ABSTRACT

VANDENLANGENBERG, KYLE MICHAEL. Studies on Downy Mildew Resistance in Cucumber (*Cucumis sativus* L.) (Under the direction of Todd C. Wehner, PhD).

Downy mildew, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a major foliar disease of cucumber. Today, 10 years after the emergence of the new race(s), downy mildew continues to be a major threat to cucumber production in the United States. Most cultivars currently grown have some resistance; however, the observed level of resistance is significantly lower than that observed during the latter half of the 20th century. Prior to 2004, host resistance was sufficient to control disease without fungicide application. Modern fungicide programs required to produce a marketable crop of cucumber under disease pressure represent a significant cost to growers. A return to a host-based resistance system is necessary to protect the profits of growers and stabilize the cucumber market.

High resistance sources were identified in a screening of cucumber germplasm. Experiments were conducted to (i) evaluate the effect of plant age on the expression of resistance; (ii) determine the type of gene action, estimate genetic variance and heritabilities of resistance in the highly resistant Plant Introduction (PI) 197088; (iii) assess the availability of non-allelic variants among the PI accessions identified as highly resistant; (iv) identify quantitative trait loci (QTL) associated with the resistance in PI 197088.

We tested a diverse set of cucumber cultigens in order to evaluate the effect developmental stage has on resistance. Among those cultigens identified as highly resistant,

some appear to respond differently to disease as varying developmental stages. The resistance present in PI 330628 and PI 605996 appears capable of fighting off downy mildew later into life. Their indeterminate growth habit may allow these accessions to outgrow the disease and appear resistance for a longer duration. Regardless of the mechanism, plant breeders may wish to utilize the resistance present in PI 330628 and PI 605996 over other resistant accessions due to their ability to maintain a high level of resistance after multiple harvests.

Resistance in PI 197088 failed to fit the single gene model, indicating that resistance should be considered quantitative and under the control of multiple genetic factors. Genetic effects were greater than environmental effects in most cases. Our estimates of additive variance and broad- and narrow-sense heritability were consistently large; suggesting gain from selection should be relatively effective. Furthermore, we estimated that resistance is under the control of only a few loci and estimated gain from selection indicates that a gain of one to two points (on a 10 point scale) per cycle under high intensity should be possible.

In general, our test of resistant lines PI 197088, PI 330628, and PI 605996 suggest that minor genetic variation may exist among the lines. We observed a significant number of susceptible offspring in the segregating F_2 generation, suggesting genetic differences are probable. However, further testing must be performed to confirm these results, as environmental variance was as high as genetic variance in many cases.

Finally, we have identified multiple QTL associated with resistance in PI 197088 utilizing a 157 $F_{6:7}$ recombinant inbred line population. In brief, three putative QTL were identified and were tightly linked to SSR markers: SSR17911 (Chr 4), SSR15321 (Chr 5),

and SSR18489 (Chr 5). Overall, the total variation among RILs explained by the putative three-QTL model was 52.29%, with a model LOD score of 21.70. All three QTL were identified in separate analysis across two locations and two years, suggesting they are environmentally stable.

© Copyright 2015 Kyle Michael VandenLangenberg

All Rights Reserved

Studies on Downy Mildew Resistance in Cucumber (*Cucumis sativus* L.)

by
Kyle Michael VandenLangenberg

A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Horticultural Sciences

Raleigh, North Carolina

2015

APPROVED BY:

Ralph A. Dean, Ph.D. Committee Chair	Ramsey Lewis, Ph.D.
Peter S. Ojiambo, Ph.D.	Todd C. Wehner, Ph.D. Chair of Advisory Committee

BIOGRAPHY

I was born in Green Bay, Wisconsin on the 4th of October 1984 to Michael and Victoria VandenLangenberg. From an early age, my parents encouraged my natural gift for the sciences. As an undergraduate, I focused my studies on genetics, which eventually led to my interest in and admittance to the Plant Breeding & Plant Genetics program at the University of Wisconsin Madison under the direction of Dr. James Nienhuis. After finishing my M.S. in plant breeding my desire to continue my education and better my plant breeding skills led me to my Ph.D. program at North Carolina State University under the direction of Dr. Todd Wehner. I look forward to using my skills, knowledge, and the connections I've made while in graduate school as I move into private industry.

ACKNOWLEDGMENTS

I would like to thank Dr. Todd Wehner. I am grateful for the opportunity you provided me with as well as the engaging discussions not only about plant breeding, but all worldly matters. Thank you to my graduate committee, including Dr. Ralph Dean, Dr. Ramsey Lewis, and Dr. Peter Ojiambo. I have enjoyed working with you these past several years and have appreciated all of our conversations. Many thanks to Ms. Tammy Ellington, whose guidance and advice helped shape my growth. Thank you to Dr. Call and Dr. Ma, who, despite their own workloads, were never too busy to lend a helping hand to my project. I would also like to thank the crew at the Horticultural Crop Research Stations in Clinton and Castle Hayne, NC for their hard work. Finally, thank you to my family, friends, and my fiancée, Emily Mae Heenan. Your willingness to listen and sometimes even train cucumbers, made this project all the more enjoyable.

TABLE OF CONTENTS

LIST OF TABLES viii

LIST OF FIGURES xi

GENERAL INTRODUCTION: A REVIEW OF RESISTANCE TO DOWNY MILDEW ON CUCUMBER 1

- INTRODUCTION 2
- *PSEUDOPERONOSPORA CUBENSIS* 4
  - Pathotypes and Races 4
  - Symptoms 5
  - Pathogen Survival and Dispersal 6
  - Life Cycle and Infection Mechanism 7
  - Evolutionary Potential 8
  - Nomenclature 8
  - Effect of Environmental Conditions 9
- CURRENTLY AVAILABLE RESISTANCE 10
- INHERITANCE OF RESISTANCE 11
  - Sources 11
  - History of Inheritance 13
  - Conflicting Inheritance Reports 14
- GENETIC MARKERS AND QTL MAPPING 17
  - Markers 17
  - Simple Sequence Repeat Polymorphisms 17
  - Genetic Linkage Mapping 18
  - Quantitative Trait Loci Mapping 19
  - Molecular Markers for Resistance to *P. cubensis* 21
- EVALUATING RESISTANCE 23
- CONCLUSION 25
- REFERENCES 27

CHAPTER ONE: EFFECT OF PLANT DEVELOPMENTAL STAGE ON DISEASE PROGRESS IN A SET OF CUCUMBER CULTIGENS 42

- ABSTRACT 44
- INTRODUCTION 45
- MATERIALS AND METHODS 47

Production Methods and Ratings 47
Plant Material 48
Statistical Analysis of Field Data 49
RESULTS AND DISCUSSION 50
CONCLUSIONS 52
REFERENCES 53
CHAPTER TWO: HERITABILITY AND GENETIC VARIANCE ESTIMATES FOR HIGH RESISTANCE TO DOWNY MILDEW IN CUCUMBER PI 197088 67
ABSTRACT 69
INTRODUCTION 70
MATERIALS AND METHODS 74
RESULTS AND DISCUSSION 79
General Analysis 79
Environmental Variance 79
Combination of Data Over Years and Locations 80
Qualitative inheritance 81
Quantitative inheritance 82
CONCLUSIONS 87
REFERENCES 89
CHAPTER THREE: INHERITANCE OF HIGH RESISTANCE TO DOWNY MILDEW IN THREE CUCUMBER PLANT INTRODUCTION ACCESSIONS 123
ABSTRACT 125
INTRODUCTION 126
MATERIALS AND METHODS 130
Statistical Analysis of Field Data 132
RESULTS AND DISCUSSION 133
Combination of data over locations 134
Distribution of Resistance 134
Qualitative Inheritance 134
Quantitative Inheritance 137
CONCLUSIONS 140
REFERENCES 142
CHAPTER FOUR: 159

IDENTIFICATION OF QUANTITATIVE TRAIT LOCI ASSOCIATED WITH RESISTANCE TO DOWNY MILDEW IN CUCUMBER 159

ABSTRACT 161

INTRODUCTION 163

MATERIALS AND METHODS 166

Plant Material 166
Plant Culture and Ratings 166
Statistical Analysis of Field Data 167
Variance Components and Heritability Estimates 167
Genotyping and Linkage Map Development 168
Identification of QTL in the PI 197088 x 'Coolgreen' RIL Population 169

RESULTS 169

Downy Mildew Resistance Levels in the 088Cglrn-RIL Population 169
Mapping QTL for Downy Mildew Resistance 171

CONCLUSION 172

REFERENCES 174

APPENDICES 188

APPENDIX A 189

A.1 Abaxial view of diseasesd cucumber leaf 189
A.2 Adaxial view of diseased cucumber leaf 190
A.3 View of diseased cucumber plant. 191
A.4 Fruit of PI 197088. 192

Appendix B 193

B.1 Raw data of downy mildew ratings taken at the North Carolina Agricultural Research Station at Clinton, NC in 2013. 193
B.2 Raw data of downy mildew ratings taken at the North Carolina Agricultural Research Station at Clinton, NC in 2014. 199

Appendix C 205

C.1 Raw data of downy mildew ratings on cucumber taken at the North Carolina Agricultural Research Station at Clinton and Castle Hayne, NC from 2011 through 2014. 205

Appendix D 396

D.1 Raw data of downy mildew ratings on cucumber taken at the North Carolina Agricultural Research Stations at Clinton and Castle Hayne, NC in 2013 and 2014. 396

Appendix E 451

E.1 Raw data of downy mildew ratings taken at the North Carolina Agricultural Research Stations at Clinton and Castle Hayne, NC in 2013 and 2014 on a recombinant inbred line cucumber population developed by single seed decent. The original cross was PI 197088 x 'Coolgreen'. 451

LIST OF TABLES

Table 1.1. Mean ratings for resistance of cucumber cultivars by year (2013, 2014) at Clinton, North Carolina for each of six ratings. [a] 60

Table 1.2. Mean rating of four replications within a planting date for resistance of cucumber cultivars by rating (1 – 6) at Clinton, North Carolina for each of six planting dates. 61

Table 1.3. Analysis of variance of the downy mildew disease ratings by year for the fourth rating date at Clinton, North Carolina in 2013 and 2014[a]. 63

Table 1.4. Scaled effect estimates of main and interacting factors in the full model for the fourth rating date of downy mildew pooled over years (2013, 2014). 64

Table 2.1. Mean of F_2 plants by year and location within year for all ratings [a]. 94

Table 2.2. Environmental variance estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a]. 95

Table 2.3. Broad-sense heritability estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a]. 96

Table 2.4. Modified environmental variance estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a]. 97

Table 2.5. Modified broad-sense heritability estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a]. 98

Table 2.6. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among location by year (2011 – 2014). 99

Table 2.7. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among years by location (Clinton, NC and Castle Hayne, NC). 100

Table 2.8. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among years and location (2011 – 2014 by Clinton, NC and Castle Hayne, NC). 101

Table 2.9. Frequency distribution and disease severity index (DSI) of downy mildew mean disease ratings for five families in 2011[a]. 102

Table 2.10. Frequency distribution and disease severity index (DSI) of downy mildew mean disease ratings for five families in 2012[a]. 103

Table 2.11. Frequency distribution and disease severity index (DSI) of downy mildew mean disease ratings for five families in 2013[a]. 104

Table 2.12. Frequency distribution and disease severity index (DSI) of downy mildew disease ratings for five families in 2014[a]. 105

Table 2.13. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Coolgreen'[a]. Data in 2011 were not poolable among locations and are presented separately. 106

Table 2.14. Single locus good goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Gy 14. 107

Table 2.15. Single locus good goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Poinsett 76. Data in 2014 were not poolable among locations and are presented separately. 108

Table 2.16. Single locus good goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Ashley. 109

Table 2.17. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Polaris. 110

Table 2.19. Variance and heritability estimates, including modified environmental variance and modified broad-sense heritability estimates, for the five cucumber families screened for resistance to downy mildew at Clinton and Castle Hayne, North Carolina (2011-2014)[a]. .. 113

Table 2.20. Estimates of number of effective factors and predicted gain from selection under different selection intensities of the mean of three downy mildew ratings by generation for the five cucumber families screened for resistance to downy mildew at Clinton and Castle Hayne, North Carolina (2011-2014)[a]. 115

Table 3.1. Mean of F_2 plants by year and location within year for all ratings[a]. 147

Table 3.2. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among location by year (2013, 2014). 148

Table 3.3. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among years and location (Clinton, NC and Castle Hayne, NC). .. 149

Table 3.4. Frequency distribution and disease severity index (DSI) of downy mildew disease ratings for three resistant families in 2013 & 2014 pooled across locations (Clinton & Castle Hayne, NC)[a]. 150

Table 3.5. Mean of all parents by year and location within year for all ratings plus standard deviations [a]. 151

Table 3.6. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2013, 2014) for cross PI 197088 x PI 330628[a]..... 152

Table 3.7. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2013, 2014) for cross PI 197088 x PI 605996[a]..... 153

Table 3.8. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2013, 2014) for cross PI 330628[a] x PI 605996[a]. 154

Table 3.9. Phenotypic variances by generation for the three cucumber families screened for resistance to downy mildew (2013, 2014)[a]. 155

Table 3.10. Variance and heritability estimates, including modified environmental variance and modified broad-sense heritability estimates, for the three cucumber families screened for resistance to downy mildew at Clinton and Castle Hayne, North Carolina (2013, 2014)[a]... 156

Table 4.1. Analysis of variance, year means, variance component estimates, and heritability (h^2) for resistance to downy mildew in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber.[z]..... 180

Table 4.2. Molecular markers associated with putative QTL in the PI 197088 X 'Coolgreen' recombinant inbred line population of cucumber. 181

LIST OF FIGURES

Fig. 1.1. Least squares mean plot of nine cultigen (x-axis) by downy mildew rating on the fourth rating date (y-axis) by six planting date (different color lines). Areas where the lines cross represent a planting date by cultigen interaction. In general, only a mild amount of interaction between planting date and cultigen was observed. Data are from four replications over two years (2013 and 2014). Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). 65

Fig. 1.2. Regression lines of the fourth downy mildew ratings for nine cultigens for both years (2013, 2014) plotted against days post sowing (x-axis). Data are from four replications taken on the fourth rating date. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). Least significant difference between cultigens is 1.595 (p-value=0.05). 66

Figure 2.1. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2011. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a].... 118

Figure 2.2. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2012. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a].... 119

Figure 2.3. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2013. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a].... 120

Figure 2.4. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2014. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a].... 121

Figure 2.5. Histogram distributions of ratings of F_2 ratings for five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) and years (2011 – 2014). [a]..... 122

Figure 3.1. Contour distributions of ratings for six generations in three families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) and year (2013, 2014) Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a]. 157

Figure 3.2. Histogram distributions of ratings of F_2 ratings for three families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) and years (2013, 2014)..... 158

Figure 4.1. Distribution of best downy mildew ratings in a recombinant inbred line population (PI 197088 x 'Coolgreen') of cucumber for 2013 and 2014 at two locations (Clinton, NC and Castle Hayne, NC)[a]. 182

Figure 4.2. Effect plot of SSR marker SSR17911 on chromosome 4 on the downy mildew rating in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. Best rating of three independent ratings of each line are presented as black circles. 183

Figure 4.3. Effect plot of SSR marker SSR15321 on chromosome 5 on the downy mildew rating in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. Best rating of three independent ratings of each line are presented as black circles. 184

Figure 4.4. Effect plot of SSR marker SSR18489 on chromosome 5 on the downy mildew rating in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. Best rating of three independent ratings of each line are presented as black circles. 185

Figure 4.5. Logarithm of odds (LOD) profile of chromosome 4 showing the closest linked marker to the putative QTL for resistance to downy mildew in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. A 95% Bayesian confident interval surrounding the putative QTL is shaded in diagonal red lines. 186

Figure 4.6. Logarithm of odds (LOD) profile of chromosome 5 showing the closest linked markers to the putative QTL for resistance to downy mildew in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. A 95% Bayesian confident interval surrounding the putative QTL is shaded in diagonal red lines. 187

GENERAL INTRODUCTION:

A REVIEW OF RESISTANCE TO DOWNY MILDEW ON CUCUMBER

Kyle Michael VandenLangenberg

Department of Horticultural Science, North Carolina State University
Raleigh, NC 27695

INTRODUCTION

Cucumber (*Cucumis sativus* L.) is a major vegetable crop throughout the world. It has been an important food source for more than 5000 years (Robinson and Decker-Walters, 1997). Today, cucumbers are cultivated throughout most temperate and tropical climates and are the fourth most widely grown vegetable crop behind tomato (*Lycopersicon esculentum* Mill.), cabbage (*Brassica oleracea* var. *capitata* L.), and onion (*Allium cepa* L.) (Tatlioglu, 1993). In 2013, the U.S. farm value of cucumber production was approximately $363.0 million, with approximately 3.59 x 10^8 kilograms produced for the fresh and pickling market (USDA, 2013). The fresh and pickling cucumber market were valued at approximately $28.7 million in North Carolina in 2012 (USDA, 2012).

Cucumbers are utilized in both culinary and non-food products. Many cosmetics products, including lotions, perfumes, and soaps contain cucumber extracts. Typically, cucumbers are consumed in fresh or processed forms. The fresh fruit are commonly eaten in salads while the pickled or vinegar-brined fruit are typically used as a garnish on sandwiches. In Asia, cucumber seeds, tender leaves, and stems are also eaten (Robinson and Decker-Walters, 1997). Cucumber seed oil is also used in French cuisine (Robinson and Decker-Walters, 1997). There are six major classifications or types of cucumber, including: slicers, pickles, gherkins, middle-eastern, trellis, and European greenhouse types (Shetty and Wehner, 2002). The pickling cucumber type is the most commonly produced in North America and is utilized as an important garnish on many dishes.

Cucumber downy mildew is a major foliar disease of cucumber and is caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. And Curt) Rostow (Palti and Cohen,

1980). In the eastern United States, downy mildew represents a major problem for modern growers. Highly resistant cultivars were available to growers for much of the latter half of the 20th century (Sitterly, 1973; Wehner and Shetty, 1997). Modern cultivars utilized by today's growers have at least a moderate level of resistance tracing back to Plant Introduction (PI) accession 197087 (Barnes and Epps, 1954). In the 1950s while working at Clemson University, Carroll Barnes developed a series of resistant cultivars, including: 'Polaris', 'Poinsett', 'Pixie', and 'Chipper' using the resistance source PI 197087. Beginning in 1961 with the release of 'Polaris', resistant cultivars were available to growers for over 40 years. From 1961 through 2003, the *dm-1* resistance gene from PI 197087 provided growers with a high level of genetic control to downy mildew. During this period, downy mildew was only a minor problem to growers in North America and was easily controlled during onset with minor fungicide applications. A flare up of the disease between 1982 and 1988 resulted in incidence levels as high as 30% in North Carolina with an averaged 2.9% dollar loss per year based on yield and quality reduction (St. Amand and Wehner, 1991). Since the emergence of the new downy mildew in 2004 the disease incidence and dollar loss per year has been significantly higher. In 2004 alone, a resurgence of downy mildew and the presence of a significantly more virulent race of *P. cubensis* caused yield losses of 40% for cucumber growers in the United States (Colucci *et al*., 2006). Today, 10 years later, the new race(s) of *P. cubensis* continue to infect cucumber in most production areas in the United States. Most cultivars currently grown in the United States have some resistance; however, the observed level of overall resistance is significantly lower than that observed prior to 2004. This results in increased costs to growers, as expensive fungicide regiments are now required to produce

cucumbers with acceptable yields and quality. Additionally, *P. cubensis* has a history of evolving resistance to fungicides and recent reports indicate that the new race(s) are likely to follow suit (Pappas, 1982; Cohen and Samoucha, 1984; Baines and Sharma, 1986; Zhu et al., 2008). Development of new cultivars with high resistance will lower costs to growers and improve the stability of the industry.

PSEUDOPERONOSPORA CUBENSIS

Pathotypes and Races

In general, pathogen populations consist of a mixture of varying pathotypes and races. Defined simply, different pathotypes of a pathogen infect different species within a genus while different races of a pathogen infect different genotypes within a species. There appears to be at least three races of *P. cubensis* in the United States that infect cucumber based on the historical sources of resistance. Prior to Barnes and Epps' work in the 1950s with PI 197087, P.R. 40 was used as a source of effective resistance to *P. cubensis* in 1948 and partially in 1949. These two sources, along with the newly identified sources of high resistance to the new downy mildew (PI 197088 and others), suggest the presence of at least three races in the pathogen population. Several studies have confirmed the presence of multiple races of *P. cubensis* through the world; however, none confirm the presence of multiple races within the United States (Angelov *et al.,* 2000; Bains and Jhooty, 1976; Lebeda *et al.,* 2006; Palti, 1974; Shetty *et al.,* 2002).

A multitude of pathotype differential screenings have been performed on *P. cubensis,* with an increasing number of pathotypes being identified overtime. In 1987, Thomas *et al*.

identified five pathotypes of *P. cubensis* among eight isolates from the United States, Israel, and Japan after establishing a differential set of 26 cultivars spanning 13 species. In 2002, Lebeda and Gadasová identified 13 pathotypes from 22 isolates collected in the Czech Republic, Spain, France, and the Netherlands. Interestingly, Lebeda and Urban (2007) reported a sudden decrease in pathotype variability along with simultaneous shift towards high pathogenicity among isolates collected in the Czech Republic from 2001 to 2003. In the United States, Colluci (2008) reported a high level of pathotype variation with 32 different compatibility patterns on 12 cucurbit hosts from 32 isolates. Nearly all of these 32 isolates were able to infect cucumber.

Symptoms

The diseases symptoms on susceptible cucumber cultigens of downy mildew are characterized by the appearance of small, water-soaked lesions on the underside of leaves generally observed in the early morning (Palti and Cohen, 1980; Personal Observation) (Addendum A.1). Adaxial lesions are often angular and bound by leaf veins, eventually turning chlorotic and necrotic (Oerke *et al.,* 2006) (Addendum A.2, A.3). Heavy sporulation can be observed within the lesions on the abaxial leaf surface. In general, symptoms occur exclusively on the leaf blades, although D'Ercole (1975) reported observing downy mildew symptoms on fruit.

In contrast to susceptible cultivar symptoms, Barnes and Epps (1954) described the hypersensitive response (HR) resistance in cucumber accession PI 197087. The lesions were described as irregularly shaped, brown, with a slight water-soaked appearance. There was no

chlorosis, and lesions remained as small, brown spots. The leaf tissue died shortly after infection and there was little to no sporulation on the leaf undersides. The resistance observed by Barnes and Epps was used in the development of nearly all resistant cultivars (Wehner and Shetty, 1997). That resistance, which was sufficiently effective for growers to produce cucumbers in warm humid regions of the United States with minimal fungicides for over 40 years, has since been overcome by a new race of the pathogen. Symptoms of the new, more virulent strains appear to be similar to those reported prior to Barnes and Epps' work. In general, symptoms occur primarily on the leaf, and follow the previously outlined susceptible cultigens' characteristics.

Pathogen Survival and Dispersal

Cucurbit downy mildew is an obligate biotroph and can only survive and reproduce on living host tissue (Savory *et al.*, 2011). Additionally, *P. cubensis* cannot overwinter in geographical areas that experience a killing frost. In the United States, areas such as Southern Florida and Southern Texas that experience mild winters and no killing frost allow the pathogen to overwinter. In the early spring as the growing season begins in the Southern United States, asexual sporangia are produced on the undersides of infected cucurbit leaves. Once produced, the sporangia are released into the air and can travel long distance through wind dispersion (Lange *et al.,* 1989; Thomas, 1996, Ojiambo and Holmes, 2011). It is believed that downy mildew infection patterns follow spring wind currents flowing Northward from these overwintering areas (Doran, 1932; Holmes *et al.,* 2004; Van Haltern, 1933). Once the pathogen establishes infection in any particular geographic region, local

secondary inoculum occurs primarily via wind, splash dispersal, and physical transfer on equipment (Thomas, 1996).

Oospores of *P. cubensis* have been observed in both temperate and tropical regions (Bains *et al*., 1977; Bedlan, 1989; Cohen *et al*., 2003; D'Ercole, 1975; Hiura and Kawada, 1933; Palti and Cohen, 1980). The probability exists that oospores could act as overwintering structures; however, their importance in the disease infection cycle appears to be limited.

Life Cycle and Infection Mechanism

Cucurbit downy mildew overwinters in areas that experience no killing frost. In the early spring, as temperatures begin to warm at higher latitudes and growers begin planting cucurbits, aerial dispersed sporangia land on the adaxial leaf surfaces. Leaf moisture is required for a successful infection to occur (Cohen, 1977; 1981). After landing, sporangia germinate and release biflagellate zoospores that swim towards stomata openings where they encyst (Iwata, 1949; Palti and Cohen, 1980). Next, zoospores form germtubes and produce an appressoria followed by a penetration hypha. Hyphae then continue to colonize the mesophyll tissue and establish haustorium for nutrient uptake (Fraymouth, 1956; Voglmayr *et al*., 2004). It is likely these structures also act as a way for the pathogen to delivery effector proteins to combat the host plant's defense response system (Hahn and Mendgen, 2001; Whisson *et al.,* 2007). Finally, sporangiophores emerge from the abaxial stomates bearing new sporangia at their tips. These new sporangia are then dispersed as either primary or secondary inoculum and continue the infection cycle.

Evolutionary Potential

Cohen and Rubin (2011) reported that *P. cubensis* reproduces both sexually and asexually. Additionally, the sporangia of *P. cubensis* may travel long distances rapidly (Lange *et al.,* 1989; Thomas, 1996, Ojiambo and Holmes, 2011). According to McDonald and Linde (2002), a mixed mating system along with airborne dispersal of inoculum represents the highest possible evolutionary potential. Based on this rating scale, *P. cubensis* has the potential to rapidly overcome genetic host resistance and evolve tolerance to available fungicides. Despite this evolutionary potentially, the single gene resistance deployed in 1961 was an effective control measure against infection through 2003.

Today, it is more important than ever to respect the evolutionary potential of *P.* cubensis. The widespread use of fungicides to control the disease provides additional selection pressure to an already virulent population. Several studies published since the 2004 resurgence of cucumber downy mildew report that resistance to systemic fungicides has been observed (Colucci and Holmes, 2007; Hausbeck and Cortright, 2009; Lebeda and Urban, 2007; Mitani *et al.*, 2001; and Zhu *et al*., 2008). As fungicide resistances continue to emerge, the importance of new cultivars with genetic resistance will continue to increase.

Nomenclature

First described in Cuba in 1868 by Berkeley and Curtis, *P. cubensis* was originally placed in the genus *Peronospora*, rather than *Pseudoperonospora*. Thirty-five years later, based on his study of infected cucumbers at the Botanical Institute of Moscow, Rostowzew (1903) determined a genus classification change was required. He observed a significant

difference in the way *Peronospora* and his subject, downy mildew, produced asexual spores called sporangia. Downy mildew's sporangia land on the leaf surface and when environmental conditions are correct germinate to produce biflagellate zoospores capable of swimming towards stomatal openings. Once encysted within stomata, *Pseudoperonospora* species produce a germtube that penetrates the host species. In contrast, *Peronospora* species produce asexual spores that germinate by means of a germtube and are called conidia. The germtube from the conidia directly enters the host through stomatal pores (Agrios; 2005; Palti and Cohen, 1980; Thakur and Mathur, 2001). Based on this difference, Rostowzew suggested a genus classification change from *Peronospora* to *Pseudoperonospora*.

Effect of Environmental Conditions

Several studies have concluded that temperature, leaf wetness, and inoculum concentration may alter the level of infection as well as the disease progress. In general, downy mildew is the most severe when the temperature is approximately 15 to 20°C, though at least some infection is possible between 5 and 30°C when leaf wetness is sufficient (Cohen and Rotem, 1969; Neufield and Ojiambo; 2012). While the range of temperature is quite wide, a key factor for infection to occur is long periods of leaf wetness, with at least 2 h of wetness required for infection (Cohen, 1977; Granke and Hausbeck, 2011). Longer periods of sustained leaf wetness are associated with higher rates of infection and steeper disease progress curves (Cohen, 1977). The lack of available moisture from humidity and rainfall is a likely reason downy mildew is not a significant pathogen in much of the Southwest United States. Besides optimal temperatures and wetness durations, viable sporangia need to be

present for infection to occur. The numbers of viable sporangia within a given field appears to be a byproduct of both current disease severity within that field, as well as cumulative solar radiation levels (Granke *et al*., 2013). Kanetis *et al*., (2009) reported that sporangia survival rates are negatively correlated with increases in solar radiation, suggesting periods of overcast may increase inoculum levels. These studies suggest that downy mildew infection and disease progress rates are the highest at moderately warm temperatures, in humid and wet conditions, during cloudy periods of time.

CURRENTLY AVAILABLE RESISTANCE

Today, no commercially available cultivars offer a high level of resistance to downy mildew. In a recent study published by Call *et al*. (2012a) a series of available commercial cultivars were screened for resistance to downy mildew in North Carolina – none of the cultigens tested in that study showed a high level of resistance. In general, commercial cultivars ranged from moderately resistant to highly susceptible. The author noted that even the most resistant commercial cultivars would likely require fungicide applications to protect yield and quality.

Since the emergence of the new downy mildew, researchers have focused on the identification of new sources of high resistance and the incorporation of those traits into elite backgrounds (Call *et al.*, 2012b). In 2014, Holdsworth *et al.* released a breeding line, DMR-NY264, with a high level of resistance and a reported high level of yield under disease pressure. While DMR-NY264 appears to have a high level of resistance and quality compared to resistant PI accessions and commercial checks under disease pressure, the yield

data appears to be a byproduct of maturity rather than tolerance. In their study, the authors partition the yield measurements into two groups, harvests 1-6 (early) and 7-12 (late). Commercial checks outperform DMR-NY264 during the early period when disease pressure is low, and then subsequently fall behind in yield performance compared to DMR-NY264 in the late period once disease pressure is high. When considering the total yield over all 12 harvests for a particular cultivar, line, or check, DMR-NY264 lacks a competitive advantage with only moderate total marketable yield. Despite this limitation, the public release of a breeding line with high resistance and good quality provides private and public breeders with advanced source material for commercial cultivar development.

INHERITANCE OF RESISTANCE

Sources

In 1933, a curved, long-fruited Chinese cultivar was used at the Puerto Rico Agricultural Experiment Station as a source of resistance to downy mildew. The Chinese cultivar was considered commercially unviable due to poor fruit quality. Researchers at the station began crossing the downy mildew resistant parent with the currently available best commercial cultivars in order to combine resistance with good horticultural traits. Seven highly resistant lines having good agronomic traits were obtained in this program; three of these (PR 37, PR 39, and PR 40) had exceptional fruit quality and yields similar to or higher than the commercial checks. These were then used for the development of resistant breeding lines and cultivars (Barnes et al. 1946; Barnes, 1955; Barnes and Epps, 1955).

Fifteen years after the resistant Chinese cultivar was utilized by the Puerto Rico Agricultural Experiment Station to develop the PR lines, Barnes (1948) developed and released a downy mildew resistant cultivar called 'Palmetto' by crossing PR 40 with a susceptible high quality line, 'Cubit'. Limited area of 'Palmetto' was planted in 1948 and 1949. Symptoms during those years were classified as small lesions with little sporulation (Epps and Barnes, 1952). Unfortunately, by 1950 and 1951, all fields planted with 'Palmetto' showed signs of significant infection. The symptoms also changed, being now classified as large with heavy sporulation – a symptomology generally used to describe susceptible cultivars. It is unlikely that a change in host resistant occurred between 'Palmetto's' 1948 debut and 1952. Rather, the change was likely due to a shift in the pathogen population due to mutation, selection in a mixed population, or migration of a race from a different region.

Recently, PI 401734, which is PR 39 from the Puerto Rico Agricultural Experiment Station, was found to still be moderately susceptible (Criswell, 2008; Wehner and Shetty, 1997). This suggests that the resistance that was overcome in 'Palmetto' is still ineffective.

Following the failed resistance of 'Palmetto' and PR 40, Barnes and Epps (1954) identified a new source of resistance, PI 197087. Since its identification, the resistance in PI 197087 has been introgressed into many modern cultivars with resistance to the pre-2004 downy mildew pathogen population in the United States. The resistance that traces back to PI 197087 was effective in controlling downy mildew without the use of fungicides for nearly 50 years.

Since the emergence of the new downy mildew in 2004, new sources of resistance (reduced leaf damage) and tolerance (good yield under disease presence) to the race(s) of

downy mildew in the United States have been identified. Criswell (2008) and Call *et al*. (2012b) identified several new sources of resistance to the new downy mildew in a cucumber germplasm screening and multi year re-evaluation of the most resistant cultigens. The most resistant cultigens from the germplasm screening test were PI 197088, Ames 2354, PI 267942, Ames 2353, PI 197085, PI 330628, PI 432878, and PI 618931 (Criswell, 2008). A more thorough analysis of the results and data can be found in Call *et al*., (2012b). The new downy mildew is a severely destructive pathogen of cucumbers, and the identification of resistant sources to the new population will allow researchers to develop new cultivars with high levels of resistance.

History of Inheritance

The inheritance of downy mildew resistance has been previously reported; however, the conclusions vary and the matter continues to be the subject of intense research.

Angelov (1994) reported that PI 197088 resistance to the European race(s) is due to two recessive genes, while resistance in 'Poinsett' is from one recessive gene (*dm-1*). Resistance in 'Poinsett', 'Taipei', 'Natsufushinari', PI 179676, and PI 234517, which traces to PI 197087 was reported by Van Vliet and Meysing (1974; 1977) to be from at least one single recessive gene, *dm* (*dm-1*). Fanourakis and Simon (1987) agreed with Van Vliet and Meysing, confirming that a single recessive gene controls downy mildew resistance.

In contrast to the single gene models, Shimizu *et al*. (1963) reported that three recessive genes (s_1, s_2, s_3) control resistance in 'Aojihai'. McFerson (1978) also reported resistance was due to three recessive genes. Doruchowski and Łazokowska-Ryk (1992)

reached the same conclusion using 'Wisconsin 2843' (resistance from PI 197087) – that resistance to downy mildew is under the control of three recessive genes (*dm-1, dm-2,* and *dm-3*). Interestingly, they reported that *dm-3* and either *dm-1* or *dm-2* had to be homozygous recessive for maximum resistance expression. In contrast to Doruchowski and Łazokowska-Ryk (1992), Petrov *et al.* (2000) were unclear in their report of the inheritance in J-13, a derivative of Wisconsin 2843, suggesting that it may be due to one or two incompletely dominant genes. Pershin *et al.* (1988) determined resistance was controlled by at least three major genes, all with partial dominance using cultivar 'Sadao Rischu'. Recently, Kozik *et al*., (2013) reported that one to three genes controls resistance in Ames 2354, a downy mildew tolerant selection from PI 234517 (Carroll Barnes breeding line SC50). Similarly, Call (2012) reported that resistance in PI 197088 is likely due to at least three or four genes.

Resistance in cultivars 'Palmetto' and 'Yomaki', with resistance tracing back to P.R. 40 (Barnes, 1948), was reported to be the result of an epistatic interaction between a dominant susceptible allele and a recessive resistance allele (El-Hafaz *et al*., 1990). Similarly, Badr and Mohamed (1998) reported that a pair of dominant and recessive interacting genes controls resistance.

Conflicting Inheritance Reports

There appears to be no general consensus in the literature about the inheritance pattern of resistance. This may be due to several factors, including measuring techniques, pathogen and environmental variability, and resistance sources.

For instance, the aforementioned studies were not all measuring the same symptoms of disease. Doruchowski and Łazokowska-Ryk (1992) measured percent necrotic lesions while Van Vliet and Meysing (1974; 1977) and El-Hafaz *et al*. (1990) measured sporulation intensity. Other studies used different measures, including percent chlorotic lesions (Fanourakis and Simon, 1987; Petrov *et al*., 2000), or simply did not detail the methodologies utilized. Criswell (2008) and Call *et al*. (2012a; 2012b) reported that necrosis and chlorosis were highly correlated (R^2=0.90); however, sporulation (R^2=0.71 and R^2=0.70, respectively) and stunting (R^2=0.26) were only mildly correlated with necrosis and chlorosis. Based on only moderate correlation levels, it seems likely that by measuring different symptoms of disease the various researchers were estimating inheritances for differing traits.

In addition to measuring different symptoms, the varying inheritance studies were conducted in environments that may have varied significantly. Factors including temperature, humidity, rainfall, and inoculum movement by wind influence the severity of downy mildew infection (Cohen, 1977). Variances in severity may have attributed to the conflicting results reported regarding inheritance patterns. It is reasonable to assume that environments varied significantly across these studies, as they were conducted over a period of nearly 50 years in a multitude of countries. The addition of greenhouse tests to inheritance studies would allow for better estimates of environmental variance and may help to reduce this problem.

Furthermore, the *P. cubensis* pathogen population is highly variable throughout space and time (Lebeda and Urban, 2004). Multiple pathotypes and races have been identified (Angelov *et al*., 2000; Epps and Barnes, 1952; Hughes and Van Haltern, 1952; Lebeda and

Widrlechner, 2003; Shetty *et al*., 2002). This may result in varying levels of infection along with changes in observed inheritance patterns.

Finally, the source of resistance varies between the downy mildew studies. Historically, two primary sources of resistance have been utilized in both breeding resistant cultivars and inheritance studies. Some studies evaluated resistance sources from PI 197087 or PI 197088 (India), while others evaluated resistance from P.R. 40 (China). Observed differences in inheritance pattern may be explained by the use of different resistance sources. Modern inheritance studies include the new source of resistance, PI 197088, and add further complication to an area of study with much discrepancy.

In summary, there are several proposed inheritance patterns for resistance to downy mildew. Models range from single-gene inheritance to at least three genes with varying degrees of dominance or epistasis, and may be conflicting due to a number of extraneous factors. Despite this incongruence, there are at least three known resistance sources to the varying downy mildew pathogen population: P.R. 40, PI 197087, and PI 19088. Today, resistance tracing back to P.R. 40 provides only a slight advantage over lines that lack a resistant parent in their pedigree. Cultivars with resistance tracing back to PI 197087 are generally moderately resistant to the current downy mildew epidemic in the United States. This resistance comprises a majority of the commercially available resistance and requires frequent fungicide application to reduce yield and quality losses. Finally, the newly identified source, PI 197088 is highly resistant and may be introgressed into elite backgrounds to provide a high level of genetic resistance once again. However, poor horticultural traits may complicate the introgression of new resistance (Addendum A.4). Taken together, these three

sources along with the varying reports of inheritance, indicate that there are likely several genes that control resistant.

GENETIC MARKERS AND QTL MAPPING

Markers

Genetic markers fall into three main categories: 1) morphological markers, which detect variation at the phenotype level, 2) biochemical markers, which detect variation at the gene product level, and 3) molecular markers, which detect variation at the DNA level (Doveri *et al.*, 2008). Griffiths *et al*. (1996) described a genetic marker as "a variant allele that is used to label a biological structure or process through the course of an experiment". In plant breeding, genetic markers are used for many applications including marker-assisted selection, germplasm enhancement, gene isolation, and gene mapping. In general, these markers allow the indirect identification of specific genes located on particular chromosomes. To date a large number of marker systems have been developed. A thorough review of a variety of marker systems and their uses can be found in Bernardo (2008).

Simple Sequence Repeat Polymorphisms

Microsatellites, or simple sequence repeats (SSRs), are short stretches of DNA consisting of short tandem repeats of mono-, di-, tri-, or tetranucleotide motifs with a repeat size of 1-6 bp (Tautz, 1989). SSRs are typically characterized by a high degree of length polymorphism in both coding and noncoding regions (Zane *et al*., 2002). Generally, SSRs are abundant and distributed throughout the eukaryotic genome (Tautz and Renz, 1984). Zane *et*

al., (2002) provides a comprehensive review of strategies available for the isolation of SSR markers. In brief, there are two main ways SSR markers can be developed. One, primer sequences that flank the repeat units can be derived from genomic DNA libraries or two, primers can be designed based on sequence data available in gene banks from closely related species. Today, SSR markers have grown in popularity among plant breeders due to their abundance in plant genomes, the relative ease of identification, their high polymorphism level, and their codominant nature (Gupta *et al*., 1996).

Genetic Linkage Mapping

The ability to draw a link between phenotypic data and genotypic data is an important tool for genetic research. Using the frequency of recombination events that occur during meiosis is the basic foundation of calculating genetic distances between loci on a chromosome. The map distance between two loci is commonly determined by applying a mapping function to the observed recombination frequencies and adjusting for any assumptions (Haldane, 1919; Kosambi, 1944). There are two main mapping functions used in plants to create genetic linkage maps. One, the Kosambi function (Kosambi, 1944) assumes that interference between crossover events occurs during meiosis. In contrast, the Haldane function (Haldane, 1919) assumes that no interference occurs between crossover events. Regardless of the function utilized, genetic linkage maps are then constructed by estimating the recombination frequency between all pairs of loci and ordering them. Pairs of loci that are physically close on a chromosome will have a lower recombination frequency than pairs of loci that are physically distant. This “linkage” is used to infer the genetic distance between

markers and is often expressed in centiMorgans (cM). By studying many markers we are able to build a genetic map with markers that are only a short distance apart from one another along each chromosome. This genetic map, along with accurate phenotypic data of a target trait can be used for quantitative trait locus (QTL) identification. Once identified, plant breeders can utilize QTL to increase the output of their programs.

Quantitative Trait Loci Mapping

The theory of QTL mapping was first described by Sax in 1923. QTL mapping allows a researcher to model the relationship between phenotype and genotype at each location across a genome. Below is a brief summary of the various QTL mapping techniques that are available. A thorough review can be found in Broman and Sen (2009).

The simplest way to perform QTL mapping is through marker regression. In marker regression, each marker is considered individually. Groups are created for each marker according to their genotype, and group phenotype trait averages are compared using a t-test or ANOVA (F statistic) at each marker. Several disadvantages of marker regression exist, including its inability to separate linked QTL, detect QTL x QTL interactions, and deal with missing genotype data (Broman, 2001). Despite these disadvantages, marker regression in the presence of complete genotype data and with traits controlled by single-genes is relatively straightforward and does not require special software to perform.

An improvement on marker regression is simple interval mapping (SIM), which models the relationship between phenotype and genotype by performing a likelihood ratio test for a hypothetical QTL at one-marker intervals across the genome (Lander and Botstein,

1989). In SIM, the hypothetical QTL is located between flanking markers. Confidence intervals are calculated using the likelihoods of odds (LOD score) around each interval step. The results are often plotted as LOD score (y-axis) against chromosomal position in cM (x-axis) and the location of the maximum LOD score is taken as the single putative QTL's position (Semagn *et al.*, 2010). The key advantage of SIM, compared to marker regression, is that it takes into account missing genotype information. Perhaps more importantly, interval mapping may predict positions between markers, which may provide researchers with additional information. The main disadvantage of simple interval mapping is that it only considers one QTL at a time and is unable to detected QTL x QTL interactions. This can result in a biased identification and estimation of the effect and position of a given QTL when multiple QTL are present within a single linkage group (Haley and Knott, 1992).

Due to the limitations of single-QTL mapping, multiple-QTL mapping procedures have been developed. One such approach is commonly referred to as composite interval mapping (CIM) (Jansen, 1993; Zeng, 1993 and 1994). CIM combines standard single interval mapping with linear regressions and includes, at each analyzed marker step, information about other markers in the form of cofactors. The use of additional marker information as a cofactor when searching for putative additional QTL allows the CIM approach to identify multiple-QTL and QTL x QTL interactions. However, as with marker regression and single interval mapping, CIM also suffers from drawbacks. Mainly, as stated by Zeng *et al.* (1999), when tightly linked markers are used as cofactors the statistical power available to detect QTL can be significantly reduced. As genotyping individuals within a population becomes

increasingly less expensive or as finer (closer physical distance) mapping projects are undertaken, the loss of statistical power may become an issue with the CIM procedure.

In general, the more advanced (and more recent), QTL mapping procedures provide better estimates of QTL locations and effects (Semagn, 2010). Regardless of the methods deployed, once identified, QTL may be utilized by researchers for a variety of beneficial reasons. Applications such as marker-assisted selection, germplasm enhancement, gene isolation, and gene mapping are among the most common and can improve the ability of plant breeders and researchers to tackle issues in their fields faster and more effectively.

Molecular Markers for Resistance to *P. cubensis*

Several studies have been conducted to identify QTL associated with resistance to downy mildew. Zhang *et al*., (2013) mapped five putative QTL (*dm1.1, dm5.1, dm5.2, dm5.3,* and *dm6.1*) controlling resistance to downy mildew on chromosome 1, 5, and 6 in an F_2 population using a cross between K8 and K18. K8 is a typical Northern Chinese type cucumber inbred with resistance to downy mildew derived from a Chinese long cucumber hybrid, 'Yuanfeng'. Inbred line K18 is highly susceptible to downy mildew (Zhang *et al*., 2007). Similarly, Bai *et al*., (2008) mapped four QTL (*dm1.1, dm1.2, dm 6.1,* and *dm6.2*) to linkage groups 1 and 6 in a recombinant inbred line (RIL) population with resistant parent S94 (Northern Chinese type cucumber); however, they were unable to assign the linkage groups to corresponding chromosomes. Pang *et al*., (2013) identified three putative QTL controlling aspects of resistance to downy mildew by screening 10 introgression lines derived from an interspecific hybridization between cucumber cultivar "*beijingjietou*" and the wild

Cucumis, *C. hystrixi*. Ding *et al*., (2007) reported that the randomly amplified polymorphic DNA (RAPD) marker, SPS18-561 was linked to a downy mildew resistance gene. Horejsi *et al*., (2000) identified five RAPD markers linked to downy mildew resistance in 'WI 1983G', a resistant inbred derived from 'Gy 14', tracing its resistance back to PI 197087. Additional non-polymerase chain reaction (PCR) markers linked to downy mildew resistance have also been reported; however, due to the high inefficiency and cost of non-PCR markers they provide little value to molecular assisted breeding programs (Bai *et al*., (2008); Ding *et al*., 2007; Horejsi *et al.*, 2000; Kennard *et al*., 1994; Meglic and Staub, 1996). While the information regarding the location and effect of the various identified QTL and molecular markers is useful for breeders and researchers, none of these studies trace their resistance back to PI 197088 or other newly identified sources of resistance. This suggests that many of the identified QTL in the aforementioned studies are likely the *dm-1* gene from PI 197087.

Recently, Yoshioka *et al*., (2014) reported 11 QTL with relatively small effects associated with the downy mildew resistance in cucumber line CS-PMR1, a self-pollination derived selection from PI 197088. A population consisting of 111 RILs derived from a cross between CS-PMR1 and moderately resistant 'Santou', an old Japanese cultivar, was used for QTL analysis. A single isolate of *P. cubensis* was collected from an infected cucumber leaf grown in a plastic greenhouse and used as the source of all inoculum. All phenotype data was collected in a greenhouse. This study represents the only known example of QTL discovery using the new source of resistance found in PI 197088 and is an important step in allowing breeders to integrate molecular data into their breeding programs. However, greenhouse and

single-isolate assays of resistance are generally not representative of field infection or resistance and these results should be confirmed using a field assay.

EVALUATING RESISTANCE

Many methods have been deployed by researchers when evaluating host resistance to downy mildew in cucumber. Different goals of research may dictate the best evaluation method. A plant pathologist, interested in the spread of disease, may wish to rate sporulation. A plant breeder, interested in releasing resistant cultivars, may be most interested in tolerance (yield under disease presence). The variety of methods deployed rate the expression of different resistant mechanisms, such as chlorosis and necrosis of leaf tissue, stunting in plant size, sporulation, lesion size, and tolerance.

The most predominant symptoms, and perhaps most easily rated of downy mildew, are chlorosis and necrosis (Addendum A.1). While the two traits are often rated separately, they are highly correlated (Call *et al*., 2012a; Call *et al*., 2012b; Criswell, 2008). Call (2012) suggested that when selecting for resistance, breeders should select for low overall chlorosis and necrosis expression and for a high necrosis to chlorosis ratio. As an obligate biotroph, *P. cubensis* is unable to survive and sporulate on necrotic tissue, and a high ratio of necrosis to chlorosis may be indicative of a hyper sensitive response.

Lesion type and size are related to the expression of chlorosis and necrosis, and smaller lesions result in less sporulating tissue. Bains (1991) described four categories of lesion type: 1. faded green to dull yellow lesions, size restricted, slow necrosis; 2. yellow spots or flecks, non-angular, slow growing, slow necrosis; 3. bright yellow, large, angular,

fast growing, susceptible type, high sporulation; 4. necrotic spots or flecks, non-angular, little chlorosis, HR type. The lesion type of most currently grown cultivars is category 3 (Call, 2012b).

Disease progress and the relative amount of disease incidence within a given field are related to the amount of viable inoculum present. A reduction in the amount of inoculum produced by resistant cultivars should slow overall disease progress and reduce incidence. A hemocytometer or leaf disc can be utilized in a laboratory setting to estimate spore count; however, this process is laborious and time consuming. A subjective 0 to 9 scale, similar to those used in many disease rating assays, is as effective as rating with a hemocytometer and considerably faster (Criswell, 2008).

Finally, stunting or plant vigor is another way to evaluate disease pressure. In general, susceptible cultivars have reduced vegetative growth due to disease pressure, though clear exceptions exist (Personal observation). Reduced vigor results in less leaf area for photosynthesis and significantly reduces yield. While larger plants may provide additional leaf area for sporulation, they can often outgrow the progress of the disease and still produce acceptable yields. Large plants, even those with disease symptoms, may represent the disease resistance trait tolerance – as they produce yield even under disease pressure.

Plant breeders should focus on selecting for improvement in each trait separately in lines that can later be intercrossed and combined into hybrid cultivars. Ideally, one parent would include resistance to chlorosis and necrosis, and reduced sporulation while the second parent has reduced stunting and tolerance.

CONCLUSION

Today, 10 years after the emergence of the new downy mildew in the United States, no commercial cultivars offer the level of high genetic resistances that was previously available to growers from 1961 until 2003. Those cultivars utilized a single-gene resistance, *dm-1*, from PI 197087 that has since been overcome through a shift in the pathogen population. Growers in the eastern United States now must grow moderately resistant cultivars in combination with expensive and frequent fungicide applications in order to achieve acceptable yields and quality. New cultivars need to be developed with high levels of resistance.

In a screening of the United States Department of Agriculture cucumber germplasm collection, new sources of resistance were identified (Call *et al*. 2012b; Criswell 2008). Accessions considered highly resistant had low levels of chlorosis and necrosis, reduced sporulation, high levels of plant vigor, and tolerance under disease presence. Historically, a series of conflicting reports on the inheritance of resistance have been reported. Resistance in PI 197088, the new source of resistance, is thought to be inherited quantitatively and under the control of at least three genes (Call, 2012). Though it may also be the result of several small effect QTL (Yoshioka *et al*., 2014). An effective breeding program relies on accurate estimates of heritability, the number of effective factors (genes), and gene action. In order to develop new cultivars with high levels of resistance plant breeders will require the debate in the literature to be resolved. We have developed families using resistant and susceptible parents to determine the inheritance pattern of resistance from PI 197088.

Downy mildew has a high evolutionary potential and a history of overcoming deployed resistance. We have developed families using multiple sources of resistance in order to search for possible allelic variants that may be available to combat the threat posed by the new downy mildew. If multiple new alleles were available that express the same level of resistance as the allele(s) from PI 197088, plant breeders would have a larger source of genetic diversity to deploy. This may increase the length of time any newly deployed resistance is effective against the pathogen population.

Finally, marker assisted selection is a tool available to plant breeders to increase the efficiency of their breeding programs. A recent report by Yoshioka *et al*. (2014) identified at least 11 QTL responsible for the increased level of resistance from PI 197088. However, their experiments were solely conducted under greenhouse conditions. We developed a RIL population in order to identify QTL linked to resistance expression in a field environment. Markers linked to these QTL will be useful for breeders attempting to introgress resistance from the wild accession PI 197088.

Downy mildew remains a destructive disease of cucumber in the eastern United States and throughout the world. As the fourth most important vegetable crop worldwide, it is important that the threat posed upon the cucumber industry be overcome. Plant breeders will need a multitude of tools and resources in order to successfully develop commercial cultivars with high levels of resistance. To help plant breeders with this process, we have studied the effect plant developmental stage has on resistance, contributed to the understanding of inheritance, searched for additional sources of the new resistance, and reported on several putative QTL that will be useful in breeding new highly resistant cultivars.

REFERENCES

Agrios, G.N. 2005. Plant Pathology. Elsevier Academic Press. New York, NY.

Angelov, D. 1994. Inheritance of resistance to downy mildew, Pseudoperonospora cubensis (Berk. & Curt.) Rostow. Rep. 2nd Natl. Symp. Plant Immunity. (Plovdiv) 3:99–105.

Angelov, D., Georgiev, P. and Krasteva, L. 2000. Two races of *Pseudoperonospora cubensis* on cucumbers in Bulgaria. In: Katzir, N. and Paris, H. S. eds. Proc. Cucurbitaceae 2000. ISHS Press, Ma'ale Ha Hamisha, Israel. pp. 81-83.

Badr, L. A. A. and Mohamed, F. G. 1998. Inheritance and nature of resistance to downy mildew disease in cucumber (*Cucumis sativus* L.). Annals of Agriculture Science, Moshtohor. (in Arabic) 36: 2517-2544.

Bai, Z., Yuan, X., Cai, R., Liu, L., He, H., Zhou, H., and Pan, J. 2008. QTL analysis of downy mildew resistance in cucumber. Prog. Nat. Sci. 18:706-710 (in Chinese).

Bains, S.B. 1991. Classification of cucurbit downy mildew lesions into distinct categories. Indian J. of Mycol. and Plant Pathol. 21(3): 269-272.

Bains, S.S. and Jhooty, J.S. 1976. Host-range and possibility of pathological races in *Pseudoperonospora cubensis* – cause of downy mildew of muskmelon. Indian Phytopathology. 29:214-216.

Bains, S.S. and Sharma, N.K. 1986. Differential response of certain cucurbits to isolates of *Pseudoperonospora cubensis* and characteristics of identified races. Phytophylactica. 18:31-33.

Bains, S.S., Sokhi, S.S. and Jhooty, J.S. 1977. *Melothria maderaspatana*—a new host of *Pseudoperonospora cubensis*. Indian J. Mycol. Plant Pathol. 7: 86.

Barnes, W.C. 1948. The performance of Palmetto, a new downy mildew-resistant cucumber variety. Proc. Amer. Soc. Hort. Sci. 51: 437-44.

Barnes, W.C. 1955. They both resist downy mildew: Southern cooperative trials recommend two new cucumbers. Seedsmans Dig. 14: 46-47.

Barnes, W.C. and Epps, W.M. 1954. An unreported type of resistance to cucumber downy mildew. Plant Disease Reporter 38:620.

Barnes, W.C. and W.M. Epps. 1955. Progress in breeding cucumbers resistant to anthracnose and downy mildew. Proc. Amer. Soc. Hort. Sci. 65: 409-15.

Barnes, W.C., C.N. Clayton and J.M. Jenkins. 1946. The development of downy mildew-resistant cucumbers. Proc. Amer. Soc. Hort. Sci. 47: 357-60.

Bedlan, G. 1989. First detection of oospores of *Pseudoperonospora cubensis* (Berk et Curt.) Rost. on glasshouse cucumbers in Austria. Pflantzenschutzberichte, 50: 119–120.

Berkeley, M. S. and Curtis, A. 1868. *Peronospora cubensis*. J. Linn. Soc. Bot. 10:363.

Bernardo, R. 2008. Molecular markers and selection for complex traits in plants: Learning from the last 20 years. Crop Sci. 48: 1649-1664.

Borman, K.W. 2001. Review of statistical methods for QTL mapping in experimental crosses. Laboratory Animals. 30: 44-52.

Broman, K. and Ś Sen. 2009. Introduction. p. 1-20. In K. Broman and Ś. Sen (ed.) A Guide to QTL Mapping with R/qtl. Springer, New York.

Call, A.D. 2012. Inheritance of resistance to downy mildew in cucumber (*Cucumis sativus* L.) PI 197088 and effect of interaction of host plant resistance, fungicides, and environment on severity of downy mildew on cucumber. Ph.D. Thesis, North Carolina State Univ., Raleigh.

Call, A.D., A.D. Criswell, T.C. Wehner, K. Ando and R. Grumet. 2012a. Resistance of cucumber cultivars to a new strain of cucurbit downy mildew. HortScience. 47(2):171–178.

Call, A.D., A.D. Criswell, T.C. Wehner, U. Klosinska and E.U. Kozik. 2012b. Screening cucumber for resistance to downy mildew caused by Pseudoperonospora cubensis (Berk. and Curt.) Rostov. Crop Sci. 52: 577-592.

Cohen, Y. 1977. The combined effects of temperature, leaf wetness, and inoculum concentration on infection of cucumbers with *Pseudoperonospora cubensis*. Canadian Journal of Botany. 55:1478-1487.

Cohen, Y. 1981. Downy mildew of cucurbits. In: Spencer, D.M. ed. The Downy Mildews. Academic Press, London. pp. 341-354.

Cohen, Y. and Y. Samoucha. 1984. Cross-resistance to four systemic fungicides in metalaxyl-resistant strains of Phytophthora infestans and Pseudoperonospora cubensis. Plant Dis. 68(2): 137-139.

Cohen, Y., A.E. Rubin and M. Galperin. 2011. Formation and infectivity of oospores of Pseudoperonospora cubensis, the causal agent of downy mildew in cucurbits. Plant Dis. 95: 874.

Cohen, Y., and Rotem, J. 1969. The effects of lesion development, air tem- perature, and duration of moist period on sporulation of *Pseudoperonospora cubensis* in cucumbers. Israel J. Bot. 18:135-140.

Cohen, Y., Meron, I., Mor, N. and Zuriel, S. 2003. A new pathotype of *Pseudoperonospora cubensis* causing downy mildew in cucurbits in Israel. Phytoparasitica, 31: 458–466.

Colucci, S.J. and Holmes, G.J. 2007. Fungicide insensitivity and pathotype determination of *Pseudoperonospora cubensis*, causal agent of cucurbit downy mildew. *Phytopathology*, 97, S24.

Colucci, S.J., 2008. Host Range, Fungicide Resistance and Management of Pseudoperonospora cubensis, Causal Agent of Cucurbit Downy Mildew. M.S. Thesis, North Carolina State Univ., Raleigh.

Colucci, S.J., Wehner, T.C. and Holmes, G.J. 2006. The downy mildew epidemic of 2004 and 2005 in the eastern United States. In: Holmes, G. J. ed. Proc. Cucurbitaceae 2006. pp. 403-411.

Criswell, A.D. 2008. Screening for downy mildew resistance in cucumber. M. S. Thesis, North Carolina State Univ., Raleigh.

D'Ercole, N. 1975. La peronoospora del cetriolo in coltura protetta. Inftore fitopath 25:11-13.

Ding, G., Qin, Z., Zhou, X.,and Fan, J. 2007. RAPD and SCAR markers linked to downy mildew resistance genes in cucumber. Acta Botanica Boreali-Occidentalia Sinica. 27:1747-1751 (in Chinese).

Doran, W.L. .1932. Downy mildew of cucumbers. Mass. Agr. Exp. St. Re. B. 283, 1–22.

Doruchowski RW, Łazokowska-Ryk E. 1992. Inheritance of resistance to downy mildew (*Pseudoperonospora cubensis* Berk & Curt) in *Cucumis sativus*. In: Doruchowski RW. (ed) Proceedings of the V Eucarpia Cucurbitaceae Symposium. Poland, Skierniewice-Warszawa, pp 132–138.

Doveri, S., D. Lee, M. Maheswaran, W. Powell. 2008. Molecular Markers: History, Features and Applications. p. 23-67. *In* C. Kole and A.G. Abbott (ed.) Principles and Practices of Plant Genomics, Vol. 1: Genome Mapping. Science Publishers, Enfield, USA.

El-Hafaz, A., El-Din, B., El-Doweny, H. H. and Awad, M. M. W. 1990. Inheritance of downy mildew resistance and its nature of resistance in cucumber. Annals of Agricultural Science, Moshtohor. 28:1681-1697.

Epps, W. M. and Barnes, W. C. 1952. The increased susceptibility of the palmetto cucumber to downy mildew in South Carolina. Plant Disease Reporter. 36(1):14-15.

Fanourakis, N. E. and Simon, P. W. 1987. Analysis of genetic linkage in the cucumber. Journal of Heredity. 78:238-242.

Fraymouth, J. 1956. Haustoria of the Peronosporales. Trans. Br. Mycol. Soc. 39: 79–107.

Granke, L.L., and Hausbeck, M.K. 2011. Aerobiology of *Pseudoperonospora cubensis* sporangia in commercial cucurbit fields. Plant Dis. 95:1392-1400.

Granke, L.L., J.J. Morrice, M.K. Hausbeck. 2013. Relationships between airborne *Pseudoperonospora cubensis* sporangia, environmental conditions, and cucumber downy mildew severity. Plant Disease. 98: 674-681.

Griffiths, A.J.F., J.H. Miller, D.T. Suzuki, R.C. Lewontin, and W.M. Gelbart. 1996. An Introduction to Genetic Analysis. 6th edn. W.H. Freeman, New York, USA.

Gupta, P.K., H.S. Balyan, P.C. Sharma and B. Ramesh. 1996. Microsatellites in plants: A new class of molecular markers. Current science 70: 45-54.

Hahn, M. and Mendgen, K. 2001. Signal and nutrient exchange at biotrophic plant–fungus interfaces. Curr. Opin. Plant Biol. 4: 322–327.

Haldane, J.B.S. 1919. The combination of linkage values and the calculation of distance between loci of linked factors. Journal of genetics 8: 299-309.

Haley, C.S. and Knott, S.A. 1992. A simple regression method for mapping quantitative trait loci in line crosses using flanking markers. Heredity, 69: 315-324.

Haley, C.S. and L. Andersson. 1997. Linkage mapping of quantitative trait loci in plants and animals. In: DEAR, Paul H., ed. *Genome mapping: a practical approach*. New York, Oxford University Press, , p. 49-71.

Hausbeck, M.K. and Cortright, B.D. 2009. Evaluation of fungicides for control of downy mildew of pickling cucumber, 2007. *Plant. Dis. Manag. Rep*. **3**, V112.

Hiura, M. and Kawada, S. 1933. On the overwintering of *Peronoplasmopara cubensis*. Jpn. J. Bot. 6: 507–513.

Holdsworth, W.L., C.F. Summers, M. Glos, C.D. Smart, M. Maxourek. 2014. Development of downy mildew-resistant cucumbers for late-season production in Northeastern United States. HortSci. 49: 10-17.

Holmes, G.J., Main, C.E. and Zeever, Z.T. 2004. Cucurbit downy mildew: a unique pathosystem for disease forcasting. In: *Advances in Downy Mildew Research* (Spencer-Phillips, P.T.N. and Jeger, M., eds), pp. 69–80. Dordercht: Kluwer Academic Publishers.

Horejsi, T., Staub, J., and Thomas, C. 2000. Linkage of random amplified polymorphic DNA markers to downy mildew resistance in cucumber (*Cucumis sativus* L.). Euphytica 115:105-113.

Hughes, M. B. and Van Haltern, F. 1952. Two biological forms of *Pseudoperonospora cubensis*. Plant Disease Reporter. 36(9):365-367.

Iwata, Y. 1949. Studies on the invasion of cucumber plants by downy mildew. (In Japanese, with English summary). Ann. Phytopathol. Soc. Jpn. 13: 60–61.

Jansen, R.C. 1993. Interval mapping of multiple quantitative trait loci. Genetics. 135: 205-211.

Kanetis, L., Holmes, G. J., and Ojiambo, P. S. 2009. Survival of *Pseudoperonospora cubensis* sporangia exposed to solar radiation. Plant Pathol. 59: 313-323.

Kennard, W.C., Poetter, K., Dijkhuizen, A., Meglic, V., Staub, J.E., and Havey, M.J.1994. Linkage among RFLP, RAPD, isozyme, disease resistance and morphological markers in narrow and wide crosses of cucumber. Theor. Appl. Genet. 89:42-48.

Kosambi, D.D. 1944. The estimation of map distances from recombination values. Annals of Eugenics 12: 172-175.

Kozik, E.U., U. Klosinska, A.D. Call, and T.C. Wehner. 2013. Heritability and genetic variance estimates for resistance to downy mildew in cucumber access Ames 2354. Crop Sci. 53: 177-182.

Lander, E.S. and D. Botstein. 1989. Mapping Mendelian factors underlying quantitative traits using RFLP linkage maps. Genetics 121: 185-199.

Lange, L., Eden, U., and Olson, L. W. 1989. Zoosporogenesis in *Pseudoperonospora cubensis*, the causal agent of cucurbit downy mildew. Nord. J. Bot. 8:497-504.

Lebeda, A. and Gadasova, V. 2002. Pathogenic variation of *Pseudoperonospora cubensis* in the Czech Republic and some other European countries. In: Nishimura, S. et al. eds. Proc. 2nd International Symposium on Cucurbits. pp. 137-141.

Lebeda, A. and J. Urban. 2004. Disease impact and pathogenicity variation in Czech populations of Pseudoperonospora cubensis. In: Lebeda, A. and H.S. Paris. eds. Progress in Cucurbit genetics and breeding research. Proc. Cucurbitaceae 2004, 8th EUCARPIA Meeting on Cucurbit Genetics and Breeding. Palacky University in Olomouc, Olomouc, Czech Republic: 267-273.

Lebeda, A. and J. Urban. 2007. Temporal changes in pathogenicity and fungicide resistance in Pseudoperonospora cubensis populations. Acta Hort. 731: 327–336.

Lebeda, A. and Widrlechner, M. P. 2003. A set of *Cucurbitaceae* taxa for differentiation of *Pseudoperonospora cubensis* pathotypes. Journal of Plant Diseases and Protection. 110: 337- 349.

Lebeda, A., Widrlechner, M.P. and Urban, J. 2006. Individual and population aspects of interactions between cucurbits and *Pseudoperonospora cubensis*: pathotypes and races. In: Holmes, G.J. ed. Proc. Cucurbitaceae 2006. pp. 453-467.

McDonald B.A. and C. Linde. 2002. The population genetics of plant pathogen and breeding strategies for durable resistance. Euphytica 124: 163-80.

McFerson JR. 1978. A screening procedure for determining levels of resistance in cucumber. USA, Texas A&M University, MSc thesis.

Meglic, V., and Staub, J.E.1996. Inheritance and linkage relationship sof isozyme and morphological loci in cucumber (Cucumis sativus L.). Theor. Appl. Genet. 92:865-872.

Mitani, S., Araki, S., Yamaguchi, T., Takii, Y., Ohshima, T. and Matsuo, N. 2001. Biological properties of the novel fungicide cyazofamid against *Phy- tophthora infestans* on tomato and *Pseudoperonospora cubensis* on cucum- ber. *Pest Manag. Sci.* 58, 139–145.

Neufeld, K., and Ojiambo, P. 2012. Interactive effects of temperature and leaf wetness during on sporangia germination and infection of cucurbit hosts by *Pseudoperonospora cubensis*. Plant Disease. 96: 345-353.

Oerke, E.-C., U. Steiner, H.-W. Dehne, and M. Lindenthal. 2006. Thermal imaging of cucumber leaves affected by downy mildew and environmental conditions. J. Exp. Bot. 57:2121–2132.

Oerke, E.C., Steiner, U., Dehne, H.W. and Lindenthal, M. 2006. Thermal imaging of cucumber leaves affected by downy mildew and environmental conditions. J. Exp. Bot. 57: 2121–2132.

Ojiambo, P.S. and G.J. Holmes. 2011. Spatiotemporal spread of cucurbit downy mildew in the eastern United States. Phytopathol. 101: 451-461.

Palti, J. 1974. The significance of pronounced divergences in the distribution of *Pseudoperonospora cubensis* on its crop hosts. Phytoparasitica 2: 109-115.

Palti, J., and Cohen, Y. 1980. Downy mildew of cucurbits (*Pseudoperonospora cubensis).* The fungus and its hosts, distribution, epidemiology, and control. Phytoparasitica 8: 109-147.

Pang, X., Zhou, X., Wan, H. and Chen, J. 2013. QTL mapping of downy mildew resistance in an introgression line derived from interspecific hybridization between cucumber and *Cucumis hystrix*. J Phytopathology 161: 536-543.

Pappas, A.C. 1982. Metalaxyl resistance and control of cucumber downy mildew with oomycete-fungicides. Annales - Benakeion Phytopathologikon Institouton. 13(2): 194-212.

Pershin, A. f., Medvedeva, N. I. and Nedvedev, A. V. 1988. Quantitative approach to studying the genetics of disease resistance. IV. Interaction of the genetic systems for resistance to powdery and downy mildews in cucumber. Geneticka, USSR. (in Russian) 24:484-493.

Pershin, A. f., Medvedeva, N. I. and Nedvedev, A. V. 1988. Quantitative approach to studying the genetics of disease resistance. IV. Interaction of the genetic systems for resistance to powdery and downy mildews in cucumber. Geneticka, USSR. (in Russian) 24:484-493.

Petrov, L., Boodert, K., Sheck, L., Baider, A., Rubin, E., Cohen, Y., Datzir, N. and Paris, H. S. 2000. Resistance to downy mildew, *Pseudoperonospora cubensis*, in cucumbers. Acta Horticulturae. 510:203-209.

Robinson, R.W. and Decker-Walters, D.S. 1997 Cucurbits. Cab International NY, NY. pp. 226

Rostowzew, S.J. 1903. Beitraege zur Kenntnis der Peronosporeen. Flora 92:405-433.

Savory E.A., L.L. Granke, L.M. Quesada-Ocampo, M. Varbanova, M.K. Hausbeck, and B. Day. 2011. The cucurbit downy mildew pathogen Pseudoperonospora cubensis. Mole Plant Path. 12: 217-226.

Sax, K. 1923. The association of size differences with seed-coat pattern and pigmentation in *Phaseolus vulgaris*. Genetics. 8:. 552-560.

Semagn, K.; A Bjornstad, and Y. Xu. 2010. The genetic dissection of quantitative traits in crops. Electronic J of Biotechnology. 13, no. 5. http://dx.doi.org/10.2225/vol13-issue5-fulltext-14

Shetty, N. V. and Wehner, T. C. 2002. Screening the cucumber germplasm collection for fruit yield and quality. Crop Science. 42: 2174-2183.

Shetty, N. V., Wehner, T. C., Thomas, C. E., Doruchowski, R. W. and Shetty, V. K. P. 2002. Evidence for downy mildew races in cucumber tested in Asia, Europe, and North America. Scientia Horticulturae. 94: 231-239.

Shimizu, S., Kanazawa, K., Kato, A., Yokota, Y., and Koyama, T. 1963. Studies on the breeding of cucumber for the resistance to downy mildew and other fruit characters. Engei Shikenjo ho koku. (in Japanese) 2:65-81.

Sitterly, W.R. 1973. Cucurbits. In: Nelson, R.R. ed. Breeding plants for disease resistance, concepts and applications. Penn. State Univ. Press, University Park.

St. Amand, P. C., and Wehner, T. C. 1991. Crop loss to 14 diseases in cucumber in North Carolina for 1983 to 1988. Cucurbit Genetics Coop. Rpt. 14: 15-17.

Tatlioglu, T. 1993. Cucumbers. In: Kalloo, G. and Bergh, B.O. ed. Genetic improvement of vegetable crops. Pergamon Press, New South Wales, Australia.

Tautz D, M. Renz. 1984. Simple sequences are ubiquitous repetitive components of eukaryotic genomes. Nucleic Acids Research. 12:4127–4138

Tautz, D. 1989. Hypervariability of simple sequences as a general source for polymorphic DNA markers. Nucleic Acids Res. 17: 6463-6471.

Tautzl, D. and M. Renz. 1984. Simple sequences are ubiquitous repetitive components of eukaryotic genomes. Nucleic Acids Res. 12: 4127-4138.

Thakur, R.P. and Kusum, M. 2001. Downy Mildews of India. Crop Protection. 21:333-345.

Thomas, C. E., Inaba, T. and Cohen, Y. 1987. Physiological specialization in *Pseudoperonospora cubensis*. Phytopathology. 77:1621-1624.

Thomas, C.E. 1996. Downy mildew. In: Compendium of cucurbit diseases. APS Press, St. Paul, MN:25-27.

USDA, National Agricultural Statistics Service. 2012. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

USDA, National Agricultural Statistics Service. 2013. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

Van Haltern, F. 1933. Spraying cantaloupes for the control of downy mildew and other diseases. Geo. Agr. Exp. St. Bull. 175: 1–53.

Van Vliet GJA, Meysing WD. 1974. Inheritance of resistance to *Pseudoperonospora cubensis* Rost. in cucumber (Cucumis sativus L.). Euphytica 23:251–255.

Van Vliet, G. J. A. and Meysing W. D. 1977. Relation in the inheritance of resistance to *Pseudoperonospora cubensis* Rost and *Sphaerotheca fuliginea* Poll. in cucumber (*Cucumis sativus* L.). Euphytica 26:793-796.

Voglmayr, H., Riethmuller, A., Goker, M., Weiss, M. and Oberwinkler, F. 2004. Phylogenetic relationships of *Plasmopara, Bremia* and other genera of downy mildew pathogens with pyriform haustoria based on Bayesian analysis of partial LSU rDNA sequence data. Mycol. Res. 108: 1011–1024.

Wehner, T.C. and Shetty, N.V. 1997. Downy mildew resistance of the cucumber germplasm collection in North Carolina field tests. Crop Science. 37:1331-1340.

Whisson, S.C., Boevink, P.C., Moleleki, L., Avrova, A.O., Morales, J.G., Gilroy, E.M., Armstrong, M.R., Grouffard, S., van West, P., Chapman, S., Hein, I., Toth, I.K., Pritchard, L. and Birch, P.R.J. 2007. A translocation signal for delivery of oomycete effector proteins into host plant cells. Nature. 450: 115–118.

Yoshioka, Y., Y. Sakata, M. Sugiyama, N. Fukino. 2014. Identification of quantitative traint loci for downy mildew resistance in cucumber (*Cucumis sativus* L.). Euphytica. 198: 265-276.

Zane L., L. Bargelloni, T. Patarnello. 2002. Strategies for microsatellite isolation: a review. Molecular Ecology. 11: 1–16

Zane, L., L. Bargelloni, and T. Patarnello. 2002. Strategies for microsatlellite isolation: a review. Molecular Ecology. 1-16.

Zeng, Z.B. 1993. Theoretical basis for separation of multiple linked gene effects in mapping quantitative trait loci. Proceedings of the National Academy of Sciences. 90: 10972-10976.

Zeng, Z.B. 1994. Precision mapping of quantitative trait loci. Genetics. 136: 1457-1468.

Zeng, Z.B., C.H. Koa, and C.J. Basten. 1999. Estimating the genetic architecture of quantitative traits. Genetical Research. 74: 279-289.

Zhang SP, Liu MM, Miao H, Zhang SQ, Yang YH, Xie BY, Todd CW, Gu XF. 2013. Chromosomal mapping and QTL analysis of resistance to downy mildew in Cucumis sativus. Plant Dis 97:245–251. http://dx.doi.org/10.1094/ PDIS-11-11-0941-RE.

Zhang, S.Q., Gu, X.F.,Zhang, S.P.,and Zou, Z.R. 2007. Genetic analysis of downy mildew resistance in cucumber. Acta Botanica Boreali-Occidentalia Sinica. 27: 2416-2420.

Zhu, S., Liu, P., Liu, X., Li, J., Yuan, S. and Si, N. 2008. Assessing the risk of resistance in *Pseudoperonospora cubensis* to the fungicide flumorph in vitro. *Pest Manag. Sci.* 64, 255–261.

CHAPTER ONE:

EFFECT OF PLANT DEVELOPMENTAL STAGE ON DISEASE PROGRESS IN A SET OF CUCUMBER CULTIGENS

Kyle M. VandenLangenberg and Todd C. Wehner

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

This chapter is intended to be published in Horticultural Science

Effects of Plant Developmental Stage on Disease Progress in a Set of Cucumber Cultigens

Kyle M. VandenLangenberg[1] and Todd C. Wehner[1]

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

Received for publication _____. Accepted for publication _____. The use of trade names in this publication does not imply endorsement by the North Carolina Agricultural Research Service of the products named, or criticism of similar ones not mentioned. Direct correspondence to Todd Wehner (Todd_Wehner@NCSU.Edu).

[1] Graduate research assistant and professor. The authors gratefully acknowledge the technical assistance of Tammy L. Ellington.

Additional index words: *Cucumis sativus, Pseudoperonospora cubensis*, Disease

ABSTRACT

Downy mildew, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a major foliar disease of cucumber. Presently, 10 years after the emergence of the new race(s) of *P. cubensis*, downy mildew continues to be a major threat to cucumber production in the United States. Cucumber accessions with high resistance have been recently identified. Development of new cultivars with high resistance remains an important object of many cucumber research and breeding programs. We tested a set of cucumber cultigens, including newly identified highly resistant plant introduction (PI) accessions and susceptible check lines, to observe the effect of plant age on resistance expression. Some cultigens responded differently to disease over plant developmental stages. In general, older plants had more disease symptoms, even lines classified as resistant, such as PI 197088. In contrast, PI 330628 and PI 605996 held their resistance even at late developmental stages. It is possible that these lines were resistant at late stages due to a multitude of factors, but we believe it is likely due to their rapid and indeterminate growth, which allows them to continue to outgrow the disease. Regardless of the mechanism involved, plant breeders should use the genetic resistance in PI 330628 and PI 605996 over PI 197088, due to their ability to maintain resistance over a long time.

INTRODUCTION

Cucumber (*Cucumis sativus* L.) is a major vegetable crop used in most countries around the world. The crop is cultivated throughout most temperate and tropical climates and is the fourth most widely grown vegetable crop behind tomato (*Lycopersicon esculentum* Mill.), cabbage (*Brassica oleracea* var. *capitata* L.), and onion (*Allium cepa* L.) (Tatlioglu, 1993). In 2013, the U.S. farm value of cucumber was $363 million, with 3.59 x 10^8 kg produced for the fresh and processing market (USDA, 2013). In North Carolina in 2012, the fresh and processing cucumber market was valued at $29 million (USDA, 2012).

Downy mildew, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a major foliar disease of cucumber (Palti and Cohen, 1980). The disease symptoms on cucumber are characterized by the appearance of small, water-soaked lesions on the underside of leaves generally observed in the morning. Adaxial lesions are often angular and bound by leaf veins, eventually turning chlorotic and necrotic. Heavy sporulation can be observed within the lesions on the abaxial leaf surface. The disease has been reported in over 80 countries on 20 genera, including 50 species of the *Cucurbitaceae*, causing significant economic losses (Lebeda, 1992; Lebeda and Widrlechner, 2003; Palti and Cohen, 1980; and Olczak-Woltman *et al.*, 2011). Downy mildew can cause significant reductions in yield due to a short-latent period, high secondary infection frequency, rapid spread, and a year-round presence in some cucurbit production areas (Cohen, 1981; Colucci and Holmes, 2010). Entire leaves may die within days of initial infection if the disease is not controlled (Thomas, 1996). Severe foliar loss leads to an open plant canopy, resulting in a cessation of fruit development due to a lack of photosynthetic activity, increased incidence of

sunscald, and secondary rots (Keinath *et al*., 2007). Prior to 2004, it was possible to control epidemics of cucumber downy mildew by growing resistant cultivars. However, a resurgence of the disease in 2004 and subsequent breakdown of the resistance resulted in yield losses of up to 40% (Colucci et al., 2006). Presently, 10 years after the appearance of a new race of cucumber downy mildew, the disease continues to threaten production in warm humid regions around the world, including most production areas of the United States.

Development of new cultivars with high resistance remains an important objective of cucumber breeding programs. Without high resistance, expensive fungicide programs have been necessary to maintain fruit yield and quality. *P. cubensis* reproduces both sexually and asexually and is wind-dispersed over long distances. This results in a high evolutionary potential (McDonald and Linde, 2002). Because of the evolutionary potential of downy mildew, and the widespread use of fungicides to control the disease, it is likely that fungicide resistances will develop. Several studies published since the 2004 resurgence of cucumber downy mildew report resistance to systemic fungicides (Colucci and Holmes, 2007; Hausbeck and Cortright, 2009; Lebeda and Urban, 2007; Mitani *et al.*, 2001; and Zhu *et al*., 2008). As fungicide resistances occur, cultivars with genetic resistance will be more useful.

New sources of genetic resistance (reduced leaf damage) and tolerance (high yield in the presence of disease) to the new race(s) of downy mildew in the United States were identified in a germplasm screening study and a multi-year re-evaluation of the most resistant and susceptible cultigens conducted at North Carolina State University (Call *et al.*, 2012b). Several cultigens were identified with high levels of resistance to the new downy mildew. Among these cultigens, considerable attention has been given to Plant Introduction (PI)

197088. This accession is being used in breeding efforts as the source of high resistance. Additionally, the inheritance of resistance in PI 197088 has been detailed in several studies and appears to be quantitative (Call, 2012; VandenLangenberg, 2014). Interestingly, the most resistant cultigens identified by Call *et al*. (2012b), were only moderately resistant in the downy mildew screening of Wehner and Shetty (1997). It is likely that the change in the pathogen population in 2004 altered the rankings of these cultigens.

Adult plant resistance has been observed in several crop-disease interactions (Chen, 2005; Coelho and Monteiro, 2003; and Shaik, 1985). However, to our knowledge it has not been reported in cucumber. It is possible that the new resistance present in several PI accessions is a form of adult plant resistance. A better understanding of the pattern of resistance to the new downy mildew will help inform breeders and growers on best practices. The objective of this study was to better understand the interaction between the new race(s) of downy mildew and the newly-identified, highly resistant cucumber cultigens, and to assess the presence of adult plant resistance.

MATERIALS AND METHODS

Production Methods and Ratings

In the summer of 2013 and 2014, nine cultigens were direct seeded into black plastic mulch on raised beds at the Horticultural Crops Research Stations at Clinton, North Carolina. The soil type in Clinton was a mixture of Norfolk, Orangeburg, and Goldsboro loamy sand. The environment is sub-tropical during the main growing season, with high humidity and frequent rainfall. Cucumbers were grown using recommended horticultural practices as

summarized by Schultheis (1990). Irrigation was applied as needed through plastic drip tape for a total of 25 to 40 mm per week. Plots consisted of five single-plant hills, with individual hills 0.6 m apart within the row. Border rows were planted using the susceptible cultivar 'Coolgreen' approximately every third row to encourage the even spread of inoculum. No artificial inoculum was used in the field tests in North Carolina. Plots were exposed to natural epidemics encouraged by overhead irrigation during the growing season. The experiment design required multiple planting dates throughout the season. Plantings were made every second week for six planting dates. The first plantings were on 9 May 2013 and 1 May 2014.

Disease severity was evaluated weekly after the onset of observable symptoms in the first planting date for six consecutive weeks. Ratings are based on percentage of symptomatic leaf area (disease rating scale 0 to 9, where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)); as described by Jenkins and Wehner (1983). The first ratings were taken on 11 July 2013, and 3 July 2014. The first rating day was exactly 62 days from planting in both years.

Plant Material

Nine cucumber cultivars and PI accessions (hereafter collectively referred to as cultigens) differing in disease resistance were used to evaluate severity of disease at different life-cycle stages. Cultigens were chosen based on previous studies at North Carolina State University (Call et al., 2012a; Call et al., 2012b; Wehner and Shetty, 1997; Shetty et al., 2002). 'Wisconsin SMR 18' (Wisconsin AES) is highly susceptible, 'Poinsett 76' (Clemson and Cornell Univ.) is moderately resistant, and 'Ashley' (Clemson Univ.) is moderately susceptible. The selected group of PI accessions were among the most resistant cultigens

over all environments in a germplasm retest study (Call, 2010). They include PI 197085, PI 197086, PI 197088, PI 330628, PI 432875, and PI 605996.

Experiment Design

We planted nine cultigens (subplots) in each of four replicates through time (planting date) using a split-plot design. In this way, plants in each subsequent planting (main plot) were at an earlier stage of development when inoculum arrived. In order to observe the true effect of plant age on resistance, we rated the entire study multiple times through the main infection season. A single rating of the entire experiment represents a snapshot of resistance expression on a set of cultigens at different stages of plant development. For example, our fourth rating in 2014 taken on 24 July was 14, 28, 42, 56, 70 and 84 d after planting each sequential set of plots. This range of dates represents a high degree of spread in plant development stage, from first true leaf (14 d), full flower (28 d), early fruit set (42 d), late fruit set (56 d), early seed maturity (70 d), and late seed maturity (84 d).

In order to study the effect of plant stage on resistance one must look at a set of cultigens at different stages of growth, all rated at the same time. For that, we used the fourth rating, since it had the best array of growth stages in both years. Earlier ratings lacked plants that were at the seed-set stage, while later ratings lacked plants at the pre-flower stage.

Statistical Analysis of Field Data

Data were analyzed using the statistical packages JMP Pro 10 (SAS Institute Inc., Cary, N.C.), R (R Development Core Team, Vienna, Austria) and SAS v9.4 (SAS Institute, Cary, N.C.). Prior to analysis, data were checked for normality. Residual plots had a random

distribution, indicating that the statistical model was valid and its assumptions were met (Fernandez, 1992).

RESULTS AND DISCUSSION

Severity of downy mildew was higher in 2013 than in 2014 (Table 1.1). This is consistent with other studies conducted on downy mildew at the same location (data not shown). It is possible that the environment was more conducive to disease development in 2013 than in 2014, resulting in higher overall ratings. Due to intensity differences between years, we analyzed the data separately between years in order to highlight any differences that disease intensity may cause. However, in areas of our report where no major differences appeared in our analysis, we pooled over years for simplicity.

All model effects were significant in our analysis of the fourth rating date in both 2013 and 2014, including planting date, cultigen, and the planting date by cultigen interaction (Table 1.3). The mean squares for planting date was approximately 55 and 29 times higher than the planting date by cultigen interaction in 2013 and 2014, respectively. However, a significant planting date by cultigen interaction indicates that there are possible plant development stage effects on downy mildew ratings (Figure 1.1).

Disease ratings for downy mildew increased over time (Table 1.2). The average age of the entire study increased in age with each sequential rating, likely resulting in an increase in the downy mildew rating with each progressive rating date.

Regression analysis indicated differences among cultigens in the way plant age affects disease ratings (Table 1.4, Fig 1.2). If adult stage resistance were present in a cultigen, then old plants would rate lower (have less disease) compared to young plants. For example,

if only adult plants were resistant, we would expect planting date five to rate lower than planting date six on the same rating date. In both 2013 and 2014, older plants rated higher (had more disease) than younger plants on all occasions, indicating that no adult stage resistance exists (Fig 1.2).

While no adult stage resistance was detected, some cultigens maintained their resistances longer than others (Fig 1.2). Scaled effect estimates of all possible model terms in the regression analysis (intercept, days after planting, cultigens, and the days after planting by cultigen interaction) helps assess the impact of model terms on downy mildew ratings in comparison to the overall means. In our study, check cultigens 'Ashley', 'Poinsett 76', and 'Wisconsin SMR 18' had a positive (more disease) effect on downy mildew ratings compared to the overall mean. In contrast, check cultigens PI 197085, PI 197086, PI 330628, and PI 606996 had a negative (less disease) effect on downy mildew ratings. Interestingly, the highly resistant accession PI 197088, the resistant parent in several modern breeding efforts, had no effect on downy mildew rating – with its mean rating over planting dates being about equal to the overall study mean on the fourth rating date (Table 1.4). The interaction between planting date and cultigen was found to be significant, consistent with the hypothesis that some cultigens would respond differently to disease at different stages of plant maturity (Table 1.3).

We observed that accessions PI 330628 and PI 605996 were better able to resistant disease at later stages of development than the other cultigens tested using the scaled effect estimates of the regression model (Table 1.4). Put simply, the regression slopes of PI 330628 and PI 605996 were less steep than the other cultigens tested (Fig 1.2). The resistant

accession PI 197088 was less able to resistant disease (had a steeper regression line) at later stages of development in comparison to the other cultigens tested (Fig 1.2, Table 1.4).

CONCLUSIONS

We detected no evidence of adult stage resistance to the new downy mildew in this set of cultigens. All cultigens rated higher at later stages of development. However, we did detect differences in the way some cultigens maintain their resistance over time. PI 330628 and PI 605996 maintained a resistant rating the longest. The observation that some cultigens in our study responded differently to disease at different plant developmental stages may be due to several factors. PI 330628 and PI 605996 were capable of resisting downy mildew later in life. However, it is more likely that these cultigens are either resistant to other diseases (which may present later in the season and conflate downy mildew ratings) or their wild-type vigor and large plant size gives them the ability to outgrow the disease (personal observation). It is concerning that the resistant accession PI 197088 appears to develop disease symptoms faster than other resistant PI accessions. PI 197088 is used frequently in modern breeding programs aimed at the development of commercial cultivars with high resistant and quality.

These results should be verified in additional studies. The use of growth chambers would allow for better control of experimental results, as our results may be biased due the presence of other diseases with similar symptomologies as downy mildew. Plant breeders may wish to use PI 330638 or PI 605996 instead of PI 197088 due to their ability to maintain a high level of resistance well into adulthood.

REFERENCES

Angelov, D. 1994. Inheritance of resistance to downy mildew *Pseudoperonospora cubensis* (Berk. & Curt.) Rostow. Rep. 2nd Natl. Symp. Plant Immunity. (Plovdiv) 3:99–105.

Bai, Z., X. Yuan, R. Cai, L. Liu, H. He, H. Zho, and Pan, J. 2008. QTL analysis of downy mildew resistance in cucumber. Prog. Nat. Sci. 18:706-710 (in Chinese).

Barnes, W.C. and W.M. Epps. 1954. An unreported type of resistance to cucumber downy mildew. Plant Dis. Rptr. 38:620.

Broman K.W., H. Wu, Ś. Sen, and G.A. Churchill. 2003. R/qtl: QTL mapping in experimental crosses. Bioinformatics. 19:889-890.

Call, A. D. 2012. Inheritance of resistance to downy mildew in cucumber (*Cucumis sativus* L.) PI 197088 and effect of interaction of host plant resistance, fungicides, and environment on severity of downy mildew on cucumber. Ph.D. Thesis, North Carolina State Univ., Raleigh.

Call, A.D., A. D. Criswell, T.C. Wehner, U. Klosinska, and E.U. Kozik. 2012b. Screening cucumber for resistance to downy mildew caused by *Pseudoperonospora cubensis* (Berk. and Curt.) Rostov. Crop Sci. 52: 577-592.

Cavagnaro P.F., D.A. Senalik, L. Yang, P.W. Simon, T.T. Harkins, C.D. Kodira, S. Huang, and Y. Weng. 2010. Genome-wide characterization of simple sequence repeats in cucumber (*Cucumis sativus* L.). BMC Genomics 11:569

Chen, X.M. 2005. Epidemiology and control of stripe rust [*Puccinia striiformis f. sp. tritici*] on wheat. Can. J. Plant Pathol. 27: 314-337.

Cockerham, C.C. 1963. Estimates of genetic variances. Statistical genetics and plant breeding. N.A.S.N.R.C. 982:53-94.

Cockerham, C.C. 1983. Covariance of relatives from self-fertilization. Crop Sci. 23:1177-1180.

Coelho, P.S. and Monteiro, A.A. 2003. Expression of resistance to downy mildew at cotyledon and adult plant stages in *Brassica oleracea*. L. Euphytica. 133: 279-284.

Cohen, Y. 1981. Downy mildew of cucurbits. In: The Downy Mildews, D.M. Spencer (ed.), Academic Press, NY. 636 pp.

Colucci S.J., T.C. Wehner, and G.J. Holmes. 2006. The downy mildew epidemic of 2004 and 2005 in the eastern United States. Pages 403-411 in: Proceedings of The Cucurbitaceae 2006, G.J. Holmes ed., Asheville, NC, USA.

Colucci, S.J. and G.J. Holmes. 2010. Downy mildew of cucurbits. The Plant Health Instructor. DOI: 10.1094/PHI-I-2010-0825-01.

Colucci, S.J. and G.J. Holmes. 2007. Fungicide insensitivity and pathotype determination of *Pseudoperonospora cubensis*, causal agent of cucurbit downy mildew. Phytopathology, 97, S24.

Ding, G., Z. Qin, X. Zhou, and J. Fan. 2007. RAPD and SCAR markers linked to downy mildew resistance genes in cucumber. Acta Botanica Boreali-Occidentalia Sinica 27:1747-1751 (in Chinese).

Fanourakis N.E., and P.W. Simon. 1987. Analysis of genetic linkage in the cucumber. J. Hered. 78:238–242.

Fernandez, G.C.J. 1992. Residual analysis and data transformations: important tools in statistical analysis. HortScience 27:297-300.

Hallauer, A.R. and J.B. Miranda F. 1988. Quantitative genetics in maize breeding. 2nd Ed. Iowa University Press. Ames, IA.

Hausbeck, M.K. and B.D. Cortright. 2009. Evaluation of fungicides for control of downy mildew of pickling cucumber, 2007. *Plant. Dis. Manag. Rep*. **3**, V112.

Horejsi, T., J. Staub, and C. Thomas. 2000. Linkage of random amplified polymorphic DNA markers to downy mildew resistance in cucumber (Cucumis sativus L.). Euphytica 115:105-113.

Huang, S., Li, R., Zhang, Z., Li, L., Gu, X., Fan, W., Lucas, W., Wang, X., Xie, B., Ni, P., Ren, Y., Zhu, H., Li, J., Lin, K., Jin, W., Fei, Z., Li, G., Staub, J. E., Kilian, A., van der Vossen, E. A. G., Wu, Y., Guo, J., He, J., Jia, Z., Ren, Y., Tian, G., Lu, Y., Ruan, J., Qian, W., Wang, M., Huang, Q., Li, B., Xuan, Z., Cao, J., San, A., Wu, Z., Zhang, J., Cai, Q., Bai, Y., Zhao, B., Han, Y., Li, Y., Li, X., Wang, S., Shi, Q., Liu, S., Cho, W., Kim, J., Xu, Y., Heller-Uszynska, K., Miao, H., Cheng, Z., Zhang, S., Wu, J., Yang, Y., Kang, H., Li, M., Liang, H., Ren, X., Shi, Z., Wen, M., Jian, M., Yang, H., Zhang, G., Yang, Z., Chen, R., Liu, S., Li, J., Ma, L., Liu, H., Zhou, Y., Zhao, J., Fang, X., Li, G., Fang, L., Li, Y., Liu, D., Zheng, H., Zhang, Y., Qin, N., Li, Z., Yang, G., Yang, S., Bolund, L., Kristiansen, K., Zheng, H., Li, S., Zhang, X., Yang, H., Wang, J., Sun, R., Zhang, B., Jiang, S., Wang, J., Du, Y., and Li, S. 2009. The genome of the cucumber, *Cucumis sativus* L. Nat. Genet. 41:1275-1281.

Jenkins, S.F. Jr. and T.C. Wehner. 1983. A system for measurement of foliar disease in cucumbers. Cucurbit Genetics Cooperative, Rpt 6:10-12.

JMP, Version 10. SAS Institute Inc., Cary, NC, 1989-2014.

Keinath, A.P., G.J. Holmes, K.L. Everts, D.S. Egel, and D.B. Langston. 2007. Evaluation of combinations of chlorothalonil with azoxystrobin, harpin, and disease forecasting for control of downy mildew and gummy stem blight on melon. Crop Prot. 26, 83–88.

Kennard, W.C., K. Poetter, A. Dijkhuizen, V. Meglic, J.E. Staub, and M.J. Havey. 1994. Linkage among RFLP, RAPD, isozyme, disease resistance and morphological markers in narrow and wide crosses of cucumber. Theor. Appl. Genet. 89:42-48.

Knapp, S.J., W.W. Stroup, and W.M. Ross. 1985. Exact confidence intervals for heritability on a progeny mean basis. Crop Sci. 25:192-194.

Lebeda, A. 1992. Screening of wild Cucumis species against downy mildew (Pseudoperonospora cubensis) isolates from cucumbers. Phytoparasitica 20(3):203-210.

Lebeda, A. and J. Urban. 2007. Temporal changes in pathogenicity and fungicide resistance in *Pseudoperonospora cubensis* populations. *Acta Hortic.* 731:327–336.

Lebeda, A. and M.P. Widrlechner. 2003. A set of *Cucurbitaceae* taxa for differentiation of *Pseudoperonospora cubensis* pathotypes. J. Plant Dis. and Prot. 110: 337-349.

Li, Y., L. Yang, M. Pathak, D. Li, X. He, and Y. Weng. 2011. Fine genetic mapping of cp: a recessive gene for compact (dwarf) plant architecture in cucumber, *Cucumis sativus* L. Theor. Appl. Genet. 123:973–983

McDonald, B.A. and C. Linde. 2002. The population genetics of plant pathogen and breeding strategies for durable resistance. Euphytica 124: 163-80.

McFerson J.R. 1978. A screening procedure for determining levels of resistance in cucumber. USA, Texas A&M University, MSc thesis.

Meglic, V. and J.E Staub. 1996. Inheritance and linkage relationships of isozyme and morphological loci in cucumber (*Cucumis sativus* L.). Theor. Appl. Genet. 92:865-872.

Mitani, S., S. Araki, T. Yamaguchi, Y. Takii, T. Ohshima, and N. Matsuo. 2001. Biological properties of the novel fungicide cyazofamid against *Phytophthora infestans* on tomato and *Pseudoperonospora cubensis* on cucumber. Pest Manag. Sc*i.* 58, 139–145.

Olczak-Woltman H, J. Marcinkowska, and K. Niemirowicz-Szczytt. 2011. The genetic basis of resistance to downy mildew in *Cucumis* spp.–latest developments and prospects. J Appl Genet 52:249–255.

R Development Core Team. 2014. R: A language and environment for statistical computing. R Foundation for Statistical Comp. http://www.R-project.org

SAS Institute Inc. 2013. SAS® 9.4 Guide to Software Updates. Cary, NC: SAS Institute Inc.

Schultheis, J.R. 1990. Pickling cucumbers. N.C. State Ag. Extension. Hort. Info. Lflt. No. 14-A.

Shaik, M. 1985. Race-nonspecific resistance in bean cultivars to races of *Uromyces appendiculatus* var. *appendiculatus* and its correlation with leaf epidermal characteristics. Phytopathology. 75:478-481.

Shetty, N. V., T. C. Wehner, C. E. Thomas, R. W. Doruchowski, and K. P. V. Shetty. 2002. Evidence for downy mildew races in cucumber tested in Asia, Europe, and North America. Scientia Hort. 94: 231-239.

Shimizu, S., K. Kanazawa, and A. Kato. 1963. Studies on the breeding of cucumber for resistance to downy mildew. Part 2. Difference of resistance to downy mildew among the cucumber varieties and the utility of the cucumber variety resistance to downy mildew. Bul Hort Res Sta Jpn 2:80–81.

Palti, J. and Y. Cohen. 1980. Downy mildew of cucurbits (*Pseudoperonospora cubensis*). The fungus and its hosts, distribution, epidemiology and control. Phytoparasitica 8:109-147.

Pang, X., X. Zhou, H. Wan, and J. Chen. 2013. QTL mapping of downy mildew resistance in an introgression line derived from interspecific hybridization between cucumber and *Cucumis hystrix*. J Phytopathology 161: 536-543.

Tatlioglu, T. 1993. Cucumbers. In: Kalloo, G. and Bergh, B.O. ed. Genetic improvement of vegetable crops. Pergamon Press, New South Wales, Australia.

USDA, National Agricultural Statistics Service. 2012. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

USDA, National Agricultural Statistics Service. 2013. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

Thomas, C.E. 1996. Downy mildew. In: *Compendium of Cucurbit Diseases* (Zitter, T.A., ed.), pp. 25–27. Ithaca, NY: Cornell University Press.

Wehner, T. C. and N. V. Shetty. 1997. Downy mildew resistance of the cucumber germplasm collection in North Carolina field tests. Crop Sci. 37: 1331-1340.

VandenLangenberg, K.M. 2014. Studies on Downy Mildew Resistance in Cucumber (*Cucumis sativus* L.). North Carolina State Univ., Raleigh, PhD. Diss.

Van Vliet, G.J.A and W.D. Meysing. 1974. Inheritance of resistance to Pseudoperonospora cubensis Rost. in cucumber (*Cucumis sativus* L.). Euphytica 23:251–255.

Yang, L., D.H. Koo, Y. Li, X. Zhang, F. Luan, M.J. Havey, J. Jiang, and Y. Weng. 2012. Chromosome rearrangements during domestication of cucumber as revealed from high-density genetic mapping and draft genome assembly. Plant J 71:895–906

Zhang, S.P., M.M. Liu, H. Miao, S.Q. Zhang, Y.H. Yang, B.Y. Xie, T.C. Wehner, and X.F. Gu. 2013. Chromosomal mapping and QTL analysis of resistance to downy mildew in *Cucumis sativus*. Plant Dis 97:245–251. http://dx.doi.org/10.1094/ PDIS-11-11-0941-RE.

Zhu, S., P. Liu, X. Liu, J. Li, S. Yuan, and N. Si. 2008. Assessing the risk of resistance in *Pseudoperonospora cubensis* to the fungicide flumorph in vitro. Pest Manag. Sci. 64, 255–261.

Table 1.1. Mean ratings for resistance of cucumber cultivars by year (2013, 2014) at Clinton, North Carolina for each of six ratings.[a]

		Rating[b]						
Cultigen	**N**	**1**	**2**	**3**	**4**	**5**	**6**	**Mean**
2013								
Ashley	48	5.69	4.63	4.85	3.50	5.00	6.46	5.02
PI 197085	48	3.06	2.45	2.80	1.88	2.71	4.88	2.96
PI 197086	48	2.69	2.55	2.25	1.67	3.17	5.50	2.97
PI 197088	48	3.56	3.20	3.90	2.88	3.67	5.67	3.81
PI 330628	48	1.63	1.75	2.25	1.70	2.35	3.91	2.26
PI 432875	48	3.06	3.60	3.75	2.96	3.38	5.22	3.66
PI 605996	48	3.06	2.85	2.55	1.71	2.33	3.88	2.73
Poinsett 76	48	3.69	3.85	4.47	3.04	3.67	6.25	4.16
Wis. SMR 18	48	6.67	5.63	5.84	4.78	6.30	6.96	6.03
Mean		3.68	3.39	3.63	2.68	3.62	5.41	3.73
F-ratio		9.85	10.16	10.75	12.81	6.77	7.39	22.49
2014								
Ashley	48	2.00	3.95	3.42	4.67	3.67	3.58	3.62
PI 197085	48	1.00	1.61	1.95	2.77	3.09	2.73	2.21
PI 197086	48	1.00	25	1.58	2.50	2.58	1.67	1.85
PI 197088	48	29	2.24	2.05	3.43	3.81	2.11	2.60
PI 330628	48	0.74	17	1.57	2.82	2.77	1.90	1.89
PI 432875	48	1.00	2.28	2.10	3.67	3.57	2.44	2.53
PI 605996	48	1.00	2.05	43	2.74	2.91	1.82	2.08
Poinsett 76	48	1.05	3.65	2.79	3.88	3.46	2.92	3.03
Wis. SMR 18	48	3.25	5.40	4.63	6.17	5.21	5.50	5.05
Mean		37	2.62	2.39	3.63	3.45	2.74	2.76
F-ratio		24.36	241	20.40	15.51	7.32	6.72	31.84

a Data are from four replications with up to six weekly ratings. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

b Ratings occurred weekly starting with the onset of the first observable symptoms in the first planting date.

Table 1.2. Mean rating of four replications within a planting date for resistance of cucumber cultivars by rating (1 – 6) at Clinton, North Carolina for each of six planting dates.

		Planting Date						
Cultigen	**N**	**1**	**2**	**3**	**4**	**5**	**6**	**Mean**
Rating 1								
Ashley	48	5.63	4.88	4.13	1.75	0.00	.	3.28
PI 197085	48	2.13	3.13	1.75	1.83	0.00	.	1.77
PI 197086	48	2.50	2.13	1.75	1.50	0.00	.	1.58
PI 197088	48	3.63	3.25	1.88	1.80	0.00	.	2.11
PI 330628	48	13	1.50	1.63	0.86	0.00	.	1.02
PI 432875	48	2.50	2.38	2.13	1.83	0.00	.	1.77
PI 605996	48	1.75	2.25	2.63	2.14	0.00	.	1.75
Poinsett 76	48	3.38	3.00	2.50	13	0.00	.	2.00
Wis. SMR 18	48	7.50	6.38	4.86	2.50	0.00	.	4.25
Mean		3.35	3.21	2.58	1.70	0.00	.	2.17
F-ratio		19.44	22.13	14.85	13.13	.	.	
Rating 2								
Ashley	48	7.57	5.38	4.50	3.50	0.88	.	4.36
PI 197085	48	2.75	3.00	25	2.00	25	.	2.05
PI 197086	48	2.88	2.50	1.75	0.88	1.50	.	1.90
PI 197088	48	5.50	3.13	1.88	1.60	25	.	2.67
PI 330628	48	2.13	1.63	38	17	1.00	.	46
PI 432875	48	4.25	2.75	3.13	3.00	1.75	.	2.98
PI 605996	48	2.38	2.75	2.88	2.86	1.50	.	2.47
Poinsett 76	48	6.63	5.13	3.63	2.50	1.00	.	3.78
Wis. SMR 18	48	8.50	7.25	6.00	4.25	1.63	.	5.53
Mean		4.73	3.72	2.93	2.42	31	.	3.02
F-ratio		8.78	13.40	14.68	7.34	15.74	.	
Rating 3								
Ashley	48	7.25	5.50	4.38	2.88	2.38	0.00	3.73
PI 197085	48	3.88	3.25	1.75	17	2.63	0.00	2.11
PI 197086	48	3.63	2.88	2.00	0.38	1.50	0.00	1.73
PI 197088	48	5.50	4.25	1.63	2.40	2.25	0.00	2.67
PI 330628	48	3.13	2.63	1.75	14	1.63	0.00	1.71
PI 432875	48	5.38	3.13	2.50	2.17	2.57	0.00	2.62
PI 605996	48	3.13	2.00	38	43	2.75	0.00	1.78
Poinsett 76	48	7.00	4.63	3.75	2.25	1.57	0.00	3.20
Wis. SMR 18	48	8.25	7.25	6.00	3.75	3.25	0.00	4.75
Mean		5.24	3.95	2.79	1.95	2.28	0.00	2.70
F-ratio		9.10	9.12	16.11	4.64	6.31	.	

Table 2 Continued...

Rating 4								
Ashley	48	6.75	5.13	4.50	3.25	3.63	25	4.09
PI 197085	48	4.75	4.13	1.75	0.67	25	0.88	2.24
PI 197086	48	4.75	3.38	2.00	0.63	25	0.50	2.09
PI 197088	48	6.63	4.88	3.13	40	1.63	0.50	3.03
PI 330628	48	4.00	3.63	2.25	0.67	25	14	2.16
PI 432875	48	5.50	4.50	2.88	2.83	2.14	1.63	3.25
PI 605996	48	3.88	2.50	1.63	29	2.38	1.50	2.20
Poinsett 76	48	6.63	4.50	3.63	2.63	2.63	0.75	3.46
Wis. SMR 18	48	8.63	6.75	6.43	4.88	4.63	1.75	5.51
Mean		5.72	4.38	3.13	2.03	2.31	10	3.11
F-ratio		4.89	10.52	10.08	7.53	7.36	8.19	
Rating 5								
Ashley	48	6.50	4.88	4.00	3.13	4.13	3.38	4.33
PI 197085	48	3.88	4.75	3.00	2.00	1.50	2.00	2.85
PI 197086	48	4.75	3.88	3.13	1.88	1.50	2.13	2.88
PI 197088	48	5.50	6.13	4.13	2.40	2.00	1.75	3.65
PI 330628	48	4.25	4.63	2.00	1.00	13	1.86	2.48
PI 432875	48	6.00	3.88	3.25	1.83	2.14	3.13	3.37
PI 605996	48	4.25	4.00	1.88	43	38	2.63	2.59
Poinsett 76	48	6.00	4.25	3.13	3.38	2.50	2.13	3.56
Wis. SMR 18	48	8.13	6.75	6.00	5.38	4.63	3.63	5.75
Mean		5.47	4.79	3.39	2.49	2.32	2.52	3.50
F-ratio		3.09	3.41	5.42	3.53	14.18	2.42	
Rating 6								
Ashley	48	8.75	7.50	6.25	5.63	4.75	3.13	6.00
PI 197085	48	6.75	7.25	4.75	3.57	3.75	2.13	4.70
PI 197086	48	7.50	8.00	6.00	3.75	3.00	1.50	4.96
PI 197088	48	7.25	7.00	5.50	5.40	4.00	2.13	5.21
PI 330628	48	6.00	4.75	4.00	3.50	2.00	1.86	3.68
PI 432875	48	7.75	7.00	6.50	4.00	2.57	2.75	5.10
PI 605996	48	6.75	5.25	2.75	2.57	2.25	2.25	3.64
Poinsett 76	48	7.50	6.25	8.25	5.25	3.63	3.25	5.69
Wis. SMR 18	48	9.00	8.00	8.67	5.75	6.50	4.25	7.03
Mean		7.47	6.78	5.85	4.38	3.61	2.58	5.11
F-ratio		2.64	1.71	5.25	5.38	7.79	3.90	

a Data are from four replications with up to six weekly ratings pooled over two years (2013 and 2014). Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

b Ratings occurred weekly starting with the onset of the first observable symptoms in the first planting date.

Table 1.3. Analysis of variance of the downy mildew disease ratings by year for the fourth rating date at Clinton, North Carolina in 2013 and 2014[a].

Source of variation	df	Sum of Squares	Mean Square	F	*P*
2013					
Planting Date	5	558.10	111.62	53.13	<0.01
Error A [b]	18	37.81	2.10		
Cultigen	8	2127	26.41	26.56	<0.01
Cultigen*Date	40	85.48	2.14	2.15	<0.01
Error B [c]	141	140.19	0.99		
2014					
Planting Date	5	438.21	87.64	36.04	<0.01
Error A [b]	18	43.78	2.43		
Cultigen	8	113.36	14.17	9.87	<0.01
Cultigen*Date	40	125.81	3.15	2.19	<0.01
Error B [c]	141	189.47	44		

a Data are from four replications on the fourth rating date. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

b Error A used to calculate *F*-value and P-value for Date. Error A = Rep(Date).

c Error B used to calculate *F*-value and P-value for Cultigen and Cultigen*Date. Error B = Rep(Cult*Date).

Table 1.4. Scaled effect estimates of main and interacting factors in the full model for the fourth rating date of downy mildew pooled over years (2013, 2014).

Model Term [a,b]	Scaled Estimate	Plot Estimate [c]	Std Error	t Ratio	Prob>|t|
Intercept	3.146		0.064	49.24	<0.01*
Days After Planting	2.182		0.093	23.51	<0.01*
Cultigens:					
Ashley	0.956		0.178	5.37	<0.01*
PI 197085	-0.842		0.182	-4.64	<0.01*
PI 197086	-1.046		0.178	-5.87	<0.01*
PI 197088	-0.027		0.183	-0.15	0.88
PI 330628	-0.939		0.183	-5.12	<0.01*
PI 432875	0.117		0.183	0.64	0.52
PI 605996	-0.930		0.180	-5.17	<0.01*
Poinsett 76	0.333		0.178	1.87	0.06
Wis SMR 18	2.377		0.180	13.21	<0.01*
Interactions:					
Ashley*(DayPostSow-48.9451)	0.201		0.262	0.77	0.44
PI 197085*(DayPostSow-48.9451)	-0.101		0.262	-0.39	0.70
PI 197086*(DayPostSow-48.9451)	-0.094		0.262	-0.36	0.72
PI 197088*(DayPostSow-48.9451)	0.816		0.262	3.11	<0.01*
PI 330628*(DayPostSow-48.9451)	-0.524		0.267	-1.96	0.05
PI 432875*(DayPostSow-48.9451)	-0.269		0.264	-1.02	0.31
PI 605996*(DayPostSow-48.9451)	-271		0.262	-4.86	<0.01*
Poinsett 76*(DayPostSow-48.9451)	0.404		0.262	1.55	0.12
Wis SMR 18*(DayPostSow-48.9451)	0.839		0.262	3.21	<0.01*

[a] Data are means over four replications taken on the fourth rating date. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

[b] Continuous factors are centered by mean and scaled by range/2.

[c] The plot estimate column graphically represents the relative amount of effect a model term has on the overall downy mildew rating, with longer bars representing a greater effect on the 0 to 9 rating scale. Bars to the right represent an increase in downy mildew rating, while bars to the left represent a decrease in downy mildew rating.

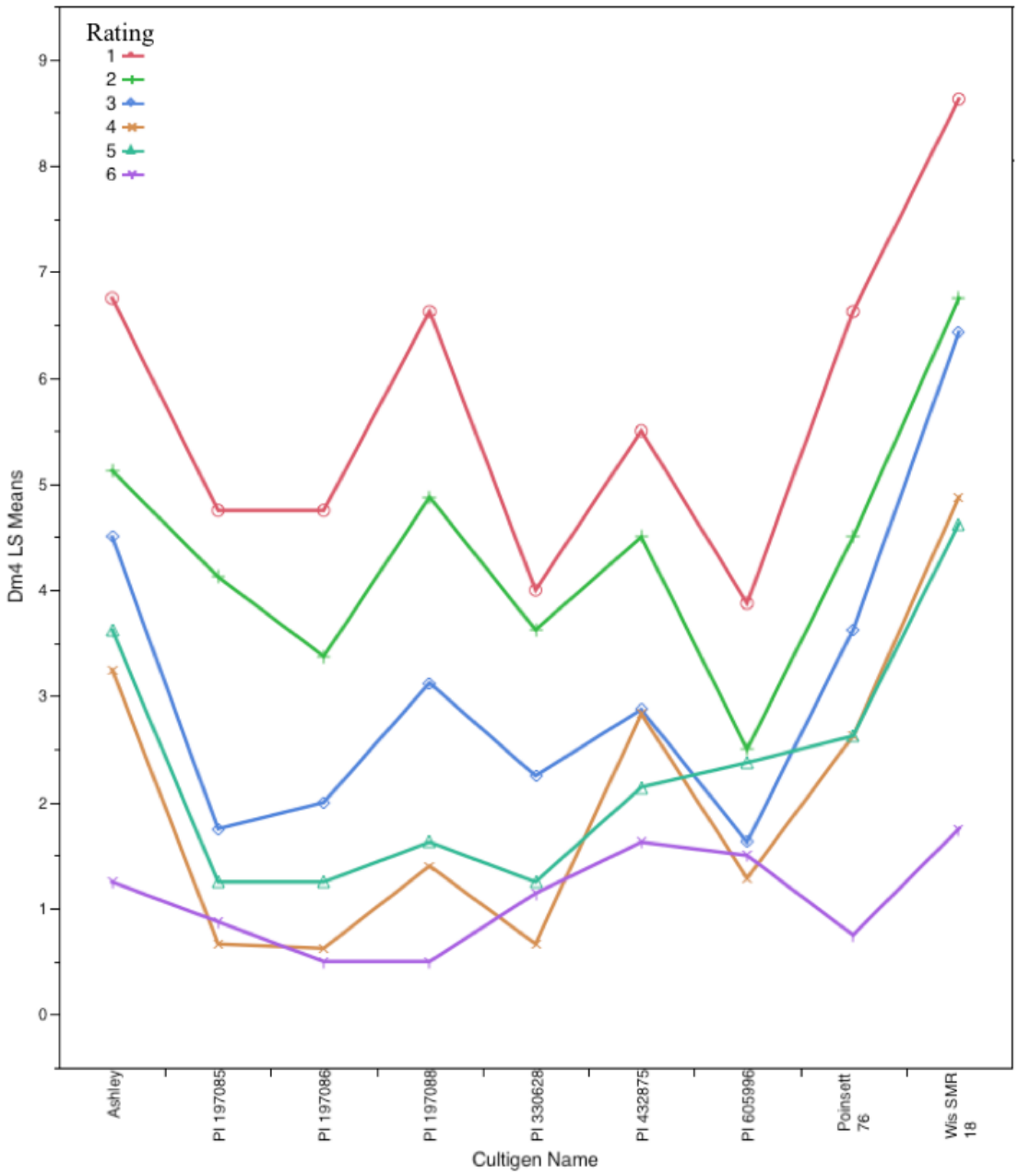


Fig. 1.1. Least squares mean plot of nine cultigen (x-axis) by downy mildew rating on the fourth rating date (y-axis) by six planting date (different color lines). Areas where the lines cross represent a planting date by cultigen interaction. In general, only a mild amount of interaction between planting date and cultigen was observed. Data are from four replications over two years (2013 and 2014). Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

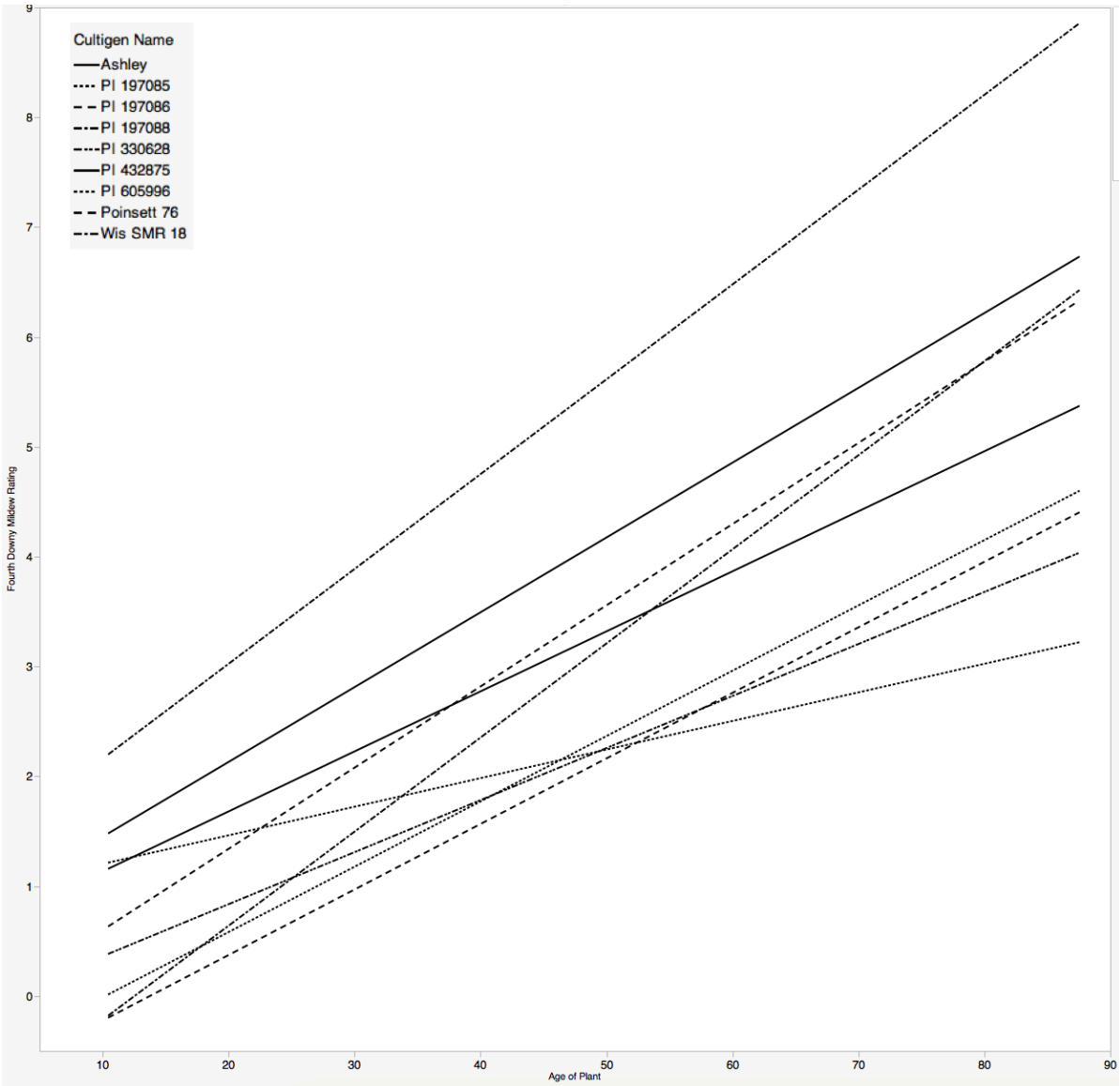


Fig. 1.2. Regression lines of the fourth downy mildew ratings for nine cultigens for both years (2013, 2014) plotted against days post sowing (x-axis). Data are from four replications taken on the fourth rating date. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). Least significant difference between cultigens is 1.595 (p-value=0.05).

CHAPTER TWO:

HERITABILITY AND GENETIC VARIANCE ESTIMATES FOR HIGH RESISTANCE TO DOWNY MILDEW IN CUCUMBER PI 197088

Kyle M. VandenLangenberg, Adam D. Call, and Todd C. Wehner

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

This chapter is intended to be published in J. Heredity

Heritability and Genetic Variance Estimates For High Resistance to Downy Mildew in Cucumber PI 197088

Kyle M. VandenLangenberg[1], Adam D. Call[1], and Todd C. Wehner[1]

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

Received for publication _____. Accepted for publication _____. The use of trade names in this publication does not imply endorsement by the North Carolina Agricultural Research Service of the products named, or criticism of similar ones not mentioned. Direct correspondence to Todd Wehner (Todd_Wehner@NCSU.Edu).

[1] Graduate research assistant and professor. The authors gratefully acknowledge the technical assistance of Tammy L. Ellington.

Additional index words: *Cucumis sativus, Pseudoperonospora cubensis*, Disease

ABSTRACT

Downy mildew of cucumber, caused by *Pseudoperonospora cubensis*, is a devastating disease of cucurbits. Resistance is available, but is not sufficient to eliminate the need for fungicides to control the disease. Previously, the United States Department of Agricultural Plant Introduction (PI) collection of cucumber germplasm was screened and PI 197088 was identified as highly resistant. The objective of this study was to determine the type of gene action controlling resistance in PI 197088. Five families were developed using cultivars ranging from susceptible to moderately resistant. Crosses were made with PI 197088 to make 6 generations for the study: P_1, P_2, F_1, F_2, BC_1P_1 and BCP_2. Families were tested at two locations, Clinton and Castle Hayne, North Carolina for three or four years. Resistance in PI 197088 failed to fit the single gene model, indicating that resistance should be considered quantitative and under the control of multiple genetic factors. Genetic effects were greater than environmental effects in most cases. Our estimates of additive variance and broad- and narrow-sense heritability were consistently large, suggesting gain from selection should be relatively effective. Furthermore, we estimated that resistance is under the control of only a few loci and estimated gain from selection indicates that a gain of one to two points (on a 10 point scale) per cycle under high intensity should be possible.

INTRODUCTION

Cucumber belongs to the *Cucurbitaceae*, which are comprised of 90 genera and 750 species (Sitterly, 1972). It is the fourth most important vegetable crop in the world behind tomato (*Lycopersicon esculentum* Mill.), cabbage (*Brassica oleracea* var. *capitata* L.), and onion (*Allium cepa* L.) (Tatlioglu, 1993). In 2013, the U.S. farm value of cucumber production was approximately $363.0 million, with approximately 3.59 x 10^8 kilograms produced for the fresh and pickling market (USDA, 2013). In North Carolina in 2012, the fresh and pickling cucumber market were valued at approximately $28.7 million (USDA, 2012).

Downy mildew of cucumber, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a devastating foliar disease of cucumber *(Cucumis sativus* L.) (Palti and Cohen, 1980). The disease was first described in Cuba in 1868 (Berkeley and Curtis, 1868). It was then reported in Russia in 1903 (Rostowzew, 1903) and Japan in 1927 (Kurosawa, 1927). The disease has been reported in over 80 countries on 20 different genera, including 50 species of the *Cucurbitaceae*, causing significant economic losses (Palti and Cohen, 1980; Lebeda, 1992; Lebeda and Widrlechner, 2003; and Olczak-Woltman *et al.*, 2011). A resurgence of the disease in 2004 was unexpected in the United States and resulted in an estimated yield loss of 40% (Colucci et al., 2006). Prior to 2004, it was possible to control epidemics of cucumber downy mildew by growing resistant cultivars. The new race(s) of *P. cubensis* continue to infect cucumber in most production areas in the United States and remain a major threat to cucumber production in warm humid regions around the world.

Most cucumber cultivars currently grown in the United States have some resistance, but not at the level seen prior to appearance of the new race in 2004. A recent study of resistance of available cultivars concluded that although there are differences in resistance among those tested, none were highly resistant (Call *et al*., 2012a).

Downy mildew symptoms on susceptible cucumber cultivars and accessions (hereafter collectively referred to as cultigen) are characterized by the appearance of small, water-soaked lesions on the underside of leaves generally observed in the early morning. Adaxial lesions are often angular and bound by leaf veins, eventually turning chlorotic and necrotic. Heavy sporulation can be observed within the lesions on the abaxial leaf surface. In contrast, Barnes and Epps (1954) first described the hypersensitive response type resistance in cucumber accession PI 197087, being controlled by a single resistance gene. Downy mildew lesions on PI 197087 were different from previously observed resistant cultigens. The lesions were described as irregularly shaped, brown, with a slight water-soaked appearance. There was no chlorosis, and lesions remained as small, brown spots. The leaf tissue died shortly after infection and there was little to no sporulation on the leaf undersides. Resistance from PI 197087 was used in the development of new cultivars, and the resistance in many current cultivars traces to PI 197087 (Wehner and Shetty, 1997). That resistance, which was sufficiently effective for growers to produce cucumbers in warm humid regions of the United States without fungicides for over 40 years, has since been overcome by a new race of the pathogen.

Today, 10 years after the appearance of a new race of cucumber downy mildew the disease continues to threaten production. Without high resistance, fungicide programs have

been necessary to achieve high yield and quality, resulting in increased cost to growers. *P. cubensis* is a pathogen with high evolutionary potential (McDonald and Linde, 2002). The pathogen reproduces both asexually, via sporangia, and sexually, thru oospores, and produces a large quantity of clones that can be transported aerially over a long distance (Cohen and Rubin, 2011). Resistance to systemic fungicides has been reported in several studies (Pappas, 1982; Cohen and Samoucha, 1984; Baines and Sharma, 1986; Zhu et al., 2008). Eshet and Dinur (1970) reported downy mildew in test plots treated with benomyl (source Benlate), suggesting that resistance to benomyl has been observed. At the Fifth Congress of the Mediterranean Phytopathological Union in 1980, Pappas (1981) reported good control of *P. cubensis* by phosetyl-Al, under conditions favoring disease. Metalaxyl was reported as less effective and also was shown to have resistant or insensitive biotypes. Cross-resistance has also been reported (Cohen and Samouch, 1984) where four systemic fungicides were not effective against races of *P. cubensis* that were resistant to metalaxyl. As the threat of fungicide efficacy breakdown continues, new sources of high resistance have been identified.

New sources of genetic resistance (reduced leaf damage) and tolerance (good yield under disease presence) to the new race(s) of downy mildew in the United States since 2004 were identified in a large germplasm screening study and a multiple year reevaluation of the most resistant and susceptible cultigens conducted at North Carolina State University (Criswell, 2008; Call et al., 2012b). Cultigens were identified that outperformed currently grown cultivars for disease resistance and yield traits, including PI 197088. PI 197088 was collected at the same location and collection trip as PI 197087, the source of resistance that

was overcome in 2004. Also among that collection are PI 197086 and PI 197085, both testing as highly resistant to the new race of *P. cubensis* in the Southeast United States.

The inheritance of downy mildew resistance has been previously reported; however, the conclusions vary. Angelov (1994) reported that PI 197088 resistance to the European race(s) was due to two recessive genes, while resistance in 'Pointsett' is from one recessive gene. Resistance in 'Poinsett', 'Taipei', 'Natsufushinari', PI 179676, and PI 234517, which traces to PI 197087 was reported by Van Vliet and Meysing (1974, 1977) to be from at least one single recessive gene, *dm* (*dm-1*). Fanourakis and Simon (1987) agreed with Van Vliet and Meysing, confirming that a single recessive gene controls downy mildew resistance. In contrast, Shimizu *et al*. (1963) reported that three recessive genes (*dm-1, dm-2, dm-3)* controlled resistance in 'Aojihai'. McFerson (1978) also reported resistance was due to three recessive genes. Doruchowski and Łazokowska-Ryk (1992) reached the same conclusion using Wisconsin 2843 (resistance from PI 197087) – that resistance to downy mildew is under the control of three recessive genes. In contrast, Petrov *et al.* (2000) reported that the inheritance of resistance in J-13, a derivative of Wisconsin 2843 was unclear, suggesting that it may be due to one or two incompletely dominant genes.

The objective of this experiment was to study the inheritance of resistance to the new downy mildew in PI 197088. In addition, under the hypothesis that resistance to downy mildew in cucumber may be a quantitative trait, we estimated genetic variances and heritability of resistance. Information regarding the inheritance of resistance to downy mildew will be useful to plant breeders introgressing resistance from PI 197088 into elite backgrounds.

MATERIALS AND METHODS

All tests were conducted in the field at the Horticultural Crops Research Stations at Clinton and Castle Hayne, North Carolina. The soil type in Clinton was a mixture of Norfolk, Orangeburg, and Goldsboro loamy sand. At Castle Hayne, the soil type was a mixture of Pantego loam and Stallings fine sand. During the main growing season, the weather at both location is sub-tropical. High humidity persists throughout the entire season, and rainfall is frequent. Each family was tested in 2011, 2012, 2013, and 2014 at both locations. The experiment had two sets, divided equally among the two locations, each set including all six generations (Pa, Pb, F_1, BC_1Pa, BC_1Pb, and F_2). Single plant hills were grown on raised beds covered in black plastic mulch, 1.2 m apart within the row, with 50 hills per row. Plots were hand seeded and thinned to a single plant at true leaf stage. Irrigation was applied through drip tape as needed for a total of 25 to 40 mm per week. Generations were planted in the following order and number (no serpentine): (P_a(10), P_b(10), BC_1P_a(30), F_1(20), BC_1P_b(30), F_2(100)). Rows were spaced with centers 1.6 m apart. The susceptible cultivar 'Coolgreen' was planted every 5th row to monitor and increase inoculum in the field. 'Coolgreen' was also used for side and end borders. In the field, no artificial inoculum was used. Plots were exposed to natural epidemics in the course of the growing season. Epidemics were encouraged using overhead irrigation at least 3 days a week. The study was planted at Castle Hayne, NC on 8 July 2011, 21 July 2012, 9 July 2013, and 19 June, 2014, and at Clinton, NC on 8 July 2011, 25 July 2012, 11 July 2013, and 16 June, 2014.

In this experiment, we used five families developed from the five crosses PI 197088 × 'Ashley', PI 197088 × 'Coolgreen', PI 197088 × 'Gy 14', PI 197088 × 'Poinsett 76', and

PI 197088 × 'Polaris'. For each family, we developed six generations in the greenhouses at North Carolina State University in Raleigh, North Carolina: Parent A (Pa), Parent B (Pb), F_1, Backcross to Parent A (BC_1Pa), Backcross to Parent B (BC_1Pb), and F_2. PI 197088 is a highly resistant plant accession. 'Coolgreen' is a highly susceptible cultivar. 'Ashley' is a moderately susceptible cultivar, having slightly effective resistance tracing to a long fruited Chinese cultivar with resistance identified at the Puerto Rico Agricultural Experiment Station. The same resistance was used in the cultivar 'Palmetto' which was highly resistant when released in 1948, but within two years was no longer effective (Epps and Barnes, 1952). 'Gy 14' is a gynoecious pickling inbred used as the seed source in many hybrid pickles with resistance tracing back to PI 197087. 'Poinsett 76' is a cultivar developed by Henry Munger at Cornell, which traces its resistance to PI 197087. 'Polaris' is a cultivar from the Clemson breeding program developed from crosses of PI 197087 with breeding lines. Cultivars with resistance tracing back to PI 197087 are considered moderately resistant today.

Disease was evaluated weekly starting when symptoms appeared for a total of three ratings. Downy mildew was rated on a 0 to 9 scale based on percentage of symptomatic leaf area (disease rating scale 0 to 9, where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)); as described by Jenkins and Wehner (1983). Our analysis will highlight data from a variety of different ratings. In 2011, we will highlight the average of all ratings. In 2012, we will highlight the 2nd rating. In 2013, we will highlight the 3rd rating. In 2014, we will highlight the 2nd rating. We have chosen these ratings over the others for the following reasons:

1. The maximum range of disease observed in a particular field varies significantly depending on the year and location. We attempted to choose a rating for analysis that maximized the true difference observed, while minimizing effects of plant age and secondary diseases on the rating scale.

2. A basic ANOVA was performed for each year. The chosen ratings maximize the *F* ratio of the ANOVA.

3. The chosen rating also maximizes the poolability of our data over locations for each year according to Barlett's test for homogeneity of variances (Ostle and Malone 1988; Steel et al. 1997).

We performed segregation analysis and goodness-of-fit tests with the SAS-STAT statistical package (SAS Institute, Cary, NC) and the SASGene 1.2 program (Liu et al. 1997). All χ^2 tests were performed at the 95% confidence level. This experiment was designed to determine qualitative inheritance of resistance to downy mildew. Since there was strong evidence against the single gene hypothesis, we verified the distribution of the F_2 data for each family using the UNIVARIATE procedure of SAS-STAT and by plotting the disease ratings against their frequency, prior to analyzing resistance to downy mildew as a quantitative trait. Due to the experiment's design, variance estimates for generations are obtained from different sample sizes.

We tested the F_2 data for homogeneity of variances using the Bartlett's method (Ostle and Malone 1988; Steel et al. 1997). When variances were homogeneous among tests within a family, we pooled the data for that family. We also analyzed the data for each family and test, to highlight possible differences among tests.

Phenotypic (P), environmental (E), genotypic (G), and additive (A) variances were estimated from generation variances as follows (Warner 1952; Wright 1968):

$$\sigma^2(P) = \sigma^2(F_2) \qquad \sigma^2(E) = \frac{\sigma^2(P_a) + \sigma^2(P_b) + \left[2 \times \sigma^2(F_1)\right]}{4}$$

$$\sigma^2(G) = \sigma^2(P) - \sigma^2(E) \qquad \sigma^2(A) = \left[2 \times \sigma^2(F_2)\right] - \left[\sigma^2(BC_1P_a) + \sigma^2(BC_1P_b)\right]$$

Phenotypic variance is estimated as the variance of the F_2 progeny. The means of the variances in non-segregating generations (P_a, P_b, and F_1) provide an estimate of environmental variance. Genotypic variance is the difference in the phenotypic variance and environmental variance. Additive variance is derived from the single-locus model (Warner, 1952) and estimated by subtracting the backcross (BC_1P_a, BC_1P_b) variances from twice the variance of the F_2 progeny.

Heritability was estimated using the ratio of genotypic or additive variances to phenotypic variance. In all quantitative genetic studies, there is a large variation associated with variance component estimates. Negative estimates for genetic variances and heritability estimates outside the expected range of 0 to 1 are possible with the experiment design adopted. Negative estimates should be considered equal to zero (Robinson et al. 1955), but should be reported "in order to contribute to the accumulation of knowledge, which may, in the future, be properly interpreted" (Dudley and Moll 1969). We considered negative estimates equal to zero for the calculation of the mean estimates over families or locations. When a negative estimate was derived from another negative value (for example, narrow-

sense heritability and gain from selection, calculated from additive variance), it was considered to be zero and omitted.

The number of effective factors, an estimate of the genetic factors determining a quantitative trait (Mendelian genes or Quantitative Trait Loci), was estimated using the following methods (Lande 1981; Mather and Jinks 1982; Wright 1968):

Lande's method I:
$$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{8\times\left\{\sigma^2(F_2)-\frac{\sigma^2(P_a)+\sigma^2(P_b)+\left[2\times\sigma^2(F_1)\right]}{4}\right\}}$$

Lande's method II:
$$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{8\times\left\{\left[2\times\sigma^2(F_2)\right]-\left[\sigma^2(BC_1P_a)+\sigma^2(BC_1P_b)\right]\right\}}$$

Lande's method III:
$$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{\left\{8\times\left[\sigma^2(BC_1P_a)+\sigma^2(BC_1P_b)-\sigma^2(F_1)\right]\right\}-\frac{\left[\sigma^2(P_a)+\sigma^2(P_b)\right]}{2}}$$

Mather's method:
$$\frac{\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{2}}{\left[2\times\sigma^2(F_2)\right]-\left[\sigma^2(BC_1P_a)+\sigma^2(BC_1P_b)\right]}$$

Wright's method:

$$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2\times\left\{1.5-\left[2\times\frac{\mu(F_1)-\mu(P_a)}{\mu(P_b)-\mu(P_a)}\times\left(1-\frac{\mu(F_1)-\mu(P_a)}{\mu(P_b)-\mu(P_a)}\right)\right]\right\}}{8\times\left\{\sigma^2(F_2)-\frac{\sigma^2(P_a)+\sigma^2(P_b)+\left[2\times\sigma^2(F_1)\right]}{4}\right\}}$$

The assumptions for the estimates of number of effective factors were as follows:

1) With respect to all relevant loci, one parent is fixed with the alleles increasing the trait of interest and the other parent is fixed with alleles decreasing the trait of interest.
2) There are additive gene effects.
3) There are unlinked loci.
4) There are equal allelic effects at all loci.

The possible gain from selection per cycle was predicted as $h_n^2 \times \sqrt{\sigma^2(P)}$ multiplied by the selection differential in standard deviation units k for selection intensities of 5%, 10%, or 20% (Hallauer and Miranda, 1988). The statistical analysis was performed using the SAS-STAT statistical package (SAS Institute, Cary, North Carolina).

RESULTS AND DISCUSSION

General Analysis

In general, the highest disease rating for downy mildew was observed on the final rating date (in most cases, rating 3) (Table 1.1). The mean disease rating increased over time (ratings) for all environments (years x location) with the exception of Castle Hayne in 2014. In this environment, the second rating date had a slightly higher overall rating than the third rating date (2.99 vs. 2.80). It is possible that the environmental conditions had become less favorable for the disease, and the plants temporarily began to recover.

Environmental Variance

Environmental variances [σ^2_E] can have a large effect on inheritance studies as it is used to estimate genetic variance [$\sigma^2_G = \sigma^2_P - \sigma^2_E$]. Broad-sense heritability (H^2) is an estimate of the relative contribution of variance due to genotype to the total estimated variance [σ^2_G / σ^2_P]. Therefore, for our analysis, the mean of all ratings for downy mildew was chosen over individual ratings as the mean showed the least amount of environmental variance and highest genotypic contribution to overall variance (Table 2.2 and 2.3). In general, broad-sense heritability estimates were similar for all ratings (range 0.48 to 0.53). The amount of total environmental variance averaged over all years, locations, and families increased steadily with each successive rating.

To account for the observed high variance in several F_1 generations we calculated a modified environmental variance [$\sigma^2_E = (\sigma^2_{Pa} + \sigma^2_{Pb)} / 2$] (Table 2.4). In general, the environmental variance using the modified formula decreased compared to the non-modified calculation. This suggests that a significant amount of segregation in the F_1 generations existed. It is possible that some parents used in the creation of the crosses were not homozygous at all loci. Estimates of broad-sense heritability using the modified environmental variance were also calculated (Table 2.5). However, because the use of the modified environmental variance is likely inflating heritability estimates, we present all other data using the traditional calculations.

Combination of Data Over Years and Locations

We tested the F_2 data for homogeneity of variances using Bartlett's method (Ostle and Malone 1988; Steel et al. 1997) (Table 2.6, 2.7, and 2.8). In general, at least one rating for every family was poolable across locations (Clinton, NC vs. Castle Hayne, NC) each

year. In 2011, the mean downy mildew rating was poolable across both locations for all families except PI 197088 x 'Coolgreen'. In 2012 and 2013, the second and third downy mildew rating, respectively, was poolable across both locations for all families. In 2014, the second downy mildew rating was poolable for all families except PI 197088 x 'Poinsett 76'. We also investigated the poolability of families over years by location and among locations. While several ratings are poolable over years for several families, no discernable pattern in poolability was detected. Due to this, we performed all qualitative inheritance studies on a year-by-year basis for consistency.

Qualitative inheritance

In general, resistance to downy mildew in cucumber was not inherited as a single gene (Tables 2.9 to 2.12, Figure 2.1 – 2.4). Plants having a mean rating less than 2.5 were classified as resistant, and those greater than 2.5 were classified as susceptible. This separation point was chosen to be between both parents, with an emphasis on the high level of resistance from PI 197088. Additionally, the mean rating for all PI 197088 ratings plus one-standard deviation equaled approximately 2.5 (data not shown), suggesting that a level of resistance comparable to PI 197088 must be at or below a rating of 2.5 on a 0 – 9 scale to be considered as resistant as the PI line. The expected segregation ratio for the inheritance of a single gene was not observed in the F_2 generation of any family, in any year, except in PI 197088 x 'Coolgreen' at Clinton, NC in 2011, in PI 197088 x 'Polaris' in 2013 (pooled), and in PI 197088 x 'Poinsett 76' at Castle Hayne, NC in 2014 (Tables 2.13 – 2.17). This appears to be a product of environment and chance, as well as the chosen cutoff for classifying plants as resistant or susceptible. Approximately half of the backcross generations segregated as

expected in single gene inheritance. This may indicate that a large effect dominant gene is responsible for a significant portion of the resistance variation observed in the F_2 generations.

The lack of fit to the single gene hypothesis in the F_2 and half the backcross generations suggests that resistance could be inherited quantitatively, with multiple loci regulating the level of resistance expression. In general, The F_1 generation ratings were near the mid-parent value in all families (Tables 2.9 to 2.11, Figure 2.1 – 2.4). In some cases, the test at Castle Hayne, NC tended to rate higher (more disease), pushing the means of the F_1 towards that of the susceptible parent (data now shown). It is possible this is due to higher humidity near the coast and indicates that Castle Hayne, NC may be a better selection environment to identify high resistance. It is also possible that there are different races of *P. cubensis* at each location, resulting in differences among tests.

The distributions of the F_2 data are close to the expected bell-shaped distribution of a quantitative trait and range between both parents, with no transgressive segregation observed (Figure 2.5). Distributions of downy mildew ratings skew slightly towards the resistant parent in the 'Ashley', 'Poinsett 76', and 'Polaris' families, while skewing slightly toward the susceptible parent in the 'Coolgreen' family. This is likely a ghost effect from the partially effective old resistance in these parents. Since there was strong evidence against the single-gene hypothesis, we analyzed resistance to downy mildew as a quantitative trait.

Quantitative inheritance

Call *et al*. (2012b) reported that PI 197088 was highly resistant to the current race of *P. cubensis* in the southeast United States. Originally, seeds of PI 197088 were obtained from the United States Department of Agriculture's National Plant Germplasm System (USDA

NPGS). Due to time limitations, selfed sublines of the resistant parent PI 197088 were not field evaluated for segregation prior to use as a parent in each cross. It is therefore possible, and likely, that the parent used in the cross was not fully homozygous at all loci. A heterozygous parental line would inflate the overall observed environmental variance. Some segregation for high resistance has been observed in other studies conducted at NCSU using multiple PI 197088 sources (NPGS, greenhouse S_1 sublines, and isolation block bulk increases) (data not shown). The observed segregation for high resistance suggests that the original source packet from the USDA NPGS was heterozygous for at least some loci affecting overall resistance to downy mildew. A high variance in the F_1 generation relative to the parents in some crosses indicates that this is likely (Table 2.9 – Table 2.13, Figure 1.1 – Figure 1.4). To account for this, we performed an additional analysis using only the parents to estimate environmental variance [$\sigma^2_E = (\sigma^2_{Pa}+\sigma^2_{Pb})/2$]. For reader information, this is included in all relevant tables. However, because the adjusted analysis may be inflating heritability estimates, discussion will be based on the original analysis that uses the parents and F_1 to estimate environmental variance.

In general, the variance calculations of the six generations tested were consistent across locations within a given year (Table 2.18 and 2.19). Observed variances of the parental generations in all families were relatively small and similar. This suggests that most parental lines were homozygous at most alleles affecting disease resistance. In all cases, the variance of the F_2 generation was larger than the variance of the F_1, except in PI 197088 x 'Coolgreen in 2012 at Clinton, NC and PI 197088 x 'Ashley' in 2014 at Clinton, NC. We expect the variance of the F_1 generation to be similar to that of the parental generation;

however, in all cases the observed F_1 variance is larger than the parental variance. This may be due to the aforementioned segregating resistance alleles in the parent PI 197088. A larger than expected variance in the F_1 generation will inflate the estimated environmental variance and result in a lower overall genetic variance and broad-sense heritability estimate. To investigate the effect a large F_1 variance has on our estimates, we calculated a modified environmental variance, leaving the variance for the F_1 generation out of the equation. This resulted in a significantly lower estimate of environmental variance and an overall increase in the broad-sense heritability estimate for most family x year x location combinations (Table 2.19). It is likely that this method of calculation is vastly overestimating the broad-sense heritability, and therefore, we hesitate to draw conclusions based on inflated heritability estimates.

Genetic variance was larger than environmental variance for all families, in all years, except PI 197088 x 'Coolgreen' at Castle Hayne, NC in 2011 and Clinton, NC in 2012, PI 197088 x 'Poinsett 76' at Castle Hayne, NC in 2011, PI 197088 x 'Ashley' at Castle Hayne, NC in 2013, PI 197088 x 'Gy 14' at Castle Hayne, NC in 2014, PI 197088 x 'Poinsett 76' at Castle Hayne, NC in 2014, and PI 197088 x 'Ashley' at Clinton, NC in 2014 (Table 2.19). This was due to the relatively large environmental variance estimate compared to the overall variance of the F_2 generation (genetic variance), caused in part by the high variance of the F_1. Using the modified environmental variance (Table 2.19), the genetic variance for downy mildew is larger than the environmental variance for all families except PI 197088 x 'Gy 14' at Castle Hayne, NC in 2014 and PI 197088 x 'Poinsett 76' at Castle Hayne, NC in 2014. An unusually low variance in the F_2 generations was observed for the aforementioned two family

x year x location combinations. In general, the genetic variance was at least twice the environmental variance, further supporting the hypothesis that downy mildew resistance in PI 197088 is a quantitative trait. Additive genetic effects were estimated, but a comparison with dominance effects was not possible due to the adopted experiment design. Dominance variance could be indirectly estimated by subtraction of the additive variance from the genetic variance, but this estimate would not be precise, and in many cases would result in negative estimates of dominance. Negative estimates for additive variance were found for several families, including: PI 197088 x 'Coolgreen' at Castle Hayne, NC in 2011, PI 197088 x 'Gy 14' at Clinton and Castle Hayne, NC in 2014, PI 197088 x 'Poinsett 76' at Castle Hayne, NC in 2011, Clinton, NC in 2012, and at Castle Hayne, NC in 2014, and in PI 197088 x 'Ashley' at Clinton in 2012. The negative estimates are a result of high variance in the backcross generations and may indicate the presence of either a major recessive or additive resistance gene in the PI 197088 parent.

The heritability of resistance to downy mildew in PI 197088 was high in most cases (Table 2.19). At Clinton, NC the average estimated narrow-sense heritability was approximately 0.97. In contrast, a slightly higher narrow-sense heritability estimate of 1.06 on average was observed at Castle Hayne, NC. Interestingly, a comparatively low narrow-sense heritability was observed for resistance in the families PI 197088 x 'Polaris' at Castle Hayne, NC in 2013 and PI 197088 x 'Poinsett 76' at Clinton, NC in 2014. We observed an unusually low amount of disease in these families x location x year combinations. Prior to the onset of symptoms, a washout rain event occurred at Castle Hayne destroying the study neighboring the PI 197088 x 'Polaris' family. This resulted in a large area of empty field and

may have buffered the plants from some inoculum. In other studies, we have observed slight end-row effects as well as weed-buffering effects – in which a row with heavy weeds rates lower than neighboring rows (VandenLangenberg, personal observation). It is possible that an overall lower rating of the PI 197088 x 'Poinsett 76' family at Clinton, NC in 2014 resulted from a high degree of resistance combined with a slightly earlier planting date. It is also possible that these physical conditions lower the overall disease rating of effected material, and could result in a lower than expected phenotypic variation due to dampened disease pressure in the F_2 generation.

Dominance and epistatic effects could not be estimated in our analysis. Thus, the estimates of the minimum number of effect factors (genes) for resistance may be biased. For downy mildew resistance, the number of effect factors ranged from 1 to 61 with all but 12 of 157 estimates ranging from 1 to 10 (Table 2.20). Mean estimates of families over environments (locations x year) ranged from two to six. These estimates suggest that resistance to downy mildew in cucumber is a quantitative trait controlled by several genetic factors.

Our analysis showed that good progress could be made using field selection for resistance to downy mildew. Potential gains from selection under high intensity (k = 5%) may be as high as three points on a 10-point scale (0 to 9) (Table 2.20). Even under lower selection intensity (k = 20%), a gain of one to two points on a 10-point scale per generation of selection should be possible. A selection intensity of 20% represents a fairly low threshold, and should allow the inclusion of other horticultural and agronomically important traits along with resistance in a standard recurrent selection population. In general, more gain

from selection appears possible while using a more susceptible line (i.e. 'Coolgreen' vs. 'Gy 14') (Table 2.20); however, breeders likely would use moderately resistant lines with good fruit quality to cross with disease resistant lines. In such a population, heritability estimates may be slightly lower than found in our study, and progress may be slower than estimated. Nevertheless, our estimates suggest that in crosses with PI 197088 and other moderately resistant parents, the potential for gain and the opportunity to capitalize on additive variance remains strong.

CONCLUSIONS

Our study indicates that downy mildew resistance is cucumber should be regarded as a quantitative trait for breeding purposes. A cross between the highly resistant parent PI 197088 and a moderately resistant (possessing *dm1* from PI 197087) line seems to be the most useful for breeding and should result in reasonable gains from selection per cycle. Breeding techniques that take advantage of the high additive variance, such as recurrent selection, should be used for population improvement. Field resistance is easily tested using natural sources of inoculum in areas where downy mildew is an endemic disease. However, caution should be taken to minimize conflating symptoms of downy mildew with other prevalent diseases. Additionally, as observed in this study, several generations of selfing and field-testing should be performed on any parents used as a resistance source to rogue out potential heterozygotes. Greenhouse testing could be used to reduce environmental variance observed in this study, as the combination of quantitative inheritance and high environmental variability could limit gain from selection. The high narrow-sense heritability observed in this study indicates that single plants could be selected for inbred line development. Due to

the poor marketability of PI 197088, it is likely that linkage drag will cause significant complications while introgressing resistance. Pedigree selection or backcross breeding will likely be useful in moving qualitative traits, such as white spine, non-netted, mottled, non-hallow, and bitter free, into breeding lines with high resistance.

REFERENCES

Angelov, D. 1994. Inheritance of resistance to downy mildew, *Pseudoperonospora cubensis* (Berk. & Curt.) Rostow. Rep. 2nd Natl. Symp. Plant Immunity. (Plovdiv) 3:99–105.

Bains, S.S. and N.K. Sharma. 1986. Differential response of certain cucurbits to isolates of *Pseudoperonospora cubensis* and characteristics of identified races. Phytophylactica. 18:31-33.

Barnes, W.C. and W.M. Epps. 1954. An unreported type of resistance to cucumber downy mildew. Plant Dis. Rptr. 38:620.

Berkeley, M.S. and A. Curtis. 1868. Peronospora cubensis. J. Linn. Soc. Bot. 10:363.

Call, A.D., A.D. Criswell, T.C. Wehner, K. Ando and R. Grumet. 2012a. Resistance of cucumber cultivars to a new strain of cucurbit downy mildew. HortScience. 47(2):171–178.

Call, A.D., A. D. Criswell, T.C. Wehner, U. Klosinska and E.U. Kozik. 2012b. Screening cucumber for resistance to downy mildew caused by *Pseudoperonospora cubensis* (Berk. and Curt.) Rostov. Crop Sci. 52: 577-592.

Cohen, Y. and Y. Samoucha. 1984. Cross-resistance to four systemic fungicides in metalaxyl-resistant strains of *Phytophthora infestans* and *Pseudoperonospora cubensis*. Plant Dis. 68(2): 137-139.

Cohen, Y., A.E. Rubin and M. Galperin. 2011. Formation and infectivity of oospores of *Pseudoperonospora cubensis*, the causal agent of downy mildew in cucurbits. Plant Dis. 95(7): 874.

Colucci S.J., T.C. Wehner and G.J. Holmes. 2006. The downy mildew epidemic of 2004 and 2005 in the eastern United States. Pages 403-411 in: Proceedings of The Cucurbitaceae 2006, G.J. Holmes ed., Asheville, NC, USA

Criswell, A.D. 2008. Screening for downy mildew resistance in cucumber. M. S. Thesis, North Carolina State Univ., Raleigh.

Doruchowski RW, E. Łazokowska-Ryk. 1992. Inheritance of resistance to downy mildew (*Pseudoperonospora cubensis* Berk & Curt) in *Cucumis sativus*. In: Doruchowski RW. (ed) Proceedings of the V Eucarpia Cucurbitaceae Symposium. Poland, Skierniewice-Warszawa, pp 132–138.

Dudley, J.W. and R.H. Moll. 1969. Interpretation and use of estimates of heritability and genetic variances in plant breeding. Crop Science 9:257-262.

Eshet, Y. and A. Dinur. 1970. Controlling cucumber mildew with systemic fungicides. Hassadeh. 51(1): 108-111.

Fanourakis, N. E. and P.W. Simon. 1987. Analysis of genetic linkage in the cucumber. Journal of Heredity. 78:238-242.

Hallauer A.R. and J.B. Miranda. 1988. Quantitative genetics in maize breeding. II ed. Iowa State University Press, Ames, Iowa.

Kurosawa, E. 1927. Studies on *Plasmopora cubensis*. J. Nat. Hist. Soc. Formosa 17:1-18. (in Japanese).

Lande, R. 1981. The minimum number of genes contributing to quantitative variation between and within populations. Genetics 99:541-553.

Lebeda, A. 1992.Screening of wild Cucumis species against downy mildew (Pseudoperonospora cubensis) isolates from cucumbers. Phytoparasitica 20(3):203-210.

Lebeda, A. and M.P. Widrlechner. 2003. A set of *Cucurbitaceae* taxa for differentiation of *Pseudoperonospora cubensis* pathotypes. J. of Plant Dis. and Prot. 110: 337-349.

Liu, J.S., T.C. Wehner and S.B. Donaghy. 1997. SASGENE: a SAS computer program for genetic analysis of gene segregation and linkage. Journal of Heredity 88:253-254.

Mather, K. and J.L. Jinks. 1982. Biometrical genetics. The study of continuous variation. 3rd ed. Chapman and Hall, London, NY.

McFerson JR. 1978. A screening procedure for determining levels of resistance in cucumber. USA, Texas A&M University, MSc thesis.

Olczak-Woltman H, J. Marcinkowska, and K. Niemirowicz-Szczytt. 2011. The genetic basis of resistance to downy mildew in Cucumis spp.–latest developments and prospects. J Appl Genet 52:249–255.

Ostle, B. and L.C. Malone. 1988. Statistics in research. IV ed. Iowa State University Press, Ames, Iowa.

Palti, J. and Y. Cohen. 1980. Downy mildew of cucurbits (*Pseudoperonospora cubensis*). The fungus and its hosts, distribution, epidemiology and control. Phytoparasitica 8:109-147.

Pappas, A.C. 1981. Effectiveness of metalaxyl and phosetyl-Al against *Pseudoperonospora cubensis* (Berk. & Curt.) Rostow isolates from cucumbers. Proc. of the Fifth Congr. of the Mediterranean Phytopathol. Union, Patras, Greece: 146-148.

Pappas, A.C. 1982. Metalaxyl resistance and control of cucumber downy mildew with oomycete-fungicides. Annales - Benakeion Phytopathologikon Institouton. 13(2): 194-212.

Petrov, L., k. Boodert, L. Sheck, A. Baider, E. Rubin, Y. Cohen, N. Datzir and H.S. Paris. 2000. Resistance to downy mildew, *Pseudoperonospora cubensis*, in cucumbers. Acta Horticulturae. 510:203-209.

Robinson, H.F., R.E. Comstock and P.H. Harvey. 1955. Genetic variances in open pollinated varieties of corn. Genetics 40:45-60.

Rostowzew, S. J. 1903. Beitraege zur Kenntnis der Perono- sporeen. Flora (Jena), 92.

SAS Institute Inc. 2013. SAS® 9.4 Guide to Software Updates. Cary, NC: SAS Institute Inc.

Sitterly, W. R. 1972. Breeding for disease resistance in cucurbits. Ann. Rev. Phytopathology 10: 471.

Shimizu, S., Kanazawa, K., Kato, A., Yokota, Y., and Koyama, T. 1963. Studies on the breeding of cucumber for the resistance to downy mildew and other fruit characters. Engei Shikenjo ho koku. (in Japanese) 2:65-81.

Steel, R.G.D., J.H. Torrie and D.A. Dickey. 1997. Principles and procedures of statistics: a biometrical approach. III ed. WCB/McGraw-Hill, Boston, Massachusetts.

Tatlioglu, T. 1993. Cucumbers. In: Kalloo, G. and Bergh, B.O. ed. Genetic improvement of vegetable crops. Pergamon Press, New South Wales, Australia.

USDA, National Agricultural Statistics Service. 2012. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

USDA, National Agricultural Statistics Service. 2013. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

Van Vliet G.J.A. and W.D. Meysing. 1974. Inheritance of resistance to *Pseudoperonospora cubensis* Rost. in cucumber (Cucumis sativus L.). Euphytica 23:251–255.

Van Vliet, G. J. A. and W.D. Meysing. 1977. Relation in the inheritance of resistance to *Pseudoperonospora cubensis* Rost and *Sphaerotheca fuliginea* Poll. in cucumber (*Cucumis sativus* L.). Euphytica 26:793-796.

Warner, J.N. 1952. A method for estimating heritability. Agronomy Journal 44:427-430.

Wehner, T.C. and N.V. Shetty. 1997. Downy mildew resistance of the cucumber germplasm collection in North Carolina field tests. Crop Sci. 37:1331-1340.

Wehner, T.C. and N.V. Shetty. 2000. Screening the cucumber germplasm collection for resistance to gummy stem blight in North Carolina field tests. HortScience 35:1132-1140.

Wright, S. 1968. The genetics of quantitative variability. In: S. Wright, ed. Evolution and genetics of populations, Vol. 1, 2nd ed. University of Chicago Press, Chicago, Il: 373-420.

Zhu, S., Liu, P., Liu, X., Li, J., Yuan, S. and Si, N. 2008. Assessing the risk of resistance in *Pseudoperonospora cubensis* to the fungicide flumorph in vitro. *Pest Manag. Sci.* 64, 255–261.

Table 2.1. Mean of F_2 plants by year and location within year for all ratings [a].

	Downy Mildew Rating			
Year, Loc	Rating 1	Rating 2	Rating 3	Rating Mean
2011	2.35	2.76	4.07	3.01
Clinton	4.12	4.41	5.23	4.61
C. Hayne	3.24	3.59	4.65	3.81
2012	3.06	4.10	5.85	3.70
Clinton	3.09	3.63	4.72	3.48
C. Hayne	3.08	3.87	5.29	3.59
2013	1.81	2.65	3.12	2.54
Clinton	2.22	2.99	3.32	2.84
C. Hayne	2.02	2.82	3.22	2.69
2014	1.92	3.16	2.47	2.68
Clinton	2.27	2.82	3.12	2.73
C. Hayne	2.10	2.99	2.80	2.71
Mean	2.61	3.32	3.99	3.20

a Data are ratings from *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Ashley', 'Poinsett 76', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: were 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead))

Table 2.2. Environmental variance estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a].

Environmental Variance (σ^2_E)[b]					
Family		**Downy Mildew Rating**			
197088 x __	**Year x Loc**	**Rating 1**	**Rating 2**	**Rating 3**	**Rating Mean**
Coolgreen	11 Clinton	1.53	1.60	1.62	1.25
	11 C. Hayne	0.91	1.49	1.38	0.69
	12 Clinton	1.52	1.25	1.71	1.16
	12 C. Hayne	1.47	0.97	1.38	1.17
	13 Clinton	.	.	.	.
	13 C. Hayne	.	.	.	.
	14 Clinton	0.32	0.90	0.35	0.24
	14 C. Hayne	0.44	0.42	0.33	0.17
Gy14	11 Clinton	.	.	.	.
	11 C. Hayne	0.74	.	.	.
	12 Clinton	0.6	0.25	.	0.25
	12 C. Hayne	0.31	0.32	0.91	0.26
	13 Clinton	0.43	0.72	0.48	0.19
	13 C. Hayne	0.19	1.09	1.07	0.42
	14 Clinton	.	.	.	.
	14 C. Hayne	0.47	0.79	1.12	0.68
Poinsett 76	11 Clinton	0.76	0.77	1.80	0.39
	11 C. Hayne	1.45	1.09	1.29	0.75
	12 Clinton	0.44	0.20	.	0.19
	12 C. Hayne	0.21	0.54	.	0.24
	13 Clinton	.	.	.	.
	13 C. Hayne	0.29	0.31	0.51	0.18
	14 Clinton	0.44	0.22	0.58	0.18
	14 C. Hayne	0.59	0.35	0.56	0.28
Ashley	11 Clinton	1.32	1.18	0.95	0.87
	11 C. Hayne	0.97	1.91	1.91	1.21
	12 Clinton	0.31	0.60	.	0.30
	12 C. Hayne	0.58	0.49	.	0.42
	13 Clinton	0.61	0.61	0.39	0.31
	13 C. Hayne	0.27	0.36	0.48	0.37
	14 Clinton	0.41	0.35	1.27	0.36
	14 C. Hayne	0.49	0.56	0.61	0.38
Polaris	11 Clinton	2.35	0.87	1.11	1.56
	11 C. Hayne	0.37	0.93	0.79	0.41
	12 Clinton	0.46	0.32	.	0.29
	12 C. Hayne	0.39	0.78	.	0.33
	13 Clinton	0.83	0.56	0.42	0.26
	13 C. Hayne	0.38	0.43	0.54	0.32
	14 Clinton	0.40	0.31	0.37	0.15
	14 C. Hayne	0.53	0.58	0.49	0.25
	Mean	**0.68**	**0.71**	**0.90**	**0.48**

a Data are ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

b σ^2_E = environmental variance = $\dfrac{\sigma^2(P_a)+\sigma^2(P_b)+\left[2\times\sigma^2(F_1)\right]}{4}$

Table 2.3. Broad-sense heritability estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a].

Broad-sense Heritability – (σ^2_G / σ^2_P)					
Family		**Downy Mildew Rating**			
197088 x __	**Year x Loc**	**Rating 1**	**Rating 2**	**Rating 3**	**Rating Mean**
Coolgreen	11 Clinton	0.67	0.68	0.54	0.64
	11 C. Hayne	0.51	0.30	-0.12	0.43
	12 Clinton	-0.20	0.43	0.25	0.00
	12 C. Hayne	0.31	0.54	0.39	0.16
	13 Clinton	.	.	.	.
	13 C. Hayne	.	.	.	.
	14 Clinton	0.64	0.26	0.88	0.82
	14 C. Hayne	0.63	0.67	0.79	0.86
Gy14	11 Clinton	.	.	.	.
	11 C. Hayne	0.72	.	.	.
	12 Clinton	0.61	0.88	.	0.81
	12 C. Hayne	0.73	0.81	0.63	0.80
	13 Clinton	0.57	0.34	0.72	0.68
	13 C. Hayne	0.75	0.59	0.48	0.63
	14 Clinton	.	.	.	.
	14 C. Hayne	0.53	0.25	0.01	0.14
Poinsett 76	11 Clinton	0.44	0.45	0.08	0.70
	11 C. Hayne	0.26	0.30	0.48	0.44
	12 Clinton	0.42	0.79	.	0.72
	12 C. Hayne	0.81	0.59	.	0.78
	13 Clinton	.	.	.	.
	13 C. Hayne	-0.11	0.37	0.46	0.54
	14 Clinton	0.34	0.80	0.13	0.49
	14 C. Hayne	-0.68	-0.33	0.63	0.28
Ashley	11 Clinton	-0.27	0.46	0.75	0.43
	11 C. Hayne	0.66	-0.09	0.06	0.24
	12 Clinton	0.57	0.61	.	0.58
	12 C. Hayne	0.60	0.69	.	0.69
	13 Clinton	0.46	0.55	0.65	0.52
	13 C. Hayne	0.58	0.67	0.54	0.49
	14 Clinton	0.49	0.61	-0.38	0.22
	14 C. Hayne	0.28	0.34	0.63	0.52
Polaris	11 Clinton	-1.94	0.54	0.64	-0.31
	11 C. Hayne	0.89	0.41	0.55	0.72
	12 Clinton	0.69	0.75	.	0.76
	12 C. Hayne	0.80	0.62	.	0.81
	13 Clinton	0.30	0.51	0.72	0.58
	13 C. Hayne	0.24	0.48	0.62	0.50
	14 Clinton	0.49	0.69	0.70	0.67
	14 C. Hayne	0.42	0.34	0.66	0.71
	Mean[b]	**0.47**	**0.51**	**0.48**	**0.54**

a Data are ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

b Broad-sense heritability means calculated with negative estimates as zero.

Table 2.4. Modified environmental variance estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a].

Modified Environmental Variance (σ^2_E)[b]					
Family		**Downy Mildew Rating**			
197088 x __	**Year x Loc**	**Rating 1**	**Rating 2**	**Rating 3**	**Rating Mean**
Coolgreen	11 Clinton	0.09	0.04	0.09	0.03
	11 C. Hayne	1.07	0.73	0.29	0.28
	12 Clinton	0.55	0.05	0.00	0.07
	12 C. Hayne	0.20	0.09	0.04	0.05
	13 Clinton	.	.	.	.
	13 C. Hayne	.	.	.	.
	14 Clinton	0.28	0.24	0.28	0.20
	14 C. Hayne	0.40	0.39	0.43	0.15
Gy14	11 Clinton	1.08	0.74	0.48	0.23
	11 C. Hayne	0.34	.	.	.
	12 Clinton	0.14	0.00	.	0.04
	12 C. Hayne	0.14	0.21	0.04	0.05
	13 Clinton	0.29	0.71	0.28	0.23
	13 C. Hayne	0.09	0.39	0.75	0.16
	14 Clinton	.	.	.	.
	14 C. Hayne	0.38	1.24	1.31	0.60
Poinsett 76	11 Clinton	0.67	0.14	0.71	0.10
	11 C. Hayne	0.38	1.05	0.84	0.50
	12 Clinton	0.37	0.00	.	0.13
	12 C. Hayne	0.23	0.29	.	0.19
	13 Clinton	.	.	.	.
	13 C. Hayne	0.21	0.27	0.34	0.14
	14 Clinton	0.46	0.18	0.37	0.14
	14 C. Hayne	0.31	0.26	0.49	0.19
Ashley	11 Clinton	0.57	0.63	0.79	0.32
	11 C. Hayne	0.62	1.06	0.47	0.55
	12 Clinton	0.22	0.21	.	0.15
	12 C. Hayne	0.23	0.30	.	0.15
	13 Clinton	0.39	0.41	0.15	0.21
	13 C. Hayne	0.22	0.41	0.26	0.46
	14 Clinton	0.45	0.13	0.55	0.10
	14 C. Hayne	0.19	0.26	0.31	0.15
Polaris	11 Clinton	0.57	0.65	1.00	0.25
	11 C. Hayne	0.19	0.71	0.80	0.28
	12 Clinton	0.32	0.31	.	0.20
	12 C. Hayne	0.35	0.40	.	0.21
	13 Clinton	0.17	0.63	0.33	0.14
	13 C. Hayne	0.42	0.49	0.50	0.35
	14 Clinton	0.34	0.17	0.36	0.14
	14 C. Hayne	0.48	0.43	0.50	0.21
	Mean	**0.37**	**0.41**	**0.46**	**0.21**

a Data are ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

b σ^2_E = environmental variance = $\left(\sigma^2_{Pa} + \sigma^2_{Pb}\right)/2$

Table 2.5. Modified broad-sense heritability estimates for downy mildew disease trait ratings 1 – 3 and average rating by family and environment (Year x Location)[a].

Modified Broad-sense Heritability – (σ^2_G /σ^2_P)					
Family		**Downy Mildew Rating**			
197088 x __	**Year x Loc**	**Rating 1**	**Rating 2**	**Rating 3**	**Rating Mean**
Coolgreen	11 Clinton	0.98	0.99	0.97	0.99
	11 C. Hayne	0.42	0.66	0.77	0.77
	12 Clinton	0.57	0.98	1.00	0.94
	12 C. Hayne	0.91	0.96	0.98	0.97
	13 Clinton	.	.	.	.
	13 C. Hayne	.	.	.	.
	14 Clinton	0.69	0.80	0.91	0.85
	14 C. Hayne	0.67	0.69	0.72	0.87
Gy14	11 Clinton	0.43	0.78	0.85	0.87
	11 C. Hayne	0.87	.	.	.
	12 Clinton	0.91	1.00	.	0.97
	12 C. Hayne	0.88	0.88	0.98	0.96
	13 Clinton	0.70	0.35	0.84	0.61
	13 C. Hayne	0.88	0.86	0.64	0.87
	14 Clinton	.	.	.	.
	14 C. Hayne	0.62	-0.18	-0.15	0.24
Poinsett 76	11 Clinton	0.51	0.90	0.64	0.93
	11 C. Hayne	0.81	0.33	0.66	0.64
	12 Clinton	0.51	1.00	.	0.81
	12 C. Hayne	0.80	0.78	.	0.83
	13 Clinton	.	.	.	.
	13 C. Hayne	0.19	0.45	0.63	0.64
	14 Clinton	0.30	0.84	0.44	0.62
	14 C. Hayne	0.11	0.03	0.67	0.51
Ashley	11 Clinton	0.45	0.71	0.79	0.79
	11 C. Hayne	0.79	0.40	0.77	0.65
	12 Clinton	0.70	0.87	.	0.80
	12 C. Hayne	0.84	0.81	.	0.89
	13 Clinton	0.66	0.70	0.87	0.69
	13 C. Hayne	0.66	0.62	0.75	0.36
	14 Clinton	0.43	0.85	0.40	0.79
	14 C. Hayne	0.73	0.70	0.81	0.81
Polaris	11 Clinton	0.29	0.66	0.67	0.79
	11 C. Hayne	0.95	0.55	0.55	0.81
	12 Clinton	0.79	0.77	.	0.83
	12 C. Hayne	0.82	0.80	.	0.88
	13 Clinton	0.86	0.45	0.78	0.79
	13 C. Hayne	0.18	0.40	0.65	0.47
	14 Clinton	0.57	0.83	0.71	0.68
	14 C. Hayne	0.48	0.51	0.65	0.76
	Mean[b]	**0.64**	**0.68**	**0.72**	**0.76**

a Data are ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

b Broad-sense heritability means calculated with negative estimates as zero.

Table 2.6. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among location by year (2011 – 2014).

2011 - Poolability of Families over Locations (CI & CH)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	**Chi-sq**	**P-value**	**Chi-sq**	**P-value**	**Chi-sq**	**P-value**	**Chi-sq**	**P-value**
1	Clgrn	9.57	<0.01	8.12	<0.01	12.41	<0.01	13.05	<0.01
2	Gy14	1.32	0.25	4.39	0.04	1.06	0.30	0.27	0.60
3	P76	2.09	0.15	0.16	0.68	0.79	0.37	0.05	0.82
4	Ashley	16.33	<0.01	0.67	0.41	5.61	0.02	0.02	0.90
5	Polaris	31.67	<0.01	0.61	0.44	5.01	0.03	0.58	0.45

2012 - Poolability of Families over Locations (CI & CH)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	Clgrn	4.88	0.03	0.01	0.91	0.00	0.98	0.58	0.45
2	Gy14	1.68	0.20	0.60	0.44	.	.	0.07	0.80
3	P76	3.23	0.07	1.97	0.16	.	.	4.92	0.03
4	Ashley	10.58	<0.01	0.02	0.88	.	.	8.74	<0.01
5	Polaris	1.25	0.26	2.85	0.09	.	.	1.86	0.17

2013 - Poolability of Families over Locations (CI & CH)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	Clgrn	25.99	<0.01	1.92	0.17	0.85	0.36	3.99	0.05
2	Gy14	0.88	0.35	13.65	0.00	0.55	0.46	7.68	0.01
3	P76	30.71	<0.01	15.85	<0.01	3.15	0.08	6.67	0.01
4	Ashley	5.42	0.02	0.77	0.38	0.06	0.80	0.14	0.71
5	Polaris	13.16	0.00	2.00	0.16	0.06	0.81	0.01	0.92

2014 - Poolability of Families over Locations (CI & CH)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	Clgrn	0.76	0.38	0.02	0.89	3.17	0.08	0.11	0.75
2	Gy14	2.09	0.15	2.97	0.09	4.02	0.05	16.24	<0.01
3	P76	1.82	0.18	7.89	0.01	4.85	0.03	0.04	0.85
4	Ashley	0.28	0.60	0.10	0.75	5.82	0.02	4.72	0.03
5	Polaris	0.40	0.53	0.30	0.58	0.47	0.50	7.96	0.00

*A p-value > 0.05 suggests data are poolable over locations.
**Highlighted p-values are poolable.

Table 2.7. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among years by location (Clinton, NC and Castle Hayne, NC).

Clinton - Poolability of Families over Years (2011, 2012, 2013 & 2014)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	Clgrn	47.80	<0.01	29.52	<0.01	2.91	0.41	19.91	<0.01
2	Gy14	24.47	<0.01	55.25	<0.01	40.07	<0.01	78.64	<0.01
3	P76	9.54	0.02	2.49	0.48	12.00	<0.01	16.92	<0.01
4	Ashley	4.95	0.18	14.70	<0.01	44.33	<0.01	32.47	<0.01
5	Polaris	9.55	0.02	8.56	0.04	16.41	<0.01	23.75	<0.01

Castle Hayne - Poolability of Families over Years (2011, 2012, 2013 & 2014)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	Clgrn	25.15	<0.01	8.58	0.04	6.68	0.08	0.57	0.90
2	Gy14	20.76	<0.01	9.18	0.03	7.29	0.06	5.88	0.12
3	P76	70.84	<0.01	34.65	<0.01	17.22	<0.01	35.54	<0.01
4	Ashley	47.51	<0.01	8.75	0.03	8.45	0.01	15.98	<0.01
5	Polaris	68.77	<0.01	20.30	0.00	1.10	0.58	21.25	<0.01

*A p-value > 0.05 suggests data are poolable over locations.
**Highlighted p-values are poolable.

Table 2.8. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among years and location (2011 – 2014 by Clinton, NC and Castle Hayne, NC).

Poolability of Families over Years & Location

Clinton & Castle Hayne in 2011, 2012, 2013 & 2014

		Rating 1		**Rating 2**		**Rating 3**		**Rating Mean**	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	Clgrn	75.93	<0.01	38.88	<0.01	19.05	0.01	26.37	<0.01
2	Gy14	45.35	<0.01	65.68	<0.01	49.94	<0.01	86.89	<0.01
3	P76	81.17	<0.01	37.72	<0.01	30.40	<0.01	54.24	<0.01
4	Ashley	67.86	<0.01	23.61	<0.01	54.16	<0.01	55.86	<0.01
5	Polaris	95.61	<0.01	28.91	<0.01	19.03	<0.01	53.49	<0.01

*A p-value > 0.05 suggests data are poolable over locations.
**Highlighted p-values are poolable.

Table 2.9. Frequency distribution and disease severity index (DSI) of downy mildew mean disease ratings for five families in 2011[a].

Generation	No. of plants	No. of plants in classes										DSI
		0	1	2	3	4	5	6	7	8	9	
197088 x Ashley – Clinton and Castle Hayne, NC 2011												
P1	10		1	7	2							2.1
P2	18			2	4	4	1	5	2			4.5
F1	32			5	13	6	6	1	1			3.6
F2	132		12	31	32	25	16	11	4	1		3.4
Bc1P1	51		5	10	10	15	7	3	1			3.4
Bc1P2	49			4	12	12	9	9	3			4.3
197088 x Coolgreen – Clinton and Castle Hayne, NC 2011												
P1	6		2	4								1.7
P2	19							7	1	4	7	7.6
F1	28			2	1	4	9	4	5	3		5.4
F2	99			6	10	18	28	16	16	5		5.1
Bc1P1	47		3	11	5	5	8	14	1			4.1
Bc1P2	56					5	10	24	17			5.9
197088 x Gy14 – Pooled: Clinton and Castle Hayne, NC 2011												
P1	14		7	7								1.5
P2	9							6	3			6.3
F1	15			8	5	1	1					2.7
F2	93			7	6	21	33	13	12	1		4.8
Bc1P1	24		5	13	5	1						2.1
Bc1P2	28				4	7	7	7	3			4.9
197088 x Poinsett 76 – Pooled: Clinton and Castle Hayne, NC 2011												
P1	9		1	8								1.9
P2	11					6	2	2	1			4.8
F1	36			9	10	14	2	1				3.3
F2	120		22	32	35	14	11	3	3			2.8
Bc1P1	56		5	15	9	7	16	4				3.5
Bc1P2	53		7	9	16	6	5	7	3			3.5
197088 x Polaris – Pooled: Clinton and Castle Hayne, NC 2011												
P1	12			6	6							2.5
P2	9					6	3					4.3
F1	26		2	18	4	2						2.2
F2	138		13	30	27	20	21	21	6			3.7
Bc1P1	53		12	18	5	17	1					2.6
Bc1P2	50		3	9	9	1	4	11	13			4.6

a Data are from the mean of three ratings pooled over locations for five *Cucumis sativus* families developed from the cross of resistant PI 197088 by cultivars 'Ashley', 'Coolgreen', 'Gy14', 'Poinsett 76', and 'Polaris'.

Table 2.10. Frequency distribution and disease severity index (DSI) of downy mildew mean disease ratings for five families in 2012[a].

Generation	No. of plants	No. of plants in classes										DSI
		0	1	2	3	4	5	6	7	8	9	
197088 x Ashley – Clinton and Castle Hayne, NC 2012												
P1	18		4	14								1.8
P2	20							10	9	1		6.6
F1	37			12	17	7	1					2.9
F2	178		1	73	53	29	16	5	1			3.0
Bc1P1	58		1	33	16	4		4				2.7
Bc1P2	57			1	8	14	20	10	4			4.7
197088 x Coolgreen – Clinton and Castle Hayne, NC 2012												
P1	8		3	5								1.6
P2	19								8	11	1	7.6
F1	35		2	4	1	9	10	4	5			4.5
F2	146			6	20	38	51	26	5			4.6
Bc1P1	54			19	26	8	1					2.8
Bc1P2	58						6	35	17			6.2
197088 x Gy14 – Pooled: Clinton and Castle Hayne, NC 2012												
P1	10		5	5								1.5
P2	20							3	7	10		7.4
F1	30			1	5	17	5	2				4.1
F2	168			4	20	47	50	32	13	2		4.8
Bc1P1	45		5	27	11	1			1			2.3
Bc1P2	35					8	12	5	7	3		5.6
197088 x Poinsett 76 – Pooled: Clinton and Castle Hayne, NC 2012												
P1	15		5	10								1.7
P2	20				1	5	4	6	4			5.4
F1	35			9	23	3						2.8
F2	175		8	79	56	22	7	3				2.7
Bc1P1	57		6	28	19	2			2			2.5
Bc1P2	59			4	22	22	9	1	1			3.7
197088 x Polaris – Pooled: Clinton and Castle Hayne, NC 2012												
P1	18		2	16								1.9
P2	20					1	6	11	2			5.7
F1	38			20	13	5						2.6
F2	126		7	36	32	33	12	6				3.2
Bc1P1	48		1	32	12	3						2.4
Bc1P2	14			3	4	3	4					3.6

a Data are from the mean of three ratings pooled over locations for five *Cucumis sativus* families developed from the cross of resistant PI 197088 by cultivars 'Ashley', 'Coolgreen', 'Gy14', 'Poinsett 76', and 'Polaris'.

Table 2.11. Frequency distribution and disease severity index (DSI) of downy mildew mean disease ratings for five families in 2013[a].

Generation	No. of plants	No. of plants in classes										DSI
		0	1	2	3	4	5	6	7	8	9	
197088 x Ashley – Clinton and Castle Hayne, NC 2013												
P1	15		10	5								1.3
P2	15			2	4	5	4					3.7
F1	35		2	12	20	1						2.6
F2	147		27	74	41	4				1		2.2
Bc1P1	38	1	6	28	3							1.9
Bc1P2	38			6	21	11						3.1
197088 x Coolgreen – Clinton and Castle Hayne, NC 2013												
P1	15		10	5								1.3
P2	15						4	4	7			6.2
F1	31			2	3	11	13	2				4.3
F2	138		2	19	39	38	29	10	1			3.8
Bc1P1	57		9	27	15	6						2.3
Bc1P2	45				1	6	17	19	1	1		5.4
197088 x Gy14 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	19	2	17									0.9
P2	13					5	7	1				4.7
F1	38			12	16	9	1					3.0
F2	142		11	46	50	21	11	3				2.9
Bc1P1	55		21	22	11	1						1.9
Bc1P2	0											.
197088 x Poinsett 76 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	8		7	1								2.1
P2	15			6	9							2.6
F1	35		11	17	7							2.9
F2	154	2	47	80	21	4						2.9
Bc1P1	40		20	17	3							2.6
Bc1P2	42		17	18	5	2						2.8
197088 x Polaris – Pooled: Clinton and Castle Hayne, NC 2013												
P1	15		10	5								1.3
P2	14				2	6	5	1				4.4
F1	29			6	14	9						3.1
F2	160		6	43	72	37	2					2.9
Bc1P1	35		12	15	6	1	1					2.0
Bc1P2	67			11	18	17	2	19				4.0

a Data are from the mean of three ratings pooled over locations for five *Cucumis sativus* families developed from the cross of resistant PI 197088 by cultivars 'Ashley', 'Coolgreen', 'Gy14', 'Poinsett 76', and 'Polaris'.

Table 2.12. Frequency distribution and disease severity index (DSI) of downy mildew disease ratings for five families in 2014[a].

Generation	No. of plants	No. of plants in classes										DSI
		0	1	2	3	4	5	6	7	8	9	
197088 x Ashley – Clinton and Castle Hayne, NC 2013												
P1	19	5	14									0.7
P2	20				4	13	3					4.0
F1	36			12	15	8	1					2.9
F2	136		11	46	51	24	4					2.7
Bc1P1	54		15	28	10		1					2.0
Bc1P2	57		1	4	26	20	6					3.5
197088 x Coolgreen – Clinton and Castle Hayne, NC 2013												
P1	18	8	10									0.6
P2	18						0	6	7	1	2	6.8
F1	37				4	12	10	11				4.8
F2	115		4	4	7	23	37	38	2			4.8
Bc1P1	46	0	5	14	14	8	3	1				2.8
Bc1P2	38		1		7	4	16	10				4.7
197088 x Gy14 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	19	12	6	1								0.4
P2	2				1				1			5
F1	35				3	19	12	1				4.3
F2	117		1	10	43	47	16					3.6
Bc1P1	55	1	3	7	22	16	5	1				3.2
Bc1P2	50		1		11	27	9	2				4.0
197088 x Poinsett 76 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	17	7	10									0.6
P2	20			7	12	1						2.7
F1	39		1	7	27	4						2.9
F2	58		7	24	25				1			2.4
Bc1P1	57		12	29	15	1						2.1
Bc1P2	54		6	20	20	8						2.6
197088 x Polaris – Pooled: Clinton and Castle Hayne, NC 2013												
P1	20	3	15	2								1.0
P2	20				11	8	1					3.5
F1	40		1	10	19	10						3.0
F2	151	2	27	38	64	20						2.5
Bc1P1	55	1	28	19	7							1.6
Bc1P2	60		1	15	31	11	1		1			3.0

a Data are from the second of three ratings pooled over locations for five *Cucumis sativus* families developed from the cross of resistant PI 197088 by cultivars 'Ashley', 'Coolgreen', 'Gy14', 'Poinsett 76', and 'Polaris'.

Table 2.13. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Coolgreen'[a]. Data in 2011 were not poolable among locations and are presented separately.

Family: PI 197088 x Coolgreen

	Clinton, NC							Castle Hayne, NC					
	Dom	Rec	Exp	X^2	df	*P*		Dom	Rec	Exp	X^2	df	*P*
2011[a]							**2011**[a]						
P_a	0	22					P_a	3	26				
P_b	6	0					P_b	6	0				
F1	12	1					F1	14	1				
F2	31	6	3:1	1.52	1	0.21	F2	62	0	3:1	20.67	1	0.000*
BC_1P_a	9	11	1:1	0.20	1	0.65	BC_1P_a	22	5	1:1	10.70	1	0.001*
BC_1P_b	26	0	1:0	0.00	1	1.00	BC_1P_b	30	0	1:0	0.00	1	1.00

	Pooled					
	Dom	Rec	Exp	X^2	df	*P*
2012[b]						
P_a	0	78				
P_b	20	0				
F1	29	6				
F2	134	13	3:1	20.46	1	0.000*
BC_1P_a	29	25	1:1	0.30	1	0.580
BC_1P_b	58	0	1:0	0.00	1	1.000
2013[c]						
P_a	0	55				
P_b	15	0				
F1	31	0				
F2	123	15	3:1	14.70	1	0.000*
BC_1P_a	25	32	1:1	0.86	1	0.350
BC_1P_b	44	1	1:0	0.02	1	0.880
2014[d]						
P_a	0	93				
P_b	18	0				
F1	37	0				
F2	108	8	3:1	20.28	1	0.000*
BC_1P_a	26	20	1:1	0.78	1	0.370
BC_1P_b	37	1	1:0	0.03	1	0.870

[a]Trait used to estimate single locus probability: DM Rating Avg.
[b]Trait used to estimate single locus probability: DM Rating 2.
[c]Trait used to estimate single locus probability: DM Rating 3.
[d]Trait used to estimate single locus probability: DM Rating 2.

Table 2.14. Single locus good goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Gy 14.

Family: PI 197088 x Gy 14						
	Dom.	Rec.	Exp.	X^2	df	*P*
2011[a]						
P_a	3	48				
P_b	9	0				
F1	8	8				
F2	85	8	3:1	13.34	1	0.000*
BC_1P_a	5	19	1:1	8.17	1	0.004*
BC_1P_b	28	0	1:0	0.00	1	1.000
2012[b]						
P_a	0	78				
P_b	20	0				
F1	30	0				
F2	159	6	3:1	40.16	1	0.000*
BC_1P_a	7	37	1:1	20.45	1	0.000*
BC_1P_b	35	0	1:0	0.00	1	1.000
2013[c]						
P_a	0	55				
P_b	13	0				
F1	35	3				
F2	120	18	3:1	10.52	1	0.001*
BC_1P_a	15	39	1:1	10.67	1	0.001*
BC_1P_b	.	.	1:0	.	1	.
2014[d]						
P_a	0	93				
P_b	2	0				
F1	35	0				
F2	106	11	3:1	15.18	1	0.000*
BC_1P_a	44	11	1:1	19.8	1	0.000*
BC_1P_b	49	1	1:0	0.02	1	0.880

[a]Trait used to estimate single locus probability: DM Rating Avg.
[b]Trait used to estimate single locus probability: DM Rating 2.
[c]Trait used to estimate single locus probability: DM Rating 3.
[d]Trait used to estimate single locus probability: DM Rating 2.

Table 2.15. Single locus good goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Poinsett 76. Data in 2014 were not poolable among locations and are presented separately.

Family: PI 197088 x Poinsett 76

	Clinton, NC					
	Dom	Rec	Exp	X^2	df	*P*
2011[a]						
P_a	3	48				
P_b	11	0				
F1	24	12				
F2	62	58	3:1	34.84	1	0.000*
BC_1P_a	34	22	1:1	2.57	1	0.100
BC_1P_b	33	20	1:0	7.55	1	0.006*
2012[b]						
P_a	0	78				
P_b	20	0				
F1	19	15				
F2	59	114	3:1	154.31	1	0.000*
BC_1P_a	11	46	1:1	21.49	1	0.000*
BC_1P_b	51	8	1:0	1.08	1	0.290
2013[c]						
P_a	55	0				
P_b	1	14				
F1	19	16				
F2	104	50	3:1	4.58	1	0.032*
BC_1P_a	32	8	1:0	1.60	1	0.200
BC_1P_b	21	21	1:1	0.00	1	1.000

	Clinton, NC					
	Dom	Rec	Exp	X^2	df	*P*
2014[d]						
P_a	0	46				
P_b	10	0				
F1	18	2				
F2	19	24	3:1	21.78	1	0.000*
BC_1P_a	11	19	1:1	2.13	1	0.140
BC_1P_b	22	7	1:0	1.69	1	0.190

	Castle Hayne, NC					
	Dom	Rec	Exp	X^2	df	*P*
2014[c]						
P_a	1	46				
P_b	10	0				
F1	15	5				
F2	12	9	3:1	3.57	1	0.058
BC_1P_a	12	18	1:1	1.2	1	0.270
BC_1P_b	19	9	1:0	2.89	1	0.080

[a]Trait used to estimate single locus probability: DM Rating Avg.
[b]Trait used to estimate single locus probability: DM Rating 2.
[c]Trait used to estimate single locus probability: DM Rating 3.
[d]Trait used to estimate single locus probability: DM Rating 2.

Table 2.16. Single locus good goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Ashley.

Family: PI 197088 x Ashley						
	Dom	Rec	Exp	X^2	df	*P*
2011[a]						
P_a	3	48				
P_b	12	0				
F1	26	2				
F2	93	6	3:1	18.94	1	0.000*
BC_1P_a	31	16	1:1	4.79	1	0.028*
BC_1P_b	56	0	1:0	0.00	1	1.000
2012[b]						
P_a	78	0				
P_b	0	20				
F1	20	17				
F2	97	81	3:1	39.92	1	0.000*
BC_1P_a	42	16	1:0	04.41	1	0.035*
BC_1P_b	3	53	1:1	44.64	1	0.000*
2013[c]						
P_a	0	55				
P_b	12	1				
F1	19	16				
F2	60	86	3:1	89.51	1	0.000*
BC_1P_a	11	27	1:1	6.74	1	0.009*
BC_1P_b	37	1	1:0	0.03	1	0.870
2014[d]						
P_a	0	93				
P_b	20	0				
F1	24	12				
F2	79	57	3:1	20.75	1	0.000*
BC_1P_a	11	43	1:1	18.96	1	0.000*
BC_1P_b	52	5	1:0	0.44	1	0.500

[a]Trait used to estimate single locus probability: DM Rating Avg.
[b]Trait used to estimate single locus probability: DM Rating 2.
[c]Trait used to estimate single locus probability: DM Rating 3.
[d]Trait used to estimate single locus probability: DM Rating 2.

Table 2.17. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2011 – 2014) for cross PI 197088 x 'Polaris.

Family: PI 197088 x Polaris						
	Dom.	Rec.	Exp.	X^2	df	*P*
2011[a]						
P_a	18	0				
P_b	0	20				
F1	25	13				
F2	51	75	3:1	80.10	1	0.000*
BC_1P_a	41	7	1:0	1.02	1	0.310
BC_1P_b	3	11	1:1	4.57	1	0.032*
2012[b]						
P_a	78	0				
P_b	0	20				
F1	28	10				
F2	60	66	3:1	50.38	1	0.000*
BC_1P_a	40	6	1:0	0.78	1	0.370
BC_1P_b	5	9	1:1	1.14	1	0.280
2013[c]						
P_a	0	55				
P_b	14	0				
F1	27	2				
F2	111	45	3:1	1.23	1	0.260
BC_1P_a	11	23	1:1	4.24	1	0.039*
BC_1P_b	40	6	1:0	0.78	1	0.370
2014[d]						
P_a	0	93				
P_b	20	0				
F1	29	11				
F2	84	67	3:1	30.22	1	0.000*
BC_1P_a	7	48	1:1	30.56	1	0.000*
BC_1P_b	44	16	1:0	4.27	1	0.038*

[a]Trait used to estimate single locus probability: DM Rating Avg.
[b]Trait used to estimate single locus probability: DM Rating 2.
[c]Trait used to estimate single locus probability: DM Rating 3.
[d]Trait used to estimate single locus probability: DM Rating 2.

Table 2.18. Phenotypic variances by generation for the five cucumber families screened for resistance to downy mildew (2011-2014)[a].

Pedigree, Location, Year	$\sigma^2(P_a)$	$\sigma^2(P_b)$	$\sigma^2(F_1)$	$\sigma^2(F_2)$	$\sigma^2(BC_1P_a)$	$\sigma^2(BC_1P_b)$
PI 197088 x 'Coolgreen'						
Clinton 2011	0.00	0.06	0.99	3.49	2.14	0.98
Castle Hayne 2011	0.10	0.46	1.11	1.22	2.39	0.27
Clinton 2012	0.02	0.12	1.33	1.16	0.35	0.24
Castle Hayne 2012	0.05	0.04	0.20	1.39	0.51	0.31
Clinton 2013	.	0.51	0.55	1.92	0.68	0.70
Castle Hayne 2013	0.11	0.52	0.30	1.17	0.82	0.83
Clinton 2014	0.20	0.20	0.29	1.32	0.70	0.15
Castle Hayne 2014	0.03	0.27	0.18	1.18	0.56	0.59
PI 197088 x 'Gy14'						
Clinton 2011	0.03	0.43	.	1.80	0.49	0.68
Castle Hayne 2011	0.10	.	0.74	1.54	0.18	0.22
Clinton 2012	0.01	0.06	0.47	1.34	1.27	0.60
Castle Hayne 2012	0.03	0.06	0.47	1.27	0.20	0.46
Clinton 2013	0.11	0.35	0.15	0.59	0.36	.
Castle Hayne 2013	0.06	0.25	0.68	1.15	0.51	.
Clinton 2014	0.09	.	0.10	0.28	0.44	0.23
Castle Hayne 2014	0.18	1.03	0.76	0.80	1.39	1.09
PI 197088 x 'P76'						
Clinton 2011	0.10	0.09	0.68	1.28	0.82	0.70
Castle Hayne 2011	0.11	0.88	1.01	1.36	1.16	1.58
Clinton 2012	0.08	0.18	0.26	0.68	0.56	0.91
Castle Hayne 2012	0.13	0.17	0.29	1.10	0.40	0.52
Clinton 2013	.	0.28	0.44	0.70	0.12	0.85
Castle Hayne 2013	0.11	0.17	0.22	0.39	0.19	0.32
Clinton 2014	0.17	0.10	0.23	0.36	0.33	0.32
Castle Hayne 2014	0.19	0.19	0.36	0.38	0.30	0.61
PI 197088 x 'Ashley'						
Clinton 2011	0.20	0.42	0.58	1.54	0.89	0.77
Castle Hayne 2011	0.34	0.22	1.04	1.59	1.00	0.68
Clinton 2012	0.08	0.21	0.46	0.72	1.45	1.59
Castle Hayne 2012	0.07	0.23	0.70	1.36	0.53	0.83
Clinton 2013	0.06	0.35	0.42	0.66	0.02	0.47
Castle Hayne 2013	0.04	0.88	0.28	0.72	0.51	0.31
Clinton 2014	0.08	0.12	0.62	0.46	0.22	0.30
Castle Hayne 2014	0.06	0.23	0.60	0.79	0.66	0.33
PI 197088 x 'Polaris'						
Clinton 2011	0.06	0.50	0.52	1.19	0.12	1.08
Castle Hayne 2011	0.21	0.34	0.54	1.44	0.50	0.36

Table 2.18 continued

Clinton 2012	0.06	0.34	0.39	1.21	0.15	1.15
Castle Hayne 2012	0.11	0.30	0.45	1.72	0.46	0.32
Clinton 2013	0.03	0.24	0.39	0.63	0.37	0.44
Castle Hayne 2013	0.02	0.67	0.30	0.65	0.69	0.51
Clinton 2014	0.06	0.22	0.15	0.46	0.14	0.30
Castle Hayne 2014	0.20	0.22	0.30	0.88	0.41	0.30

a Data are the mean of all downy mildew ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Ashley', 'Coolgreen', ‘Gy 14’ 'Poinsett 76', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

Table 2.19. Variance and heritability estimates, including modified environmental variance and modified broad-sense heritability estimates, for the five cucumber families screened for resistance to downy mildew at Clinton and Castle Hayne, North Carolina (2011-2014)[a].

Pedigree, Location, Year	$\sigma^2(P)$[b]	$\sigma^2(E)$[c]	Modified $\sigma^2(E)$[d]	$\sigma^2(G)$[e]	$\sigma^2(A)$[f]	H^2[g]	Modified H^2[h]	h^2[i]
PI 197088 x 'Coolgreen'								
Clinton 2011	3.49	0.51	0.03	2.98	3.86	0.85	0.99	1.11
Castle Hayne 2011	1.22	0.69	0.28	0.52	-0.22	0.43	0.77	--[j]
Clinton 2012	1.16	0.70	0.07	0.47	1.74	0.40	0.94	1.49
Castle Hayne 2012	1.39	0.12	0.04	1.27	1.97	0.91	0.97	1.41
Clinton 2013	1.92	.	.	.	2.46	.	.	1.28
Castle Hayne 2013	1.17	0.31	0.32	0.86	0.68	0.73	0.73	0.58
Clinton 2014	1.32	0.24	0.20	1.08	1.79	0.82	0.85	1.36
Castle Hayne 2014	1.18	0.17	0.15	1.01	1.21	0.86	0.87	1.03
PI 197088 x 'Gy14'								
Clinton 2011	1.80	.	0.23	.	2.43	.	0.87	1.35
Castle Hayne 2011	1.54	.	.	.	2.68	.	.	1.74
Clinton 2012	1.34	0.25	0.04	1.09	0.82	0.81	0.97	0.61
Castle Hayne 2012	1.27	0.26	0.05	1.01	1.88	0.80	0.96	1.48
Clinton 2013	0.59	0.19	0.23	0.40	.	0.68	0.61	.
Castle Hayne 2013	1.15	0.42	0.15	0.73	.	0.63	0.86	.
Clinton 2014	0.28	.	.	.	-0.11	.	.	--[j]
Castle Hayne 2014	0.80	0.68	0.60	0.11	-0.89	0.14	0.24	--[j]
PI 197088 x 'P76'								
Clinton 2011	1.28	0.39	0.10	0.89	1.03	0.70	0.92	0.81
Castle Hayne 2011	1.36	0.75	0.49	0.60	-0.03	0.44	0.64	--[j]
Clinton 2012	0.68	0.19	0.13	0.49	-0.10	0.72	0.81	--[j]
Castle Hayne 2012	1.10	0.22	0.15	0.88	1.29	0.80	0.86	1.17
Clinton 2013	0.70	.	.	.	0.44	.	.	0.63
Castle Hayne 2013	0.39	0.18	0.14	0.21	0.27	0.54	0.65	0.69
Clinton 2014	0.36	0.18	0.14	0.18	0.07	0.49	0.62	0.19
Castle Hayne 2014	0.38	0.28	0.19	0.11	-0.14	0.28	0.51	--[j]

Table 2.19 continued

PI 197088 x 'Ashley'								
Clinton 2011	1.54	0.44	0.31	1.09	1.41	0.71	0.80	0.92
Castle Hayne 2011	1.59	0.66	0.28	0.93	1.49	0.58	0.82	0.94
Clinton 2012	0.72	0.30	0.15	0.42	-1.60	0.58	0.79	--[j]
Castle Hayne 2012	1.36	0.42	0.15	0.94	1.37	0.69	0.89	1.01
Clinton 2013	0.66	0.31	0.20	0.35	0.83	0.52	0.69	1.26
Castle Hayne 2013	0.72	0.37	0.46	0.35	0.61	0.49	0.36	0.85
Clinton 2014	0.46	0.36	0.10	0.10	0.40	0.22	0.79	0.87
Castle Hayne 2014	0.79	0.38	0.15	0.41	0.59	0.52	0.81	0.75
PI 197088 x 'Polaris'								
Clinton 2011	1.19	0.40	0.28	0.79	1.18	0.67	0.77	0.99
Castle Hayne 2011	1.44	0.41	0.28	1.03	2.01	0.72	0.81	1.40
Clinton 2012	1.21	0.29	0.20	0.91	1.11	0.76	0.83	0.92
Castle Hayne 2012	1.72	0.33	0.21	1.39	2.65	0.81	0.88	1.55
Clinton 2013	0.63	0.26	0.14	0.37	0.46	0.58	0.79	0.73
Castle Hayne 2013	0.65	0.32	0.35	0.32	0.10	0.50	0.46	0.15
Clinton 2014	0.46	0.15	0.14	0.31	0.47	0.67	0.68	1.04
Castle Hayne 2014	0.88	0.25	0.21	0.62	1.04	0.71	0.76	1.19

a Data are from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Ashley', 'Coolgreen', 'Gy 14' 'Poinsett 76', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

b σ^2(P) = phenotypic variance = $\sigma^2_{F_2}$

c σ^2(E) = environmental variance = $\dfrac{\sigma^2(P_a)+\sigma^2(P_b)+\left[2\times\sigma^2(F_1)\right]}{4}$

d Modified σ^2(E) = environmental variance = $\left(\sigma^2_{Pa}+\sigma^2_{Pb}\right)/2$

e σ^2(G) = genetic variance = $\sigma^2_P-\sigma^2_E$

f σ^2(A) = additive variance = $\left[2\times\sigma^2_{F2}\right]-\left[\sigma^2_{Bc_1P_a}+\sigma^2_{Bc_1P_b}\right]$

g H^2 = broad-sense heritability = σ^2_G/σ^2_P

h Modified H^2 = modified broad-sense heritability = σ^2_G/σ^2_P

i h^2 = narrow-sense heritability = σ^2_A/σ^2_P

j Negative estimate from a negative estimate of additive variance

Table 2.20. Estimates of number of effective factors and predicted gain from selection under different selection intensities of the mean of three downy mildew ratings by generation for the five cucumber families screened for resistance to downy mildew at Clinton and Castle Hayne, North Carolina (2011-2014)[a].

	Effective Factors						Gain[b]		
Pedigree, Location, Year	**W [c]**	**M [d]**	**L1 [e]**	**L2 [f]**	**L3 [g]**	**Mean**	**5%**	**10%**	**20%**
PI 197088 x 'Coolgreen'									
Clinton 2011	2.5	7.1	2.3	1.8	3.2	3.4	4.3	3.6	2.9
Castle Hayne 2011	8.8	--[h]	8.7	--[h]	3.6	--[h]	--[h]	--[h]	--[h]
Clinton 2012	9.0	9.0	8.4	2.2	--[h]	4.7	3.3	2.8	2.3
Castle Hayne 2012	4.5	11.5	4.4	2.9	9.7	6.6	3.4	2.9	2.3
Clinton 2013	.	4.5	.	1.1	.	2.8	3.7	3.1	2.5
Castle Hayne 2013	4.5	21.3	4.2	5.3	3.5	7.8	1.3	1.1	0.9
Clinton 2014	3.3	7.3	3	1.8	9	4.9	3.2	2.7	2.2
Castle Hayne 2014	4.9	16.1	4.8	4	6	7.2	2.3	2	1.6
Mean	**5.4**	**11.0**	**5.1**	**2.7**	**5.8**	**5.3**	**3.1**	**2.6**	**2.1**
PI 197088 x 'Gy14'									
Clinton 2011	.	5.4	.	1.3	.	3.3	3.7	3.2	2.5
Castle Hayne 2011	.	.	.	.	.	.	4.4	3.8	3.0
Clinton 2012	4.4	23.1	4.3	5.8	3.4	8.2	1.4	1.2	1.0
Castle Hayne 2012	3.5	7.5	3.5	1.9	23.8	8.0	3.4	2.9	2.3
Clinton 2013	4.3	.	4.3	.	.	4.3	.	.	.
Castle Hayne 2013	2.6	.	2.5	.	.	2.5	.	.	.
Clinton 2014	.	.	.	.	.	.	--[h]	--[h]	--[h]
Castle Hayne 2014	32.1	--[h]	31.3	--[h]	3.2	9.3	--[h]	--[h]	--[h]
Mean	**9.4**	**12.0**	**9.2**	**3.0**	**10.1**	**5.9**	**3.2**	**2.8**	**2.2**
PI 197088 x 'P76'									
Clinton 2011	3.0	0.9	0.8	1.0	1.3	1.9	1.6	1.3	3.0
Castle Hayne 2011	--[h]	2.6	--[h]	1.3	--[h]	--[h]	--[h]	0.0	--[h]
Clinton 2012	--[h]	5.7	--[h]	2.6	--[h]	--[h]	--[h]	--	--[h]
Castle Hayne 2012	3.4	1.3	0.9	2.3	1.8	2.5	2.2	1.7	3.4
Clinton 2013	.	.	.	.	.	1.1	0.9	0.7	.
Castle Hayne 2013	2.8	0.9	0.7	1.2	1.3	0.9	0.8	0.6	2.8

Table 2.20 continued

Clinton 2014	1.6	13.2	1.3	3.3	0.8	4	0.2	0.2	0.2
Castle Hayne 2014	5.8	--[h]	4.3	--[h]	1.3	--[h]	--[h]	--[h]	--[h]
Mean	**3.3**	**4.1**	**1.6**	**2.0**	**1.3**	**2.1**	**1.1**	**0.8**	**2.4**
PI 197088 x 'Ashley'									
Clinton 2011	1.3	4.0	1.3	1.0	1.8	1.9	2.3	2.0	1.6
Castle Hayne 2011	3.4	8.5	3.4	2.1	8.8	5.3	2.4	2.1	1.7
Clinton 2012	8.5	--[h]	7.3	--[h]	1.3	1.5	--[h]	--[h]	--[h]
Castle Hayne 2012	2.8	7.2	2.6	1.8	4.9	3.9	2.4	2.1	1.6
Clinton 2013	3.9	6.2	3.7	1.5	--[h]	1.2	2.1	1.8	1.4
Castle Hayne 2013	1.0	2.1	0.9	0.5	3.6	1.7	1.5	1.3	1.0
Clinton 2014	9.7	9.3	9.2	2.3	-4.7	5.2	1.2	1	0.8
Castle Hayne 2014	3.9	9.5	3.4	2.4	5.9	5	1.4	1.2	0.9
Mean	**4.3**	**6.7**	**4.0**	**1.7**	**3.1**	**3.2**	**1.9**	**1.6**	**1.3**
PI 197088 x 'Polaris'									
Clinton 2011	1.4	2.9	1.1	0.7	2.1	1.6	2.2	1.9	1.5
Castle Hayne 2011	2.4	3.1	1.5	0.8	36.9	9.0	3.5	3.0	2.4
Clinton 2012	2.9	8.2	2.5	2.0	3.2	3.8	2.1	1.8	1.4
Castle Hayne 2012	1.3	2.4	1.1	0.6	12.6	3.6	4.2	3.6	2.8
Clinton 2013	2.7	8.5	2.7	2.1	3.5	3.9	1.2	1.0	0.8
Castle Hayne 2013	4.6	60.9	4.5	15.2	2.6	17.6	0.2	0.2	0.2
Clinton 2014	1.9	4.9	1.9	1.2	4.1	2.8	1.4	1.2	1
Castle Hayne 2014	1.6	3.6	1.5	0.9	4.7	2.5	2.3	2	1.6
Mean	**2.4**	**11.8**	**2.1**	**2.9**	**8.7**	**5.6**	**2.1**	**1.8**	**1.5**

Table 2.20 continued

a Data are ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76',

d Mather's method: $$\frac{\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{2}}{\left[2\times\sigma^2(F_2)\right]-\left[\sigma^2(BC_1P_a)+\sigma^2(BC_1P_b)\right]}$$

e Lande's method I: $$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{8\times\left\{\sigma^2(F_2)-\frac{\sigma^2(P_a)+\sigma^2(P_b)+\left[2\times\sigma^2(F_1)\right]}{4}\right\}}$$

f Lande's method II: $$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{8\times\left\{\left[2\times\sigma^2(F_2)\right]-\left[\sigma^2(BC_1P_a)+\sigma^2(BC_1P_b)\right]\right\}}$$

e Lande's method III: $$\frac{\left[\mu(P_b)-\mu(P_a)\right]^2}{\left\{8\times\left[\sigma^2(BC_1P_a)+\sigma^2(BC_1P_b)-\sigma^2(F_1)\right]\right\}-\frac{\left[\sigma^2(P_a)+\sigma^2(P_b)\right]}{2}}$$

h Negative estimate from a negative variance estimate.

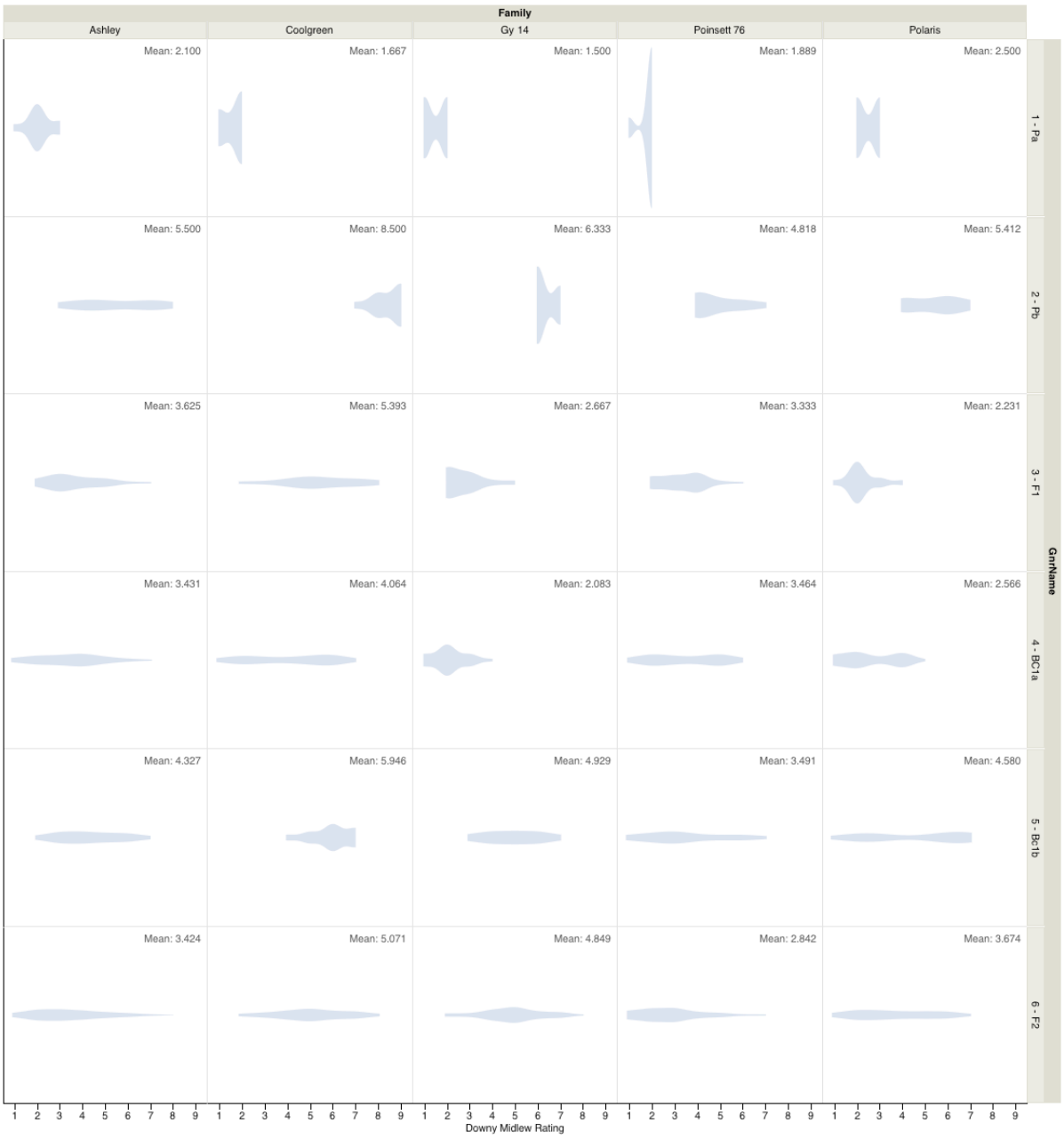


Figure 2.1. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2011. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a]

a Data are mean ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

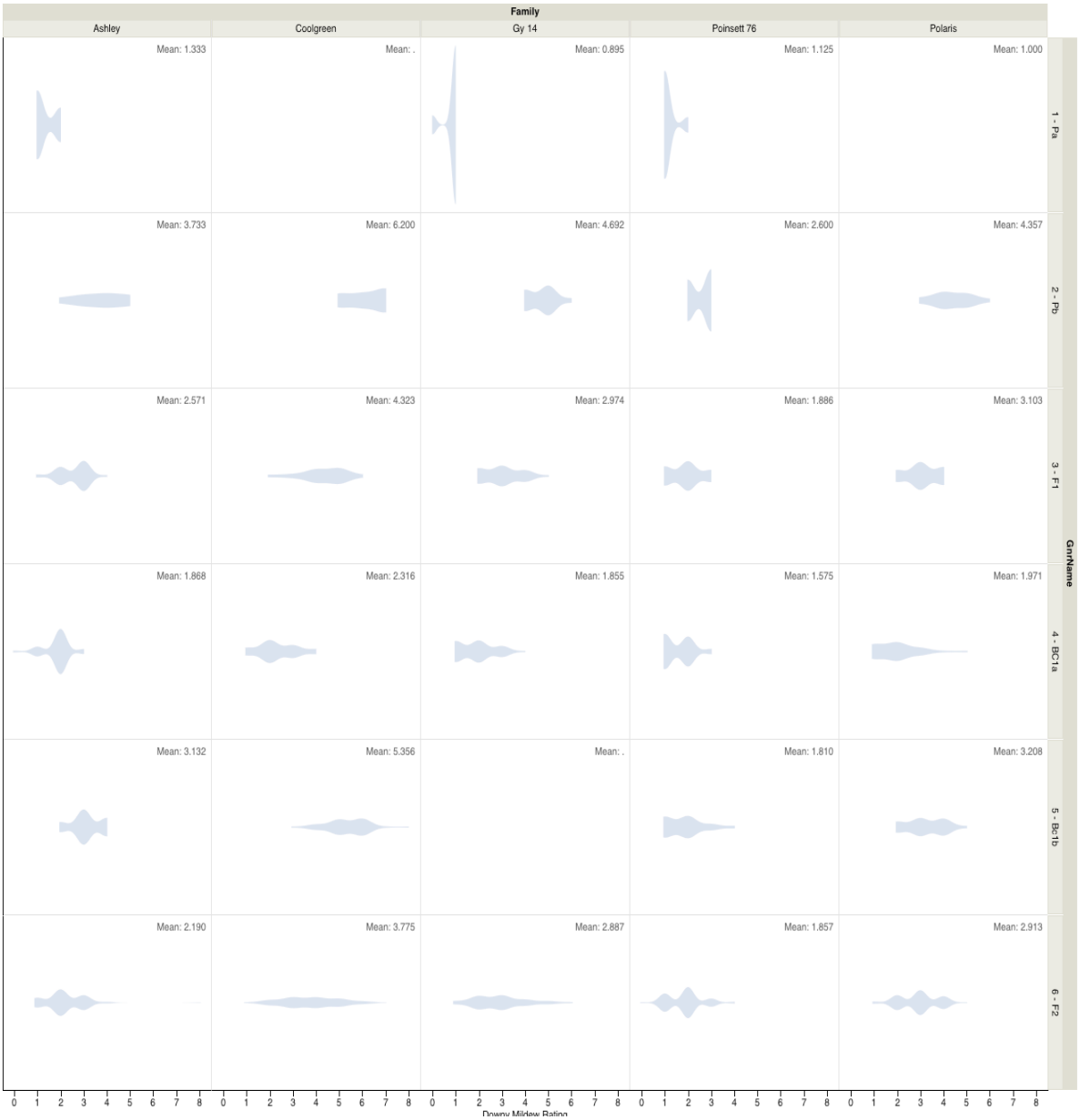


Figure 2.2. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2012. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a]

a Data are mean ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

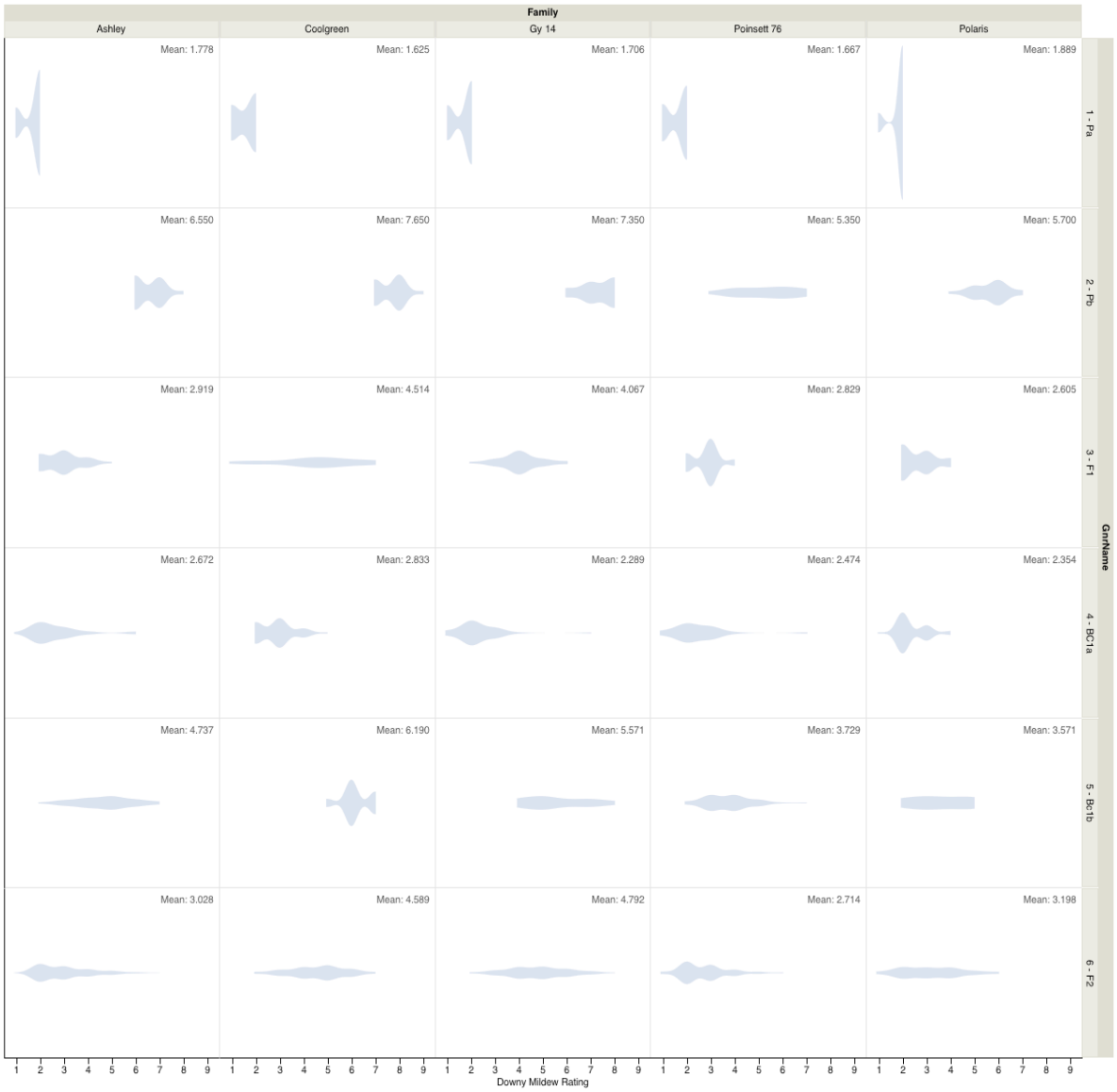


Figure 2.3. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2013. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a]

a Data are mean ratings from five Cucumis sativus families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

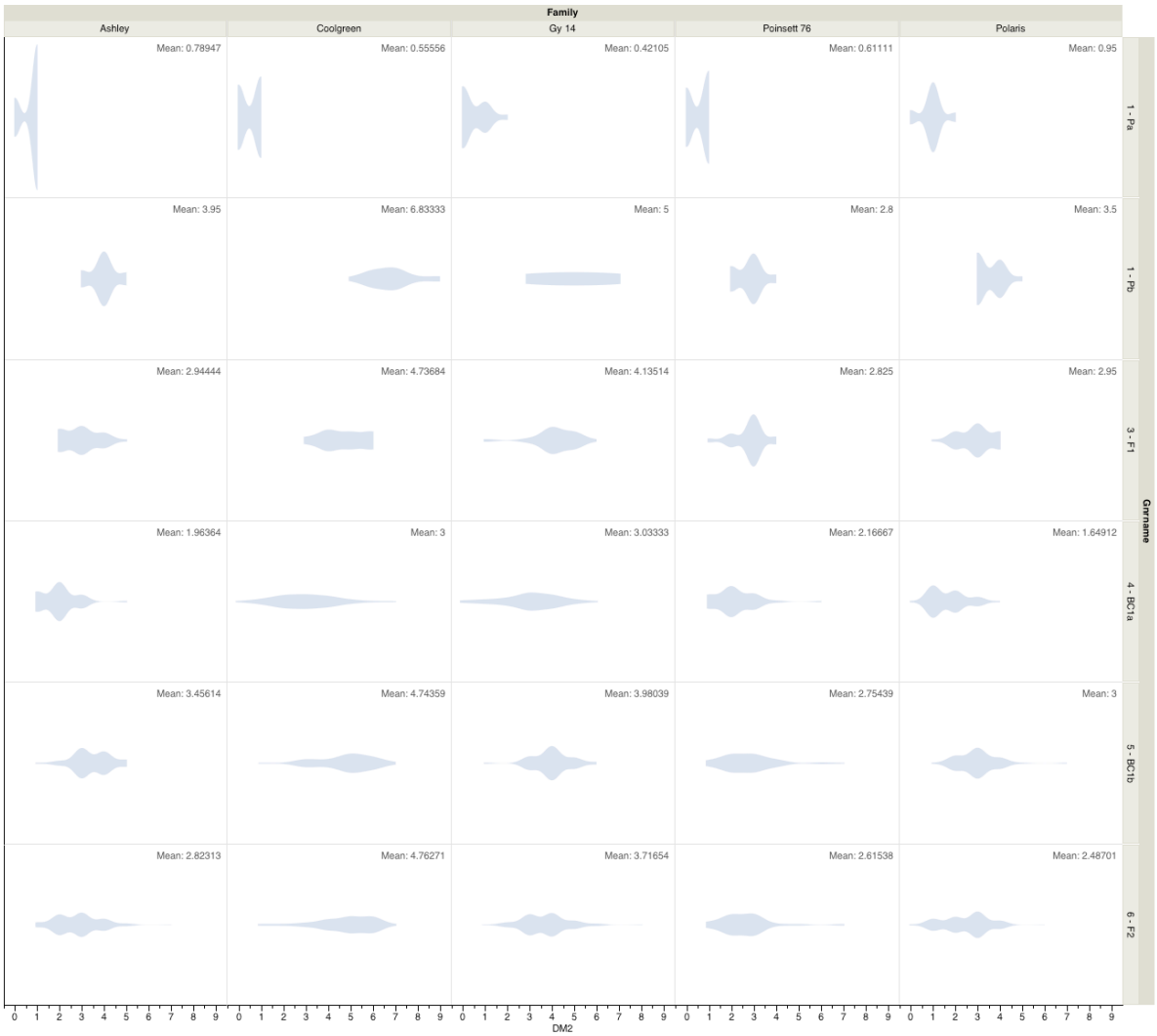


Figure 2.4. Contour distributions of ratings for six generations in five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) in 2014. Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a]

a Data are the second of three ratings from five Cucumis sativus families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

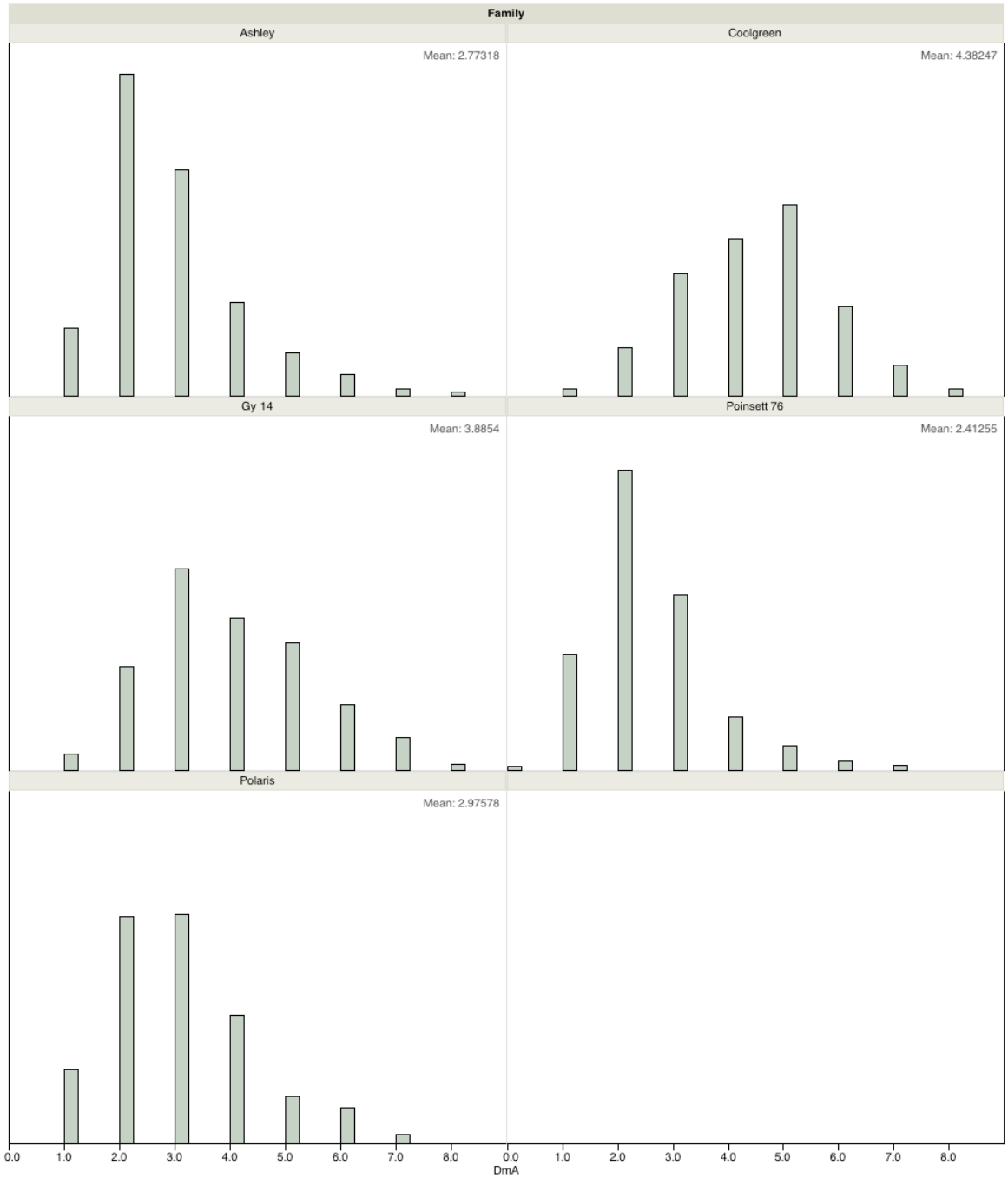


Figure 2.5. Histogram distributions of ratings of F_2 ratings for five families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) and years (2011 – 2014). [a]

a Data are mean ratings from five *Cucumis sativus* families developed from the cross of resistant PI 197088 by susceptible cultivars 'Coolgreen', 'Gy 14', 'Poinsett 76', 'Ashley', and 'Polaris'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

CHAPTER THREE:

INHERITANCE OF HIGH RESISTANCE TO DOWNY MILDEW IN THREE CUCUMBER PLANT INTRODUCTION ACCESSIONS

Kyle M. VandenLangenberg and Todd C. Wehner

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

This chapter is intended to be published in the journal Cucurbitaceae

Inheritance of High Resistance to Downy Mildew in Three Cucumber Plant Introduction Accessions

Kyle M. VandenLangenberg[1] and Todd C. Wehner[1]

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

Received for publication _____. Accepted for publication _____. The use of trade names in this publication does not imply endorsement by the North Carolina Agricultural Research Service of the products named, or criticism of similar ones not mentioned. Direct correspondence to Todd Wehner (Todd_Wehner@NCSU.Edu).

[1] Graduate research assistant and professor. The authors gratefully acknowledge the technical assistance of Tammy L. Ellington.

Additional index words: *Cucumis sativus, Pseudoperonospora cubensis*, Disease

ABSTRACT

Downy mildew of cucumber, caused by *Pseudoperonospora cubensis*, is an important disease of cucurbits. Recently, a germplasm screening of the USDA Plant Introduction (PI) collection of cucumber was completed and multiple sources of high resistance were identified. The objective of this study was to determine if the gene action controlling resistance in three of the most resistance line was non-allelic. Three families were developed using resistant parents PI 197088, PI 330628, and PI 605996 to make 6 generations for the study: P_1, P_2, F_1, F_2, BC_1P_1 and BCP_2. Families were tested at two locations, Clinton and Castle Hayne, North Carolina for two years. In general, our tests suggest that minor genetic variation may exist among the lines. We observed a large number of susceptible individuals in the segregating F_2 generation, suggesting genetic differences are probable. A single-locus goodness-of-fit test was performed on every family, location, and year combination. The results of four of twelve such tests suggest that there is a single-gene difference among the parents; however, no pattern in the data emerged. Estimates of environmental variance were often the same size as estimates of genetic variance, evidence that suggests observed differences may simply be due to environmental differences or experimental error. Furthermore, no F_2 progeny rated higher than either parent, suggesting that no improvement can be made upon the current level of resistance available. Regardless, the observation of a large number of susceptible individuals warrants further investigation. Multiple sources of resistance to the new downy mildew will provide plant breeders with additional genetic tools to combat disease and may result in more durable resistance.

INTRODUCTION

Cucumber (*Cucumis sativus* L.) is a major vegetable crop used in most countries around the world. They are cultivated throughout most temperate and tropical climates and are the fourth most widely grown vegetable crop behind tomato (*Lycopersicon esculentum* Mill.), cabbage (*Brassica oleracea* var. *capitata* L.), and onion (*Allium cepa* L.) (Tatlioglu, 1993). In 2013, the U.S. farm value of cucumber production was approximately $363.0 million, with approximately 3.59 x 10^8 kilograms produced for the fresh and pickling market (USDA, 2013). In North Carolina in 2012, the fresh and pickling cucumber market were valued at approximately $28.7 million (USDA, 2012).

Downy mildew of cucumber, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a devastating foliar disease of cucumber *(Cucumis sativus* L.) (Palti and Cohen, 1980). The disease was first described in Cuba in 1868 (Berkeley and Curtis, 1868). It was then reported in Russia in 1903 (Rostowzew, 1903) and Japan in 1927 (Kurosawa, 1927). The disease has been reported in over 80 countries on 20 different genera, including 50 species of the *Cucurbitaceae*, causing significant economic losses (Palti and Cohen, 1980; Lebeda, 1992; Lebeda and Widrlechner, 2003; and Olczak-Woltman *et al.*, 2011). A resurgence of the disease in 2004 was unexpected in the United States and resulted in an estimated yield loss of 40% (Colucci et al., 2006). Prior to 2004, it was possible to control epidemics of cucumber downy mildew by growing resistant cultivars. The new race(s) of *P. cubensis* continue to infect cucumber in most production areas in the United States and remain a major threat to cucumber production in warm humid regions around the world.

Development of new cultivars with high resistance remains an important object of many cucumber research and breeding programs. Most cucumber cultivars currently grown in the United States have some resistance, but not at the level seen prior to the appearance of the new race in 2004. A recent study of resistance of available cultivars concluded that although there are differences, none were highly resistant (Call *et al*., 2012a). Without high resistance, expensive fungicide programs have been necessary to achieve high yield and quality.

P. cubensis reproduces both sexually and asexually and is wind-dispersed over long distances, resulting in an extremely high evolutionary potential (McDonald and Linde, 2002). Due to the high evolutionary potential of downy mildew, along with the widespread use of fungicides to control the disease, it is likely that fungicide resistances will develop. Several studies published since the 2004 resurgence of cucumber downy mildew report that resistance to systemic fungicides has been observed (Colucci and Holmes, 2007; Hausbeck and Cortright, 2009; Lebeda and Urban, 2007; Mitani *et al.*, 2001; and Zhu *et al*., 2008). As fungicide resistances continue to emerge, growers will need new sources of cultivars with genetic resistance.

Downy mildew symptoms on susceptible cucumber cultivars and accessions (hereafter collectively referred to as cultigens) are characterized by the appearance of small, water-soaked lesions on the underside of leaves generally observed in the early morning. Adaxial lesions are often angular and bound by leaf veins, eventually turning chlorotic and necrotic. Heavy sporulation can be observed within the lesions on the abaxial leaf surface. In contrast, Barnes and Epps (1954) first described the hypersensitive response (HR) type

resistance in cucumber accession PI 197087, being controlled by a single resistance gene. Downy mildew lesions on PI 197087 were different from previously observed resistant cultivars. The lesions were described as irregularly shaped, brown, with a slight water-soaked appearance. There was no chlorosis, and lesions remained as small, brown spots. The leaf tissue died shortly after infection and there was little to no sporulation on the leaf undersides. Resistance from PI 197087 was used in the development of new cultivars, and the resistance in many current cultivars traces to PI 197087 (Wehner and Shetty, 1997). That resistance, which was sufficiently effective for growers to produce cucumbers in warm humid regions of the United States without fungicides for over 40 years, has since been overcome by a new race of the pathogen.

New sources of genetic resistance (reduced leaf damage) and tolerance (good yield under disease presence) to the new race(s) of downy mildew in the United States since 2004 were identified in a large germplasm screening study and a multiple year reevaluation of the most resistant and susceptible cultigens conducted at North Carolina State University (Criswell, 2008; Call et al., 2012b). Cultigens were identified that outperformed currently grown cultivars for disease resistance while maintaining acceptable yields, including PI 197088, PI 330628, and PI 605996. PI 197088 was collected from Assam, India in 1951 at the in the same location and on the same collection trip as PI 197087, the source of resistance that was overcome in 2004. PI 330628 was collected in 1968 from Pakistan. PI 605996 was collected in 1992 in Madhya Pradesh, India on the Indo-US *Cucumis* collection expedition. All three accessions tested as highly resistant to the new race of *P. cubensis* in the Southeast United States.

The inheritance of downy mildew resistance has been previously reported; however, the conclusions vary. Angelov (1994) reported that PI 197088 resistance to the European race(s) was due to two recessive genes, while resistance in 'Poinsett' is from one recessive gene. Resistance in 'Poinsett', 'Taipei', 'Natsufushinari', PI 179676, and PI 234517, which traces to PI 197087 was reported by Van Vliet and Meysing (1974, 1977) to be from at least one single recessive gene, *dm* (*dm-1*). Fanourakis and Simon (1987) agreed with Van Vliet and Meysing, confirming that a single recessive gene controls downy mildew resistance. In contrast, Shimizu *et al*. (1963) reported that three recessive genes (*dm-1, dm-2, dm-3)* controlled resistance in 'Aojihai'. McFerson (1978) also reported resistance was due to three recessive genes. Doruchowski and Łazokowska-Ryk (1992) reached the same conclusion using Wisconsin 2843 (resistance from PI 197087) – that resistance to downy mildew is under the control of three recessive genes. In contrast, Petrov *et al.* (2000) reported that the inheritance of resistance in J-13, a derivative of Wisconsin 2843 was unclear, suggesting that it may be due to one or two incompletely dominant genes.

In summary, there are several proposed inheritance patterns for resistance to downy mildew. Models range from single-gene inheritance to at least three genes with varying degrees of dominance or epistasis. Estimates of the number of genes may be conflicting due to a number of extraneous factors. Despite these incongruences, there are at least three known resistance sources to the varying downy mildew pathogen population: P.R. 40, PI 197087, and the newly identified sources, including PI 197088, PI 330628, and PI605996. No observable differences were detected in the level of resistance available in the new accessions (Criswell, 2008; Call et al., 2012b); however, due to their distinct geographical

collection locations it is possible that different alleles are responsible for the expression of high resistance to the new downy mildew.

The objective of this experiment was to assess the availability of multiple new resistance alleles to the new race(s) of downy mildew. Currently, several breeding programs are focusing on the introgression of the alleles found in the new sources of resistance. However, to our knowledge, no reports have attempted to characterize allelic differences that may exist between the resistant PI accessions. The availability of multiple sources of resistance, each possessing a different allele or set of alleles responsibility for the expression of resistance, would provide plant breeders with additional source material in their breeding programs.

MATERIALS AND METHODS

Plant Culture

All tests were conducted in the field at the Horticultural Crops Research Stations at Clinton and Castle Hayne, North Carolina. The soil type in Clinton was a mixture of Norfolk, Orangeburg, and Goldsboro loamy sand. At Castle Hayne, the soil type was a mixture of Pantego loam and Stallings fine sand. During the main growing season, the weather at both locations is sub-tropical. Humidity is persistent, and rainfall is frequent. Cucumbers were grown using recommended horticultural practices as summarized by Schultheis (1990). Each family was tested in 2013 and 2014 at both locations. The experiment had two sets, divided equally among the two locations, each set including all six generations (Pa, Pb, F_1, BC_1Pa, BC_1Pb, and F_2). Single plant hills were grown on raised beds covered in black plastic mulch, 1.2 m apart within the row, with 50 hills per row. Plots were hand seeded and thinned to a

single plant at true leaf stage. Irrigation was supplied as needed through drip tape at a rate of 25 to 40 mm per week. Generations were planted in the following order and number (no serpentine): (P_a(10), P_b(10), BC_1P_a(30), F_1(20), BC_1P_b(30), F_2(100)). Rows were spaced with centers 1.6 m apart. A spreader row planted with susceptible cultivar 'Coolgreen' was grown every 5th row to monitor and increase inoculum in the field. 'Coolgreen' was also used for side and end borders. In the field, no artificial inoculum was used. Plots were exposed to natural epidemics in the course of the growing season. Epidemics were encouraged using overhead irrigation at least 3 days a week. The study was planted at Castle Hayne, NC on 9 July 2013 and 19 June, 2014, and at Clinton, NC on 11 July 2013, and 16 June, 2014.

Plant Material

Three families developed from the crosses PI 197088 × PI 330628, PI 197088 × PI 605996, and PI 330628× PI 605996 were used in this experiment. For each family, we developed six generations in the greenhouses at North Carolina State University in Raleigh, North Carolina: Parent A (Pa), Parent B (Pb), F_1, Backcross to Parent A (BC_1Pa), Backcross to Parent B (BC_1Pb), and F_2. All three PI accessions are highly resistant to the new downy mildew.

Data Collection

Disease was evaluated weekly starting when symptoms appeared for a total of three ratings. Downy mildew was rated on a 0 to 9 scale based on percentage of symptomatic leaf area (0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)); as described by Jenkins and Wehner (1983). Our analysis will primarily use the third rating, though other ratings, including the mean over

three ratings are presented in certain tables or figures. We have chosen to use the third rating because the maximum range of disease observed in a particular field varies significantly depending on the year and location. By utilizing the third rating, we attempted to choose a rating for analysis that maximized the true difference observed, while minimizing effects of secondary diseases on the rating scale.

Statistical Analysis of Field Data

We performed segregation analysis and goodness-of-fit tests with the SAS-STAT statistical package (SAS Institute, Cary, NC) and the SASGene 1.2 program (Liu et al. 1997). All χ^2 tests were performed at the 95% confidence level. This experiment was designed to determine qualitative inheritance of resistance to downy mildew. Since there was strong evidence against the single gene hypothesis, we verified the distribution of the F_2 data for each family using the UNIVARIATE procedure of SAS-STAT and by plotting the disease ratings against their frequency, prior to analyzing resistance to downy mildew as a quantitative trait. Due to the experiments design, variance estimates for generations are obtained from different sample sizes.

We tested the F_2 data for homogeneity of variances using the Bartlett's method (Ostle and Malone 1988; Steel et al. 1997). When variances were homogeneous among tests within a family, we pooled the data for that family. We also analyzed the data for each family and test, to highlight differences among tests.

Phenotypic (P), environmental (E), genotypic (G), and additive (A) variances were estimated from generation variances as follows (Warner 1952; Wright 1968):

$$\sigma^2(P) = \sigma^2(F_2) \qquad \sigma^2(E) = \frac{\sigma^2(P_a) + \sigma^2(P_b) + \left[2 \times \sigma^2(F_1)\right]}{4}$$

$$\sigma^2(G) = \sigma^2(P) - \sigma^2(E) \qquad \sigma^2(A) = \left[2 \times \sigma^2(F_2)\right] - \left[\sigma^2(BC_1P_a) + \sigma^2(BC_1P_b)\right]$$

Phenotypic variance is estimated as the variance of the F_2 progeny. The means of the variances in non-segregating generations (P_a, P_b, and F_1) provides an estimate of environmental variance. Genotypic variance is the difference in the phenotypic variance and environmental variance. Additive variance is derived from the single-locus model (Warner, 1952) and estimated by subtracting the backcross (BC_1P_a, BC_1P_b) variances from twice the variance of the F_2 progeny.

RESULTS AND DISCUSSION

General Analysis

In general, the highest disease rating for downy mildew was observed on the final rating date (rating 3) (Table 3.1). The mean disease rating increased over time (ratings) for all environments (years x location) with the exception of Clinton in 2013. In this environment, the second rating date had a slightly higher overall rating than the third rating date (1.95 vs. 1.10). It is possible that the environmental conditions had become less favorable for the disease, and the plants temporarily began to recover.

Combination of data over locations

We tested the F_2 data for homogeneity of variances using Bartlett's method (Ostle and Malone 1988; Steel et al. 1997) (Table 3.2 and 3.3). Bartlett's test suggested that our data was not poolable by location for individual years, with few exceptions. However, the mean downy mildew rating for families PI 197088 x PI 330628 and PI 197088 x PI 605996 was poolable over both locations and years (Table 3.3). While a few ratings are poolable over years for several families, no discernable pattern in poolability was detected. Due to this, we performed all additional analysis on a year-by-year basis for consistency.

Distribution of Resistance

A majority (82%) of all individual plants were considered resistant, having a downy mildew rating of 3 or less on the final rating (third rating) (Table 3.4). Several plants in the F_1, F_2, and Bc_1P_1 generations (18% over all families, locations, and years) had a rating of 4 or 5, generally considered only moderately resistant. It is possible that the rating of these individuals was inflated due to increased leaf damage caused by other pathogens. No individuals were considered highly susceptible. In general, there were more disease symptoms from non-downy mildew pathogens in the field on the third rating date. Despite this caveat, the segregation in the F_2 generation suggests the possibility that different alleles control resistance among the parents.

Qualitative Inheritance

Traditionally, the analysis of the single-gene hypothesis requires the designation of a cutoff, a so-called "line in the sand", between two distinct phenotypic categories. The assignment of this cutoff is generally straightforward when the parents used to create an F_2

segregating population possess easily distinguished phenotypes, e.g. resistant by susceptible. In our experiment; however, all parents are highly resistant to downy mildew – significantly complicating this designation. In previous experiments, we have utilized the standard deviation of the resistant parent as a way to define this cutoff (VandenLangenberg, 2014). By adding two standard deviations to the mean value of the resistant parent we are able to capture the distribution of resistant phenotypes due to environmental variance and define a numerical value in which all ratings above that value are susceptible. In our experiment, the mean value of both resistant parents across all locations and years was 1.55 with a standard deviation of 0.68 (Table 3.5). Thus, a reasonable cutoff for the mean ratings between susceptible and resistant lines is 2.91 (Mean + 2*Standard Deviation). A mean rating higher than 2.91 is outside the reasonable realm of environmental variability, and is either due to an underlying genetic factor or experimental error, such as conflation of ratings with other diseases.

Nearly all individual plants rated in the parental generations were considered resistant on the third rating, with only a few exceptions (Table 3.6, 3.7, and 3.8, Figure 3.2). Similarly, no segregation for resistance versus susceptibility was observed in the F_1 generation, as nearly all plants were still considered resistant on the third rating date. Observing no difference in resistance in the F_1 generation compared to the parents is not particularly informative in this study. However, if different alleles are responsible for the high level of resistance among the parents, observing no change in the rating of the F_1 generation among these particular families suggests that resistance is likely due to dominant alleles in at least one parent.

No distinct pattern emerged in the single locus goodness-of-fit tests performed on each family by location and year (Table 3.6, 3.7, and 3.8). Within the segregating generations (F_2, Bc_1P_a, and Bc_1P_b) approximately half lacked fit to the single-gene hypothesis. Among these, large majorities were considered to lack fit to the single-gene model because a majority of individuals were classified as resistant. The single locus goodness-of-fit test uses a Chi-square test with an expected segregation ratio of 3:1 (resistant to susceptible) in the F_2 generation. Among the 12 distinct F_2 generations tested, eight were significantly different than the expected 3:1 ratio; however, among the 542 individual plants rated in these F_2 generations, only 61 individuals were considered susceptible on the third rating. It is possible that these 61 individuals were considered susceptible on the third rating due to the presence of other diseases. This data suggests that there is little evidence to support the hypothesis that different alleles control resistance to downy mildew among the PI accessions.

Interestingly, among generations that fit the single-gene hypothesis, there were a large number of individuals classified as susceptible. Within the segregating F_2 generations that fit the single-gene model, 69 of 267 tested individuals were considered susceptible on the third rating. However, no consistency in fit to the single-gene model within a particular family was observed over years and locations. It is possible that the classification of susceptible cultivars in these generations was due to various environmental factors, but no pattern in the data would suggest a particular environment was more prone to disease development than another.

A lack of fit to the single-gene model generally would suggest that the trait of interest is quantitatively inherited; however, a majority of the segregating generations that lack fit to

the single-gene model did so because of extremely low counts in the susceptible category. Despite the lack of evidence derived from the above-mentioned test to suggest quantitative inheritance, a large number of F_2 progeny in all families were considered susceptible using the cutoff of 2.91 (Table 3.6, 3.7, 3.8). Segregation beyond the cutoff assigned between the resistant and susceptible phenotypes in the F_2 generation suggests that there are genetic differences between the parents responsible for resistance to downy mildew. According to our single locus goodness-of-fit test, it is possible that a single gene difference exists between the PI accessions. However, the distributions of the F_2 data appear to be at least somewhat bell-shaped and close to the expected distribution of a quantitative trait (Figure 3.2). Since there was some evidence against the single-gene hypothesis, we analyzed resistance to downy mildew as a quantitative trait in an attempt to further explore any possible differences in resistant sources.

Quantitative Inheritance

Call *et al*., (2012b) reported that PI 197088, PI 330628, and PI 605996 were highly resistant to the current race of *P. cubensis* in the southeast United States. Originally, seeds of the PI accessions were obtained from the United States Department of Agriculture's National Plant Germplasm System (USDA NPGS). Due to time limitations, selfed sublines of parents were not field evaluated for segregation prior to use as a parent in each cross. It is therefore possible, and likely, that the parents used in the crosses were not fully homozygous at all loci. A heterozygous parental line would inflate the overall observed environmental variance and may account for a portion of the observed susceptible phenotypes. Some segregation for high resistance has been observed in other studies conducted at NCSU using multiple PI

197088 sources (NPGS, greenhouse S_1 sublines, and isolation block bulk increases) (data not shown). The observed segregation for high resistance suggests that the original source packet from the USDA NPGS was heterozygous for at least some loci affecting overall resistance to downy mildew. However, a similar variance in the F_1 generation in this study compared to the parents in all crosses indicates that this is unlikely in these families (Table 3.9). Regardless, we performed an additional analysis using only the parents to estimate environmental variance [$\sigma^2_E = (\sigma^2_{Pa}+\sigma^2_{Pb})/2$]. For reader information, this will be included in all relevant tables (Table 3.10). However, because the adjusted analysis may be inflating heritability estimates, discussion is based on the original analysis that uses the parents and F_1 to estimate environmental variance.

In general, the variance calculations of the six generations tested were consistent across locations within a given year (Table 3.9). Observed variances of the parental and F_1 generations in all families were relatively small and similar. This suggests that most parental lines were homozygous at most alleles affecting disease resistance. We expect the variance of the F_2 generation to be larger than that of the F_1 generation if different alleles control resistance among the parents. In our study, the variance of the F_2 generation was only larger than that of the F_1 in half of the tested environments. Furthermore, when it was larger, it often was no more than threes times the size of the F_1 variance. While this does not provide strong evidence in favor of the hypothesis that different alleles control resistance among the parents, the possibility remains that the larger variance observed in the F_2 generation is due to an underlying genetic factor.

Genetic variance was larger than environmental variance in only two family by year by location combinations: PI 197088 x PI 330628, Castle Hayne, 2014 and PI 330628 x PI 605996, Clinton, 2013 (Table 3.10). This was due to the relatively large environmental variance estimate compared to the overall variance of the F_2 generation (genetic variance). Using the modified environmental variance (Table 3.10), the genetic variance for downy mildew is larger than the modified environmental variance for only one additional combination: PI 197088 x PI 0605996, Castle Hayne, 2013. In cases where genetic variance was higher than environmental variance, the degree to which it was larger was generally small. In many cases, the value of genetic variance was negative, further adding to the evidence that resistance to downy mildew is not inherited as different alleles among the resistant PI accessions.

Additive genetic effects were estimated when possible, but a comparison with dominance effects was not possible due to the adopted experiment design. Dominance variance could be indirectly estimated by subtraction of the additive variance from the genetic variance, but this estimate would not be precise, and in many cases would result in negative estimates of dominance. Negative estimates for additive variance were found for many families, and could not be estimated for PI 197088 x PI 330628 (Table 3.10). The Bc_1P_1 generation did not successfully germinate in any year and location combination. Without an estimate of this variance the additive variance cannot be calculated. The negative estimates are a result of similar variances in the backcross generations and F_2 generation, possibly providing further evidence against the hypothesis that different genes control resistance among the parents. Due to the general lack of reliability in the variance estimates,

heritability estimates should likely be ignored, though they are presented for reader information (Table 3.10). Taken together, these results indicate that resistance among the parental lines is not under the control of multiple genetic factors, and should not be regarded as a quantitative trait.

CONCLUSIONS

Our study indicates that downy mildew resistance among the highly resistant cucumber accessions PI 197088, PI 330628, and PI 605996 should not be regarded as a quantitative trait. There is no general consensus within our analysis to suggest that genetic differences exist among the resistant lines. Furthermore, no segregating individual rated higher than either parent. This suggests no gain in disease resistance beyond the value of either parent can be made. However, the observation of susceptible phenotypes, even in only a few tested environments (year by location combinations), suggests that some genetic differences may exist among the parents that govern either resistance or apparent resistance to downy mildew. It is possible that one of these parents used in the original crosses were segregating for resistance, leading to the observance of susceptible phenotypes in the F_2 generation. Regardless, a large number of individual plants in the segregating generations were considered susceptible on the third rating date and resulted in several single locus goodness-of-fit tests to conclude that a single gene differed between the parental lines. These results should be used cautiously until further research can be conducted to rogue out possible sources of experimental error that may ultimately be responsible for these results.

Several generations of selfing and field-testing should be performed on any parents used as a resistance source to remove plants that appear to be heterozygotes. Upon confirmation of complete homozygosity, the generations used in this study should be re-created with confirmed parents and retested in the field to confirm or deny our results. Additionally, greenhouse testing could be used to reduce the presence of symptom conflation with other diseases while simultaneously reducing environmental variance. If these new results confirm the presence of non-allelic resistance among the highly resistant accessions, plant breeders will have an additional source of resistance material to use while creating elite cultivars with a high degree of downy mildew resistance. The availability of multiple sources of resistance that are genetically distinct could be pyramided into elite cultivars and may result in increased durability of resistance to downy mildew.

REFERENCES

Angelov, D. 1994. Inheritance of resistance to downy mildew, *Pseudoperonospora cubensis* (Berk. & Curt.) Rostow. Rep. 2nd Natl. Symp. Plant Immunity. (Plovdiv) 3:99–105.

Bains, S.S. and N.K. Sharma. 1986. Differential response of certain cucurbits to isolates of *Pseudoperonospora cubensis* and characteristics of identified races. Phytophylactica. 18:31-33.

Barnes, W.C. and W.M Epps. 1954. An unreported type of resistance to cucumber downy mildew. Plant Dis. Rptr. 38:620.

Berkeley, M.S. and A. Curtis. 1868. *Peronospora cubensis*. J. Linn. Soc. Bot. 10:363.

Call, A.D., A.D. Criswell, T.C. Wehner, K. Ando and R. Grumet. 2012a. Resistance of cucumber cultivars to a new strain of cucurbit downy mildew. HortScience. 47(2):171–178.

Call, A.D., A. D. Criswell, T.C. Wehner, U. Klosinska and E.U. Kozik. 2012b. Screening cucumber for resistance to downy mildew caused by *Pseudoperonospora cubensis* (Berk. and Curt.) Rostov. Crop Sci. 52: 577-592.

Cohen, Y. and Y. Samoucha. 1984. Cross-resistance to four systemic fungicides in metalaxyl-resistant strains of *Phytophthora infestans* and *Pseudoperonospora cubensis*. Plant Dis. 68(2): 137-139.

Cohen, Y., A.E. Rubin and M. Galperin. 2011. Formation and infectivity of oospores of *Pseudoperonospora cubensis*, the causal agent of downy mildew in cucurbits. Plant Dis. 95(7): 874.

Colucci S.J., T.C. Wehner and G.J. Holmes. 2006. The downy mildew epidemic of 2004 and 2005 in the eastern United States. Pages 403-411 in: Proceedings of The Cucurbitaceae 2006, G.J. Holmes ed., Asheville, NC, USA

Criswell, A.D. 2008. Screening for downy mildew resistance in cucumber. M. S. Thesis, North Carolina State Univ., Raleigh.

Doruchowski RW, Łazokowska-Ryk E. 1992. Inheritance of resistance to downy mildew (*Pseudoperonospora cubensis* Berk & Curt) in *Cucumis sativus*. In: Doruchowski RW. (ed) Proceedings of the V Eucarpia Cucurbitaceae Symposium. Poland, Skierniewice-Warszawa, pp 132–138.

Dudley, J.W. and R.H. Moll. 1969. Interpretation and use of estimates of heritability and genetic variances in plant breeding. Crop Science 9:257-262.

Eshet, Y. and A. Dinur. 1970. Controlling cucumber mildew with systemic fungicides. Hassadeh. 51(1): 108-111.

Fanourakis, N. E. and Simon, P. W. 1987. Analysis of genetic linkage in the cucumber. Journal of Heredity. 78:238-242.

Hallauer A.R. and J.B. Miranda. 1988. Quantitative genetics in maize breeding. II ed. Iowa State University Press, Ames, Iowa.

Kurosawa, E. 1927. Studies on *Plasmopora cubensis*. J. Nat. Hist. Soc. Formosa 17:1-18. (in Japanese).

Lande, R. 1981. The minimum number of genes contributing to quantitative variation between and within populations. Genetics 99:541-553.

Lebeda, A. 1992.Screening of wild Cucumis species against downy mildew (*Pseudoperonospora cubensis*) isolates from cucumbers. Phytoparasitica 20(3):203-210.

Lebeda, A. and M.P. Widrlechner. 2003. A set of *Cucurbitaceae* taxa for differentiation of Pseudoperonospora cubensis pathotypes. J. of Plant Dis. and Prot. 110: 337-349.

Liu, J.S., T.C. Wehner and S.B. Donaghy. 1997. SASGENE: a SAS computer program for genetic analysis of gene segregation and linkage. Journal of Heredity 88:253-254.

Mather, K. and J.L. Jinks. 1982. Biometrical genetics. The study of continuous variation. 3rd ed. Chapman and Hall, London, NY.

McFerson JR. 1978. A screening procedure for determining levels of resistance in cucumber. USA, Texas A&M University, MSc thesis.

Olczak-Woltman H, Marcinkowska J, Niemirowicz-Szczytt K. 2011. The genetic basis of resistance to downy mildew in Cucumis spp.–latest developments and prospects. J Appl Genet 52:249–255.

Ostle, B. and L.C. Malone. 1988. Statistics in research. IV ed. Iowa State University Press, Ames, Iowa.

Palti, J. and Y. Cohen. 1980. Downy mildew of cucurbits (*Pseudoperonospora cubensis*). The fungus and its hosts, distribution, epidemiology and control. Phytoparasitica 8:109-147.

Pappas, A.C. 1981. Effectiveness of metalaxyl and phosetyl-Al against *Pseudoperonospora cubensis* (Berk. & Curt.) Rostow isolates from cucumbers. Proc. of the Fifth Congr. of the Mediterranean Phytopathol. Union, Patras, Greece: 146-148.

Pappas, A.C. 1982. Metalaxyl resistance and control of cucumber downy mildew with oomycete-fungicides. Annales - Benakeion Phytopathologikon Institouton. 13(2): 194-212.

Petrov, L., Boodert, K., Sheck, L., Baider, A., Rubin, E., Cohen, Y., Datzir, N. and Paris, H. S. 2000. Resistance to downy mildew, *Pseudoperonospora cubensis*, in cucumbers. Acta Horticulturae. 510:203-209.

Robinson, H.F., R.E. Comstock and P.H. Harvey. 1955. Genetic variances in open pollinated varieties of corn. Genetics 40:45-60.

Rostowzew, S. J. 1903. Beitraege zur Kenntnis der Perono- sporeen. Flora (Jena), 92.

SAS Institute Inc. 2013. SAS® 9.4 Guide to Software Updates. Cary, NC: SAS Institute Inc.

Shimizu, S., Kanazawa, K., Kato, A., Yokota, Y., and Koyama, T. 1963. Studies on the breeding of cucumber for the resistance to downy mildew and other fruit characters. Engei Shikenjo ho koku. (in Japanese) 2:65-81.

Steel, R.G.D., J.H. Torrie and D.A. Dickey. 1997. Principles and procedures of statistics: a biometrical approach. III ed. WCB/McGraw-Hill, Boston, Massachusetts.

Tatlioglu, T. 1993. Cucumbers. In: Kalloo, G. and Bergh, B.O. ed. Genetic improvement of vegetable crops. Pergamon Press, New South Wales, Australia.

USDA, National Agricultural Statistics Service. 2012. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

USDA, National Agricultural Statistics Service. 2013. Cucumbers: National Statistics. 9 September 2014. <http://www.nass.usda.gov/>.

Van Vliet GJA, Meysing WD. 1974. Inheritance of resistance to *Pseudoperonospora cubensis* Rost. in cucumber (Cucumis sativus L.). Euphytica 23:251–255.

Van Vliet, G. J. A. and Meysing W. D. 1977. Relation in the inheritance of resistance to *Pseudoperonospora cubensis* Rost and *Sphaerotheca fuliginea* Poll. in cucumber (*Cucumis sativus* L.). Euphytica 26:793-796.

Warner, J.N. 1952. A method for estimating heritability. Agronomy Journal 44:427-430.

Wehner, T.C. and N.V. Shetty. 1997. Downy mildew resistance of the cucumber germplasm collection in North Carolina field tests. Crop Sci. 37:1331-1340.Wehner TC and Shetty NV, 2000. Screening the cucumber germplasm collection for resistance to gummy stem blight in North Carolina field tests. HortScience 35:1132-1140.

Wright, S. 1968. The genetics of quantitative variability. In: S. Wright, ed. Evolution and genetics of populations, Vol. 1, 2nd ed. University of Chicago Press, Chicago, Il: 373-420.

Zhu, S., Liu, P., Liu, X., Li, J., Yuan, S. and Si, N. 2008. Assessing the risk of resistance in *Pseudoperonospora cubensis* to the fungicide flumorph in vitro. *Pest Manag. Sci.* 64, 255–261.

Table 3.1. Mean of F_2 plants by year and location within year for all ratings [a].

	Downy Mildew Rating			
Year, Loc	Rating 1	Rating 2	Rating 3	Rating Mean
2013	1.58	1.88	1.79	1.75
Clinton	1.46	1.95	1.10	1.51
C. Hayne	1.66	1.84	2.23	1.90
2014	1.14	1.37	1.58	1.35
Clinton	0.99	1.24	1.62	1.28
C. Hayne	1.31	1.51	1.54	1.43
Mean	1.37	1.64	1.68	1.55

a Data are the mean of three ratings from *Cucumis sativus* families: PI 197088 by PI 330628, PI 197088 x PI 605996, and PI 330628 by PI 605996. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

Table 3.2. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among location by year (2013, 2014).

	2013 - Poolability of Families over Locations (CI & CH)							
	Rating 1		**Rating 2**		**Rating 3**		**Rating Mean**	
Family	**Chi-sq**	**P-value**	**Chi-sq**	**P-value**	**Chi-sq**	**P-value**	**Chi-sq**	**P-value**
PI 197088 x PI 330628	1.42	0.23	0.48	0.49	66.70	<0.01	11.14	0.00
PI 197088 x PI 605996	36.78	<0.01	11.10	0.00	95.11	<0.01	1.72	0.19
PI 330628 x PI 605996	39.32	<0.01	13.20	0.00	5.95	0.01	5.30	0.02

	2012 - Poolability of Families over Locations (CI & CH)							
	Rating 1		**Rating 2**		**Rating 3**		**Rating Mean**	
Family	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
PI 197088 x PI 330628	1.42	0.23	0.48	0.49	66.70	<0.01	11.14	0.00
PI 197088 x PI 605996	36.78	<0.01	11.10	0.00	95.11	<0.01	1.72	0.19
PI 330628 x PI 605996	39.32	<0.01	13.20	0.00	5.95	0.01	5.30	0.02

*A p-value > 0.05 suggests data are poolable over locations.
**Highlighted p-values are poolable.

Table 3.3. Chi-squares and P-values from Bartlett's Homogeneity of Variances test for validity in pooling data among years and location (Clinton, NC and Castle Hayne, NC).

Clinton - Poolability of Families over Years (2013 & 2014)

		Rating 1		Rating 2		Rating 3		Rating Mean	
Family	**Name**	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value	Chi-sq	P-value
1	088x628	2.30	0.51	13.05	<0.01	69.96	<0.01	25.37	<0.01
2	088x996	38.43	<0.01	19.14	<0.01	96.91	<0.01	4.45	0.22
3	628x996	62.22	<0.01	15.55	<0.01	8.13	0.04	7.95	0.05

*A p-value > 0.05 suggests data are poolable over locations.
**Highlighted p-values are poolable.

Table 3.4. Frequency distribution and disease severity index (DSI) of downy mildew disease ratings for three resistant families in 2013 & 2014 pooled across locations (Clinton & Castle Hayne, NC)[a].

Generation	No. of plants	No. of plants in classes 0	1	2	3	4	5	6	7	8	9	DSI
197088 x 330628 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	14		4	8	2							1.6
P2	16		12	2	2							1.4
F1	33		11	17	4		1					1.9
F2	127		71	32	19	4	1					1.7
Bc1P1	0											
Bc1P2	31	3	14	9	5							1.5
197088 x 605996 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	13		2	8	3							2.1
P2	19		10	3	6							1.8
F1	31		22	7	2							1.4
F2	162		101	30	27	4						1.6
Bc1P1	48		28	15	5							1.5
Bc1P2	43		16	18	9							1.8
330628 x 605996 – Pooled: Clinton and Castle Hayne, NC 2013												
P1	17		17									1.0
P2	20		10	2	5	3						2.1
F1	39		26	2	4	7						1.8
F2	164		68	39	37	17	3					2.1
Bc1P1	54		41	9	4							1.3
Bc1P2	58		33	16	9							1.6
197088 x 330628 – Pooled: Clinton and Castle Hayne, NC 2014												
P1	10	1	4	5								1.4
P2	14	2	9	3								1.1
F1	26	3	17	5	1							1.1
F2	108	6	59	25	16	2						1.5
Bc1P1	2	2										1.0
Bc1P2	0											
197088 x 605996 – Pooled: Clinton and Castle Hayne, NC 2014												
P1	11	3	3	3	2							2.4
P2	18		6	5	7							2.0
F1	33		13	7	10	2	1					2.1
F2	167	3	88	52	22	2						1.6
Bc1P1	56		21	16	15	4						2.0
Bc1P2	58	1	28	19	10							1.7
330628 x 605996 – Pooled: Clinton and Castle Hayne, NC 2014												
P1	20	2	17	1								0.9
P2	17		9	6	2							1.6
F1	35	1	13	17	4							1.7
F2	169	0	87	58	22							1.6
Bc1P1	57	1	36	17	2	1						1.4
Bc1P2	58		33	17	8							1.6
Summary Stats												
Sum	1748	28	929	473	264	46	6	0	0	0	0	
% Total	1.00	0.	0.53	0.27	0.15	0.03	0.00	0.0	0.	0.	0	

a Data are from the third of three ratings pooled over locations for three *Cucumis sativus* families developed from the crosses of resistant lines PI 197088 x PI 330638, PI 197088 x PI 605996, and PI 330628 x 605996.

Table 3.5. Mean of all parents by year and location within year for all ratings plus standard deviations [a].

	Downy Mildew Rating			
Year, Loc	Rating 1	Rating 2	Rating 3	Rating Mean
2013	1.44±0.93	1.75±0.73	1.69±0.88	1.63±0.62
Clinton	1.04±0.98	1.86±0.85	1.18±0.49	1.36±0.52
C. Hayne	1.78±0.74	1.65±0.62	2.11±0.9	1.84±0.62
2014	1.43±1.03	1.54±1.06	1.54±0.88	1.49±0.80
Clinton	1.47±1.18	1.67±1.21	1.70±0.91	1.61±0.91
C. Hayne	1.39±0.82	1.39±0.86	1.38±0.82	1.37±0.68
Mean	1.42±0.93	1.64±0.89	1.59±0.78	1.55±0.68

a Data are the mean and standard deviation of three ratings from *Cucumis sativus* families: PI 197088 by PI 330628, PI 197088 x PI 605996, and PI 330628 by PI 605996. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

Table 3.6. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2013, 2014) for cross PI 197088 x PI 330628[a].

Family: PI 197088 x PI 330628

Clinton, NC							Castle Hayne, NC						
	Res	Sus	Exp	X^2	df	*P*		Res	Sus	Exp	X^2	df	*P*
2013[a]							**2013**[a]						
P_a	6	2					P_a	6	0				
P_b	7	0					P_b	10	0				
F1	10	3					F1	19	1				
F2	39	0	3:1	13.0	1	<0.01*	F2	86	3	3:1	22.21	1	<0.01*
BC_1P_a	.	.	.	.	.		BC_1P_a	.	.	.	.	.	.
BC_1P_b	9	0	1:0	0.00	1	1.00	BC_1P_b	22	0	1:0	0.00	1	1.00
2014[a]							**2014**[a]						
P_a	5	0					P_a	5	0				
P_b	4	0					P_b	10	0				
F1	14	0					F1	11	1				
F2	45	5	3:1	6.00	1	0.014*	F2	45	13	3:1	0.21	1	0.64
BC_1P_a	2	0	1:1	2.00	1	0.15	BC_1P_a	.	.	.	.	.	.
BC_1P_b	.	.	.	.	.	.	BC_1P_b	.	.	.	.	.	.

[a]Trait used to estimate single locus probability: DM Rating 3.

Table 3.7. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2013, 2014) for cross PI 197088 x PI 605996[a].

Family: PI 197088 x PI 605996

	Clinton, NC							Castle Hayne, NC					
	Res	Sus	Exp	X^2	df	*P*		Res	Sus	Exp	X^2	df	*P*
2013[a]							**2013**[a]						
P_a	4	0					P_a	6	3				
P_b	9	0					P_b	9	1				
F1	13	0					F1	18	0				
F2	66	1	3:1	19.75	1	<0.01*	F2	94	2	3:1	26.89	1	<0.01*
BC_1P_a	22	0	1:1	22.00	1	<0.01*	BC_1P_a	26	0	1:1	26.00	1	<0.01*
BC_1P_b	14	1	1:0	0.07	1	0.79	BC_1P_b	27	1	1:0	0.04	1	0.85
2014[a]							**2014**[a]						
P_a	3	3					P_a	3	2				
P_b	4	4					P_b	7	3				
F1	11	7					F1	9	6				
F2	64	13	3:1	2.71	1	0.09	F2	79	11	3:1	7.84	1	<0.01*
BC_1P_a	16	13	1:1	0.31	1	0.57	BC_1P_a	21	6	1:1	8.33	1	<0.01*
BC_1P_b	23	7	1:0	1.63	1	0.20	BC_1P_b	25	3	1:0	0.32	1	0.57

[a]Trait used to estimate single locus probability: DM Rating 3.

Table 3.8. Single locus goodness-of-fit test of resistance to downy mildew at Clinton and Castle Hayne, NC (2013, 2014) for cross PI 330628[a] x PI 605996[a].

Family: PI 330628 x PI 605996

	Clinton, NC							Castle Hayne, NC					
	Res	Sus	Exp	X^2	df	P		Res	Sus	Exp	X^2	df	P
2013[a]							**2013**[a]						
P_a	7	0					P_a	10	0				
P_b	10	0					P_b	8	2				
F1	20	0					F1	19	0				
F2	65	6	3:1	10.37	1	<0.01*	F2	79	17	3:1	2.72	1	0.09
BC_1P_a	27	0	1:1	27.00	1	<0.01*	BC_1P_a	27	0	1:1	27.00	1	<0.01*
BC_1P_b	26	3	1:0	0.31	1	0.57	BC_1P_b	28	1	1:0	0.03	1	0.85
2014[a]							**2014**[a]						
P_a	10	0					P_a	10	0				
P_b	8	2					P_b	7	0				
F1	16	4					F1	15	0				
F2	79	16	3:1	3.37	1	0.06	F2	68	6	3:1	11.26	1	<0.01*
BC_1P_a	26	3	1:1	18.24	1	<0.01*	BC_1P_a	28	0	1:1	28.00	1	<0.01*
BC_1P_b	24	6	1:0	1.20	1	0.27	BC_1P_b	26	2	1:0	0.14	1	0.70

[a]Trait used to estimate single locus probability: DM Rating 3.

Table 3.9. Phenotypic variances by generation for the three cucumber families screened for resistance to downy mildew (2013, 2014)[a].

Pedigree, Location, Year	$\sigma^2(P_a)$	$\sigma^2(P_b)$	$\sigma^2(F_1)$	$\sigma^2(F_2)$	$\sigma^2(BC_1P_a)$	$\sigma^2(BC_1P_b)$
PI 197088 x PI 330628						
Clinton 2013	0.79	0.00	0.73	0.05	.	0.25
Castle Hayne 2013	0.00	0.75	0.74	0.89	.	0.60
Clinton 2014	0.80	0.92	0.44	0.62	0.00	.
Castle Hayne 2014	0.30	0.22	0.52	0.92	.	.
PI 197088 x PI 605996						
Clinton 2013	0.33	0.00	0.00	0.06	0.00	0.27
Castle Hayne 2013	0.25	0.50	0.49	0.82	0.44	0.32
Clinton 2014	1.10	0.79	1.23	0.63	1.14	0.65
Castle Hayne 2014	1.70	0.77	1.31	0.61	0.64	0.56
PI 330628 x PI 605996						
Clinton 2013	0.00	0.00	0.00	0.45	0.00	0.38
Castle Hayne 2013	0.00	0.54	1.69	0.78	0.55	0.46
Clinton 2014	0.10	0.68	0.66	0.56	0.60	0.63
Castle Hayne 2014	0.18	0.29	0.27	0.47	0.23	0.40

a Data are the mean of all downy mildew ratings from three *Cucumis sativus* families developed from the cross of resistant parents PI 197088, PI 330628, and PI 605996. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (0 = 0%, 1 = 1-3%, 2= 3-6%, 3 = 6-12%, 4 = 12-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75-87%, 8 = 87-99%, 9 = 100%)

Table 3.10. Variance and heritability estimates, including modified environmental variance and modified broad-sense heritability estimates, for the three cucumber families screened for resistance to downy mildew at Clinton and Castle Hayne, North Carolina (2013, 2014)[a].

Pedigree, Location, Year	$\sigma^2(P)$[b]	$\sigma^2(E)$[c]	Modified $\sigma^2(E)$[d]	$\sigma^2(G)$[e]	$\sigma^2(A)$[f]	H^2[g]	Modified H^2[h]	h^2[i]
PI 197088 x PI 330628								
Clinton 2013	0.05	0.56	0.39	--[j]	.	--[j]	--[j]	.
Castle Hayne 2013	0.89	0.56	0.38	0.34	.	0.38	0.58	.
Clinton 2014	0.62	0.65	0.86	--[j]	.	--[j]	--[j]	.
Castle Hayne 2014	0.92	0.39	0.26	0.53	.	0.58	0.72	.
PI 197088 x PI 605996								
Clinton 2013	0.06	0.08	0.17	--[j]	--[j]	--[j]	--[j]	--[j]
Castle Hayne 2013	0.82	0.43	0.38	0.39	0.88	0.47	0.54	1.07
Clinton 2014	0.63	1.09	0.94	--[j]	--[j]	--[j]	--[j]	--[j]
Castle Hayne 2014	0.61	1.27	1.23	--[j]	0.02	--[j]	--[j]	0.03
PI 330628 x PI 605996								
Clinton 2013	0.45	0.00	0.00	0.45	0.51	1.00	1.00	1.14
Castle Hayne 2013	0.78	0.98	0.27	--[j]	0.55	--[j]	0.65	0.70
Clinton 2014	0.56	0.52	0.39	0.04	--[j]	0.07	0.31	--[j]
Castle Hayne 2014	0.47	0.25	0.23	0.22	0.32	0.47	0.51	0.67

a Data are the third rating of all downy mildew ratings from three *Cucumis sativus* families developed from the cross of resistant parents PI 197088, PI 330628, and PI 605996. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

b $\sigma^2(P)$ = phenotypic variance = $\sigma^2_{F_2}$

c $\sigma^2(E)$ = environmental variance = $\dfrac{\sigma^2(P_a)+\sigma^2(P_b)+\left[2\times\sigma^2(F_1)\right]}{4}$

d Modified $\sigma^2(E)$ = environmental variance = $\left(\sigma^2_{Pa}+\sigma^2_{Pb}\right)/2$

e $\sigma^2(G)$ = genetic variance = $\sigma^2_P-\sigma^2_E$

f $\sigma^2(A)$ = additive variance = $\left[2\times\sigma^2_{F2}\right]-\left[\sigma^2_{Bc_1P_a}+\sigma^2_{Bc_1P_b}\right]$

g H^2 = broad-sense heritability = σ^2_G/σ^2_P

h Modified H^2 = modified broad-sense heritability = σ^2_G/σ^2_P

i h^2 = narrow-sense heritability = σ^2_A/σ^2_P

j Negative estimate from a negative estimate of additive variance

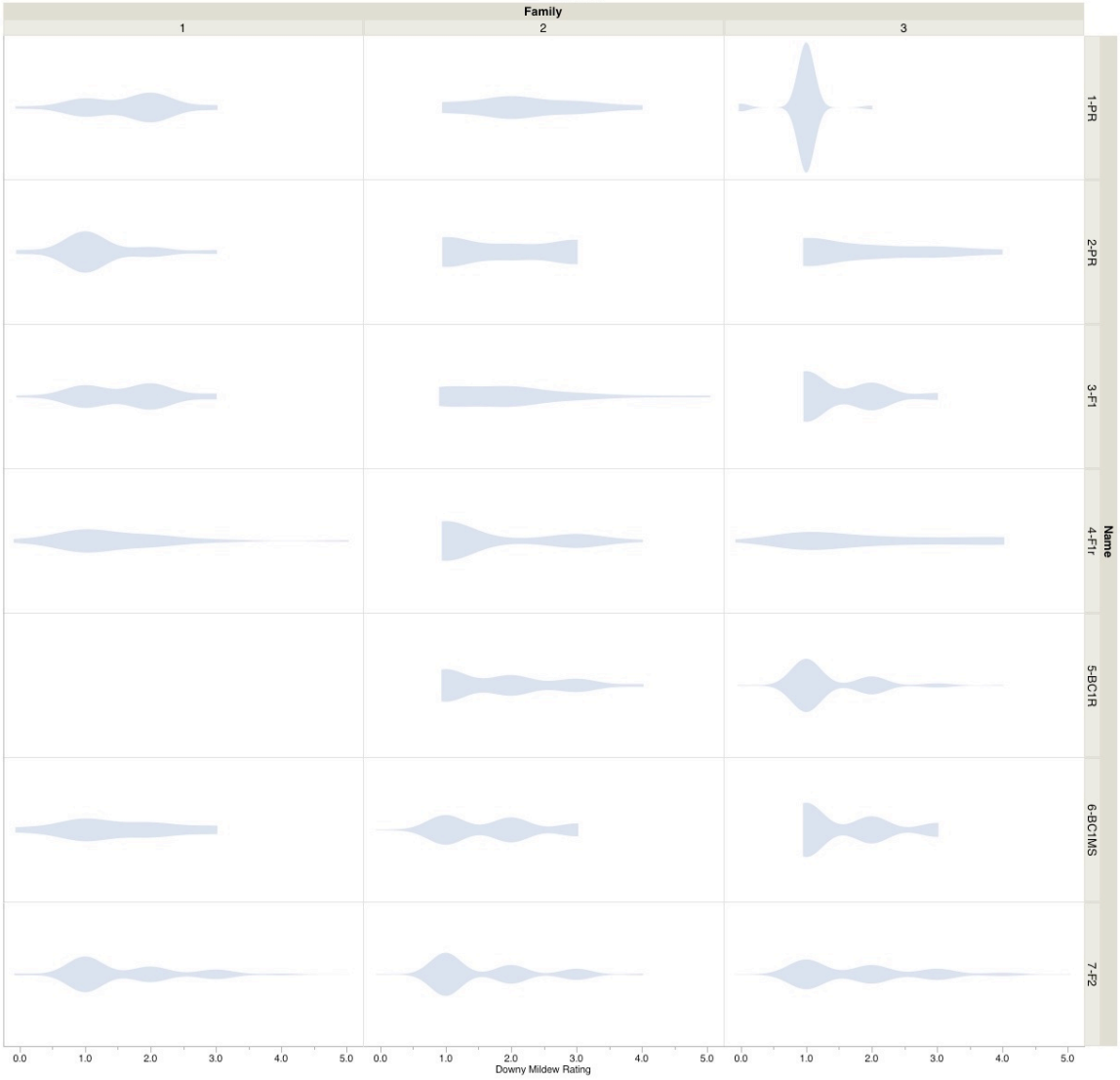


Figure 3.1. Contour distributions of ratings for six generations in three families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) and year (2013, 2014) Wide areas along the contour plot correlate with more individual plants receiving the corresponding rating. [a] .

a Data are the third ratings from three *Cucumis sativus* families developed from the crosses of resistant parents PI 197088, PI 330628, and PI 605996. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

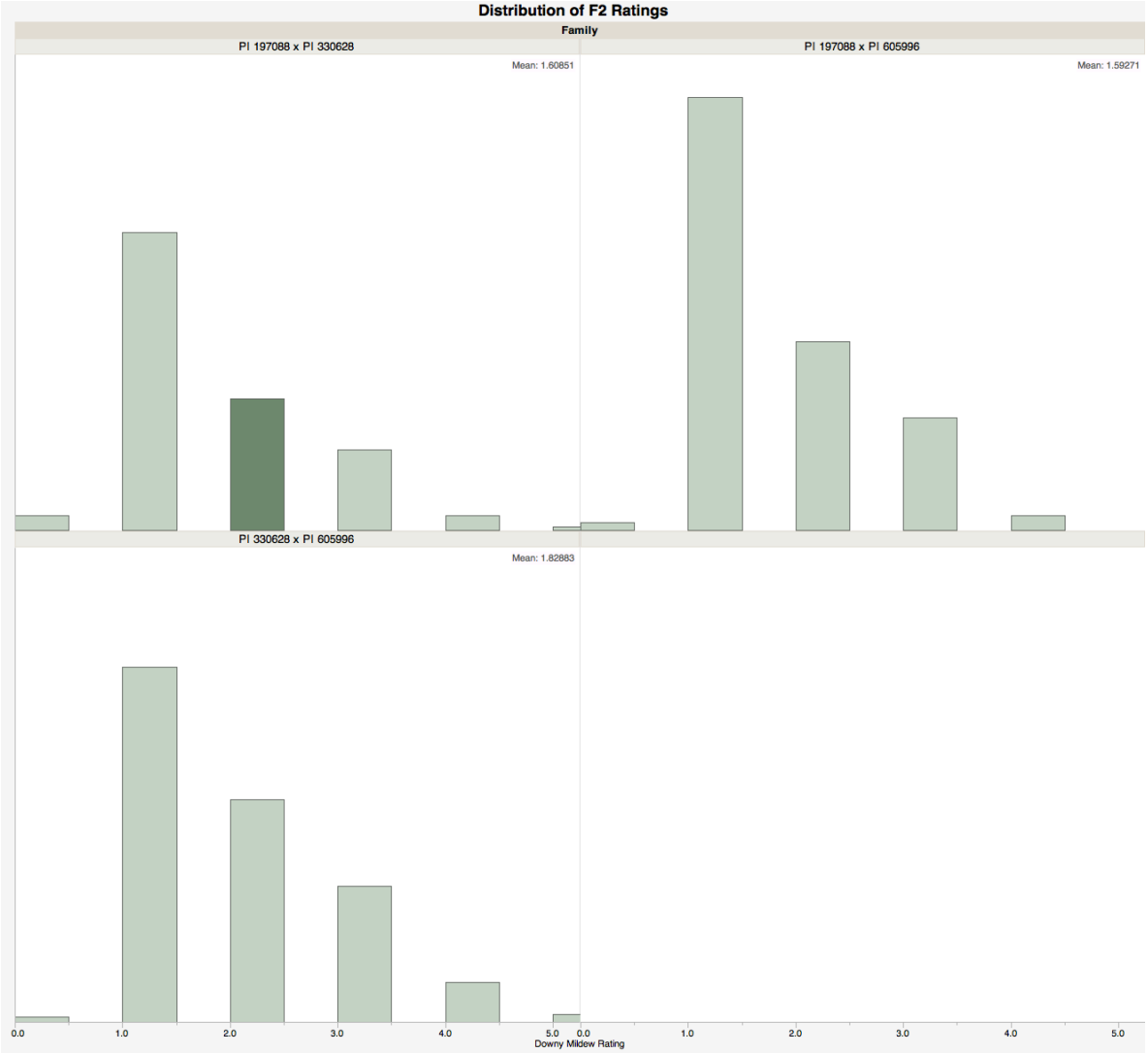


Figure 3.2. Histogram distributions of ratings of F_2 ratings for three families of cucumber pooled over location (Clinton, NC and Castle Hayne, NC) and years (2013, 2014).

a Data are from the third ratings of three Cucumis sativus families developed from the cross of resistant parents PI 197088, PI 330628, and PI 605996. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

CHAPTER FOUR:

IDENTIFICATION OF QUANTITATIVE TRAIT LOCI ASSOCIATED WITH RESISTANCE TO DOWNY MILDEW IN CUCUMBER

Kyle M. VandenLangenberg and Todd C. Wehner

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

This chapter is intended to be published in Crop Science

Identification of Quantitative Trait Loci Associated with Resistance to Downy Mildew in Cucumber

Kyle M. VandenLangenberg[1] and Todd C. Wehner[1]

Department of Horticultural Science, North Carolina State University, Raleigh, NC 27695-7609

Received for publication _____. Accepted for publication _____. The use of trade names in this publication does not imply endorsement by the North Carolina Agricultural Research Service of the products named, or criticism of similar ones not mentioned. Direct correspondence to Todd Wehner (Todd_Wehner@NCSU.Edu).

[1] Graduate research assistant and professor. The authors gratefully acknowledge the technical assistance of Tammy L. Ellington.

Additional index words: *Cucumis sativus, Pseudoperonospora cubensis*, Disease

ABSTRACT

Downy mildew, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a major foliar disease of cucumber. Prior to 2004, it was possible to control epidemics of cucumber downy mildew by growing resistant cultivars. A resurgence of the disease in 2004 and subsequent breakdown of the current resistance mechanism resulted in yield loss estimates of up to 40%. Today, 10 years after the appearance of a new race of cucumber downy mildew the disease continues to threaten production in warm humid regions around the world and throughout the United States. Recently, a germplasm screening of the USDA Plant Introduction (PI) collection of cucumber was completed and sources of high resistance were identified. The accession 197088 is a wild type highly resistant cucumber with poor horticultural traits. The cultivar 'Coolgreen', is a highly susceptible pickle-type cucumber with good horticultural traits. From a cross between PI 197088 and 'Coolgreen', a population consisting of 157 $F_{6:7}$ recombinant inbred lines (RILs) was developed. A bulk-segregant analysis using the best eight and worst eight lines (for downy mildew rating) resulted in the identification of 53 cucumber simple sequence repeat (SSR) markers associated with resistance on Chromosomes (Chr) 1, 3, 4, 5, and 6. Significant differences were observed among the RILs. Three putative QTL were identified and were tightly linked to SSR markers: SSR17911 (Chr 4), SSR15321 (Chr 5), and SSR18489 (Chr 5). Overall, the total variation among RILs explained by the three-QTL model was 52.29%, with a model LOD score of 21.70. All three QTLs were identified in separate analysis across two locations and two years, suggesting they are

environmentally stable. In general, heritability estimates for resistance to downy mildew were high for all ratings in both years, ranging from 0.68 to 0.90.

INTRODUCTION

Downy mildew, caused by the oomycete pathogen *Pseudoperonospora cubensis* (Berk. & Curt) Rostow, is a major foliar disease of cucumber (Palti and Cohen, 1980). The diseases symptoms on cucumber are characterized by the appearance of small, water-soaked lesions on the underside of leaves generally observed in the early morning. Adaxial lesions are often angular and bound by leaf veins, eventually turning chlorotic and necrotic. Heavy sporulation can be observed within the lesions on the abaxial leaf surface. The disease has been reported in over 80 countries on 20 different genera, including 50 species of the *Cucurbitaceae*, causing significant economic losses (Palti and Cohen, 1980; Lebeda, 1992; Lebeda and Widrlechner, 2003; and Olczak-Woltman *et al.*, 2011). Downy mildew can cause significant reductions in yield due to a short-latent period, high secondary infection frequency, rapid spread, and a year round presence in some Cucurbit production areas (Cohen, 1981; Colucci and Holmes, 2010). As the disease progresses, entire leaves may die within days of initial infection (Thomas, 1996). Severe foliar loss leads to an open plant canopy, resulting in a cessation of fruit development due to a lack of photosynthetic activity as well as increased incidence of sunscald and secondary rots (Keinath *et al*., 2007). Prior to 2004, it was possible to control epidemics of cucumber downy mildew by growing resistant cultivars. A resurgence of the disease in 2004 and subsequent breakdown of the current resistance mechanism, however, resulted in yield loss estimates of up to 40% (Colucci et al., 2006). Today, 10 years after the appearance of a new race of cucumber downy mildew the disease continues to threaten production in warm humid regions around the world and throughout the United States.

Development of new cultivars with high resistance remains an important object of many cucumber research and breeding programs. Without high resistance, expensive fungicide programs have been necessary to achieve high yield and quality. *P. cubensis* reproduces both sexually and asexually and is wind-dispersed over long distances, resulting in an extremely high evolutionary potential (McDonald and Linde, 2002). Due to the high evolutionary potential of downy mildew, along with the widespread use of fungicides to control the disease it is likely that fungicide resistances will develop. Several studies published since the 2004 resurgence of cucumber downy mildew report that resistance to systemic fungicides has been observed (Colucci and Holmes, 2007; Hausbeck and Cortright, 2009; Lebeda and Urban, 2007; Mitani *et al.*, 2001; and Zhu *et al*., 2008). As fungicide resistances continue to emerge, growers will need new sources of cultivars with genetic resistance.

New sources of genetic resistance (reduced leaf damage) and tolerance (good yield under disease pressure) to the new race(s) of downy mildew in the United States were identified in a germplasm screening study and a multi-year reevaluation of the most resistance and susceptible cultigens conducted at North Carolina State University (Call *et al.*, 2012b). Several cultigens were identified with high levels of resistance to the new downy mildew, including PI 197088. PI 197088 was collected at the same time and location as PI 197087, the source of resistance that was overcome in 2004 (Barnes and Epps, 1954). The inheritance pattern of cucumber downy mildew has always been a contentious issue in the literature. Van Vliet and Meysing (1974), Fanourakis and Simon (1987) and Angelov (1994) all reported that the inheritance of resistance from PI 197087 was under the control of a

single recessive gene. In contrast, Shimizu *et al*. (1963) and later McFerson (1978) reported that three recessive genes controlled resistance. Recently, Zhang *et al*., (2013) mapped five putative QTL controlling resistance to downy mildew on chromosome 1, 5, and 6 in an F_2 population using a cross between K8 and K18. K8 is a typical Northern Chinese type cucumber with resistance to downy mildew derived from a Chinese Long cucumber hybrid. Pang *et al*., (2013) identified three putative QTL controlling aspects of resistance to downy mildew by screening 10 introgression lines derived from an interspecific hybridization between cucumber cultivar "*beijingjietou*" and the wild *Cucumis*, *C. hystrix*. Additional non-polymerase chain reaction (PCR) markers linked to downy mildew resistance have previously been reported; however, due to the high inefficiency and cost of non-PCR markers they provide little value to molecular assisted breeding programs (Bai *et al*., 2008; Ding *et al*., 2007; Horejsi *et al.*, 2000; Kennard *et al*., 1996; Meglic and Staub, 1996;).

Identification of markers linked to the resistance identified in PI 197088 will assist breeders in introgressing the new source of resistance into elite backgrounds. PI 197088 is a round, hollow, netted fruit with poor quality traits but high resistance to the new race(s) of downy mildew. In contrast, the cultivar 'Coolgreen' possesses elite horticultural traits but expresses a high level of susceptibility to downy mildew. The objective of this study was to identify QTL associated with resistance to downy mildew in a PI 197088 x 'Coolgreen' recombinant inbred line (RIL) population.

MATERIALS AND METHODS

Plant Material

A RIL population derived from a cross between PI 197088, a highly resistant wild cucumber accession collected in India, and 'Coolgreen', a highly susceptible pickling type cucumber developed by Seminis Vegetable Seeds Inc. (formerly Asgrow Seed Co.), was used to identify QTL for downy mildew resistance. The PI 197088 x 'Coolgreen' (088Clgrn-RIL) population consisted of 154 $F_{6:7}$ lines developed by single seed descent at the Horticultural Field Laboratories at North Carolina State University between 2011 and 2013.

Plant Culture and Ratings

In the summer of 2013 and 2014, 157 and 154 $F_{6:7}$ lines of the 088Clgrn-RILwere direct seeded in test plots at the Horticultural Crops Research Stations at Clinton and Castle Hayne, North Carolina, respectively. Cucumbers were grown using recommended horticultural practices as summarized by Schultheis (1990). Fertilizer was incorporated before planting at a rate of 90-39-74 kg/ha (N-P-K) with an additional 34 kg N/ha applied at the vine tip over stage (four to six true leaves). Susceptible border rows, planted with 'Coolgreen', were spaced every 8 rows throughout each replication to encourage the even spread of inoculum. Test plots were 1.5 m long and were hand-seeded on raised, shaped beds with centers 1.5 m apart. Plots were thinned to 15 plants prior to the vine tip over stage. No artificial inoculum was used in the field tests in North Carolina. Plots were exposed to natural epidemics encouraged by overhead irrigation during the growing season at least three times per week, or as needed. Experiments were planted on 27 June 2013 and 30 June 2014 at Clinton, and 20 June 2013 and 26 June 2014 at Castle Hayne.

The experiment was a randomized complete block design with two replications per location. Disease severity was evaluated weekly for three consecutive weeks based on percentage of symptomatic leaf area (disease rating scale 0 to 9, where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)); as described by Jenkins and Wehner (1983).

Statistical Analysis of Field Data

Data was analyzed using the statistical packages JMP Pro 10 (SAS Institute Inc., Cary, N.C.), R (R Development Core Team, Vienna, Austria) and SAS v9.4 (SAS Institute, Cary, N.C.). Analysis of variance (ANOVA) and QTL analysis were performed on the 088Clgrn-RIL population on downy mildew disease ratings using the maximum rating given on each test plot over the three ratings, as this measure had the highest *F* value and lowest coefficient of variation. Additional QTL analyses were performed on other ratings (e.g. rating 1, 2, 3 and the mean) and produced similar results (data not shown). Prior to analysis, data were checked for normality. Residual plots had a random distribution, indicating that the statistical model was valid and its assumptions were met (Fernandez, 1992).

Variance Components and Heritability Estimates

Variance components for the analysis of variance were computed from the mean square errors of the analysis of variance for untransformed disease rating values in the 088Clgrn-RIL population according to the expectations for random models (Cockerham, 1963; Knapp *et al*., 1985). Narrow sense heritability and standard error estimates were calculated on a progeny mean basis using Hallauer and Miranda (1988) procedures. Heritability estimates computed from inbred lines are considered narrow sense estimates

because the dominance variance and covariance of additive and dominance effects are equal to zero in the $F_{6:7}$ 088Clgrn-RIL population (Cockerham, 1983). Using these assumptions, the genetic variance for the lines is equivalent to the additive variance and the additive x additive interactions. Epistatic relationships of additive effects may cause an overestimation of narrow sense heritability (Cockerham, 1983).

Genotyping and Linkage Map Development

A bulk segregant analysis using the best eight and worst eight (for downy mildew rating) lines resulted in the identification of 53 polymorphic cucumber SSR markers located on Chromosomes 1, 3, 4, 5, and 6. These SSR markers were used to genotype 154 $F_{6:7}$ plants. DNA extraction, PCR amplification of molecular markers and gel electrophoreses followed Li *et al*. (2011). Leaf samples of $F_{6:7}$ lines were frozen at -80°C for at least 48 h and then overnight shipped to the University of Wisconsin Madison Department of Plant Breeding & Plant Genetics for DNA extraction and polymorphic SSR marker screening. The identified markers were used to construct linkage groups using the Join Map 4.0 software. Linkage groups were determined with a minimum LOD score of 4.0 and a recombination fraction of 0.3. Genetic distances were calculated with the Kosambi mapping function. The resultant map was ~ 406 cM, with an average spacing of 9.5 cM between markers.

The cucumber genome has been sequenced and assembled (Huang *et al.*, 2009). The physical locations in the scaffold and whole genome assemblies of all mapped markers were used to verify their genetic map locations. Inference of chromosomal locations of molecular markers on the map was performed with BLASTn or in silico PCR according to Cavagnaro *et al.* (2010). Chromosome assignment of linkage groups followed Yang *et al*., (2012).

Identification of QTL in the PI 197088 x 'Coolgreen' RIL Population

The focus of the QTL identification procedure was to identify putative QTL and estimate their additive effects. An exploratory approach to QTL mapping was utilized to select the best model explaining the observed phenotypic variance. Genome wide thresholds to establish significant logarithm of the odds (LOD) scores were calculated using the package R/qtl (Broman *et al*., 2003). Standard interval mapping using Haley-Knott regression was performed for single and two-QTL models to establish potential candidate QTL, additive QTL, and QTL x QTL interactions. Based on these results, several QTL models describing downy mildew resistance were compared using penalized LOD (pLOD) scores calculated as:

$$pLOD\alpha(\gamma) = LOD(\gamma) - T\,|\gamma|$$

where γ denotes a model, $|\gamma|$ is the number of QTL in the model, and T is a penalty on the size of the model (Broman *et al*., 2009). Chosen models were then compared to the results of a forward selection- backward elimination multiple regression approach to arrive at the most reasonable model. Bayesian confidence intervals were calculated at the 95% confidence level around the discovered QTL to establish a window of potential candidate markers. The LOD thresholds ($P < 0.05$) used to declare QTL significant were obtained through permutation tests with 1,000 repetitions.

RESULTS

Downy Mildew Resistance Levels in the 088Cglrn-RIL Population

In general, significantly higher ratings for disease were observed at the Horticultural Research Station at Castle Hayne than at Clinton, North Carolina in 2013 (Table 4.1). In

contrast, significantly higher ratings were observed at the Horticultural Research Station at Clinton than at Castle Hayne, North Carolina in 2014 (Table 4.1). Additionally, significantly higher ratings were observed in 2013 than in 2014 (Table 4.1). In general, heritability estimates were high for all ratings in both years, ranging from 0.68 to 0.90. (Table 4.1). Similar heritability estimates were reported by Call (2012) and VandenLangenberg (2014).

Significant variation for downy mildew disease ratings was observed among the 088Clgrn-RILs in 2013 and 2014 for all ratings (Table 4.1, Figure 4.1). In general, the observed ratings followed a normal curve, with a full range of ratings, from 0 to 9 reported (Figure 4.1).

Significant cultigen x location and cultigen x year interactions were observed (Table 4.1). The three-way interaction, cultigen x location x year, was not significant for any rating. Because a significant interaction existed between cultigen and location, and cultigen and year, the QTL mapping procedure was conducted data from each individual location and year. However, results of the QTL mapping study were the same between locations, suggesting that the identified QTL are stable across tested environments. Additionally, results of the QTL mapping study were nearly identical between years, with only one QTL shifting position slightly, also suggesting the identified QTL are stable across environments. Due to the high similarity in results, the QTL procedure was also performed on pooled data (years and locations) and discussion is focused on this analysis.

Mapping QTL for Downy Mildew Resistance

The mean of all maximum downy mildew ratings per RIL from each replication, location, and year were used in QTL mapping. The maximum downy mildew rating was used because it maximized the *F* value of the ANOVA model. Localized differences in inoculum and environmental conditions often result in temporary plant recovery. The maximum downy mildew rating captures the true susceptibility of a particular RIL. Using the maximum rating per RIL mutes variation in ratings that may be present due to extraneous environmental conditions affecting the severity of disease at the time of a given rating.

Using the SSR linkage map, three chromosomal regions, one located on chromosome 4, and two on chromosome 5 were associated with putative QTL for resistance to downy mildew (Table 4.2). The SSR markers, SSR17911, SSR15321, and SSR18489, were the closest linked markers to the three QTL associated with an increase in resistance to downy mildew in the 088Clgrn-RIL population (Table 4.2, Figure 4.2, 4.3, and 4.4). Several polymorphic markers were excluded from the construction of the linkage map used in this study due to their close proximity (cM distance) to other markers and may have been more tightly linked to the identified QTL than the markers presented here; however, due to their tight linkage it is unlikely that recombination would occur between them and those listed here. Overall, the total variation among RILs explained by the putative three-QTL model is 52.29%, with a model LOD score of 21.70 (Table 4.2). All QTLs were associated with a decrease in downy mildew disease rating, with a combined reduction in rating on a 0 to 9 scale of approximately 1.2 points.

A 95% Bayesian confidence interval was calculated around each putative QTLs position. On chromosome 4, the Bayesian interval spanned 24 cM and included SSR markers UW004293 and SSR17911 (Fig 4.5). On chromosome 5, the Bayesian interval surrounding the first QTL spanned 28 cM and included SSR markers SSR01280 and SSR15321 (Fig 4.6). Additionally, the Bayesian interval on chromosome 5 surrounding the second QTL spanned only 4 cM and included SSR markers SSR15196 and SSR18489 (Fig 4.6). The large span of the Bayesian confidence intervals observed on chromosome 4 and surrounding the first QTL on chromosome 5 may be due to the low number of SSR markers used in the construction of the linkage map. The addition of more SSR markers in these regions would likely reduce the Bayesian intervals and improve the useful of markers associated with QTL.

CONCLUSION

Similarities exist between this study and previous studies that identified QTL associated with resistance to the new downy mildew in cucumber. Zhang *et al.* (2013) reported the identification of five QTLs for resistance: *dm1.1, dm5.1, dm5.2, dm5.3,* and *dm6.1*. The loci of *dm1.1* and *dm6.1* were on chromosome 1 and 6, respectively. The loci of *dm5.1, dm5.2, and dm5.3* were on chromosome 5 and were linked. Similarly, Pang *et al.*, (2013) identified three QTL on chromosome 5, and 1 on chromosome 6. While the present study did not confirm the presence of QTL on chromosome 1 or 6 as in previous studies, two putative QTL were identified on chromosome 5. In contrast to previous studies, the present study identified a putative QTL on chromosome 4.

The identification of multiple putative QTL associated with resistance to downy mildew fits with the quantitative pattern of inheritance suggested by several studies (Call,

2012; McFerson, 1978; Shimizu *et al*., 1963; Pang *et al*., 2013; VandenLangenberg, 2014; Zhang *et al*., 2013). Additionally, the relatively small amount of effect each individual QTL has on the disease scale may indicate the presence of additional QTL not detected in this study.

Further experimentation should be done to fine-map the location of these QTL. In particular, the development of additional SSR and SNP markers linked to the putative QTLs should be identified to assist in marker-assisted selection for downy mildew resistance breeding. Downy mildew resistance is an important trait to introgress into all cucumber breeding material in the face of continuing epidemics. The identification of tightly linked SSR markers responsible for increased resistance in downy mildew may be utilized by breeding programs to more rapidly develop new cultivars with high levels of resistance. Finally, and as reported in previous studies, the high heritability levels associated with these QTL suggests an opportunity exists to easily breed for higher levels of resistance while using the accession PI 197088.

REFERENCES

Angelov, D. 1994. Inheritance of resistance to downy mildew, Pseudoperonospora cubensis (Berk. & Curt.) Rostow. Rep. 2nd Natl. Symp. Plant Immunity. (Plovdiv) 3:99–105.

Bai, Z., Yuan, X., Cai, R., Liu, L., He, H., Zhou, H., and Pan, J. 2008. QTL analysis of downy mildew resistance in cucumber. Prog. Nat. Sci. 18:706-710 (in Chinese).

Barnes, W.C. and W.M Epps. 1954. An unreported type of resistance to cucumber downy mildew. Plant Dis. Rptr. 38:620.

Broman K.W., H. Wu, Ś Sen, and G.A. Churchill. 2003. R/qtl: QTL mapping in experimental crosses. Bioinformatics. 19:889-890.

Call, A. D. 2012. Inheritance of resistance to downy mildew in cucumber (Cucumis sativus L.) PI 197088 and effect of interaction of host plant resistance, fungicides, and environment on severity of downy mildew on cucumber. Ph.D. Thesis, North Carolina State Univ., Raleigh.

Call, A.D., A. D. Criswell, T.C. Wehner, U. Klosinska and E.U. Kozik. 2012b. Screening cucumber for resistance to downy mildew caused by Pseudoperonospora cubensis (Berk. and Curt.) Rostov. Crop Sci. 52: 577-592.

Cavagnaro PF, Senalik DA, Yang L, Simon PW, Harkins TT, Kodira CD, Huang S, Weng Y. 2010. Genome-wide characterization of simple sequence repeats in cucumber (Cucumis sativus L.). BMC Genomics 11:569

Cockerham, C.C. 1963. Estimates of genetic variances. Statistical genetics and plant breeding. N.A.S.N.R.C. 982:53-94.

Cockerham, C.C. 1983. Covariance of relatives from self-fertilization. Crop Sci. 23:1177-1180.

Cohen, Y. 1981. Downy mildew of cucurbits. In: The Downy Mildews, D.M. Spencer (ed), Academic Press, NY. 636 pp.

Colucci S.J., T.C. Wehner and G.J. Holmes. 2006. The downy mildew epidemic of 2004 and 2005 in the eastern United States. Pages 403-411 in: Proceedings of The Cucurbitaceae 2006, G.J. Holmes ed., Asheville, NC, USA

Colucci, S.J. and Holmes, G.J. 2010. Downy mildew of cucurbits. The Plant Health Instructor. DOI: 10.1094/PHI-I-2010-0825-01.

Colucci, S.J. and Holmes, G.J. 2007. Fungicide insensitivity and pathotype determination of *Pseudoperonospora cubensis*, causal agent of cucurbit downy mildew. *Phytopathology*, 97, S24.

Ding, G., Qin, Z., Zhou, X., and Fan, J. 2007. RAPD and SCAR markers linked to downy mildew resistance genes in cucumber. Acta Botanica Boreali-Occidentalia Sinica 27:1747-1751 (in Chinese).

Fanourakis NE, Simon PW. 1987. Analysis of genetic linkage in the cucumber. J Hered 78:238–242.

Fernandez, G.C.J. 1992. Residual analysis and data transformations: important tools in statistical analysis. HortScience 27:297-300.

Hallauer, A.R. and J.B. Miranda F. 1988. Quantitative genetics in maize breeding. Second Ed. Iowa University Press. Ames, IA.

Hausbeck, M.K. and Cortright, B.D. 2009. Evaluation of fungicides for control of downy mildew of pickling cucumber, 2007. *Plant. Dis. Manag. Rep*. **3**, V112.

Horejsi, T.,Staub, J.,andThomas, C. 2000. Linkage of random amplified polymorphic DNA markers to downy mildew resistance in cucumber (Cucumis sativus L.). Euphytica 115:105-113.

Huang, S., Li, R., Zhang, Z., Li, L., Gu, X., Fan, W., Lucas, W., Wang, X., Xie, B., Ni, P., Ren, Y., Zhu, H., Li, J., Lin, K., Jin, W., Fei, Z., Li, G., Staub, J. E., Kilian, A., van der Vossen, E. A. G., Wu, Y., Guo, J., He, J., Jia, Z., Ren, Y., Tian, G., Lu, Y., Ruan, J., Qian, W., Wang, M., Huang, Q., Li, B., Xuan, Z., Cao, J., San, A., Wu, Z., Zhang, J., Cai, Q., Bai, Y., Zhao, B., Han, Y., Li, Y., Li, X., Wang, S., Shi, Q., Liu, S., Cho, W., Kim, J., Xu, Y., Heller-Uszynska, K., Miao, H., Cheng, Z., Zhang, S., Wu, J., Yang, Y., Kang, H., Li, M., Liang, H., Ren, X., Shi, Z., Wen, M., Jian, M., Yang, H., Zhang, G., Yang, Z., Chen, R., Liu, S., Li, J., Ma, L., Liu, H., Zhou, Y., Zhao, J., Fang, X., Li, G., Fang, L., Li, Y., Liu, D., Zheng, H., Zhang, Y., Qin, N., Li, Z., Yang, G., Yang, S., Bolund, L., Kristiansen, K., Zheng, H., Li, S., Zhang, X., Yang, H., Wang, J., Sun, R., Zhang, B., Jiang, S., Wang, J., Du, Y., and Li, S. 2009. The genome of the cucumber, Cucumis sativus L. Nat. Genet. 41:1275-1281.

Jenkins, S.F. Jr. and T.C. Wehner. 1983. A system for measurement of foliar disease in cucumbers. Cucurbit Genetics Cooperative, Rpt 6:10-12.

JMP, Version 10. SAS Institute Inc., Cary, NC, 1989-2014.

Keinath, A.P., Holmes, G.J., Everts, K.L., Egel, D.S. and Langston, D.B. 2007. Evaluation of combinations of chlorothalonil with azoxystrobin, harpin, and disease forecasting for control of downy mildew and gummy stem blight on melon. *Crop Prot.* **26**, 83–88.

Kennard, W.C., Poetter, K., Dijkhuizen, A., Meglic, V., Staub, J.E., and Havey, M.J.1994. Linkage among RFLP, RAPD, isozyme, disease resistance and morphological markers in narrow and wide crosses of cucumber. Theor. Appl. Genet. 89:42-48.

Knapp, S.J., W.W. Stroup, and W.M. Ross. 1985. Exact confidence intervals for heritability on a progeny mean basis. Crop Sci. 25:192-194.

Lebeda, A. 1992. Screening of wild Cucumis species against downy mildew (Pseudoperonospora cubensis) isolates from cucumbers. Phytoparasitica 20(3):203-210.

Lebeda, A. and Urban, J. 2007. Temporal changes in pathogenicity and fungicide resistance in *Pseudoperonospora cubensis* populations. *Acta Hortic.* 731:327–336.

Lebeda, A. and M.P. Widrlechner. 2003. A set of Cucurbitaceae taxa for differentiation of Pseudoperonospora cubensis pathotypes. J. of Plant Dis. and Prot. 110: 337-349.

Li Y, Yang L, Pathak M, Li D, He X, Weng Y. 2011. Fine genetic mapping of cp: a recessive gene for compact (dwarf) plant architecture in cucumber, Cucumis sativus L. Theor Appl Genet 123:973–983

McDonald, B.A. and Linde C, 2002. The population genetics of plant pathogen and breeding strategies for durable resistance. Euphytica 124: 163-80.

McFerson JR. 1978. A screening procedure for determining levels of resistance in cucumber. USA, Texas A&M University, MSc thesis.

Meglic, V.,andStaub,J.E.1996. Inheritance and linkage relationship sof isozyme and morphological loci in cucumber (Cucumis sativus L.). Theor. Appl. Genet. 92:865-872.

Mitani, S., Araki, S., Yamaguchi, T., Takii, Y., Ohshima, T. and Matsuo, N. 2001. Biological properties of the novel fungicide cyazofamid against *Phy- tophthora infestans* on tomato and *Pseudoperonospora cubensis* on cucum- ber. *Pest Manag. Sci.* 58, 139–145.

Olczak-Woltman H, Marcinkowska J, Niemirowicz-Szczytt K. 2011. The genetic basis of resistance to downy mildew in Cucumis spp.–latest developments and prospects. J Appl Genet 52:249–255.

R Development Core Team. 2014. R: A language and environment for statistical computing. R Foundation for Statistical Comp. http://www.R-project.org

SAS Institute Inc. 2013. SAS® 9.4 Guide to Software Updates. Cary, NC: SAS Institute Inc.

Schultheis, J.R. 1990. Pickling cucumbers. N.C. State Ag. Extension. Hort. Info. Lflt. No. 14-A.

Shimizu S, Kanazawa K, Kato A. 1963. Studies on the breeding of cucumber for resistance to downy mildew. Part 2. Difference of resistance to downy mildew among the cucumber varieties and the utility of the cucumber variety resistance to downy mildew. Bul Hort Res Sta Jpn 2:80–81.

Palti, J. and Y. Cohen. 1980. Downy mildew of cucurbits (*Pseudoperonospora cubensis*). The fungus and its hosts, distribution, epidemiology and control. Phytoparasitica 8:109-147.

Pang, X., Zhou, X., Wan, H. and Chen, J. 2013. QTL mapping of downy mildew resistance in an introgression line derived from interspecific hybridization between cucumber and *Cucumis hystrix*. J Phytopathology 161: 536-543.

Thomas, C.E. 1996. Downy mildew. In: *Compendium of Cucurbit Diseases* (Zitter, T.A., ed.), pp. 25–27. Ithaca, NY: Cornell University Press.

Van Vliet GJA, Meysing WD. 1974. Inheritance of resistance to Pseudoperonospora cubensis Rost. in cucumber (Cucumis sativus L.). Euphytica 23:251–255.

Yang L, Koo DH, Li Y, Zhang X, Luan F, Havey MJ, Jiang J, Weng Y. 2012. Chromosome rearrangements during domestication of cucumber as revealed from high-density genetic mapping and draft genome assembly. Plant J 71:895–906

Zhang SP, Liu MM, Miao H, Zhang SQ, Yang YH, Xie BY, Todd CW, Gu XF. 2013. Chromosomal mapping and QTL analysis of resistance to downy mildew in Cucumis sativus. Plant Dis 97:245–251. http://dx.doi.org/10.1094/ PDIS-11-11-0941-RE.

Zhu, S., Liu, P., Liu, X., Li, J., Yuan, S. and Si, N. 2008. Assessing the risk of resistance in *Pseudoperonospora cubensis* to the fungicide flumorph in vitro. *Pest Manag. Sci.* 64, 255–261.

Table 4.1. Analysis of variance, year means, variance component estimates, and heritability (h^2) for resistance to downy mildew in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber.[z]

		Analysis of Variance[a] Downy mildew rating mean squares				
Source	df	Rating 1[b]	Rating 2[c]	Rating 3	Mean Rating	Max Rating
Year (Y)	1	529.48***	402.83***	342.77***	427.89***	336.10***
Genotype (G)	168	6.24***	8.80***	11.11***	7.92***	9.45***
Location (L)	1	0.11	91.21***	4.91*	6.87***	1.48
Y * G	137	1.33**	1.56***	2.07***	0.96***	1.47***
Y * L	1	244.61***	17.08***	240.27***	135.51***	181.68***
G * L	168	1.49***	1.23**	1.10**	0.58**	0.86**
Y * G * L	131	1.05	1.11	0.72	0.49	0.61
Error (σ^2)	535	0.94	0.92	0.76	0.43	0.61
Year by location mean						
2013 –Clinton		4.02	5.03	5.11	4.74	5.50
2013 –Castle Hayne		4.97	4.74	6.16	5.28	6.23
2014 –Clinton		3.68	4.17	5.00	4.28	5.29
2014 –Castle Hayne		2.62	3.28	4.11	3.34	4.31
Variance components 2013						
σ^2_g (G)		0.75	1.04	0.96	0.93	0.83
σ^2_{gy} (G x L)		0.19	0.05	0.07	0.05	0.08
Heritability[d]						
$h^2 \pm SE(\sigma^2_g)$		0.71 ± 0.17	0.82 ± 0.17	0.84 ± 0.17	0.88 ± 0.16	0.84 ± 0.17
Variance components 2014						
σ^2_g (G)		0.52	1.05	1.98	1.11	1.61
σ^2_{gy} (G x L)		0.17	0.28	0.11	0.07	0.06
Heritability[d]						
$h^2 \pm SE(\sigma^2_g)$		0.68 ± 0.17	0.79 ± 0.17	0.89 ± 0.16	0.90 ± 0.16	0.90 ± 0.16

[a] Data are individual disease ratings, means, and maximum ratings of *Cucumis sativus* recombinant inbred lines developed from the cross of resistant PI 197088 by susceptible cultivar 'Coolgreen'. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

[b] Error df = 505.

[c] Error df = 529.

[d] h^2, narrow-sense heritability = $\sigma^2_g/[\sigma^2/(rl)+ \sigma^2_{gl}/l+ \sigma^2_g]$ and $SE(h^2)$, standard-error of heritability = $SE(\sigma^2_g)/[\sigma^2/(rl)+ \sigma^2_{ge}/l+ \sigma^2_g]$, (where r = replications within locations, l = locations, and $SE(\sigma^2_g) = \sqrt{(2/(rl)^2[(MS(G)/n+1)+(MS(lxG)/((l-1)(n-1)+2))]}$ with n = # of cultigens.

*,**,***Significant at *P* = 0.05, 0.01 or 0.001, respectively.

Table 4.2. Molecular markers associated with putative QTL in the PI 197088 X 'Coolgreen' recombinant inbred line population of cucumber.

QTL and model parameters in PI 197088 x 'Coolgreen' RIL population

QTL Position		Closest	SSR marker					
Chr	cM Position	Linked SSR Marker	sequence 5'-3'	LOD score[z]	Type III SS	Effect value[y]	% var explained	F Value
4	54	SSR17911		6.315	16.52	-0.399	11.47	31.49
5	66	SSR15321		4.129	10.39	-0.355	7.22	19.81
5	98	SSR18489		6.526	17.13	-0.424	11.90	32.66

Source	Df	SS	MS	LOD	% var
Model	3	75.32	25.11	21.70	52.29
Error	131	68.71	0.52		
Total	134	144.03			

[z]LOD scores for downy mildew resistance from multi-QTL model, y ~ Q1 + Q2 + Q3.
[y]Effect of presence of QTL with intercept of 5.847.

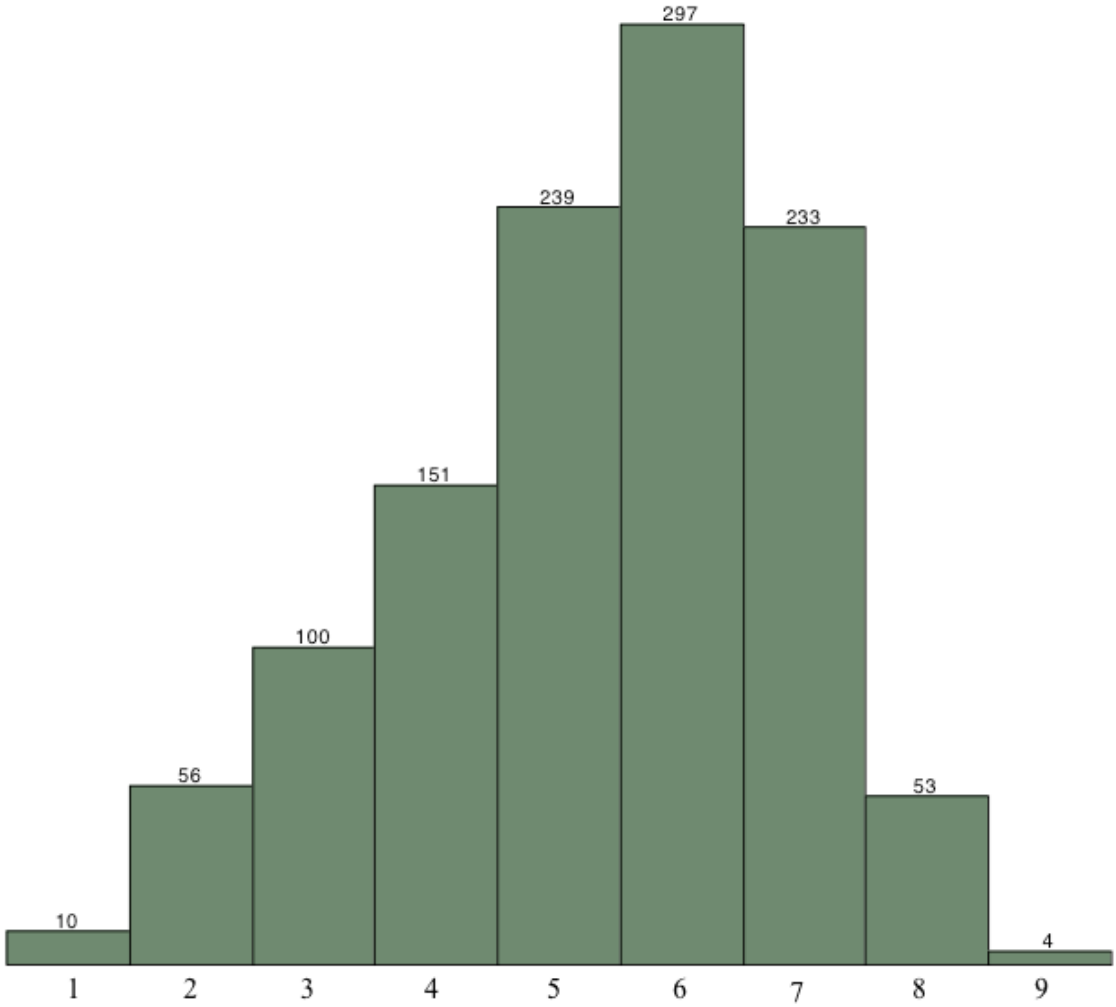


Figure 4.1. Distribution of best downy mildew ratings in a recombinant inbred line population (PI 197088 x 'Coolgreen') of cucumber for 2013 and 2014 at two locations (Clinton, NC and Castle Hayne, NC)[a].Numbers above bars are plant counts by rating.

[a] Data are the maximum of three ratings taken on each plot, in each replication, at each location for both years. Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)).

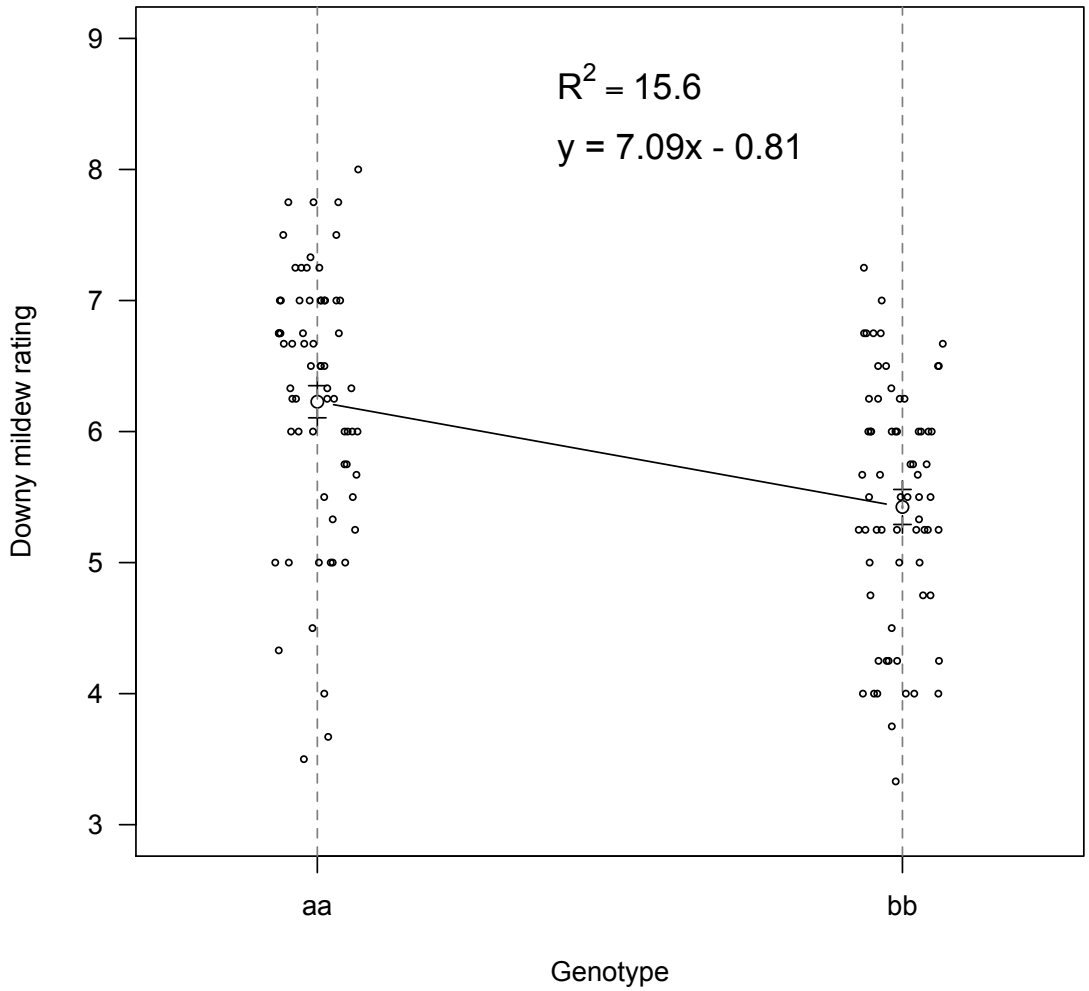


Figure 4.2. Effect plot of SSR marker SSR17911 on chromosome 4 on the downy mildew rating in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. Best rating of three independent ratings of each line are presented as black circles.

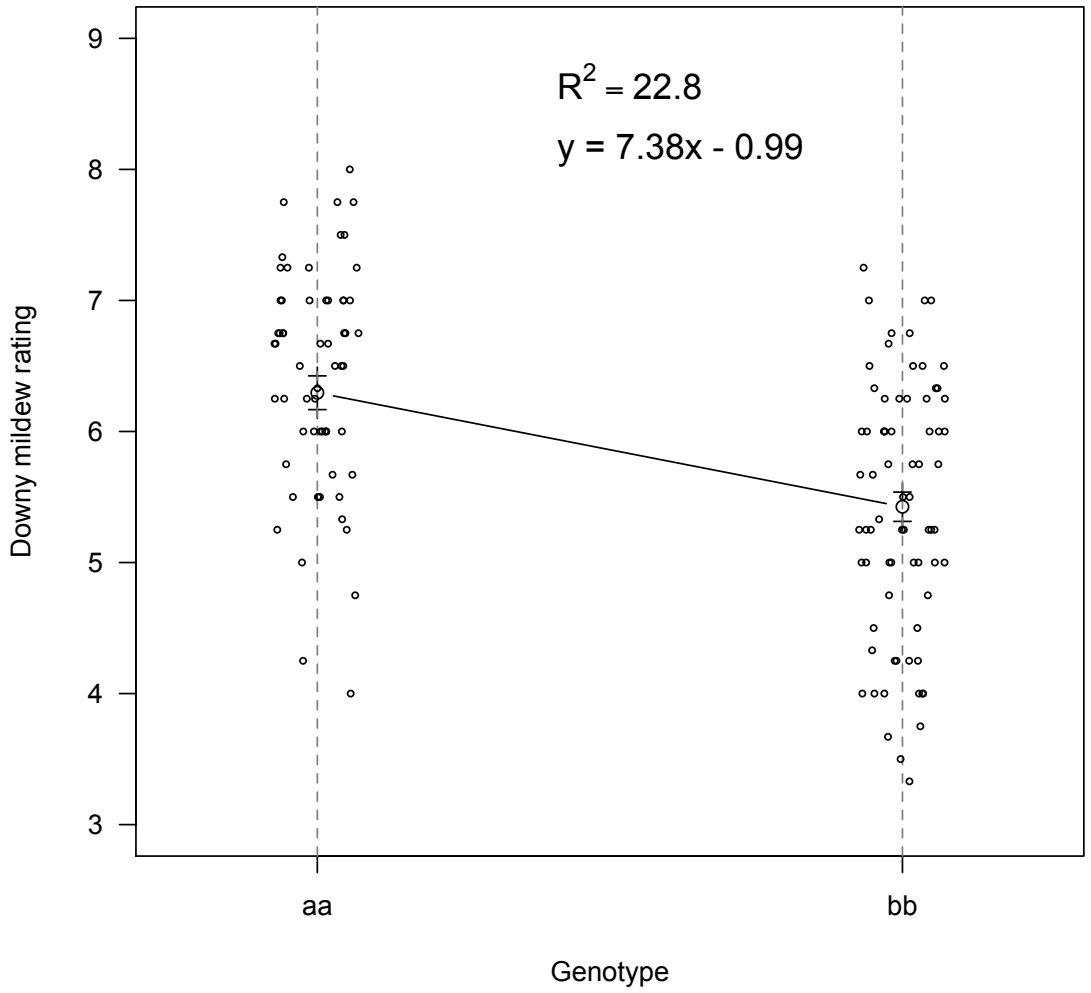


Figure 4.3. Effect plot of SSR marker SSR15321 on chromosome 5 on the downy mildew rating in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. Best rating of three independent ratings of each line are presented as black circles.

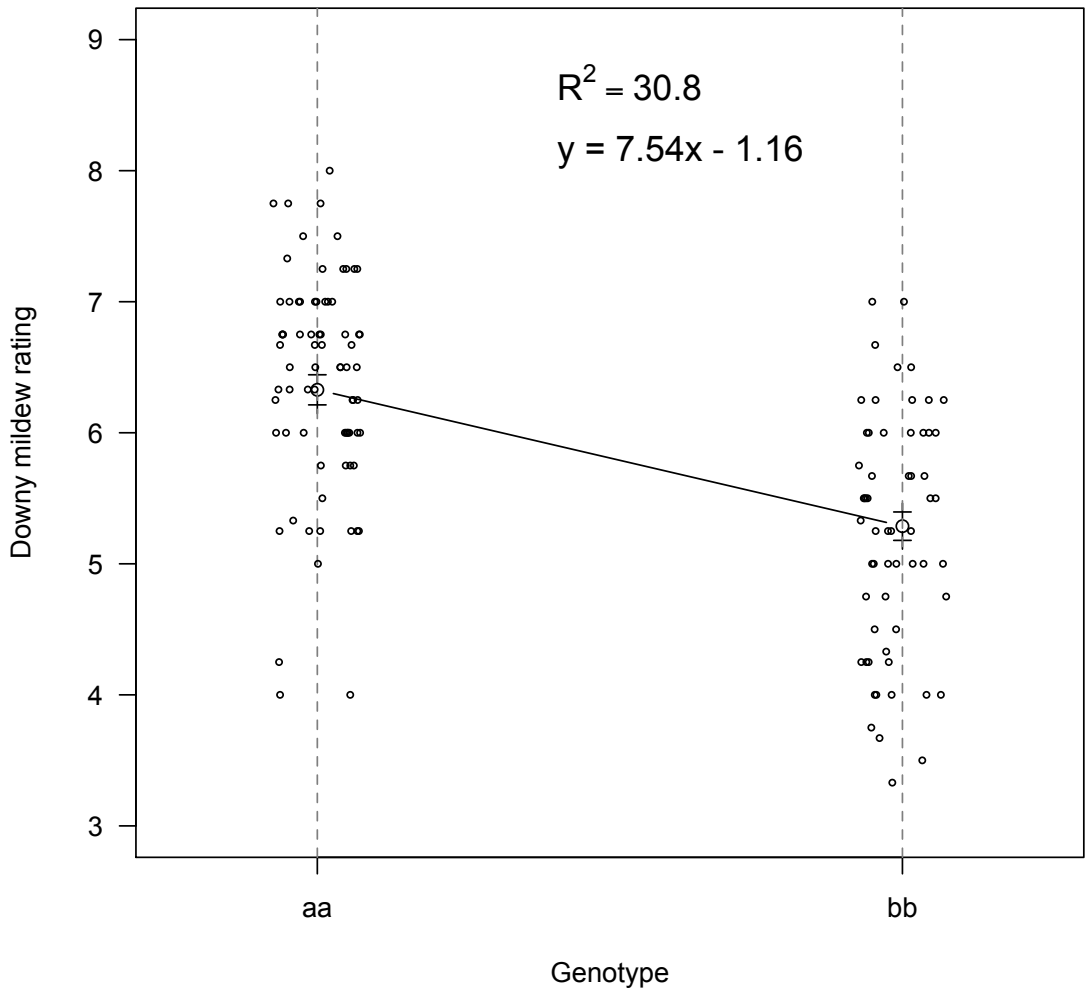


Figure 4.4. Effect plot of SSR marker SSR18489 on chromosome 5 on the downy mildew rating in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. Best rating of three independent ratings of each line are presented as black circles.

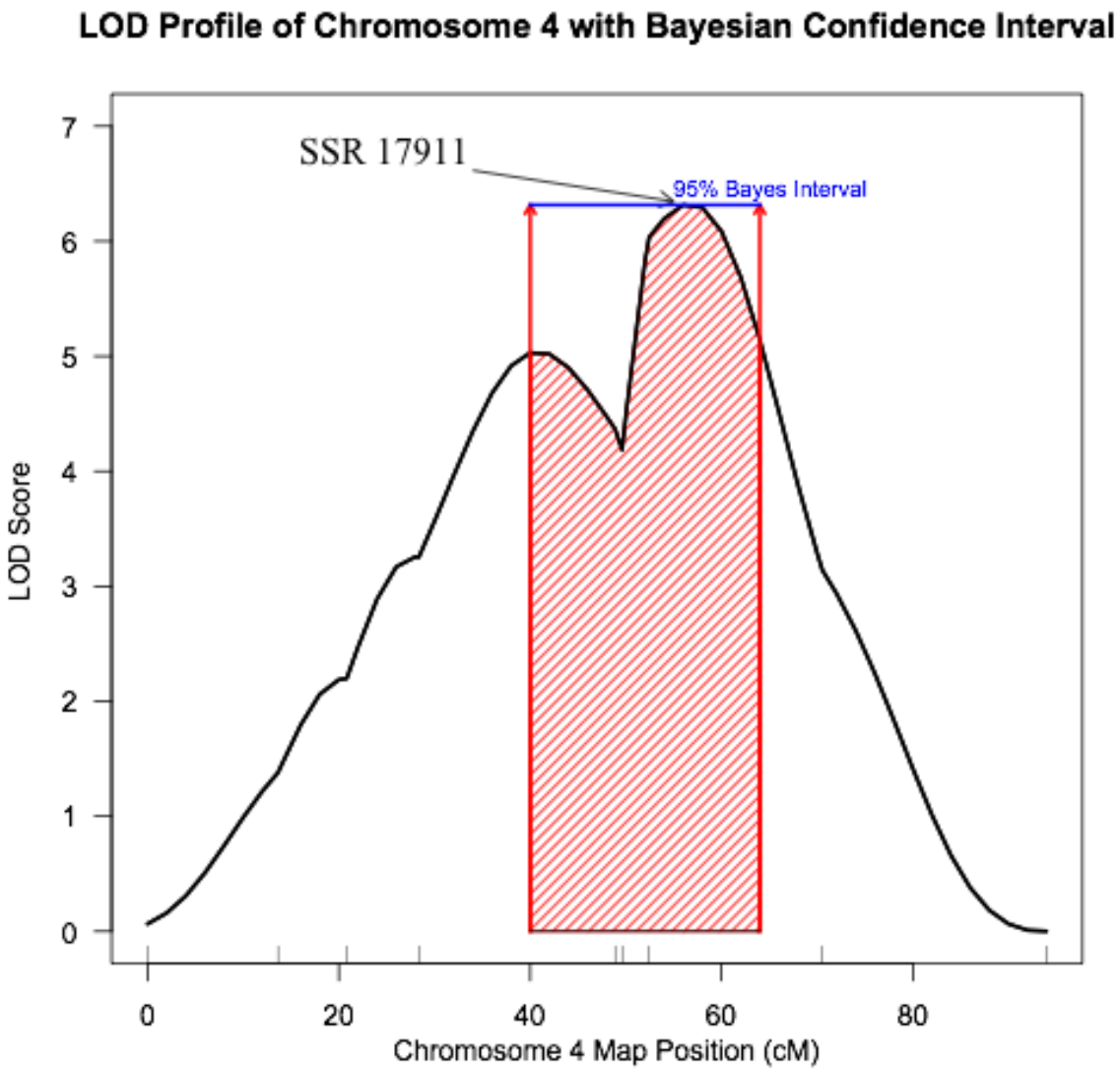


Figure 4.5. Logarithm of odds (LOD) profile of chromosome 4 showing the closest linked marker to the putative QTL for resistance to downy mildew in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. A 95% Bayesian confident interval surrounding the putative QTL is shaded in diagonal red lines.

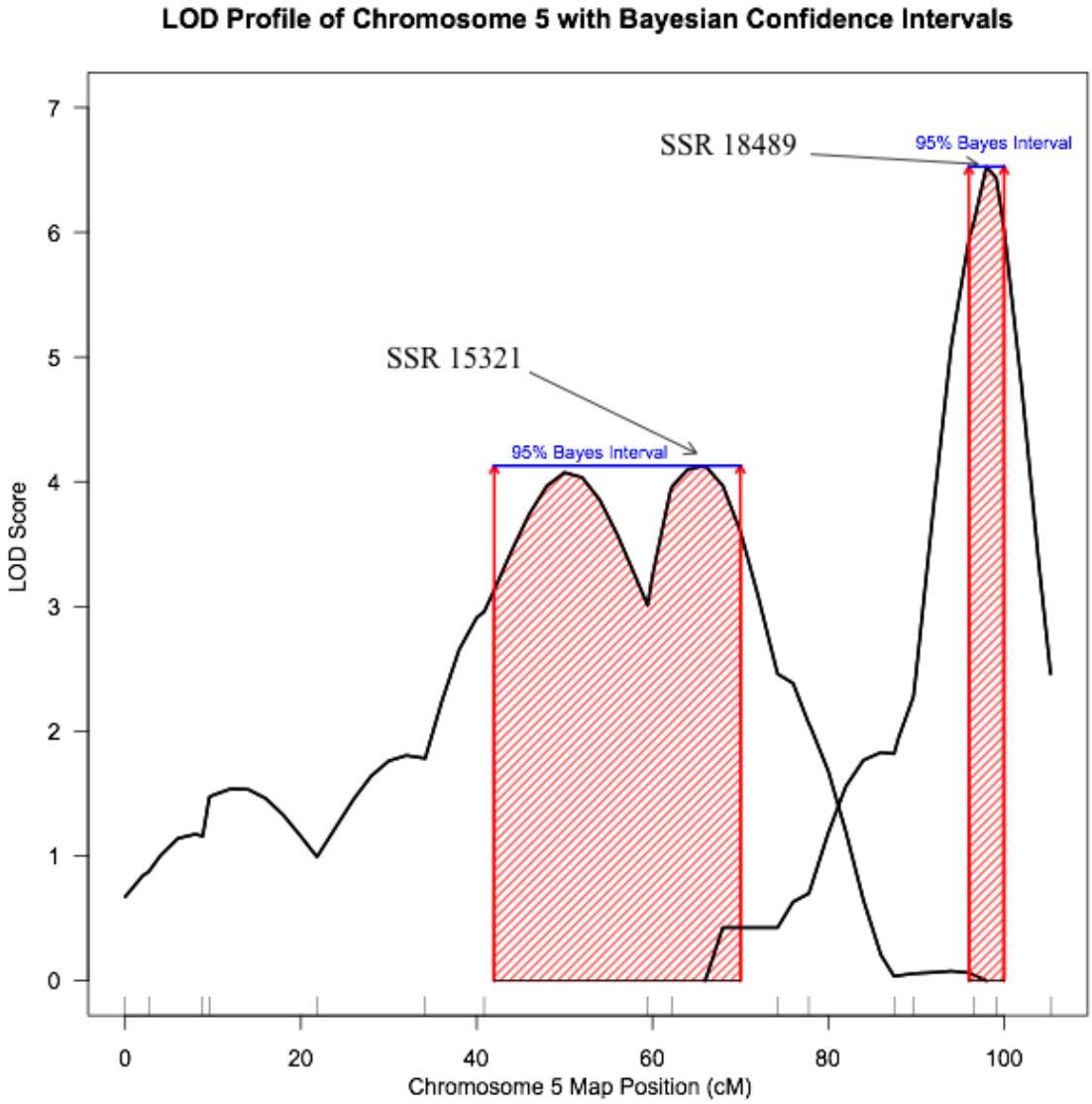


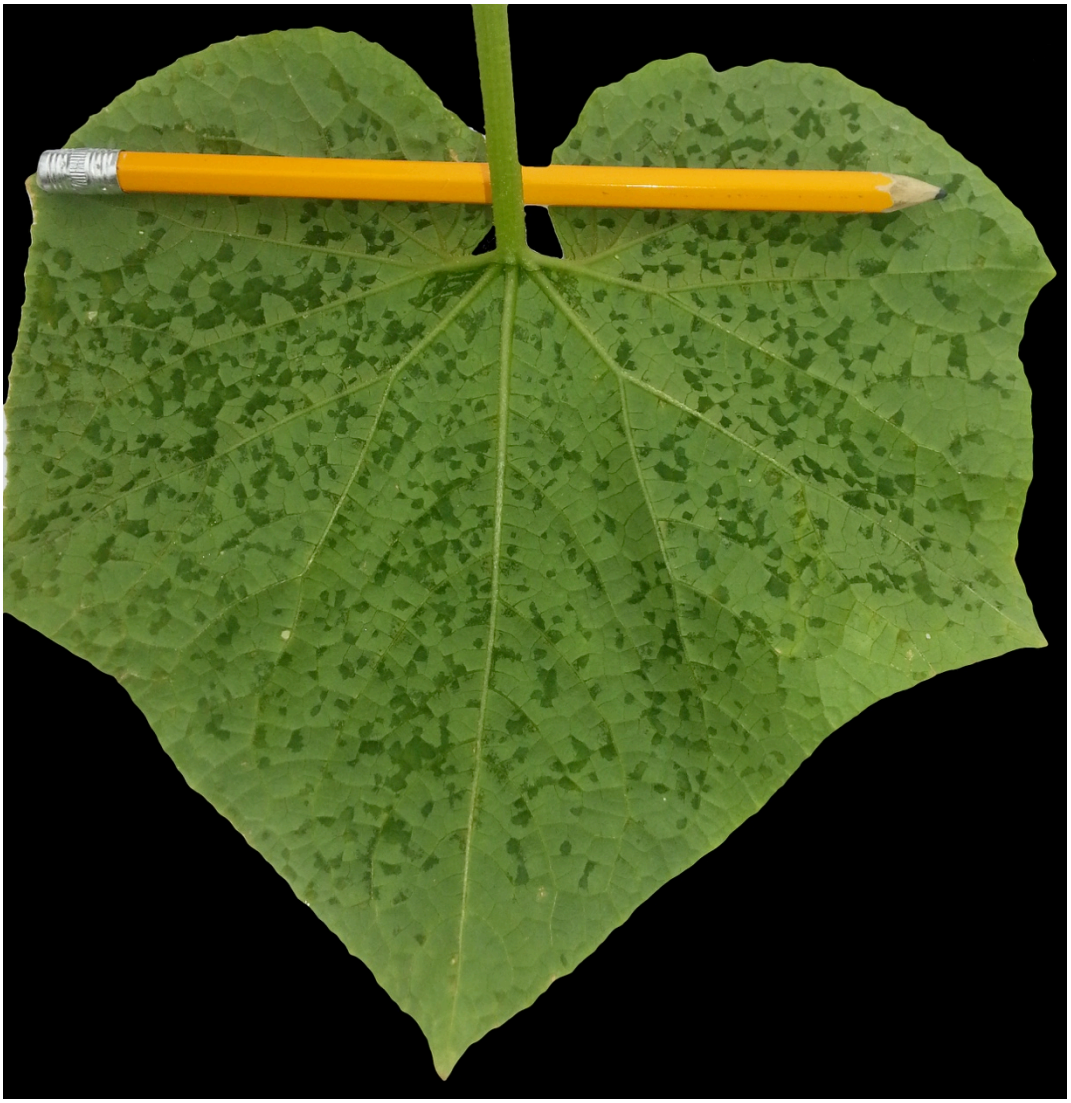
Figure 4.6. Logarithm of odds (LOD) profile of chromosome 5 showing the closest linked markers to the putative QTL for resistance to downy mildew in a recombinant inbred line population (PI 197088 X 'Coolgreen') of cucumber. A 95% Bayesian confident interval surrounding the putative QTL is shaded in diagonal red lines.

APPENDICES

APPENDIX A

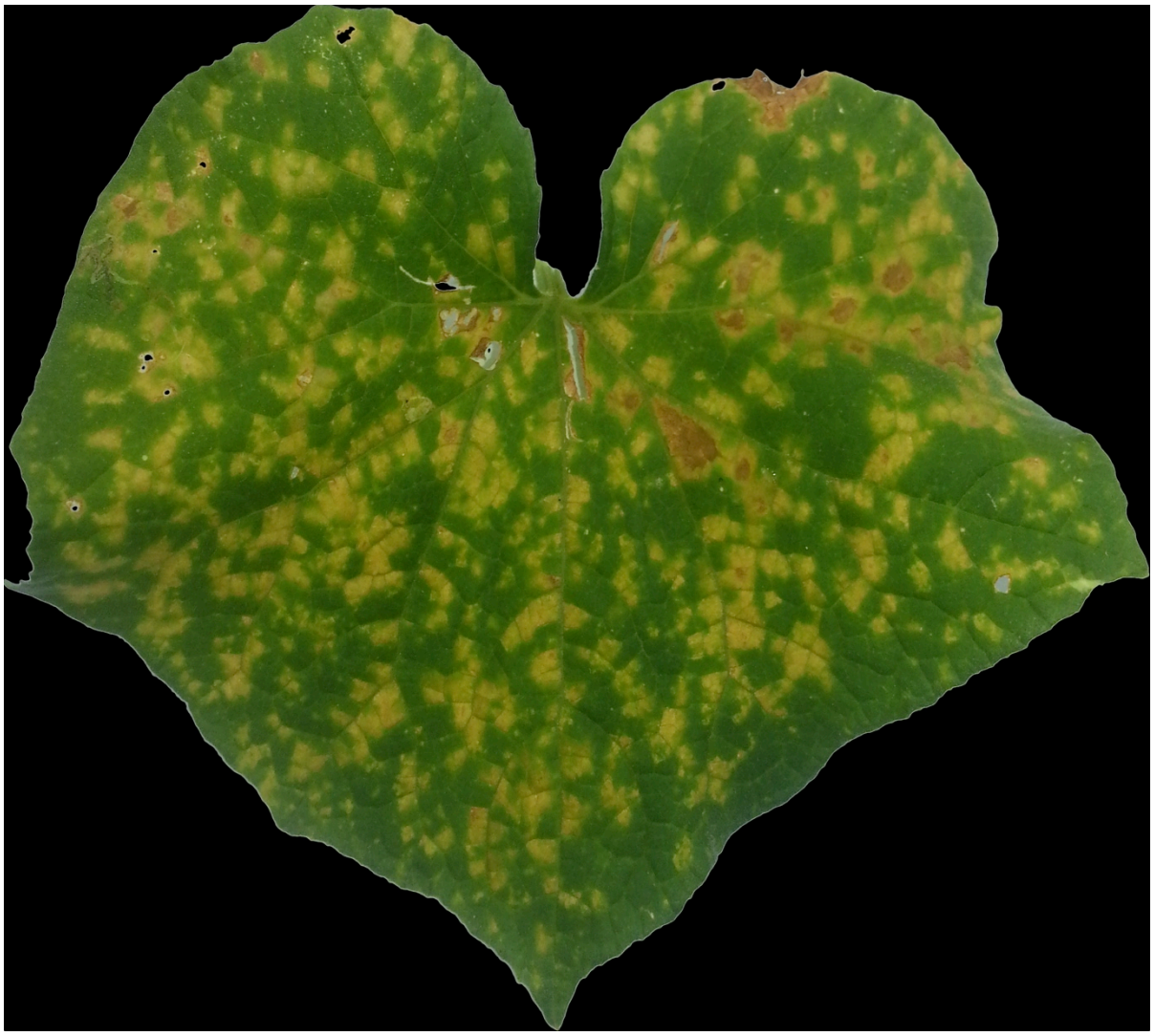
A.1 Abaxial view of diseasesd cucumber leaf

Abaxial lesions caused by *Pseudoperonospora cubensis* on cucumber. The appearance of small, water-soaked lesions on the underside of leaves generally are observable in the early morning and are a classic primary symptom. Photo was taken on 31 July 2014 at the Horticultural Field Research Station in Clinton, North Carolina.



A.2 Adaxial view of diseased cucumber leaf

Adaxial lesions caused by *Pseudoperonospora cubensis* on cucumber. Angular, vein-bound chloric lesions are a classic susceptible response. Photo was taken on 31 July 2014 at the Horticultural Field Research Station in Clinton, North Carolina. Adaxial lesions are often angular and bound by leaf veins, eventually turning chlorotic and necrotic



A.3 View of diseased cucumber plant.

Symptoms caused by *Pseudoperonospora cubensis* on cucumber. The appearance of chlorotic, vein-bound lesions is a classic symptom. Rapid spread of symptoms is possible under ideal conditions, including high humidity and persistent moisture from irrigation or rain. Photo was taken on 3 September 2013 at the Horticultural Field Research Station in Clinton, North Carolina.

A.4 Fruit of PI 197088.

Fruit of the United States Department of Agriculture Plant Introduction (PI) accession 197088. In a multiyear germplasm screening and retest, PI 197088 consistently was among the most resistant to the new downy mildew. While highly resistant, PI 197088 has poor horticultural fruit quality.

Appendix B

B.1 Raw data of downy mildew ratings taken at the North Carolina Agricultural Research Station at Clinton, NC in 2013.

			Rating[a, b]					
Planting Date	Replication	Cultigen	1	2	3	4	5	6
1	1	PI 432875	3	4	6	6	5	7
1	1	Wis. SMR 18	9	9	8	9	8	9
1	1	PI 197088	4	4	5	5	5	8
1	1	PI 197085	4	5	3	6	4	7
1	1	Poinsett 76	4	4	8	8	9	9
1	1	PI 197086	3	3	4	4	5	8
1	1	PI 605996	3	4	3	2	3	7
1	1	PI 330628	2	2	2	1	3	7
1	1	Ashley	8	9	9	7	8	9
1	2	Wis. SMR 18	7	7	7	8	8	9
1	2	Ashley	7		6	4	6	9
1	2	PI 330628	1	2	2	2	2	3
1	2	PI 197086	3	4	3	5	3	6
1	2	PI 605996	1	2	4	1	2	7
1	2	PI 197085	2	3	4	3	2	7
1	2	PI 197088	8	8	6	7	8	8
1	2	PI 432875	2	4	4	5	4	9
1	2	Poinsett 76	3	7	7	6	4	6
1	3	Ashley	6	7	6	6	8	8
1	3	PI 197086	2	4	4	5	5	9
1	3	PI 330628	1	1	3	4	4	8
1	3	Wis. SMR 18	9	9	9	8	9	9
1	3	Poinsett 76	6	9	9	9	9	9
1	3	PI 605996	1	3	3	3	3	7
1	3	PI 197085	5	6	5	5	4	8
1	3	PI 197088	3	6	7	9	8	8
1	3	PI 432875	3	5	9	8	9	7
1	4	PI 432875	4	5	6	6	5	8
1	4	Ashley	9	9	9	7	7	9
1	4	Poinsett 76	6	7	5	4	5	6
1	4	Wis. SMR 18	9	9	9	9	9	9
1	4	PI 605996	3	2	3	6	4	6
1	4	PI 330628	1	3	2	7	6	6
1	4	PI 197088	4	5	3	5	2	5
1	4	PI 197085	1	1	4	6	4	5
1	4	PI 197086	3	4	2	3	5	7

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen**	**1**	**2**	**3**	**4**	**5**	**6**
2	1	PI 432875	3	3	3	3	2	7
2	1	Wis. SMR 18	7	7	6	4	5	9
2	1	PI 197086	3	3	3	2	3	7
2	1	Ashley	7	5	5	4	6	4
2	1	PI 197085	5	4	3	2	3	9
2	1	PI 197088	4	3	5	4	5	6
2	1	PI 605996	3	3	3	2	3	8
2	1	PI 330628	2	1	4	3	4	5
2	1	Poinsett 76	4	5	3	3	5	6
2	2	Wis. SMR 18	7	7	7	7	8	7
2	2	PI 197086	3	4	3	2	3	9
2	2	PI 197088	6	4	5	2	4	6
2	2	PI 197085	5	5	4	2	4	6
2	2	PI 432875	3	3	4	3	3	.
2	2	Ashley	6	6	6	4	5	8
2	2	PI 605996	4	2	1	1	3	5
2	2	PI 330628	3	3	2	2	4	5
2	2	Poinsett 76	4	5	5	3	5	7
2	3	Ashley	6	6	6	4	4	9
2	3	PI 197085	4	1	4	4	5	8
2	3	PI 197088	3	3	6	4	4	9
2	3	PI 605996	3	4	4	3	4	4
2	3	PI 330628	2	1	3	2	3	4
2	3	PI 197086	3	3	2	2	3	7
2	3	Wis. SMR 18	7	6	9	6	9	9
2	3	Poinsett 76	5	7	5	4	5	8
2	3	PI 432875	3	3	4	4	4	7
2	4	PI 197085	5	5	3	3	3	6
2	4	PI 197088	3	5	4	4	5	7
2	4	Ashley	6	6	6	5	9	9
2	4	PI 432875	4	4	6	6	3	7
2	4	Poinsett 76	5	4	4	4	3	4
2	4	PI 605996	2	2	2	1	3	4
2	4	PI 330628	1	3	3	3	4	5
2	4	PI 197086	3	3	4	3	4	9
2	4	Wis. SMR 18	7	7	7	6	6	7
3	1	Wis. SMR 18	.	.	.	.	.	.
3	1	Ashley	5	3	3	3	3	2
3	1	PI 605996	4	2	2	1	2	2
3	1	Poinsett 76	3	4	3	2	5	8
3	1	PI 432875	3	3	3	3	3	6
3	1	PI 197086	3	1	2	0	3	6

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen**	**1**	**2**	**3**	**4**	**5**	**6**
3	1	PI 197088	4	3	2	2	3	5
3	1	PI 197085	2	0	1	1	3	5
3	1	PI 330628	1	1	3	2	3	4
3	2	Wis. SMR 18	6	6	6	6	6	9
3	2	PI 605996	3	3	1	1	1	3
3	2	PI 197086	2	2	2	1	3	6
3	2	PI 197085	2	1	3	1	4	4
3	2	Ashley	5	5	5	4	6	8
3	2	Poinsett 76	4	3	5	4	3	7
3	2	PI 432875	3	4	2	1	3	4
3	2	PI 330628	2	1	2	2	2	3
3	2	PI 197088	4	3	4	4	3	3
3	3	PI 605996	4	4	2	3	2	3
3	3	PI 197088	3	2	2	3	3	7
3	3	PI 330628	3	2	3	4	2	7
3	3	PI 197086	1	1	2	2	3	8
3	3	PI 197085	2	0	2	2	3	6
3	3	Ashley	6	5	5	4	5	7
3	3	Wis. SMR 18	6	7	6	6	9	9
3	3	PI 432875	4	4	2	2	5	9
3	3	Poinsett 76	4	3	4	4	4	9
3	4	Ashley	6	5	4	5	5	8
3	4	PI 197088	2	1	3	3	5	7
3	4	PI 197086	2	3	3	3	4	4
3	4	PI 432875	3	4	2	3	4	7
3	4	Wis. SMR 18	6	6	6	6	6	8
3	4	Poinsett 76	2	4	5	3	2	9
3	4	PI 605996	3	2	2	2	2	3
3	4	PI 330628	1	1	3	1	1	2
3	4	PI 197085	1	0	3	2	2	4
4	1	Ashley	4	3	5	3	4	8
4	1	PI 605996	5	4	3	1	2	4
4	1	Wis. SMR 18	4	4	4	3	3	2
4	1	PI 197085	4	3	1	1	1	4
4	1	Poinsett 76	3	2	4	3	3	6
4	1	PI 197088	2	3	3	0	3	6
4	1	PI 432875	3	3	4	4	4	6
4	1	PI 197086	3	1	1	1	4	7
4	1	PI 330628	1	2	1	1	1	6
4	2	PI 197086	3	1	0	1	2	4
4	2	PI 197085	3	2	0	0	1	4
4	2	PI 330628	2	3	2	0	1	3

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen**	**1**	**2**	**3**	**4**	**5**	**6**
4	2	Ashley	4	4	4	4	4	8
4	2	Poinsett 76	2	3	4	4	3	8
4	2	Wis. SMR 18	5	3	5	5	7	8
4	2	PI 432875	3	3	3	3	2	5
4	2	PI 197088	3	3	3	2	2	6
4	2	PI 605996	3	3	2	1	1	4
4	3	PI 197085	1	2	0	0	1	3
4	3	PI 432875	4	3	4	3	1	5
4	3	PI 197088	2	1	3	3	4	7
4	3	PI 605996	3	3	3	1	2	3
4	3	Poinsett 76	1	3	3	2	3	8
4	3	Wis. SMR 18	6	4	5	4	8	9
4	3	PI 330628	1	1	0	0	1	5
4	3	Ashley	4	4	4	4	4	8
4	3	PI 197086	4	1	0	0	2	6
4	4	PI 197088	2	0	3	1	2	7
4	4	PI 197085	3	1	1	2	4	7
4	4	Wis. SMR 18	5	4	4	5	7	3
4	4	PI 605996	4	2	0	2	1	3
4	4	PI 432875	1	3	0	2	2	3
4	4	PI 197086	2	1	1	1	4	7
4	4	Ashley	2	4	3	2	3	6
4	4	PI 330628	2	0	2	0	1	3
4	4	Poinsett 76	3	1	4	2	2	8
5	1	PI 330628	.	4	1	1	2	2
5	1	PI 197085	.	3	4	2	2	2
5	1	PI 432875	.	3	3	1	3	1
5	1	PI 197086	.	3	1	0	3	3
5	1	Poinsett 76	.	1	3	1	3	7
5	1	PI 605996	.	3	3	2	1	2
5	1	PI 197088	.	2	3	0	3	6
5	1	Wis. SMR 18	.	4	2	4	5	7
5	1	Ashley	.	2	3	2	4	5
5	2	Poinsett 76	.	2	3	3	2	3
5	2	PI 197086	.	3	4	3	2	2
5	2	PI 197088	.	3	4	4	4	5
5	2	PI 330628	.	1	3	2	2	2
5	2	PI 605996	.	3	3	1	2	2
5	2	PI 197085	.	2	5	0	3	4
5	2	Ashley	.	1	3	4	5	6
5	2	PI 432875	.	4	4	2	3	4
5	2	Wis. SMR 18	.	3	4	4	5	7

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen**	**1**	**2**	**3**	**4**	**5**	**6**
5	3	Poinsett 76	.	1	1	2	2	5
5	3	PI 605996	.	3	3	3	2	3
5	3	PI 197085	.	2	3	1	1	6
5	3	PI 197088	.	2	4	3	3	4
5	3	PI 432875	.	4	2	3	3	3
5	3	Ashley	.	2	3	4	5	6
5	3	PI 197086	.	3	3	1	1	5
5	3	Wis. SMR 18	.	1	4	4	5	8
5	3	PI 330628	.	2	2	1	1	2
5	4	PI 605996	.	3	4	3	1	3
5	4	PI 330628	.	1	2	1	1	2
5	4	PI 432875	.	3	4	2	1	2
5	4	Poinsett 76	.	2	3	2	3	4
5	4	PI 197088	.	3	3	3	3	5
5	4	Wis. SMR 18	.	4	3	5	6	7
5	4	Ashley	.	2	2	4	4	6
5	4	PI 197085	.	3	3	1	2	5
5	4	PI 197086	.	3	1	1	2	5
6	1	PI 197086	.	.	.	0	4	2
6	1	PI 197088	.	.	.	0	1	2
6	1	PI 605996	.	.	.	0	3	3
6	1	PI 432875	.	.	.	0	3	3
6	1	Poinsett 76	.	.	.	0	1	4
6	1	PI 197085	.	.	.	0	2	1
6	1	Ashley	.	.	.	0	3	2
6	1	PI 330628	.	.	.	0	3	3
6	1	Wis. SMR 18	.	.	.	1	4	4
6	2	Wis. SMR 18	.	.	.	0	3	4
6	2	PI 197085	.	.	.	1	4	1
6	2	Poinsett 76	.	.	.	0	1	3
6	2	PI 197086	.	.	.	0	3	1
6	2	PI 432875	.	.	.	0	4	3
6	2	Ashley	.	.	.	0	5	3
6	2	PI 605996	.	.	.	0	4	1
6	2	PI 330628	.	.	.	0	1	1
6	2	PI 197088	.	.	.	1	3	2
6	3	PI 330628	.	.	.	0	2	2
6	3	PI 432875	.	.	.	0	3	3
6	3	Wis. SMR 18	.	.	.	0	5	3
6	3	PI 605996	.	.	.	1	3	3
6	3	Poinsett 76	.	.	.	0	3	4
6	3	PI 197086	.	.	.	0	3	2

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen**	**1**	**2**	**3**	**4**	**5**	**6**
6	3	Ashley	.	.	.	0	4	3
6	3	PI 197085	.	.	.	0	1	3
6	3	PI 197088	.	.	.	0	2	4
6	4	PI 197088	.	.	.	0	3	3
6	4	Ashley	.	.	.	0	3	4
6	4	PI 432875	.	.	.	1	2	4
6	4	Wis. SMR 18	.	.	.	0	4	4
6	4	PI 605996	.	.	.	0	2	3
6	4	PI 197085	.	.	.	0	2	2
6	4	PI 197086	.	.	.	0	2	2
6	4	Poinsett 76	.	.	.	0	3	2
6	4	PI 330628	.	.	.	.	.	.

a Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). Dots represent missing data.
b Ratings occurred weekly starting with the onset of the first observable symptoms in the first planting date.

B.2 Raw data of downy mildew ratings taken at the North Carolina Agricultural Research Station at Clinton, NC in 2014.

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen Name**	**1**	**2**	**3**	**4**	**5**	**6**
1	1	Ashley	4	8	7	7	8	.
1	2	Ashley	3	7	7	7	5	.
1	3	Ashley	4	7	7	8	3	.
1	4	Ashley	4	6	7	8	7	.
2	1	Ashley	3	4	5	7	5	.
2	2	Ashley	4	6	6	6	2	.
2	3	Ashley	3	5	5	5	4	.
2	4	Ashley	4	5	5	6	4	.
3	1	Ashley	3	5	4	4	2	.
3	2	Ashley	3	4	4	6	4	.
3	3	Ashley	3	4	5	5	4	.
3	4	Ashley	2	5	5	5	3	.
4	1	Ashley	0	4	3	2	1	3
4	2	Ashley	0	4	1	4	2	3
4	3	Ashley	0	3	2	4	4	5
4	4	Ashley	0	2	1	3	3	4
5	1	Ashley	0	0	2	3	3	3
5	2	Ashley	0	0	2	4	5	4
5	3	Ashley	0	0	3	6	4	5
5	4	Ashley	0	0	1	2	3	3
6	1	Ashley	.	.	0	2	3	3
6	2	Ashley	.	.	0	4	4	3
6	3	Ashley	.	.	0	4	3	3
6	4	Ashley	.	.	0	0	2	4
1	1	PI 197085	1	1	2	3	5	.
1	2	PI 197085	2	3	4	3	4	.
1	3	PI 197085	1	1	4	7	4	.
1	4	PI 197085	1	2	5	5	4	.
2	1	PI 197085	1	2	5	7	7	.
2	2	PI 197085	2	2	2	6	7	.
2	3	PI 197085	0	2	2	4	4	.
2	4	PI 197085	3	3	3	5	5	.
3	1	PI 197085	2	3	2	3	4	.
3	2	PI 197085	2	1	0	1	2	.
3	3	PI 197085	0	2	2	2	3	.
3	4	PI 197085	3	3	1	2	3	.
4	1	PI 197085	0	2	1	0	3	3
4	2	PI 197085	.	.	.	.	.	.

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen Name**	**1**	**2**	**3**	**4**	**5**	**6**
4	3	PI 197085	0	2	4	1	2	2
4	4	PI 197085	.	.	.	.	.	2
5	1	PI 197085	0	0	2	1	1	3
5	2	PI 197085	0	0	0	1	1	3
5	3	PI 197085	0	0	2	3	1	4
5	4	PI 197085	0	0	2	1	1	3
6	1	PI 197085	.	.	0	0	3	4
6	2	PI 197085	.	.	0	2	1	2
6	3	PI 197085	.	.	0	2	1	2
6	4	PI 197085	.	.	0	2	2	2
1	1	PI 197086	3	1	4	4	6	.
1	2	PI 197086	1	4	4	5	4	.
1	3	PI 197086	2	1	4	6	4	.
1	4	PI 197086	3	2	4	6	6	.
2	1	PI 197086	1	1	3	6	5	.
2	2	PI 197086	1	2	3	3	4	.
2	3	PI 197086	1	1	2	4	5	.
2	4	PI 197086	2	3	3	5	4	.
3	1	PI 197086	1	2	1	2	3	.
3	2	PI 197086	2	1	2	2	3	.
3	3	PI 197086	1	2	2	3	3	.
3	4	PI 197086	2	2	2	3	3	.
4	1	PI 197086	0	1	0	0	0	2
4	2	PI 197086	0	1	0	0	1	1
4	3	PI 197086	0	0	0	1	1	1
4	4	PI 197086	0	1	1	1	1	2
5	1	PI 197086	0	0	1	1	1	2
5	2	PI 197086	0	0	1	1	1	4
5	3	PI 197086	0	0	1	2	1	2
5	4	PI 197086	0	0	0	1	1	1
6	1	PI 197086	.	.	0	0	1	1
6	2	PI 197086	.	.	0	2	2	2
6	3	PI 197086	.	.	0	1	1	1
6	4	PI 197086	.	.	0	1	1	1
1	1	PI 197088	2	2	3	7	7	.
1	2	PI 197088	3	8	6	4	4	.
1	3	PI 197088	2	2	5	7	6	.
1	4	PI 197088	3	9	9	9	4	.
2	1	PI 197088	3	3	4	8	9	.
2	2	PI 197088	3	4	5	7	7	.
2	3	PI 197088	1	1	1	4	7	.
2	4	PI 197088	3	2	4	6	8	.

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen Name**	**1**	**2**	**3**	**4**	**5**	**6**
3	1	PI 197088	0	2	1	3	6	.
3	2	PI 197088	0	2	1	5	6	.
3	3	PI 197088	1	1	0	2	3	.
3	4	PI 197088	1	1	0	3	4	.
4	1	PI 197088	.	.	.	.	.	.
4	2	PI 197088	0	1	0	1	1	1
4	3	PI 197088	.	.	.	.	.	.
4	4	PI 197088	.	.	.	.	.	.
5	1	PI 197088	0	0	1	1	0	4
5	2	PI 197088	0	0	0	0	1	2
5	3	PI 197088	0	0	2	2	1	3
5	4	PI 197088	0	0	1	0	1	3
6	1	PI 197088	.	.	0	0	2	3
6	2	PI 197088	.	.	0	0	1	1
6	3	PI 197088	.	.	0	2	1	1
6	4	PI 197088	.	.	0	1	1	1
1	1	PI 330628	1	2	3	2	5	.
1	2	PI 330628	1	3	5	4	5	.
1	3	PI 330628	1	3	4	6	4	.
1	4	PI 330628	1	1	4	6	5	.
2	1	PI 330628	2	1	4	7	9	.
2	2	PI 330628	0	1	1	5	4	.
2	3	PI 330628	1	2	2	3	5	.
2	4	PI 330628	1	1	2	4	4	.
3	1	PI 330628	1	1	0	1	1	.
3	2	PI 330628	2	2	1	2	3	.
3	3	PI 330628	1	1	1	3	2	.
3	4	PI 330628	2	2	1	3	2	.
4	1	PI 330628	.	.	.	.	.	.
4	2	PI 330628	0	1	0	2	1	2
4	3	PI 330628	0	0	0	1	1	2
4	4	PI 330628	0	.	3	.	.	.
5	1	PI 330628	0	0	1	1	0	1
5	2	PI 330628	0	0	1	1	1	3
5	3	PI 330628	0	0	2	2	1	2
5	4	PI 330628	0	0	1	1	1	2
6	1	PI 330628	.	.	0	1	3	2
6	2	PI 330628	.	.	0	3	1	4
6	3	PI 330628	.	.	0	2	2	0
6	4	PI 330628	.	.	0	2	1	1
1	1	PI 432875	2	3	4	4	7	.
1	2	PI 432875	3	5	4	3	4	.

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen Name**	**1**	**2**	**3**	**4**	**5**	**6**
1	3	PI 432875	2	3	4	7	5	.
1	4	PI 432875	1	5	6	5	9	.
2	1	PI 432875	2	2	2	5	4	.
2	2	PI 432875	1	2	2	5	6	.
2	3	PI 432875	1	2	2	5	4	.
2	4	PI 432875	2	3	2	5	5	.
3	1	PI 432875	1	2	2	4	2	.
3	2	PI 432875	1	2	3	4	4	.
3	3	PI 432875	1	3	3	3	3	.
3	4	PI 432875	1	3	3	3	2	.
4	1	PI 432875	0	3	1	2	1	3
4	2	PI 432875	0	3	1	3	1	2
4	3	PI 432875	.	.	.	.	.	.
4	4	PI 432875	.	.	.	.	.	.
5	1	PI 432875	0	0	1	3	2	3
5	2	PI 432875	0	0	2	1	1	2
5	3	PI 432875	0	0	2	3	2	3
5	4	PI 432875	0	0	.	.	.	.
6	1	PI 432875	.	.	0	1	3	2
6	2	PI 432875	.	.	0	4	4	3
6	3	PI 432875	.	.	0	4	3	1
6	4	PI 432875	.	.	0	3	3	3
1	1	PI 605996	2	2	3	5	6	.
1	2	PI 605996	2	2	3	3	3	.
1	3	PI 605996	2	2	3	6	9	.
1	4	PI 605996	0	2	3	5	4	.
2	1	PI 605996	1	2	2	6	4	.
2	2	PI 605996	1	3	1	2	8	.
2	3	PI 605996	2	3	2	2	3	.
2	4	PI 605996	2	3	1	3	4	.
3	1	PI 605996	2	4	1	2	2	.
3	2	PI 605996	2	2	0	1	3	.
3	3	PI 605996	1	3	1	2	2	.
3	4	PI 605996	2	3	2	1	1	.
4	1	PI 605996	0	2	0	1	1	1
4	2	PI 605996	0	3	0	1	2	2
4	3	PI 605996	0	3	2	2	1	1
4	4	PI 605996	.	.	.	.	.	.
5	1	PI 605996	0	0	3	2	1	2
5	2	PI 605996	0	0	2	3	2	2
5	3	PI 605996	0	0	2	3	2	3
5	4	PI 605996	0	0	2	2	0	1

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen Name**	**1**	**2**	**3**	**4**	**5**	**6**
6	1	PI 605996	.	.	0	2	1	1
6	2	PI 605996	.	.	0	3	2	2
6	3	PI 605996	.	.	0	3	3	2
6	4	PI 605996	.	.	0	3	3	3
1	1	Poinsett	3	7	7	5	4	.
1	2	Poinsett	2	7	7	7	5	.
1	3	Poinsett	1	6	7	7	7	.
1	4	Poinsett	2	6	6	7	5	.
2	1	Poinsett	1	4	4	5	5	.
2	2	Poinsett	2	5	5	5	3	.
2	3	Poinsett	1	5	6	6	4	.
2	4	Poinsett	2	6	5	6	4	.
3	1	Poinsett	2	5	3	3	2	.
3	2	Poinsett	2	3	3	4	3	.
3	3	Poinsett	2	4	3	4	3	.
3	4	Poinsett	1	3	4	5	3	.
4	1	Poinsett	0	3	1	4	2	3
4	2	Poinsett	0	3	1	3	3	4
4	3	Poinsett	0	4	1	2	2	3
4	4	Poinsett	0	1	0	1	9	2
5	1	Poinsett	0	0	1	2	1	1
5	2	Poinsett	0	1	1	3	3	3
5	3	Poinsett	0	0	1	4	3	3
5	4	Poinsett	0	0	1	4	3	3
6	1	Poinsett	.	.	0	1	2	3
6	2	Poinsett	.	.	0	2	3	3
6	3	Poinsett	.	.	0	2	2	3
6	4	Poinsett	.	.	0	1	2	4
1	1	Wis SMR 18	7	9	9	9	9	.
1	2	Wis SMR 18	7	9	8	9	9	.
1	3	Wis SMR 18	6	8	8	9	6	.
1	4	Wis SMR 18	6	8	8	8	7	.
2	1	Wis SMR 18	5	7	7	8	9	.
2	2	Wis SMR 18	6	8	8	8	5	.
2	3	Wis SMR 18	6	8	8	8	8	.
2	4	Wis SMR 18	6	8	6	7	4	.
3	1	Wis SMR 18	4	6	7	7	5	.
3	2	Wis SMR 18	4	6	6	7	6	.
3	3	Wis SMR 18	4	6	6	7	4	.
3	4	Wis SMR 18	4	5	5	6	6	.
4	1	Wis SMR 18	0	5	4	6	5	6
4	2	Wis SMR 18	0	5	4	6	5	6

			Rating[a, b]					
Planting Date	**Replication**	**Cultigen Name**	**1**	**2**	**3**	**4**	**5**	**6**
4	3	Wis SMR 18	0	5	1	5	4	6
4	4	Wis SMR 18	0	4	3	5	4	6
5	1	Wis SMR 18	0	0	4	5	4	5
5	2	Wis SMR 18	0	1	3	6	4	6
5	3	Wis SMR 18	0	0	4	5	4	6
5	4	Wis SMR 18	0	0	2	4	4	6
6	1	Wis SMR 18	.	.	0	4	3	5
6	2	Wis SMR 18	.	.	0	2	2	4
6	3	Wis SMR 18	.	.	0	3	4	5
6	4	Wis SMR 18	.	.	0	4	4	5

a Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). Dots represent missing data.
b Ratings occurred weekly starting with the onset of the first observable symptoms in the first planting date.

Appendix C

C.1 Raw data of downy mildew ratings on cucumber taken at the North Carolina Agricultural Research Station at Clinton and Castle Hayne, NC from 2011 through 2014.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	2	1	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	2	1	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	9	9	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	9	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	8	9	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	9	9	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	9	9	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	Pb	9	9	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	5	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	2	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	6	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	4	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	4	3	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	3	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	4	2	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	8	7	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	8	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	8	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	7	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	6	7	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	5	6	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	6	7	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	3	5	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	5	6	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	3	7	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	6	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F1	7	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	6	8	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	6	9	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	6	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	4	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	6	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	4	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	4	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	3	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	6	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	6	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	9	9	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	8	8	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	2	3	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	4	4	3	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	6	8	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	4	3	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	8	9	9	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	6	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	6	4	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	6	5	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	8	7	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	2	5	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	3	2	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	4	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	6	5	6	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	5	6	7	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	6	8	8	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	5	1	2	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	2	1	1	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	2	1	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	4	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	2	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	6	8	8	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	6	8	8	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	5	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	5	6	7	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	7	5	6	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	4	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	4	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	5	8	9	.
2011	Clinton, NC	PI 197088 x Gy 14	Pb	4	7	8	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	4	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	4	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	2	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	4	2	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	2	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	6	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	2	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	3	5	5	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	4	5	6	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	4	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	3	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	3	4	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	4	3	5	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	2	5	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	2	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	5	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	3	3	7	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	3	5	8	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	4	3	7	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	4	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	3	3	5	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	3	3	5	.
2011	Clinton, NC	PI 197088 x Gy 14	BC1b	2	3	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	2	5	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	6	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	6	8	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	7	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	2	5	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	4	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	4	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	3	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	6	4	3	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	7	9	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	7	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	3	5	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	7	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	3	3	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	5	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	2	5	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	1	2	3	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	1	4	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	5	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	1	7	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	3	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	2	5	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	6	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	7	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	6	5	4	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	7	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	6	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	3	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	1	2	3	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	1	3	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	5	5	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	6	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	5	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	6	8	9	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	.	.	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	3	7	8	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	4	6	7	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	3	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	3	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	5	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	4	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	4	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	4	4	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	4	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	Pb	5	4	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	4	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	5	4	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	4	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	4	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	4	4	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	4	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	4	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	4	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	2	4	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	3	3	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	2	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	2	4	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	3	3	4	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	2	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	3	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	4	4	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	2	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	2	2	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F1	3	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	2	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	2	4	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	7	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	4	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	2	4	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	2	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	5	7	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	6	4	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	4	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	5	3	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	6	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	6	5	7	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	5	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	3	4	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	6	8	7	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	3	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	1	3	1	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	2	2	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	2	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	2	6	7	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	2	4	5	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	2	4	4	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	1	5	6	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	3	5	7	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	3	4	7	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	2	5	6	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	4	5	7	.
2011	Clinton, NC	PI 197088 x Ashley	Pb	2	6	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	4	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	4	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	3	2	1	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	5	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	5	6	3	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	4	4	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	3	5	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	4	2	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	3	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1a	2	1	5	.
2011	Clinton, NC	PI 197088 x Ashley	F1	4	5	6	.
2011	Clinton, NC	PI 197088 x Ashley	F1	3	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	F1	7	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F1	4	3	3	.
2011	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F1	3	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F1	3	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F1	3	1	5	.
2011	Clinton, NC	PI 197088 x Ashley	F1	2	2	5	.
2011	Clinton, NC	PI 197088 x Ashley	F1	3	6	6	.
2011	Clinton, NC	PI 197088 x Ashley	F1	3	3	5	.
2011	Clinton, NC	PI 197088 x Ashley	F1	2	3	5	.
2011	Clinton, NC	PI 197088 x Ashley	F1	4	1	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Ashley	F1	2	2	6	.
2011	Clinton, NC	PI 197088 x Ashley	F1	2	2	5	.
2011	Clinton, NC	PI 197088 x Ashley	F1	1	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F1	2	3	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	8	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	4	4	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	2	3	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	4	4	7	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	1	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	5	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	7	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	7	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	1	3	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	6	.
2011	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	2	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	5	5	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	5	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	4	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	4	5	.
2011	Clinton, NC	PI 197088 x Ashley	F2	4	7	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	4	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	5	7	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	3	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	4	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	1	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Ashley	F2	4	5	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	1	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	5	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	1	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	3	5	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	6	9	9	.
2011	Clinton, NC	PI 197088 x Ashley	F2	3	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	4	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	3	5	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	4	6	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Ashley	F2	2	3	7	.
2011	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Ashley	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Ashley	F2	7	.	.	.
2011	Clinton, NC	PI 197088 x Ashley	F2	2	4	5	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	7	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	3	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	1	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	1	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	5	5	6	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	2	4	6	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	4	6	7	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	3	5	6	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	2	4	6	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	2	7	.	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	2	4	5	.
2011	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	3	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F1	5	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F1	3	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F1	4	2	4	.
2011	Clinton, NC	PI 197088 x Polaris	F1	2	4	2	.
2011	Clinton, NC	PI 197088 x Polaris	F1	4	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F1	3	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F1	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F1	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F1	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F1	1	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	F1	2	4	4	.
2011	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F1	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F1	2	2	4	.
2011	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F1	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	5	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	5	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	4	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	3	5	7	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	2	6	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	2	6	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	3	6	7	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	1	8	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	5	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	2	7	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	2	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	4	.
2011	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	5	8	7	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	2	4	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	3	7	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	5	4	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	2	6	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	4	7	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	4	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	6	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	3	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	7	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	2	6	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	3	6	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	4	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	3	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	4	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	4	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	4	6	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	4	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	3	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	2	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	5	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	2	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	1	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	6	8	6	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	3	.
2011	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Clinton, NC	PI 197088 x Polaris	F2	2	1	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	4	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	2	2	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	1	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	9	9	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	9	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	9	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	9	9	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	5	8	9	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	5	9	9	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	1	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	1	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	1	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	5	7	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	5	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	5	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	6	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	7	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	5	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	2	2	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	1	2	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	6	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	2	6	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	5	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	6	4	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	7	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	7	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	8	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	8	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	9	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	3	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	6	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	7	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	4	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	3	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	7	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	7	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	8	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	7	7	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	7	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	9	9	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	7	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	5	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	8	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	4	3	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	6	6	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	7	.
2011	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	2	1	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	2	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	2	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	3	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	2	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	8	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	7	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	7	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	Pb	6	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	2	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	3	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	1	2	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	1	4	1	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	3	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	3	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	4	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	3	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	5	4	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	3	1	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	3	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	2	1	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	7	5	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	7	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	7	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	4	2	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	3	4	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	6	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	5	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	8	6	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	4	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	3	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	7	4	4	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	4	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	7	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	8	9	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	4	4	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	8	7	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	8	6	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	7	7	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	7	7	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	8	6	8	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	5	5	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	4	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	3	2	1	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	3	1	1	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	2	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	3	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	4	4	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	4	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	5	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	6	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	5	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	3	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	7	5	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	5	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	6	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	5	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	5	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	7	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	6	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	5	5	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	4	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	5	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	6	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	6	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	4	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	7	6	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	5	4	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	4	7	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	2	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	6	4	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	7	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	8	6	8	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	7	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	5	4	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	6	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	5	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	2	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	2	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	7	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	7	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	6	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	5	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	5	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	2	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	2	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	5	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	6	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	6	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	3	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	5	2	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	4	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	6	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	2	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	5	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	2	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	5	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	4	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	5	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	3	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	3	.
2011	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	3	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	3	2	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	1	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	3	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	3	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	4	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	7	7	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	8	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	7	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	8	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	8	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	7	4	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	6	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	Pb	7	6	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	6	5	3	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	6	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	6	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	6	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	5	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	5	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	3	3	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	2	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	8	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	8	9	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	6	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	3	4	3	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	3	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	2	6	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	5	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	2	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	4	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	1	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	7	5	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	9	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	7	5	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	6	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	7	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	7	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	3	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	4	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	4	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	6	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	6	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	7	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	7	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	2	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	7	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	7	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	4	6	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	6	3	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	4	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	4	6	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	6	7	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	6	4	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	4	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	5	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	7	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	7	6	5	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	6	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	3	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	4	2	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	2	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	2	1	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	2	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	3	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	6	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	5	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	3	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	6	9	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	4	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	4	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	3	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	2	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	2	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	5	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	3	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	4	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	5	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	4	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	1	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	3	5	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	7	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	8	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	5	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	5	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	5	7	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	6	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	5	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	5	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	6	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	7	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	BC1b	7	7	9	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	3	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	6	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	6	7	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	4	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	5	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	4	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	3	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	8	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	8	6	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	4	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	6	8	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	4	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	3	3	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	5	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	7	9	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	4	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	8	4	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	4	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	9	6	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	7	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	5	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	2	7	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	4	4	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	5	3	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	7	7	6	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2011	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	2	2	2	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	1	2	2	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	5	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	6	8	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	6	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	5	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	6	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	8	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	6	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	4	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	6	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	Pb	6	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	4	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	4	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	2	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	4	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	4	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	4	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	2	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	4	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	1	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	2	3	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Coolgreen	F1	4	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	4	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	2	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	3	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	2	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	2	2	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	5	4	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	6	6	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	6	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	5	8	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	6	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	6	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	5	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	5	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	5	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	5	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	6	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	6	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	6	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	8	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	8	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	8	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	8	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	8	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	8	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	7	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	4	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	7	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	8	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	1	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	7	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	7	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	5	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	6	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	1	2	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	6	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	5	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	5	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	4	3	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	6	5	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	4	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	9	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	1	5	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	4	7	6	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	6	8	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	1	5	5	.
2012	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	.	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	7	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	8	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	8	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	8	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	8	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	7	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	6	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	7	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	7	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	Pb	7	9	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	5	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	4	2	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	2	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	5	6	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Gy 14	F1	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	4	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	6	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	4	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	7	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	8	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	5	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	BC1b	7	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	2	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	7	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	2	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	2	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	7	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	2	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	5	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	7	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	6	8	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	9	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Gy 14	F2	2	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	5	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	5	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	5	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	4	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	5	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	4	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	8	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	4	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	4	9	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	5	9	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	5	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	.	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	.	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	5	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	3	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	5	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	5	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	7	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	5	9	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	5	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	9	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	5	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	5	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	5	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	6	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	5	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	4	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	7	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	7	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	Pb	7	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	4	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1a	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	4	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	4	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	5	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	5	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	6	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	5	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	5	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	5	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	6	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	2	5	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	8	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	2	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	4	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	5	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	BC1b	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	1	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	6	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	9	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	5	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	5	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	7	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	6	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	5	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	5	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	4	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	2	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	1	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Polaris	Pa	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pa	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	6	8	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	6	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	5	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	5	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	5	9	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	4	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	4	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	4	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	5	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	Pb	5	7	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	3	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	.	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Polaris	F1	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	4	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F1	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	6	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	5	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	5	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	5	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	5	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	4	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	3	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	1	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	5	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	5	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	6	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	6	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	5	6	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	1	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	4	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Clinton, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	1	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	2	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	1	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	9	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	8	9	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	8	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	6	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	4	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	4	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	5	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	3	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	3	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	3	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	1	3	1	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	1	1	1	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	5	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	2	2	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	4	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	6	5	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	4	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	5	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	6	5	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	7	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	7	8	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	8	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	6	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	6	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	6	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	1	6	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	9	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	7	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	6	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	5	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	1	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	5	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	5	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	8	7	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	6	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	7	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	7	7	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	7	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	5	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	6	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	7	8	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	7	7	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	6	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	6	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	4	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	6	8	7	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	3	2	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	5	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	4	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	6	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	1	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	1	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	5	7	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	4	8	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	5	7	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	5	8	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	4	7	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	5	8	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	4	8	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	4	8	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	5	7	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	Pb	5	7	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	2	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	2	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	1	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	3	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	1	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	4	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	6	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	5	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	5	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	3	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	7	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	8	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	4	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	1	6	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	1	6	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	6	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	1	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	7	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	7	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	7	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	7	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	2	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	5	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	1	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	5	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	7	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	8	9	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	7	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	6	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	7	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	7	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	6	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	8	8	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	7	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	3	4	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	4	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	6	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	5	.
2012	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	6	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	6	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	1	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	6	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	7	8	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	6	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	5	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	5	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	5	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	Pb	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	7	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	7	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	BC1b	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	7	8	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pa	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	7	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	6	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	7	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	7	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	7	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	5	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	4	2	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	6	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	7	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	6	7	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	6	7	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	5	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	6	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	6	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2012	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	2	3	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	1	2	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	2	3	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	1	2	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	0	1	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	3	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	3	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	4	4	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	3	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	0	3	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	4	5	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	5	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	3	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	5	7	8	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	4	6	8	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	5	7	8	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	4	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	3	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	3	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	Pa	2	5	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	3	4	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	2	3	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	3	4	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F1	4	3	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	6	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	0	2	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	4	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	6	5	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	4	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	0	4	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	4	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	5	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	6	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	1	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	3	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	2	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	3	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	3	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	0	2	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	2	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	1	3	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	3	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	5	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	5	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	3	2	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	1	6	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	0	4	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	5	5	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	5	7	7	.
2013	Clinton, NC	PI 197088 x Coolgreen	F2	6	6	5	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	2	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	0	1	0	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	0	0	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	1	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	0	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	2	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	2	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	3	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	2	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	1	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	1	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	4	4	6	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	3	5	5	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	3	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	4	6	6	.
2013	Clinton, NC	PI 197088 x Gy 14	Pb	3	5	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	0	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	0	2	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	0	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	1	5	2	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F1	2	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	6	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	2	6	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	4	6	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	3	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	2	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	3	1	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	4	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	1	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	2	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	6	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	6	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	6	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	5	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	1	2	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	1	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	4	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	4	4	4	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	3	3	3	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Gy 14	F2	4	5	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	0	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	0	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	0	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	0	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	1	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	0	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	0	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	2	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	0	1	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	1	1	5	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	1	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	4	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	0	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	2	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	0	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	0	1	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	2	2	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	1	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	0	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	2	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	0	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	5	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	0	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	0	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	0	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	4	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	4	2	5	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	0	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	3	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	2	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	4	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	4	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	4	5	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	4	5	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	4	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	3	5	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	2	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	3	5	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	3	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	1	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	2	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	3	.
2013	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	1	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	1	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	0	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	1	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	0	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	Pa	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F1	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F1	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F1	3	4	2	.
2013	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F1	2	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F1	3	4	2	.
2013	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F1	1	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	2	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	4	5	5	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	3	5	5	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	4	5	5	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	2	3	4	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	3	5	6	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Ashley	Pb	3	4	5	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	4	5	5	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	Pb	3	5	5	.
2013	Clinton, NC	PI 197088 x Ashley	F1	1	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	F1	2	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F1	3	2	3	.
2013	Clinton, NC	PI 197088 x Ashley	F1	4	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	F1	2	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F1	2	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	F1	2	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	F1	2	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F1	3	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	4	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	1	2	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	3	1	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	0	2	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Ashley	BC1b	4	4	3	.
2013	Clinton, NC	PI 197088 x Ashley	BC1b	1	4	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	0	1	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	0	1	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	0	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	0	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	0	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	4	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	2	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Ashley	F2	2	2	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	4	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	4	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	3	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	1	4	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	3	4	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	4	5	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	4	3	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	4	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Ashley	F2	3	4	2	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	1	1	4	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	4	4	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	2	1	.
2013	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Ashley	F2	3	4	3	.
2013	Clinton, NC	PI 197088 x Ashley	F2	4	5	3	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	1	2	1	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	0	1	2	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	1	1	1	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pa	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F1	4	4	2	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	1	2	2	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	2	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F1	2	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F1	1	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	0	1	2	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	1	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	0	1	2	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	1	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	0	2	1	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	2	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1a	3	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	2	5	6	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	2	5	6	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	2	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	2	3	5	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	Pb	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	4	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	1	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F1	1	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	1	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	6	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	3	6	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	5	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	4	4	6	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	3	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	5	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	4	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	4	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	3	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	4	6	6	.
2013	Clinton, NC	PI 197088 x Polaris	BC1b	4	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	4	6	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	0	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	5	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	5	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	5	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	5	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	5	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	5	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	5	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	5	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Polaris	F2	1	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	5	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	2	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	2	6	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	4	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	5	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	4	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	2	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	2	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	2	6	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	2	2	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	1	5	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	0	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Clinton, NC	PI 197088 x Polaris	F2	0	1	1	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	2	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	2	6	.
2013	Clinton, NC	PI 197088 x Polaris	F2	1	2	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	1	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Clinton, NC	PI 197088 x Polaris	F2	4	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	7	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	0	1	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	6	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	5	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	4	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	4	5	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	1	1	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	0	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	4	1	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	8	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	5	8	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	5	8	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	4	8	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	7	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	6	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	4	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	8	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	9	9	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	6	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	5	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	6	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	6	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	5	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	7	9	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	3	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	7	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	7	8	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	4	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	7	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	4	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	9	9	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	5	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	4	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	7	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	7	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	7	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	7	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	5	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	5	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	1	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	3	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	3	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	1	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	5	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	2	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	7	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	2	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	3	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	1	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	6	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	6	4	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	6	5	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	.	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	.	3	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	2	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	0	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	0	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	0	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	2	1	1	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	0	1	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	0	1	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	2	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	2	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	1	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	1	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	0	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	4	9	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	6	8	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	5	8	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	2	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	6	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	6	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	6	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	1	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	2	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	1	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	6	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	1	1	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	2	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	2	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	1	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	3	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	9	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	7	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	1	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	6	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	1	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	3	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	7	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	1	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	2	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	4	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	2	6	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	6	7	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	3	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	6	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	0	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	0	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pa	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	1	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	0	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	2	4	6	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	2	4	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	1	2	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	Pb	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	3	4	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	4	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F1	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	4	6	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	1	2	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	BC1b	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	6	9	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	4	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	6	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	4	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	1	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	2	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	2	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	4	5	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	5	7	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	5	6	7	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	5	7	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	2	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	5	7	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	5	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	1	3	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	4	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	4	6	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	BC1b	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	4	5	7	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	4	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	6	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	4	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	4	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	1	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	3	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2013	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	3
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	1
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	1
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	1	1	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	Pa	0	0	1	3
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	4	3
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	4	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	3	4	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	1	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	1	1	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	4	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	1	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	1	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	4	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	1	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	2	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	4	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	4	4	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	3	2	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	5	4	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	2	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	4	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	5	3	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	0	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	1	4	3	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	3	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	3	5	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	1	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	1	3
2014	Clinton, NC	PI 197088 x Coolgreen	BC1a	2	2	2	3
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	5	6	7	8
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	5	6	5	7
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	5	7	6	9
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	4	6	6	8
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	4	6	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	4	5	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	4	6	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	3	6	7	8
2014	Clinton, NC	PI 197088 x Coolgreen	Pb	4	7	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	6	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	4	6	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F1	2	5	6	3
2014	Clinton, NC	PI 197088 x Coolgreen	F1	3	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	5	7
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	6	5

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	5	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	5	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	6	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	3	5	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	4	6	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	2	6	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	7	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	4	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	4	4	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	4	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	7	9
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	3	2

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	4	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	7	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	2	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	4	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	3	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	7	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	2	1
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	6	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	7	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	3	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	2	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	4	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	2	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	5	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	1	3	3	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	2	2	1
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	7	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	1	1	1	1
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	5	5	7	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	3	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	5	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	1	5	2	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	5	6	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	4	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	3	4

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	4	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	5	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	5	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	1	5	4	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	4	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	4	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	4	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	3	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	4	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	4	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	5	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	7	7
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	7	7	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	3	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	6	6	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	6	6	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	7	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	1	4	2	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	2	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	3	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	4	2
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	6	3
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	5	6	6
2014	Clinton, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Coolgreen	F2	2	5	3	5
2014	Clinton, NC	PI 197088 x Coolgreen	F2	3	6	5	4
2014	Clinton, NC	PI 197088 x Coolgreen	F2	4	7	7	8
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	0	1	2
2014	Clinton, NC	PI 197088 x Gy 14	Pa	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	0	1	3
2014	Clinton, NC	PI 197088 x Gy 14	Pa	2	0	1	1
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	0	1	2
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	0	1	1
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	0	1	2
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	0	1	1
2014	Clinton, NC	PI 197088 x Gy 14	Pa	1	1	1	1
2014	Clinton, NC	PI 197088 x Gy 14	Pa	2	1	1	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	3	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	3	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F1	3	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	3	5	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F1	3	5	2	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	4	1	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	2	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	2	1
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	4	2	1
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	2	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	4	1	1
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	2	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	5	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	4	1	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	5	3	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	4	1	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	2	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	5	2	1
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	1	1
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	1	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	4	1	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	1	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	2	4	3	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	3	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	4	4	.	.
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	3	1	1
2014	Clinton, NC	PI 197088 x Gy 14	BC1a	1	2	1	1
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	1	4
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F1	1	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F1	1	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	5	3	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	3	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	1	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	5	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	3	3	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	5	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	4	5	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	4	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	1	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	3	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	3	2	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	3	1	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	1	4	1	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	1	4	4	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	4	4	3	.
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	5	2	2
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	5	3	4

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	3	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	1	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	1	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	BC1b	2	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	2	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	3	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	2	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	1	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	3	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	5	4	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	5	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	2	5
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	3	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	3	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	3	2

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	2	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	4	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	5	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	4	4	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	2	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	5	3	5
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	2	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	5	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	3	5
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	2	5
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	4	4	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	4

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Gy 14	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	4	3	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	2	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	3	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	1	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	3	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	4	4	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	5	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	3	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	2
2014	Clinton, NC	PI 197088 x Gy 14	F2	3	4	2	4
2014	Clinton, NC	PI 197088 x Gy 14	F2	4	4	2	3
2014	Clinton, NC	PI 197088 x Gy 14	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	1	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	0	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	0	0	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	1	1	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	1	1	4
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	0	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	1	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	1	1	1	4
2014	Clinton, NC	PI 197088 x Poinsett 76	Pa	2	1	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	2	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	3	3	3	4
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	2	4
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	3	2	1	1

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	1	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	2	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	3	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	2	4	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	4	5
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	3	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	0	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	1	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	1	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	3	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	0	2	0	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1a	1	2	1	.
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	3	1
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	3	3	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	0	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	1	3	3	4
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	1	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	Pb	2	4	1	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	4	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	3	4	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	1	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	2	4	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	1	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F1	1	3	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	4	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	2	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	4	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	4	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	4	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	4	4	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	3	4	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	4
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	4	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	3	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	4	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	2	.
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	4	4
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	4	4	4
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	0	2	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	BC1b	2	1	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	1	4

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	0	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	0	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	3	3	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	3	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	3	5
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	3	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	2	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	4	4
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	7	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	0	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	0	1	1	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	4	2	5
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	3	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2		.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	3	2	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	4	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	1
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	2	2	3
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Poinsett 76	F2	2	1	2	2
2014	Clinton, NC	PI 197088 x Ashley	Pa	1	1	0	1
2014	Clinton, NC	PI 197088 x Ashley	Pa	2	1	0	2
2014	Clinton, NC	PI 197088 x Ashley	Pa	2	1	0	1
2014	Clinton, NC	PI 197088 x Ashley	Pa	1	1	0	1
2014	Clinton, NC	PI 197088 x Ashley	Pa	.	.	.	.
2014	Clinton, NC	PI 197088 x Ashley	Pa	1	1	0	2
2014	Clinton, NC	PI 197088 x Ashley	Pa	1	1	0	2
2014	Clinton, NC	PI 197088 x Ashley	Pa	1	1	1	3
2014	Clinton, NC	PI 197088 x Ashley	Pa	0	1	0	2
2014	Clinton, NC	PI 197088 x Ashley	Pa	1	1	1	3
2014	Clinton, NC	PI 197088 x Ashley	F1	3	3	3	2
2014	Clinton, NC	PI 197088 x Ashley	F1	2	3	2	2
2014	Clinton, NC	PI 197088 x Ashley	F1	2	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F1	3	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F1	2	2	0	3
2014	Clinton, NC	PI 197088 x Ashley	F1	2	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	F1	3	3	1	3
2014	Clinton, NC	PI 197088 x Ashley	F1	2	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	F1	2	2	3	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	3	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	2	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	2	4
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	1	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	0	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	0	1

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	3	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	2	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	0	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	0	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	3	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	2	4
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	0	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	2	1	2	.
2014	Clinton, NC	PI 197088 x Ashley	BC1a	0	1	0	1
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	3	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	3	.
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	1	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	2	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	1	2	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	0	1	1	2
2014	Clinton, NC	PI 197088 x Ashley	BC1a	0	1	1	3
2014	Clinton, NC	PI 197088 x Ashley	BC1a	1	3	2	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	4	3	2	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	3	4	3	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	3	4	3	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	3	4	3	5
2014	Clinton, NC	PI 197088 x Ashley	Pb	4	3	4	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	5	4	4	3
2014	Clinton, NC	PI 197088 x Ashley	Pb	5	3	5	5
2014	Clinton, NC	PI 197088 x Ashley	Pb	4	3	5	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	4	4	4	4
2014	Clinton, NC	PI 197088 x Ashley	Pb	4	4	4	3
2014	Clinton, NC	PI 197088 x Ashley	F1	4	3	4	5
2014	Clinton, NC	PI 197088 x Ashley	F1	3	3	2	4
2014	Clinton, NC	PI 197088 x Ashley	F1	3	4	5	4
2014	Clinton, NC	PI 197088 x Ashley	F1	3	2	3	4
2014	Clinton, NC	PI 197088 x Ashley	F1	3	3	4	5
2014	Clinton, NC	PI 197088 x Ashley	F1	3	4	5	4
2014	Clinton, NC	PI 197088 x Ashley	F1	3	4	4	5
2014	Clinton, NC	PI 197088 x Ashley	F1	3	4	3	4
2014	Clinton, NC	PI 197088 x Ashley	F1	2	3	4	5
2014	Clinton, NC	PI 197088 x Ashley	F1	2	4	4	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	3	5
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	1	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	3	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	4	4	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	4	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	2	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	2	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	3	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	2	6
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	3	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	3	6
2014	Clinton, NC	PI 197088 x Ashley	BC1b	1	3	1	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	4	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	1	3	4	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	4	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	1	3	2	2
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	4	2	2
2014	Clinton, NC	PI 197088 x Ashley	BC1b	1	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	2	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	1	1	2	3
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	3	4
2014	Clinton, NC	PI 197088 x Ashley	BC1b	3	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	0	1	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	4
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	0	1	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	3	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	3	2	3	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	2

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Ashley	F2	1	1	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	1	2	4
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	4	4	3	2
2014	Clinton, NC	PI 197088 x Ashley	F2	3	4	2	6
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	3	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	5
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	4	5
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	0	6
2014	Clinton, NC	PI 197088 x Ashley	F2	1	4	2	5
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	0	2	1	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	5
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	5
2014	Clinton, NC	PI 197088 x Ashley	F2	3	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	0	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	3	4	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	6
2014	Clinton, NC	PI 197088 x Ashley	F2	1	4	2	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	5	4	6
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	4	4	0	5
2014	Clinton, NC	PI 197088 x Ashley	F2	3	5	2	5
2014	Clinton, NC	PI 197088 x Ashley	F2	0	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	2

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	1	1	1
2014	Clinton, NC	PI 197088 x Ashley	F2	0	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	5
2014	Clinton, NC	PI 197088 x Ashley	F2	3	4	3	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	3	4
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	0	2	0	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	3	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	1
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	0	1
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	3	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	0	3
2014	Clinton, NC	PI 197088 x Ashley	F2	4	3	4	4
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	3	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	0	3
2014	Clinton, NC	PI 197088 x Ashley	F2	3	3	4	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	2	4	1	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	6
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	3	5	2	3
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	0	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	4
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	6
2014	Clinton, NC	PI 197088 x Ashley	F2	2	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	3	3
2014	Clinton, NC	PI 197088 x Ashley	F2	2	1	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Ashley	F2	3	4	3	4
2014	Clinton, NC	PI 197088 x Ashley	F2	2	3	1	4
2014	Clinton, NC	PI 197088 x Ashley	F2	0	2	1	3
2014	Clinton, NC	PI 197088 x Ashley	F2	0	1	1	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	1	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Ashley	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Ashley	F2	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	0	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	1	1	0	3
2014	Clinton, NC	PI 197088 x Polaris	Pa	1	2	0	3
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	0	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	0	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	0	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	Pa	0	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F1	2	3	2	1
2014	Clinton, NC	PI 197088 x Polaris	F1	2	3	1	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	2	2	1
2014	Clinton, NC	PI 197088 x Polaris	F1	2	4	1	1
2014	Clinton, NC	PI 197088 x Polaris	F1	0	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	2	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	1	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	1	4
2014	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	0	1
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	0	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	0	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	0	1	1	1
2014	Clinton, NC	PI 197088 x Polaris	BC1a	0	1	1	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	0	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	3	2	1
2014	Clinton, NC	PI 197088 x Polaris	BC1a	0	1	1	.
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	2	1	0	1
2014	Clinton, NC	PI 197088 x Polaris	BC1a	2	2	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	2	1
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	1	1	3
2014	Clinton, NC	PI 197088 x Polaris	BC1a	1	2	1	3
2014	Clinton, NC	PI 197088 x Polaris	Pb	2	4	4	5
2014	Clinton, NC	PI 197088 x Polaris	Pb	3	3	3	4
2014	Clinton, NC	PI 197088 x Polaris	Pb	2	3	4	4
2014	Clinton, NC	PI 197088 x Polaris	Pb	2	3	3	4
2014	Clinton, NC	PI 197088 x Polaris	Pb	2	4	3	4
2014	Clinton, NC	PI 197088 x Polaris	Pb	2	3	4	4
2014	Clinton, NC	PI 197088 x Polaris	Pb	3	4	4	3
2014	Clinton, NC	PI 197088 x Polaris	Pb	2	3	4	4
2014	Clinton, NC	PI 197088 x Polaris	Pb	1	3	5	3
2014	Clinton, NC	PI 197088 x Polaris	Pb	1	3	.	.
2014	Clinton, NC	PI 197088 x Polaris	F1	2	4	2	3
2014	Clinton, NC	PI 197088 x Polaris	F1	2	3	1	3
2014	Clinton, NC	PI 197088 x Polaris	F1	3	4	3	2
2014	Clinton, NC	PI 197088 x Polaris	F1	2	4	3	3
2014	Clinton, NC	PI 197088 x Polaris	F1	1	2	2	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F1	2	4	1	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	F1	1	4	1	2
2014	Clinton, NC	PI 197088 x Polaris	F1	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	1	1
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	4	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	0	2	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	4	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	2	2	1
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	3	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	3	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	3	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	4	4
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	1	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	2	4	3	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	3	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	.	.
2014	Clinton, NC	PI 197088 x Polaris	BC1b	0	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	1	2	2
2014	Clinton, NC	PI 197088 x Polaris	BC1b	1	3	4	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	3
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	0	1
2014	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	2	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	1
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	0	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	4	4
2014	Clinton, NC	PI 197088 x Polaris	F2	0	2	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	0	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	2	1	3
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	3	1
2014	Clinton, NC	PI 197088 x Polaris	F2	3	1	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	3	2	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	4	4
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	4	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	3	4
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	2	1
2014	Clinton, NC	PI 197088 x Polaris	F2	0	3	3	4
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	4	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	4	4
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	2	1
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	2	2	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	4	4
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	4
2014	Clinton, NC	PI 197088 x Polaris	F2	1	2	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	2	1	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	3	.
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	0	3
2014	Clinton, NC	PI 197088 x Polaris	F2	0	1	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	2	1
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	2	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	4	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	1	.	4
2014	Clinton, NC	PI 197088 x Polaris	F2	0	1	1	3

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Clinton, NC	PI 197088 x Polaris	F2	1	2	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	4	0	2
2014	Clinton, NC	PI 197088 x Polaris	F2	3	2	2	4
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	3	4	3	3
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	4	3	1
2014	Clinton, NC	PI 197088 x Polaris	F2	3	3	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	4	3	5	4
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	0	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	3	2	1	3
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	1	2	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	3
2014	Clinton, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Clinton, NC	PI 197088 x Polaris	F2	0	3	1	1
2014	Clinton, NC	PI 197088 x Polaris	F2	0	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	2	4	1
2014	Clinton, NC	PI 197088 x Polaris	F2	1	1	1	2
2014	Clinton, NC	PI 197088 x Polaris	F2	1	4	3	5
2014	Clinton, NC	PI 197088 x Polaris	F2	1	4	3	2
2014	Clinton, NC	PI 197088 x Polaris	F2	2	3	2	2
2014	Clinton, NC	PI 197088 x Polaris	F2	3	3	3	4
2014	Clinton, NC	PI 197088 x Polaris	F2	0	1	1	3
2014	Clinton, NC	PI 197088 x Polaris	F2	1	3	1	2
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	0	1	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	5	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	6	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	5	6	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	3	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	3	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	1	3	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1a	2	3	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	8	9	7	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	9	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	8	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	7	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	8	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	7	8	8	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	8	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	Pb	6	7	7	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	1	1	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	5	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	4	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	3	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	3	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	3	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	3	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	4	5	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	3	4	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	3	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	2	3	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	3	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	5	5	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	5	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.		4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	1	.	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	1	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	2	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	4	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	4	5	6	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Coolgreen	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	0	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	0	0	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	0	0	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	1	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pa	1	0	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	5	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	4	4	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	4	5	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	3	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	3	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	3	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	5	6	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	4	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	4	4	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	3	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	2	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	1	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	1	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	1	2	0	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1a	4	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	6	7	8	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	2	3	7	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	Pb	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	5	6	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	3	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	2	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	1	1	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	4	7	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	5	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	6	6	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	5	6	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	4	6	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	4	6	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	2	4	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	BC1b	4	4	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	2	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.		.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	1	1	2	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	4	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	3	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	2	1	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	5	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	5	5	5	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	4	2	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Gy 14	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	0	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	0	0	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pa	0	0	0	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	4	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	0	1	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	3	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	3	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	0	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	.	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	2	3	5	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	Pb	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F1	1	1	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	5	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	BC1b	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.		.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	1	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	3	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	5	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Poinsett 76	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	.	0	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	1	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	3	2	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	1	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	6	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	3	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	2	2	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1a	0	1	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	4	5	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	Pb	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	4	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F1	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	4	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	BC1b	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	4	5	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	6	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	3	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	0	1	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	3	4	6	.
2014	Castle Hayne, NC	PI 197088 x Ashley	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	0	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	.	0	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	0	2	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	1	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	0	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pa	0	0	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	0	0	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	1	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1a	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	5	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	Pb	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F1	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	5	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	4	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	1	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	1	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	7	4	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	1	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	BC1b	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	0	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	3	.

				Rating[a, b]			
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**	**4**
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	3	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	5	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	2	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	4	4	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	.	.	.	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	2	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	4	3	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	1	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	0	2	1	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	2	3	4	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	1	1	2	.
2014	Castle Hayne, NC	PI 197088 x Polaris	F2	3	3	5	.

a Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). Dots represent missing data.

b Ratings occurred weekly starting with the onset of the first observable symptoms.

C Generations are: Parent A (Pa), Parent B (Pb), F1 (Cross between Pa and Pb), BC1a (Backcross to Pa), BC1b (Backcross to Pb), and F2 (Self of F1).

Appendix D

D.1 Raw data of downy mildew ratings on cucumber taken at the North Carolina Agricultural Research Stations at Clinton and Castle Hayne, NC in 2013 and 2014.

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1	3	2
2013	Clinton, NC	PI 197088 x PI 605996	Pa	0	1	2
2013	Clinton, NC	PI 330628 x PI 605996	Pa			
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1		2
2013	Clinton, NC	PI 197088 x PI 605996	Pa	0	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Pa			
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	Pa	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Pa			
2013	Clinton, NC	PI 330628 x PI 605996	Pa	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pa			
2013	Clinton, NC	PI 197088 x PI 605996	Pa			
2013	Clinton, NC	PI 330628 x PI 605996	Pa			
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	Pa			
2013	Clinton, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pa			
2013	Clinton, NC	PI 197088 x PI 605996	Pa			
2013	Clinton, NC	PI 330628 x PI 605996	Pa	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1	1	3
2013	Clinton, NC	PI 197088 x PI 605996	Pa	0	1	2
2013	Clinton, NC	PI 330628 x PI 605996	Pa	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pa	1	2	3
2013	Clinton, NC	PI 197088 x PI 605996	Pa			
2013	Clinton, NC	PI 330628 x PI 605996	Pa	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pa	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	Pa			
2013	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F1			
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	F1	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	0	3	3
2013	Clinton, NC	PI 197088 x PI 605996	F1			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	0	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	1	2
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F1			
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	2	2
2013	Clinton, NC	PI 197088 x PI 605996	F1			
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	1	3
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	2	1	2
2013	Clinton, NC	PI 197088 x PI 605996	F1	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	0	3	1
2013	Clinton, NC	PI 197088 x PI 605996	F1			
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	0	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	0	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	0	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a			
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a			
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	4	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1a	4	4	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1a	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb			
2013	Clinton, NC	PI 197088 x PI 605996	Pb	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb			
2013	Clinton, NC	PI 197088 x PI 605996	Pb	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb			
2013	Clinton, NC	PI 197088 x PI 605996	Pb	3	1	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 330628 x PI 605996	Pb	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	0	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	0	2	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Pb	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Pb	0	2	1
2013	Clinton, NC	PI 197088 x PI 605996	Pb			
2013	Clinton, NC	PI 330628 x PI 605996	Pb	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F1	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F1	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1			
2013	Clinton, NC	PI 330628 x PI 605996	F1	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F1			
2013	Clinton, NC	PI 197088 x PI 605996	F1	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F1	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F1	1	2	3
2013	Clinton, NC	PI 197088 x PI 605996	F1			
2013	Clinton, NC	PI 330628 x PI 605996	F1	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	1	3
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	3	3
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	2	2	1
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	1	3	0
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	1	2	0
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	2	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	4	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	0	1	0
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	2	3
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	1	0	1
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b	0	0	1
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	3

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	4	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	4	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	4	1
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b	4	4	1
2013	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2013	Clinton, NC	PI 197088 x PI 605996	Bc1b			
2013	Clinton, NC	PI 330628 x PI 605996	Bc1b			
2013	Clinton, NC	PI 197088 x PI 330628	F2	2	1	2
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	2	3
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	0	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	1	3
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	0	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	3	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	4	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	2	4
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	4
2013	Clinton, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	4	4	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	4	3
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	3	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	3	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	3	0	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	4	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	1	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	1	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	0	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	4	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	2	3	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	3	2	1
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	0	2	2
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2	4	4	1
2013	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Clinton, NC	PI 197088 x PI 605996	F2	3	3	1
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Clinton, NC	PI 197088 x PI 330628	F2			
2013	Clinton, NC	PI 197088 x PI 605996	F2			
2013	Clinton, NC	PI 330628 x PI 605996	F2			
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	2	3	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa	1	1	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	3	3	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pa	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	3	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1			
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	1	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1			
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1			
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	3	3	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	3	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	3	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	3	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	2	1	
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	3	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb		2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	3	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	3	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	3	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	2	1	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	3	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	3	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	1	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Pb	3	3	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	3

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	3	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F1	3	3	5
2013	Castle Hayne, NC	PI 197088 x PI 605996	F1	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	3	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	3	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	3	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	1	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	4	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	1	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	3	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	3	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	1	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	2	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	3	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	1	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2013	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			
2013	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	3	5
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2		2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	3	4
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	5
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2		2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	4
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	4	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	3	4
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2		
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2		1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2		1	1
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2		
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2		3	3

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	3	4
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	4	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	4
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	3	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	3	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	3	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	3	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	5
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	1	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	4

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	4	5
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	3	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	3	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	3	4
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	3	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	4
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2		
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	3	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	4
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1		
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	2
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	3
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2013	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2013	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2013	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	Pa			
2014	Clinton, NC	PI 197088 x PI 605996	Pa	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	Pa	3	2	2
2014	Clinton, NC	PI 197088 x PI 605996	Pa	2	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa	3	1	2
2014	Clinton, NC	PI 197088 x PI 605996	Pa	2	3	4
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa			
2014	Clinton, NC	PI 197088 x PI 605996	Pa	1	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa	2	3	
2014	Clinton, NC	PI 197088 x PI 605996	Pa			
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa	3	4	0
2014	Clinton, NC	PI 197088 x PI 605996	Pa	1	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa			
2014	Clinton, NC	PI 197088 x PI 605996	Pa			
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa			
2014	Clinton, NC	PI 197088 x PI 605996	Pa			
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa	3	2	1
2014	Clinton, NC	PI 197088 x PI 605996	Pa	0	1	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Pa	2	2	2
2014	Clinton, NC	PI 197088 x PI 605996	Pa	2	2	
2014	Clinton, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F1	0	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F1	3	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	3	3	2
2014	Clinton, NC	PI 197088 x PI 330628	F1	0	0	1
2014	Clinton, NC	PI 197088 x PI 605996	F1	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F1			
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	3	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F1			
2014	Clinton, NC	PI 197088 x PI 605996	F1	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F1			1
2014	Clinton, NC	PI 197088 x PI 605996	F1	3	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	3	3	2
2014	Clinton, NC	PI 197088 x PI 330628	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F1	2	3	4
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F1	0	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F1	2	3	2
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F1			
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	3	2
2014	Clinton, NC	PI 330628 x PI 605996	F1	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	F1	1	1	0
2014	Clinton, NC	PI 197088 x PI 605996	F1	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F1			
2014	Clinton, NC	PI 197088 x PI 605996	F1	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	3	4
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a			
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	2	4
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	4
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	4
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	4	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	0	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a			
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	3	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	4	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	3	4
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			1
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	3	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1a			1
2014	Clinton, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1a	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Pb	0	0	1
2014	Clinton, NC	PI 197088 x PI 605996	Pb	3	3	1
2014	Clinton, NC	PI 330628 x PI 605996	Pb	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Pb	0	0	0
2014	Clinton, NC	PI 197088 x PI 605996	Pb	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Pb	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Pb	1	3	2
2014	Clinton, NC	PI 197088 x PI 605996	Pb	1	1	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 330628 x PI 605996	Pb	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Pb			
2014	Clinton, NC	PI 197088 x PI 605996	Pb	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	2
2014	Clinton, NC	PI 197088 x PI 330628	Pb			
2014	Clinton, NC	PI 197088 x PI 605996	Pb	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	3
2014	Clinton, NC	PI 197088 x PI 330628	Pb			
2014	Clinton, NC	PI 197088 x PI 605996	Pb			
2014	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	Pb			
2014	Clinton, NC	PI 197088 x PI 605996	Pb	1	1	3
2014	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	Pb			
2014	Clinton, NC	PI 197088 x PI 605996	Pb	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	3
2014	Clinton, NC	PI 197088 x PI 330628	Pb	1	3	2
2014	Clinton, NC	PI 197088 x PI 605996	Pb	1	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Pb	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Pb			
2014	Clinton, NC	PI 197088 x PI 605996	Pb			
2014	Clinton, NC	PI 330628 x PI 605996	Pb	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	F1	0	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F1	1	2	1
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	0	0	0
2014	Clinton, NC	PI 197088 x PI 330628	F1			1
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F1	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F1	1	2	1
2014	Clinton, NC	PI 197088 x PI 605996	F1	3	3	4
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F1	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F1	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F1	2	1	0
2014	Clinton, NC	PI 197088 x PI 605996	F1	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F1			2
2014	Clinton, NC	PI 197088 x PI 605996	F1			
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F1	1	1	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 605996	F1	0	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F1			
2014	Clinton, NC	PI 197088 x PI 605996	F1	1	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F1			
2014	Clinton, NC	PI 197088 x PI 605996	F1			
2014	Clinton, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	3	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	3	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	3	3	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	1	1	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	Bc1b			
2014	Clinton, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	0	0
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	3	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2			
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	0	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	0
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	3	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	2	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	2	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	2	3	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	3	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	3	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	2	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	0
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	3	2	4
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	3	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	1		
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	2	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	3	3	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2			
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2			
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2			
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	3	3	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	2	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	2	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2			
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2			
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	1	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	3
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	3	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	0
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	2	3	3
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	3
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Clinton, NC	PI 197088 x PI 605996	F2	3	3	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	0	1	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Clinton, NC	PI 197088 x PI 330628	F2	0	2	2
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			
2014	Clinton, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Clinton, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Clinton, NC	PI 197088 x PI 330628	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Clinton, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Clinton, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa	3	3	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	0	0	0
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa	1	1	
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	2	4
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	0
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pa	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pa	1	1	
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pa			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	3	3	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1		0	
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	0	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	3	5
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	3	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	1	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	0	0	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	0	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	0	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	0	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	3	3	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	0
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	0	0	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	0	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	2	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	2	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1a			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1a			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1a	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb			2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb			
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb			
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	3	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	2	0
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	3	3	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Pb			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	Pb	3	3	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Pb	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1			2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	0
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	3	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	3	3	
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	0		
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	3	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1			2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F1			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F1	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F1	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	2	0
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2		1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	0	0	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	0	0	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	3	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			2
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 330628	Bc1b			
2014	Castle Hayne, NC	PI 197088 x PI 605996	Bc1b		1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	Bc1b			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	3	
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	0	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	3	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	0	0	0
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	0	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	0
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	3	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	4
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	0	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	0	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	0
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			0
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	3	3	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	0	1	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	3	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	0	0	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	1

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	1	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	3	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	2

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	3	3	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	2
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	4
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	0	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	0	0	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	0	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	0	0
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	2	2	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	3	3	3
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	2	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	3	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	4
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	3	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	2	2	2
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	0	0	0
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	2
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	0
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	2	3

				Rating[a,b]		
Year	**Location**	**Family**	**Generation[c]**	**1**	**2**	**3**
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	3
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	1	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2	2	2	1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2	1	1	1
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			
2014	Castle Hayne, NC	PI 197088 x PI 330628	F2			
2014	Castle Hayne, NC	PI 197088 x PI 605996	F2			1
2014	Castle Hayne, NC	PI 330628 x PI 605996	F2			

a Disease assessment scale adopted for evaluating cucumber for resistance to downy mildew: 0 to 9 (where 0=no damage, 1=1-10%, 2=11-20%, 3=21-30%, 4=31-40%, 5=41-50%, 6=51-60%, 7=61-70%, 8=71-80%, 9=81-100% (or dead)). Dots represent missing data.
b Ratings occurred weekly starting with the onset of the first observable symptoms.
C Generations are: Parent A (Pa), Parent B (Pb), F1 (Cross between Pa and Pb), BC1a (Backcross to Pa), BC1b (Backcross to Pb), and F2 (Self of F1).

Appendix E

E.1 Raw data of downy mildew ratings taken at the North Carolina Agricultural Research Stations at Clinton and Castle Hayne, NC in 2013 and 2014 on a recombinant inbred line cucumber population developed by single seed decent. The original cross was PI 197088 x 'Coolgreen'.

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-002	13GH-004	Castle Hayne, NC	3	6	5	7
2013	Clgrn088-002	13GH-004	Castle Hayne, NC	4	4	5	7
2013	Clgrn088-003	13GH-006	Castle Hayne, NC	3	6	6	8
2013	Clgrn088-003	13GH-006	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-004	13GH-008	Castle Hayne, NC	3	4	3	5
2013	Clgrn088-004	13GH-008	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-005	13GH-009	Castle Hayne, NC	3	4	4	6
2013	Clgrn088-005	13GH-009	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-006	13GH-011	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-006	13GH-011	Castle Hayne, NC	4	5	3	5
2013	Clgrn088-007	13GH-013	Castle Hayne, NC	3	6	6	7
2013	Clgrn088-007	13GH-013	Castle Hayne, NC	4	5	3	6
2013	Clgrn088-008	13GH-016	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-008	13GH-016	Castle Hayne, NC	4	3	5	7
2013	Clgrn088-009	13GH-017	Castle Hayne, NC	3	5	5	7
2013	Clgrn088-009	13GH-017	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-010	13GH-019	Castle Hayne, NC	3	5	6	7
2013	Clgrn088-010	13GH-019	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-011	13GH-021	Castle Hayne, NC	3	4	4	6
2013	Clgrn088-011	13GH-021	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-012	13GH-023	Castle Hayne, NC	3	7	7	7
2013	Clgrn088-012	13GH-023	Castle Hayne, NC	4	6	7	7
2013	Clgrn088-014	13GH-027	Castle Hayne, NC	3	5	5	6
2013	Clgrn088-014	13GH-027	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-015	13GH-030	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-015	13GH-030	Castle Hayne, NC	4	5	5	5
2013	Clgrn088-016	13GH-032	Castle Hayne, NC	3	5	5	7
2013	Clgrn088-016	13GH-032	Castle Hayne, NC	4	7	5	6
2013	Clgrn088-017	13GH-033	Castle Hayne, NC	3	6	5	8
2013	Clgrn088-017	13GH-033	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-018	13GH-036	Castle Hayne, NC	3	7	7	7
2013	Clgrn088-018	13GH-036	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-019	13GH-038	Castle Hayne, NC	3	6	5	7
2013	Clgrn088-019	13GH-038	Castle Hayne, NC	4	6	6	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-020	13GH-039	Castle Hayne, NC	3	3	2	4
2013	Clgrn088-020	13GH-039	Castle Hayne, NC	4	.	.	3
2013	Clgrn088-022	13GH-044	Castle Hayne, NC	3	6	5	6
2013	Clgrn088-022	13GH-044	Castle Hayne, NC	4	5	6	6
2013	Clgrn088-023	13GH-046	Castle Hayne, NC	3	6	6	8
2013	Clgrn088-023	13GH-046	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-024	13GH-047	Castle Hayne, NC	3	6	3	4
2013	Clgrn088-024	13GH-047	Castle Hayne, NC	4	4	3	6
2013	Clgrn088-025	13GH-049	Castle Hayne, NC	3	6	6	8
2013	Clgrn088-025	13GH-049	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-027	13GH-053	Castle Hayne, NC	3	6	6	5
2013	Clgrn088-027	13GH-053	Castle Hayne, NC	4	6	4	6
2013	Clgrn088-028	13GH-056	Castle Hayne, NC	3	3	6	7
2013	Clgrn088-028	13GH-056	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-029	13GH-058	Castle Hayne, NC	3	5	5	6
2013	Clgrn088-029	13GH-058	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-030	13GH-059	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-030	13GH-059	Castle Hayne, NC	4	4	3	8
2013	Clgrn088-031	13GH-061	Castle Hayne, NC	3	4	3	5
2013	Clgrn088-031	13GH-061	Castle Hayne, NC	4	6	5	5
2013	Clgrn088-032	13GH-064	Castle Hayne, NC	3	3	5	5
2013	Clgrn088-032	13GH-064	Castle Hayne, NC	4	4	5	7
2013	Clgrn088-033	13GH-066	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-033	13GH-066	Castle Hayne, NC	4	6	7	7
2013	Clgrn088-034	13GH-068	Castle Hayne, NC	3	3	3	6
2013	Clgrn088-034	13GH-068	Castle Hayne, NC	4	6	4	6
2013	Clgrn088-035	13GH-069	Castle Hayne, NC	3	7	7	7
2013	Clgrn088-035	13GH-069	Castle Hayne, NC	4	4	4	7
2013	Clgrn088-037	13GH-074	Castle Hayne, NC	3	4	4	7
2013	Clgrn088-037	13GH-074	Castle Hayne, NC	4	4	4	6
2013	Clgrn088-038	13GH-076	Castle Hayne, NC	3	6	7	8
2013	Clgrn088-038	13GH-076	Castle Hayne, NC	4	5	6	7
2013	Clgrn088-039	13GH-077	Castle Hayne, NC	3	7	8	8
2013	Clgrn088-039	13GH-077	Castle Hayne, NC	4	4	6	7
2013	Clgrn088-040	13GH-080	Castle Hayne, NC	3	.	.	5
2013	Clgrn088-040	13GH-080	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-041	13GH-081	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-041	13GH-081	Castle Hayne, NC	4	5	4	6
2013	Clgrn088-042	13GH-084	Castle Hayne, NC	3	5	4	5
2013	Clgrn088-042	13GH-084	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-043	13GH-085	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-043	13GH-085	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-044	13GH-087	Castle Hayne, NC	3	6	5	7
2013	Clgrn088-044	13GH-087	Castle Hayne, NC	4	5	5	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-045	13GH-089	Castle Hayne, NC	3	3	5	5
2013	Clgrn088-045	13GH-089	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-046	13GH-091	Castle Hayne, NC	3	7	8	8
2013	Clgrn088-046	13GH-091	Castle Hayne, NC	4	6	7	7
2013	Clgrn088-047	13GH-093	Castle Hayne, NC	3	3	1	5
2013	Clgrn088-047	13GH-093	Castle Hayne, NC	4	5	6	6
2013	Clgrn088-048	13GH-096	Castle Hayne, NC	3	7	8	8
2013	Clgrn088-048	13GH-096	Castle Hayne, NC	4	6	8	8
2013	Clgrn088-049	13GH-098	Castle Hayne, NC	3	5	7	8
2013	Clgrn088-049	13GH-098	Castle Hayne, NC	4	6	7	8
2013	Clgrn088-052	13GH-103	Castle Hayne, NC	3	4	4	4
2013	Clgrn088-052	13GH-103	Castle Hayne, NC	4	3	4	4
2013	Clgrn088-053	13GH-106	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-053	13GH-106	Castle Hayne, NC	4	4	4	4
2013	Clgrn088-054	13GH-108	Castle Hayne, NC	3	3	3	4
2013	Clgrn088-054	13GH-108	Castle Hayne, NC	4	6	3	4
2013	Clgrn088-055	13GH-110	Castle Hayne, NC	3	7	6	8
2013	Clgrn088-055	13GH-110	Castle Hayne, NC	4	6	5	8
2013	Clgrn088-056	13GH-112	Castle Hayne, NC	3	5	6	6
2013	Clgrn088-056	13GH-112	Castle Hayne, NC	4	6	5	6
2013	Clgrn088-057	13GH-114	Castle Hayne, NC	3	7	7	8
2013	Clgrn088-057	13GH-114	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-058	13GH-115	Castle Hayne, NC	3	5	3	5
2013	Clgrn088-058	13GH-115	Castle Hayne, NC	4	5	3	5
2013	Clgrn088-059	13GH-117	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-059	13GH-117	Castle Hayne, NC	4	4	5	7
2013	Clgrn088-060	13GH-119	Castle Hayne, NC	3	3	2	6
2013	Clgrn088-060	13GH-119	Castle Hayne, NC	4	6	3	5
2013	Clgrn088-063	13GH-126	Castle Hayne, NC	3	4	3	5
2013	Clgrn088-063	13GH-126	Castle Hayne, NC	4	5	4	7
2013	Clgrn088-064	13GH-127	Castle Hayne, NC	3	5	5	7
2013	Clgrn088-064	13GH-127	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-065	13GH-129	Castle Hayne, NC	3	4	4	7
2013	Clgrn088-065	13GH-129	Castle Hayne, NC	4	6	5	5
2013	Clgrn088-066	13GH-131	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-066	13GH-131	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-067	13GH-133	Castle Hayne, NC	3	3	4	6
2013	Clgrn088-067	13GH-133	Castle Hayne, NC	4	7	8	7
2013	Clgrn088-068	13GH-136	Castle Hayne, NC	3	4	5	7
2013	Clgrn088-068	13GH-136	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-070	13GH-139	Castle Hayne, NC	3	5	5	7
2013	Clgrn088-070	13GH-139	Castle Hayne, NC	4	5	6	7
2013	Clgrn088-071	13GH-141	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-071	13GH-141	Castle Hayne, NC	4	6	6	8

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-072	13GH-143	Castle Hayne, NC	3	5	6	7
2013	Clgrn088-072	13GH-143	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-073	13GH-145	Castle Hayne, NC	3	5	6	6
2013	Clgrn088-073	13GH-145	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-074	13GH-148	Castle Hayne, NC	3	4	3	6
2013	Clgrn088-074	13GH-148	Castle Hayne, NC	4	3	2	6
2013	Clgrn088-077	13GH-153	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-077	13GH-153	Castle Hayne, NC	4	4	2	4
2013	Clgrn088-078	13GH-155	Castle Hayne, NC	3	3	4	6
2013	Clgrn088-078	13GH-155	Castle Hayne, NC	4	6	7	8
2013	Clgrn088-079	13GH-158	Castle Hayne, NC	3	3	2	4
2013	Clgrn088-079	13GH-158	Castle Hayne, NC	4	3	4	5
2013	Clgrn088-080	13GH-159	Castle Hayne, NC	3	4	3	6
2013	Clgrn088-080	13GH-159	Castle Hayne, NC	4	3	2	4
2013	Clgrn088-081	13GH-162	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-081	13GH-162	Castle Hayne, NC	4	7	7	6
2013	Clgrn088-082	13GH-164	Castle Hayne, NC	3	4	4	6
2013	Clgrn088-082	13GH-164	Castle Hayne, NC	4	7	5	7
2013	Clgrn088-083	13GH-166	Castle Hayne, NC	3	4	2	3
2013	Clgrn088-083	13GH-166	Castle Hayne, NC	4	5	3	5
2013	Clgrn088-084	13GH-167	Castle Hayne, NC	3	7	6	7
2013	Clgrn088-084	13GH-167	Castle Hayne, NC	4	5	7	7
2013	Clgrn088-085	13GH-169	Castle Hayne, NC	3	3	3	6
2013	Clgrn088-085	13GH-169	Castle Hayne, NC	4	4	3	5
2013	Clgrn088-087	13GH-173	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-087	13GH-173	Castle Hayne, NC	4	4	3	5
2013	Clgrn088-088	13GH-175	Castle Hayne, NC	3	4	7	7
2013	Clgrn088-088	13GH-175	Castle Hayne, NC	4	6	8	9
2013	Clgrn088-089	13GH-178	Castle Hayne, NC	3	3	4	6
2013	Clgrn088-089	13GH-178	Castle Hayne, NC	4	5	2	4
2013	Clgrn088-090	13GH-179	Castle Hayne, NC	3	6	6	7
2013	Clgrn088-090	13GH-179	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-091	13GH-182	Castle Hayne, NC	3	3	3	6
2013	Clgrn088-091	13GH-182	Castle Hayne, NC	4	4	4	6
2013	Clgrn088-092	13GH-184	Castle Hayne, NC	3	5	3	6
2013	Clgrn088-092	13GH-184	Castle Hayne, NC	4	5	6	7
2013	Clgrn088-093	13GH-185	Castle Hayne, NC	3	6	4	6
2013	Clgrn088-093	13GH-185	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-094	13GH-187	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-094	13GH-187	Castle Hayne, NC	4	5	3	6
2013	Clgrn088-095	13GH-189	Castle Hayne, NC	3	7	7	7
2013	Clgrn088-095	13GH-189	Castle Hayne, NC	4	5	7	7
2013	Clgrn088-097	13GH-193	Castle Hayne, NC	3	4	4	6
2013	Clgrn088-097	13GH-193	Castle Hayne, NC	4	4	3	5

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-098	13GH-195	Castle Hayne, NC	3	7	7	8
2013	Clgrn088-098	13GH-195	Castle Hayne, NC	4	7	7	8
2013	Clgrn088-099	13GH-198	Castle Hayne, NC	3	5	4	4
2013	Clgrn088-099	13GH-198	Castle Hayne, NC	4	4	2	4
2013	Clgrn088-100	13GH-199	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-100	13GH-199	Castle Hayne, NC	4	6	4	6
2013	Clgrn088-101	13GH-202	Castle Hayne, NC	3	4	4	7
2013	Clgrn088-101	13GH-202	Castle Hayne, NC	4	4	3	6
2013	Clgrn088-102	13GH-203	Castle Hayne, NC	3	3	5	6
2013	Clgrn088-102	13GH-203	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-103	13GH-206	Castle Hayne, NC	3	6	7	8
2013	Clgrn088-103	13GH-206	Castle Hayne, NC	4	6	7	8
2013	Clgrn088-104	13GH-207	Castle Hayne, NC	3	6	6	8
2013	Clgrn088-104	13GH-207	Castle Hayne, NC	4	7	7	7
2013	Clgrn088-105	13GH-210	Castle Hayne, NC	3	4	4	5
2013	Clgrn088-105	13GH-210	Castle Hayne, NC	4	4	.	5
2013	Clgrn088-106	13GH-211	Castle Hayne, NC	3	6	7	7
2013	Clgrn088-106	13GH-211	Castle Hayne, NC	4	7	7	8
2013	Clgrn088-107	13GH-213	Castle Hayne, NC	3	3	2	4
2013	Clgrn088-107	13GH-213	Castle Hayne, NC	4	5	5	5
2013	Clgrn088-108	13GH-216	Castle Hayne, NC	3	3	2	3
2013	Clgrn088-108	13GH-216	Castle Hayne, NC	4	4	3	5
2013	Clgrn088-109	13GH-218	Castle Hayne, NC	3	5	4	5
2013	Clgrn088-109	13GH-218	Castle Hayne, NC	4	4	5	5
2013	Clgrn088-110	13GH-219	Castle Hayne, NC	3	6	6	8
2013	Clgrn088-110	13GH-219	Castle Hayne, NC	4	6	7	7
2013	Clgrn088-111	13GH-221	Castle Hayne, NC	3	7	7	8
2013	Clgrn088-111	13GH-221	Castle Hayne, NC	4	5	7	8
2013	Clgrn088-112	13GH-223	Castle Hayne, NC	3	4	3	4
2013	Clgrn088-112	13GH-223	Castle Hayne, NC	4	4	4	4
2013	Clgrn088-113	13GH-225	Castle Hayne, NC	3	3	6	7
2013	Clgrn088-113	13GH-225	Castle Hayne, NC	4	6	6	8
2013	Clgrn088-114	13GH-228	Castle Hayne, NC	3	3	4	6
2013	Clgrn088-114	13GH-228	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-115	13GH-230	Castle Hayne, NC	3	4	3	4
2013	Clgrn088-115	13GH-230	Castle Hayne, NC	4	4	3	4
2013	Clgrn088-117	13GH-233	Castle Hayne, NC	3	6	5	5
2013	Clgrn088-117	13GH-233	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-118	13GH-235	Castle Hayne, NC	3	7	7	8
2013	Clgrn088-118	13GH-235	Castle Hayne, NC	4	6	6	8
2013	Clgrn088-119	13GH-238	Castle Hayne, NC	3	4	2	4
2013	Clgrn088-119	13GH-238	Castle Hayne, NC	4	4	3	4
2013	Clgrn088-120	13GH-239	Castle Hayne, NC	3	5	4	6
2013	Clgrn088-120	13GH-239	Castle Hayne, NC	4	5	4	5

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-121	13GH-242	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-121	13GH-242	Castle Hayne, NC	4	4	4	4
2013	Clgrn088-122	13GH-243	Castle Hayne, NC	3	4	6	7
2013	Clgrn088-122	13GH-243	Castle Hayne, NC	4	5	7	7
2013	Clgrn088-123	13GH-246	Castle Hayne, NC	3	4	6	6
2013	Clgrn088-123	13GH-246	Castle Hayne, NC	4	5	5	5
2013	Clgrn088-125	13GH-250	Castle Hayne, NC	3	6	7	7
2013	Clgrn088-125	13GH-250	Castle Hayne, NC	4	7	6	7
2013	Clgrn088-126	13GH-251	Castle Hayne, NC	3	6	4	6
2013	Clgrn088-126	13GH-251	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-127	13GH-254	Castle Hayne, NC	3	4	5	7
2013	Clgrn088-127	13GH-254	Castle Hayne, NC	4	7	6	7
2013	Clgrn088-128	13GH-255	Castle Hayne, NC	3	4	2	4
2013	Clgrn088-128	13GH-255	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-131	13GH-261	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-131	13GH-261	Castle Hayne, NC	4	6	6	8
2013	Clgrn088-132	13GH-263	Castle Hayne, NC	3	6	4	7
2013	Clgrn088-132	13GH-263	Castle Hayne, NC	4	6	6	7
2013	Clgrn088-133	13GH-266	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-133	13GH-266	Castle Hayne, NC	4	3	4	6
2013	Clgrn088-134	13GH-268	Castle Hayne, NC	3	5	4	6
2013	Clgrn088-134	13GH-268	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-135	13GH-269	Castle Hayne, NC	3	4	3	5
2013	Clgrn088-135	13GH-269	Castle Hayne, NC	4	4	2	4
2013	Clgrn088-136	13GH-271	Castle Hayne, NC	3	4	5	6
2013	Clgrn088-136	13GH-271	Castle Hayne, NC	4	3	3	6
2013	Clgrn088-137	13GH-274	Castle Hayne, NC	3	4	5	6
2013	Clgrn088-137	13GH-274	Castle Hayne, NC	4	4	3	5
2013	Clgrn088-138	13GH-275	Castle Hayne, NC	3	4	3	6
2013	Clgrn088-138	13GH-275	Castle Hayne, NC	4	3	2	6
2013	Clgrn088-139	13GH-278	Castle Hayne, NC	3	4	4	6
2013	Clgrn088-139	13GH-278	Castle Hayne, NC	4	6	4	7
2013	Clgrn088-141	13GH-281	Castle Hayne, NC	3	6	5	6
2013	Clgrn088-141	13GH-281	Castle Hayne, NC	4	5	4	6
2013	Clgrn088-142	13GH-284	Castle Hayne, NC	3	7	6	8
2013	Clgrn088-142	13GH-284	Castle Hayne, NC	4	6	6	8
2013	Clgrn088-144	13GH-287	Castle Hayne, NC	3	5	5	5
2013	Clgrn088-144	13GH-287	Castle Hayne, NC	4	6	3	6
2013	Clgrn088-145	13GH-290	Castle Hayne, NC	3	7	7	7
2013	Clgrn088-145	13GH-290	Castle Hayne, NC	4	6	5	7
2013	Clgrn088-146	13GH-291	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-146	13GH-291	Castle Hayne, NC	4	4	3	4
2013	Clgrn088-147	13GH-293	Castle Hayne, NC	3	6	5	4
2013	Clgrn088-147	13GH-293	Castle Hayne, NC	4	5	4	4

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-148	13GH-295	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-148	13GH-295	Castle Hayne, NC	4	5	6	7
2013	Clgrn088-149	13GH-297	Castle Hayne, NC	3	4	4	3
2013	Clgrn088-149	13GH-297	Castle Hayne, NC	4	3	3	3
2013	Clgrn088-150	13GH-300	Castle Hayne, NC	3	6	6	6
2013	Clgrn088-150	13GH-300	Castle Hayne, NC	4	5	6	7
2013	Clgrn088-151	13GH-302	Castle Hayne, NC	3	3	.	5
2013	Clgrn088-151	13GH-302	Castle Hayne, NC	4	5	5	6
2013	Clgrn088-152	13GH-303	Castle Hayne, NC	3	3	4	5
2013	Clgrn088-152	13GH-303	Castle Hayne, NC	4	4	3	4
2013	Clgrn088-153	13GH-305	Castle Hayne, NC	3	5	5	7
2013	Clgrn088-153	13GH-305	Castle Hayne, NC	4	6	5	6
2013	Clgrn088-154	13GH-308	Castle Hayne, NC	3	6	5	7
2013	Clgrn088-154	13GH-308	Castle Hayne, NC	4	4	5	7
2013	Clgrn088-155	13GH-309	Castle Hayne, NC	3	5	5	6
2013	Clgrn088-155	13GH-309	Castle Hayne, NC	4	4	4	7
2013	Clgrn088-156	13GH-312	Castle Hayne, NC	3	7	6	7
2013	Clgrn088-156	13GH-312	Castle Hayne, NC	4	5	5	8
2013	Clgrn088-157	13GH-313	Castle Hayne, NC	3	4	4	5
2013	Clgrn088-157	13GH-313	Castle Hayne, NC	4	4	3	7
2013	Clgrn088-159	13GH-318	Castle Hayne, NC	3	2	1	4
2013	Clgrn088-159	13GH-318	Castle Hayne, NC	4	3	2	2
2013	Clgrn088-160	13GH-320	Castle Hayne, NC	3	1	4	5
2013	Clgrn088-160	13GH-320	Castle Hayne, NC	4	5	2	5
2013	Clgrn088-161	13GH-321	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-161	13GH-321	Castle Hayne, NC	4	5	4	6
2013	Clgrn088-162	13GH-323	Castle Hayne, NC	3	6	5	7
2013	Clgrn088-162	13GH-323	Castle Hayne, NC	4	7	7	7
2013	Clgrn088-163	13GH-325	Castle Hayne, NC	3	3	4	6
2013	Clgrn088-163	13GH-325	Castle Hayne, NC	4	3	4	6
2013	Clgrn088-164	13GH-328	Castle Hayne, NC	3	5	4	7
2013	Clgrn088-164	13GH-328	Castle Hayne, NC	4	6	7	8
2013	Clgrn088-165	13GH-330	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-165	13GH-330	Castle Hayne, NC	4	.	.	.
2013	Clgrn088-166	13GH-332	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-166	13GH-332	Castle Hayne, NC	4	5	5	7
2013	Clgrn088-167	13GH-334	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-167	13GH-334	Castle Hayne, NC	4	4	2	4
2013	Clgrn088-168	13GH-336	Castle Hayne, NC	3	5	3	5
2013	Clgrn088-168	13GH-336	Castle Hayne, NC	4	5	4	7
2013	Clgrn088-169	13GH-338	Castle Hayne, NC	3	7	7	8
2013	Clgrn088-169	13GH-338	Castle Hayne, NC	4	7	7	8
2013	Clgrn088-173	13GH-345	Castle Hayne, NC	3	4	5	6
2013	Clgrn088-173	13GH-345	Castle Hayne, NC	4	6	6	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-174	13GH-347	Castle Hayne, NC	3	7	6	8
2013	Clgrn088-174	13GH-347	Castle Hayne, NC	4	5	3	6
2013	Clgrn088-175	13GH-349	Castle Hayne, NC	3	6	3	6
2013	Clgrn088-175	13GH-349	Castle Hayne, NC	4	5	4	6
2013	Clgrn088-176	13GH-352	Castle Hayne, NC	3	.	.	3
2013	Clgrn088-176	13GH-352	Castle Hayne, NC	4	4	5	6
2013	Clgrn088-177	13GH-353	Castle Hayne, NC	3	4	1	4
2013	Clgrn088-177	13GH-353	Castle Hayne, NC	4	3	4	5
2013	Clgrn088-178	13GH-356	Castle Hayne, NC	3	4	2	6
2013	Clgrn088-178	13GH-356	Castle Hayne, NC	4	4	3	5
2013	Clgrn088-179	13GH-358	Castle Hayne, NC	3	5	4	6
2013	Clgrn088-179	13GH-358	Castle Hayne, NC	4	6	4	6
2013	Clgrn088-180	13GH-359	Castle Hayne, NC	3	5	4	5
2013	Clgrn088-180	13GH-359	Castle Hayne, NC	4	4	4	6
2013	Clgrn088-181	13GH-361	Castle Hayne, NC	3	.	.	.
2013	Clgrn088-181	13GH-361	Castle Hayne, NC	4	4	6	6
2013	Clgrn088-002	13GH-004	Clinton, NC	1	5	5	5
2013	Clgrn088-002	13GH-004	Clinton, NC	2	4	5	6
2013	Clgrn088-003	13GH-006	Clinton, NC	1	4	5	6
2013	Clgrn088-003	13GH-006	Clinton, NC	2	6	6	7
2013	Clgrn088-004	13GH-008	Clinton, NC	1	.	.	.
2013	Clgrn088-004	13GH-008	Clinton, NC	2	6	6	6
2013	Clgrn088-005	13GH-009	Clinton, NC	1	6	6	6
2013	Clgrn088-005	13GH-009	Clinton, NC	2	.	.	.
2013	Clgrn088-006	13GH-011	Clinton, NC	1	5	3	3
2013	Clgrn088-006	13GH-011	Clinton, NC	2	4	6	5
2013	Clgrn088-007	13GH-013	Clinton, NC	1	6	5	5
2013	Clgrn088-007	13GH-013	Clinton, NC	2	6	6	8
2013	Clgrn088-008	13GH-016	Clinton, NC	1	6	5	5
2013	Clgrn088-008	13GH-016	Clinton, NC	2	3	7	7
2013	Clgrn088-009	13GH-017	Clinton, NC	1	5	5	5
2013	Clgrn088-009	13GH-017	Clinton, NC	2	6	5	4
2013	Clgrn088-010	13GH-019	Clinton, NC	1	4	6	6
2013	Clgrn088-010	13GH-019	Clinton, NC	2	4	6	6
2013	Clgrn088-011	13GH-021	Clinton, NC	1	7	5	6
2013	Clgrn088-011	13GH-021	Clinton, NC	2	.	6	6
2013	Clgrn088-012	13GH-023	Clinton, NC	1	6	7	6
2013	Clgrn088-012	13GH-023	Clinton, NC	2	5	6	6
2013	Clgrn088-014	13GH-027	Clinton, NC	1	6	4	4
2013	Clgrn088-014	13GH-027	Clinton, NC	2	5	5	5
2013	Clgrn088-015	13GH-030	Clinton, NC	1	5	6	6
2013	Clgrn088-015	13GH-030	Clinton, NC	2	2	5	6
2013	Clgrn088-016	13GH-032	Clinton, NC	1	4	7	7
2013	Clgrn088-016	13GH-032	Clinton, NC	2	4	6	6

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-017	13GH-033	Clinton, NC	1	5	4	5
2013	Clgrn088-017	13GH-033	Clinton, NC	2	5	6	7
2013	Clgrn088-018	13GH-036	Clinton, NC	1	6	6	6
2013	Clgrn088-018	13GH-036	Clinton, NC	2	4	5	6
2013	Clgrn088-019	13GH-038	Clinton, NC	1	4	6	6
2013	Clgrn088-019	13GH-038	Clinton, NC	2	.	4	4
2013	Clgrn088-020	13GH-039	Clinton, NC	1	1	3	3
2013	Clgrn088-020	13GH-039	Clinton, NC	2	1	2	4
2013	Clgrn088-022	13GH-044	Clinton, NC	1	4	5	5
2013	Clgrn088-022	13GH-044	Clinton, NC	2	4	6	6
2013	Clgrn088-023	13GH-046	Clinton, NC	1	5	7	7
2013	Clgrn088-023	13GH-046	Clinton, NC	2	4	5	6
2013	Clgrn088-024	13GH-047	Clinton, NC	1	5	7	5
2013	Clgrn088-024	13GH-047	Clinton, NC	2	6	5	5
2013	Clgrn088-025	13GH-049	Clinton, NC	1	5	4	6
2013	Clgrn088-025	13GH-049	Clinton, NC	2	5	6	7
2013	Clgrn088-027	13GH-053	Clinton, NC	1	3	5	3
2013	Clgrn088-027	13GH-053	Clinton, NC	2	3	4	5
2013	Clgrn088-028	13GH-056	Clinton, NC	1	5	5	3
2013	Clgrn088-028	13GH-056	Clinton, NC	2	7	6	7
2013	Clgrn088-029	13GH-058	Clinton, NC	1	4	4	3
2013	Clgrn088-029	13GH-058	Clinton, NC	2	2	5	6
2013	Clgrn088-030	13GH-059	Clinton, NC	1	1	2	1
2013	Clgrn088-030	13GH-059	Clinton, NC	2	.	.	.
2013	Clgrn088-031	13GH-061	Clinton, NC	1	6	3	3
2013	Clgrn088-031	13GH-061	Clinton, NC	2	5	5	6
2013	Clgrn088-032	13GH-064	Clinton, NC	1	2	5	5
2013	Clgrn088-032	13GH-064	Clinton, NC	2	4	6	7
2013	Clgrn088-033	13GH-066	Clinton, NC	1	7	5	5
2013	Clgrn088-033	13GH-066	Clinton, NC	2	.	6	5
2013	Clgrn088-034	13GH-068	Clinton, NC	1	2	3	3
2013	Clgrn088-034	13GH-068	Clinton, NC	2	2	5	3
2013	Clgrn088-035	13GH-069	Clinton, NC	1	7	5	5
2013	Clgrn088-035	13GH-069	Clinton, NC	2	6	6	4
2013	Clgrn088-037	13GH-074	Clinton, NC	1	5	6	5
2013	Clgrn088-037	13GH-074	Clinton, NC	2	5	6	6
2013	Clgrn088-038	13GH-076	Clinton, NC	1	6	6	6
2013	Clgrn088-038	13GH-076	Clinton, NC	2	5	7	6
2013	Clgrn088-039	13GH-077	Clinton, NC	1	6	6	6
2013	Clgrn088-039	13GH-077	Clinton, NC	2	5	6	7
2013	Clgrn088-040	13GH-080	Clinton, NC	1	5	6	4
2013	Clgrn088-040	13GH-080	Clinton, NC	2	6	6	6
2013	Clgrn088-041	13GH-081	Clinton, NC	1	5	6	4
2013	Clgrn088-041	13GH-081	Clinton, NC	2	5	4	4

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-042	13GH-084	Clinton, NC	1	6	4	5
2013	Clgrn088-042	13GH-084	Clinton, NC	2	6	6	6
2013	Clgrn088-043	13GH-085	Clinton, NC	1	7	7	6
2013	Clgrn088-043	13GH-085	Clinton, NC	2	5	7	7
2013	Clgrn088-044	13GH-087	Clinton, NC	1	3	5	5
2013	Clgrn088-044	13GH-087	Clinton, NC	2	4	6	4
2013	Clgrn088-045	13GH-089	Clinton, NC	1	3	6	5
2013	Clgrn088-045	13GH-089	Clinton, NC	2	4	4	4
2013	Clgrn088-046	13GH-091	Clinton, NC	1	5	6	6
2013	Clgrn088-046	13GH-091	Clinton, NC	2	6	6	7
2013	Clgrn088-047	13GH-093	Clinton, NC	1	5	5	5
2013	Clgrn088-047	13GH-093	Clinton, NC	2	4	5	6
2013	Clgrn088-048	13GH-096	Clinton, NC	1	5	5	6
2013	Clgrn088-048	13GH-096	Clinton, NC	2	5	6	7
2013	Clgrn088-049	13GH-098	Clinton, NC	1	5	7	8
2013	Clgrn088-049	13GH-098	Clinton, NC	2	7	7	7
2013	Clgrn088-052	13GH-103	Clinton, NC	1	3	5	4
2013	Clgrn088-052	13GH-103	Clinton, NC	2	3	4	5
2013	Clgrn088-053	13GH-106	Clinton, NC	1	3	4	5
2013	Clgrn088-053	13GH-106	Clinton, NC	2	3	2	3
2013	Clgrn088-054	13GH-108	Clinton, NC	1	3	4	4
2013	Clgrn088-054	13GH-108	Clinton, NC	2	2	4	3
2013	Clgrn088-055	13GH-110	Clinton, NC	1	6	7	6
2013	Clgrn088-055	13GH-110	Clinton, NC	2	7	6	6
2013	Clgrn088-056	13GH-112	Clinton, NC	1	4	5	5
2013	Clgrn088-056	13GH-112	Clinton, NC	2	4	6	5
2013	Clgrn088-057	13GH-114	Clinton, NC	1	5	5	5
2013	Clgrn088-057	13GH-114	Clinton, NC	2	5	6	5
2013	Clgrn088-058	13GH-115	Clinton, NC	1	4	5	3
2013	Clgrn088-058	13GH-115	Clinton, NC	2	5	4	5
2013	Clgrn088-059	13GH-117	Clinton, NC	1	4	5	4
2013	Clgrn088-059	13GH-117	Clinton, NC	2	4	5	6
2013	Clgrn088-060	13GH-119	Clinton, NC	1	2	3	2
2013	Clgrn088-060	13GH-119	Clinton, NC	2	1	1	2
2013	Clgrn088-063	13GH-126	Clinton, NC	1	6	5	5
2013	Clgrn088-063	13GH-126	Clinton, NC	2	4	6	6
2013	Clgrn088-064	13GH-127	Clinton, NC	1	5	6	5
2013	Clgrn088-064	13GH-127	Clinton, NC	2	3	5	5
2013	Clgrn088-065	13GH-129	Clinton, NC	1	5	5	4
2013	Clgrn088-065	13GH-129	Clinton, NC	2	6	5	4
2013	Clgrn088-066	13GH-131	Clinton, NC	1	6	6	4
2013	Clgrn088-066	13GH-131	Clinton, NC	2	5	6	5
2013	Clgrn088-067	13GH-133	Clinton, NC	1	4	7	7
2013	Clgrn088-067	13GH-133	Clinton, NC	2	6	6	5

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-068	13GH-136	Clinton, NC	1	6	6	5
2013	Clgrn088-068	13GH-136	Clinton, NC	2	.	5	5
2013	Clgrn088-070	13GH-139	Clinton, NC	1	3	5	5
2013	Clgrn088-070	13GH-139	Clinton, NC	2	4	5	5
2013	Clgrn088-071	13GH-141	Clinton, NC	1	6	7	7
2013	Clgrn088-071	13GH-141	Clinton, NC	2	7	7	7
2013	Clgrn088-072	13GH-143	Clinton, NC	1	6	7	6
2013	Clgrn088-072	13GH-143	Clinton, NC	2	5	5	7
2013	Clgrn088-073	13GH-145	Clinton, NC	1	6	5	5
2013	Clgrn088-073	13GH-145	Clinton, NC	2	.	6	5
2013	Clgrn088-074	13GH-148	Clinton, NC	1	4	4	4
2013	Clgrn088-074	13GH-148	Clinton, NC	2	.	5	4
2013	Clgrn088-077	13GH-153	Clinton, NC	1	3	5	4
2013	Clgrn088-077	13GH-153	Clinton, NC	2	3	3	3
2013	Clgrn088-078	13GH-155	Clinton, NC	1	6	6	6
2013	Clgrn088-078	13GH-155	Clinton, NC	2	.	.	.
2013	Clgrn088-079	13GH-158	Clinton, NC	1	2	5	4
2013	Clgrn088-079	13GH-158	Clinton, NC	2	1	5	5
2013	Clgrn088-080	13GH-159	Clinton, NC	1	3	5	5
2013	Clgrn088-080	13GH-159	Clinton, NC	2	3	5	5
2013	Clgrn088-081	13GH-162	Clinton, NC	1	6	6	6
2013	Clgrn088-081	13GH-162	Clinton, NC	2	.	6	5
2013	Clgrn088-082	13GH-164	Clinton, NC	1	6	6	6
2013	Clgrn088-082	13GH-164	Clinton, NC	2	5	5	6
2013	Clgrn088-083	13GH-166	Clinton, NC	1	1	2	4
2013	Clgrn088-083	13GH-166	Clinton, NC	2	2	4	3
2013	Clgrn088-084	13GH-167	Clinton, NC	1	6	7	6
2013	Clgrn088-084	13GH-167	Clinton, NC	2	.	4	6
2013	Clgrn088-085	13GH-169	Clinton, NC	1	3	5	3
2013	Clgrn088-085	13GH-169	Clinton, NC	2	3	5	5
2013	Clgrn088-087	13GH-173	Clinton, NC	1	2	3	3
2013	Clgrn088-087	13GH-173	Clinton, NC	2	2	3	3
2013	Clgrn088-088	13GH-175	Clinton, NC	1	5	7	6
2013	Clgrn088-088	13GH-175	Clinton, NC	2	5	5	5
2013	Clgrn088-089	13GH-178	Clinton, NC	1	1	2	2
2013	Clgrn088-089	13GH-178	Clinton, NC	2	2	3	3
2013	Clgrn088-090	13GH-179	Clinton, NC	1	3	5	4
2013	Clgrn088-090	13GH-179	Clinton, NC	2	4	5	5
2013	Clgrn088-091	13GH-182	Clinton, NC	1	3	5	3
2013	Clgrn088-091	13GH-182	Clinton, NC	2	4	4	4
2013	Clgrn088-092	13GH-184	Clinton, NC	1	2	6	5
2013	Clgrn088-092	13GH-184	Clinton, NC	2	3	5	5
2013	Clgrn088-093	13GH-185	Clinton, NC	1	4	5	5
2013	Clgrn088-093	13GH-185	Clinton, NC	2	.	5	5

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-094	13GH-187	Clinton, NC	1	3	6	7
2013	Clgrn088-094	13GH-187	Clinton, NC	2	3	3	5
2013	Clgrn088-095	13GH-189	Clinton, NC	1	5	5	4
2013	Clgrn088-095	13GH-189	Clinton, NC	2	5	7	6
2013	Clgrn088-097	13GH-193	Clinton, NC	1	2	6	5
2013	Clgrn088-097	13GH-193	Clinton, NC	2	4	4	4
2013	Clgrn088-098	13GH-195	Clinton, NC	1	6	6	7
2013	Clgrn088-098	13GH-195	Clinton, NC	2	6	6	7
2013	Clgrn088-099	13GH-198	Clinton, NC	1	4	3	3
2013	Clgrn088-099	13GH-198	Clinton, NC	2	1	2	3
2013	Clgrn088-100	13GH-199	Clinton, NC	1	5	5	5
2013	Clgrn088-100	13GH-199	Clinton, NC	2	4	5	6
2013	Clgrn088-101	13GH-202	Clinton, NC	1	3	4	4
2013	Clgrn088-101	13GH-202	Clinton, NC	2	5	6	7
2013	Clgrn088-102	13GH-203	Clinton, NC	1	6	5	3
2013	Clgrn088-102	13GH-203	Clinton, NC	2	3	4	5
2013	Clgrn088-103	13GH-206	Clinton, NC	1	6	7	7
2013	Clgrn088-103	13GH-206	Clinton, NC	2	5	6	8
2013	Clgrn088-104	13GH-207	Clinton, NC	1	7	7	7
2013	Clgrn088-104	13GH-207	Clinton, NC	2	7	6	7
2013	Clgrn088-105	13GH-210	Clinton, NC	1	4	4	4
2013	Clgrn088-105	13GH-210	Clinton, NC	2	1	6	6
2013	Clgrn088-106	13GH-211	Clinton, NC	1	4	7	7
2013	Clgrn088-106	13GH-211	Clinton, NC	2	3	6	7
2013	Clgrn088-107	13GH-213	Clinton, NC	1	5	4	4
2013	Clgrn088-107	13GH-213	Clinton, NC	2	6	5	4
2013	Clgrn088-108	13GH-216	Clinton, NC	1	3	3	2
2013	Clgrn088-108	13GH-216	Clinton, NC	2	1	3	5
2013	Clgrn088-109	13GH-218	Clinton, NC	1	3	5	4
2013	Clgrn088-109	13GH-218	Clinton, NC	2	3	3	6
2013	Clgrn088-110	13GH-219	Clinton, NC	1	5	6	6
2013	Clgrn088-110	13GH-219	Clinton, NC	2	.	.	.
2013	Clgrn088-111	13GH-221	Clinton, NC	1	5	7	6
2013	Clgrn088-111	13GH-221	Clinton, NC	2	4	7	7
2013	Clgrn088-112	13GH-223	Clinton, NC	1	4	5	4
2013	Clgrn088-112	13GH-223	Clinton, NC	2	7	7	.
2013	Clgrn088-113	13GH-225	Clinton, NC	1	6	7	7
2013	Clgrn088-113	13GH-225	Clinton, NC	2	5	7	7
2013	Clgrn088-114	13GH-228	Clinton, NC	1	6	6	4
2013	Clgrn088-114	13GH-228	Clinton, NC	2	5	5	4
2013	Clgrn088-115	13GH-230	Clinton, NC	1	5	5	4
2013	Clgrn088-115	13GH-230	Clinton, NC	2	4	5	4
2013	Clgrn088-117	13GH-233	Clinton, NC	1	3	4	5
2013	Clgrn088-117	13GH-233	Clinton, NC	2	.	3	3

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-118	13GH-235	Clinton, NC	1	6	7	7
2013	Clgrn088-118	13GH-235	Clinton, NC	2	.	6	6
2013	Clgrn088-119	13GH-238	Clinton, NC	1	2	2	2
2013	Clgrn088-119	13GH-238	Clinton, NC	2	2	4	5
2013	Clgrn088-120	13GH-239	Clinton, NC	1	4	4	5
2013	Clgrn088-120	13GH-239	Clinton, NC	2	1	2	3
2013	Clgrn088-121	13GH-242	Clinton, NC	1	4	4	3
2013	Clgrn088-121	13GH-242	Clinton, NC	2	2	4	5
2013	Clgrn088-122	13GH-243	Clinton, NC	1	7	7	7
2013	Clgrn088-122	13GH-243	Clinton, NC	2	2	4	5
2013	Clgrn088-123	13GH-246	Clinton, NC	1	4	5	5
2013	Clgrn088-123	13GH-246	Clinton, NC	2	5	5	4
2013	Clgrn088-125	13GH-250	Clinton, NC	1	6	6	7
2013	Clgrn088-125	13GH-250	Clinton, NC	2	7	6	8
2013	Clgrn088-126	13GH-251	Clinton, NC	1	3	5	5
2013	Clgrn088-126	13GH-251	Clinton, NC	2	2	4	5
2013	Clgrn088-127	13GH-254	Clinton, NC	1	7	6	6
2013	Clgrn088-127	13GH-254	Clinton, NC	2	5	6	5
2013	Clgrn088-128	13GH-255	Clinton, NC	1	2	5	5
2013	Clgrn088-128	13GH-255	Clinton, NC	2	2	3	4
2013	Clgrn088-131	13GH-261	Clinton, NC	1	4	5	6
2013	Clgrn088-131	13GH-261	Clinton, NC	2	2	6	6
2013	Clgrn088-132	13GH-263	Clinton, NC	1	3	5	5
2013	Clgrn088-132	13GH-263	Clinton, NC	2	6	6	5
2013	Clgrn088-133	13GH-266	Clinton, NC	1	2	1	2
2013	Clgrn088-133	13GH-266	Clinton, NC	2	.	1	4
2013	Clgrn088-134	13GH-268	Clinton, NC	1	4	6	5
2013	Clgrn088-134	13GH-268	Clinton, NC	2	3	5	5
2013	Clgrn088-135	13GH-269	Clinton, NC	1	2	3	4
2013	Clgrn088-135	13GH-269	Clinton, NC	2	4	4	4
2013	Clgrn088-136	13GH-271	Clinton, NC	1	1	4	5
2013	Clgrn088-136	13GH-271	Clinton, NC	2	1	3	.
2013	Clgrn088-137	13GH-274	Clinton, NC	1	2	5	4
2013	Clgrn088-137	13GH-274	Clinton, NC	2	5	5	5
2013	Clgrn088-138	13GH-275	Clinton, NC	1	2	5	4
2013	Clgrn088-138	13GH-275	Clinton, NC	2	.	4	4
2013	Clgrn088-139	13GH-278	Clinton, NC	1	4	6	7
2013	Clgrn088-139	13GH-278	Clinton, NC	2	4	6	7
2013	Clgrn088-141	13GH-281	Clinton, NC	1	3	4	4
2013	Clgrn088-141	13GH-281	Clinton, NC	2	4	4	5
2013	Clgrn088-142	13GH-284	Clinton, NC	1	4	6	7
2013	Clgrn088-142	13GH-284	Clinton, NC	2	6	7	8
2013	Clgrn088-144	13GH-287	Clinton, NC	1	2	5	6
2013	Clgrn088-144	13GH-287	Clinton, NC	2	2	6	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-145	13GH-290	Clinton, NC	1	.	.	.
2013	Clgrn088-145	13GH-290	Clinton, NC	2	4	5	6
2013	Clgrn088-146	13GH-291	Clinton, NC	1	1	5	4
2013	Clgrn088-146	13GH-291	Clinton, NC	2	2	3	3
2013	Clgrn088-147	13GH-293	Clinton, NC	1	1	5	4
2013	Clgrn088-147	13GH-293	Clinton, NC	2	3	4	4
2013	Clgrn088-148	13GH-295	Clinton, NC	1	2	6	5
2013	Clgrn088-148	13GH-295	Clinton, NC	2	4	6	7
2013	Clgrn088-149	13GH-297	Clinton, NC	1	2	4	3
2013	Clgrn088-149	13GH-297	Clinton, NC	2	3	2	3
2013	Clgrn088-150	13GH-300	Clinton, NC	1	5	6	6
2013	Clgrn088-150	13GH-300	Clinton, NC	2	6	5	6
2013	Clgrn088-151	13GH-302	Clinton, NC	1	2	5	5
2013	Clgrn088-151	13GH-302	Clinton, NC	2	.	4	5
2013	Clgrn088-152	13GH-303	Clinton, NC	1	1	6	4
2013	Clgrn088-152	13GH-303	Clinton, NC	2	3	4	5
2013	Clgrn088-153	13GH-305	Clinton, NC	1	5	6	4
2013	Clgrn088-153	13GH-305	Clinton, NC	2	5	5	6
2013	Clgrn088-154	13GH-308	Clinton, NC	1	4	6	4
2013	Clgrn088-154	13GH-308	Clinton, NC	2	3	5	5
2013	Clgrn088-155	13GH-309	Clinton, NC	1	5	6	6
2013	Clgrn088-155	13GH-309	Clinton, NC	2	.	.	.
2013	Clgrn088-156	13GH-312	Clinton, NC	1	6	7	7
2013	Clgrn088-156	13GH-312	Clinton, NC	2	3	7	7
2013	Clgrn088-157	13GH-313	Clinton, NC	1	1	5	5
2013	Clgrn088-157	13GH-313	Clinton, NC	2	2	5	5
2013	Clgrn088-159	13GH-318	Clinton, NC	1	0	1	2
2013	Clgrn088-159	13GH-318	Clinton, NC	2	1	3	4
2013	Clgrn088-160	13GH-320	Clinton, NC	1	4	6	6
2013	Clgrn088-160	13GH-320	Clinton, NC	2	.	4	3
2013	Clgrn088-161	13GH-321	Clinton, NC	1	2	4	5
2013	Clgrn088-161	13GH-321	Clinton, NC	2	2	4	5
2013	Clgrn088-162	13GH-323	Clinton, NC	1	5	6	7
2013	Clgrn088-162	13GH-323	Clinton, NC	2	6	6	6
2013	Clgrn088-163	13GH-325	Clinton, NC	1	4	5	6
2013	Clgrn088-163	13GH-325	Clinton, NC	2	.	6	6
2013	Clgrn088-164	13GH-328	Clinton, NC	1	4	6	6
2013	Clgrn088-164	13GH-328	Clinton, NC	2	2	4	6
2013	Clgrn088-165	13GH-330	Clinton, NC	1	.	.	.
2013	Clgrn088-165	13GH-330	Clinton, NC	2	.	.	.
2013	Clgrn088-166	13GH-332	Clinton, NC	1	3	5	5
2013	Clgrn088-166	13GH-332	Clinton, NC	2	4	5	6
2013	Clgrn088-167	13GH-334	Clinton, NC	1	1	3	4
2013	Clgrn088-167	13GH-334	Clinton, NC	2	2	2	2

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2013	Clgrn088-168	13GH-336	Clinton, NC	1	4	5	6
2013	Clgrn088-168	13GH-336	Clinton, NC	2	4	5	5
2013	Clgrn088-169	13GH-338	Clinton, NC	1	6	6	8
2013	Clgrn088-169	13GH-338	Clinton, NC	2	.	7	8
2013	Clgrn088-173	13GH-345	Clinton, NC	1	2	5	7
2013	Clgrn088-173	13GH-345	Clinton, NC	2	1	4	6
2013	Clgrn088-174	13GH-347	Clinton, NC	1	5	7	6
2013	Clgrn088-174	13GH-347	Clinton, NC	2	6	6	7
2013	Clgrn088-175	13GH-349	Clinton, NC	1	3	5	5
2013	Clgrn088-175	13GH-349	Clinton, NC	2	.	5	5
2013	Clgrn088-176	13GH-352	Clinton, NC	1	2	4	4
2013	Clgrn088-176	13GH-352	Clinton, NC	2	4	4	4
2013	Clgrn088-177	13GH-353	Clinton, NC	1	1	3	4
2013	Clgrn088-177	13GH-353	Clinton, NC	2	2	2	4
2013	Clgrn088-178	13GH-356	Clinton, NC	1	3	4	4
2013	Clgrn088-178	13GH-356	Clinton, NC	2	.	2	4
2013	Clgrn088-179	13GH-358	Clinton, NC	1	3	4	4
2013	Clgrn088-179	13GH-358	Clinton, NC	2	4	4	5
2013	Clgrn088-180	13GH-359	Clinton, NC	1	5	4	5
2013	Clgrn088-180	13GH-359	Clinton, NC	2	.	5	5
2013	Clgrn088-181	13GH-361	Clinton, NC	1	4	6	6
2013	Clgrn088-181	13GH-361	Clinton, NC	2	5	6	6
2014	Clgrn088-002	13GH-1337	Castle Hayne, NC	1	5	4	7
2014	Clgrn088-002	13GH-1337	Castle Hayne, NC	2	3	4	6
2014	Clgrn088-003	13GH-1340	Castle Hayne, NC	1	1	4	5
2014	Clgrn088-003	13GH-1340	Castle Hayne, NC	2	3	4	4
2014	Clgrn088-004	13GH-1341	Castle Hayne, NC	1	2	4	4
2014	Clgrn088-004	13GH-1341	Castle Hayne, NC	2	2	3	4
2014	Clgrn088-005	13GH-1343	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-005	13GH-1343	Castle Hayne, NC	2	2	3	4
2014	Clgrn088-006	13GH-1345	Castle Hayne, NC	1	1	4	4
2014	Clgrn088-006	13GH-1345	Castle Hayne, NC	2	3	2	4
2014	Clgrn088-007	13GH-1347	Castle Hayne, NC	1	3	6	6
2014	Clgrn088-007	13GH-1347	Castle Hayne, NC	2	3	6	6
2014	Clgrn088-008	13GH-1349	Castle Hayne, NC	1	3	5	5
2014	Clgrn088-008	13GH-1349	Castle Hayne, NC	2	4	6	7
2014	Clgrn088-010	13GH-1352	Castle Hayne, NC	1	2	3	5
2014	Clgrn088-010	13GH-1352	Castle Hayne, NC	2	3	5	6
2014	Clgrn088-011	13GH-1354	Castle Hayne, NC	1	2	2	6
2014	Clgrn088-011	13GH-1354	Castle Hayne, NC	2	3	2	5
2014	Clgrn088-012	13GH-1356	Castle Hayne, NC	1	3	6	7
2014	Clgrn088-012	13GH-1356	Castle Hayne, NC	2	5	5	6
2014	Clgrn088-013	14GH-356	Castle Hayne, NC	1	4	3	6
2014	Clgrn088-013	14GH-356	Castle Hayne, NC	2	3	2	4

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-014	13GH-1357	Castle Hayne, NC	1	2	3	4
2014	Clgrn088-014	13GH-1357	Castle Hayne, NC	2	2	2	5
2014	Clgrn088-015	13GH-1360	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-015	13GH-1360	Castle Hayne, NC	2	2	3	3
2014	Clgrn088-016	13GH-1362	Castle Hayne, NC	1	4	6	5
2014	Clgrn088-016	13GH-1362	Castle Hayne, NC	2	5	4	6
2014	Clgrn088-017	13GH-1364	Castle Hayne, NC	1	4	6	6
2014	Clgrn088-017	13GH-1364	Castle Hayne, NC	2	3	4	7
2014	Clgrn088-018	13GH-1366	Castle Hayne, NC	1	5	5	6
2014	Clgrn088-018	13GH-1366	Castle Hayne, NC	2	3	4	5
2014	Clgrn088-019	13GH-1368	Castle Hayne, NC	1	4	5	4
2014	Clgrn088-019	13GH-1368	Castle Hayne, NC	2	4	2	4
2014	Clgrn088-020	13GH-1369	Castle Hayne, NC	1	1	2	1
2014	Clgrn088-020	13GH-1369	Castle Hayne, NC	2	1	1	1
2014	Clgrn088-023	13GH-1372	Castle Hayne, NC	1	4	5	4
2014	Clgrn088-023	13GH-1372	Castle Hayne, NC	2	3	3	5
2014	Clgrn088-024	13GH-1374	Castle Hayne, NC	1	2	4	3
2014	Clgrn088-024	13GH-1374	Castle Hayne, NC	2	3	3	4
2014	Clgrn088-025	14GH-381	Castle Hayne, NC	1	4	4	5
2014	Clgrn088-025	14GH-381	Castle Hayne, NC	2	5	4	5
2014	Clgrn088-027	13GH-1378	Castle Hayne, NC	1	3	4	3
2014	Clgrn088-027	13GH-1378	Castle Hayne, NC	2	3	3	2
2014	Clgrn088-028	13GH-1379	Castle Hayne, NC	1	3	5	5
2014	Clgrn088-028	13GH-1379	Castle Hayne, NC	2	4	2	4
2014	Clgrn088-029	13GH-1381	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-029	13GH-1381	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-030	14GH-383	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-030	14GH-383	Castle Hayne, NC	2	2	3	5
2014	Clgrn088-031	13GH-1385	Castle Hayne, NC	1	2	2	2
2014	Clgrn088-031	13GH-1385	Castle Hayne, NC	2	2	3	3
2014	Clgrn088-032	13GH-1387	Castle Hayne, NC	1	2	2	3
2014	Clgrn088-032	13GH-1387	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-033	13GH-1389	Castle Hayne, NC	1	2	5	6
2014	Clgrn088-033	13GH-1389	Castle Hayne, NC	2	4	6	6
2014	Clgrn088-035	14GH-322	Castle Hayne, NC	1	4	4	5
2014	Clgrn088-035	14GH-322	Castle Hayne, NC	2	2	3	5
2014	Clgrn088-037	14GH-323	Castle Hayne, NC	1	2	3	4
2014	Clgrn088-037	14GH-323	Castle Hayne, NC	2	3	2	4
2014	Clgrn088-038	13GH-1392	Castle Hayne, NC	1	3	5	6
2014	Clgrn088-038	13GH-1392	Castle Hayne, NC	2	4	4	6
2014	Clgrn088-039	13GH-1393	Castle Hayne, NC	1	4	4	5
2014	Clgrn088-039	13GH-1393	Castle Hayne, NC	2	3	5	6
2014	Clgrn088-040	13GH-1395	Castle Hayne, NC	1	4	2	5
2014	Clgrn088-040	13GH-1395	Castle Hayne, NC	2	2	4	6

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-041	13GH-1398	Castle Hayne, NC	1	1	5	4
2014	Clgrn088-041	13GH-1398	Castle Hayne, NC	2	3	3	3
2014	Clgrn088-043	13GH-1399	Castle Hayne, NC	1	2	4	5
2014	Clgrn088-043	13GH-1399	Castle Hayne, NC	2	3	3	6
2014	Clgrn088-044	13GH-1402	Castle Hayne, NC	1	2	4	4
2014	Clgrn088-044	13GH-1402	Castle Hayne, NC	2	3	4	6
2014	Clgrn088-045	13GH-1404	Castle Hayne, NC	1	1	3	3
2014	Clgrn088-045	13GH-1404	Castle Hayne, NC	2	2	4	5
2014	Clgrn088-046	13GH-1405	Castle Hayne, NC	1	4	3	3
2014	Clgrn088-046	13GH-1405	Castle Hayne, NC	2	2	4	5
2014	Clgrn088-047	13GH-1408	Castle Hayne, NC	1	2	3	3
2014	Clgrn088-047	13GH-1408	Castle Hayne, NC	2	2	2	6
2014	Clgrn088-048	13GH-1409	Castle Hayne, NC	1	4	5	7
2014	Clgrn088-048	13GH-1409	Castle Hayne, NC	2	3	6	7
2014	Clgrn088-049	13GH-1411	Castle Hayne, NC	1	4	6	7
2014	Clgrn088-049	13GH-1411	Castle Hayne, NC	2	3	4	7
2014	Clgrn088-052	13GH-1413	Castle Hayne, NC	1	2	3	3
2014	Clgrn088-052	13GH-1413	Castle Hayne, NC	2	2	2	3
2014	Clgrn088-053	13GH-1415	Castle Hayne, NC	1	2	3	3
2014	Clgrn088-053	13GH-1415	Castle Hayne, NC	2	3	4	3
2014	Clgrn088-054	13GH-1418	Castle Hayne, NC	1	2	3	2
2014	Clgrn088-054	13GH-1418	Castle Hayne, NC	2	3	1	3
2014	Clgrn088-056	13GH-1419	Castle Hayne, NC	1	2	4	6
2014	Clgrn088-056	13GH-1419	Castle Hayne, NC	2	2	2	4
2014	Clgrn088-057	13GH-1422	Castle Hayne, NC	1	3	4	6
2014	Clgrn088-057	13GH-1422	Castle Hayne, NC	2	4	5	6
2014	Clgrn088-058	13GH-1424	Castle Hayne, NC	1	2	3	2
2014	Clgrn088-058	13GH-1424	Castle Hayne, NC	2	2	1	1
2014	Clgrn088-059	13GH-1426	Castle Hayne, NC	1	3	5	3
2014	Clgrn088-059	13GH-1426	Castle Hayne, NC	2	3	3	4
2014	Clgrn088-060	13GH-1427	Castle Hayne, NC	1	1	2	2
2014	Clgrn088-060	13GH-1427	Castle Hayne, NC	2	1	1	1
2014	Clgrn088-061	14GH-358	Castle Hayne, NC	1	4	5	5
2014	Clgrn088-061	14GH-358	Castle Hayne, NC	2	.	.	.
2014	Clgrn088-063	13GH-1429	Castle Hayne, NC	1	3	4	4
2014	Clgrn088-063	13GH-1429	Castle Hayne, NC	2	3	5	5
2014	Clgrn088-064	13GH-1431	Castle Hayne, NC	1	2	5	5
2014	Clgrn088-064	13GH-1431	Castle Hayne, NC	2	3	5	6
2014	Clgrn088-065	13GH-1433	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-065	13GH-1433	Castle Hayne, NC	2	3	3	3
2014	Clgrn088-066	13GH-1436	Castle Hayne, NC	1	2	4	4
2014	Clgrn088-066	13GH-1436	Castle Hayne, NC	2	3	3	7
2014	Clgrn088-067	13GH-1437	Castle Hayne, NC	1	5	6	6
2014	Clgrn088-067	13GH-1437	Castle Hayne, NC	2	5	5	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-070	13GH-1439	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-070	13GH-1439	Castle Hayne, NC	2	.	.	.
2014	Clgrn088-071	13GH-1442	Castle Hayne, NC	1	4	6	6
2014	Clgrn088-071	13GH-1442	Castle Hayne, NC	2	3	5	7
2014	Clgrn088-072	13GH-1443	Castle Hayne, NC	1	2	5	6
2014	Clgrn088-072	13GH-1443	Castle Hayne, NC	2	5	5	6
2014	Clgrn088-074	13GH-1447	Castle Hayne, NC	1	1	2	2
2014	Clgrn088-074	13GH-1447	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-077	13GH-1450	Castle Hayne, NC	1	4	3	4
2014	Clgrn088-077	13GH-1450	Castle Hayne, NC	2	3	4	4
2014	Clgrn088-078	13GH-1452	Castle Hayne, NC	1	2	4	6
2014	Clgrn088-078	13GH-1452	Castle Hayne, NC	2	1	3	4
2014	Clgrn088-080	13GH-1453	Castle Hayne, NC	1	2	2	2
2014	Clgrn088-080	13GH-1453	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-081	13GH-1456	Castle Hayne, NC	1	3	6	1
2014	Clgrn088-081	13GH-1456	Castle Hayne, NC	2	5	6	7
2014	Clgrn088-082	13GH-1458	Castle Hayne, NC	1	3	4	4
2014	Clgrn088-082	13GH-1458	Castle Hayne, NC	2	2	4	6
2014	Clgrn088-083	13GH-1460	Castle Hayne, NC	1	3	2	2
2014	Clgrn088-083	13GH-1460	Castle Hayne, NC	2	1	2	1
2014	Clgrn088-084	13GH-1462	Castle Hayne, NC	1	4	7	7
2014	Clgrn088-084	13GH-1462	Castle Hayne, NC	2	4	6	6
2014	Clgrn088-085	13GH-1463	Castle Hayne, NC	1	2	3	2
2014	Clgrn088-085	13GH-1463	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-087	13GH-1466	Castle Hayne, NC	1	3	4	4
2014	Clgrn088-087	13GH-1466	Castle Hayne, NC	2	2	3	3
2014	Clgrn088-088	13GH-1468	Castle Hayne, NC	1	2	5	6
2014	Clgrn088-088	13GH-1468	Castle Hayne, NC	2	3	5	7
2014	Clgrn088-089	13GH-1470	Castle Hayne, NC	1	3	1	2
2014	Clgrn088-089	13GH-1470	Castle Hayne, NC	2	2	1	1
2014	Clgrn088-091	13GH-1473	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-091	13GH-1473	Castle Hayne, NC	2	.	.	.
2014	Clgrn088-092	13GH-1475	Castle Hayne, NC	1	2	6	5
2014	Clgrn088-092	13GH-1475	Castle Hayne, NC	2	4	4	5
2014	Clgrn088-093	13GH-1477	Castle Hayne, NC	1	2	2	3
2014	Clgrn088-093	13GH-1477	Castle Hayne, NC	2	2	3	3
2014	Clgrn088-094	13GH-1479	Castle Hayne, NC	1	3	5	5
2014	Clgrn088-094	13GH-1479	Castle Hayne, NC	2	2	3	2
2014	Clgrn088-095	13GH-1481	Castle Hayne, NC	1	3	5	6
2014	Clgrn088-095	13GH-1481	Castle Hayne, NC	2	2	2	6
2014	Clgrn088-097	13GH-1483	Castle Hayne, NC	1	2	2	3
2014	Clgrn088-097	13GH-1483	Castle Hayne, NC	2	1	2	3
2014	Clgrn088-098	13GH-1486	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-098	13GH-1486	Castle Hayne, NC	2	.	.	.

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-099	13GH-1488	Castle Hayne, NC	1	2	1	1
2014	Clgrn088-099	13GH-1488	Castle Hayne, NC	2	1	1	0
2014	Clgrn088-100	13GH-1489	Castle Hayne, NC	1	4	4	4
2014	Clgrn088-100	13GH-1489	Castle Hayne, NC	2	2	3	4
2014	Clgrn088-101	13GH-1492	Castle Hayne, NC	1	4	3	5
2014	Clgrn088-101	13GH-1492	Castle Hayne, NC	2	4	4	5
2014	Clgrn088-102	13GH-1494	Castle Hayne, NC	1	4	2	5
2014	Clgrn088-102	13GH-1494	Castle Hayne, NC	2	3	3	5
2014	Clgrn088-103	13GH-1496	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-103	13GH-1496	Castle Hayne, NC	2	.	.	.
2014	Clgrn088-104	13GH-1497	Castle Hayne, NC	1	3	5	7
2014	Clgrn088-104	13GH-1497	Castle Hayne, NC	2	.	.	.
2014	Clgrn088-107	13GH-1502	Castle Hayne, NC	1	2	5	4
2014	Clgrn088-107	13GH-1502	Castle Hayne, NC	2	3	4	5
2014	Clgrn088-108	13GH-1503	Castle Hayne, NC	1	2	3	2
2014	Clgrn088-108	13GH-1503	Castle Hayne, NC	2	1	2	2
2014	Clgrn088-109	13GH-1505	Castle Hayne, NC	1	2	3	3
2014	Clgrn088-109	13GH-1505	Castle Hayne, NC	2	2	2	4
2014	Clgrn088-110	13GH-1507	Castle Hayne, NC	1	2	5	7
2014	Clgrn088-110	13GH-1507	Castle Hayne, NC	2	7	5	7
2014	Clgrn088-111	13GH-1510	Castle Hayne, NC	1	2	4	4
2014	Clgrn088-111	13GH-1510	Castle Hayne, NC	2	2	2	5
2014	Clgrn088-112	13GH-1511	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-112	14GH-317	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-112	14GH-317	Castle Hayne, NC	2	2	1	1
2014	Clgrn088-112	13GH-1511	Castle Hayne, NC	2	.	.	.
2014	Clgrn088-113	13GH-1514	Castle Hayne, NC	1	2	4	6
2014	Clgrn088-113	13GH-1514	Castle Hayne, NC	2	3	6	7
2014	Clgrn088-114	13GH-1515	Castle Hayne, NC	1	2	4	3
2014	Clgrn088-114	13GH-1515	Castle Hayne, NC	2	4	4	5
2014	Clgrn088-117	13GH-1518	Castle Hayne, NC	1	2	2	2
2014	Clgrn088-117	13GH-1518	Castle Hayne, NC	2	2	1	1
2014	Clgrn088-118	13GH-1520	Castle Hayne, NC	1	3	4	7
2014	Clgrn088-118	13GH-1520	Castle Hayne, NC	2	2	3	5
2014	Clgrn088-119	13GH-1522	Castle Hayne, NC	1	1	1	1
2014	Clgrn088-119	13GH-1522	Castle Hayne, NC	2	2	1	1
2014	Clgrn088-120	13GH-1523	Castle Hayne, NC	1	2	3	4
2014	Clgrn088-120	13GH-1523	Castle Hayne, NC	2	3	2	3
2014	Clgrn088-121	13GH-1525	Castle Hayne, NC	1	3	2	3
2014	Clgrn088-121	13GH-1525	Castle Hayne, NC	2	3	1	2
2014	Clgrn088-122	13GH-1528	Castle Hayne, NC	1	2	6	5
2014	Clgrn088-122	13GH-1528	Castle Hayne, NC	2	4	5	6
2014	Clgrn088-123	13GH-1530	Castle Hayne, NC	1	2	2	2
2014	Clgrn088-123	13GH-1530	Castle Hayne, NC	2	2	3	2

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-126	13GH-1534	Castle Hayne, NC	1	1	3	1
2014	Clgrn088-126	13GH-1534	Castle Hayne, NC	2	2	3	3
2014	Clgrn088-127	13GH-1536	Castle Hayne, NC	1	3	4	6
2014	Clgrn088-127	13GH-1536	Castle Hayne, NC	2	5	4	5
2014	Clgrn088-128	13GH-1538	Castle Hayne, NC	1	2	3	3
2014	Clgrn088-128	13GH-1538	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-130	14GH-364	Castle Hayne, NC	1	2	2	2
2014	Clgrn088-130	14GH-364	Castle Hayne, NC	2	2	2	3
2014	Clgrn088-131	14GH-328	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-131	14GH-328	Castle Hayne, NC	2	1	2	6
2014	Clgrn088-132	13GH-1540	Castle Hayne, NC	1	4	5	6
2014	Clgrn088-132	13GH-1540	Castle Hayne, NC	2	2	1	4
2014	Clgrn088-133	13GH-1542	Castle Hayne, NC	1	2	1	0
2014	Clgrn088-133	13GH-1542	Castle Hayne, NC	2	1	1	1
2014	Clgrn088-134	13GH-1544	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-134	13GH-1544	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-135	13GH-1545	Castle Hayne, NC	1	2	3	4
2014	Clgrn088-135	13GH-1545	Castle Hayne, NC	2	3	1	3
2014	Clgrn088-136	13GH-1547	Castle Hayne, NC	1	1	2	2
2014	Clgrn088-136	13GH-1547	Castle Hayne, NC	2	1	2	2
2014	Clgrn088-137	13GH-1550	Castle Hayne, NC	1	3	4	3
2014	Clgrn088-137	13GH-1550	Castle Hayne, NC	2	2	2	3
2014	Clgrn088-138	13GH-1551	Castle Hayne, NC	1	2	3	3
2014	Clgrn088-138	13GH-1551	Castle Hayne, NC	2	3	2	2
2014	Clgrn088-139	13GH-1553	Castle Hayne, NC	1	3	5	5
2014	Clgrn088-139	13GH-1553	Castle Hayne, NC	2	4	2	4
2014	Clgrn088-142	13GH-1558	Castle Hayne, NC	1	4	7	6
2014	Clgrn088-142	13GH-1558	Castle Hayne, NC	2	4	5	7
2014	Clgrn088-144	13GH-1560	Castle Hayne, NC	1	1	4	2
2014	Clgrn088-144	13GH-1560	Castle Hayne, NC	2	3	1	3
2014	Clgrn088-145	13GH-1561	Castle Hayne, NC	1	4	5	5
2014	Clgrn088-145	13GH-1561	Castle Hayne, NC	2	2	4	4
2014	Clgrn088-146	13GH-1564	Castle Hayne, NC	1	1	2	3
2014	Clgrn088-146	13GH-1564	Castle Hayne, NC	2	2	1	2
2014	Clgrn088-147	13GH-1566	Castle Hayne, NC	1	3	3	3
2014	Clgrn088-147	13GH-1566	Castle Hayne, NC	2	2	2	3
2014	Clgrn088-148	13GH-1567	Castle Hayne, NC	1	.	2	5
2014	Clgrn088-148	13GH-1567	Castle Hayne, NC	2	3	2	6
2014	Clgrn088-150	13GH-1569	Castle Hayne, NC	1	.	.	.
2014	Clgrn088-150	13GH-1569	Castle Hayne, NC	2	3	5	5
2014	Clgrn088-151	13GH-1571	Castle Hayne, NC	1	2	5	4
2014	Clgrn088-151	13GH-1571	Castle Hayne, NC	2	1	2	4
2014	Clgrn088-152	13GH-1574	Castle Hayne, NC	1	1	2	1
2014	Clgrn088-152	13GH-1574	Castle Hayne, NC	2	2	2	4

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-153	13GH-1575	Castle Hayne, NC	1	3	5	4
2014	Clgrn088-153	13GH-1575	Castle Hayne, NC	2	3	4	4
2014	Clgrn088-154	13GH-1578	Castle Hayne, NC	1	2	2	6
2014	Clgrn088-154	13GH-1578	Castle Hayne, NC	2	3	2	6
2014	Clgrn088-155	13GH-1580	Castle Hayne, NC	1	2	5	5
2014	Clgrn088-155	13GH-1580	Castle Hayne, NC	2	2	2	3
2014	Clgrn088-156	13GH-1582	Castle Hayne, NC	1	3	4	6
2014	Clgrn088-156	13GH-1582	Castle Hayne, NC	2	2	3	4
2014	Clgrn088-157	13GH-1583	Castle Hayne, NC	1	3	2	3
2014	Clgrn088-157	13GH-1583	Castle Hayne, NC	2	1	2	2
2014	Clgrn088-160	13GH-1585	Castle Hayne, NC	1	2	2	4
2014	Clgrn088-160	13GH-1585	Castle Hayne, NC	2	2	3	3
2014	Clgrn088-161	13GH-1587	Castle Hayne, NC	1	1	3	4
2014	Clgrn088-161	13GH-1587	Castle Hayne, NC	2	3	2	3
2014	Clgrn088-162	13GH-1589	Castle Hayne, NC	1	1	2	4
2014	Clgrn088-162	13GH-1589	Castle Hayne, NC	2	2	3	6
2014	Clgrn088-163	13GH-1592	Castle Hayne, NC	1	2	2	4
2014	Clgrn088-163	13GH-1592	Castle Hayne, NC	2	3	2	3
2014	Clgrn088-164	13GH-1594	Castle Hayne, NC	1	3	3	6
2014	Clgrn088-164	13GH-1594	Castle Hayne, NC	2	2	3	4
2014	Clgrn088-166	13GH-1595	Castle Hayne, NC	1	2	3	4
2014	Clgrn088-166	13GH-1595	Castle Hayne, NC	2	2	2	4
2014	Clgrn088-167	13GH-1598	Castle Hayne, NC	1	1	1	2
2014	Clgrn088-167	13GH-1598	Castle Hayne, NC	2	1	1	1
2014	Clgrn088-168	13GH-1600	Castle Hayne, NC	1	.	2	3
2014	Clgrn088-168	13GH-1600	Castle Hayne, NC	2	2	2	5
2014	Clgrn088-169	13GH-1601	Castle Hayne, NC	1	2	1	7
2014	Clgrn088-169	13GH-1601	Castle Hayne, NC	2	3	5	6
2014	Clgrn088-171	14GH-366	Castle Hayne, NC	1	3	2	3
2014	Clgrn088-171	14GH-366	Castle Hayne, NC	2	3	1	2
2014	Clgrn088-173	13GH-1604	Castle Hayne, NC	1	.	.	2
2014	Clgrn088-173	13GH-1604	Castle Hayne, NC	2	3	1	2
2014	Clgrn088-174	13GH-1606	Castle Hayne, NC	1	5	5	6
2014	Clgrn088-174	13GH-1606	Castle Hayne, NC	2	3	3	6
2014	Clgrn088-175	13GH-1608	Castle Hayne, NC	1	3	4	3
2014	Clgrn088-175	13GH-1608	Castle Hayne, NC	2	4	5	3
2014	Clgrn088-176	13GH-1610	Castle Hayne, NC	1	2	3	5
2014	Clgrn088-176	13GH-1610	Castle Hayne, NC	2	2	3	5
2014	Clgrn088-177	13GH-1611	Castle Hayne, NC	1	2	3	4
2014	Clgrn088-177	13GH-1611	Castle Hayne, NC	2	2	2	1
2014	Clgrn088-178	13GH-1613	Castle Hayne, NC	1	2	1	0
2014	Clgrn088-178	13GH-1613	Castle Hayne, NC	2	2	1	1
2014	Clgrn088-179	13GH-1616	Castle Hayne, NC	1	2	4	4
2014	Clgrn088-179	13GH-1616	Castle Hayne, NC	2	3	4	4

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-180	13GH-1617	Castle Hayne, NC	1	3	5	5
2014	Clgrn088-180	13GH-1617	Castle Hayne, NC	2	3	3	3
2014	Clgrn088-181	13GH-1620	Castle Hayne, NC	1	2	2	3
2014	Clgrn088-181	13GH-1620	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-198	14GH-339	Castle Hayne, NC	1	3	4	5
2014	Clgrn088-198	14GH-339	Castle Hayne, NC	2	1	1	6
2014	Clgrn088-206	14GH-341	Castle Hayne, NC	1	4	5	4
2014	Clgrn088-206	14GH-341	Castle Hayne, NC	2	3	3	7
2014	Clgrn088-211	14GH-343	Castle Hayne, NC	1	5	7	7
2014	Clgrn088-211	14GH-343	Castle Hayne, NC	2	.	5	7
2014	Clgrn088-213	14GH-345	Castle Hayne, NC	1	3	3	4
2014	Clgrn088-213	14GH-345	Castle Hayne, NC	2	3	4	5
2014	Clgrn088-217	14GH-346	Castle Hayne, NC	1	3	4	5
2014	Clgrn088-217	14GH-346	Castle Hayne, NC	2	2	2	5
2014	Clgrn088-219	14GH-347	Castle Hayne, NC	1	5	6	7
2014	Clgrn088-219	14GH-347	Castle Hayne, NC	2	3	3	6
2014	Clgrn088-221	14GH-349	Castle Hayne, NC	1	3	3	5
2014	Clgrn088-221	14GH-349	Castle Hayne, NC	2	1	3	5
2014	Clgrn088-222	14GH-350	Castle Hayne, NC	1	2	2	5
2014	Clgrn088-222	14GH-350	Castle Hayne, NC	2	2	3	4
2014	Clgrn088-230	14GH-354	Castle Hayne, NC	1	2	3	2
2014	Clgrn088-230	14GH-354	Castle Hayne, NC	2	2	2	2
2014	Clgrn088-002	13GH-1337	Clinton, NC	1	2	4	6
2014	Clgrn088-002	13GH-1337	Clinton, NC	2	5	5	6
2014	Clgrn088-003	13GH-1340	Clinton, NC	1	.	.	.
2014	Clgrn088-003	13GH-1340	Clinton, NC	2	4	4	5
2014	Clgrn088-004	13GH-1341	Clinton, NC	1	2	2	3
2014	Clgrn088-004	13GH-1341	Clinton, NC	2	3	3	7
2014	Clgrn088-005	13GH-1343	Clinton, NC	1	4	5	6
2014	Clgrn088-005	13GH-1343	Clinton, NC	2	5	6	6
2014	Clgrn088-006	13GH-1345	Clinton, NC	1	3	4	5
2014	Clgrn088-006	13GH-1345	Clinton, NC	2	.	.	.
2014	Clgrn088-007	13GH-1347	Clinton, NC	1	6	6	6
2014	Clgrn088-007	13GH-1347	Clinton, NC	2	6	6	7
2014	Clgrn088-008	13GH-1349	Clinton, NC	1	.	.	7
2014	Clgrn088-008	13GH-1349	Clinton, NC	2	6	4	6
2014	Clgrn088-010	13GH-1352	Clinton, NC	1	3	3	6
2014	Clgrn088-010	13GH-1352	Clinton, NC	2	.	4	4
2014	Clgrn088-011	13GH-1354	Clinton, NC	1	4	5	2
2014	Clgrn088-011	13GH-1354	Clinton, NC	2	4	6	5
2014	Clgrn088-012	13GH-1356	Clinton, NC	1	.	.	.
2014	Clgrn088-012	13GH-1356	Clinton, NC	2	5	6	7
2014	Clgrn088-013	14GH-356	Clinton, NC	1	5	7	8
2014	Clgrn088-013	14GH-356	Clinton, NC	2	5	7	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-014	13GH-1357	Clinton, NC	1	5	3	5
2014	Clgrn088-014	13GH-1357	Clinton, NC	2	5	5	3
2014	Clgrn088-015	13GH-1360	Clinton, NC	1	2	3	5
2014	Clgrn088-015	13GH-1360	Clinton, NC	2	2	3	4
2014	Clgrn088-016	13GH-1362	Clinton, NC	1	5	7	5
2014	Clgrn088-016	13GH-1362	Clinton, NC	2	5	4	4
2014	Clgrn088-017	13GH-1364	Clinton, NC	1	6	7	7
2014	Clgrn088-017	13GH-1364	Clinton, NC	2	6	6	8
2014	Clgrn088-018	13GH-1366	Clinton, NC	1	6	5	6
2014	Clgrn088-018	13GH-1366	Clinton, NC	2	5	5	6
2014	Clgrn088-019	13GH-1368	Clinton, NC	1	6	7	5
2014	Clgrn088-019	13GH-1368	Clinton, NC	2	5	5	5
2014	Clgrn088-020	13GH-1369	Clinton, NC	1	2	1	2
2014	Clgrn088-020	13GH-1369	Clinton, NC	2	0	1	2
2014	Clgrn088-023	13GH-1372	Clinton, NC	1	5	4	7
2014	Clgrn088-023	13GH-1372	Clinton, NC	2	4	4	4
2014	Clgrn088-024	13GH-1374	Clinton, NC	1	5	4	5
2014	Clgrn088-024	13GH-1374	Clinton, NC	2	5	4	3
2014	Clgrn088-025	14GH-381	Clinton, NC	1	6	5	7
2014	Clgrn088-025	14GH-381	Clinton, NC	2	6	6	6
2014	Clgrn088-027	13GH-1378	Clinton, NC	1	3	3	4
2014	Clgrn088-027	13GH-1378	Clinton, NC	2	5	4	4
2014	Clgrn088-028	13GH-1379	Clinton, NC	1	3	4	7
2014	Clgrn088-028	13GH-1379	Clinton, NC	2	3	5	7
2014	Clgrn088-029	13GH-1381	Clinton, NC	1	.	.	.
2014	Clgrn088-029	13GH-1381	Clinton, NC	2	2	2	3
2014	Clgrn088-030	14GH-383	Clinton, NC	1	.	.	.
2014	Clgrn088-030	14GH-383	Clinton, NC	2	.	.	.
2014	Clgrn088-031	13GH-1385	Clinton, NC	1	3	3	4
2014	Clgrn088-031	13GH-1385	Clinton, NC	2	2	3	4
2014	Clgrn088-032	13GH-1387	Clinton, NC	1	1	2	3
2014	Clgrn088-032	13GH-1387	Clinton, NC	2	2	3	5
2014	Clgrn088-033	13GH-1389	Clinton, NC	1	3	6	7
2014	Clgrn088-033	13GH-1389	Clinton, NC	2	3	5	7
2014	Clgrn088-035	14GH-322	Clinton, NC	1	6	4	5
2014	Clgrn088-035	14GH-322	Clinton, NC	2	4	4	3
2014	Clgrn088-037	14GH-323	Clinton, NC	1	.	.	.
2014	Clgrn088-037	14GH-323	Clinton, NC	2	4	4	5
2014	Clgrn088-038	13GH-1392	Clinton, NC	1	6	7	5
2014	Clgrn088-038	13GH-1392	Clinton, NC	2	5	6	6
2014	Clgrn088-039	13GH-1393	Clinton, NC	1	3	4	6
2014	Clgrn088-039	13GH-1393	Clinton, NC	2	.	.	.
2014	Clgrn088-040	13GH-1395	Clinton, NC	1	5	4	4
2014	Clgrn088-040	13GH-1395	Clinton, NC	2	5	3	6

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-041	13GH-1398	Clinton, NC	1	5	4	4
2014	Clgrn088-041	13GH-1398	Clinton, NC	2	5	1	3
2014	Clgrn088-043	13GH-1399	Clinton, NC	1	.	.	.
2014	Clgrn088-043	13GH-1399	Clinton, NC	2	4	6	6
2014	Clgrn088-044	13GH-1402	Clinton, NC	1	.	.	.
2014	Clgrn088-044	13GH-1402	Clinton, NC	2	4	4	6
2014	Clgrn088-045	13GH-1404	Clinton, NC	1	4	5	6
2014	Clgrn088-045	13GH-1404	Clinton, NC	2	4	5	6
2014	Clgrn088-046	13GH-1405	Clinton, NC	1	6	7	6
2014	Clgrn088-046	13GH-1405	Clinton, NC	2	3	6	8
2014	Clgrn088-047	13GH-1408	Clinton, NC	1	1	6	5
2014	Clgrn088-047	13GH-1408	Clinton, NC	2	3	6	6
2014	Clgrn088-048	13GH-1409	Clinton, NC	1	2	3	7
2014	Clgrn088-048	13GH-1409	Clinton, NC	2	4	6	7
2014	Clgrn088-049	13GH-1411	Clinton, NC	1	5	7	8
2014	Clgrn088-049	13GH-1411	Clinton, NC	2	3	8	9
2014	Clgrn088-052	13GH-1413	Clinton, NC	1	4	3	3
2014	Clgrn088-052	13GH-1413	Clinton, NC	2	3	2	4
2014	Clgrn088-053	13GH-1415	Clinton, NC	1	2	2	4
2014	Clgrn088-053	13GH-1415	Clinton, NC	2	.	.	.
2014	Clgrn088-054	13GH-1418	Clinton, NC	1	4	5	3
2014	Clgrn088-054	13GH-1418	Clinton, NC	2	2	2	0
2014	Clgrn088-056	13GH-1419	Clinton, NC	1	5	6	5
2014	Clgrn088-056	13GH-1419	Clinton, NC	2	4	6	6
2014	Clgrn088-057	13GH-1422	Clinton, NC	1	5	5	5
2014	Clgrn088-057	13GH-1422	Clinton, NC	2	6	5	5
2014	Clgrn088-058	13GH-1424	Clinton, NC	1	3	3	2
2014	Clgrn088-058	13GH-1424	Clinton, NC	2	3	3	3
2014	Clgrn088-059	13GH-1426	Clinton, NC	1	4	4	5
2014	Clgrn088-059	13GH-1426	Clinton, NC	2	.	.	.
2014	Clgrn088-060	13GH-1427	Clinton, NC	1	4	3	1
2014	Clgrn088-060	13GH-1427	Clinton, NC	2	1	2	2
2014	Clgrn088-061	14GH-358	Clinton, NC	1	5	7	7
2014	Clgrn088-061	14GH-358	Clinton, NC	2	4	5	6
2014	Clgrn088-063	13GH-1429	Clinton, NC	1	5	7	6
2014	Clgrn088-063	13GH-1429	Clinton, NC	2	5	5	5
2014	Clgrn088-064	13GH-1431	Clinton, NC	1	4	5	6
2014	Clgrn088-064	13GH-1431	Clinton, NC	2	5	3	5
2014	Clgrn088-065	13GH-1433	Clinton, NC	1	5	4	4
2014	Clgrn088-065	13GH-1433	Clinton, NC	2	5	4	3
2014	Clgrn088-066	13GH-1436	Clinton, NC	1	.	.	.
2014	Clgrn088-066	13GH-1436	Clinton, NC	2	.	.	.
2014	Clgrn088-067	13GH-1437	Clinton, NC	1	.	.	.
2014	Clgrn088-067	13GH-1437	Clinton, NC	2	6	6	6

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-070	13GH-1439	Clinton, NC	1	.	.	.
2014	Clgrn088-070	13GH-1439	Clinton, NC	2	2	4	3
2014	Clgrn088-071	13GH-1442	Clinton, NC	1	2	4	5
2014	Clgrn088-071	13GH-1442	Clinton, NC	2	6	6	7
2014	Clgrn088-072	13GH-1443	Clinton, NC	1	2	5	7
2014	Clgrn088-072	13GH-1443	Clinton, NC	2	3	7	6
2014	Clgrn088-074	13GH-1447	Clinton, NC	1	4	3	2
2014	Clgrn088-074	13GH-1447	Clinton, NC	2	2	1	2
2014	Clgrn088-077	13GH-1450	Clinton, NC	1	5	6	7
2014	Clgrn088-077	13GH-1450	Clinton, NC	2	5	4	5
2014	Clgrn088-078	13GH-1452	Clinton, NC	1	.	.	5
2014	Clgrn088-078	13GH-1452	Clinton, NC	2	3	7	7
2014	Clgrn088-080	13GH-1453	Clinton, NC	1	.	.	.
2014	Clgrn088-080	13GH-1453	Clinton, NC	2	3	3	4
2014	Clgrn088-081	13GH-1456	Clinton, NC	1	3	3	7
2014	Clgrn088-081	13GH-1456	Clinton, NC	2	6	6	7
2014	Clgrn088-082	13GH-1458	Clinton, NC	1	4	5	5
2014	Clgrn088-082	13GH-1458	Clinton, NC	2	4	5	5
2014	Clgrn088-083	13GH-1460	Clinton, NC	1	2	2	4
2014	Clgrn088-083	13GH-1460	Clinton, NC	2	0	2	5
2014	Clgrn088-084	13GH-1462	Clinton, NC	1	3	5	7
2014	Clgrn088-084	13GH-1462	Clinton, NC	2	5	6	7
2014	Clgrn088-085	13GH-1463	Clinton, NC	1	1	2	2
2014	Clgrn088-085	13GH-1463	Clinton, NC	2	2	2	1
2014	Clgrn088-087	13GH-1466	Clinton, NC	1	5	5	6
2014	Clgrn088-087	13GH-1466	Clinton, NC	2	3	2	4
2014	Clgrn088-088	13GH-1468	Clinton, NC	1	2	3	7
2014	Clgrn088-088	13GH-1468	Clinton, NC	2	.	.	.
2014	Clgrn088-089	13GH-1470	Clinton, NC	1	1	1	1
2014	Clgrn088-089	13GH-1470	Clinton, NC	2	0	1	1
2014	Clgrn088-091	13GH-1473	Clinton, NC	1	.	.	.
2014	Clgrn088-091	13GH-1473	Clinton, NC	2	.	.	.
2014	Clgrn088-092	13GH-1475	Clinton, NC	1	5	7	7
2014	Clgrn088-092	13GH-1475	Clinton, NC	2	3	5	6
2014	Clgrn088-093	13GH-1477	Clinton, NC	1	3	3	4
2014	Clgrn088-093	13GH-1477	Clinton, NC	2	3	3	2
2014	Clgrn088-094	13GH-1479	Clinton, NC	1	3	3	6
2014	Clgrn088-094	13GH-1479	Clinton, NC	2	4	4	7
2014	Clgrn088-095	13GH-1481	Clinton, NC	1	5	7	9
2014	Clgrn088-095	13GH-1481	Clinton, NC	2	4	5	6
2014	Clgrn088-097	13GH-1483	Clinton, NC	1	.	.	.
2014	Clgrn088-097	13GH-1483	Clinton, NC	2	3	4	3
2014	Clgrn088-098	13GH-1486	Clinton, NC	1	.	.	.
2014	Clgrn088-098	13GH-1486	Clinton, NC	2	6	5	7

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-099	13GH-1488	Clinton, NC	1	.	.	3
2014	Clgrn088-099	13GH-1488	Clinton, NC	2	1	1	2
2014	Clgrn088-100	13GH-1489	Clinton, NC	1	3	4	5
2014	Clgrn088-100	13GH-1489	Clinton, NC	2	3	5	5
2014	Clgrn088-101	13GH-1492	Clinton, NC	1	3	4	6
2014	Clgrn088-101	13GH-1492	Clinton, NC	2	4	6	6
2014	Clgrn088-102	13GH-1494	Clinton, NC	1	3	3	5
2014	Clgrn088-102	13GH-1494	Clinton, NC	2	4	6	6
2014	Clgrn088-103	13GH-1496	Clinton, NC	1	.	.	.
2014	Clgrn088-103	13GH-1496	Clinton, NC	2	.	.	.
2014	Clgrn088-104	13GH-1497	Clinton, NC	1	6	7	8
2014	Clgrn088-104	13GH-1497	Clinton, NC	2	6	7	9
2014	Clgrn088-107	13GH-1502	Clinton, NC	1	6	6	7
2014	Clgrn088-107	13GH-1502	Clinton, NC	2	4	6	7
2014	Clgrn088-108	13GH-1503	Clinton, NC	1	3	2	5
2014	Clgrn088-108	13GH-1503	Clinton, NC	2	2	3	5
2014	Clgrn088-109	13GH-1505	Clinton, NC	1	3	4	6
2014	Clgrn088-109	13GH-1505	Clinton, NC	2	.	1	6
2014	Clgrn088-110	13GH-1507	Clinton, NC	1	.	.	.
2014	Clgrn088-110	13GH-1507	Clinton, NC	2	5	5	7
2014	Clgrn088-111	13GH-1510	Clinton, NC	1	3	4	6
2014	Clgrn088-111	13GH-1510	Clinton, NC	2	3	6	7
2014	Clgrn088-112	14GH-317	Clinton, NC	1	4	4	2
2014	Clgrn088-112	13GH-1511	Clinton, NC	1	.	.	.
2014	Clgrn088-112	13GH-1511	Clinton, NC	2	.	.	.
2014	Clgrn088-112	14GH-317	Clinton, NC	2	3	1	3
2014	Clgrn088-113	13GH-1514	Clinton, NC	1	6	6	7
2014	Clgrn088-113	13GH-1514	Clinton, NC	2	5	6	7
2014	Clgrn088-114	13GH-1515	Clinton, NC	1	.	.	.
2014	Clgrn088-114	13GH-1515	Clinton, NC	2	5	5	5
2014	Clgrn088-117	13GH-1518	Clinton, NC	1	2	2	5
2014	Clgrn088-117	13GH-1518	Clinton, NC	2	0	2	4
2014	Clgrn088-118	13GH-1520	Clinton, NC	1	6	6	6
2014	Clgrn088-118	13GH-1520	Clinton, NC	2	5	6	6
2014	Clgrn088-119	13GH-1522	Clinton, NC	1	1	3	1
2014	Clgrn088-119	13GH-1522	Clinton, NC	2	0	0	2
2014	Clgrn088-120	13GH-1523	Clinton, NC	1	.	.	.
2014	Clgrn088-120	13GH-1523	Clinton, NC	2	1	3	5
2014	Clgrn088-121	13GH-1525	Clinton, NC	1	.	.	.
2014	Clgrn088-121	13GH-1525	Clinton, NC	2	.	.	.
2014	Clgrn088-122	13GH-1528	Clinton, NC	1	4	6	7
2014	Clgrn088-122	13GH-1528	Clinton, NC	2	5	6	7
2014	Clgrn088-123	13GH-1530	Clinton, NC	1	3	3	5
2014	Clgrn088-123	13GH-1530	Clinton, NC	2	3	3	5

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-126	13GH-1534	Clinton, NC	1	1	2	4
2014	Clgrn088-126	13GH-1534	Clinton, NC	2	2	2	5
2014	Clgrn088-127	13GH-1536	Clinton, NC	1	4	4	6
2014	Clgrn088-127	13GH-1536	Clinton, NC	2	3	3	5
2014	Clgrn088-128	13GH-1538	Clinton, NC	1	3	2	5
2014	Clgrn088-128	13GH-1538	Clinton, NC	2	2	1	2
2014	Clgrn088-130	14GH-364	Clinton, NC	1	4	4	5
2014	Clgrn088-130	14GH-364	Clinton, NC	2	3	4	2
2014	Clgrn088-131	14GH-328	Clinton, NC	1	3	5	6
2014	Clgrn088-131	14GH-328	Clinton, NC	2	3	6	6
2014	Clgrn088-132	13GH-1540	Clinton, NC	1	5	4	5
2014	Clgrn088-132	13GH-1540	Clinton, NC	2	5	5	6
2014	Clgrn088-133	13GH-1542	Clinton, NC	1	0	1	1
2014	Clgrn088-133	13GH-1542	Clinton, NC	2	1	1	1
2014	Clgrn088-134	13GH-1544	Clinton, NC	1	.	.	.
2014	Clgrn088-134	13GH-1544	Clinton, NC	2	4	3	3
2014	Clgrn088-135	13GH-1545	Clinton, NC	1	4	4	3
2014	Clgrn088-135	13GH-1545	Clinton, NC	2	3	2	2
2014	Clgrn088-136	13GH-1547	Clinton, NC	1	.	.	.
2014	Clgrn088-136	13GH-1547	Clinton, NC	2	3	6	4
2014	Clgrn088-137	13GH-1550	Clinton, NC	1	4	4	5
2014	Clgrn088-137	13GH-1550	Clinton, NC	2	5	4	6
2014	Clgrn088-138	13GH-1551	Clinton, NC	1	4	3	3
2014	Clgrn088-138	13GH-1551	Clinton, NC	2	3	3	4
2014	Clgrn088-139	13GH-1553	Clinton, NC	1	6	5	5
2014	Clgrn088-139	13GH-1553	Clinton, NC	2	4	6	6
2014	Clgrn088-142	13GH-1558	Clinton, NC	1	4	6	8
2014	Clgrn088-142	13GH-1558	Clinton, NC	2	5	6	7
2014	Clgrn088-144	13GH-1560	Clinton, NC	1	.	.	.
2014	Clgrn088-144	13GH-1560	Clinton, NC	2	.	.	.
2014	Clgrn088-145	13GH-1561	Clinton, NC	1	6	4	6
2014	Clgrn088-145	13GH-1561	Clinton, NC	2	4	4	6
2014	Clgrn088-146	13GH-1564	Clinton, NC	1	.	.	.
2014	Clgrn088-146	13GH-1564	Clinton, NC	2	2	2	3
2014	Clgrn088-147	13GH-1566	Clinton, NC	1	3	4	4
2014	Clgrn088-147	13GH-1566	Clinton, NC	2	3	4	4
2014	Clgrn088-148	13GH-1567	Clinton, NC	1	1	6	7
2014	Clgrn088-148	13GH-1567	Clinton, NC	2	5	6	7
2014	Clgrn088-150	13GH-1569	Clinton, NC	1	3	3	5
2014	Clgrn088-150	13GH-1569	Clinton, NC	2	.	.	.
2014	Clgrn088-151	13GH-1571	Clinton, NC	1	3	4	5
2014	Clgrn088-151	13GH-1571	Clinton, NC	2	3	4	4
2014	Clgrn088-152	13GH-1574	Clinton, NC	1	3	2	2
2014	Clgrn088-152	13GH-1574	Clinton, NC	2	2	2	1

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-153	13GH-1575	Clinton, NC	1	5	5	6
2014	Clgrn088-153	13GH-1575	Clinton, NC	2	5	5	6
2014	Clgrn088-154	13GH-1578	Clinton, NC	1	5	4	5
2014	Clgrn088-154	13GH-1578	Clinton, NC	2	5	5	6
2014	Clgrn088-155	13GH-1580	Clinton, NC	1	3	4	5
2014	Clgrn088-155	13GH-1580	Clinton, NC	2	4	5	7
2014	Clgrn088-156	13GH-1582	Clinton, NC	1	4	4	6
2014	Clgrn088-156	13GH-1582	Clinton, NC	2	4	6	7
2014	Clgrn088-157	13GH-1583	Clinton, NC	1	3	3	4
2014	Clgrn088-157	13GH-1583	Clinton, NC	2	2	1	1
2014	Clgrn088-160	13GH-1585	Clinton, NC	1	3	3	6
2014	Clgrn088-160	13GH-1585	Clinton, NC	2	2	2	3
2014	Clgrn088-161	13GH-1587	Clinton, NC	1	5	4	5
2014	Clgrn088-161	13GH-1587	Clinton, NC	2	5	6	5
2014	Clgrn088-162	13GH-1589	Clinton, NC	1	5	5	4
2014	Clgrn088-162	13GH-1589	Clinton, NC	2	4	6	7
2014	Clgrn088-163	13GH-1592	Clinton, NC	1	2	3	5
2014	Clgrn088-163	13GH-1592	Clinton, NC	2	3	3	5
2014	Clgrn088-164	13GH-1594	Clinton, NC	1	.	.	.
2014	Clgrn088-164	13GH-1594	Clinton, NC	2	6	6	7
2014	Clgrn088-166	13GH-1595	Clinton, NC	1	.	.	.
2014	Clgrn088-166	13GH-1595	Clinton, NC	2	3	3	4
2014	Clgrn088-167	13GH-1598	Clinton, NC	1	1	1	3
2014	Clgrn088-167	13GH-1598	Clinton, NC	2	.	.	.
2014	Clgrn088-168	13GH-1600	Clinton, NC	1	.	3	.
2014	Clgrn088-168	13GH-1600	Clinton, NC	2	3	5	3
2014	Clgrn088-169	13GH-1601	Clinton, NC	1	4	6	7
2014	Clgrn088-169	13GH-1601	Clinton, NC	2	3	5	8
2014	Clgrn088-171	14GH-366	Clinton, NC	1	3	2	2
2014	Clgrn088-171	14GH-366	Clinton, NC	2	3	3	2
2014	Clgrn088-173	13GH-1604	Clinton, NC	1	.	.	.
2014	Clgrn088-173	13GH-1604	Clinton, NC	2	3	2	3
2014	Clgrn088-174	13GH-1606	Clinton, NC	1	3	5	6
2014	Clgrn088-174	13GH-1606	Clinton, NC	2	5	6	6
2014	Clgrn088-175	13GH-1608	Clinton, NC	1	5	5	5
2014	Clgrn088-175	13GH-1608	Clinton, NC	2	3	3	3
2014	Clgrn088-176	13GH-1610	Clinton, NC	1	.	.	.
2014	Clgrn088-176	13GH-1610	Clinton, NC	2	4	2	4
2014	Clgrn088-177	13GH-1611	Clinton, NC	1	2	3	2
2014	Clgrn088-177	13GH-1611	Clinton, NC	2	3	1	2
2014	Clgrn088-178	13GH-1613	Clinton, NC	1	.	.	.
2014	Clgrn088-178	13GH-1613	Clinton, NC	2	0	2	1
2014	Clgrn088-179	13GH-1616	Clinton, NC	1	5	6	7
2014	Clgrn088-179	13GH-1616	Clinton, NC	2	5	6	6

					Rating		
Year	**Cultigen**	**Source**	**Location**	**Replication**	**1**	**2**	**3**
2014	Clgrn088-180	13GH-1617	Clinton, NC	1	5	7	7
2014	Clgrn088-180	13GH-1617	Clinton, NC	2	4	5	7
2014	Clgrn088-181	13GH-1620	Clinton, NC	1	.	.	.
2014	Clgrn088-181	13GH-1620	Clinton, NC	2	3	2	1
2014	Clgrn088-198	14GH-339	Clinton, NC	1	4	4	6
2014	Clgrn088-198	14GH-339	Clinton, NC	2	6	3	5
2014	Clgrn088-206	14GH-341	Clinton, NC	1	4	4	6
2014	Clgrn088-206	14GH-341	Clinton, NC	2	6	6	7
2014	Clgrn088-211	14GH-343	Clinton, NC	1	4	5	6
2014	Clgrn088-211	14GH-343	Clinton, NC	2	.	.	.
2014	Clgrn088-213	14GH-345	Clinton, NC	1	2	3	4
2014	Clgrn088-213	14GH-345	Clinton, NC	2	3	4	6
2014	Clgrn088-217	14GH-346	Clinton, NC	1	.	.	.
2014	Clgrn088-217	14GH-346	Clinton, NC	2	3	4	6
2014	Clgrn088-219	14GH-347	Clinton, NC	1	4	5	7
2014	Clgrn088-219	14GH-347	Clinton, NC	2	4	6	8
2014	Clgrn088-221	14GH-349	Clinton, NC	1	3	4	6
2014	Clgrn088-221	14GH-349	Clinton, NC	2	5	4	5
2014	Clgrn088-222	14GH-350	Clinton, NC	1	2	2	4
2014	Clgrn088-222	14GH-350	Clinton, NC	2	4	3	2
2014	Clgrn088-230	14GH-354	Clinton, NC	1	.	.	.
2014	Clgrn088-230	14GH-354	Clinton, NC	2	3	3	4