

Vegetable and Fruit

Variety Trials Spring 2013

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Tips to Interpret Results on Vegetable Variety Performance

Edgar Vinson and Joe Kemble

Introduction: 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 information provides a few tips to adequately interpret results in this report.

Open-Pollinated or Hybrid Varieties

In general, hybrid varieties (also referred to as F1 varieties) are earlier and produce a more uniform crop. They have improved disease and pest or virus tolerance/resistance. F1 varieties are often more expensive than open-pollinated varieties (also referred to as OP varieties), and seeds cannot be collected from one crop in order to plant the next. Despite the advantages F1 varieties offer, OP varieties 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 simply by 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 ranges between 0 and 1. Values close to 1 suggest that the test was conducted under good conditions and that 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 are desirable (under 20 percent) but are not always achieved.

TIPS

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 watermelon trial presented in this issue conducted at the E.V. Smith Research Center; 'Summer Flavor 880' yielded 88,585 pounds per acre, while 'Valentino' and 'Estrella' yielded 74,030 and 66,823 pounds per acre, respectively. Since there was less than a 20,603 difference between 'Summer Flavor 880' and 'Valentino,' there is no statistical difference between these two varieties. However, the yield difference between 'Summer Flavor 880' and 'Estrella' was 21,762 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 Condition

Auburn University variety trials are conducted under standard, recommended commercial production practices. If the cropping system to be used is different from that used in the trials, the results of the trials may not apply. Information on soil type (Table 1), planting dates, fertilizer rates and 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 rates depend 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 the Appendix.

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

Vegetable and Fruit Variety Trials on the Web – to view this and other publications online go to:

www.aaes.auburn.edu/comm/pubs/pubs-by-type/rebulllist.php

Table 1
Soil Types at the Location of the Trial

| Location | Water holding capacity (In.) | Soil type |
|--|-------------------------------------|---------------------------------------|
| Gulf Coast Research and Extension Center (Fairhope) | 0.09-0.19 | Malhis fine sandy loam |
| Brewton Experiment Field (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 Substation (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 |

Three Yellow Summer Squash Varieties Top List in Early and Total Yield

Joe Kemble, Edgar Vinson and Randy Akridge

A summer squash variety trial was conducted at the Brewton Area Research Unit (BARU) in Brewton, Alabama (Tables 3.1 and 3.2). Beds were formed and plastic mulch and drip irrigation were used. Squash varieties were direct seeded on white plastic mulch on May 13. 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. For current recommendations for pest and weed control in vegetable production in Alabama, consult the latest edition of the Southeastern U.S. Vegetable Crop Handbook (www.thegrower.com/south-east-vegetable-guide). For a copy of the handbook and for further information, consult your local county extension agent. Your agent can be found by going to www.aces.edu/counties.

Squash were harvested eight times between June 12 and June 26. Squash were graded according to the United States Standards for Grades of Summer Squash (U.S. Department of Agriculture, G.P.O 1987-180-916:40730 AMS) (Table 3). Early yield consisted of the first three harvests. In early marketable yield 'Superpik' was significantly higher than 'Lioness' (Table 3). There were no other differences found in this category. The varieties 'Cougar,' 'Supersette' and 'Ocelot' produced the three highest yields in the early US No.1 category. These yields were significantly higher than 'Cheetah' and 'Lioness'. 'Cheetah' produced the highest US No.2 yield overall. The yield was significantly higher than 'Supersette,' 'Cougar,' 'Lazor,' and 'Lioness.' Early US No.2 yield value for 'Superpik' was significantly higher than 'Cougar' and 'Lioness.' There were no other differences in this category.

'Ocelot,' 'Supersette,' and 'Superpik' produced the three highest values in total marketable yield (Table 3.4). These three varieties were statistically similar in the category, produced values that were statistically higher than the remaining cultivars with the exception of 'Multipik.' 'Ocelot' and 'Supersette' also produced the highest values in US No.2 yield category. There were few differences in this category. 'Ocelot' and 'Supersette' produced values that were significantly different from 'Cheetah' and 'Lioness' only. Similarly, there was little difference found among US No.2 fruit. 'Ocelot,' 'Superpik,' and 'Multipik' produced values that were statistically higher than 'Cougar' and 'Lioness'.

Table 3.1

Ratings of 2013 Summer Squash Variety Trial

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

¹See introduction for description of ratings scales.

Table 3.2

Seed Source, Fruit Type and Relative Earliness of Selected Yellow Summer Squash Varieties

| Variety | Type | Seed source | Days to harvest | Disease claims | Years Evaluated |
|-------------|------|--------------|-----------------|--------------------------------------|--------------------|
| Cheetah | F1 | Harris Moran | -- | PM, PRSV, WMV, ZYMV | 13 |
| Cougar | F1 | Harris Moran | -- | PRSV, ZYMV | 13 |
| Lazor | F1 | Seedway | 42 | ZYMV | 11-13 |
| Lioness | F1 | Harris Seeds | 50 | CMV, PRSV, WMV 2 ¹ , ZYMV | 04-08, 11-13 |
| Multipik* | F1 | Harris Seeds | 50 | CMV, WMV | 11-13 |
| Ocelot | F1 | Harris Moran | -- | -- | 11-13 |
| Superpik* | F1 | Harris | 50 | CMV, WMV | 12, 13 |
| Supersette* | F1 | Harris Moran | -- | CMV, WMV | 94, 96, 03, 12, 13 |

¹Indicates variety is resistant/tolerant to Watermelon Mosaic Virus race 2. * Precocious Variety – Has ability to mask blemishes caused by some viruses; -- = none; from seed catalogues; Disease Claims: CMV = Cucumber Mosaic Virus; PM = Powdery Mildew; PRSV = Papaya Ring Spot; ZYMV = Zucchini Yellow Mosaic Virus ; WMV = Watermelon Mosaic Virus

SUMMER SQUASH

Table 3.3

Early Yield of Selected Yellow Summer Squash Varieties

| Variety | Early Marketable Yield (lbs/ac) | Early U.S. No. 1 Weight (lbs/ac) | Early U.S. No. 2 Weight (lbs/ac) | Early U.S. No. 1 Number (#/ac) | Early U.S. No. 2 (#/ac) |
|----------------|---------------------------------|----------------------------------|----------------------------------|--------------------------------|-------------------------|
| Superpik | 8,033 | 3,422 | 4,611 | 12,180 | 6,235 |
| Superset | 7,778 | 4,082 | 3,695 | 15,660 | 6,634 |
| Ocelot | 7,569 | 3,624 | 3,945 | 13,703 | 5,220 |
| Multipik | 7,486 | 3,376 | 4,111 | 11,310 | 6,416 |
| Cheetah | 7,186 | 2,114 | 5,072 | 6,634 | 3,154 |
| Cougar | 7,117 | 4,233 | 2,884 | 14,355 | 4,459 |
| Lazor | 6,853 | 3,330 | 3,524 | 10,005 | 3,045 |
| Lioness | 4,537 | 1,599 | 2,938 | 4,785 | 3,371 |
| R ² | 0.65 | 0.64 | 0.60 | 0.80 | 0.64 |
| CV | 13.6 | 26 | 24 | 23 | 30 |
| LSD | 1,407 | 1,235 | 1,339 | 3,690 | 2,129 |

Table 3.4

Total Yield of Selected Yellow Summer Squash Varieties

| Variety | Marketable Yield (lbs/ac) | U.S. No. 1 Weight (lbs/ac) | U.S. No. 2 Weight (lbs/ac) | U.S. No. 1 Number (#/ac) | U.S. No. 2 (#/ac) |
|----------------|---------------------------|----------------------------|----------------------------|--------------------------|-------------------|
| Ocelot | 14,536 | 8,374 | 6,162 | 31,755 | 9,679 |
| Superset | 14,011 | 8,182 | 5,829 | 31,320 | 11,310 |
| Superpik | 13,845 | 7,543 | 6,302 | 25,810 | 9,715 |
| Multipik | 13,076 | 6,555 | 6,521 | 22,511 | 10,984 |
| Cougar | 12,254 | 7,924 | 4,330 | 27,296 | 7,069 |
| Lazor | 11,769 | 6,740 | 5,029 | 21,641 | 5,546 |
| Cheetah | 9,516 | 4,154 | 5,361 | 12,071 | 3,589 |
| Lioness | 7,474 | 3,613 | 3,861 | 11,854 | 5,111 |
| R ² | 0.90 | 0.74 | 0.53 | 0.83 | 0.77 |
| CV | 8 | 20 | 20 | 19 | 25 |
| LSD | 1,495 | 1,986 | 1,583 | 6,410 | 2,970 |

Zucchini Yields Differ in Early and Total Yield

Joe Kemble, Edgar Vinson and Jason Burkett

A zucchini squash variety trial was conducted at the E.V. Smith Research Center (EVSRC) in Shorter, AL (Tables 4.1 and 4.2). Zucchini varieties were direct seeded on white plastic mulch on May 3. 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. For current recommendations for pest and weed control in vegetable production in Alabama, consult the latest edition of the Southeastern U.S. Vegetable Crop Handbook (www.thegrower.com/south-east-vegetable-guide). For a copy of the handbook and for further information, consult your local county extension agent. Your agent can be found by going to www.aces.edu/counties.

Zucchini were harvested 13 times between June 5 and July 3. Squash were graded according to the United States Standards for Grades of Summer Squash (U.S. Department of Agriculture. G.P.O 1987-180-916:40730 AMS) (Table 4.3 and 4.4). Grades were combined and categorized as marketable or non-marketable.

Early yield consisted of the first three harvests. In this category, ‘Zucchini’ produced a significantly higher yield than all other varieties (Table 4.3). ‘Spineless Beauty,’ which was considered the market standard in this trial, produced the second highest early yield which was significantly higher than the remaining varieties. ‘Spineless Perfection’ is an improved version of ‘Spineless Beauty.’ Unlike ‘Spineless Beauty,’ ‘Spineless Perfection’ has a disease resistance package against Powdery Mildew, Watermelon Mosaic Virus, Zucchini Yellow Mosaic Virus. In early marketable yield, ‘Spineless Beauty’ produced significantly higher yield than ‘Spineless Perfection’. In total marketable yield, ‘Cashflow’ which was a moderately performing variety early in harvest season produced the highest yield. This yield was significantly higher than all varieties with the exception of ‘Zucchini Elite’ and ‘Spineless Beauty.’

Significant differences existed among several varieties in both early and total marketable yield. ‘Spineless Beauty’ produced yields significantly higher than most varieties early in the harvest season. Some differences disappeared by the end of the season. For example, differences in early marketable yield between ‘Spineless Beauty’ and ‘Spineless Perfection’ were not found in total marketable yield.

ZUCCHINI

Table 4.1

Ratings of 2013 Zucchini Squash Variety Trial¹

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

¹See introduction for description of ratings scales.

Table 4.2

Seed Source, Fruit Type and Relative Earliness of Selected Zucchini Squash Varieties

| Variety | Type | Seed source | Days to harvest | Disease claims | Years evaluated |
|---------------------------------|------|--------------|-----------------|--------------------|------------------|
| Cashflow | F1 | Syngenta | 47 | ZYMV | 10, 11, 13 |
| Reward | F1 | Harris | 49 | PM, CMV, WMV, ZYMV | 12, 13 |
| Leopard | F1 | Harris Moran | -- | PRSV, ZYMV | 11-13 |
| Spineless Perfection (RSQ 5184) | F1 | Harris | 44 | PM, WMV, ZYMV | 10, 11, 13 |
| Spineless Beauty | F1 | Harris | 43 | -- | 95-97, 99, 10-13 |
| Zucchini Elite | F1 | Harris Moran | -- | -- | 95-97, 99, 10-13 |
| Elegance | F1 | Harris Moran | -- | PM, WMV, ZYMV | 10-13 |

-- = none; from seed catalogues; Disease Claims: CMV = Cucumber Mosaic Virus; PM = Powdery Mildew; PRSV = Papaya Ring Spot; ZYMV = Zucchini Yellow Mosaic Virus ; WMV = Watermelon Mosaic Virus

Table 4.3

Early Yield of Selected Zucchini Squash Varieties

| Variety | Early Marketable Yield (lbs/ac) | Early Marketable Number (lbs/ac) | Cull (lbs/ac) | Individual Fruit Weight (lbs) |
|----------------------|---------------------------------|----------------------------------|---------------|-------------------------------|
| Zucchini Elite | 8,033 | 3,422 | 4,611 | 12,180 |
| Spineless Beauty | 7,778 | 4,082 | 3,695 | 15,660 |
| Leopard | 7,569 | 3,624 | 3,945 | 13,703 |
| Cashflow | 7,486 | 3,376 | 4,111 | 11,310 |
| Spineless Perfection | 7,186 | 2,114 | 5,072 | 6,634 |
| Elegance | 7,117 | 4,233 | 2,884 | 14,355 |
| Reward | 6,853 | 3,330 | 3,524 | 10,005 |
| R ² | 0.65 | 0.64 | 0.60 | 0.80 |
| CV | 13.6 | 26 | 24 | 23 |
| LSD | 4,537 | 6,599 | 2,938 | 4,785 |

Table 4.4

Total Yield and Quality of Selected Summer Squash Varieties

| Variety | Total Marketable Yield (lbs/ac) | Total Marketable Number (#/ac) | Cull (lbs/ac) | Individual Fruit Weight (lbs) |
|----------------------|---------------------------------|--------------------------------|---------------|-------------------------------|
| Cashflow | 21,063 | 44,468 | 7,685 | 0.47 |
| Zucchini Elite | 18,905 | 35,120 | 7,801 | 0.54 |
| Spineless Beauty | 18,141 | 29,766 | 8,021 | 0.61 |
| Elegance | 17,685 | 36,572 | 8,018 | 0.48 |
| Leopard | 16,936 | 34,394 | 7,497 | 0.49 |
| Spineless Perfection | 16,258 | 28,949 | 9,537 | 0.57 |
| Reward | 15,135 | 38,387 | 4,323 | 0.40 |
| R ² | 0.60 | 0.64 | 0.40 | 0.83 |
| CV | 12 | 13 | 32 | 7 |
| LSD | 3,114 | 15,180 | 3,591 | 0.02 |

Bell Pepper Trials in North and South Alabama

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

Spring bell pepper variety trials were conducted at the Brewton Agricultural Research Unit (BARU) in Brewton, Alabama and at 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 April 30 at BARU and May 20 at NAHRC. White plastic mulch and drip irrigation were used.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. For current recommendations for pest and weed control in vegetable production in Alabama, consult the latest edition of the Southeastern U.S. Vegetable Crop Handbook (www.thegrower.com/south-east-vegetable-guide). For a copy of the handbook and for further information, consult your local county extension agent. Your agent can be found by going to www.aces.edu/counties.

At BARU, bell peppers were harvested four times between July 8 and July 30. Prior to weighing, bell peppers were graded according to USDA's Grader's Guide as US Fancy, Number 1, Number 2, and cull (Table 5.3). Marketable yield was the sum of Fancy, Number 1 and Number 2 grades (Table 5.3). At NAHRC, bell peppers were harvested three times between August 1 and September 23. Bell peppers were graded according to fruit diameter (D) (Table 5.4). Diameters of fresh market bell pepper were adapted from the USDA's Grader's Guide (Table 5.4).

At BARU, 'Camelot X3R' was included in the trial as market standard. Varieties that produced the three highest values in total marketable yield were 'Declaration', 'Aristotle' and 'Gridiron' (FPP9048). All varieties except FPP-1814 and 'Allegiance' produced higher values than the market standard in the US Fancy category. Overall, the majority of total marketable yield came from US No.1 fruit at 68 percent, while US Fancy and US Number 2 were 23 percent and 10 percent of the total yield respectively. A similar trend was exhibited among the top three performing varieties. Thirty four percent of total marketable yield of 'Declaration' was the result of US Fancy yield, while 30 percent and 23 percent of total marketable yield was the result of US Fancy yield in 'Aristotle' and Gridiron respectively. The majority of total marketable yield was 58 percent, 64 percent, and 66 percent was the result of US Number 1 Fruit in 'Declaration', 'Aristotle', and Gridiron respectively.

At NAHRC, ‘Camelot X3R’ was again the market standard. The three top performing varieties were ‘Vanguard,’ FPP1814, and ‘Double Up.’ Of the top three ‘Vanguard’ and FPP1814 produced yields that were significantly higher than the market standard. All other varieties were similar to the market standard. Overall, medium size fruit was responsible for 50 percent of total marketable yield. Extra-large and large were responsible for 18 percent and 31 percent of total marketable yield respectively.

Table 5.1
Ratings of 2013 Bell Pepper Variety Trial¹

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

¹See introduction for description of ratings scales.

Table 5.2
Seed Source, Fruit Characteristics and Relative Earliness of Selected Bell Pepper Varieties

| Variety | Type | Seed Source | Fruit Color | Days to Harvest | Disease Claims ¹ | Years Evaluated |
|--------------------|------|--------------|-------------|-----------------|-----------------------------|----------------------|
| Allegiance | F1 | Harris Moran | G-R | 61 | BSp1-5, PVY 0, TbmV | 11-13 |
| Aristotle | F1 | Harris | G-R | 73 | BSp1-3, PVY, TMV | 01, 10, 11 |
| Camelot X3R | F1 | Seminis | G-R | 74 | TbMV | 94-97, 99, 01, 10-13 |
| Declaration | F1 | Harris Moran | G-R | 75 | CMV, PRR, TSWV | 10-12 |
| Double Up | F1 | Sakata | G-R | -- | BSp 0-3, 5, 7, 8, TMV 0 | 12, 13 |
| FPP1814 | F1 | Sakata | G | -- | -- | 12, 13 |
| Gridiron (FPP9048) | F1 | Sakata | G-R | -- | BSp 0-5, 7-9, TEV, TMV | 12, 13 |
| Revolution | F1 | Harris Moran | G-R | -- | Bsp 1-3, 5, CMV, PRR | 12, 13 |
| Vanguard | F1 | Harris Moran | G-R | -- | BSp 1-5, CMV, PRR | 10-13 |
| Wizard X3R | F1 | Seminis | G-R | 74 | Bsp 1-3, TMV | 01, 11-13 |
| Blitz (XPP7039) | F1 | Sakata | G-R | -- | Bsp 0-5, 7-9, TEV, TMV | 12, 13 |

¹Numbers that follow abbreviations indicate race of disease. For Example BSp 1-5 indicates that a cultivar is resistant/tolerant to bacterial spot races 1 through 5; "--" = not available from seed catalogues; Type: F1 = Hybrid; BSp = Bacterial Spot; CMV = Cucumber Mosaic Virus; PRR = Phytophthora Root Rot; PVY = Potato Virus Y; TbmV = Tobamo Virus; TEV= Tobacco Etch Virus; TMV=Tobacco Mosaic Virus; TSWV = Tomato Spotted Wilt Virus; G=Green; G-R = Green to Red; G-Y = Green to Yellow

Table 5.3
Yield and Grade Distribution of Selected Bell Pepper Varieties, BARU

| Variety | Total Marketable Yield (lbs/ac) | Total Marketable Number (#/ac) | Fancy Number (#/ac) | Fancy Weight (lbs/ac) | U.S.#1 Number (#/ac) | U.S.#1 Weight (lbs/ac) | U.S.#2 Number (#/ac) | U.S.#2 Weight (lbs/ac) | Individual Fruit Weight (lbs) | Cull (lbs/ac) |
|----------------|---------------------------------|--------------------------------|---------------------|-----------------------|----------------------|------------------------|----------------------|------------------------|-------------------------------|---------------|
| Declaration | 16,112 | 38,569 | 10,073 | 5,538 | 23,595 | 9,333 | 4,901 | 1,241 | 0.42 | 1,788 |
| Aristotle | 15,368 | 36,482 | 8,984 | 4,743 | 24,412 | 9,770 | 3,086 | 855 | 0.42 | 1,243 |
| Gridiron | 14,054 | 35,393 | 6,080 | 3,209 | 23,777 | 9,286 | 5,536 | 1,559 | 0.40 | 1,287 |
| Double Up | 13,284 | 35,030 | 1,906 | 1,000 | 26,227 | 10,424 | 6,897 | 1,860 | 0.38 | 1,325 |
| Revolution | 13,222 | 31,400 | 7,532 | 4,309 | 20,419 | 8,131 | 3,449 | 782 | 0.42 | 1,788 |
| Blitz | 13,110 | 30,674 | 7,169 | 4,124 | 20,600 | 8,271 | 2,904 | 715 | 0.43 | 1,530 |
| Vanguard | 12,950 | 30,855 | 7,169 | 3,926 | 20,419 | 8,231 | 3,267 | 793 | 0.42 | 1,441 |
| Camelot X3R | 11,798 | 33,033 | 1,573 | 801 | 26,318 | 9,759 | 5,536 | 1,437 | 0.36 | 1,525 |
| FPP1814 | 11,770 | 32,216 | 1,361 | 675 | 23,686 | 9,117 | 7,169 | 1,978 | 0.37 | 1,755 |
| Allegiance | 8,001 | 22,234 | 1,573 | 886 | 16,244 | 6,225 | 4,810 | 1,111 | 0.36 | 1,686 |
| R ² | 0.61 | 0.60 | 0.81 | 0.80 | 0.57 | 0.54 | 0.50 | 0.51 | 0.76 | 0.40 |
| CV | 17 | 16 | 35 | 37 | 16 | 17 | 50 | 53 | 4.7 | 27 |
| LSD | 3,188 | 7,337 | 2,847 | 1,630 | 5,292 | 2,148 | 3,449 | 952 | 0.03 | 600 |

Table 5.4
Yield and Grade Distribution of Selected Bell Pepper Varieties, NAHRC

| Variety | Total Marketable Yield (lbs/ac) | Total Marketable Number (#/ac) | Extra Large Number (#/ac) | Extra Large Weight (lbs/ac) | Large Number (#/ac) | Large Weight (lbs/ac) | Medium Number (#/ac) | Medium Weight (lbs/ac) | Individual Fruit Weight (lbs) | Cull (lbs/ac) |
|--------------------|---------------------------------|--------------------------------|---------------------------|-----------------------------|---------------------|-----------------------|----------------------|------------------------|-------------------------------|---------------|
| Vanguard | 49,958 | 52,363 | 12,342 | 17,529 | 14,248 | 15,163 | 22,200 | 17,266 | 1.0 | 2,494 |
| FPP1814 | 46,197 | 57,354 | 1,997 | 2,649 | 11,798 | 13,007 | 38,404 | 30,540 | 0.8 | 2,797 |
| Double Up | 40,637 | 51,092 | 3,358 | 4,540 | 9,983 | 10,434 | 32,891 | 25,663 | 0.8 | 1,250 |
| Gridiron (FPP9048) | 40,094 | 43,742 | 5,899 | 8,831 | 12,796 | 13,622 | 22,585 | 17,641 | 0.9 | 1,242 |
| Aristotle | 36,778 | 44,195 | 5,627 | 7,856 | 10,799 | 11,602 | 23,074 | 17,320 | 0.9 | 1,965 |
| Revolution | 36,013 | 43,742 | 4,538 | 6,379 | 11,888 | 12,620 | 22,088 | 17,014 | 0.9 | 2,192 |
| Camelot X3R | 32,535 | 41,564 | 3,449 | 4,404 | 11,435 | 11,935 | 22,367 | 16,196 | 0.8 | 2,731 |
| R ² | 0.41 | 0.33 | 0.80 | 0.82 | 0.20 | 0.22 | 0.44 | 0.51 | 0.50 | 0.28 |
| CV | 23 | 26 | 36 | 36 | 33 | 33 | 35 | 34 | 10 | 59 |
| LSD | 13,576 | 18,694 | 2,849 | 3,953 | 6,501 | 6,138 | 13,583 | 10,118 | 0.06 | 1,837 |

No Differences Found Among Tomato Varieties in South Alabama

Joe Kemble, Edgar Vinson and Randy Akridge, 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 6.1 and 6.2, Figure 1). Five-week-old tomato transplants were set on May 4 and April 26 at NAHRC onto 20-foot long plots and 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. For current recommendations for pest and weed control in vegetable production in Alabama, consult the latest edition of the Southeastern U.S. Vegetable Crop Handbook (www.thegrower.com/south-east-vegetable-guide). For a copy of the handbook and for further information, consult your local county extension agent. Your agent can be found by going to www.aces.edu/counties.

Tomatoes were harvested, weighed, and graded four times between July 9 and July 30 at BARU and four times between July 15 and August 5 at NAHRC. Grades and corresponding fruit diameters (D) of fresh market tomato were adapted from USDA standards 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 6.3).

At BARU, market standard included in the trial was ‘Florida 47.’ All varieties were similar to the market standard in total marketable yield. In the extra-large category, ‘Charger’ produced statistically higher values than all other varieties. Both ‘Bella Rosa’ and ‘Tribute’ produced values that were significantly higher than the market standard in this category.

At NAHRC, ‘Florida 47’ was again used as the market standard. Among the varieties in this trial, half of the entries were statistically similar to the market standard in total marketable yield. In extra-large yield, values of ‘Bella Rosa’ were significantly larger than other varieties with the exception of ‘Charger’ and ‘Volante.’ All other varieties produced extra-large yields similar to the market standard.

Table 6.1

Ratings of 2013 Tomato Variety Trial¹

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

¹See introduction for description of ratings scales.

Table 6.2

Seed Source, Fruit Characteristics and Relative Earliness of Selected Tomato Varieties

| Variety | Type | Seed Source | Plant | Fruit Color | Days to Harvest | Disease Claims ¹ | Years Evaluated |
|--------------|-------|--------------|-------|-------------|-----------------|-----------------------------|---------------------------|
| Amelia | F1/FM | Harris Moran | Det | Red | 80 | FW 1-3, TSWV, VW | 03-08, 10-13 |
| Bella Rosa | F1/FM | Sakata | Det | Red | 74 | FW 1-2, TSWV, VW | 07-08, 10-13 |
| Florida 47 | F1/FM | Seminis | Det | Red | 75 | ASC, FW1-2, St, VW | 97-99, 02, 08, 10, 11, 13 |
| Reba | F1/FM | Sakata | Det | Red | -- | ASC, FW1-2, St, VW1 | 13 |
| Charger | F1/FM | Sakata | Det | Red | -- | ASC, FW1-3, St, VW1, TY | 12, 13 |
| Crista | F1/FM | Harris Moran | Det | Red | 74 | FW1-3, NE, TSWV, VW | 06-13 |
| Mt. Fresh | F1/FM | Reimer | Det | Red | 77 | FW, Nt, VW, St | 13 |
| Red Defender | F1/FM | Harris | Det | Red | 75 | ASC, FW1-2, St, TSWV, VW | 07, 11, 13 |
| Mt. Merit | F1/FM | Johnny's | Det | Red | 75 | FW0-2, LB, Nt, TSWV | 13 |
| Red Bounty | F1/FM | Harris Moran | Det | Red | 76 | FW1-2, Nt, St, TSWV, VW1 | 13 |
| Tribute | F1/FM | Sakata | Det | Red | -- | -- | 10-13 |
| Trinity | F1/FM | Harris Moran | Det | Red | -- | FW 1-2, Nt, TSWV, VW 1 | 10-13 |
| XTM-8105 | F1/FM | Sakata | Det | Red | -- | -- | 13 |
| XTM-8135 | F1/FM | Sakata | Det | Red | -- | -- | 13 |
| Volante | F1/FM | Sakata | Det | Red | -- | ASC, FW 1-2, VW 1, St, TSWV | 13 |

¹Numbers that follow abbreviations indicate race of disease. For Example FW 1-3 indicates that a cultivar is resistant/tolerant to Fusarium Wilt races 1 through 3. Type: F1 = Hybrid; EB=Early Blight; FM = Fresh-Market; Plant Habit: Det = Determinate; Disease Claims (Resistance/Tolerance): FC = Fusarium Crown Rot, FR = Fusarium Root Rot, FW = Fusarium Wilt; LB = Late Blight; VW = Verticillium Wilt; ASC = Alternaria Stem Canker; St = Stemphylium (grey leaf spot); TSWV = Tomato Spotted Wilt Virus, TY=Tomato Yellow Leaf Curl, ToMV=Tomato Mosaic Virus, Nt = Root not nematode; "--" = not available from seed catalogues

Table 6.3
Yield and Size Distribution of Selected Tomato Varieties, BARU, 2013

| Variety | Total Marketable Yield (lbs/ac) | Total Marketable Number (#/ac) | Extra Large Number (#/ac) | Extra Large Weight (lbs/ac) | Large Number (#/ac) | Large Weight (lbs/ac) | Medium Number (#/ac) | Medium Weight (lbs/ac) | Small Weight lbs/acre | Individual Fruit Weight (lbs) | Cull (lbs/ac) |
|----------------|---------------------------------|--------------------------------|---------------------------|-----------------------------|---------------------|-----------------------|----------------------|------------------------|-----------------------|-------------------------------|---------------|
| Amelia | 44,237 | 58,988 | 4,969 | 7,532 | 13,032 | 28,768 | 26,236 | 22,688 | 2,347 | 0.70 | 2,502 |
| Tribute | 38,556 | 92,928 | 10,182 | 17,606 | 18,842 | 44,740 | 9,532 | 30,583 | 1,920 | 0.41 | 2,719 |
| Charger | 34,383 | 65,068 | 17,704 | 26,045 | 13,582 | 28,949 | 3,098 | 10,073 | 675 | 0.53 | 3,762 |
| Volante | 29,795 | 64,705 | 9,088 | 14,520 | 14,919 | 32,035 | 5,788 | 18,150 | 1,194 | 0.46 | 1,790 |
| XTM8105 | 28,825 | 67,881 | 8,555 | 13,794 | 12,998 | 29,887 | 7,272 | 24,200 | 2,773 | 0.43 | 3,170 |
| Florida 47 | 28,621 | 68,698 | 4,964 | 7,986 | 15,389 | 33,941 | 8,267 | 26,771 | 2,294 | 0.42 | 1,643 |
| Bella Rosa | 27,040 | 54,813 | 10,309 | 15,065 | 12,747 | 27,407 | 3,984 | 12,342 | 490 | 0.50 | 2,880 |
| Reba | 26,978 | 62,164 | 5,091 | 7,986 | 14,498 | 31,490 | 7,389 | 22,688 | 2,225 | 0.43 | 2,773 |
| Crista | 24,288 | 56,084 | 5,650 | 8,984 | 12,264 | 26,953 | 6,374 | 20,147 | 2,621 | 0.43 | 2,606 |
| Red Defender | 24,080 | 58,443 | 5,407 | 8,712 | 11,402 | 25,592 | 7,271 | 24,140 | 5,069 | 0.41 | 1,771 |
| R ² | 0.20 | 0.60 | 0.64 | 0.61 | 0.44 | 0.52 | 0.30 | 0.70 | 0.81 | 0.23 | 0.60 |
| CV | 47 | 17 | 41 | 41 | 19 | 19 | 143 | 24 | 33 | 38 | 25 |
| LSD | 20,729 | 15,618 | 4,821 | 7,581 | 3,815 | 8,506 | 17,781 | 479 | 1,017 | 0.26 | 916 |

Table 6.4
Yield and Size Distribution of Selected Tomato Varieties, NAHRC, 2013

| Variety | Total Marketable Yield (lbs/ac) | Total Marketable Number (#/ac) | Extra Large Number (#/ac) | Extra Large Weight (lbs/ac) | Large Number (#/ac) | Large Weight (lbs/ac) | Medium Number (#/ac) | Medium Weight (lbs/ac) | Small Weight lbs/ac | Individual Fruit Weight (lbs) | Cull (lbs/ac) |
|--------------|---------------------------------|--------------------------------|---------------------------|-----------------------------|---------------------|-----------------------|----------------------|------------------------|---------------------|-------------------------------|---------------|
| Bella Rosa | 57,175 | 109,082 | 9,154 | 17,424 | 26,637 | 40,747 | 18,165 | 40,838 | 3,219 | 0.53 | 8,560 |
| Florida 47 | 57,036 | 121,242 | 2,205 | 2,541 | 16,590 | 26,590 | 22,644 | 51,455 | 8,619 | 0.47 | 11,954 |
| Reba | 55,528 | 103,277 | 2,421 | 3,267 | 16,255 | 27,497 | 21,927 | 48,098 | 7,835 | 0.54 | 10,956 |
| Mt. Fresh | 55,246 | 113,710 | 2,645 | 3,086 | 21,611 | 34,939 | 24,030 | 54,541 | 6,960 | 0.49 | 9,178 |
| Red Defender | 51,179 | 106,359 | 3,445 | 3,993 | 19,940 | 31,763 | 20,935 | 49,459 | 6,860 | 0.48 | 14,828 |
| Amelia | 51,124 | 103,183 | 3,516 | 3,267 | 19,987 | 32,307 | 22,442 | 51,728 | 5,180 | 0.49 | 9,935 |
| Tribute | 46,694 | 85,789 | 4,483 | 5,203 | 22,096 | 33,487 | 14,770 | 34,848 | 3,129 | 0.54 | 8,313 |
| Mt. Merit | 44,778 | 97,526 | 1,377 | 1,573 | 12,812 | 20,419 | 22,973 | 52,817 | 7,077 | 0.46 | 8,952 |
| Charger | 44,156 | 79,134 | 9,086 | 9,620 | 19,344 | 29,675 | 12,750 | 29,585 | 2,976 | 0.56 | 6,741 |
| Red Bounty | 41,928 | 80,132 | 4,747 | 5,264 | 17,279 | 26,590 | 14,697 | 33,396 | 5,205 | 0.52 | 8,950 |
| Crista | 39,932 | 76,049 | 3,521 | 4,084 | 18,194 | 28,586 | 15,065 | 33,668 | 3,152 | 0.53 | 5,661 |
| Volante | 39,395 | 72,842 | 6,049 | 6,534 | 17,966 | 27,588 | 11,661 | 27,134 | 2,966 | 0.54 | 6,049 |
| XTM-8135 | 32,697 | 62,073 | 3,443 | 3,630 | 13,801 | 21,236 | 12,252 | 27,407 | 3,201 | 0.53 | 7,106 |
| XTM-8105 | 20,134 | 38,841 | 2,017 | 2,178 | 8,288 | 12,161 | 7,351 | 16,880 | 2,477 | 0.50 | 6,840 |
| R2 | 0.72 | 0.80 | 0.58 | 0.59 | 0.50 | 0.51 | 0.76 | 0.77 | 0.75 | 0.35 | 0.64 |
| CV | 17 | 15 | 55 | 75 | 25 | 27 | 19 | 18 | 27 | 9 | 23 |
| LSD | 12,588 | 18,940 | 3,443 | 5,864 | 7,227 | 10,853 | 4,655 | 10,423 | 1,938 | 0.065 | 2,972 |

Table 6.5
Yield and Quality of Selected Tomato Varieties

| Variety | Total marketable yield (lbs/ac) | Total marketable cull (boxes/ac) | Total marketable number (#/ac) | Extra large weight (lbs/ac) | Extra large number (#/ac) | Large weight (lbs/ac) | Number (#/ac) | Large weight (lbs/ac) | Medium number (#/ac) | Medium weight (lbs) | Individual fruit weight (lbs/ac) |
|-------------------------|---------------------------------|----------------------------------|--------------------------------|-----------------------------|---------------------------|-----------------------|---------------|-----------------------|----------------------|---------------------|----------------------------------|
| Red Defender | 26,722 | 432 | 61,952 | 10,802 | 17,303 | 9,052 | 21,296 | 6,868 | 23,353 | 0.43 | 6,695 |
| BHN 640 | 24,964 | 377 | 55,902 | 9,431 | 15,065 | 9,728 | 22,506 | 5,804 | 18,332 | 0.45 | 11,429 |
| Trinity | 24,613 | 527 | 50,336 | 13,164 | 20,328 | 7,229 | 16,214 | 4,220 | 13,794 | 0.49 | 8,495 |
| BHN 602 | 24,275 | 508 | 52,393 | 12,697 | 20,933 | 7,622 | 18,150 | 3,957 | 13,310 | 0.46 | 11,191 |
| Bella Rosa | 23,411 | 492 | 72,721 | 12,291 | 19,602 | 7,072 | 39,809 | 4,047 | 13,310 | 0.39 | 9,767 |
| Tribeca | 22,787 | 370 | 50,215 | 9,249 | 14,641 | 8,682 | 19,602 | 4,856 | 15,972 | 0.45 | 9,138 |
| Charger | 22,112 | 500 | 42,955 | 12,504 | 18,513 | 6,685 | 15,004 | 2,922 | 9,438 | 0.51 | 14,814 |
| Amelia | 21,958 | 363 | 49,126 | 9,079 | 15,004 | 7,789 | 17,545 | 5,090 | 16,577 | 0.45 | 8,977 |
| HM 8849 | 21,658 | 360 | 47,674 | 9,002 | 14,641 | 8,021 | 17,908 | 4,634 | 15,125 | 0.45 | 10,192 |
| Primo Red | 20,989 | 436 | 40,898 | 10,906 | 16,093 | 7,197 | 15,730 | 2,886 | 9,075 | 0.51 | 11,167 |
| XTM 7262 | 20,093 | 435 | 43,318 | 10,869 | 118,392 | 5,279 | 11,979 | 3,945 | 12,947 | 0.47 | 6,967 |
| Crista | 19,482 | 303 | 43,076 | 7,585 | 11,979 | 7,421 | 16,456 | 4,476 | 14,641 | 0.45 | 10,053 |
| Sunguard | 17,177 | 203 | 40,172 | 5,071 | 8,107 | 7,448 | 16,819 | 4,659 | 15,246 | 0.43 | 8,871 |
| Tribute | 16,896 | 250 | 39,446 | 6,262 | 10,285 | 6,694 | 15,609 | 3,941 | 13,552 | 0.43 | 15,188 |
| R ² | 0.50 | 0.68 | 0.40 | 0.70 | 0.60 | 0.50 | 0.40 | 0.60 | 0.62 | 0.40 | 0.80 |
| CV | 17 | 21 | 30 | 21 | 25 | 22 | 66 | 25 | 25 | 10 | 16 |
| LSD ($\alpha = 0.05$) | 5,499 | 122 | 22,011 | 3,077 | 5,748 | 2,400 | 18,191 | 1,622 | 5,275 | 0.06 | 2,390 |

Figure 1. Tomato Varieties Included in Tomato Trials at BARU and NAHRC



TOMATO



Several Varieties Show No Instances of Hollow Heart in Central Alabama Watermelon Trial

Joe Kemble, Edgar Vinson, and Jason Burkett

A seeded watermelon trial was conducted at the E.V. Smith Research Center in Shorter. Tennessee seeded watermelon varieties were direct seeded on April 30, 2013. Transplants were spaced ten feet between rows and five feet within a row. Drip irrigation and black plastic mulch were used.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county extension agent (see <http://www.aces.edu/counties/>).

Watermelons were harvested once on July 15 and were graded according to the Watermelon Grader's Guide (Circular ANR-681 from the Alabama Cooperative Extension System) and marketable yield was determined (Table 7.3). Representative watermelon samples were collected for each variety and were used to measure soluble solids (sweetness). These samples were not replicated. A hand-held digital refractometer was used to measure soluble solids. Watermelons with reading below 10 are not considered sweet.

'Stargazer' was included in the trial as a market standard. All varieties with the exception of 'Allsweet' performed as well as the market standard in total marketable yield. There were no differences found among varieties in total marketable number. Most varieties produced cull yield statistically similar to the market standard. The only differences found in this category were between 'Summer Flavor 860' and 'Maistro.' 'Summer Flavor 860' produced the highest cull yield and 'Maistro' produced the lowest cull yield. 'Summer Flavor 860' produced the largest individual fruit size. 'Montreal' and 'Sweet Amigo' produced fruit of a significantly lower weight than the market standard 'Stargazer' while individual fruit of 'Summer Flavor 880,' 'Summer Flavor 860' and 'Valentino ,' and 'Verde Grande' were significantly higher than the market standard. Soluble solids of all varieties were above the threshold of sweet (>10 percent). 'Allsweet ,' 'Sweet Amigo ,' 'Estrella' and 'Montreal' were the only melons in the trial that did not show hollow heart.

WATERMELON

Table 7.1

Ratings of 2013 Seeded and Seedless Watermelon Variety Trial

| Location | EVSRC |
|------------|-------|
| Fertility | 5 |
| Irrigation | 5 |
| Pests | 5 |
| Overall | 5 |

Note: See introduction for description of ratings scales

Table 7.2

Seed Source, Fruit Characteristics and Relative Earliness of Selected Seeded and Seedless Watermelon Varieties

| Variety | Type | Seed source | Fruit shape | Flesh color | Days to harvest | Disease claims ^a | Years evaluated |
|-------------------|--------|---------------|-------------|-------------|-----------------|------------------------------------|-------------------|
| Allsweet | OP, AS | Seiger | Elongated | Red | 90 | ^{bd} Ant, FW | 12, 13 |
| Estrella | F1, AS | Seedway | Oblong | Red | 84 | Ant, FW | 12 |
| Fantasy | F1, AS | Sakata | Elongated | Red | 87 | ^b Ant, ^b FW | 13 |
| Maistro | F1, AS | Harris Moran | Oblong | Red | -- | ^b Ant, ^{ab} FW | 13 |
| Montreal | F1, AS | Nunhems | Blocky | Red | -- | ^b FW | 01, 02, 13 |
| Stargazer | F1, AS | Sieger | Elongated | Red | 85 | Ant, FW | 98-01, 03, 12, 13 |
| Summer Flavor 860 | F1, AS | Abbott & Cobb | Oblong | Red | -- | -- | 12, 13 |
| Summer Flavor 880 | F1, AS | Abbott & Cobb | Elongated | Red | -- | -- | 12, 12 |
| Sweet Amigo | F1, AS | Sakata | Elongated | Red | 85 | ^b FW | 13 |
| Valentino | F1, AS | Sakata | Oblong | Red | 87 | ^b Ant, ^b FW | 13 |
| Verde Grande | F1 P | Sakata | Oblong | Red | 85 | -- | 13 |

^aRace 0; ^bRace 1 ; ^cRace 2; '- -' = not available from seed catalogues; Type: F1 = Hybrid; OP = Open Pollinated AS= Allsweet; CS = Crimson Sweet P=Peacock; Ant = Anthracnose; FW = Fusarium Wilt; R=Red

WATERMELON

Table 7.3

Yield and Quality of Selected Seeded Watermelon Varieties

| Variety | Total Marketable Yield (lbs/ac) | Total Marketable Number (#/ac) | Cull (lbs/ac) | Individual Fruit Weight (lbs) | Soluble Solids (%) | Hollow Heart (in) |
|-------------------|---------------------------------|--------------------------------|---------------|-------------------------------|--------------------|-------------------|
| Summer Flavor 880 | 88,585 | 4,719 | 6,828 | 18.9 | 12.2 | 6.1 |
| Montreal | 82,875 | 5,808 | 4,765 | 14.3 | 10.8 | . |
| Stargazer | 81,577 | 5,082 | 7,108 | 16.1 | 12.4 | 5.6 |
| Summer Flavor 860 | 80,858 | 4,265 | 13,576 | 19.0 | 10.9 | 4.0 |
| Maistros | 77,544 | 5,082 | 2,955 | 15.4 | 12.1 | 5.0 |
| Valentino | 74,030 | 4,175 | 10,721 | 17.7 | 12.4 | 2.5 |
| Estrella | 66,823 | 4,175 | 6,575 | 16.0 | 12.1 | . |
| Verde Grande | 63,569 | 3,358 | 5,670 | 18.9 | 11.9 | 6.0 |
| Sweet Amigo | 62,211 | 4,356 | 5,590 | 14.3 | 11.6 | . |
| Fantasy | 60,095 | 3,630 | 7,906 | 16.6 | 12.4 | 5.9 |
| Allsweet | 53,147 | 3,449 | 6,549 | 15.6 | 11.4 | . |
| R ² | 0.43 | 0.51 | 0.40 | 0.50 | 0.40 | 0.30 |
| CV | 20 | 19 | 62 | 12 | 7 | 60 |
| LSD | 20,603 | 2,579 | 6,787 | 1.3 | 1.2 | 1.8 |

Growing 87.5% *V. vinifera* Grapes Within the High Disease Pressure Southeastern Region

Elina Coneva, Edgar Vinson and Jim Pitts

Although Pierce's Disease (PD) is a serious threat to the cultivation of grapes in the United States, especially in warmer southern regions, the U.C. Davis grape breeding program has recently developed new generations with over 87 percent *V. vinifera* that are resistant to the devastating PD. These new accessions are expected to produce high quality yield even in regions with high PD pressure, such as the southeastern U.S., where the *V. vinifera* production was previously not a viable option. The objective of our study is to assess the feasibility of growing PD resistant *V. vinifera* selections in Alabama and the southeast.

An experimental vineyard was established at the Chilton Research and Extension Center (CREC), Alabama, in 2010 consisting of three recently developed PD resistant 87.5 percent *V. vinifera* selections, namely 502-10, 502-01, and 501-12. The grapevines were trained to a vertical shoot positioning (VSP) system and supplemental drip irrigation was provided to facilitate plant establishment. The grape selections grew well in 2011. Fruiting clusters were removed from the plants in an attempt to provide optimal conditions for the growth and development of the vine root system and enhance the vine vigor and longevity. In 2012 all three *V. vinifera* selections produced their first commercial crop and a number of measurements were collected to evaluate the vegetative growth, productivity, and fruit quality of these newly introduced grapevines. Data collection continued in 2013.

To assess the pruning weight and aid in determining the optimal crop load, all of the dormant-pruned one-year-old wood was collected and weighed. Our results shown in Table 1 suggest that in both seasons selection 502-10 had the lowest pruning weight, while 501-12 produced the largest pruning weight. The greater pruning weight indicates the more vigorously growing vine.

Our results indicated statistical differences in total yield per vine with the late maturing 501-12 producing the greatest crop of 5.8 and 8.1 kilogram per vine in 2012 and 2013 respectively (Figure 1). Bird feeding was accountable for about 70 percent crop loss for the early ripening selection 502-10 in 2012.

Table 8.1.
Trunk Cross Sectional area and pruning weight of PD Resistant 87.5% V.vinifera Selections, CREC, 2012-2013

| Selection | TCSA (cm ²) | Pruning Weight (kg) |
|--------------|----------------------------|------------------------|
| | | |
| 2012 | | |
| 502-10 | 4.7 | 0.64 b |
| 502-01 | 4.3 | 0.95 a |
| 501-12 | 4 | 0.96 a |
| Significance | n.s. | *** |
| 2013 | | |
| 502-10 | 9.7 | 2.1 |
| 502-01 | 9.9 | 2.3 |
| 501-12 | 8.2 | 2.4 |
| Significance | * | n.s. |

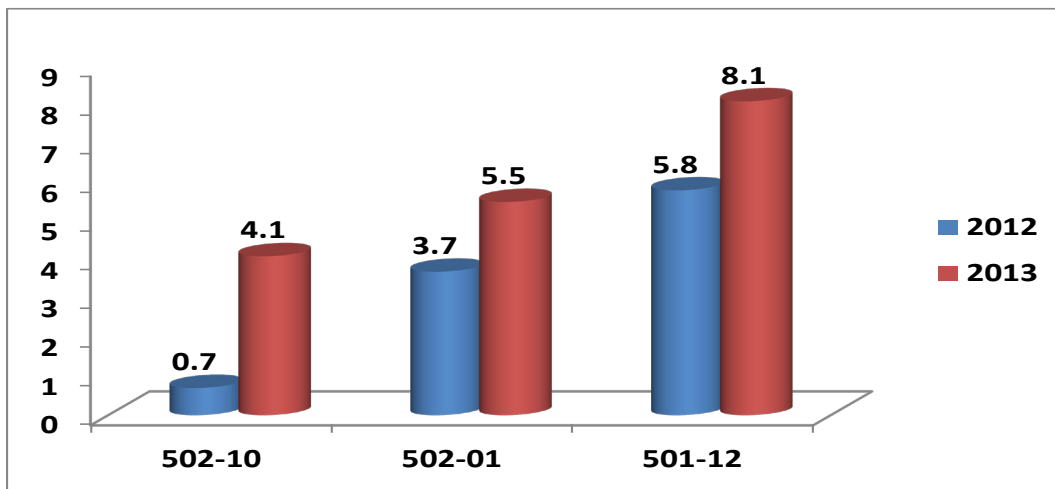


Figure 1. Total yield per vine of PD resistant 87.5% *V. vinifera* selections grown at the CREC, Clanton, AL, 2012-2013.

During both years of our study, late season selection 501-12 produced the highest number of clusters per vine, while the early ripening selection 502-10 had fewer clusters per vine (Table 2). Mid-season selection 502-01 had the largest clusters in 2012, while the early ripening 502-10 produced the largest clusters in 2013.



Figure 2. Fruit clusters of PD resistant late season 87.5% *V. vinifera* selection 501-12, grown at the Chilton REC, Clanton, October 8, 2013.

The preliminary results on the performance of the newly developed PD resistant *V. vinifera* selections in Alabama are very encouraging. Knowledge gained through this project will aid in development of best management practices and production system recommendations, vital for the establishment of a sustainable grape industry in Alabama and the Southeast.

Seed Sources

Supporting Seed Companies

Nunhems

1200 Anderson Corner Rd.
Parma, ID 83660
(800) 733-9505
rbeckham@rose.net

Harris Moran Seed Co.

Michael Hannah
P.O. Box 4938
Modesto, CA 95352
(828) 421-6618
Fax: (828) 246-0925
m.hannah@hmclause.com

Sakata Seed America

Jim Stewart
18095 Serene Drive
Morgan Hills, CA 95037
(408) 778-7758
jayjones@sakata.com

Other Seed Sources

Harris Seeds

355 Paul Rd.
Rochester, NY 14624
(800) 544-7938
growers@harriseseeds.com

Johnny's Select Seeds

955 Benton Ave
Winslow, ME 04901
(207) 861-3900
info@johnnyseeds.com

Reimer Seeds

P.O. Box 206
Saint Leonard, MD 20685
Fax: (866) 716-4748
mail@reimerseeds.com

Seedway

1225 Zeager Rd
Elizabethtown, PA 17022
(717) 367-1075
info@seedway.com

Seminis Vegetable Seeds

2700 Camino Del Sol
Oxnard, CA 93030
(855) 733-3834
seminis.deruiter
@monsanto.com

Siegers Seed Company

13031 Reflections Drive
Holland, MI 49424
(616) 786-4999

Syngenta

Woody Speir
P.O. Box 18300
Greensboro, NC 27419
(229) 894-5398
woody.speir@syngenta.com