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Introduction: Tips for Interpreting Vegetable Varieties Performance Results

Edgar Vinson and Joe Kemble

The srping 2006 variety trials regional bulletin includes research results from Auburn University and the University of Georgia. 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%) 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%) 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 presented in this issue conducted at the E.V. Smith Research Center, 'SSX 1098' yielded 24,714 pounds per acre, while 'Odyssey' and 'Aphrodite' yielded 15,299 and 10,925 pounds per acre, respectively. Since there was less than a 10,541 difference between 'SSX 1098' and 'Odyssey', there is no statistical difference between these two varieties. However, the yield difference between 'SSX 1098' and 'Aphrodite' was 13,789, 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. 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 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 29.

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.

Vegetable trials on the Web. For more vegetable variety information be sure to visit our Web page at http://www.aces.edu/dept/com_veg/veg_trial/vegetabl.htm. Our Web site will provide a 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/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	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

Experimental Cantaloupe Varieties Compared to 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. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county extension agent (see http://www.aces.edu/counties/).

Cantaloupe varieties were direct-seeded on May 9 into 20 foot rows with 6 feet between rows and a within row spacing of 1.5 feet. Drip irrigation and black plastic mulch were used.

Melons were harvested seven times at the half slip stage of maturity from July 5 through July 30 (Table 3).

Several experimental cantaloupe lines were compared to the market standard 'Athena' and several other commercial varieties. SSX 1098, SSX 1268, SSX 1574, and Eclipse produced yields that were statistically higher than 'Athena'.

Table 1. Ratings of the 2006 Canteloupe Variety Trial[1]

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

[1] See introduction for description of ratings scales

'Athena' had yields statistically similar to all other commercial varieties and experimental lines. For commercial cantaloupe production individual fruit weight should be 4 to 6 pounds. Larger fruit are generally sold at road side markets. Higher yields achieved by experimental lines were not attributed to high individual fruit weights but rather to higher numbers of fruit that were within the 4 to 6 pound range.

Table 2. Seed Source, Fruit Characteristics, and Relative Earliness of Selected Cantaloupe Varieties

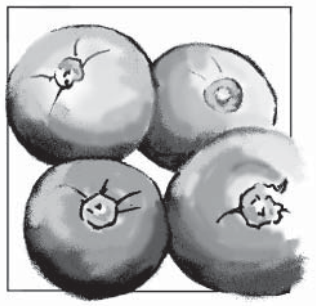
Variety	Type[1]	Seed source	Rind aspect[2]	Flesh color[3]	Days to harvest	Disease claims[4]
SSX 1098	F1	Sakata	E	O	—	—
Aphrodite (RML 8793)	F1	Seedway/Novartis	E	O	—	—
Athena[4]	F1	Seedway/Novartis	E	O	80	FW, PM
Aurora	OP	Auburn University	E	O	—	FW, PM
Eclipse	F1	Seminis	E	O	85	FW, PM
Minerva (RML 6969)	F1	Seedway/Novartis	E	O	77	FW, PM
Odyssey	F1	Nunhems	E	O	75	FW, PM
Orange Star	F1	Seminis	E	O	—	—
SSX 1268	F1	Sakata	E	O	—	—
SSX 1574	F1	Sakata	E	O	—	—
SSX 1044	F1	Sakata	E	O	—	—
SSX 1243	F1	Sakata	E	O	—	—
SSX 1271	F1	Sakata	E	O	—	—

[1] Type: F1 = Hybrid OP = Open Pollenated; [2] Rind Aspect: E = Eastern; [3] Flesh color: O = Orange; [4] Disease claims: FW = Fusarium Wilt, PM = Powdery Mildew; [4]Not sensitive to sulfur; — = not found, from seed catalog.

Table 3. Yield of Selected Eastern Cantaloupe Varieties

Variety	Marketable yield *lbs/a*	Marketable fruit *no/a*	Cull weight *lbs/a*	Individual fruit weight *lbs*	Soluble solids *(brix)*
SSX 1098	24,714	4,477	839	5.56	11.64
SSX 1268	24,621	5,082	4,544	4.83	10.75
SSX 1574	23,644	5,203	2,593	4.55	10.84
Eclipse	22,433	3,872	2,476	5.71	11.95
SSX 1044	20,250	4,477	4,824	4.40	•
SSX 1243	18,796	2,662	1,745	7.08	•
SSX 1271	17,133	8,228	1,829	2.14	12.38
Orange Star	16,369	3,509	866	4.74	10.41
Odyssey	15,299	2,541	1,134	5.72	9.84
Aphrodite	10,925	1,815	1,770	6.35	11.24
Athena	10,866	2,299	1,573	5.00	11.38
Aurora	5,934	1,694	4,524	3.35	10.14
Minerva	5,710	726	1,259	7.87	12.14
r2	***0.60***	***0.53***	***0.80***		***0.40***
CV	***52***	***43***	***17***		***11***
LSD	***10,541***	***16,043***	***2,953***		***1.81***

* = not found



Tomato Varieties Resistant to Spotted Wilt Increase in Popularity

Joe Kemble, Edgar Vinson, and Arnold Caylor

A spring tomato variety trial was conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama (Tables 1 and 2). On May 14, six-week-old tomato transplants were set into 20-foot-long plots, at a within row spacing of 1.5 feet. Silver 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 your county Extension agent (see http://www.aces.edu/counties/).

Preplant fertilization consisted of 80 pounds per acre of N as ammonium nitrate. Fertilization consisted of weekly injections of ammonium nitrate at a rate of 10 pounds of N per acre. Pesticides were applied weekly.

Tomatoes were harvested, weighed, and graded six times between July 19 and August 23. 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 Jumbo (D greater than 3.5 inch), extra-large (D greater than 2.9 inch), large (D greater than 2.5 inch) and medium (D greater than 2.3 inch). Marketable yield was the sum of extra-large, large and medium grades (Table 3).

Table 1. Ratings of the 2006 Tomato Variety Trial[1]

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

[1] See introduction for description of ratings scales

Overall, total marketable yield of tomato varieties were not significantly different. However, 'Amelia' and 'Crista' tomato spotted wilt resistant varieties topped the list. Another tomato spotted wilt resistant variety BHN 640 ranked at the bottom this year. 'Amelia, 'Crista', 'Solar Fire', and 'Applause' produced yields of extra large fruit similar to the standard variety Florida 47. Cull fruit weights were high this year. Several varieties produced almost as many cull fruit as marketable fruit. There were no significant differences found in large or medium yields.

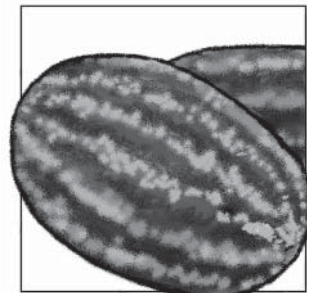
Table 2. Seed Source, Fruit Characteristics, and Relative Earliness of Selected Tomato Varieties

Variety	Type[1]	Seed source	Plant habit[2]	Fruit color	Days to harvest	Disease claims[3]	Years evaluated
Amelia	F1/FM	Harris Moran	Det	Red	—	**FW,TSWV,VW	03-06
Applause	F1/FM	Seminis	Det	Red	75	—	06
BHN 589	F1/FM	BHN/Sieger	Det	Red	80	*FW,VW,TMV	06
BHN 640	F1/FM	BHN/Sieger	Det	Red	75	**FW,TSWV,VW	03-06
Crista	F1/FM	Harris Moran	Det	Red	—	**FW, TSWV,VW	06
Florida 47	F1/FM	Seminis	Det	Red	75	ASC,FW,St,VW	97-99,02-06
Phoenix	F1/FM	Seminis	Det	Red	80	ASC,*FW,St,VW	06
Quincy	F1FM	Seminis	Det	Red	—	—	06
Solar Fire	F1/FM	Harris Moran	Det.	Red	—	**FW,St,VW	06
Soraya	F1/FM	Rogers	Det.	Red	—	FCR,**FW, St	05-06

[1] Type: F1 = Hybrid, FM = Fresh market; [2] Plant habit: Det. = Determinate; [3] Disease claims: FCR = Fusarium Crown Rot; FW = Fusarium Wilt; VW = Verticillium Wilt; ASC = Alternaria Stem Canker; St = Stemphylium (grey leaf spot), TSWV = Tomato Spotted Wilt Virus; * = Races 1 and 2; ** = Races 1, 2, and 3; — = not found, from seed catalog.

Table 3. Total Yield of Selected Tomato Varieties, North Alabama Horticulture Research Center

Variety	Marketable yield *lbs/a*	Extra large number *no/a*	Extra large yield *lbs/a*	Large number *no/a*	Large yield *lbs/a*	Medium number *no/a*	Medium yield *lbs/a*	Cull *lbs/a*	Individual fruit weight *lb*
Amelia	29,504	4,666	4,809	24,141	18,333	12,478	6,362	10,551	0.72
Crista	28,056	3,364	3,737	25,552	18,135	11,067	6,183	10,879	0.70
Florida 47	27,275	1,628	1,834	23,816	15,583	18,825	9,858	14,083	0.61
Solar Fire	24,760	1,085	1,159	19,856	12,908	22,894	10,692	14,323	0.56
Applause	24,522	3,038	3,265	21,375	15,292	12,206	5,965	13,375	0.68
Phoenix	23,951	760	697	22,134	14,929	18,011	8,326	14,135	0.59
BHN 589	23,802	326	412	22,839	15,865	16,492	7,524	15,523	0.60
Quincy	20,085	380	355	17,631	11,185	18,554	8,545	13,197	0.55
Soraya	19,930	434	435	18,228	11,652	16,438	7,842	9,385	0.57
BHN 640	19,848	488	518	18,879	11,611	16,004	7,720	17,132	0.56
r2	***0.30***	***0.13***	***0.53***	***0.55***	***0.20***	***0.50***	***0.50***	***0.40***	***0.62***
CV	***24***	***24***	***97***	***93***	***30***	***26***	***23***	***24***	***9***
LSD	***13,892***	***3,630***	***4,073***	***15,360***	***9,895***	***10,266***	***4,386***	***7,743***	***0.08***



Experimental Seedless Watermelon Show Promise in North Alabama

Joe Kemble, Edgar Vinson, and Arnold Caylor

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

Four-week-old seedless watermelon transplants were set on May 1. Seedless watermelons should be transplanted rather than direct seeded because of the low germination rate of seedless watermelons. Seedless watermelons must be planted with a seeded variety to serve as a source of pollen. A seeded variety, 'Companion,' was planted for every two or three seedless transplants to insure proper pollenation. 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/). Fertilization consisted of a preplant application of 13-13-13 at a rate of 460 pounds per acre in late March. After planting, calcium nitrate was injected weekly at a rate of 40 pounds per acre from May 8 to July 3.

Watermelons were harvested on July 3, 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 handheld refractometer was used to measure soluble solids.

Table 1. Ratings of the 2006 Seedless Watermelon Variety Trial[1]

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

[1] See introduction for description of ratings scales

A standard variety, 'Revolution', was similar to several experimental lines. All lines were statistically similar to 'Revolution'. At 40,290 pounds per acre, SSX 7619 produced yields that were similar to 'Revolution' and most other experimental lines. SSX 7619 produced yields that were statistically higher than SR 8026 WM and SSX 7609. On an individual fruit weight basis, fruit of 'Revolution' were statistically similar to all experimental lines. Watermelons with soluble solids (sugar) readings below 10 are not considered sweet. 'Revolution' and all of the experimental lines had soluble solids readings that indicated adequate sweetness. Overall, experimental lines produced yields and had qualities that are similar to the commercial variety 'Revolution'. This year, the standard variety Tri-X-313 could not be used because of low germination. If these experimental lines are included next year, they should be compared to Tri-X-313 to further confirm their potential in commercial markets.

Table 2. Seed Source, Fruit Characteristics, and Relative Earliness of Selected Seedless Watermelon Varieties

Variety	Flesh color	Days to harvest	Disease claims[1]	Years evaluated
PX 80335335	Red	—	—	06
Revolution	Red	83	FW*	02-04,06
SB 33354 WM	Red	—	—	06
SSX 7619	Red	—	—	06
SSX 7401	Red	—	—	06
W2-014	Red	—	—	06
SSX 7616	Red	—	—	06
SR 8026 WM	Red	—	—	06
SSX 7609	Red	—	—	06

[1]Disease claims: FW = Fusarium Wilt.; *Race 1 only; — = not available, from seed catalogs.

Table 3. Yield and Quality of Selected Seedless Watermelon Varieties

Variety	Marketable yield *lbs/a*	Marketable fruits *no/a*	Individual fruit weight *lbs/a*	Hollow heart *in*	Soluble solids *brix*
SSX 7619	40,290	2,523	16.22	1	11.58
SB 33354 WM	35,607	2,132	16.72	1	10.93
Revolution	34,491	2,219	15.61	0	11.40
SSX 7401	33,854	2,349	14.69	1	10.75
W2-014	33,667	2,262	14.88	1	10.58
SSX 7616	32,253	2,262	14.24	1	.
SR 8026 WM	30,635	1,914	16.53	1	11.40
PX 80335335	28,782	2,349	12.41	0	10.95
SSX 7609	27,914	2,132	13.24	0	10.93
r2	***0.23***	***0.10***	***0.40***	***0.43***	***0.14***
CV	***23***	***24***	***14***	***91***	***47***
LSD	***10,935***	***791***	***2.94***	***0.88***	***0.80***

Conqueror III Summer Squash Produces Highest Yields For Another Year

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

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

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/).

At both locations beds were formed and plastic mulch with drip irrigation was used. Squash varieties were direct seeded on black plastic mulch on May 8 at EVSRC and on silver plastic mulch on May 1 at BARU. Beds were 20 feet long on 5-foot centers at BARU and 20 feet long on 6-foot centers at EVSRC. Spacing within a row was 1.5 feet at both locations.

Squash were harvested 13 times from June 19 through July 19 at EVSRC and from June 2 through July 11 at BARU. Squash were graded as marketable and non-marketable 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).

Table 1. Ratings of the 2006 Summer Squash Variety Trial[1]

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

[1] See introduction for description of ratings scales

At EVSRC, Conqueror III produced significantly higher marketable yields than all other varieties at an early yield (Table 3). 'Gentry' and 'XPT 1832 III ' were similar to the market standard Prelude II. At BARU, there were fewer differences. Yields of 'Conqueror III' were similar to all varieties with the exception of Destiny III.

In total yield, Conqueror III remained the top producer with yields significantly higher than all others at EVSRC. At BARU there were few differences among varieties.

Table 2. Seed Source, Fruit Type, and Relative Earliness of Selected Squash Varieties

Variety	Type[1]	Seed source	Days to harvest	Disease claims[2]	Years evaluated
Conqueror III	F1	Seminis	41	CMV,PRSV, WMV,ZYMV	05,06
Destiny III	F1	Seminis	41	CMV,WMV,ZYMV	97-01,04-06
Fortune*	F1	Novartis	39	—	99,04-06
Gentry	F1	Novartis	43	–	95-99,02-06
Horn of Plenty	F1	Hollar	--	--	98,02,04-06
Liberator III	F1	Seminis	–	–	06
Lioness	F1	Harris Moran	--	CMV,WMV,ZYMV	04-06
Prelude II	F1	Seminis	40	PM,WMV,ZYMV	97-01,03-06
XPT 1832 III	F1	Seminis	43	CMV,WMV,ZYMV	06

[1] Type: F1 = Hybrid; [2] Disease claims: CMV = Cucumber Mosaic Virus; PM = Powdery Mildew; PRSV = Papaya Ring Spot Virus; ZYMV = Zucchini Yellow Mosaic Virus ; WMV = Watermelon Mosaic Virus; * Precocious Variety; — = none, from seed catalogs.

Table 3. Early and Total Yield of Selected Summer Squash Varieties

Variety	Early Marketable yield *lbs/a*	Early Marketable number *lbs/a*	Total Marketable yield *lbs/a*	Total Marketable number *lbs*	Cull weight	Individual fruit weight
Early Yield: E.V. Smith Research Center						
Conqueror III	6,668	20,933				
Gentry	5,236	22,990				
XPT 1832 III	5,183	16,335				
Prelude II	4,730	18,634				
Destiny III	4,624	17,787				
Liberator III	4,342	12,342				
Lioness	4,265	10,769				
Fortune	4,230	11,979				
Horn of Plenty	3,551	13,431				
r2	***0.64***	***0.80***				
CV	***16***	***16***				
LSD	***595***	***4,515***				
Early Yield: Brewton Agiculture Research Unit						
Conqueror III	3,099	12,615				
Prelude II	2,912	15,225				
XPT 1832 III	2,899	12,941				
Fortune	2,706	13,050				
Liberator III	2,509	10,331				
Gentry	2,418	12,941				
Horn of Plenty	2,211	11,636				
Lioness	2,141	8,048				
Destiny III	2,109	10,440				
r2	***0.20***	***0.11***				
CV	***31***	***66***				
LSD	***973***	***1,925***				
Total Yield: E.V. Smith Research Center						
Conqueror III			15,020	47,281	8,133	0.32
Gentry			11,781	50,366	9,392	0.23
XPT 1832 III			11,594	43,651	8,515	0.27
Liberator III			11,574	40,112	6,774	0.29
Destiny III			11,503	43,288	9,492	0.27
Fortune			10,698	36,119	9,620	0.30
Prelude II			10,326	42,017	9,262	0.24
Lioness			8,886	29,222	5,650	0.31
Horn of Plenty			8,728	36,300	10,564	0.24
r2			***0.72***	***0.64***	***0.30***	***0.80***
CV			***11***	***12***	***67***	***7***
LSD			***1,084***	***7,416***	***4,318***	***0.012***
Total Yield: Brewton Agricultural Research Unit						
XPT 1832 III			6,602	28,819	3,009	0.23
Fortune			6,219	25,121	5,115	0.25
Conqueror III			5,719	22,076	4,275	0.25
Prelude II			5,467	30,124	2,835	0.18
Gentry			5,382	26,318	3,296	0.21
Liberator III			5,346	20,554	3,725	0.27
Horn of Plenty			4,749	23,599	4,680	0.20
Destiny III			4,566	23,273	3,172	0.20
Lioness			4,482	17,291	3,120	0.26
r2			***0.20***	***0.30***	***0.20***	***0.63***
CV			***30***	***29***	***54***	***12***
LSD			***1,977***	***8,478***	***2,410***	***0.04***

2006 Vidalia Onion Variety Trial

George Boyhan, Reid Torrance, Chris Hopkins, Mike Dollar, Cliff Riner, Randy Hill, and Thad Paulk

Onion variety trials have become an important program at the University of Georgia to assess a wide variety of onion characteristics. This has included yield, graded yield, disease resistance, maturity class, flavor characteristics, and taste.

These trials have been used in part to select varieties for inclusion on the Georgia Department of Agriculture's official list of approved varieties. The Department has relied primarily on flavor characteristics and maturity class.

There were 42 entries in the variety trial in the 2005-06 season. Seed were sown on September 19, 2005 in high density plant beds with approximately 60 seed per linear foot. Transplants were grown following University of Georgia Cooperative Extension Service recommendations. Onion transplants were pulled on November 30, 2005 and reset to their final spacing with an in-row spacing of 5.5 inches and between-row spacing of 12 inches. Four such rows were planted on beds or panels formed on 6-foot centers. Dry bulb onions were grown according to UGA Cooperative Extension Service recommendations.

The experimental unit or plot size was 30 feet long with approximately 262 plants. There was a 5-foot between-plot, in-row alley between each experimental unit. The experimental design was a randomized complete block design with four replications. For seedstems, doubles, and disease incidence the entire 30-foot plot was evaluated. Twenty-five feet of each plot was harvested for yield data. Varieties were harvested as they matured on April 10, April 17, April 25, May 1, and May 4, 2006. Plants were harvested by hand pulling and field curing for two days. Total or field yield was recorded for each plot before transporting to the shed where they were heat cured at 95 degrees F for 24 hours. Onions were then graded into mediums (greater than 2 inches and less than 3 inches) and jumbos (greater than 3 inches).

Onions were evaluated for doubles and seedstems on March 30, 2006 and a select number of varieties were evaluated for center rot on April 26, 2006. A 10-bulb sample from each experimental unit was tested for pyruvate and soluble solids.

The height and width of five bulbs from each experimental unit were measured and averaged to determine the height/width ratio. In addition, five bulbs from each plot were cut open perpendicular to the growing axis and the number of centers counted. These data were averaged before analysis.

Ratings of the 2006 Vidalia Onion Trial[1]

Location	Vidalia Onion and Vegetable Research Center
Weather	5
Fertility	5
Irrigation	5
Pests	3-4
Overall	4
Soil type	Tifton loamy sand
Water holding capacity (in/in)	0.06-0.15

[1] See introduction for description of ratings scales

Count data for seedstems and doubles were transformed with square root plus 0.5 before analyses and means and least significant differences (LSD) were back transformed to their original units. The coefficient of variation (CV) and Fisher's Protected LSD (p=0.05) with Bonferroni adjustment for five comparisons was computed for each dataset.

The 42 entries in the trial represent 11 different onion seed companies. The number of doubles averaged from about 1 to 38 (Table 1). This contrasts to the 2004-05 season where doubles ranged from 0 to 118. The five varieties with the highest number of doubles were 'Sapelo Sweet', WI-129, WI-131, 'Georgia Boy', and 'Granex Yellow PRR'. Twenty-seven of the entries averaged less than 10 doubles per plot. The average number of seedstems ranged from approximately 0 to 15 with only 'Granex Yellow PRR' having average number of seedstems in double digits.

These entries can be separated into three maturity classes of early, mid-season, and late-season varieties. Early season entries were harvested on April 10 and 17, 2006, while mid-season varieties were harvested on April 25 and May 1, 2006. Finally, late season entries were harvested on May 4, 2006. Late season varieties have been plagued with bacterial diseases putatively identified as sour skin and slippery skin. This is reflected in the percent marketable onions with the early and mid-season

Table 1. Evaluation of Vidalia Onion Varieties for Doubles, Seedstems, Disease, and Yield

Variety	Company	Harvest date	Doubles	Seed-stems	Center rot (pantoea)	Field yield	Jumbos	Mediums
			no/plot	*no/plot*	*no/plot*		*50-lb bag/a*	
FS 2005	Solar Seed	04/10/06	16.3	0.5		976	744	28
FS 2011	Solar Seed	04/17/06	13.1	4.4		1192	945	11
Sapelo Sweet	D. Palmer Seed	04/25/06	38.2	2.7		1004	741	22
Georgia Boy	D. Palmer Seed	05/01/06	32.4	0.6	7.1	1149	827	7
Ohoopee Sweet	D. Palmer Seed	05/01/06	5.7	0.0	9.7	1000	665	9
Mr. Buck	D. Palmer Seed	05/01/06	3.7	0.4	5.3	1014	835	8
Miss Megan (DPS 1290)	D. Palmer Seed	05/04/06	5.1	0.6	6.8	1090	625	6
Yel. Granex 15082	Dessert Seed	04/25/06	6.1	3.2		1078	817	6
Yel. Granex 108101	Dessert Seed	05/04/06	2.8	1.9	12.2	1090	837	4
Yel. Granex 15094	Dessert Seed	05/04/06	6.3	9.7	28.2	1137	686	4
Yel. Granex 105101	Dessert Seed	05/01/06	3.7	3.6	22.0	1073	922	4
Yel. Granex 126101	Dessert Seed	05/01/06	2.5	4.7	14.7	1028	612	3
Yel. Granex 129101	Dessert Seed	05/01/06	3.1	2.4	13.5	1141	955	4
Yel. Granex 114101	Dessert Seed	05/01/06	5.4	2.5	8.9	1131	738	4
Yel. Granex 15085	Dessert Seed	04/25/06	2.1	2.6		916	815	4
Caramelo (SRO 1000)	Nunhems	05/01/06	5.8	0.2	16.8	1051	792	6
Sweet Vidalia	Nunhems	04/25/06	18.2	9.1		1253	868	3
Sweet Caroline (SXO 1001)	Nunhems	05/04/06	3.2	0.2	18.9	1215	353	1
Nirvana	Nunhems	04/25/06	3.5	0.0		1268	883	1
HSX-61304	Hortag Seed	05/04/06	3.2	1.2	22.0	954	342	7
Sweet Jasper (XON-202Y)	Sakata Seed	05/04/06	5.4	3.2	18.8	1228	559	1
Ponderosa (XON 303Y)	Sakata Seed	05/01/06	7.3	0.6		1063	558	3
XON-403Y	Sakata Seed	05/01/06	12.5	1.5	19.4	1208	768	3
XON-203Y	Sakata Seed	04/25/06	9.9	1.6		1146	873	1
XON-204Y	Sakata Seed	04/25/06	4.5	1.8		1046	767	3
WI-129	Wannamaker	04/17/06	36.5	1.0		1216	711	6
WI-131	Wannamaker	04/17/06	32.8	3.3		1163	765	17
DY 606	Shaddy	04/17/06	13.4	0.4		1279	643	2
DY 72766	Shaddy	04/10/06	16.0	3.4		1051	824	18
SSC 1535 F1	Shamrock	04/17/06	24.8	0.8		918	559	17
Honeycomb (SSC 6372)	Shamrock	04/17/06	12.1	2.5		814	507	42
Honeybee (SSC 33076)	Shamrock	04/10/06	21.1	2.1		1155	878	7
Sugar Belle	Shamrock	04/25/06	10.7	1.4		995	694	1
J 3001	Bejo Seed	04/25/06	2.6	2.0		1104	784	1
J 3002	Bejo Seed	05/04/06	1.7	0.0	30.5	1055	242	1
Granex Yellow PRR	Seminis	05/01/06	29.6	14.9	29.3	1037	738	12
XP 07542007	Seminis	04/25/06	9.3	0.7		976	705	5
Pegasus	Seminis	05/04/06	3.1	4.1	30.4	1110	396	1
Granex 33	Seminis	05/04/06	8.1	1.6	23.2	1147	413	1
Century	Seminis	05/04/06	2.0	1.1	23.1	1259	375	3
Savannah Sweet	Seminis	05/01/06	1.3	0.4	30.3	1162	866	2
XP Red	Seminis	05/04/06	1.8	0.0		536	460	26
Coefficient of Variation			***28%***	***34%***	***26%***	***11%***	***23%***	***90%***
Fisher's Protected LSD (p=0.05) w/Bonferroni adj.			***2.0***	***0.4***	***3.7***	***227***	***299***	***13***

varieties averaging 69 and 73 percent, respectively, while the late season varieties averaged only 48 percent.

Among the 21 varieties that were evaluated for center-rot, the incidence range averaged 5.3 to 30.5. The lowest incidence occurred with 'Mr. Buck', 'Miss Megan', 'Georgia Boy', and 'Yel. Granex 114101'. Overall the incidence of center rot was much higher in 2006 compared to 2005.

Overall yields were very good in 2006 with an overall total yield average of 1,082 50-pound bags per acre compared to only 893 50-pound bags per acre in 2005. The total yield range was 536 to 1,279 50-pound bags per acre. On the low end was 'XP-Red', which for some reason had very poor stand in the plots resulting in very low yields. The highest yielding entry for total yield was DY 606 at 1,279 50-pound bags per acre , which was not statistically different from the next 25 entries in descending order for total yield. Jumbo yields ranged from 242 to 955 50-pound bags per acre with the highest yield from

Yellow Granex 129101, which did not differ from the next 28 in descending order for jumbo yields. Medium yield was very low for all of the entries, which probably reflects the overall excellent yields.

Pyruvate ranged from 2.8 to 6.3 um/gfw with an average of 4.5 um/gfw, which was higher than for 2005 where onions averaged 3.8 um/gfw (Table 2). The lowest entry this year was DY 72766 with 2.8 um/gfw, which did not differ from the next eight lowest entries for pyruvate. Sugar content ranged from 7.8 to 11.6 percent with 'Ohoopee Sweet' having the highest sugar content.

The bulb height/width ratio ranged from 0.62 for 'Granex Yellow PRR' to 1.00 for 'Yel. Granex 126101'. Varieties with height/width ratios closer to one are better for processing into onion rings. Although there were no entries with height/width ratios over one, such varieties would be considered unacceptable for the Vidalia onion industry. The number of centers was also evaluated in this trial and ranged from 1.0 to 2.1. Varieties that average one or near one for centers are also considered better candidates for processing into onion rings.

Finally the CVs had relatively low percentages in most cases and are typical of a field experiment. In conclusion, this year was very good for onions with optimum conditions for high yields, low disease, and environmental conditions ideal for onion production.

Table 2. Yield, Graded Yield, and Harvest Date of Vidalia Onion Varieties

Variety	Company	Pyruvate	Sugar	Height/Width	Centers
	50-lb bags/a	*umoles/gfw*	*%*	ratio	*no/bulb*
FS 2005	Solar Seed	2.9	8.6	0.84	1.3
FS 2011	Solar Seed	3.3	7.8	0.80	1.6
Sapelo Sweet	D. Palmer Seed	4.9	9.7	0.74	1.2
Georgia Boy	D. Palmer Seed	5.1	9.9	0.75	1.4
Ohoopee Sweet	D. Palmer Seed	6.3	11.6	0.84	2.0
Mr. Buck	D. Palmer Seed	5.2	9.7	0.73	2.1
Miss Megan (DPS 1290)	D. Palmer Seed	4.9	9.5	0.74	1.6
Yel. Granex 15082	Dessert Seed	5.7	9.0	0.67	1.0
Yel. Granex 108101	Dessert Seed	5.0	9.7	0.70	1.6
Yel. Granex 15094	Dessert Seed	4.7	9.3	0.68	1.3
Yel. Granex 105101	Dessert Seed	4.5	9.4	0.65	1.4
Yel. Granex 126101	Dessert Seed	4.5	9.2	1.00	1.7
Yel. Granex 129101	Dessert Seed	4.4	8.7	0.69	1.2
Yel. Granex 114101	Dessert Seed	5.0	8.7	0.77	1.3
Yel. Granex 15085	Dessert Seed	4.2	8.5	0.71	1.1
Caramelo (SRO 1000)	Nunhems	4.4	9.1	0.66	1.3
Sweet Vidalia	Nunhems	4.9	9.5	0.66	1.2
Sweet Caroline (SXO 1001)	Nunhems	4.3	9.4	0.63	1.1
Nirvana	Nunhems	4.6	9.5	0.77	1.0
HSX-61304	Hortag Seed	5.4	9.5	0.66	2.0
Sweet Jasper (XON-202Y)	Sakata Seed	4.0	10.5	0.69	2.0
Ponderosa (XON 303Y)	Sakata Seed	6.0	8.5	0.79	1.4
XON-403Y	Sakata Seed	4.8	8.4	0.77	1.6
XON-203Y	Sakata Seed	4.2	8.5	0.72	1.4
XON-204Y	Sakata Seed	4.9	9.2	0.77	1.8
WI-129	Wannamaker	3.0	8.6	0.84	1.3
WI-131	Wannamaker	3.2	7.9	0.85	1.3
DY 606	Shaddy	3.0	7.8	0.85	1.1
DY 72766	Shaddy	2.8	8.7	0.79	1.2
SSC 1535 F1	Shamrock	3.5	9.7	0.64	1.3
Honeycomb (SSC 6372)	Shamrock	3.5	9.7	0.72	1.2
Honeybee (SSC 33076)	Shamrock	3.8	8.6	0.76	1.0
Sugar Belle	Shamrock	5.4	9.2	0.67	1.6
J 3001	Bejo Seed	4.9	8.8	0.72	1.3
J 3002	Bejo Seed	4.7	9.6	0.66	1.7
Granex Yellow PRR	Seminis	5.1	9.7	0.62	1.8
XP 07542007	Seminis	4.6	9.5	0.73	1.1
Pegasus	Seminis	4.6	9.5	0.65	1.5
Granex 33	Seminis	5.2	9.9	0.69	1.9
Century	Seminis	3.8	9.4	0.68	1.4
Savannah Sweet	Seminis	4.9	8.3	0.73	2.1
XP Red	Seminis	5.2	11.5	0.78	1.3
Coefficient of Variation		**15%**	**8%**	**6%**	**21%**
Fisher's Protected LSD (p=0.05) w/Bonferroni adj.		**1.2**	**1.4**	**0.08**	**0.5**

Evaluation of Non-Traditional Onion Varieties

George Boyhan, Bob Boland, Randy Hill, and Thad Paulk

Georgia is famous for mild sweet Vidalia onions, which are grown in a defined region of southeast Georgia. There is, however, interest from time to time to produce onions outside the Vidalia onion growing region. In addition, we are beginning a concerted effort to evaluate onions other than Granex yellow onion types for production in the Vidalia region. Both red and white onions with suitable shape and mildness may have a place in the Vidalia production region.

The traditional Granex yellow onion type produced in southeast Georgia is a short-day overwintering onion that has a characteristic shape (slightly flattened) with a mild sweet flavor. Texas onions by contrast are short-day overwintering Grano type onions. These yellow onions are rounder in shape than Granex, but with many of the same characteristics. Other short-day onions are available that are both white and red in color. This study then was undertaken to evaluate non-traditional onions for production inside and outside the Vidalia region.

Entries 1-14 were sown in high density plantbeds on September 21, 2005 and entries 15-17 were sown on September 26, 2005 (Table 1). These transplants were grown according to University of Georgia Cooperative Extension Service recommendations.

Beds were formed with 6-foot centers with four rows of onions transplanted with 12 inches between the rows and 5.5 inches in the row. Plantbed onions were transplanted to their final spacing on December 13, 2005. Each plot or experimental unit was 20 feet of planted bed. Each plot had a 5-foot in-row between plot unplanted alley. The experimental design was a randomized complete block design with three replications. Onions were grown following University of Georgia Cooperative Extension Service Recommendations.

Onions were harvested when mature on April 19 or May 1, 2006. Onions were pulled and allowed to field cure for at least one day. Field or total yield was then recorded before transporting to the shed for heat curing for 24 hours at 95°F. Onions were then graded into jumbo (greater than 3 inches) or mediums (greater than 2 inches and less than 3 inches). Finally, red onions in this trial were analyzed for pyruvate.

Ratings of the 2006 Non-Traditional Onion Trial[1]

Location	Vidalia Onion and Vegetable Research Center
Weather	5
Fertility	5
Irrigation	5
Pests	3-4
Overall	4
Soil type	Tifton loamy sand
Water holding capacity (in/in)	0.06-0.15

[1] See introduction for description of ratings scales

Approximately 50 pounds of onions from each experimental unit were transported to the Vidalia Onion Research Laboratory in Tifton, Georgia, for storage. Onion entries 1, 2, 3, 4, 6, and 7 were stored under refrigerated storage beginning April 26, 2006 and entries 5, 9-17 beginning May 8, 2006. The storage conditions were 34°F and 70 percent relative humidity (RH). Onions were removed from storage on July 11, 2006 for evaluation. Data on weight loss in storage and percent marketable onions were collected. In addition, onions were held under ambient conditions (approximately 75°F) for two week and re-evaluated for weight loss based on post-storage weight as well as percent marketability based on pre-storage weight.

The coefficient of variation (CV) and Fisher's protected least significant difference (LSD) were calculated for each measured parameter.

Seven of the 17 entries harvested on April 19, 2006 would be considered mid-season onions and included 'Gobi', 'Don Victor', 'Safari', 'Serengeti', 'Kristal', 'Sweet Sunrise', and 'Kalahari', which included no red onions. The remaining 10 entries would be considered late-season varieties.

The greatest total yield was with Ebano with 1,079 50-pound bags per acre. This did not differ from nine entries with yields above 872 50-pound bags per acre. Jumbo yields ranged from 222 to 804 50-pound bags per acre with XP 07597000 from Seminis having the highest yield, which did not differ from the 10 entries with yields above 580 50-pound bags per acre. Overall, medium yields were very low with 'Don Victor' and 'Kristal' having the greatest amount of mediums with 25 and 27 50-pound bags per acre, respectively.

Table 1. Source, Harvest Date, Bulb Color, Yield, and Pungency of Non-Traditional Short-Day Onions

No.	Variety	Company	Harvest date	Bulb color	Total yield	Jumbos	Mediums	Market-able	Pungency
						50-lb.bag/acre		*%*	*um/ml*
1	Gobi	Nunhems	4/19/06	Yellow	812	369	5	46	
2	Don Victor	Nunhems	4/19/06	Yellow	636	222	25	39	
3	Safari	Nunhems	4/19/06	Yellow	972	654	8	68	
4	Serengeti (1202)	Nunhems	4/19/06	Yellow	708	314	7	45	
5	Mata Hari	Nunhems	5/1/06	Red	847	618	14	75	6.1
6	Kristal	Nunhems	4/19/06	White	855	605	27	74	
7	Sweet Sunrise	Nunhems	4/19/06	Yellow	812	405	10	51	
8	Kalahari (1200)	Nunhems	4/19/06	Yellow	835	442	10	54	
9	NUN 3005ON	Nunhems	5/1/06	Red	879	682	14	79	4.5
10	NUN 3006ON	Nunhems	5/1/06	Red	1038	714	4	69	6.6
11	NUN 3004ON	Nunhems	5/1/06	Red	1059	676	4	64	6.7
12	NUN 3001ON	Nunhems	5/1/06	Red	1057	552	4	53	7.8
13	XP 07597000	Seminis	5/1/06	Red	1044	804	6	78	5.5
14	Mercedes	Seminis	5/1/06	Yellow	947	687	4	73	
15	Ebano	Seminis	5/1/06	Yellow	1079	527	1	49	
16	Linda Vista	Seminis	5/1/06	Yellow	1045	643	5	62	
17	Cougar	Seminis	5/1/06	Yellow	1004	697	1	69	
	CV				**14%**	**24%**	**73%**		**7%**
	Fisher's Protected LSD (p=0.05)				**207**	**224**	**11**		**0.8**

Table 2. Treatment Effect on Refrigerated Storage of Non-Traditional Short-Day Onions [1]

No.	Variety	Company	Harvest date	Bulb color	After 2.5 months of refrigerated storage		Two weeks after removal from storage	
					Wt. loss	Marketable	Wt. loss	Marketable
1	Gobi	Nunhems	4/19/06	Yellow	3.8	76.0	1.8	74.6
2	Don Victor	Nunhems	4/19/06	Yellow	4.8	78.7	2.7	76.7
3	Safari	Nunhems	4/19/06	Yellow	3.2	83.4	2.1	81.6
4	Serengeti (1202)	Nunhems	4/19/06	Yellow	3.2	88.0	1.8	86.4
5	Mata Hari	Nunhems	5/1/06	Red	3.5	84.4	2.7	82.2
6	Kristal	Nunhems	4/19/06	White	3.5	85.5	3.0	82.9
7	Sweet Sunrise	Nunhems	4/19/06	Yellow	3.5	72.7	3.2	70.3
8	Kalahari (1200)	Nunhems	4/19/06	Yellow	3.6	81.3	3.1	78.8
9	NUN 3005ON	Nunhems	5/1/06	Red	3.1	90.2	1.3	89.0
10	NUN 3006ON	Nunhems	5/1/06	Red	2.3	89.7	1.7	88.2
11	NUN 3004ON	Nunhems	5/1/06	Red	3.7	88.0	1.5	86.5
12	NUN 3001ON	Nunhems	5/1/06	Red	3.6	90.6	1.1	89.6
13	XP 07597000	Seminis	5/1/06	Red	3.1	73.2	2.1	71.7
14	Mercedes	Seminis	5/1/06	Yellow	3.1	84.0	3.0	81.5
15	Ebano	Seminis	5/1/06	Yellow	3.6	84.6	3.4	81.7
16	Linda Vista	Seminis	5/1/06	Yellow	2.7	82.6	1.8	81.2
17	Cougar	Seminis	5/1/06	Yellow	2.0	90.7	2.2	88.7
	CV				**19%**	**10%**	**33%**	**10%**
	Fisher's Protected LSD (p=0.05)				**1.0**	**NS**	**1.2**	**NS**

The percent marketable yields ranged from 39 percent to 79 percent. The highest percent marketable yields was with NUN 3005ON. There were a total of five entries with better than 70 percent marketable onions and along with NUN 3005ON there was XP 07597000, 'Mata Hari', 'Kristal', and 'Mercedes'. Overall, the percent marketable onions was not very good in this trial. Generally poor marketability has been associated with late season bacterial diseases often because of less than optimum harvest time or because the specific variety matures late.

The red onions in this trial were analyzed for pyruvate, which ranged from 4.5 to 7.8 um/gfw with an average of 6.2 um/gfw. This was decidedly higher than in the Vidalia onion trial (see elsewhere in this publication), which ranged from 2.8 to 6.3 um/gfw with an average of 4.5 um/gfw. We have tested red onions in the past that had a suitable mild sweet flavor, but were often misshapen (torpedo shaped).

After 2.5 months of refrigerated storage there were differences in weight loss, but not for percent market-

able onions (Table 2). The lowest percent weight loss after 2.5 months of storage was ‘Cougar ‘with only 2 percent loss. This was significantly lower than any other variety. The lowest weight loss after two weeks was with NUN 3001ON, which had only 1.1 percent loss, which was significantly lower than ‘Don Victor’, ‘Mata Hari’, ‘Kristal’, ‘Sweet Sunrise’, ‘Kalahari’, ‘Mercedes’, and ‘Ebano’. In general the red onions appeared to have less weight loss after two weeks compared to the others. Finally there was no difference in percent marketable onions after two weeks. We hope to continue testing red onions for their suitability as Vidalia onions.

Georgia Cantaloupe Variety Trial, First Time on Plastic

George Boyhan, Reid Torrance, Chris Hopkins, Cliff Riner, and Randy Hill

As in the past a small cantaloupe trial was conducted at the Vidalia Onion and Vegetable Research Center. Cantaloupes are an important crop in Georgia with more than 5,000 acres of production valued at approximately $35 million. The industry continues to be dominated by Eastern type melons, which tend to be slightly larger than their Western counterparts with less netting and usually more pronounced sutures.

Six varieties were entered in the trial. This was the first year plastic was laid for cantaloupe variety testing. Land was prepared according to University of Georgia Cooperative Extension Service recommendations with preplant incorporation of 600 pounds per acre of 10-10-10 fertilizer. Beds were formed with 6-foot between row spacing. The beds were covered with black plastic with a single drip line resulting in a bed with approximately 30 inches across the top. Approximately three-week-old transplants were set on May 22, 2006 to an in-row spacing of 3 feet. The experiment was a randomized complete block design with four replications. Each experimental unit or plot consisted of 10 plants. The experiment was sprayed twice with Bravo fungicide and irrigated through a drip irrigation system as needed. No additional fertilizer was used

Cantaloupes were harvested on July 5, July 10, July 13, July 18, July 21, and July 25, 2006. The total count and weight from each plot was recorded. In addition, two fruit from each plot were cut longitudinally and measured for length, width, and rind thickness. Finally each cut fruit was measured for soluble solids or percent sugars.

2006 Canteloupe Variety Trial Conditions[1]

Location	Vidalia Onion and Vegetable Research Center
Weather	5
Fertility	2
Irrigation	5
Pests	3-4
Overall	4
Soil type	Tifton loamy sand
Water holding capacity (in/in)	0.06-0.15

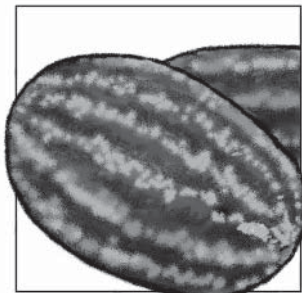
[1] See introduction for description of ratings scales

There were no differences among the varieties either for yield or fruit count (see table). Nor was there any differences among the varieties for sugar content. These results are not unusual since most cantaloupes grown in south Georgia are large Eastern types, Athena being the most popular.

This was the first year plastic mulch was used in the cantaloupe variety trial. This is a tremendous help; in past years as soon as cantaloupes ripened they would begin to rot. In fact, we have tried to compensate for this by harvesting fruit and early as possible and allowing it to ripen postharvest. This proved not to work very well as fruit were often taken too early so that they never ripened. The plastic mulch gave us some leeway in harvest since fruit on the plastic was less likely to rot. We were quite pleased with the results.

Georgia Canteloupe Variety Trial, 2006

Variety	Type	Company	Yield *lb/ac*	Count *no/ac*	Sugar content *%*	Length	Width *in*	Flesh Depth
Athena	Eastern	Rogers	40,335	7,805	8.5	8.8	7.9	2.0
Aphrodite	Eastern	Rogers	39,422	6,171	8.5	8.3	6.8	2.1
Yuma Grande F1	Western	Hollar	44,915	7,079	7.8	8.7	6.2	2.3
Strike F1	Eastern	Hollar	27,612	4,901	7.1	8.0	5.3	1.8
HSR 4236	Western	Hollar	36,215	6,050	7.4	8.2	7.1	2.3
Sherbert	Specialty	D. Palmer Seed	50,784	6,837	7.3	9.4	8.7	2.0
CV			***25%***	***23%***	***19%***			
LSD (P0.05)			***NS***	***NS***	***NS***			



Georgia Notes to Researchers

2006 Watermelon Variety Trial Yields Poor Results

Yields Poor Results

George Boyhan

As in past years, watermelon variety trials were undertaken at the Vidalia Onion and Vegetable Research Center just outside of Lyons, Georgia. These trials usually encompass some 20 to 30 currently available varieties and/or advanced lines from the seed companies.

Unlike many other vegetables, watermelons have a wide assortment of fruit types and varieties that are grown for various markets. Some markets prefer large oblong fruit, which are usually sold around the 4th of July or may be used in the minimally processed cut fruit industry.

Triploid or seedless watermelons have become an important part of the market, requiring special production practices involving the use of normal watermelon plants as a source of pollen. In addition to this, recently very small mini watermelons have been introduced in the 3- to 5-pound size class. These melons are usually seedless with very thin rinds so that when cut the edible flesh encompasses almost the entire interior of the fruit.

Because of this great variability in fruit type, we have endeavored to collect variety information every year to share with growers, county agents, seed companies, and other interested parties. The object of this study was to collect such data on varieties submitted by cooperating seed companies.

Twenty-one varieties were entered in the trial. This was the first year plastic was laid for watermelon variety testing. Land was prepared according to University of Georgia Cooperative Extension Service recommendations with preplant incorporation of 600 pounds per acre of 10-10-10 fertilizer. Beds were formed with 6 feet between rows. The beds were covered with black plastic with a single drip line resulting in a bed with approximately 30 inches across the top. Approximately three-week-old transplants were set on May 22 and 23, 2006 to an in-row spacing of 5 feet. The experiment was a randomized complete block design with four replications. Each experimental unit or plot consisted of 10 plants. The experiment was sprayed twice with Bravo fungicide and irrigated through a drip irrigation system as needed. No additional fertilizer was used

Watermelons were harvested on July 21 and 24, 2006. The total count and weight from each plot was recorded.

2006 Watermelon Variety Trial Conditions[1]

Location	Vidalia Onion and Vegetable Research Center
Weather	5
Fertility	2
Irrigation	5
Pests	3-4
Overall	4
Soil type	Tifton loamy sand
Water holding capacity (in/in)	0.06-0.15

[1] See introduction for description of ratings scales

In addition, two fruit from each plot were cut longitudinally and measured for length, width, and rind thickness. Finally each cut fruit was measured for soluble solids or percent sugars.

The data were subjected to analysis of variance (ANOVA) and the coefficient of variation (CV) as well as Fisher's Protected Least Significant Difference (LSD) was calculated (see introduction). Two additional statistics were calculated on the yield data: Levene's test for homogeneity of variance and Shapiro-Wilk W test of sample normality.

The analyses of the data revealed a problem. The CVs were extremely high and there were no differences between the means. A more careful look at the data indicated serious problems.

Variety trials are routinely subjected to a statistical evaluation called an ANOVA. The underlying mathematics are quite complex, but the basic calculations and interpretation of results is fairly straight forward. In many of the cases where there is a violation of the underlying assumptions for an ANOVA, there are methods of transforming data so they adhere to these assumptions; however, this study is not one of those instances.

Listed in the table are two additional statistics: one is Levene's test for homogeneity of variance and the other is the Shapiro-Wilk W test. Levene's test is a test to see if the variances are the same. If the probability is less than 0.05 then they are not the same. The Shapiro-Wilk W test checks for normality; that is are we dealing with a normally distributed population? And in this case

Watermelon Variety Trial, Georgia, 2006

Variety	Type	Company	Fruit per acre	Yield per acre	Yield variance per plot	Soluble solids	Length	Width	Rind thickness
				no.	lb.	s^2	%	in	in in
Wrigley	Triploid	Seminis	2,396	29,483	33,316	10.5	11.1	8.5	0.7
Cooperstown	Triploid	Seminis	4,138	47,764	91,823	8.8	8.6	6.9	0.8
Majestic	Triploid	Seminis	2,069	24,938	32,745	10.8	11.3	8.1	0.8
Fenway	Triploid	Seminis	1,888	24,452	25,740	8.3	8.8	6.5	0.7
Tri-X 313	Triploid	Rogers	3,666	54,051	12,340	13.3	13.9	10.7	0.9
Tri-X Palomar	Triploid	Rogers	2,033	29,904	69,267	10.3	10.1	8.4	0.8
Tri-X Triple Threat	Triploid	Rogers	3,122	31,429	11,227	9.8	8.8	7.9	0.7
Matrix	Triploid	Rogers	980	13,772	4,705	9.6	11.3	8.1	0.8
Sweet Delight	Triploid	Rogers	2,614	37,251	35,613	10.8	11.0	8.5	0.7
Jamboree	Hybrid	Rogers	2,759	58,399	82,338	10.6	17.9	8.8	0.8
Topgun	Hybrid	Rogers	1,888	36,198	28,851	10.8	11.9	9.6	0.7
ACR 5534T	Triploid	Abbott & Cobb	2,807	37,616	7,267	11.9	8.7	7.0	0.7
ACR 4674T	Triploid	Abbott & Cobb	1,634	21,381	15,904	11.2	10.7	8.0	0.8
ACR 5624T	Triploid	Abbott & Cobb	1,851	24,081	17,252	11.2	12.3	9.3	0.9
Intruder	Triploid	Southwestern	1,343	14,687	2,258	11.1	9.3	8.3	0.9
Tomcat	Triploid	Southwestern	1,815	25,838	10,793	10.9	10.5	8.9	0.8
Lamar F1	Triploid	Hollar	2,033	17,504	16,081	9.5	7.9	7.2	0.6
Ruby F1	Triploid	Hollar	2,686	38,834	58,322	11.1	10.6	8.6	0.8
Olé	Hybrid	Willhite	2,541	35,821	29,531	11.0	14.0	8.2	0.7
Precious Petite	Triploid	Rogers	3,340	26,405	3,867	11.1	8.9	7.6	0.5
Little Deuce Coupe (RWT 8149)	Triploid	Rogers	5,518	36,511	660	12.5	8.2	7.3	0.5
CV			**79%**	**91%**		**20%**			
LSD (P≤0.05)			**NS**	**NS**		**NS**			
Levene's test for equal variances Probability 0.004					**2.43**				
Shapiro-Wilk W test Probability 0.000					**0.890**				

the probability is also below 0.05 indicating that it is not a normal population.

The problems with these data are mine. I was not able to supervise the harvest on the dates the melons were collected; consequently, it was handled incorrectly. Many vegetables can be evaluated in a variety trial without there being much chance of plot-to-plot mix-ups with the harvested fruit. Staked tomatoes, sweet corn, bush green beans can all be planted at a standard spacing and the harvest from each plot can be easily kept separate. Watermelon, however, is a vining crop and so plants tend to overlap. The solution might be to space the plots so widely that there is no chance of overlap, but then the results are somewhat artificial. There is no plot-to-plot competition as would occur among all the plants in a commercially planted field. Others have suggested that the vines be turned as they grow to insure they don't overlap, but again you are creating an artificial environment. I've even had a farm superintendent ask me to make sure none of the same looking melons were next to each other in the experiment. This, of course, is impossible for at least two reasons: first, there usually aren't that many different fruit types, and second, the placement of varieties within a replication must be random.

Normally, I would impress upon the workers the importance of tracing each vine to its source before the fruit are harvested. This is particularly important when varieties with similar fruit are next to each other. I suspect the job was rushed and supervision was slack. In addition to the high CVs and lack of differences, which were the first clues there was a problem, the fruit characteristics appeared incorrect based on what I know about some of these varieties. For example Precious Petite is a very small mini-melon usually in the 5- to 7-pound size class. In this case it averaged almost 8 pounds. Tri-X 313, which is small seedless Crimson Sweet type melon, has length and width characteristics indicating it has a blocky to oblong shape.

In conclusion, the data listed in this study is of no use other than as a lesson of what not to do. Greater supervision of farm staff will be required in the future.

Seed Sources for Alabama Trials

Seeds were donated by the following companies:

Nunhems/Sunseeds
Richard Wojciak
12214 Lacewood Lane
Wellington, Florida 33414-4983
Phone : (561) 791 9061
Fax: (561) 798 4915
Mobile: (561) 371 2023
richard.wojciak@sunseeds.com

Palmer Seed Co.
P.O. Box 1866
Palmer City, FL 34991
(772) 221-0653

Sakata Seed America, Inc.
Tech Rep: Jay Jones
P.O. Box 880
Morgan Hill, CA 95038-0880
Phone: (239) 289-2130

O**ther sources included the following companies:**

Abbot and Cobb, Inc.
Tech Rep: Russ Beckham
146 Old US Highway 84 West
Boston, GA 31626
Phone: (229) 498-2366
E-mail: rbeckham@rose.net

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

Harris Moran
P.O. Box 4938
Modesto, CA 95352
Phone: (209) 579-7333
(209) 527-8684

Harris Seeds
To order: (800) 544-7938
P.O. Box 22960
60 Saginow Dr.
Rochester, NY 14692-2960

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
Tech. Rep: Steve Woodward+
955 Benton Ave
Winslow, ME 04901
Phone: (207) 861-3900
E-mail: info@johnnyseeds.com

Rupp Seeds
To order: (800) 700-1199
17919 County Raoad B
Waseon, OH 43567

Sandoz Rogers/Novartis
To order: (912) 560-1863

Seedway
To order: (800) 952-7333
Tech Rep: 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
Fax: (616) 994-0333

Seminis Vegetable Seeds, Inc
Tech Rep: Rusty Autry
2221 North Park Ave.
Tifton GA 31796
Phone: (229) 386-0750

Tifton Seed Distribution Center
Tech Rep: Van Lindsey
Phone: (912) 382-1815

Willhite
To order: (800) 828-1840
Tech Rep: Don Dobbs
P.O. Box 23
Poolville, TX 76487
Fax: (817) 599-5843

Guidelines for Contributions to the Vegetable Variety Regional Bulletin

Vegetable variety evaluation and selection is an essential part of production horticulture. The 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 2006).

When: April 20, 2007
Deadline for fall 2007 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.

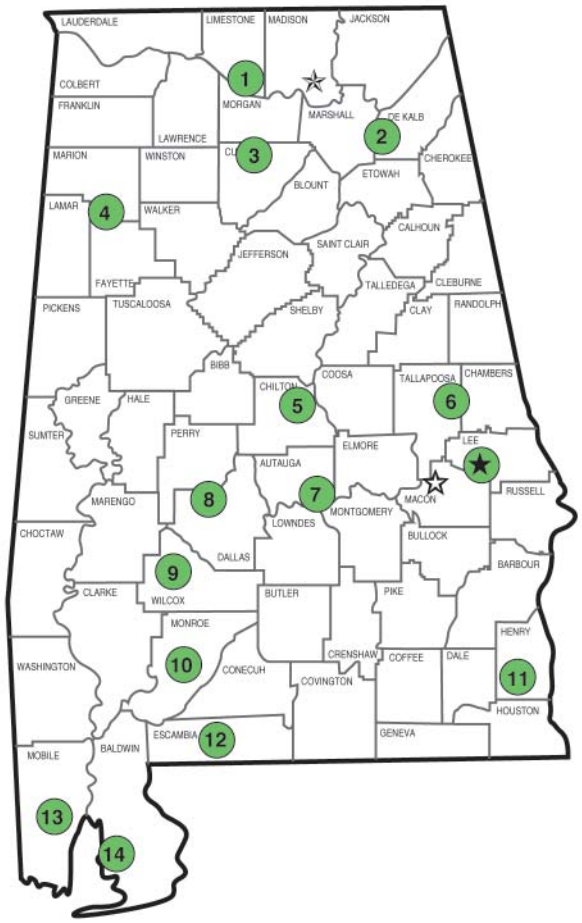
How: Send a disk and hard copy to

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.