Vegetable

Variety Trials
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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 interpret results in this report.

Open-Pollinated or Hybrid Varieties

In general, hybrid varieties (also referred to as F_1 varieties) are earlier and produce a more uniform crop. They have improved disease and pest or virus tolerance/resistance. F_1 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 hybrids 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 are 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 okra trial presented in this issue conducted at the North Alabama Horticulture Research Center in Cullman, Ala., 'Clemson Spineless' yielded 16,339 pounds per acre, while 'Jambalaya' and 'Nimral' yielded 11,370 and 9,688 pounds per acre, respectively. Since there was less than a 5,436 difference between 'Clemson Spineless' and 'Jambalaya', there was no statistical difference between these two varieties. However, the yield difference between 'Clemson Spineless' and 'Nimral' was 6,651, indicating that there was 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

AU vegetable 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 Trials on the Web – For more vegetable variety information be sure to visit our web page at:

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

Our website will provide such useful information as description of variety types, a ratings system and information about participating seed companies.

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	Malbis 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	Wynnville 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

Okra Trials Continue for a Second Season

Joe Kemble, Edgar Vinson and Arnold Caylor

An okra variety trial was conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Ala. (Tables 3, 4 and 5) and (Figure 1).

On June 5, 2014, okra was direct-seeded onto 20-foot-long experimental plots. Okra was spaced 18 inches apart within a row and rows were spaced on 8-foot centers. White plastic mulch and drip irrigation were used. Okra varieties were replicated four times and arranged in a randomized complete block experimental design.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. For current recommendations for pest and weed management in okra production in Alabama, consult the latest addition of the Southeastern U.S. Vegetable Crops handbook (www.thepacker.com/thegrower). For a copy of the handbook and further information, consult your local county Extension agent (www.aces.edu/counties).

Pods were harvested when they reached a length of approximately 4-6 inches (Table 4). Okra was harvested twice per week between August 7 and September 20. A total of 17 harvests were conducted.

The okra variety ‘Jambalaya’ performed as well as the market standard ‘Clemson Spineless’ along with the ‘Clemson Spineless,’ ‘Clemson Spineless 99.’ In last year’s trial, ‘Clemson Spineless’ performed better than ‘Clemson Spineless 99.’ ‘Nimral,’ ‘Cowhorn 44’ and its variant ‘Cowhorn 22’ produced yields that were similar to both ‘Clemson Spineless 99’ and ‘Jambalaya.’ (Figure 1)

There is still much demand for okra in the Southeast. Recently, more varieties have been added to the market. More okra trials that include some of these newer varieties should be conducted to determine the best adapted to the state of Alabama and the region.

Table 3

Ratings of 2013 Okra Variety Trial

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

Note: See introduction for description of ratings scales

Table 4

Seed Source, Earliness, and Descriptions of Selected Okra Varieties

Variety	Type	Seed Source	Days to Harvest	Pod Color	Plant Height (ft.)
Clemson Spineless	OP	Willhite	55	Green	4
Clemson Spineless 99	OP	Wax Seeds	--	Green	4
Cowhorn 22	OP	Wax Seeds	60	Green	4-6
Cowhorn 44	OP	Wax Seeds	--	Green	7-8
Jambalaya	F1	Johnny's	50	Green	4-5

Table 5

Total Marketable Yield of Selected Okra Varieties

Variety	Total Marketable Yield (lbs/acre)
Clemson Spineless	16,339
Clemson Spineless 99	13,832
Jambalaya	11,370
Nimral	9,688
Cowhorn 44	8,848
Cowhorn 22	8,605
R^2	0.70
CV	30
LSD	5,436

OKRA

Figure 1 - Selected okra varieties grown at the North Alabama Horticulture Research Center.

Most Pumpkin Trial Entries Produced Fruit Within Weight Class

Joe Kemble, Edgar Vinson and Arnold Caylor

A pumpkin variety trial was conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, AL (Tables 6, 7 and 8) and (Figure 2).

Nine pumpkin varieties were direct-seeded on July 9, 2014. Experimental plots were 50 feet long and placed on 10-foot centers. Plots were covered in white plastic mulch and drip irrigation was installed.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. For current recommendations for pest and weed management in pumpkin production in Alabama, consult the latest addition of the Southeastern U.S. Vegetable Crops handbook (www.thepacker.com/thegrower). For a copy of the handbook and further information, consult your local county Extension agent (www.aces.edu/counties).

Pumpkins were harvested on October 11 at full-color stage and were graded as marketable. Non-marketable fruit data were not included (Table 8) (Figure 2). 'Magic Lantern' was used as the market standard in this trial. There were no significant differences found in marketable yields. There were few differences in total marketable fruit number. All varieties were statistically similar to the 'Magic Lantern.' Marketable number of 'Apollo' was significantly higher than those of varieties that had the three lowest marketable numbers, 'Solid Gold,' 'Aladdin,' and 'Captain Jack.' Pumpkin weight classes ranged from 10-50 pounds. Most varieties in this trial produced fruit that were within or in excess of their weight classes. Only 'Captain Jack' and 'Aladdin' had individual fruit weight below their weight class 28.4 and 22.4 pounds respectively. 'Captain Jack' produced the highest individual fruit weight. This was significantly higher than 'Apollo,' 'Sorcerer,' 'Magic Lantern,' and 'Lumina.' '20 Karat Gold' and 'Aladdin,' which produced identical individual fruit weights, were only significantly higher than 'Lumina' in this category.

Table 6

Ratings of 2014 Pumpkin Variety Trial

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

Note: See introduction for description of ratings scales

Table 7

Seed Source, Earliness, and Weight Class of Selected Pumpkin Varieties

Variety	Type	Seed Source	Maturity (days)	Fruit Weight (pounds)	Disease Claims
Aladdin	F1	Harris	115	25-35	PM (IR)
Apollo	F1	Harris	105	18-30	PM (IR)
Diablo	F1	Sakata	100	16-22	-
Captain Jack	F1	Sakata	105	35-50	-
Lumina	F1	Harris	100	10-15	PM
Magic Lantern	F1	Harris	115	16-24	PM (IR)
Solid Gold	F1	Rupp	100	20-25	-
Sorcerer	F1	Harris	115	15-25	-
20 Karat Gold	F1	Rupp	100	18-22	-

F_1=Hybrid; OP=Open Pollinated; IR = Intermediate Resistance; PM = Powdery Mildew; - = Not Found. (Info from seed catalogs.)

Table 8

Yield of Selected Pumpkin Varieties

Variety	Total Marketable Yield (lbs/acre)	Marketable Number (#/acre)	Individual Fruit Wt. (lbs)
Apollo	78,071	4,046	19.6
Captain Jack	71,238	2,204	28.4
Sorcerer	66,158	3,654	18.0
20 Karat Gold	56,988	2,480	22.4
Diablo	56,548	2,741	21.0
Solid Gold	54,166	2,393	21.8
Lumina	51,304	3,263	14.0
Aladdin	49,343	2,262	22.4
Magic Lantern	44,193	3,002	15.0
R^2	0.43	0.46	0.70
CV	44	37	20
LSD	37,422	1,570	7.7

Figure 2 - Selected pumpkin varieties grown at the North Alabama Horticulture Research Center.

Hybrid Bunch Grape Cultivars Evaluation Trial in Alabama

Elina Coneva, Edgar Vinson and Joyce Ducar

An experimental vineyard was established at the Sand Mountain Research and Extension Center (SMREC), Crossville, Ala., in 2008 to compare the performance and determine the best suited Pierce's Disease (PD) tolerant American and French-American hybrid bunch grape cultivars for commercial production in Alabama conditions. Ten cultivars were included in our test: 'Black Spanish,' 'Blanc du Bois,' 'Champanel,' 'Conquistador,' 'Cynthiana,' 'Favorite,' 'Lake Emerald,' 'Seyval Blanc,' 'Seyval Blanc' grafted on C3309, 'Stover,' and 'Villard Blanc.'

The vineyard experimental design is a RCBD with four replications and four vines per plot. To assess cultivar vigor and development, measurements are collected on vine pruning weight, trunk cross sectional area, leaf area, and chlorophyll rates. Cultivar phenology is studied by recording the early shoot development, percent open flowers, and veraison progression throughout the growing season. Cultivar productivity and fruit quality are determined based on total yield per vine, mean cluster and berry weight and soluble solids content.

Our 2011-2012 results indicate that based on pruning weight, 'Champanel' had the most vigorous vegetative growth while 'Seyval Blanc' had the weakest (Figure 3). 'Stover' had the earliest shoot development, while 'Champanel' and 'Cynthiana' developed late in the season. 'Stover' and 'Seyval Blanc' flowered early, while 'Cynthiana' and 'Lake Emerald' bloomed late. 'Seyval Blanc' and 'Seyval Blanc'/3309C had an early fruit maturity, while 'Lake Emerald' matured late (data not shown). 'Villard Blanc' produced the largest yield of 12.7 kg/vine (Figure 4) and had the largest cluster weight of 287.1 g (Figure 5). 'Champanel' produced the largest berries of 4.8 g (Table 9). 'Cynthiana' and 'Lake Emerald' had the highest soluble solids content with 19.8 percent and 18.8 percent, respectively, while 'Champanel' had a SSC of 13.1 percent at harvest (data not shown). 'Blanc du Bois' and 'Stover' had the highest pH of 3.58 and 3.49, respectively.

There were no significant differences in titratable acidity among cultivars tested which ranged from 0.56 to 1.36 g/100 ml (data not shown). Based on our two-year observations, 'Cynthiana' (Figure 6A), 'Villard Blanc' (Figure 6B), and 'Black Spanish' were the best performing cultivars combining vigorous vegetative growth, high yields, and good fruit quality at the SMREC during the two years of studies. Research will continue and multiple season data is going to provide more complete evaluation on suitability of growing hybrid bunch grape cultivars in Alabama and the Southeast.

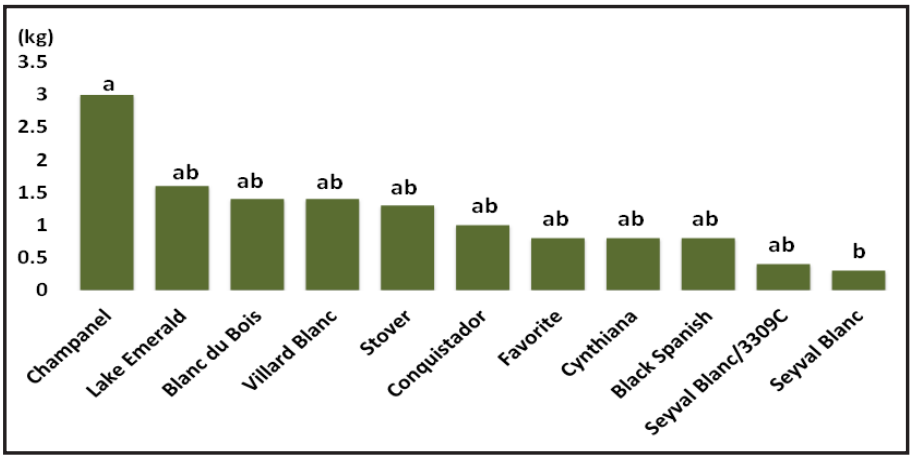

Figure 3 - Pruning weight of hybrid bunch grape cultivars grown at the SMREC, 2011-2012.

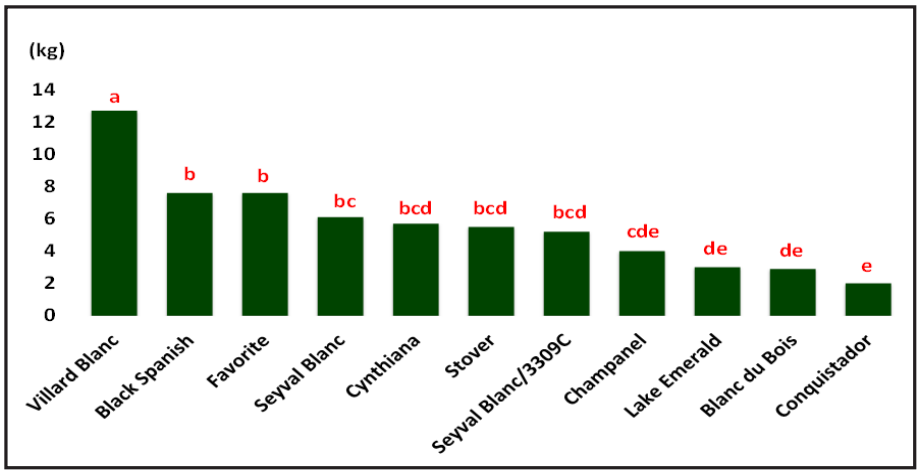

Figure 4 - Yield of hybrid bunch grape cultivars grown at the SMREC, 2011-2012.

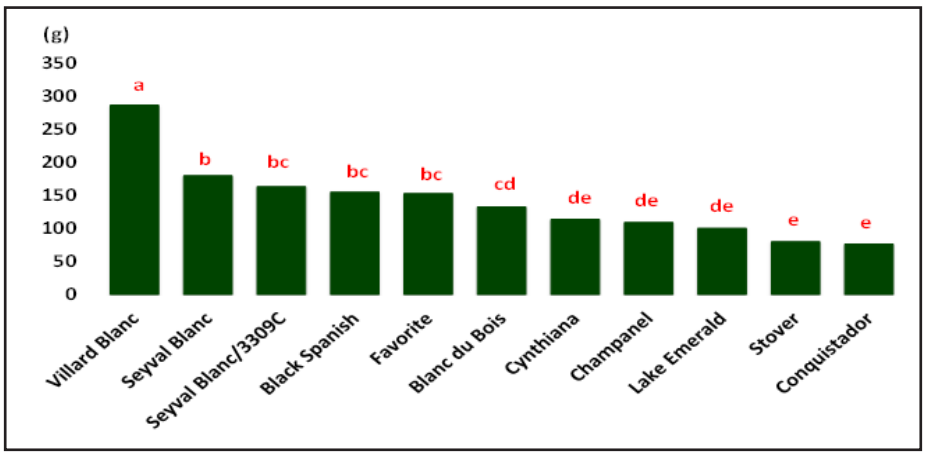

Figure 5 - Cluster weight of hybrid bunch grape cultivars grown at the SMREC, 2011-2012.

Note: *Means in each column (Figures 3-5) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test (P≤0.05).*

Table 9

Mean berry weight of hybrid bunch cultivars grown at the SMREC, 2011-2012

Cultivar	Mean Berry Weight (g)
Champanel	4.8 a
Blanc du Bois	3.6 b
Villard Blanc	3.1 c
Stover	2.5 d
Seyval Blanc/3309C	2.0 e
Seyval Blanc	1.9 ef
Black Spanish	1.8 fg
Favorite	1.7 g
Lake Emerald	1.6 g
Cynthiana	1.5 g
Conquistador	1.5 g

Note: *Means in each column (Table 9) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test (P≤0.05).*

Figure 6A

Figure 6B

Figure 6A/6B - 'Cynthiana' produced vigorous and productive vines with an excellent fruit quality (A); 'Villard Blanc' had excellent vigor and productivity with a good fruit quality (B).

Seedless Table Grapes and Advanced Selections from the University of Arkansas

Elina Coneva, Edgar Vinson and Arnold Caylor

The University of Arkansas breeding program began in 1964 with a focus on the development of table grape cultivars with major characteristics such as seedlessness, crisp texture, and edible skin. Released from the program were the seedless table grape cultivars 'Venus' (1977), 'Reliance' (1983), 'Mars' (1985), 'Saturn' (1989), 'Jupiter' (1999) and 'Neptune' (1999). In 2012, four new seedless table grape selections were released including 'Faith,' 'Hope,' 'Joy,' and 'Gratitude' cultivars. Four released seedless table grape cultivars and eight advanced selections developed by the breeding program, and two hybrid bunch grape cultivars included as controls were planted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Ala., in 2008 to evaluate the best suited table and processing grape selections in Alabama environment.

Vegetative growth, cropping potential and fruit quality of the tested cultivars and selections were evaluated during 2011 and 2012 seasons. Our results indicate that 'Joy' (selection 'A2494') had the most vigorous vegetative growth based on pruning weight per vine, while 'A2786' had the least growth (Figure 7). 'Stover' had the earliest shoot and flower bud development in both seasons (Figure 8). Selection 'A2359' had 3.5 fruiting clusters per shoot. That was the highest fruiting cluster number among all the cultivars and selections (data not shown). 'Mars' and 'Faith' (selection 'A2412') were early ripening and early maturing, while 'Conquistador' started to develop late in the season.

The highest yielding selections and cultivars recorded were 'A2574,' 'A2359,' 'Neptune,' 'A2245,' and 'Conquistador.' These produced 12.0 kg/vine or higher in both experimental years (Table 10). Seedless table grape cultivars 'Gratitude' and 'Neptune' had the largest cluster size of 490 g. 'Gratitude' (selection 'A2505') and 'A2817' produced the largest berries of 4.9 g. 'A2632' had the highest soluble solids content, while 'Conquistador' had the lowest sugar concentration at harvest (Table 11). Fruit pH level of all cultivars and selections ranged from 3.28 to 3.95. 'A2817' had the highest number of seed traces, 3.2, while 'Gratitude' had the lowest number of seed traces (data not shown).

Our preliminary results suggest 'Neptune' and 'Gratitude' were the best performing seedless table grape cultivars in North Alabama based on their vegetative growth, cropping potential and fruit quality. 'Joy' and 'Faith' were the best suited black fruited seedless table grapes in our experimental vineyard. Studies will continue to assess the vines in multiple seasons and gather information on their disease resistance, with a special focus on Pierce's disease resistance.

Neptune

Joy

Gratitude

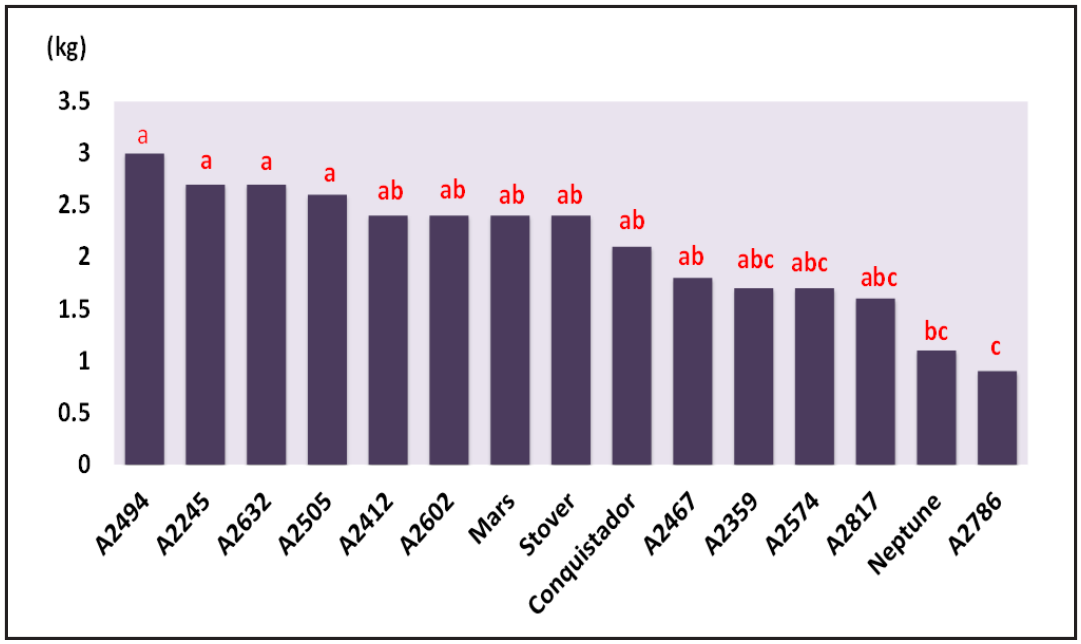

Figure 7 - Pruning weight of selected seedless table grapes and advances selections grown at the NAHRC, Cullman, Ala. 2011-2012.

Note: *Means in each column (Figure 7) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test (P≤0.05).*

Table 10

Comparison of yield per vine, cluster weight and berry weight of newly released grape cultivars and advanced grape selections grown at the NAHRC, Cullman, Ala., in 2011 and 2012 combined[z].

Cultivar	Yield (kg/vine)	Cluster Weight (g)	Berry Weight (g)
A2574	13.7[y]a[x]	250.9 bc	1.8 ef
A2359	13.6 a	177.4 cd	2.3 de
Neptune	12.9 a	492.0 a	3.5 b
A2245	12.8 a	251.4 bc	2.4 cde
Conquistador	12.0 a	168.3 cd	2.9 bc
A2817	9.7 ab	360.9 b	4.9 a
A2467	9.1 ab	215.7 c	1.4 f
Mars	6.3 bc	235.1 c	3.3 b
Joy	6.2 bc	205.4 cd	2.5 cd
Faith	6.0 bc	217.1 c	3.2 b
Gratitude	5.3 bc	495.6 a	4.9 a
Stover	4.3 c	69.8 d	2.4 cd
A2602	2.7 c	157.2 cd	2.3 de
A2786	1.7 c	189.0 cd	3.6 b
A2632	1.5 c	74.5 d	2.1 de

[x]Differences among cultivars were determined using the Simulate test at α = 0.05.

[y]All data presented are least squares means.

[z]Year was analyzed as a random variable.

Note: *Means in each column (Table 10) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test (P≤0.05).*

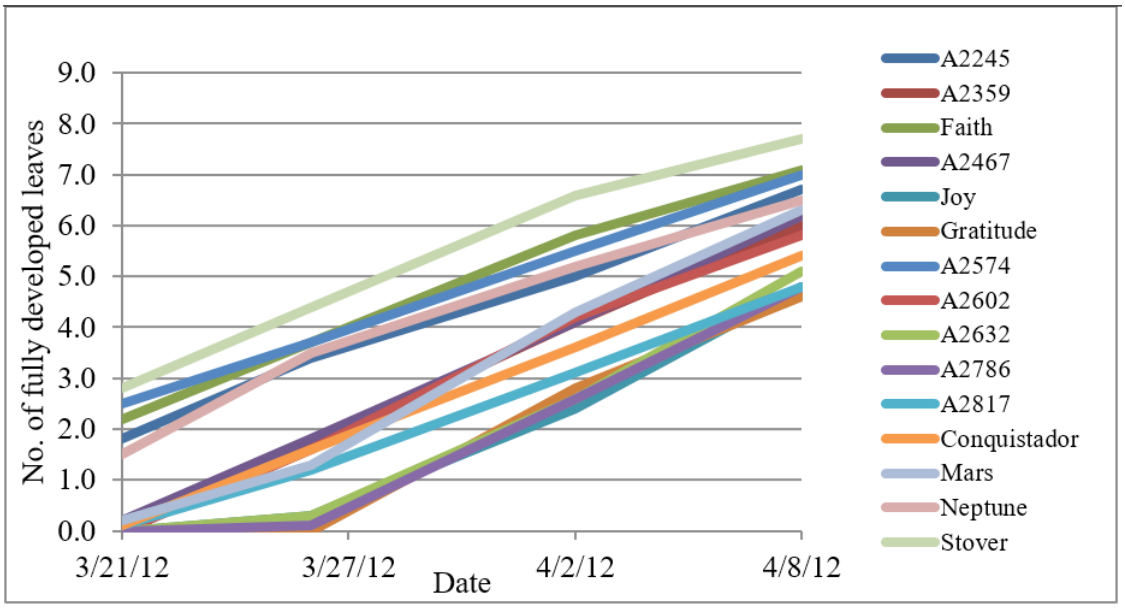

Figure 8 - Comparison of early season shoot development of newly released grape cultivars and advanced grape selections grown at the NAHRC, Cullman, Ala., in 2012.

Table 11

Comparison of fruit pH, soluble solids content (SSC), and titratable acidity (TA) of newly released grape cultivars and advanced grape selections grown at the NAHRC, Cullman, Ala., in 2011 and 2012 combined[z].

Cultivar	pH	SSC (%)	TA (g/100 ml)
A2632	3.82	21.0[y]a[x]	0.78 b
Stover	3.81	18.1 ab	0.52 b
Faith	3.95	17.5 abc	0.62 b
Joy	3.54	16.7 abcd	0.70 b
A2574	3.56	16.7 bcd	0.66 b
A2602	3.83	15.8 cd	0.59 b
A2245	3.62	15.4 cd	0.66 b
A2359	3.55	15.2 cd	0.55 b
Gratitude	3.57	14.7 cde	0.70 b
Neptune	3.35	14.7 de	0.79 b
A2786	3.54	14.6 de	0.65 b
Mars	3.34	14.6 de	0.75 b
A2817	3.44	14.1 de	0.55 b
A2467	3.28	13.4 de	1.34 a
Conquistador	3.65	13.0 e	0.66 b

[x]Differences among cultivars were determined using the Simulate test at α = 0.05.

[y]All data presented are least squares means.

[z]Year was analyzed as a random variable.

Note: *Means in each column (Table 11) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test (P≤0.05).*

Peach Rootstock Cultivar Evaluation, 2012

Elina Coneva, Edgar Vinson and Jim Pitts

Studies continue to evaluate the influence of 14 newly developed or imported peach rootstocks on peach tree survivability, disease resistance, crop load, fruit quality and vegetative growth. The experimental block located at the Chilton Research and Extension Center (CREC) near Clanton was planted in 2009. The following peach rootstocks are being investigated: 'Guardian' and 'Lovell' (serve as 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®1VVA-1' and 'Controller 5' (size controlling rootstocks). 'Redhaven' was used as a scion cultivar. Experimental design is a completely randomized block with eight single-tree replications. Data on peach tree vegetative growth — including trunk circumference, tree height and width, number of suckers per trunk and tree survivability — were collected for a fourth consecutive season.

Trees on 'Guardian' and 'Krymsk®86' were the most vigorously growing in 2012, based on their trunk cross sectional area (Table 12). For the fourth consecutive season, 'HBOK 10' and 'HBOK 32' demonstrated the least tree vigor of 30.8 and 33.9 cm^2 TCSA respectively. 'Krymsk®1VVA-1' also had a weak trunk growth of 37.7 cm^2.

Trees on 'Emparyan®2' flowered about two days earlier than trees grafted on other rootstocks in the trial, based on our records of the Julian date of 90 percent open flowers (Table 12). Julian day of 10 percent ripe fruit varied between 156.9 for 'Viking' to 160.5 for 'Mirobac' (Table 12).

The greatest total yield of 41.2 kg per tree was recorded for trees grafted on 'Guardian' rootstock (Table 12). Trees on 'Atlas,' 'BH-5,' 'Lovell,' and 'Krymsk®86' produced over 30 kg per tree, while 'Krymsk®1VVA-1' produced the lowest yield of 4.9 kg. 'Guardian,' 'Viking,' 'Mirobac,' and 'KV010-123' had a high number of fruit sized less than 2.25 inches. Mean fruit weight varied between 177.1 g for trees on 'BH-5' and 152.3 g for 'Krymsk®86.' No differences were found among the fruit produced from the 14 tested rootstocks in terms of soluble solids content (Brix %) and fruit firmness (Table 12).

In addition to the four previously dead trees — one grafted on 'HBOK 32,' two trees grafted on 'Krymsk@1VVA-1,' and one on 'Emparyan@2' — we lost one more 'Emperian®2,' three trees grafted on 'Krymsk®1VVA-1' and seven trees grafted on 'Mirobac' (Table 13). It was established that the peach tree short life (PTSL) was responsible for the death of 'Mirobac' grafted trees. Once again trees on 'Guardian' were found to have the highest number of suckers (3.6 on

average) in their fourth growing season. 'BH-5' and 'Lovell' were also found to produce a few root suckers.

Based on tree height and width, trees grafted on 'Guardian,' 'Mirobac,' 'BH-5,' 'Viking,' and 'Atlas' were found to be vigorously growing, while 'Krymsk@1VVA-1' had the least canopy growth in 2012 (Table 13).

Table 12

Field performance of 'Redhaven' peach on 14 NC-140 rootstocks near Clanton, Ala., 2012

Rootstock Cultivar	TCSA (cm^2)	Julian Day of 90% Open Flowers	Julian Day of 10% Ripe Fruit	Total Yield (kg)	No. of Fruit Less Than 2.25"	Mean Fruit Weight (g)	Brix (%)	Firmness
Controller 5 (K146-46)	39.7 cd	77.1 a	159.5 abcd	18.9 e	10.6 bcde	156.9 def	10.9	1.7
Mirobac	80.7 ab	77.3 a	160.5 a	20.8 cde	20.5 a	173.0 ab	11.2	2.8
HBOK 10	30.8 d	77.4 a	159.3 abcde	18.2 e	9.1 cde	156.7 def	11.3	2.0
BH - 5	79.8 ab	77.1 a	157.0 fg	36.5 ab	.1 a	177.1 a	10.6	2.0
Guardian	93.6 a	77.1 a	158.4 defg	41.2 a	23.0 a	158.5 cde	10.7	1.9
Lovell	68.9 abc	77.0 a	159.3 abcde	31.1 abc	17.1 abc	153.9 ef	10.9	1.5
HBOK 32	33.9 d	77.0 a	160.1 abc	19.3 e	8.1 de	162.7 bcdef	10.1	2.0
Krymsk®1VVA-1	37.7 d	77.0 a	160.3 ab	4.9 f	2.2 e	168.0 abcd	11.2	1.8
Empyrean®2 (Penta)	59.8 bcd	74.8 b	157.8 efg	20.4 de	8.5 cde	165.2 abcdef	10.6	1.6
Viking	77.4 ab	77.1 a	156.9 g	27.1 bcde	22.3 a	165.5 abcde	11.0	1.5
Atlas	69.9 abc	77.1 a	158.6 cde	34.8 ab	18.5 ab	171.5 abc	10.7	2.1
Krymsk®86 (Kuban86)	92.9 a	76.9 a	158.5 def	30.5 bcd	15.4 abcd	152.3 f	10.8	1.6
KV010-123	52.6 bcd	76.9 a	158.4 defg	26.4 bcde	20.0 a	135.5 ef	10.7	1.7
KV010-127	58.2 bcd	76.9 a	158.8 bcde	22.7 cde	16.0 abcd	156.0 def	10.9	1.3
Signifigance	***	***	***	***	***	***	n.s.	n.s.
P-value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.2363	0.4676

Note: *Means in each column (Table 12) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test ($P \leq 0.05$).*

Table 13

Field performance of 'Redhaven' peach on 14 NC-140 rootstocks near Clanton, Ala., 2012

Rootstock Cultivar	Survival	No. of Root Suckers	Width 1 (cm)	Width 2 (cm)	Height (cm)
Controller 5 (K146-46)	1.0 a	0.0 b	395.5 c	401.9 def	253.0 bcde
Mirobac	0.3 c	0.0 b	512.1 ab	531.9 a	298.8 ab
HBOK 10	1.0 a	0.0 b	391.3 cd	361.1 f	240.8 cde
BH - 5	1.0 a	0.5 b	557.8 a	538.3 a	313.2 a
Guardian	1.0 a	3.6 a	517.0 ab	529.9 a	292.2 ab
Lovell	1.0 a	0.4 b	516.7 ab	525.0 a	279.3 abcd
HBOK 32	0.8 ab	0.0 b	406.2 c	392.3 ef	236.2 de
Krymsk®1VVA-1	0.5 bc	0.0 b	323.9 d	371.9 f	211.9 e
Empyrean®2 (Penta)	0.6 b	0.0 b	490.1 ab	456.6 bc	270.0 abcd
Viking	1.0 a	0.1 b	517.8 ab	507.9 ab	316.1 a
Atlas	1.0 a	0.0 b	548.3 a	510.5 ab	285.4 abc
Krymsk®86 (Kuban86)	1.0 a	0.6 b	459.9 bc	449.9 cd	270.1 abcd
KV010-123	1.0 a	0.1 b	495.3 ab	462.2 bc	278.5 abcd
KV010-127	1.0 a	0.6 b	457.2 bc	446.2 cde	278.1 abcd
Signifigance	***	***	***	***	***
P-value	<.0001	0.0049	<.0001	<.0001	0.0018

Note: *Means in each column (Table 13) that are followed by the same letter are not significantly different according Fisher's least significant difference (LSD) test (P≤0.05).*

Results of The 2014 National Sweetpotato Collaborators' Trial

Joe Kemble, Edgar Vinson and Arnold Caylor

National Sweetpotato Collaborators' trials were conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Ala. (Table 14).

Sweetpotato roots from selected commercial varieties and breeding lines were planted in a heated bed at NAHRC on April 9 for slip production. Slips 8-12 inches long of two sweetpotato lines were planted on June 30. Varieties were replicated four times. Plots contained two rows that were 25-feet long and 3.5- feet wide. Within-row spacing was 1 foot.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory and consisted of (per acre) 45 lbs N, 0 lbs P_2O_5 and 180 lbs K_2O total. Consult your local county extension agent for current recommendations for pest and weed control in vegetable production in Alabama.

Sweetpotatoes were harvested on October 30. Roots were graded as US #1 (roots 2-3.5 inches in diameter, 3-9 inches in length, well-shaped and free of defects), canner (roots 1-2 inches in diameter, 2-7 inches in length), jumbo (roots that exceed the diameter, length, and weight requirements of the US #1 grade, but that are of marketable quality), or cull (roots at least one inch in diameter but so misshapen or unattractive that they could not be classified as marketable roots). Marketable yield was calculated by adding the yields of the US #1, canner, and jumbo grades. Percent US #1 was calculated by dividing the yield of the US #1 grade by the marketable yield (Table 15).

In the US #1 category, all varieties were similar to 'Beauregard (B63).' The only significant difference was between '6-153' and 'LA04-175.' In total yield, '6-153' produced yields that were higher than all other varieties. 'Beauregard (B63)' was similar to 'Orleans' but significantly higher than 'LA07-146,' 'Covington' and 'LA04-175.' There were no differences found among cultivars in the cull category.

Table 14

Ratings Of The 2014 National Sweetpotato Collaborators' Trial

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

Note: See introduction for description of ratings scales

Table 15

Total Production and Grade Distribution of Sweetpotato Selections (50-lbs bu/a)

Selection	US #1 (bu/a)	Canner (bu/a)	Jumbo (bu/a)	Total Marketable (bu/a)	Percent US #1	Cull (bu/a)
6-153	583	175	23	781	75	52
LA05-111	445	145	65	654	68	39
Beauregard (B63)	**417**	**150**	**61**	**628**	**67**	**37**
Covington	366	123	9	414	74	56
LA07-146	332	135	35	423	68	66
LA04-175	177	96	**	273	64	26
R^2	0.84	0.41	0.85	0.25	0.31	0.68
CV	13	15	27	20	10	58
LSD	199	52	27	90	10	41

APPENDIX

Seed Sources
(Alabama Trials)

Seeds Donated by:

Wax Seeds
121 Front Street North
Amory, MS 38821
Ph: (662) 256-3511

Other Seed Companies:

Johnny's Select Seeds
To Order: (207) 437-4395
955 Benton Ave
Winslow, ME 04901
Tech. Rep: Steve Woodward
Ph: (207) 861-3900
info@johnnyseeds.com

Rupp Seeds
17919 County Road B
Wauseon, OH 45367-9458
Ph: (800) 700-1199
Fax: (419) 337-5491

Harris Seeds
355 Paul Road
P.O. Box 24966
Rochester, NY 14624
Ph: (800) 544-7938
Fax: (877) 892-9197

Willhite Seeds
P.O. Box 4938
Modesto, CA 95352
Tech Rep.: Terry Kelly
Ph: (229) 947-3253
t.kelly@hmclause.com