

# Spring 2011 Commercial Fruit and Vegetable Variety Trials



January 2012

Regional Bulletin 23  
Auburn University  
North Carolina State University  
University of Tennessee

Alabama Agricultural Experiment Station  
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**Special thanks** is extended to the following companies who generously donated seed for the research reported in this regional bulletin:

Harris Moran,  
Kelly Seed Company,  
Sakata Seed America, and  
Syngenta Seeds, Inc.

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**Printed in cooperation with the Alabama Cooperative Extension System  
(Alabama A&M University and Auburn University)**

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**Names of chemicals are mentioned only for describing the production practices used.  
This represents neither a recommendation nor an endorsement of these products.**

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# Introduction: Interpreting Vegetable Varieties Performance Results

Edgar Vinson and Joe Kemble

The spring 2011 fruit and vegetable regional bulletin includes research results from Auburn University and North Carolina State University. The information provided by this report must be studied carefully in order to make the best selections possible. Although yield is a good indicator of varietal performance, other information must be studied. The following provides a few tips to help producers adequately interpret results in this report.

**Open pollinated or hybrid varieties.** In general, hybrids (also referred to as  $F_1$ ) are earlier and produce a more uniform crop. They have improved disease, pest, or virus tolerance/resistance.  $F_1$  varieties are often more expensive than open pollinated varieties (OP), and seeds cannot be collected from one crop to plant the next. Despite the advantages hybrids offer, OP are still often planted in Alabama. Selecting a hybrid variety is the first step toward earliness and quality.

**Yield potential.** Yields reported in variety trial results are extrapolated from small plots. Depending on the vegetable crop, plot sizes range between 100 to 500 square feet. Yields per acre are estimated by multiplying plot yields by corrective factors ranging from 100 to 1,000. Small errors are thus amplified, and estimated yields per acre may not be realistic. Therefore, locations cannot be compared by just looking at the range of yields actually reported. However, the relative differences in performance among varieties are realistic, and can be used to identify best-performing varieties.

**Statistical interpretation.** The coefficient of determination ( $R^2$ ), coefficient of variation (CV) and least significant difference (LSD, 5 percent) are reported for each test. These numbers are helpful in separating the differences due to small plots (sampling error) and true (but unknown) differences among entries.

$R^2$  values range between 0 and 1. Values close to 1 suggest that the test was conducted under good conditions and most of the variability observed was mainly due to the effect of variety and replication. Random, uncontrolled errors were of lesser importance. CV is an expression of yield variability relative to yield mean. Low CVs (under 20 percent) are desirable but are not always achieved.

There must be a minimum yield difference between two varieties before one can statistically conclude that one variety actually performs better than another. This is known as the least significant difference (LSD). When the difference in yield is less than the LSD value, one cannot conclude that there is any real difference between two varieties. For example, in the cantaloupe trial conducted at the E.V. Smith Research Center (see page 8) 'Eclipse' yielded 48,165 pounds per acre while 'Athena' and 'Ariel' yielded 35,860 and 32,553 pounds per acre, respectively. Since there was less than a 12,449 difference between 'Athena' and 'Ariel', there is no statistical difference between these two varieties. However, the yield difference between 'Eclipse' and 'Ariel' was 15,612, indicating that there is a real difference between these two varieties. From a practical point of view, producers should place the most importance on LSD values when interpreting results.

**Testing conditions.** AU vegetable variety trials are conducted under standard, recommended commercial production practices. All of Auburn University's commercial vegetable production recommendations can be found in the current edition of the Southeastern U.S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide). Additional information on any aspect of vegetable production can be obtained from your county Extension office or online at [www.aces.edu](http://www.aces.edu). Information on soil type (Table 1), planting dates, fertilizer rates, and detailed spray schedule are provided to help producers compare their own practices to the standard one used in the trials and make relevant adjustments.

**Ratings of trials.** At each location, variety trials were rated on a 1 to 5 scale, based on weather conditions, fertilization, irrigation, pest pressure, and overall performance (Table 2). Results from trials with ratings of 2 and under are not reported. These numbers may be used to interpret differences in performance from location to location. The overall rating may be used to give more importance to the results of variety performance under good growing conditions.

**Where to get seeds.** Because seeds are alive, their performance and germination rate depends on how old they are, where and how they were collected, and how they have been handled and stored. It is always preferable to get certified seeds from a reputable source, such as the ones listed in Seed Sources, page 40.

Several factors other than yield have to be considered when choosing a vegetable variety from a variety trial report.

The main factors are type, resistance and tolerance to diseases, earliness, and, of course, availability and cost of seeds. It is always better to try two to three varieties on a small scale before making a large planting of a single variety.

**Fruit and vegetable trials on the Web.** For more vegetable variety information be sure to visit our Web page at [www.aes.auburn.edu/comm/pubs/pubs-by-subject/fruits-nutsvegs.php](http://www.aes.auburn.edu/comm/pubs/pubs-by-subject/fruits-nutsvegs.php)

**TABLE 1. SOIL TYPES AT THE LOCATION OF THE TRIAL**

Location	Water holding capacity (in/in)	Soil type
Gulf Coast Research and Extension Center (Fairhope)	0.09-0.19	Malbis fine sandy loam
Brewton Agricultural Research Unit (Brewton)	0.12-0.14	Benndale fine sandy loam
Wiregrass Research and Extension Center (Headland)	0.14-0.15	Dothan sandy loam
Lower Coastal Plain Research and Extension (Camden)	0.13-0.15	Forkland fine sandy loam
EV Smith Research Center, Horticultural Unit (Shorter)	0.15-0.17	Norfolk-orangeburg loamy sand
Chilton Area Horticultural Substation (Clanton)	0.13-0.15	Luvernue sandy loam
Upper Coastal Plain Research and Extension Center (Winfield)	0.13-0.20	Savannah loam
North Alabama Horticultural Research Center (Cullman)	0.16-0.20	Hartsells-Albertville fine sandy loam
Sand Mountain Research and Extension Center (Crossville)	0.16-0.18	Wynnvilleville fine sandy loam

**TABLE 2. DESCRIPTION OF RATINGS**

Rating	Weather	Fertilizer	Irrigation	Pests	Overall
5	Very Good	Very Good	Very Good	None	Excellent
4	Favorable	Good	Good	Light	Good
3	Acceptable	Acceptable	Acceptable	Tolerable	Acceptable
2	Adverse	Low	Low	Adverse	Questionable
1	Destructive	Very Low	Insufficient	Destructive	Useless

# CANTALOUPE

## Cantaloupe Varieties Perform As Well As Market Standard

Joe Kemble, Edgar Vinson, and Jason Burkett

A small melon trial was conducted at the E.V. Smith Research Center (EVSRC) in Shorter, Alabama, (Tables 1 and 2).

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Current commercial cantaloupe production information for Alabama—including insect, disease, and weed management as well as recommended fertigation and spray schedules—is

available in the Southeastern U. S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide).

Cantaloupe varieties were direct seeded on May 4 into 30-foot rows with 6 feet between rows and a within row spacing of 2 feet. Drip irrigation and black plastic mulch were used. Melons were harvested four times from July 11 through July 27. Melons were harvested at the half slip stage of maturity (Table 3)

The market standard ‘Athena’ was among the top performers in the total marketable yield category producing a yield statistically similar to the top producers ‘Eclipse’ and ‘Strike’. Four varieties—‘Wrangler’, ‘Earlichamp’, ‘Odyssey’, and ‘Halona’—produced total marketable fruit yields significantly lower than ‘Athena’. All varieties in this year’s trial have been included in previous trials with the exception of ‘Origami’, which produced a total marketable yield similar to ‘Athena’.

**TABLE 1. RATINGS OF THE 2011 CANTEOUE VARIETY TRIAL<sup>1</sup>**

Location	EVSRC
Weather	5
Fertility	5
Irrigation	5
Pests	5
Overall	5

<sup>1</sup> See introduction for description of ratings scales.

**TABLE 2. SEED SOURCE, FRUIT CHARACTERISTICS, AND RELATIVE EARLINESS OF SELECTED CANTALOUPE VARIETIES**

Variety	Type <sup>1</sup>	Seed source	Rind aspect <sup>2</sup>	Flesh color <sup>3</sup>	Days to harvest	Disease claims <sup>4</sup>
Athena	F <sub>1</sub>	Seedway/Novartis	E	O	80	FW 0-2, PM 1-2
Atlantis	F <sub>1</sub>	Sakata/Siegers	E	O	74	FW 0-2, PM 1-2
Ariel	F <sub>1</sub>	Stokes	E	O	83	FW 0-2, PM 0-2
Earlichamp	F <sub>1</sub>	Hollar	E	O	78	FW 0,2, PM
Eclipse	F <sub>1</sub>	Seminis	E	O	85	FW, PM
Goddess	F <sub>1</sub>	Seedway	E	O	70	FW 0-2, PM 1-2
Halona	F <sub>1</sub>	Johnny's	E	O	73	FW, PM
Home Run	F <sub>1</sub>	Hollar	E	O	82	FW 0-2,PM
Odyssey	F <sub>1</sub>	Nunhems	E	O	75	FW
Origami	F <sub>1</sub>	Harris Moran	E	O	—	FW 0-2, PM 1-2
Strike	F <sub>1</sub>	Hollar	E	O	85	FW 0-2, PM
Wrangler	F <sub>1</sub>	Hollar	E	O	85	FW, PM

<sup>1</sup> Type: F<sub>1</sub> = Hybrid variety. <sup>2</sup> Rind aspect: E= Eastern. <sup>3</sup> Flesh color: O = Orange. <sup>4</sup> Disease claims: FW = Fusarium Wilt, PM = Powdery Mildew. Note: Numbers following disease claims indicate races.

'Eclipse', 'Strike', and 'Athena' also produced the greatest number fruit per acre. Most varieties produced a number of marketable fruit per acre that was statistically similar to 'Athena'. Other varieties such as 'Origami', 'Earlichamp', 'Odyssey', and 'Halona' did not.

In a commercial setting, individual melons should weigh in the range of 4 to 6 pounds. 'Athena' at 5.9 pounds is within in this range along with 'Wrangler', 'Earlichamp', and 'Halona' at 4.6 pounds, 5.6 pounds, and 4.6 pounds, respectively.

**TABLE 3. YIELD OF SELECTED CANTELOUPE VARIETIES**

Variety	Total marketable yield <i>lb/A</i>	Total marketable number <i>no/A</i>	Individual fruit weight <i>lb</i>	Cull <i>lb/A</i>
Eclipse	48,165	6,171	7.8	4,082
Strike	40,205	6,262	6.4	6,468
Athena	35,860	5,990	5.9	7,612
Ariel	32,553	4,356	7.5	5,539
Homerun	30,830	4,810	6.6	8,920
Atlantis	26,951	4,628	6.0	7,297
Origami	26,697	3,086	8.4	22,450
Wrangler	22,551	4,719	4.6	9,207
Earlichamp	21,619	3,902	5.6	15,605
Odyssey	18,090	2,904	6.2	9,444
Halona	7,726	1,634	4.6	23,462
<b><i>R</i><sup>2</sup></b>	<b>0.68</b>	<b>0.68</b>	<b>0.70</b>	<b>0.60</b>
<b><i>CV</i></b>	<b>31</b>	<b>28</b>	<b>14</b>	<b>54</b>
<b><i>LSD</i></b>	<b>12,449</b>	<b>1,724</b>	<b>1.4</b>	<b>2,181</b>



# SQUASH

## New Summer Squash Entries Perform Well Early

Joe Kemble, Edgar Vinson, Randy Akridge, and Jason Burkett

A summer squash variety trial was conducted at the E.V. Smith Research Center (EVSRC) in Shorter, Alabama, and the Brewton Area Research Unit (BARU) in Brewton, Alabama, (Tables 1 and 2).

**TABLE 1. RATINGS OF THE 2011 SUMMER SQUASH VARIETY TRIAL<sup>1</sup>**

Location	BARU	EVSRC
Weather	5	5
Fertility	5	5
Irrigation	5	5
Pests	5	4
Overall	5	5

<sup>1</sup> See introduction for description of ratings scales.

At both locations, beds were formed and plastic mulch and drip irrigation were used. Squash varieties were direct seeded on white plastic mulch on May 4 at EVSRC and on May at BARU. Beds were 20 feet long on 6 foot centers. Spacing within a row was 1.5 feet.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Current commercial summer squash production information for Alabama—including insect, disease, and weed management as well as recommended fertigation and spray schedules—is available in the Southeastern U. S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide).

**TABLE 2. SEED SOURCE, FRUIT TYPE, AND RELATIVE EARLINESS OF SELECTED SQUASH VARIETIES**

Variety	Type <sup>1</sup>	Seed source	Days to harvest	Disease claims <sup>2</sup>	Years evaluated
<b>Yellow squash (straightneck, semi crookneck, and crookneck)</b>					
Enterprise	F <sub>1</sub>	Rogers Syngenta	41	—	97,99,07,10,11
Fortune <sup>3</sup>	F <sub>1</sub>	Rogers Syngenta	39	—	99,04-07,10, 11
Gentry	F <sub>1</sub>	Rogers Syngenta	43	—	97-99,02-08,10,11
Goldprize	F <sub>1</sub>	Rogers Syngenta	42	WMV,ZYMV	10,11
Gold Star	F <sub>1</sub>	Rogers Syngenta	42	CMV,PM	10,11
Lazor	F <sub>1</sub>	Seedway	42	ZYMV	2011
Lioness	F <sub>1</sub>	Harris Seeds	50	CMV, PRSV, WMV II, ZYMV	04-08,11
Multipik <sup>3</sup>	F <sub>1</sub>	Harris Seeds	50	CMV,WMV	2011
Sunray <sup>3</sup>	F <sub>1</sub>	Seminis	43	—	99,03,04,07,08,11
Ocelot	F <sub>1</sub>	Harris Moran	—	—	2011
XPT 1832 III	F <sub>1</sub>	Seminis	44	CMV,WMV,ZYMV	06-08,11
<b>Zucchini</b>					
Cashflow	F <sub>1</sub>	Rogers Syngenta	45	ZYMV	10,11
Leopard	F <sub>1</sub>	Harris Moran	—	PRSV,ZYMV	2011
Spineless Perfection (RSQ 5184)	F <sub>1</sub>	Rogers Syngenta	44	PM, WMV, ZYMV	10,11
Spineless Beauty	F <sub>1</sub>	Rogers Syngenta	43	—	95-97,99,10
Zucchini Elite	F <sub>1</sub>	Harris Moran	—	—	95-97,11
Elegance	F <sub>1</sub>	Harris Moran	—	PM, WMV, ZYMV	10,11

<sup>1</sup> Type: F<sub>1</sub> = Hybrid. <sup>2</sup> Disease claims: CMV = Cucumber Mosaic Virus; PRSV = Papaya Ring Spot; PM = Powdery Mildew; ZYMV = Zucchini Yellow Mosaic Virus; WMV = Watermelon Mosaic Virus. <sup>3</sup> Precocious Variety. — = none; from seed catalogues.

Squash were harvested seven times between June 6 and June 20 at BARU and nine times between May 25 and June 20 at EVSRC. Squash were graded according to the United States Standards for Grades of Summer Squash (U.S. Dept. Agr. G.P.O 1987-180-916:40730 AMS) (Table 3). At EVS-

RC grades were combined and categorized as marketable or non-marketable.

At BARU, 'Multipik', 'Sunray', and 'Ocelot' produced the highest early marketable yields which were similar to the market standard 'Gentry' (Table 3). These varieties were also similar to

**TABLE 3. EARLY YIELD OF SELECTED YELLOW SUMMER SQUASH AND ZUCCHINI VARIETIES**

Variety	Type <sup>1</sup>	Early marketable yield lb/A	Early marketable number no/A	Early nonmarketable yield lb/A	US No.1 weight lb/A	US No.2 weight lb/A	US No.1 number no/A	US No.2 number no/A
<b>Brewton Agricultural Research Unit</b>								
Multipik	Y	8,323	•	•	4,290	4,032	14,029	7,504
Sunray	Y	7,285	•	•	4,196	3,090	13,485	5,438
Ocelot	Y	7,205	•	•	4,111	3,094	16,530	6,851
Gentry	Y	7,118	•	•	4,152	2,966	14,899	6,416
Enterprise	Y	6,077	•	•	2,828	3,249	8,483	6,416
Goldprize	Y	5,981	•	•	3,653	2,328	11,843	4,024
Lazor	Y	5,706	•	•	2,990	2,717	9,896	4,676
Gold Star	Y	5,434	•	•	2,843	2,592	10,658	5,003
Lioness	Y	5,177	•	•	2,116	3,060	6,090	5,111
<b>R<sup>2</sup></b>		<b>0.56</b>	•	•	<b>0.56</b>	<b>0.40</b>	<b>0.70</b>	<b>0.40</b>
<b>CV</b>		<b>18</b>	•	•	<b>25</b>	<b>27</b>	<b>22</b>	<b>40</b>
<b>LSD</b>		<b>1,739</b>	•	•	<b>1,260</b>	<b>1,187</b>	<b>3,797</b>	<b>2,433</b>
<b>E.V. Smith Research Center</b>								
Lazor	Y	4,454	12,524	3,919	•	•	•	•
XPT 1832 III	Y	4,251	16,335	6,163	•	•	•	•
Gentry	Y	4,093	16,789	6,249	•	•	•	•
GoldStar	Y	4,071	13,794	3,871	•	•	•	•
Multipik	Y	3,843	13,522	6,634	•	•	•	•
Ocelot	Y	3,626	15,609	7,495	•	•	•	•
Lioness	Y	3,115	10,164	4,185	•	•	•	•
<b>R<sup>2</sup></b>		<b>0.31</b>	<b>0.51</b>	<b>0.58</b>	•	•	•	•
<b>CV</b>		<b>21</b>	<b>19</b>	<b>29</b>	•	•	•	•
<b>LSD</b>		<b>1,234</b>	<b>8,939</b>	<b>2,409</b>	•	•	•	•
Zucchini Elite	Z	7,469	10,255	16,817	•	•	•	•
Cashflow	Z	5,982	9,892	7,974	•	•	•	•
Elegance	Z	5,620	9,892	8,850	•	•	•	•
Spineless Perfection	Z	5,237	8,621	8,363	•	•	•	•
Leopard	Z	4,836	8,077	8,311	•	•	•	•
Goldprize	Z	4,081	11,344	4,263	•	•	•	•
Spineless Beauty	Z	3,737	5,445	7,758	•	•	•	•
<b>R<sup>2</sup></b>		<b>0.54</b>	<b>0.55</b>	<b>0.41</b>	•	•	•	•
<b>CV</b>		<b>26</b>	<b>26</b>	<b>63</b>	•	•	•	•
<b>LSD</b>		<b>2,052</b>	<b>7,067</b>	<b>8,406</b>	•	•	•	•

<sup>1</sup> Type: Z = Zucchini; Y = Yellow squash (straightneck, semi crookneck, and crookneck).

• = information not available.

the market standard in the number 1 yields. In total marketable yield ‘Gentry’ produced yields that were statistically higher than all other varieties with the exception of ‘Ocelot’.

At EVSRC, yellow and zucchini varieties were included the trial. Among the yellow squash, ‘Lazor’ and XPT 1832 III produced the two highest yields in the early marketable

yield category. These yields were similar to the market standard ‘Gentry’. The varieties ‘Goldstar’ and ‘Multipik’ were also similar to ‘Gentry’. In total yield, there were very few differences observed. The market standard ‘Gentry’ topped the list and was statistically similar to all other varieties with the exception of ‘Lioness’.

**TABLE 4. TOTAL YIELD OF SELECTED YELLOW SUMMER SQUASH AND ZUCCHINI VARIETIES**

Variety	Type <sup>1</sup>	Total marketable yield <i>lb/A</i>	Total marketable number <i>no/A</i>	US No.1 weight <i>lb/A</i>	US No.2 weight <i>lb/A</i>	US No.1 number <i>no/A</i>	US No.2 number <i>no/A</i>	Cull <i>lb/A</i>
<b>Brewton Agricultural Research Unit</b>								
Gentry	Y	38,633	•	27,092	11,542	24,213	12,720	•
Ocelot	Y	34,392	•	24,904	9,488	27,579	12,823	•
Multipik	Y	30,454	•	19,724	10,730	23,261	12,128	•
Enterprise	Y	29,956	•	19,252	10,704	15,601	10,534	•
Sunray	Y	22,208	•	13,749	8,459	21,012	8,804	•
Lioness	Y	21,876	•	14,248	7,628	11,910	8,252	•
Goldprize	Y	20,664	•	13,910	6,753	21,099	7,478	•
Lazor	Y	20,293	•	12,794	7,498	18,309	8,834	•
Gold Star	Y	19,115	•	12,282	6,833	18,572	7,722	•
<b>R<sup>2</sup></b>		<b>0.75</b>	•	<b>0.73</b>	<b>0.63</b>	<b>0.75</b>	<b>0.53</b>	
<b>CV</b>		<b>19</b>	•	<b>22</b>	<b>23</b>	<b>16</b>	<b>24</b>	
<b>LSD</b>		<b>7,215</b>	•	<b>5,719</b>	<b>2,907</b>	<b>4,612</b>	<b>3,478</b>	
<b>E.V. Smith Research Center</b>								
Gentry	Y	13,438	63,434	•	•	•	•	11,448
Lazor	Y	12,851	44,377	•	•	•	•	6,748
Ocelot	Y	12,484	63,525	•	•	•	•	13,524
XPT 1832 III	Y	11,731	45,829	•	•	•	•	10,406
Multipik	Y	11,701	44,831	•	•	•	•	11,043
Gold Star	Y	11,029	44,468	•	•	•	•	9,070
Lioness	Y	9,919	37,480	•	•	•	•	6,644
<b>R<sup>2</sup></b>		<b>0.40</b>	<b>0.70</b>	•	•	•	•	<b>0.63</b>
<b>CV</b>		<b>18</b>	<b>16</b>	•	•	•	•	<b>25</b>
<b>LSD</b>		<b>3,287</b>	<b>26,195</b>	•	•	•	•	<b>3,672</b>
Zucchini Elite	Z	28,730	25,138	•	•	•	•	32,046
Cashflow	Z	17,673	30,401	•	•	•	•	13,566
Spineless Perfection	Z	16,978	28,496	•	•	•	•	16,671
Elegance	Z	16,305	27,316	•	•	•	•	15,814
Leopard	Z	14,692	24,956	•	•	•	•	14,860
Goldprize	Z	10,542	37,752	•	•	•	•	7,024
Spineless Beauty	Z	9,823	15,337	•	•	•	•	11,412
<b>R<sup>2</sup></b>		<b>0.40</b>	<b>0.70</b>	•	•	•	•	<b>0.57</b>
<b>CV</b>		<b>61</b>	<b>19</b>	•	•	•	•	<b>50</b>
<b>LSD</b>		<b>15,062</b>	<b>17,286</b>	•	•	•	•	<b>11,927</b>

<sup>1</sup> Type: Z = Zucchini; Y = Yellow squash (straightneck, semi crookneck, and crookneck).

• = information not available.

Among the zucchini varieties, 'Zucchini Elite' produced the highest early yield. This yield was similar to 'Cashflow' and 'Elegance' but statistically higher than the market standard 'Spineless Beauty' and the remaining varieties. 'Zucchini Elite' produced a total marketable yield that was statistically higher than 'Spineless Beauty'.

Varieties that produced the highest early marketable yields tended to be among the top producers throughout the season. Several varieties performed as well as or better than the market standards in both the zucchini and yellow squash varieties and in both locations.

# BELL PEPPER

## New Bell Pepper Varieties Perform Well

Joe Kemble, Edgar Vinson, and Randy Akridge

A spring bell pepper variety trial was conducted at the Brewton Agricultural Research Unit (BARU) in Brewton, Alabama, and the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama. Five-week-old bell pepper transplants were set onto 20-foot long plots at a within-row spacing of 1.5 feet on May 3 at BARU and May 24 at NAHRC. White plastic mulch and drip irrigation were used.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Current commercial bell pepper production information for Alabama—including insect, disease, and weed management as well as recommended fertigation and spray schedules—is available in the Southeastern U. S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide).

Bell peppers were harvested, weighed, and graded three times between July 11 and July 25 at BARU and on August

2 and 9 at NAHRC. Grades and corresponding fruit diameters (D) of fresh market bell pepper were adapted from the Sweet pepper Grader's Guide (Circular ANR 783 from the Alabama Cooperative Extension System). Marketable yield was the sum of Fancy, No.1, and No.2 grades (Table 3).

There were few differences in total marketable yield and total marketable number. Two experimental lines—PS

**TABLE 1. RATINGS OF THE 2011 BELL PEPPER VARIETY TRIAL<sup>1</sup>**

Location	NAHRC	BARU
Weather	5	5
Fertility	5	5
Irrigation	5	5
Pests	5	5
Overall	5	5

<sup>1</sup> See introduction for description of ratings scales.

**TABLE 2. SEED SOURCE, FRUIT CHARACTERISTICS, AND RELATIVE EARLINESS OF SELECTED BELL PEPPER VARIETIES**

Variety	Type <sup>1</sup>	Seed source	Fruit color <sup>2</sup>	Days to harvest	Disease claims <sup>3</sup>	Years evaluated
Allegiance	F <sub>1</sub>	Harris Moran	G-R	61	BSp1-5,PVY 0, TbMV	2011
Aristotle X3R	F <sub>1</sub>	Seminis	G-R	74	BSp1-3,PVY,Stip	01,10,11
Camelot X3R	F <sub>1</sub>	Seminis	G-R	74	TbMV	94-7,99,01,10,11
Colossal	F <sub>1</sub>	Rogers/Syngenta	G-R	70	—	99,01,11
Declaration	F <sub>1</sub>	Harris Moran	G-R	75	CMV,PRR,TSWV, BSp1-3,5	10,11
Del Rio	F <sub>1</sub>	Siegers	G-O	—	TMV0-3, TSWV	2011
Hunter	F <sub>1</sub>	Rogers/Syngenta	G-R	—	BSp 1-5, TEV, TMV	2011
Intruder	F <sub>1</sub>	Rogers/Syngenta	G-R	—	BSp 1-3,TEV,TMV	2011
Sirius	F <sub>1</sub>	Sieger/Western Seeds	G-Y	—	BSp1-2,TSWV	10,11
Stiletto	F <sub>1</sub>	Rogers/Syngenta	G-R	70	BSp1-3,TSWV	10,11
Tomcat	F <sub>1</sub>	Rogers/Syngenta	G-R	—	Bsp1-5, TEV,TMV	2011
Vanguard		Harris Moran	G-R	—	BSp1-5,CMV,PRR	10,11
Wizard X3R	F <sub>1</sub>	Seminis	G-rR	74	BSp1-3, TMV	01,11

<sup>1</sup> Type: F<sub>1</sub> = hybrid variety. <sup>2</sup> Fruit color: G-R = Green to Red; G-Y = Green to Yellow. <sup>3</sup> Disease Claims: BSp = Bacterial Spot; CMV = Cucumber Mosaic Virus; PRR = Phytophthora Root Rot; PVY = Potato Virus Y; Stip = Stip or Pepper spot; TbMV = Tobamo Virus; TSWV = Tomato Spotted Wilt Virus. Note: Numbers following disease claims indicate races. — = none; from seed catalogues.

9915776 and PS 9927141—topped the list in both categories. Both experimental lines had yields that were significantly higher than the standard variety ‘Camelot X3R’. Total marketable number of these two lines was statistically similar to ‘Camelot X3R’ while PS 09942815 had the highest production in the number of US Fancy fruit. Two other experimental lines—PS 9915776 and PS 9927141—produced

fruit numbers in the category that was statistically similar to PS 09942815.

At BARU, ‘Vanguard’ and ‘Colossal’ produced significantly higher yields than the market standard ‘Camelot X3R’ in the total marketable fruit category. Several varieties did not produce fruit in the U.S. Fancy category. Among the varieties that produced U.S. Fancy fruit, ‘Vanguard’ produced

**TABLE 3. YIELD AND QUALITY OF SELECTED BELL PEPPER VARIETIES**

Variety	Total marketable yield lb/A	Total marketable number no/A	U.S. fancy number no/A	U.S. fancy weight lb/A	U.S. No.1 number no/A	U.S. No.1 weight lb/A	U.S. No.2 number no/A	U.S. No.2 weight lb/A	Fruit weight lb/A	Cull weight lb/A
<b>North Alabama Horticulture Research Center</b>										
Declaration	24,465	51,546	18,634	12,265	20,812	8,164	12,100	4,037	0.48	1,862
Sirius	22,530	52,393	12,705	7,318	27,588	12,153	12,100	3,059	0.43	1,250
Wizard X3R	21,641	61,710	10,043	5,519	33,154	11,794	18,513	4,328	0.35	1,056
Vanguard	20,960	49,005	15,851	9,287	20,933	8,192	12,221	3,481	0.43	2,214
Colossal	20,048	50,215	14,399	8,279	24,805	8,745	11,011	3,025	0.40	1,404
Allegiance	19,440	50,457	9,196	5,551	28,193	10,584	13,068	3,305	0.39	1,557
Stiletto	19,341	52,635	9,438	5,038	27,951	10,216	15,246	4,086	0.37	812
Tomcat	19,210	49,005	13,673	7,633	24,200	8,573	11,132	3,004	0.39	964
Camelot X3R	19,047	47,916	11,374	5,957	26,015	9,454	10,527	3,636	0.40	728
Intruder	18,368	47,432	9,438	5,376	26,499	9,773	11,495	3,219	0.39	1,690
Aristotle	16,746	44,770	10,527	5,712	22,869	8,125	11,374	2,909	0.38	1,488
Delirio	14,433	47,311	3,993	1,647	25,652	8,524	17,666	4,262	0.31	2,300
Hunter	11,332	30,129	6,655	3,767	14,278	5,306	9,196	2,259	0.38	705
<b>R<sup>2</sup></b>	<b>0.56</b>	<b>0.46</b>	<b>0.75</b>	<b>0.77</b>	<b>0.54</b>	<b>0.50</b>	<b>0.45</b>	<b>0.40</b>	<b>0.84</b>	<b>0.67</b>
<b>CV</b>	<b>20</b>	<b>20</b>	<b>26</b>	<b>29</b>	<b>24</b>	<b>25</b>	<b>34</b>	<b>33</b>	<b>6</b>	<b>33</b>
<b>LSD</b>	<b>6,435</b>	<b>16,799</b>	<b>4,993</b>	<b>3,178</b>	<b>10,127</b>	<b>3,957</b>	<b>7,423</b>	<b>1,911</b>	<b>0.04</b>	<b>565</b>
<b>Brewton Agriculture Research Unit</b>										
Vanguard	9,404	35,211	1,331	594	18,150	5,729	16,063	3,229	0.27	892
Colossal	9,272	35,846	1,452	620	18,967	5,736	15,791	3,071	0.26	829
Wizard X3R	8,933	35,574	•	•	14,611	4,430	20,963	4,502	0.25	734
Sirius	8,793	38,206	•	•	16,154	4,587	22,052	4,205	0.23	2,144
Aristotle	8,677	32,216	908	396	18,059	5,552	13,250	2,729	0.27	1,023
Stiletto	7,869	45,194	•	•	6,353	1,616	38,841	6,253	0.18	1,107
Allegiance	7,700	30,674	726	294	11,435	3,585	19,058	4,042	0.25	1,370
Camelot X3R	7,623	33,396	•	•	12,796	3,682	20,600	3,941	0.23	780
Declaration	7,536	27,770	968	463	14,883	4,744	12,161	2,444	0.27	1,194
Delrio	7,069	37,208	•	•	5,899	1,520	31,309	5,548	0.19	2,379
<b>R<sup>2</sup></b>	<b>0.67</b>	<b>0.71</b>	<b>0.65</b>	<b>0.64</b>	<b>0.80</b>	<b>0.81</b>	<b>0.82</b>	<b>0.76</b>	<b>0.84</b>	<b>0.60</b>
<b>CV</b>	<b>13</b>	<b>13</b>	<b>40</b>	<b>122</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>20</b>	<b>7</b>	<b>50</b>
<b>LSD</b>	<b>1,566</b>	<b>6,958</b>	<b>496</b>	<b>122</b>	<b>4,301</b>	<b>1,329</b>	<b>6,777</b>	<b>1,196</b>	<b>0.02</b>	<b>916</b>

• = information not available.

a significantly higher yield than all other varieties. Varieties 'Wizard X3R', 'Aristotle', 'Allegiance', and 'Declaration' produced individual fruit weights that were significantly higher than 'Camelot X3R'. In cull fruit production, 'Delrio' produced significantly more cull fruit than all other varieties with the exception of 'Sirius'.

At NAHRC, there were few differences in total marketable yield. All varieties performed as well as the market standard. The variety 'Declaration' produced significantly greater U.S. Fancy yield than all other varieties except for 'Vanguard'. 'Declaration' also produced significantly larger individual fruit than all other varieties. The market standard 'Camelot X3R' produced among the lowest yield of cull fruit.

## Experimental Tomato Line Produces High Yield of Large Fruit

Joe Kemble, Edgar Vinson, Randy Akridge, and Arnold Caylor

Spring tomato variety trials were conducted at the Brewton Agricultural Research Unit (BARU) in Brewton, Alabama, and the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama (Tables 1 and 2). Five-week-old tomato transplants were set on May 3 at BARU and May 19 at NAHRC onto 20-foot long plots at a within-row spacing of 1.5 feet. White plastic mulch and drip irrigation were used at both locations.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory and pesticides were applied. Current commercial tomato production information for Alabama—including insect, disease, and weed management as well as recommended fertigation and spray schedules—is available in the Southeastern U. S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide).

Tomatoes were harvested, weighed, and graded four times between July 6 and July 24 at BARU and four times between July 22 through August 16 at NAHRC. Grades and corresponding fruit diameters (D) of fresh market tomato were adapted from the Tomato Grader's Guide (Circular ANR 643 from the Alabama Cooperative Extension System) and were extra-large (D>2.9 inch), large (D>2.5 inch) and medium (D>2.3 inch). Marketable yield was the sum of extra-large, large and medium grades (Table 3).

At NAHRC, 'Primo Red' produced the highest total marketable fruit yield. These yields, however, are similar to BHN 602, 'Red Defender', XTM 5356, and 'Trinity'. The market standard used in this trial performed significantly lower than most other varieties with the exceptions of 'Linda', 'Sun-keeper', and Security 28. The experimental variety XTM 5356 produced a higher yield of extra large fruit than all other va-

rieties with the exception of 'Primo Red' and BHN 602. Similar results are noted in the large fruit yield category where the XTM 5356 produced a higher yield of large than most other varieties except 'Primo Red', BHN 602, and 'Red Defender'. The experimental variety XTM 5356 also produced the among the lowest cull fruit yield.

At BARU, the three highest producers in total marketable yield were 'Trinity', 'Primo Red', and 'Red Defender'. These yields were significantly higher than the market standard 'Florida 47'. All other varieties had yields that were statistically similar to 'Florida 47'. The variety HMX 8847 produced a yield that topped the list in the large fruit category. This yield was statistically similar to approximately half of the entries in the trial.

Several varieties were included in trials at both locations. In total marketable yield, 'Primo Red', 'Red Defender', BHN 602, and 'Trinity' topped the list at both locations. The experimental variety XTM 5356 topped the list at NAHRC while producing among the lowers total marketable yields at BARU.

It is important that tomato trials be conducted at both a northern and southern location as some varieties are better adapted for either a more northern or more southern locations.

**TABLE 1. RATINGS OF THE 2011 TOMATO VARIETY TRIAL<sup>1</sup>**

Location	BARU	NAHRC
Weather	5	5
Fertility	5	5
Irrigation	5	5
Pests	5	5
Overall	5	5

<sup>1</sup> See introduction for description of ratings scales.



**TABLE 2. SEED SOURCE, FRUIT TYPE, AND RELATIVE EARLINESS OF SELECTED TOMATO VARIETIES**

Variety	Type <sup>1</sup>	Seed source	Plant habit <sup>2</sup>	Fruit color <sup>3</sup>	Days to harvest	Disease claims <sup>3</sup>	Years evaluated
Amelia	F <sub>1</sub> /FM	Harris Moran	Det	Red	80	FW 1-3,TSWV,VW	03-08,10,11
Bella Rosa	F <sub>1</sub> /FM	Sakata	Det	Red	74	FW 1-2,TSWV,VW	07-08, 10,11
BHN 602	F <sub>1</sub> /FM	BHN	Det	Red	75	FW 1-3,TSWV,VW	10,11
BHN 640	F <sub>1</sub> /FM	BHN	Det	Red	75	FW 1-3,TSWV,VW	03-11
Carolina Gold	F <sub>1</sub> /FM	Harris	Det	Yellow	75	FW, VW	99,03,04,11
Crista	F <sub>1</sub> /FM	Harris Moran	Det	Red	74	FW 1-3,NE,TSWV,VW	06-11
Finishline	F <sub>1</sub> /FM	Syngenta/Rogers	Det	Red	75	FW 1-3,St,TSWV,VW	10,11
Fletcher	F <sub>1</sub> /FM	Bejo	Det	Red	74	NE,TSWV,VW	10,11
Florida 47	F <sub>1</sub> /FM	Seminis	Det	Red	75	ASC, FW 1-2,St,VW	97-99,02-08, 10, 11
HMX 8847	F <sub>1</sub> /FM	Harris Moran	Det	Red	—	—	2011
Linda	F <sub>1</sub> /FM	Sakata	Det	Red	75	ASC,FW 1-2, St,VW	10,11
Mt. Glory	F <sub>1</sub> /FM	Harris	Det	Red	70	FW 1-2,St,TSWV,VW	10,11
Mt. Magic	F <sub>1</sub> /FM	Johnny's Select	Det	Red	66	EB, FW 0-2,LB,VW	2011
Primo Red	F <sub>1</sub> /FM	Harris Moran	Det	Red	68	FW 1-2,ToMV,TSWV,VW	10,11
Red Defender	F <sub>1</sub> /FM	Harris	Det	Red	75	ASC, FW 1-2,St,TSWV, VW	07,11
Rocky Top	F <sub>1</sub> /FM	Syngenta/Rogers	Det	Red	74	—	10,11
Security 28	F <sub>1</sub> /FM	Harris	Det	Red	70	FW 1-2,TYLCV, VW	2011
Sunkeeper	F <sub>1</sub> /FM	Syngenta/Rogers	Det	Red	—	—	10,11
Sunguard	F <sub>1</sub> /FM	Seminis	Det	Red	75	ASC, FW 1-3,St,VW 1	2011
Tribeca	F <sub>1</sub> /FM	Vimorin	Det	Red	—	FW 1-2,VW,TSWV	2011
Tribute	F <sub>1</sub> /FM	Sakata	Det	Red	—	—	10,11
Trinity	F <sub>1</sub> /FM	Harris Moran	Det	Red	—	FW 1-2,NE,TSWV,VW 1	2011
XTM 5356	F <sub>1</sub> /FM	Sakata	Det	Red	—	—	2011

<sup>1</sup> Type: F1 = Hybrid, FM = Fresh market; <sup>2</sup> Plant habit: Det. = Determinate; <sup>3</sup> Disease claims: ASC = Alternaria Stem Canker; FW = Fusarium Wilt; VW = Verticillium Wilt; St = Stemphylium (grey leaf spot), TSWV = Tomato Spotted Wilt Virus; ToMV = Tomato Mosaic Virus; NE = Root-knot Nematode; TYLCV = Tomato Yellow Leaf Curl. Note: Numbers following disease claims indicate races. — = not found, from seed catalog.

**TABLE 3. YIELD OF SELECTED TOMATO VARIETIES**

Variety	Total market-able yield <i>lb/A</i>	Total market-able number <i>no/A</i>	Extra large wt. <i>lb/A</i>	Extra large no. <i>no/A</i>	Large wt. <i>lb/A</i>	Large no. <i>no/A</i>	Medium wt. <i>lb/A</i>	Medium no. <i>no/A</i>	Small wt. <i>lb/A</i>	Individual fruit wt. <i>lb</i>	Cull wt. <i>lb/A</i>
<b>North Alabama Horticulture Research Center</b>											
Primo Red	59,876	103,807	5,766	6,080	28,104	33,204	16,303	35,302	9,702	0.58	18,410
BHN 602	59,464	111,487	5,012	5,173	28,443	43,788	16,788	36,119	9,221	0.54	16,178
Red Defender	58,882	120,252	2,202	2,904	24,641	38,305	18,959	41,291	13,081	0.49	21,624
XTM 5356	58,308	102,203	6,186	6,897	31,569	45,484	14,339	31,400	6,213	0.57	13,891
Trinity	55,640	116,421	1,938	2,087	19,477	30,935	19,327	42,199	14,898	0.48	21,248
Tribute	53,264	108,237	1,512	1,815	21,176	33,005	18,361	40,112	12,216	0.49	20,069
Bell Rosa	52,983	96,409	4,000	4,628	25,613	38,874	17,832	37,117	5,538	0.54	14,300
Carolina Gold	52,422	110,654	2,564	2,904	14,915	22,990	20,391	43,742	14,553	0.47	23,488
Mt. Glory	50,884	105,658	2,235	2,632	17,712	25,979	17,998	40,475	12,939	0.48	17,782
Finishline	50,162	95,037	4,238	4,810	22,571	35,051	16,206	34,576	7,147	0.53	14,875
Amelia	50,144	94,656	1,768	2,087	23,629	33,037	15,692	34,304	9,054	0.53	16,476
HMX 8847	49,765	92,343	4,037	4,628	24,059	35,987	13,430	28,677	8,240	0.54	12,168
Crista	48,944	88,128	2,860	3,267	24,049	33,497	14,309	30,220	7,726	0.55	13,969
Linda	46,357	87,686	3,773	4,175	20,532	31,512	14,432	30,311	7,619	0.53	14,201
BHN 640	44,062	84,427	1,468	1,634	17,788	23,806	17,366	37,480	7,440	0.52	15,565
Sunkeeper	43,241	84,876	1,031	1,271	20,314	31,696	15,138	33,215	6,757	0.51	16,227
Security 28	42,397	78,614	4,518	4,961	18,724	27,189	11,818	25,652	7,337	0.54	14,461
<b>R<sup>2</sup></b>	<b>0.70</b>	<b>0.72</b>	<b>0.62</b>	<b>0.60</b>	<b>0.73</b>	<b>0.72</b>	<b>0.61</b>	<b>0.63</b>	<b>0.73</b>	<b>0.66</b>	<b>0.66</b>
<b>CV</b>	<b>12</b>	<b>12</b>	<b>49</b>	<b>48</b>	<b>18</b>	<b>18</b>	<b>16</b>	<b>16</b>	<b>26</b>	<b>6</b>	<b>20</b>
<b>LSD</b>	<b>6,594</b>	<b>12,525</b>	<b>1,592</b>	<b>1,766</b>	<b>4,193</b>	<b>6,196</b>	<b>2,603</b>	<b>5,628</b>	<b>2,457</b>	<b>0.03</b>	<b>3,387</b>
<b>Brewton Agricultural Research Unit</b>											
Trinity	21,764	43,923	7,513	12,796	7,881	18,967	6,370	12,161	1,401	0.50	7,628
Primo Red	18,677	44,740	6,532	10,890	7,333	17,696	4,812	16,154	2,173	0.42	4,393
Red Defender	18,400	42,380	7,472	11,798	7,273	17,424	3,655	13,159	991	0.45	5,289
BHN 602	18,142	41,201	7,135	11,525	7,051	16,517	3,956	13,159	1,310	0.44	6,857
Sungard	17,778	41,110	6,873	11,435	6,903	16,335	4,001	13,340	1,471	0.43	6,133
HMX 8847	17,592	37,208	9,358	15,065	5,789	13,976	2,445	8,168	726	0.47	6,804
Finishline	16,254	36,754	6,598	10,981	6,435	15,337	3,222	10,436	1,101	0.44	5,575
Rockytop	15,661	35,846	6,476	10,981	6,182	14,702	3,003	10,164	1,124	0.44	7,635
Tribute	14,099	33,124	5,210	8,803	6,120	14,792	2,769	9,529	1,130	0.43	7,560
Florida 47	13,947	32,035	5,863	9,801	5,226	12,614	2,858	9,620	1,573	0.43	7,577
XTM 5356	13,416	31,672	4,517	7,805	5,636	13,159	3,263	10,709	1,476	0.42	8,421
Bella Rosa	12,488	28,859	5,236	8,803	4,617	10,890	2,634	9,166	1,055	0.44	8,058
Fletcher	12,411	27,770	5,139	8,531	4,914	11,344	2,358	7,895	1,095	0.45	7,173
Tribeca	11,419	27,679	3,949	6,716	4,716	11,344	2,753	9,620	1,323	0.42	6,257
<b>R<sup>2</sup></b>	<b>0.64</b>	<b>0.56</b>	<b>0.54</b>	<b>0.53</b>	<b>0.47</b>	<b>0.47</b>	<b>0.440</b>	<b>0.40</b>	<b>0.33</b>	<b>0.24</b>	<b>0.34</b>
<b>CV</b>	<b>19</b>	<b>20</b>	<b>31</b>	<b>30</b>	<b>24</b>	<b>25</b>	<b>50</b>	<b>33</b>	<b>62</b>	<b>11</b>	<b>28</b>
<b>LSD</b>	<b>4,363</b>	<b>10,511</b>	<b>2,801</b>	<b>4,560</b>	<b>2,114</b>	<b>5,304</b>	<b>2,457</b>	<b>5,249</b>	<b>802</b>	<b>0.07</b>	<b>2,769</b>

## Several Differences Found in Yield Among Roma Tomatoes

Joe Kemble, Edgar Vinson, and Jason Burkett

A spring roma tomato variety trial was conducted at the E.V. Smith Research Center (EVSRC) in Shorter, Alabama, (Tables 1 and 2). Five-week-old roma tomato transplants were set May 2 onto 20-foot long plots at a within-row spacing of 1.5 feet. White plastic mulch and drip irrigation were used.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Current commercial roma tomato production information for Alabama—including insect, disease, and weed management as well as recommended fertigation and spray schedules—is available in the Southeastern U. S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide).

Roma tomatoes were harvested five times between July 11 and August 9. Roma tomatoes were graded as marketable or non-marketable and weighed (Table 3).

There were a number of differences in marketable yield among the roma tomatoes. The varieties seemed to be divided into two groups with the varieties in the first group all having fruit yields significantly higher than each variety in the second group. For instance, ‘Monticello’, ‘Picus’ and ‘Tachi’ produced marketable yields that were each significantly higher than BHN685 and ‘Plum Regal’ and the mar-

**TABLE 1. RATINGS OF THE 2011 ROMA TOMATO VARIETY TRIAL<sup>1</sup>**

Location	EVSRC
Weather	5
Fertility	5
Irrigation	5
Pests	4
Overall	5

<sup>1</sup> See introduction for description of ratings scales.

ket standard ‘Plum Crimson’. BHN 685 and ‘Plum Regal’ produced yields similar to the market standard.

In other categories, ‘Plum Regal’ produced significantly larger fruit than all other varieties and had the lowest production of cull fruit. At the top of the list in marketable yield, ‘Monticello’ produced one of the highest yields in the cull fruit category and had the highest incidence of fruit affected with blossom-end rot. The market standard ‘Plum Crimson’ had the lowest incidence of blossom-end rot while ‘Plum Regal’ produced no fruit with the condition. Blossom-end rot is a nutritional disorder that results in decay at the blossom end of the fruit. Though this condition is present in other tomato types, roma tomatoes are disproportionately affected

**TABLE 2. SEED SOURCE, FRUIT TYPE, AND RELATIVE EARLINESS OF SELECTED TOMATO VARIETIES**

Variety	Type <sup>1</sup>	Seed source	Plant habit <sup>2</sup>	Fruit color	Days to harvest	Disease claims <sup>3</sup>
BNN 685	F <sub>1</sub>	BHN	Det.	Red	75	FW 1-3, TSWV, VW
Monticello	F <sub>1</sub>	Syngenta/Rogers	Det.	Red	—	BSp 1-3, NE, TEV, TMV
Picus	F <sub>1</sub>	Seminis	Det.	Red	Midseason	FW 1, St, TSWV, VW
Plum Crimson	F <sub>1</sub>	Harris Moran	Det.	Red	Midseason	ASC, FW 1-2, St, TSWV, VW
Plum Regal	F <sub>1</sub>	Johnny’s Select	Det.	Red	68	ASC, FW 1-2, LB, TSWV, VW
Tachi	F <sub>1</sub>	Sakata	Det.	Red	Mid to late season	ASC, FW 1-2, NE, VW, TSWV

<sup>1</sup> Type: F<sub>1</sub> = Hybrid; <sup>2</sup> Plant habit: Det. = Determinate; <sup>3</sup> Disease claims: FW = Fusarium Wilt; VW = Verticillium Wilt; ASC = Alternaria Stem Canker; St = Stemphylium (grey leaf spot), TSWV = Tomato Spotted Wilt Virus; NE = Root-knot Nematode; LB = Late blight; TEV = Tobacco Etch Virus. Note: Numbers following disease claims indicate races. — = not found, from seed catalog.

**TABLE 3. YIELD OF SELECTED ROMA TOMATO VARIETIES**

Variety	Marketable yield <i>lb/A</i>	Marketable number <i>no/A</i>	Fruit weight <i>lb</i>	Cull <i>lb/A</i>	Blossom-end rot <i>lb/A</i>
Monticello	31,167	122,240	0.3	14,401	994
Picus	27,055	121,968	0.2	9,757	232
Tachi	25,949	111,441	0.2	12,264	345
Plum Crimson	16,473	73,054	0.2	14,644	88
BHN 685	15,098	61,529	0.3	12,053	599
Plum Regal	12,646	32,216	0.7	6,389	•
<i>R</i> <sup>2</sup>	<b>0.64</b>	<b>0.71</b>	<b>0.32</b>	<b>0.35</b>	•
<i>CV</i>	<b>36</b>	<b>32</b>	<b>136</b>	<b>50</b>	•
<i>LSD</i>	<b>5,329</b>	<b>42,471</b>	<b>0.29</b>	<b>4,038</b>	•

• = information not available.

# WATERMELON

## Seeded and Seedless Watermelon Trials Continue

Joe Kemble, Edgar Vinson, and Arnold Caylor

A seeded watermelon trial was conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama, (Tables 1 and 2).

Four-week-old seedless watermelon transplants were set on May 10 onto plots that were 30 feet long on 10-foot centers. Drip irrigation and black plastic mulch were used.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Current commercial watermelon production information for Alabama—including insect, disease, and weed management as well as recommended fertigation and spray schedules—is available in the Southeastern U. S. Vegetable Crop Handbook. Copies are available from your county Extension office or online at [www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide).

Watermelons were harvested on July 19 and 20. Watermelon were graded according to the Watermelon Grader's Guide (Circular ANR-681 from the Alabama Cooperative Extension System) and marketable yield was determined (Table 3). Two melons from each plot were used to measure soluble solids (sweetness), hollow heart, and rind thickness. A hand-held digital refractometer was used to measure sol-

**TABLE 1. RATINGS OF THE 2011 WATERMELON VARIETY TRIAL<sup>1</sup>**

Location	NAHRC
Weather	5
Fertility	5
Irrigation	5
Pests	4
Overall	5

<sup>1</sup> See introduction for description of ratings scales.

uble solids. Watermelons with a reading below 10 percent are not considered sweet.

This year's watermelon trial consisted of four seeded and eight seedless varieties. Among the seeded varieties the market standard used for comparison was 'Starbrite'. Two of the four varieties—"Tropical" and "Shakira"—produced total marketable yields similar to the market standard. Both 'Starbrite' and 'Tropical' produced total marketable yields that were statistically higher than 'Legacy'. Individual fruit weight of 'Legacy' was statistically higher than all varieties

**TABLE 2. SEED SOURCE, FRUIT CHARACTERISTICS, AND RELATIVE EARLINESS OF SELECTED WATERMELON VARIETIES**

Variety	Type <sup>1</sup>	Seed source	Fruit shape	Flesh color <sup>2</sup>	Days to harvest	Disease claims <sup>2</sup>	Years evaluated
Legacy	OP, AS, 2X	Willhite	Elongated	Red	85	—	10,11
Lamar	F <sub>1</sub> , IB, 3X	Hollar/Seedway	Round	Red	83	—	10,11
QV776	F <sub>1</sub> , CS, 3X	Sakata	Oblong	Red	90	—	10,11
Sweet Treasure	F <sub>1</sub> , CS, 3X	Sakata	Oval	Red	90	Ant 1	10,11
Starbrite	F <sub>1</sub> , CS, 2X	Seminis	Elongated	Red	—	Ant 1	97-02, 11
Millennium	F <sub>1</sub> , CS, 3X	Harris Moran	Oval	Red	—	Ant 1	2011
Bold Ruler	F <sub>1</sub> , P, 3X	Harris Moran	Oval	Red	—	Ant 1	2011
Affirmed	F <sub>1</sub> , CS, 3X	Sakata	Oblong	Red	90	—	2011
Distinction	F <sub>1</sub> , CS, 3X	Rogers/Syngenta	Round	Red	—	Ant 1, FW 0-1	2011
Fascination	F <sub>1</sub> , AS, 3X	Rogers/Syngenta	Oblong	Red	—	Ant 1, FW 0-1	2011
Tropical	F <sub>1</sub> , AS, 2X	Harris Moran	Elongated	Red	—	Ant 1, FW 0-1	2011
Shakira	F <sub>1</sub> , AS, 2X	Harris Moran	Elongated	Red	—	Ant 1, FW 0-1	2011

<sup>1</sup> Type: F<sub>1</sub> = Hybrid, OP = Open Pollinated, CS = Crimson Sweet, IB = Icebox; P = Peacock; AS = Allsweet; 2X = Seeded; 3X = Seedless. <sup>2</sup> Disease claims: Ant = Anthracnose; FW = Fusarium Wilt. Note: Numbers following disease claims indicate races. — = not found, from seed catalog.

except 'Starbrite'. 'Tropical' produced watermelon fruit with the greatest rind thickness followed by 'Shakira', 'Starbrite', and 'Legacy'. Rind thickness values among these watermelon varieties were not statistically different. Soluble solids readings were within an acceptable range of 10 percent and above for all varieties. 'Starbrite' had a statistically higher incidence of hollow heart than 'Tropical' and 'Shakira'. There were no incidences of hollow heart found in 'Legacy'.

In the seedless varieties, 'Distinction' topped the list in total marketable yield. The yield of 'Distinction' was simi-

lar to QV 776, 'Affirmed' and 'Millenium'. 'Distinction' produced watermelon fruit with the smallest rind thickness. Rind thickness values among seedless varieties were not statistically different. Soluble solid readings were within an acceptable range for all varieties. Watermelons with readings below 10 percent are not considered sweet. All varieties were above 10 percent with the exception of 'Distinction'. In the samples collected there were a few incidences of hollow heart. Incidence of hollow heart was found in QV 776, 'Bold Ruler', 'Sweet Treasure', and 'Lamar'. Hollow heart values were a fraction of an inch in most cases and of little consequence.

**TABLE 3. YIELD AND QUALITY OF SELECTED WATERMELON VARIETIES**

Variety	Total marketable number <i>no/A</i>	Total marketable yield <i>lb/A</i>	Individual fruit weight <i>lb</i>	Fruit length <i>in</i>	Fruit width <i>in</i>	Rind thickness <i>in</i>	Hollow heart <i>in</i>	Soluble solids <i>brix</i>
<b>Seeded</b>								
Starbrite	39,946	1,788	22.73	15.29	9.08	0.50	1.33	10.80
Tropical	38,201	2,272	19.55	16.13	8.17	0.50	0.33	12.00
Shakira	31,886	1,547	20.97	14.25	9.09	0.50	0.33	11.00
Legacy	25,802	967	27.13	16.63	8.92	0.50	0.00	10.47
<b>Seedless</b>								
Distinction	37,787	2,030	18.62	10.25	9.34	0.50	0.00	9.83
QV 776	36,878	2,368	15.57	11.13	8.67	0.58	0.33	10.67
Affirmed	34,621	2,320	15.17	10.84	8.46	0.50	0.00	11.33
Millennium	29,876	2,610	11.54	8.67	8.17	0.50	0.00	10.67
Bold Ruler	29,114	1,933	15.12	10.29	8.29	0.58	0.17	10.07
Sweet Treasure	28,707	1,837	15.74	11.17	8.76	0.58	0.33	10.33
Lamar	26,683	2,417	11.11	8.38	8.17	0.67	0.33	11.33
Fascination	25,710	2,320	12.14	10.88	8.75	0.50	0.00	11.07
<b>R<sup>2</sup></b>	<b>0.65</b>	<b>0.54</b>	<b>0.76</b>	<b>0.94</b>	<b>0.53</b>	<b>0.40</b>	<b>0.57</b>	<b>32</b>
<b>CV</b>	<b>15</b>	<b>26</b>	<b>20</b>	<b>7</b>	<b>5</b>	<b>16</b>	<b>150</b>	<b>10</b>
<b>LSD</b>	<b>8,406</b>	<b>925</b>	<b>5</b>	<b>1.5</b>	<b>0.79</b>	<b>0.15</b>	<b>0.67</b>	<b>1.82</b>

## Peach Rootstock Cultivar Evaluation, 2010

Elina Coneva, Edgar Vinson, and Jim Pitts

A peach rootstock trial that compares 14 newly developed or imported rootstocks was planted in 2009 at the Chilton Research and Extension Center (CREC) near Clanton, Alabama. The trial is part of the cooperative regional project NC-140 “Improving Economic and Environmental Sustainability in Tree-Fruit Production through Changes in Rootstock Use.” The main project objective is to evaluate the influence of various rootstocks on peach tree characteristics and investigate the rootstock/scion interactions in peach trees.

An experimental plot consisting of 14 peach rootstocks included ‘Guardian’ and ‘Lovell’ (standards), ‘Viking’, ‘Atlas’, BH-5 (Bacterial canker resistant), Krymsk 86 (wet feet tolerant), KV010123, KV010127 (USDA breeding program), ‘Empyrean 2’, HBOK 10, HBOK 32, Krymsk 1, and ‘Controller 5’ (size controlling rootstocks) and was planted in February 2009 CREC with ‘Redhaven’ as a scion cultivar. The experimental design was a completely random-

ized block with eight single-tree replications. Data on peach tree vegetative plant growth, including trunk circumference, number of suckers per trunk, and survivability, were collected in 2009 and 2010.

Although one tree grafted on HBOK 32 did not survive its first season, no additional trees died in 2010 (see table). Trees on ‘Guardian’ were found to have the highest number of suckers in their second growing season (0.25 on average). BH-5 was also found to produce a few root suckers.

Trees on ‘Mirobac’, ‘Guardian’, and BH-5 grew the most vigorously in 2010, based on their trunk cross sectional area (TCSA). For the second consecutive season, HBOK 32 and HBOK 10 demonstrated the least tree vigor of 14.5 and 9.2 cm<sup>2</sup> TCSA, respectively.

The Julian date of 90 percent open flowers did not differ significantly among the fourteen rootstocks in the rootstock trial.

**FIELD PERFORMANCE OF ‘REDHAVEN’ PEACH ON 14 NC-140 ROOTSTOCKS, 2010**

Rootstock cultivar	Julian date of 90% bloom	Trunk cross sectional area cm <sup>2</sup>	Root suckers no	Survival %
Controller 5 (K146-46)	85.1	20.5 gh	0.00	1.00
Mirobac	84.4	53.8 a	0.00	1.00
HBOK 10	85.1	9.2 i	0.00	1.00
BH-5	84.1	46.5 ab	0.13	1.00
Guardian	84.5	51.4 a	0.25	1.00
Lovell	84.9	34.7 cde	0.00	1.00
HBOK 32	84.9	14.5 hi	0.00	0.88
Krymsk ®1 (VVA-1)	84.5	24.8 fg	0.00	1.00
Empyrean®2 (Penta)	85.3	30.7 def	0.00	1.00
Viking	84.3	42.4 bc	0.00	1.00
Atlas	84.1	39.9 bc	0.00	1.00
Krymsk®86 (Kuban 86)	84.1	35.2 cde	0.00	1.00
KV010123	84.6	26.7 efg	0.00	1.00
KV010127	85.0	26.8 efg	0.00	1.00
<b>Mean</b>	<b>84.6</b>	<b>32.8</b>	<b>0.02</b>	<b>0.99</b>
<b>LSD (5%)</b>	<b>0.88</b>	<b>8.24</b>	<b>0.21</b>	<b>0.09</b>

## Replicated Asparagus Cultivar Evaluation, 2007-2011

Carl J. Cantaluppi

As more people move into North Carolina from northern states, where asparagus is commonly grown, the demand for local sources increases. Asparagus is a high-value horticultural crop that is easy to grow and can bring in extra income for growers.

Proper variety selection is important for grower success, so a 1/4 acre replicated asparagus cultivar trial was planted at the Garnett Carr farm in Roxboro, North Carolina, with 13 cultivars (Table 1). Seeds were used to establish this trial because most of the cultivars were not available as crowns. Seeds were sown in the greenhouses of Aarons Creek Greenhouses in Buffalo Junction, Virginia, on January 20, 2005, and 15-week-old seedling transplants were planted into the field on May 4, 2005 in an Appling Sandy Loam soil. A randomized complete block design with 12 plants per plot and four replications was used. Transplants were spaced one foot between plants in the row and 5 feet between rows and planted in the bottom of a 6-inch deep furrow as recommended by Cantaluppi and Motes. As new spears emerged and as new ferns were formed, the furrows were filled in below the lowest fern branchlets until the furrows were completely filled in at ground level. Since the trial was planted using seedling transplants, no harvest was taken in 2006 in order to build food reserves in the crown of the plant and to strengthen the plant for a two-week harvest in 2007.

The transplants were irrigated as needed during the first growing season only. Irrigation is normally not needed during field establishment and beyond, if establishing a field from crowns (roots) from one-year-old plants in states where the rainfall is 30 inches or more per year. However, irrigation is imperative during the establishment year with seedling transplants since they do not have a one-year-old established root system that can tolerate periods of drought. Irrigation is needed for all transplants in areas where less than 30 inches of rainfall occur per year.

The trial was harvested for two weeks, in 2007, four weeks in 2008, six weeks in 2009, and eight weeks in 2010, and will be harvested for eight-week periods in each succeeding year. This harvesting frequency was chosen because harvesting asparagus that was established by planting one-year-old crowns, one year after planting (the second year), caused no reduction in subsequent yield, but provided the

grower with an income one year earlier than did harvesting two years after planting. Also, in the second year after planting (the third year), the average spear weight is significantly greater in plants that were harvested the previous year than in plants not harvested the previous year. The increase in spear production may be due to the release of buds from suppression by older shoots.

Asparagus spears can be cut or snapped to produce spears of marketable length, which is usually between 7 and 9 inches, depending on tip tightness. Asparagus spears may be cut below the soil surface with a knife, or they may be hand-snapped above the soil surface. Cutting asparagus requires more labor, but increases yield 20 to 25 percent because spears are longer. However, cutting spears below the soil greatly increases the chance of the knife injuring a bud or emerging spear on the same crown.

When hand-snapping, the spear usually breaks above the area containing fiber. In other words, the portion of the spear left in the field will be fibrous, while the harvested spear is tender and is completely edible. The small stub left above the soil after snapping dries up and disintegrates. A new spear does not come up at that spot but comes up from another bud that enlarges on another part of the crown. Snapped asparagus has no trim-off waste and should command a higher price than cut asparagus with white butts. In this trial, it was decided to snap spears instead of cutting because of the above reasons and because it is the preferred and accepted method by most growers.

### RESULTS

Yield data were recorded in pounds per acre, which was obtained by dividing the total square feet of one plot row (60), into 43,560 (the number of square feet in one acre) to get 726 60-square-foot rows in one acre. Data that were recorded included total yield per cultivar, the yield (and percentage) of spears per cultivar that were greater than 3/8 inch in diameter, the yield of spears that were less than 3/8 inch in diameter, and the number of spears per plant that each cultivar produced. Recording yield data in terms of spear diameter (an industry standard) also allows growers to select a cultivar that would be suitable to them and their customers' preferences. Recording the number of spears produced per plant per cultivar lets growers compare spear



output per cultivar over time. The harvesting frequency was based on how fast the spears grew, which is based on air temperatures, resulting in harvested spears that had tight tips, before they started to fern out.

**2007 Trial.** Harvest started on March 15, 2007, with just a few spears each of ‘Grande’, UC 157, and UC 115. A frost occurred on March 19 which delayed future spear emergence until March 26. The other cultivars then started to emerge with the exception of ‘Purple Passion’, ‘Dulce

Verde’, and ‘Guelph Millennium’, which did not emerge until April 2 (Table 2).

The last harvest was taken on April 5 because on April 6, 7, and 8 severe frosts occurred. A decision was made to end the 2007 harvest at this time, as the harvest period lasted three weeks, with an actual harvest of two weeks for most cultivars, with one week being lost to frost. A total of 10 harvests were made. ‘Guelph Millennium’ was one of the latest cultivars to emerge before the second frost occurrence in

**TABLE 1. BREEDING LOCATION, PARENTAGE AND COMMENTS FOR SELECTED ASPARAGUS CULTIVARS**

Variety	Breeding location	Parentage	Comments
Jersey Giant	Rutgers Univ.	NJ 56 female, NJ 22-8 super male	—
Jersey Supreme	Rutgers Univ.	NJ 44P female, NJ 22-8 super male	—
Jersey Gem	Rutgers Univ.	NJ G27 female, NJ 22-8 super male	—
Jersey Knight	Rutgers Univ.	NJ 277C female, NJ 22-8 super male	—
Jersey King	Rutgers Univ.	MD 10 female, NJ 22-8 super male	—
UC 157	UC Riverside	F 109 female, M120 male	Dioecious hybrid
UC 115 (DePaoli)	UC Riverside	F 600 female, M256 male clone	Dioecious hybrid
Atlas	California	F 109 female, unspecified Rutgers male	Dioecious hybrid
Apollo	California	F 109 female, unspecified Rutgers male	Dioecious hybrid
Grande	California	F 109 female, unspecified Rutgers male	Dioecious hybrid
Purple Passion	California	—	Open pollinated, burgundy, sweeter than other types
Dulce Verde	California	—	Higher sugar than other green cultivars; Discontinued
Guelph Millennium	Univ. of Guelph	—	Male hybrid

**TABLE 2. ASPARAGUS YIELD IN POUNDS PER ACRE, 2007**

Cultivar	Total yield <sup>1</sup>	Yield > 3/8- in. diameter	Yield < 3/8-in. diameter	Spears/plant
UC 157 (F <sub>1</sub> )	1,155 a	1,071 a 93% <sup>2</sup>	84 bcd	3.1 a
Jersey Giant	944 ab	752 b 80%	192 a	3.2 a
Jersey King	883 abc	712 b 81%	171 a	2.9 a
Jersey Supreme	860 abc	722 b 84%	138 abc	2.9 a
UC 115	821 abc	697 b 85%	124 abc	2.2 abc
Jersey Gem	734 bcd	581 b 79%	153 ab	2.6 ab
Atlas	717 bcd	684 b 95%	33 de	1.4 cde
Grande	703 bcd	684 b 97%	19 de	1.7 cde
Apollo	555 cd	481 b 87%	74 cde	1.5 cde
Jersey Knight	456 de	414 b 91%	42 de	1.2 def
Purple Passion	151 ef	104 c 69%	47 de	0.6 ef
Guelph Millennium	86 f	42 c 49%	44 de	0.4 f
Dulce Verde	71 f	69 c 97%	2 e	0.2 f

<sup>1</sup>Yields with the same letter within columns are not statistically significant, Duncan’s Multiple Range Test, 0.05 level. <sup>2</sup>Percentage of total yield

2007, and it did not get a chance to fully perform before the harvest was terminated; hence it had low yields.

**2008 Trial.** The drought of 2007 seemed to have no impact on asparagus yields in 2008 (Table 3). In 2008, harvest started on March 22 for most cultivars with the exception of ‘Guelph Millennium’. Cool temperatures occurred below 70 degrees F until April 11 when yields accelerated and ‘Guelph Millennium’ started to emerge. A single frost in mid-April set yields back for one week. Then yields increased until the harvest was ended on April 26. The harvest period lasted five weeks, with an actual harvest of four

weeks for most cultivars, with a one-week slump in yield due to frost. A total of 21 harvests were made.

**2009 Trial.** The 2009 harvest went smoothly, with only one light frost on April 6 that brought temperatures down to 31 to 32 degrees F without a harvest delay after the frost (Table 4). Harvest started on March 24 with ‘Guelph Millennium’ not showing the 20-day delay in emergence compared to other cultivars as it showed in 2008. Instead, two out of four ‘Guelph Millennium’ replications had spears emerging on March 24, with the other two replications starting four and ten days later, respectively.

**TABLE 3. ASPARAGUS YIELD IN POUNDS PER ACRE, 2008**

Cultivar	Total yield <sup>1</sup>	Yield > 3/8-in. diameter	Yield < 3/8-in. diameter	Spears/plant
Grande	3,030 a	2,821 a 93% <sup>2</sup>	209 e	7.6 bc
Jersey Giant	2,737 ab	2,263 ab 82%	474 bc	10.2 a
Atlas	2,523 abc	2,298 ab 91%	225 e	6.8 cd
Jersey Supreme	2,485 abc	2,064 ab 83%	421 bcd	8.7 abc
Jersey King	2,458 abc	1,915 b 78%	543 ab	9.3 ab
UC 157 (F <sub>1</sub> )	2,385 abc	2,078 ab 87%	307cde	7.2 bcd
Guelph Mill.	2,332 abc	1,653 b 71%	679 a	8.7 abc
UC 115	2,314 abc	1,875 b 81%	439 bcd	7.8 bc
Jersey Gen	2,071 bc	1,579 b 76%	492 b	7.7 bc
Purple Passion	1,915 bc	1,723 b 90%	192 e	4.4 e
Apollo	1,781 c	1,501 b 84%	280 de	5.4 de
Jersey Knight	1,604 c	1,401 b 87%	203 e	5.3 de

<sup>1</sup>Yields with the same letter within columns are not statistically significant, Duncan's Multiple Range Test, 0.05 level.

<sup>2</sup>Percentage of total yield

**TABLE 4. ASPARAGUS YIELD IN POUNDS PER ACRE, 2009**

Cultivar	Total yield <sup>1</sup>	Yield > 3/8-in. diameter	Yield < 3/8-in. diameter	Spears/plant
Grande	4,935 a	4,293 a 87% <sup>2</sup>	642 d	12.8 d
Guelph Mill.	4,868 ab	2,438 b 50%	2,430 a	19.5 a
Jersey Giant	4,494 abc	3,136 ab 70%	1,358 b	16.2 ab
Jersey Supreme	4,211 abc	2,948 b 70%	1,263 bc	14.9 abc
Atlas	3,987 abc	3,316 ab 83%	671 bcd	10.9 bcd
Jersey King	3,937 abc	2,815 b 72%	1,122 bc	13.9 bc
UC 157 (F <sub>1</sub> )	3,848 abc	2,962 b 77%	886 bcd	11.7 bcd
Apollo	3,550 abc	2,879 b 81%	671 bcd	10.2 cd
Jersey Gem	3,442 abc	2,386 b 69%	1,056 bcd	12.8 bcd
Purple Passion	3,287 bc	2,888 b 88%	399 d	7.6 d
Jersey Knight	3,233 bc	2,476 b 77%	757 bcd	10.8 cd
UC 115	3,175 c	2,136 b 67%	1,039 bcd	10.9 cd

<sup>1</sup>Yields with the same letter within columns are not statistically significant, Duncan's Multiple Range Test, 0.05 level. <sup>2</sup>Percentage of total yield

Temperatures were cool for a few days with temperatures rarely getting over 85 degrees F, so there were no growth flushes that would cause a large number of spears to be produced in a short period of time. The harvest period lasted six weeks with a total of 36 harvests.

**2010 Trial.** Harvest started on March 26, 2010, with one frost on March 28 that brought temperatures down to 30 degrees F and delayed the next harvest for five days

(Table 5). There were no other frosts during the season. Two ‘Guelph Millennium’ replications had spears emerging on March 26, and the other two replications had spears emerging seven days later.

Temperatures were cool but most days were above 70 degrees with very little rainfall, which made the number of growth flushes minimal. The harvest period lasted eight weeks with a total of 41 harvests.

**TABLE 5. ASPARAGUS YIELD IN POUNDS PER ACRE, 2010**

Cultivar	Total yield <sup>1</sup>	Yield > 3/8-in. diameter	Yield < 3/8-in. diameter	Spears/plant
Guelph Mill.	6,029 a	2,931 a 49% <sup>2</sup>	3,098 a	29.2 a
Jersery Giant	5,304 a	3,282 a 62%	2,022 b	23.2 ab
Grande	5,195 a	3,933 a 76%	1,262 bcd	19.3 bc
Jersey Supreme	4,759 a	2,993 a 63%	1,766 bc	20.7 bc
Atlas	4,716 a	3,799 a 81%	917 cd	15.4 bc
UC 157 (F <sub>1</sub> )	4,397 a	3,068 a 70%	1,329 bcd	17.8 bc
Us 115	4,204 a	2,803 a 67%	1,401 bcd	16.2 bc
Apollo	4,204 a	3,071 a 73%	1,133 cd	15.8 bc
Jersey King	3,992 a	2,344 a 59%	1,648 bcd	17.5 bc
Purple Passion	3,884 a	3,100 a 80%	784 d	12.3 c
Jersey Knight	3,821 a	2,665 a 70%	1,156 bcd	15.2 bc
Jersey Gem	3,712 a	2,187 a 59%	1,525 bcd	16.3 bc

<sup>1</sup>Yields with the same letter within columns are not statistically significant, Duncan’s Multiple Range Test, 0.05 level.

<sup>2</sup>Percentage of total yield

**TABLE 6. ASPARAGUS YIELD IN POUNDS PER ACRE, 2011**

Cultivar	Total yield <sup>1</sup>	Yield > 3/8-in. diameter	Yield < 3/8-in. diameter	Spears/plant
Grande	6654 a	5703 a 86% <sup>2</sup>	951 bc	19.6 ab
Guelph Mill.	6560 ab	3926 ab 60%	2634 a	28.0 a
Jersey Giant	6021 ab	4926 ab 82%	1095 bc	21.1 ab
Jersey Supreme	5696 ab	4302 ab 76%	1394 bc	30.0 ab
Atlas	5630 ab	5178 a 92%	452 bc	15.4 b
UC 115	5102 ab	3951 ab 77%	1151 bc	17.2 b
Jersey King	4902 ab	3463 ab 71%	1439 b	19.0 ab
UC 157	4897 ab	3852 ab 79%	1045 bc	16.7 b
Purple Passion	4436 ab	4049 ab 91%	387 c	11.3 b
Jersey Knight	4233 ab	3496 ab 83%	737 bc	14.6 b
Apollo	4220 ab	3546 ab 84%	674 bc	13.8 b
Jersey Gem	3770 b	2799 b 74%	971 bc	14.8 b

<sup>1</sup>Yields with the same letter within columns are not statistically significant, Duncan’s Multiple Range Test, 0.05 level.

<sup>2</sup>Percentage of total yield

**2011 Trial.** Harvest started on March 21, 2011, with one frost on March 29 that brought the temperature down to 29 degrees and delayed the next harvest for seven days (Table 6). There were no other frosts during the season. ‘Guelph Millennium’ spears emerged as follows by each replication: March 21, March 23, March 24, and April 7.

It was a cool growing season with ample rainfall throughout. The harvest period lasted six weeks with a total of 32 harvests. Yields were starting to decline after the sixth week, so harvesting was ended at that time rather than continued for a full eight weeks, which could stress the planting, causing yield reductions next year.

Spear diameters increased for all cultivars with Guelph Millennium spear diameters increasing from 49 percent in 2010 to 60 percent in 2011.

**Summary of Observations 2007-2011.** The cultivars with yield stability during the last five years are ‘Jersey Giant’ and ‘Jersey Supreme’ (Table 7). ‘Jersey Giant’ still yields well and has a wide geographic adaptability across the U.S. ‘Grande’ is back in first place in 2011. ‘Guelph Millennium’ has hovered between first and second place during the past three years.

Yields of some of the California hybrids have decreased, while others have moved up and down. More time is needed to properly evaluate these cultivars. ‘Purple Passion’ yields have remained fairly stable. Yields are low but growers should be able to get higher prices because of its purple color and higher sugar content than green asparagus.

**TABLE 7. ASPARAGUS CULTIVAR EVALUATION, FOUR-YEAR RANKING**

Cultivar	2007	2008	2009	2010	2011
UC 157 (F <sub>1</sub> )	1 <sup>1</sup>	6	7	6	8
Jersey Giant	2	2	3	2	3
Jersey King	3	5	6	9	7
Jersey Supreme	4	4	4	4	4
UC 115	5	8	12	7	6
Jersey Gem	6	9	9	12	12
Atlas	7	3	5	5	5
Grande	8	1	1	3	1
Apollo	9	11	8	8	11
Jersey Knight	10	12	11	11	10
Purple Passion	11	10	10	10	9
Guelph Mill,	12	7	2	1	2

<sup>1</sup>1 = Highest yielding; 12 = lowest yielding.

‘Guelph Millennium’ yields have steadily increased each year from twelfth place to first place to second place in five years, and spears greater than 3/8 inch in diameter increased from 50 percent to 60 percent in 2011.

In a soil free of *Fusarium*, the expected productive life of any asparagus cultivar is 15 to 20 years. Growers feel that peak production occurs in the sixth or seventh year, with the best production occurring during years 7 to 12. There is a decline of production of about 5 percent per year in the tenth year and every year thereafter. After the fifteenth year, the field may no longer be economically profitable. Established asparagus growers recover their investment after the fifth year and years 5 to 10 are their most profitable years.

Data collection in this trial will be on-going for at least another eight years to evaluate the longevity of these cultivars. During this time, total yields between cultivars can be compared by getting a more realistic picture of how they perform over a period of 12 years.

## NEW REPLICATED ASPARAGUS CULTIVAR EVALUATION

To evaluate new cultivars and experimental lines from plant breeders, another replicated trial was planted adjacent to the original asparagus trial. Seeds were sown in the greenhouses of Aarons Creek Greenhouses in Buffalo Junction, Virginia, in late January 2009 and transplants were planted into the field on April 28, 2009 in an Appling Sandy Loam soil.

A randomized complete block design with 12 plants per plot and four replications was used. Seven cultivars were included in the trial:

‘NJ 953’—an all-male hybrid from Rutgers University, which should be more adaptable to warmer climates as compared with ‘Jersey Giant’.

‘Jaleo’—a clonal hybrid from Vilmorin Seed Co., adaptable to warm climates.

‘Brock Imperial’ and ‘Early California’—hybrids from Brock Seed Co.

Hybrids #1, 2, and 3—clonal hybrids from Neil Stone, University of California, Riverside, bred to maintain good spear qualities with tight tips.

**2011 Trial.** For the first year of production, yields were similar to the 2007 yields in the original trial. ‘Brock Imperial’ and Hybrid #3 produced spear lengths of 12 and 15 inches, respectively, while retaining spear tip tightness (Table 8). ‘Early California’ had spear diameters of up to 1 1/8 inches. ‘Early California’, ‘Jaleo’, and Hybrid #3 had 91 percent, 91 percent, and 93 percent of spears greater than 3/8 inches in diameter, respectively. The harvest period lasted for two weeks, starting on March 31, and ending on April 5, for a total of five harvests.

**TABLE 8. NEW ASPARAGUS TRIAL YIELD IN POUNDS PER ACRE, 2011<sup>1</sup>**

<b>Cultivar</b>	<b>Total yield<sup>2</sup></b>	<b>Yield &gt; 3/8- in. diameter</b>	<b>Yield &lt; 3/8-in. diameter</b>	<b>Spears/ plant</b>
Early California	1129 a	1025 a 91% <sup>3</sup>	104 a	2.3 a
Hybrid #3	880 ab	819 ab 93%	61 a	1.8 a
Brock Imperial	722 ab	626 abc 87%	96 a	1.6 a
Hybrid #2	672 ab	552 abc 82%	120 a	1.8 a
Jaleo	657 ab	614 abc 93%	43 a	1.3 a
NJ 953	614 ab	474 bc 77%	140 a	1.8 a
Hybrid #1	416 b	254 c	162 a	1.3 a

<sup>1</sup>Trial was planted in 2009; first harvest was made in 2011.

<sup>2</sup>Yields with the same letter within columns are not statistically significant, Duncan's Multiple Range Test, 0.05 level.

<sup>3</sup>Percentage of total yield

## Replicated Seedless Table Grape Cultivar Trial

Carl J. Cantaluppi

A study was initiated in 2005 to look at the possibility of growing seedless, fresh market table grapes (*Vitis labrusca*) in the northern Piedmont of North Carolina. Fresh market table grapes have never been grown commercially in the North Carolina Piedmont, and research on these grapes is scant.

To see what cultivars would perform best in the Piedmont, a replicated cultivar trial of table grapes for the fresh market was established on the farm of specialty crop grower Doreathy Booth north of Oxford, North Carolina. Establishment costs were funded through a grant and by the grower (Table 1).

The trial consisted of a 1-acre planting of 14 different table grapes varieties from from the breeding programs at Cornell University and the University of Arkansas. A randomized complete block design with five plants per plot and five replications was used. Vines were spaced 10 feet apart in the row with 10 feet between rows. A total of 360 vines were planted on May 18, 2005 in a clay loam soil.

During 2005 and 2006, the vines were trained and pruned to prepare for a first harvest in 2007. Despite a freeze on Easter weekend in 2007, which killed the primary buds, the secondary buds emerged and produced a small crop. In 2008, hail destroyed most of the grape crop so yield data was not taken. In 2009, a much larger crop was harvested.

### TRIAL CULTIVAR DESCRIPTIONS

A wide range of flavors and appearances are available among seedless table grapes; *Vitis labrusca* is the parent species of many of the flavorful eastern grapes. Fruit of *V. labrusca* have a pronounced fruity, some say “foxy” flavor. Since North Carolina has warmer winters than the Northeastern United States, these cultivars should perform well in our climate (Table 2).

Berry color is usually classified as white, red, blue, or black. White grapes usually range in color from light green to amber or light orange. Red varieties may vary from pink to deep red and their coloration may vary with degree of ripeness and exposure of fruit to sunlight. The blue range includes types that have a reddish-blue color. Black grapes are typified by a dark purplish-black color.

The degree of seedlessness varies greatly among seedless grape varieties. Most seedless grapes have vestigial seed

traces that range in size from very small to large and noticeable. Seed traces in berries of the same variety may vary greatly in size and in the hardness of seed coats. Climate is also known to affect seed trace size. Occasionally the seed traces in some seedless grapes are large enough to be bothersome to consumers.

**TABLE 1. VINEYARD ESTABLISHMENT COSTS**

Procedure	Cost
Installation of deer fence, grape trellis, and labor <sup>1</sup>	\$15,000.00
Bamboo stakes	121.00
Fiberglass stakes	462.00
Drip Irrigation pump, pipe hookups, faucets	2,340.00
Grape vines <sup>2</sup>	1,462.00
Snap and grow tubes	2,460.00
Tapener guns to attach vines to trellis	133.00
Fungicides	540.00
Round-Up for 3 years	387.00
Vegetable wash	49.00
Protective gear for spraying	214.00
Grape lugs for harvesting	308.00
Fertilizer	234.00
Private pesticide applicator license	6.00
Marking spray for vine placement	11.00
Grass seed for row middles	358.00
Diesel fuel	200.00
Gasoline for lawn mower	210.00
Reflective tape to exclude birds	108.00
Labor (800 hours, three people)	—
Other irrigation installation help	1,000.00
<b>Total</b>	<b>\$25,603.00</b>

<sup>1</sup> An Innovative Program Grant, sponsored by NC A&T State University was used to purchase the trellis wire and electric fence around the 1-acre perimeter to control the deer and to pay for labor to install the wire and fence.

<sup>2</sup> Vines were purchased from Double A Vineyards, 10277 Christy Road, Fredonia, NY (North Carolina State University does not endorse nor guarantee grape vines from Double A Vineyards instead of another source.)

**Note:** Trial cultivar descriptions were adapted from Dr. Bruce Reisch, Grape Breeder, Cornell University.

**White Grapes.** ‘Marquis’, a cross of ‘Athens’ x ‘Emerald Seedless’ released in 1996, is a white seedless grape with excellent mild American flavor. The berries are large with a juicy, melting texture. Clusters are large and attractive, while the vines are very productive. Ripe fruit holds well on the vine, with the flavors going from a mild fruity flavor when first ripe, to a stronger labrusca flavor two weeks later. Vines are very vigorous and productive.

‘Himrod’, produced from a cross between ‘Ontario’ and ‘Thompson Seedless’, is the most successful table grape released from the Cornell University grape breeding program (1952). It produces large bunches of white seedless grapes with excellent, honey-like flavor and melting, juicy texture. The clusters are loosely filled.

‘Lakemont’ was also produced from the same cross as ‘Himrod’ but has a milder flavor and more compact clusters of small to medium-sized berries. Cluster thinning prevents overcropping.

‘Interlaken’ is a sister seedling of ‘Himrod’ (same parents) with seedless green to golden berries. The clusters are medium sized and compact with small, white berries that ripen very early.

**Red Grapes.** ‘Einset Seedless’ resulted from the cross of ‘Fredonia’ x ‘Canner’ (‘Hunisa’ x ‘Sultanina’) made in 1963 by G.W. Remaily. The berries are oval and bright red with a light waxy bloom (powdery covering on the fruit).

The medium-soft seed remnant is not usually noticeable. Berries are medium sized. The skin is slightly tough and adheres to the tender flesh. The flavor is fruity with a mild note of labrusca and sweet strawberry-like taste.

‘Vanessa’ was developed by the Horticultural Research Institute of Ontario, Canada, and is a red dessert grape of excellent quality. The seed remnant is usually large and soft when noticeable. Berries are medium in size on medium, well-filled clusters. The flavor is mild and fruity, and berry texture is firm to crisp. The fruit quality is among the best of the red seedless types.

‘Canadice’ produces medium, excessively compact clusters with small red berries.

‘Reliance’ comes from the University of Arkansas and produces large clusters of round, red, medium-sized berries. The skin is tender, and the flesh is melting in texture, with a sweet labrusca flavor. Cold hardiness is among the highest of the seedless varieties.

‘Suffolk Red’ produces medium to large clusters of mild-flavored red berries. The clusters are loose.

**Blue Grapes.** ‘Mars’ is a release from the University of Arkansas and is a vigorous, blue seedless grape. The flavor is mildly labrusca and the berries are slipskin (having a tough skin which separates readily from the pulpy flesh). Clusters are medium-sized, cylindrical, and well filled. A very high-yielding cultivar, it has a long ripening season.

**TABLE 2. SEEDLESS TABLE GRAPE CULTIVAR TRIAL<sup>1</sup>**

Cultivar	Color <sup>2</sup>	Cluster	Berry	Yield (lb/A) <sup>3,4</sup>			Sugar %	Harvest dates Oxford, NC
		weight lb/cluster	weight gr	2007	2009	2010		
Mars	B	0.40	3.0	4329 a	11954 a	3818a	17	7/27, 8/2, 8/10
Marquis	W	—	3.5-5.0	4295 a	4341 b	2645 b	18	8/2, 8/10
Venus	B	0.60	2.9	1972 b	4344 b	1623 c	18	7/20, 7/27, 8/3
Jupiter	B	0.50	5.0	1686 b	1795 b	411d	19	7/20, 7/26
Lakemont	W	0.48	1.7	970 b	4256 b	545 d	20	7/26, 8/3
Glenora	B	—	—	705 b	2450 b	739 cd	19	7/20, 7/27
Einset	R	0.32	2.3	668 b	3228 b	347 d	17	7/20, 7/26
Canadice	R	0.50	1.6	559 b	1847 b	1579 c	18	7/26
Vanessa	R	—	—	503 b	3668 b	1126 cd	21	8/10
Concord Seedless	B	—	—	341 b	—	—	19	8/10
Suffolk Red	R	0.32	2.7	250 b	1064 b	222 d	22	8/10
Himrod	W	0.36	2.1	241 b	1536 b	486 d	17	7/20, 7/27
Reliance <sup>5</sup>	R	0.62	2.3	—	—	—	—	—
Interlaken <sup>5</sup>	W	0.27	1.5	—	—	—	—	—

<sup>1</sup> The trial was conducted at Angels Nest Farm in Oxford, North Carolina.

<sup>2</sup> Color: B = Blue; W = White; R = Red.

<sup>3</sup> Yields with the same letter within columns are not statistically significant, Duncan’s Multiple Range Test, 0.05 level.

<sup>4</sup> The actual yield from each row is extrapolated to come up with yield per acre.

<sup>5</sup> Was not harvested due to vines not being planted until 2006

‘Venus’, also from the University of Arkansas, is a vigorous and productive blue-black grape. The medium-large clusters produce large berries with mild labrusca flavors. Seed traces may be noticeable.

‘Glenora’ produces medium-sized blue berries. The clusters are extremely loose. The taste is very bland and not as flavorful as the other varieties.

‘Jupiter’ was released from the University of Arkansas in 1998. It is an early maturing reddish-blue to blue variety when mature. It has large, firm, non-slip-skin berries on medium-sized clusters. Fruit has a distinct muscat flavor.

‘Concord Seedless’ is similar in flavor and texture to ‘Concord’. The clusters and berries are much smaller than those of ‘Concord’. Productivity is erratic due to its uneven ripening under hot temperatures. When grown in hot climates, the berries produce seeds; hence, it is not seedless.

## RESULTS

**2009 Yields.** Yields from ‘Jupiter’ did not increase much in 2009 due to severe pressure from a raccoon that devoured the grapes.

Yields from ‘Marquis’ increased only slightly due to its heavy leaf canopy, which created a humid environment around the fruit. This humid environment was enhanced by heavy rains that made timely spraying difficult. The thick canopy held moisture and without fungicide protection, the ‘Marquis’ variety developed sour rot, a fungus disease, which rotted many grapes in the cluster.

‘Concord Seedless’ was taken out of the trial in 2009 because of the actual presence of seeds and its uneven ripening characteristics. ‘Reliance’ and ‘Interlaken’ were taken out because of many missing vines. These varieties were not planted until 2006 and never became fully established.

**2010 Yields.** Decreased yields in 2010 were probably due to a combination of Pierce’s Disease (*Xylella fastidiosa*) and the presence of *Armillaria*.

*Armillaria mellea*, a soil fungus, which kills grapes by killing the cambium and xylem tissue of the grape roots, was found in the soil where it killed trees that were probably growing on the land many years ago. There is no evidence of the trees on the land now, but the fungus has survived in the soil for many years without a host plant. Grapes are very susceptible to the fungus.

As a result, 30 vines (8.5 percent) were dug up from the vineyard in November 2010 and the roots were examined to find the presence of the white mycelial growth of the fungus. It is impractical to re-plant vines in those areas, because they will become infected with the *Armillaria* and die due to the longevity of the fungus in the soil.

Yields were also reduced by Pierce’s Disease of grape (*Xylella fastidiosa*), a very destructive bacterial disease of grapes in the south. Pierce’s is vectored by a leafhopper that injects the bacterium into the leaves as it feeds. The bacterium resides in the water-conductive system (xylem) of plants. The bacteria multiply in the xylem and block water movement in the plant.

Donald Hopkins, plant pathologist with the University of Florida, has discovered a benign strain of the bacterium that causes Pierce’s Disease, which can protect or “vaccinate” the plant so that it does not contract Pierce’s Disease when the virulent strain of the bacterium is transmitted by the leafhopper. In 2008 and 2009 Hopkins inoculated the bacterium in the grape vine trunks. His evaluation of the vines in August of 2009 and 2010 indicated that about 10 percent of the vines have symptoms of Pierce’s Disease.

The fresh take grape variety trial will continue in order to monitor the yields and determine how the above factors are contributing to yield decline or yield stability.



# TOMATO

## Roma Tomato Variety Evaluation, 2011

Annette Wszelaki, Michael Hannah, Mary Rogers, Heather Toler, and Susannah Amundson

A roma tomato variety trial was conducted on-farm in Evensville, Tennessee, in the spring of 2011. Two replications of thirteen tomato varieties were transplanted on May 24 on 6-foot centers with an in-row spacing of 20 inches. A preplant fertilizer of 1000-1300 pounds of 10-20-23 was applied. Soil was fumigated with 80 pounds of Pic-Clor 60.

Tomatoes were harvested and graded on August 12, 22, and September 1. Number and weights of marketable and unmarketable fruit were recorded. Vine strength, vine cover, and susceptibility to bacterial disease were noted on August 12. Yield in pounds per acre was calculated on a plant spacing of 20 inches in-row with 6-foot centers, totaling 4,235 plants per acre.

NC10202 and XS3073 were the top producers by marketable weight with more than 1,400 boxes per acre and pro-

duced some of the larger sized fruits at 0.23 and 0.24 pounds. NC10202 and 'Plum Crimson' were the top producers by marketable number of fruit with more than 160,000 fruit per acre. BHN 768, BHN 685, and NC10200 had the largest fruit (0.25 pounds) but were some of the lowest yielding varieties with less than 870 boxes per acre. NC10202 and NC10203 yielded the most total fruit by weight with 29 tons per acre; 'Plum Crimson' and NC10201 yielded the most total fruit by number with more than 306,000 fruit per acre. While not statistically significant, XS3073, 'Patria', and NC10202 had a tendency to produce the lowest percentage of culls with around 30 percent (Table 1). Vine strength of NC10203 was very strong and this variety also had very good vine cover along with 'Plum Regal' and NC10200. 'Plum Regal' and 'Picus' were the least susceptible to bacterial disease (Table 2).

**TABLE 1. ROMA TOMATO VARIETY TRIAL YIELD<sup>1</sup> RESULTS, 2011**

Variety	Seed source	Market weight boxes/A <sup>2</sup>	Market number no/A	Avg. frt. size lb	Total weight tons/A <sup>3</sup>	Total number no/A	Cull % by no
NC10202	NCSU	1,609 a <sup>4</sup>	172,365 a	0.23 bcd	29 a	276,758 ab	30.8
XS3073	Syngenta	1,410 a	145,896 ab	0.24 abc	25 abcd	248,171 abcd	29.5
Patria	Harris Moran	1,391 ab	150,131 ab	0.22 cde	25 abcd	272,946 abc	30.0
Plum Crimson	Harris Moran	1,347 abc	162,413 a	0.21 def	28 f	308,520 a	39.7
Plum Regal	Seedway	1,338 abc	162,413 ab	0.25 ab	26 abc	249,442 abcd	36.6
NC10203	NCSU	1,304 abcd	140,179 ab	0.24 abc	29 a	243,089 abcd	44.8
Picus	Seedway	1,284 abcd	142,508 ab	0.23 cde	25 abcd	247,960 abcd	35.7
NC10201	NCSU	1,149 abcd	148,649 ab	0.18 g	24 bcdef	306,191 a	39.4
Monticello	Seedway	898 bcd	107,358 bc	0.20 efg	22 cdef	235,466 bcde	49.0
NC10200	NCSU	866 cd	86,183 c	0.25 ab	24 abcde	203,704 cde	55.9
BHN 685	Seedway	862 cd	85,735 c	0.25 a	19 f	166,812 e	42.4
Sonoma	Seedway	819 d	104,746 bc	0.19 fg	20 ef	228,102 bcde	48.1
BHN768	Seedway	811 d	78,772 c	0.25 a	21 def	180,412 de	51.0
<b>P-value</b>		<b>0.038</b>	<b>0.018</b>	<b>0.021</b>	<b>0.010</b>	<b>0.018</b>	<b>0.224</b>

<sup>1</sup> Yield per acre was calculated by assuming 4,235 plants per acre with an in-row spacing of 20 inches on 6-foot centers.

<sup>2</sup> Marketable weight is reported as 25-pound boxes/acre.

<sup>3</sup> Total weight and number consisted of marketable and unmarketable fruit yield combined.

<sup>4</sup> Means within columns followed by the same letter are not significantly different at P < 0.05 by LSD.

**TABLE 2. ROMA TOMATO VARIETY TRIAL PLANT CHARACTERISTICS, 2011<sup>1</sup>**

Variety	Vine strength <sup>1</sup>	Vine cover <sup>2</sup>	Bacterial susceptibility <sup>3</sup>
NC10202	Average	Medium	Sensitive
XS3073	Average	Medium	Sensitive
Patria	Average	Medium	Sensitive
Plum Crimson	Weak	Open	Very sensitive
Plum Regal	Strong	Very good	Tolerant
NC10203	Very strong	Very good	Medium
Picus	Strong	Good	Tolerant
NC10201	Average	Open	Very sensitive
Monticello	Average	Open	Medium
NC10200	Strong	Very good	Medium
BHN 685	Average	Medium	Medium
Sonoma	Weak	Open	Medium
BHN768	Average	Open	Very sensitive

<sup>1</sup>Vine strength scale: very weak, weak, average, strong, very strong.

<sup>2</sup>Vine cover scale: very open, open, medium, good, very good.

<sup>3</sup> Bacterial susceptibility scale: very sensitive, sensitive, medium, tolerant, very tolerant.

## Specialty Melon Variety Trial, 2011

Annette Wszelaki, Susannah Amundson, and Walt Hitch

Thirty specialty melon varieties were evaluated for field performance and fruit quality at the University of Tennessee Plateau AgResearch and Education Center in Crossville, Tennessee. Varieties included cantaloupe, galia, canary, asian, crenshaw, ananas, honeydew, and charentais. Melons were evaluated for yield, quality, and taste.

Varieties were direct seeded into black plastic mulch on June 7, 2011. Each variety was replicated four times in a randomized complete block design. Plots were 20 feet long with 10 plants per plot at an in-row spacing of 2 feet and a between row spacing of 7 feet. Plots were spaced 10 feet apart in each row.

Three hundred pounds per acre of 15-15-15 was applied and incorporated into the field prior to planting. Drip irrigation was used to provide water and fertilizer every 2 to 4 days as needed. The first two fertilizer applications of 16-16-16 delivered 4 pounds N per acre; subsequent fertilizer applications of 20-20-20 delivered 5 pounds N per acre for a total of 15 applications over the season. One application of potassium nitrate and magnesium sulfate was applied on August 9. Pre-emergent herbicides—Command, Curbit, and Roundup—were applied and incorporated between rows one day after planting. Admire Pro at a rate of 12 ounces per acre was applied through the drip line on June 10 and again on July 16. A rotation of foliar insecticides was applied five times throughout the season beginning on July 9 (Sevin XLR (applied July 9, July 26, and August 19), Asana XL (applied August 5), and Capture 2EC (applied August 12)). Weekly foliar fungicides applications rotating between Quadris and Bravo Ridomil Gold began on July 26.

The germination rate was determined on June 20, 13 days after planting. Disease ratings were taken weekly, beginning on July 7, until general plant dieback made it too difficult to distinguish diseases. Harvest began on August 8 and was done twice weekly until September 7. Three fruit from each replication were assessed for taste, soluble solids, flesh color, rind color, fruit shape, and net type. For taste evaluations, ten untrained panelists evaluated the melon samples in random order. For each sample, panelists scored taste using a five-point scale (1=dislike extremely, 3=neither like nor dislike, and 5=like extremely).

## RESULTS

Melon varieties are discussed by type and are organized in Tables 1 and 2 from highest to lowest yielding within each type.

**Asian.** ‘Sun Jewel’ was the only Asian variety of melon included in the trial and produced a large number of fruit; however, it is very susceptible to cracking, which accounts for the high percentage of culls. Despite its high sugar content, it was rated only mildly favorable in taste tests.

**Ananas.** Ananas varieties ranged in size from 4 to more than 7 pounds per fruit. Large in size, 1816AN OF and ‘Antoinette’ were the highest yielding Ananas melons by weight, but had poor taste ratings. ‘San Juan’, while lowest yielding with a shorter harvest period, was higher in sugar content and along with ACX 2268G was rated the highest among all melons in taste tests. ‘San Juan’ also had more culls, which may be attributed to over-ripening. Ananas melons ripen quickly and have a short shelf-life and, therefore, should be harvested daily.

**Canary.** Canary varieties ranged in size from 2 to nearly 6 pounds per fruit. ACX 2047CN, a small to medium fruit, was the highest yielding of all melons by weight and number with good sugar content equal to that of ACR 1056CN and less than that of ‘Brilliant’, which scored well in taste tests. Ripeness is difficult to determine for this melon type. Harvest should be done when rind is dark yellow; melons do not slip from vine.

**Crenshaw.** ‘Lilly’ had the largest fruit of all melons in the trial (8 pounds per fruit) and was a high yielding melon that was well favored in taste tests for its sweet mild flavor. Melons are harvested yellow at the forced-slip stage.

**Galia.** Galia varieties ranged from 2 to 6 pounds per fruit. ACX 425G and ACX2268G were similar in both yield by weight and sugar content, with ACX 2268G being more favorable in taste tests. However, at 3.2 pounds per fruit versus 5.8 pounds per fruit, ACX 425G yielded almost twice as many fruit as ACX 2268G. In taste tests ACX 2268G, along with ‘San Juan’, was rated the highest for taste among all melons. ‘Diplomat’ did not rate well in taste tests and had the highest percentage of culls.

**Honeydew.** Honeydew varieties ranged from 3 to 6 pounds per fruit. XLT 9276 was the top yielding hybrid honeydew by weight and the second top yielding melon in the trial.

**TABLE 1. SPECIALTY MELON VARIETY TRIAL YIELD RESULTS, 2011**

Variety	Melon type <sup>1</sup>	Seed source <sup>2</sup>	Germ. rate	Days to harvest	Yield <sup>3</sup> cwt/A	Average no/A	Average wt/fruit (lb)	Culls <sup>5</sup> %
1816AN OF	AN	AC	97.5	72	448.6 bcdef <sup>4</sup>	8573	5.7	7.5
Antoinette	AN	AC	97.5	66	440.1 bcdefg	5980	7.3	9.9
Anastasia	AN	AC	100	66	315.1 ghijkl	8750	4.2	15.6
San Juan	AN	JS	100	66	312.5 ghijkl	6533	4.9	18.3
Sun Jewel	AS	JS	100	66	271.3 ijkl	13572	2.0	32.0
ACX 2047CN	CA	AC	100	80	599.6 a	15477	3.9	7.8
ACR 1056CN	CA	AC	100	76	412.9 bcdefgh	7069	5.9	22.8
Brilliant	CA	JS	100	80	305.7 hijkl	5833	5.2	12.9
Savor	CH	JS	100	76	218.3 l	9644	2.3	30.1
Lilly	CR	JS	100	72	500.1 abcd	6455	8.0	14.1
ACX 425G	GA	AC	100	76	395.3 cdefghij	12211	3.2	12.5
ACX 2268G	GA	AC	100	76	381.6 defghij	6591	5.8	16.9
Diplomat	GA	JO	100	66	355.1 efghijk	7553	4.7	20.2
Gallipoli	GA	AC	97.5	72	248.6 kl	13879	1.8	18.4
Honey Yellow	HD	JS	100	72	436.1 bcdefg	9411	4.6	7.6
Honey Orange	HD	JS	100	76	423.0 bcdefgh	8322	5.1	8.8
Honey Pearl	HD	JS	95	72	348.6 efghijk	7233	4.8	15.6
Snow Leopard	HD	JS	97.5	72	320.1 fghijkl	11217	3.0	11.6
XLT 9276	HH	AC	100	76	541.5 ab	9722	5.6	7.7
Summer Dew 262 HQ	HH	AC	100	80	452.3 bcde	7622	6.0	5.0
ACX 145HD XOF	HH	AC	100	87	366.6 efghijk	8244	4.5	14.3
Summer Dew 252 HQ	HH	AC	100	80	359.6 efghijk	6222	5.6	13.0
Summer Dew 3000 OF	HH	AC	100	80	343.2 efghijkl	11121	3.2	6.5
Edens Gem	MM	JS	100	72	267.7 jkl	17733	1.5	9.2
Samoa	COHL	HM	100	80	521.6 abc	8555	6.0	16.1
XLT 9000	COL	AC	95	80	421.5 bcdefgh	9178	4.5	6.2
Origami	COEL	HM	100	69	398.6 cdefghi	6844	5.8	16.1
ACR-4249	COWL	AC	97.5	80	385.4 defghij	10828	3.5	2.9
ACR-7609	COWL	AC	100	76	323.9 efghijkl	6844	4.7	12.0
Sweet Granite	CO	JS	97.5	66	294.9 hijkl	7121	4.4	22.7

<sup>1</sup> Melon type: AN = Ananas, AS = Asian, CA = Canary, CR = Crenshaw, GA = Galia, HD = Honeydew, MM = Muskmelon, CH = Charentais, HH = Hybrid Honeydew, CO = Cantaloupe (W=Western Shipper, E=Eastern Shipper, L=LSL, H=Harper)

<sup>2</sup> Seed source: HM = Harris Moran, AC = Abbott and Cobb, JS = Johnny's Selected Seed Company

<sup>3</sup> Yield per acre was calculated assuming 3,111 plants per acre with an in-row spacing of 2 feet and a between row spacing of 7 feet.

<sup>4</sup> Yield means followed by the same letter are not significantly different at P < 0.05 by LSD

<sup>5</sup> Cull percent by weight

'Snow Leopard', a specialty honeydew with variegated cream and speckled dark green rind, was the highest yielder by number of fruit with more than 11,000 fruit per acre. 'Honey Yellow' and 'Honey Orange' had the highest yields by weight for the specialty honeydews with the lowest percentage of culls. 'Honey Yellow' and 'Honey Pearl' had exceptional sugar content and rated well in taste tests. It was difficult to determine ripeness on all honeydew varieties tested, so actual days to harvest may be sooner than what is reported here. When ripe, melons turn from a light green to white to a darkish cream color that is difficult to discern. They do not slip from vine.

**Muskmelon.** 'Edens Gem', a small attractive fruit (1.5 pounds per fruit) with low soluble solids content, was rated the poorest tasting melon in the trial. However, it was the highest yielding melon by number of fruit per acre (17,733 fruit per acre) in the trial. Determining harvest timing is difficult. When melons easily slip from vine, they are yellowish-orange in color but at this point are past the edible ripe stage. Muskmelons should be harvested when the green heavily netted fruit are just beginning to lighten and have to be forced from vine.

**Charentais.** 'Savor', a small attractive fruit (approximately 2 pounds per acre), had good sugar content and was favored in taste tests. However, it had a high percentage of culls. Determining optimum harvest timing for 'Savor' was difficult. Once it slips easily from the vine it is cream in color with light green sutures and over-ripe with mushy bland flesh.

Charentais should be harvested done when rind is grayish green with dark green sutures, slightly lighter in color than its unripe stage.

**Cantaloupe (Eastern and Western Shippers, LSL, and Harper).** Cantaloupe varieties ranged from 3.5 to 6 pounds per fruit. 'Samoa', a Harper Long Shelf Life (LSL) type, had the largest fruit and was the highest yielding cantaloupe by weight, as well as one of the top yielding melons overall. But 'Samoa', along with 'Origami', had the lowest taste ratings among cantaloupes. ACR-4249 had the highest yield by number with more than 10,000 fruit per acre and along with ACR-7609 ranked the highest among LSL types for taste. 'Sweet Granite', while low yielding and not a LSL, was rated the best tasting cantaloupe and one of the top tasting melons overall.

#### DISEASE RATINGS

With the spray schedule, disease and insect pressure was minimal until the last two weeks of the season when powdery mildew greatly impacted some varieties, notably 'Lilly', 'Edens Gem', 'Sweet Granite', and 'Honey Pearl' (Table 3). Ten varieties showed tolerance to powdery mildew throughout the season: 1816AN OF, 'San Juan', 'Gallipoli', XLT 9276, ACX 145HD XOF, 'Samoa', XLT 9000, 'Origami', ACR-4249, and ACR-7609. Bacterial wilt was present in a few varieties ('San Juan', 'Honey Orange', and ACR-7609) beginning mid-season; however, it was not statistically significant and did not greatly affect the overall plot or yield. Septoria leaf spot damage remained minor (<5%) throughout the season and did not progress after the second evaluation day on July 13.

**TABLE 2. SPECIALTY MELON VARIETY TRIAL QUALITY ATTRIBUTES 2011**

<b>Variety</b>	<b>Taste ratings (1-5)</b>	<b>Soluble solids (%)</b>	<b>Flesh color</b>	<b>Rind color</b>	<b>Fruit shape</b>	<b>Net type</b>
1816AN OF	2.9	6.9	Lt. or.	Or. with gr. mottling	Oblong	Medium to heavy
Antoinette	4.0	9.0	Lt. or.	Yl-or.	Oblong	Medium
Anastasia	1.6	6.9	Lt. or.	Yl.	Oblong	Fine
San Juan	4.8	10.9	Cr. with or. tint	Yl-or.	Round to oval	Medium
Sun Jewel	3.0	13.3	Wh.	Dk. yl.	Oblong	None
ACX 2047CN	3.2	11.7	Wh.	Dk. yl.	Oval-round	None
ACR 1056CN	3.0	11.7	Lt. gr. with or. tint	Dk. yl.	Round but slight point at end	None
Brilliant	4.0	14.6	Wh. with or. tint	Dk. yl.	Round oval	None
Savor	4.0	9.8	Or.	Cr. gr.	Round	None, green sutures
Lilly	4.5	10.5	Lt. or.	Yl.	Oblong	None
ACX 425G	3.8	10.1	Wh.	Yl-or.	Oval	Medium
ACX 2268G	4.8	9.6	Wh. with or. tint	Lt. yl.	Oval	Medium
Diplomat	2.3	8.8	Lt. gr. - wh.	Yl.	Round-oval	Fine-medium
Gallipoli	3.2	7.9	Lt. gr.	Yl-or.	Oval	Fine-medium
Honey Yellow	3.8	15.3	Lt. or.	Dk. yl.	Round	None
Honey Orange	3.0	11.1	Lt. or.	Cr.	Oval	None
Honey Pearl	4.3	16.0	Cr.	Cr.	Round-oval	Light markings on end
Snow Leopard	3.5	9.0	Wh.	Cr. with gr. specks	Oval	None
XLT 9276	3.3	10.1	Or.	Gr.	Oval	Heavy
Summer Dew 262 HQ	3.1	12.1	Lt. gr.	Cr.	Oval	None
ACX 145HD XOF	3.2	14.1	Or.	Cr.	Oval	None
Summer Dew 252 HQ	3.3	14.5	Lt. gr. - cr.	Cr.	Round-oval	None
Summer Dew 3000 OF	3.0	11.8	or.	Cr.	Oval-round	None
Edens Gem	1.0	6.2	Lt. or.	Lt. gr.-yl.	Round	Heavy
Samoa	1.7	7.8	Or.	Cr.	Oval	Heavy
XLT 9000	2	11.6	Or.	Green	Round	Heavy/thick
Origami	1.7	8.5	Or.	Cr.	Oval	Medium-heavy
ACR-4249	3.3	11.6	Or.	Cr.	Round	Heavy
ACR-7609	3.5	10.0	Or.	Cr.	Round-oval	Heavy
Sweet Granite	4.0	9.9	Or.	Yl-or.	Oval	Medium-heavy

**TABLE 3. SPECIALTY MELON VARIETY TRIAL POWDERY MILDEW RATINGS, 2011**

Variety	Melon type <sup>1</sup>	Powdery Mildew % severity				
		July 13 <sup>2</sup>	July 20	July 28	August 3	August 18
1816AN OF	AN	0.0	0.0	0.0 d <sup>3</sup>	0.0 c	0.0 f
Antoinette	AN	0.0	0.0	1.1 bcd	1.1 bc	0.0 f
Anastasia	AN	0.0	0.0	0.0 d	0.0 c	15.6 def
San Juan	AN	0.0	0.0	0.0 d	0.0 c	0.0 f
Sun Jewel	AS	0.0	0.0	1.1 bcd	0.5 c	18.7 def
ACX 2047CN	CA	0.0	0.0	1.1 bcd	1.1 bc	0.0 f
ACR 1056CN	CA	0.0	0.0	1.0 bcd	1.0 bc	0.0 f
Brilliant	CA	0.0	0.0	1.0 bcd	1.0 bc	15.1 def
Savor	CH	0.0	0.0	0.0 d	0.0 c	25.6 cde
Lilly	CR	0.0	0.0	1.1 bcd	1.1 bc	65.5 a
ACX 425G	GA	0.0	0.0	1.0 bcd	0.5 c	0.0 f
ACX 2268G	GA	0.0	0.0	1.0 bcd	1.0 bc	0.0 f
Diplomat	GA	0.0	0.0	2.6 b	2.6 b	9.4 ef
Gallipoli	GA	0.0	0.0	0.0 d	0.0 c	0.0 f
Honey Yellow	HD	0.0	0.0	0.0 d	0.0 c	29.6 bcde
Honey Orange	HD	0.0	0.0	1.1 bcd	1.1 bc	18.7 def
Honey Pearl	HD	0.0	0.0	1.1 bcd	1.1 bc	43.7 abc
Snow Leopard	HD	0.0	0.0	1.1 bcd	1.1 bc	36.6 bcd
XLT 9276	HH	0.0	0.0	0.0 d	0.0 c	0.0 f
Summer Dew 262 HQ	HH	0.0	0.0	2.1 bc	1.5 bc	0.0 f
ACX 145HD XOF	HH	0.0	0.0	0.5 cd	0.5 c	2.2 f
Summer Dew 252 HQ	HH	0.0	0.0	5.6 a	4.4 a	0.0 f
Summer Dew 3000 OF	HH	0.0	0.0	1.0 bcd	1.0 bc	0.0 f
Edens Gem	MM	0.0	0.0	0.0 d	0.0 c	51.5 ab
Samoa	COHL	0.0	0.0	0.0 d	0.0 c	0.0 f
XLT 9000	COL	0.0	0.0	0.0 d	0.0 c	0.0 f
Origami	COEL	0.0	0.0	0.0 d	0.0 c	0.0 f
ACR-4249	COWL	0.0	0.0	0.5 cd	0.5 c	0.0 f
ACR-7609	COWL	0.0	0.0	2.3 bc	0.5 c	0.0 f
Sweet Granite	CO	0.0	0.0	0.5 cd	0.5 c	47.5 abc

<sup>1</sup> Melon type: AN = Ananas, AS = Asian, CA = Canary, CR = Crenshaw, GA = Galia, HD = Honeydew, MM = Muskmelon, CH = Charentais, HH = Hybrid Honeydew, CO = Cantaloupe (W=Western Shipper, E=Eastern Shipper, L=LSL, H=Harper)

<sup>2</sup> Disease evaluation dates

<sup>3</sup> Means within columns followed by the same letter are not significantly different at P < 0.05 by LSD

# Seed Sources for Alabama Trials, 2011

## **Bejo Seeds**

1972 Silver Spur Place  
Oceano, CA 93445  
Phone: (805) 473-2199  
E-mail: info@bejoseeds.com

## **BHN**

1310 McGee Avenue  
Berkeley, CA 94703  
Phone: (510) 526-4704  
E-mail: mail@berkeleyhort.com

## **Harris Moran**

Contact: Bob Conrad  
P.O. Box 4938  
Modesto, CA 95352  
Mobile: (239) 370-5893  
(209) 527-8684  
E-mail: b.conrad@hmclause.com

## **Harris Seeds**

To order: (800) 544-7938  
P.O. Box 22966  
Rochester, NY 14624-0966

## **Hollar**

To order: (719) 254-7411  
P.O. Box 106  
Rocky Ford, CO 81067-0106  
Phone: (719) 254-7411  
Fax: (719) 254-3539  
Website: www.hollarseeds.com

## **Johnny's Select Seeds**

To order: (207) 437-4395  
Contact: Steve Woodward  
955 Benton Ave  
Winslow, ME 04901  
Phone: (207) 861-3900  
E-mail: info@johnnyseeds.com

## **Kelly Seed Company**

Distributor for Seminis Vegetable  
Seeds, Inc.  
Contact: Jack Stuckey  
420 South Shiloh Road  
Hartford, AL 36344  
Phone: (334) 588-3821  
E-mail: jfsseedman@aol.com

## **Nunhems**

Contact: Chris Hogg  
Mobile: (478) 456-2450  
E-mail: chris.hogg@bayer.com  
Website: www.nunhemsusa.com

## **Sakata Seed America**

Contact: Jerry Moore  
755 Isabelle Nashville Rd.  
Tifton, GA  
Mobile: (229) 821-0399  
E-mail: jmoore@sakata.com

## **Seedway**

To order: (800) 952-7333  
Contact: James J. Pullins  
1225 Zeager Road  
Elizabethtown, PA 17022  
Ph: (717) 367-1075  
Fax: (717) 367-0387  
E-mail: info@seedway.com

## **Siegers Seed Company**

13031 Reflections Drive  
Holland, MI 49424  
Phone: (800) 962-4999  
Fax: (616) 994-0333

## **Syngenta Seeds, Inc**

**Rogers Brand Vegetable Seeds**  
Contact: Butch Brady  
600 North Armstorng Place  
P.O. Box 4188  
Boise, ID 85711-4180  
Phone: (208) 322-7272  
E-mail: butch.brady@syngenta.com

## **Tifton Seed Distribution Center**

Distributor for Seminis Vegetable  
Seeds, Inc.  
Contact: Van Lindsey  
Phone: (912) 382-1815

## **Vilmorin, Inc.**

2551 North Dragoon, 131  
Tucson, AZ 85745  
Phone: (520) 844-0011  
Website: www.vilmorin.com

## **Willhite**

P.O. Box 23  
Poolville, TX 76487  
Phone: (800) 828-1840  
Website: www.willhite.com



## **Guidelines for Contributions to the Commercial Fruit and Vegetable Variety Trials Regional Bulletin**

Fruit and vegetable variety evaluation and selection is an essential part of production horticulture. The fruit and vegetable variety regional bulletin is intended to report results of variety trials conducted by research institutions in the Southeast in a timely manner. Its intended audience includes growers, research/extension personnel, and members of the seed industry.

Timeliness and rapid turnaround are essential to better serve our audience. Hence, two bulletins are printed each year: one in November with results from spring crops, and another one in April or May with results from summer and fall crops. It is essential that trial results are available before variety decisions for the next growing season are made.

Here are a few useful guidelines to speed up the publications process for the next regional bulletin (fall 2010).

**When:** April 25, 2012

Deadline for fall 2011 variety trial report submissions.

**What:** Results pertaining to variety evaluation in a broad sense. This includes field performance, quality evaluation, and disease resistance. Here are a few tips:

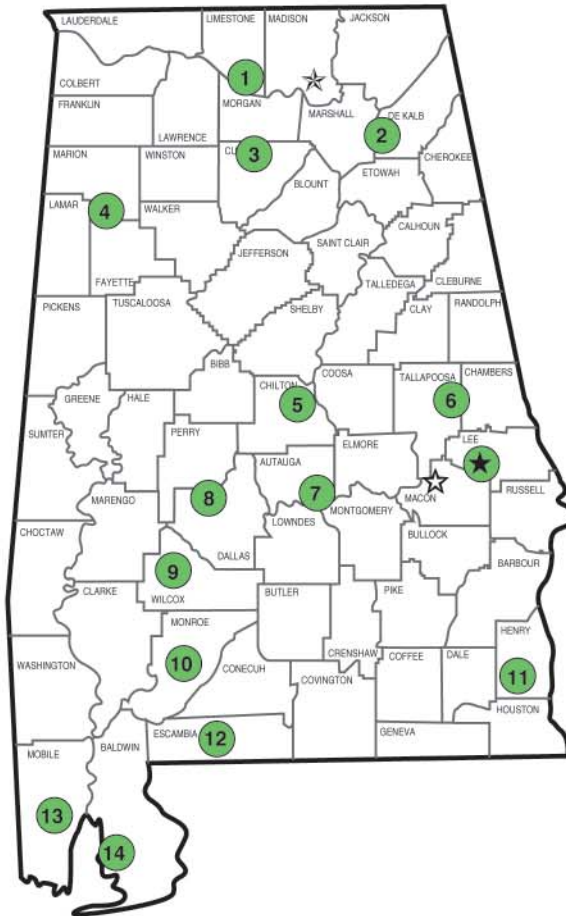
- Follow the format used in the other regional bulletins.
- Include each author's complete mailing address, e-mail address, and phone number.
- Follow your own unit's internal review process. Contributions will be edited, but not formally reviewed.

**How:** Send a disk and hard copy to  
Edgar Vinson or Joe Kemble  
Department of Horticulture  
101 Funchess Hall  
Auburn University, AL 36849-5408

Or send e-mail to  
vinsoed@auburn.edu  
kembljm@auburn.edu

## Alabama's Agricultural Experiment Station AUBURN UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, livestock, forestry, and horticultural producers in each region in Alabama. Every citizen of the state has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



### Research Unit Identification

- ★ Main Agricultural Experiment Station, Auburn.
- ☆ Alabama A&M University.
- ☆ E. V. Smith Research Center, Shorter.

1. Tennessee Valley Research and Extension Center, Belle Mina.
2. Sand Mountain Research and Extension Center, Crossville.
3. North Alabama Horticulture Research Center, Cullman.
4. Upper Coastal Plain Agricultural Research Center, Winfield.
5. Chilton Research and Extension Center, Clanton.
6. Piedmont Substation, Camp Hill.
7. Prattville Agricultural Research Unit, Prattville.
8. Black Belt Research and Extension Center, Marion Junction.
9. Lower Coastal Plain Substation, Camden.
10. Monroeville Agricultural Research Unit, Monroeville.
11. Wiregrass Research and Extension Center, Headland.
12. Brewton Agricultural Research Unit, Brewton.
13. Ornamental Horticulture Research Center, Spring Hill.
14. Gulf Coast Research and Extension Center, Fairhope.