

Spring 2008 Commercial Fruit and Vegetable Variety Trials



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**Names of chemicals are mentioned only for describing the production practices used.
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Introduction: Interpreting Vegetable Varieties Performance Results

Edgar Vinson and Joe Kemble

The spring 2008 variety trials regional bulletin includes research results from Auburn University and North Carolina State University. The information provided by this report must be studied carefully in order to make the best selections possible. Although yield is a good indicator of varietal performance, other information must be studied. The following provides a few tips to help producers adequately interpret results in this report.

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

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

Statistical interpretation. The coefficient of determination (R^2), coefficient of variation (CV) and least significant difference (LSD, 5%) 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 E.V. Smith Research Center, 'Jaipur' yielded 34,872 pounds per acre, while 'Odyssey' and 'Wrangler' yielded 29,653 and 18,997 pounds per acre, respectively. Since there was less than a 12,244 difference between 'Odyssey' and 'Wrangler', there is no statistical difference between these two varieties. However, the yield difference between 'Jaipur' and 'Wrangler' was 15,875, 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 18.

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.ag.auburn.edu/aaes/communications/publications/fruits-nutsvegs.html>.

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

TABLE 2. DESCRIPTION OF RATINGS

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

CANTALOUPE

Cantaloupe Varieties Compared in North Alabama

Joe Kemble, Edgar Vinson, and Jason Burkett

A small melon trial was conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama, and at the E.V. Smith Research Center (EVSRC) in Shorter (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 online at <http://www.aces.edu/counties/>.

Cantaloupe and varieties were direct-seeded on May 6 at EVSRC and April 30 at NAHRC into 30 foot rows with 6 feet between rows and a within row spacing of 2 feet. Drip irrigation and black plastic mulch were used.

Melons were harvested six times from July 9 through July 21 at EVSRC and eight times from July 7 through July 25 at NAHRC. At both locations, melons were harvested at half slip stage of maturity (Table 3).

At NAHRC, there were no differences in marketable yield. All varieties were statistically similar to the market standard 'Athena'. In the marketable yield category, 'Gala' was the top producing variety. At over 36,000 fruit per acre, 'Gala' produced a significantly higher number of fruit than all other varieties. 'Gala' fruit were small, weighing approximately 1.5 pounds per fruit.

At EVSRC, six varieties were evaluated. 'Jaipur', 'Eclipse', and 'Odyssey' were all similar to 'Athena' in total marketable yield. In total marketable number, all varieties with the exception of 'Halona' were similar to 'Athena'.

TABLE 1. RATINGS OF THE 2008 CANTALOUPE VARIETY TRIAL¹

Location	NAHRC	EVSRC
Weather	5	3
Fertility	5	5
Irrigation	5	5
Pests	5	5
Overall	5	5

¹ See introduction for description of ratings scales

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
Aphrodite	F ₁	Seedway/Novartis	E	O	72	FW
Athena	F ₁	Seedway/Novartis	E	O	80	FW,PM
Eclipse	F ₁	Seminis	E	O	85	FW,PM
Gala	F ₁	Palmer	Sp	G	70	FW,PM
Girlie	F ₁	Palmer	Sp	G	80	FW,PM
Halona	F ₁	Johnny's	E	O	73	FW,PM
Jaipur	F ₁	Seminis	E	O	—	—
Master Choice	F ₁	Palmer	E	O	85	Alt,FW,PM ,PV
Odyssey	F ₁	Sunseeds	E	O	75	FW
Orange Sherbet	F ₁	Palmer	E	O	83	FW,PM
Sigal	F ₁	Palmer	Sp	G	60	PM
Tasty Sherbet	F ₁	Palmer	E	O	86	Alt,FW,PM
Victoria	F ₁	Palmer	E	O	80	FW,PM
Wrangler	F ₁	Hollar	E	O	85	FW,PM

¹ Type: F₁ = hybrid variety. ² Rind Aspect: E= Eastern ; SP= Specialty. ³ Flesh Color: O = Orange. ⁴ Disease Claims: Alt=Alternaria, FW = Fusarium Wilt, PV=Potty Virus, PM = Powdery Mildew.

TABLE 3. PERFORMANCE OF SELECTED EASTERN CANTALOUPE VARIETIES

Variety	Marketable yield <i>lb/A</i>	Marketable fruit <i>no/A</i>	Individual fruit weight <i>lb</i>	Percent soluble solids <i>(brix)</i>	Cull weight <i>lb/A</i>
North Alabama Horticulture Research Center – Cullman, AL					
Eclipse	73,453	12,614	5.80	11.13	•
Halona	73,222	16,698	4.38	11.28	*
Tasty Sherbet	71,404	18,059	3.95	11.65	*
Orange Sherbet	69,626	12,070	5.73	12.65	*
Aphrodite	67,237	9,710	6.92	10.80	*
Odyssey	64,066	9,892	6.47	9.85	*
Jaipur	63,261	11,253	5.01	12.23	*
Athena	62,230	12,614	4.93	12.03	*
Girlye	61,411	17,243	3.56	11.14	*
Master Choice	61,141	12,070	5.08	12.05	*
Gala	59,503	36,209	1.64	11.40	*
Wrangler	57,166	17,515	3.26	12.43	*
Sigal	51,776	11,616	4.45	12.05	*
Victoria	47,485	10,073	4.71	9.53	*
<i>R</i>²	0.24	0.40	0.85	0.30	
<i>CV</i>	32	70	13	14	
<i>LSD</i>	28,702	14,761	0.90	2.28	
E.V. Smith Research Center – Shorter, AL					
Jaipur	34,872	6,806	5.14	•	3,056
Eclipse	32,604	5,899	5.79	•	2,650
Athena	31,704	6,534	4.88	•	3,651
Odyssey	29,653	4,991	5.86	•	2,737
Wrangler	18,997	5,264	3.67	•	2,010
Halona	15,713	3,721	4.85	•	9,648
<i>R</i>²	0.51	0.30	0.50		0.50
<i>CV</i>	30	36	17		80
<i>LSD</i>	12,244	2,992	1.30		5,240

• = information not available.

New Tomato Varieties, New Standards

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

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

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. At BARU, 13-13-13 was applied pre-plant on April 4. Plants received weekly, alternating injections of potassium nitrate or calcium nitrate (at a rate of 10 to 20 pounds per acre) from May 8 through July 15. Pesticides were applied weekly from May 21 through July 18. At NAHRC, plants received weekly injections of ammonium nitrate at a rate of 10 pounds per acre. No pesticides were applied. For current recommendations for pest and weed control in vegetable production in

Alabama, consult your county extension agent (see <http://www.aces.edu/counties/>).

Tomatoes were harvested, weighed, and graded on July 22 and July 28 at BARU and July 18 through August 11 at NAHRC. Grades and corresponding fruit diameters of fresh market tomato were adapted from the Tomato Grader's Guide (Circular ANR 643 from the Alabama Cooperative Extension System) and were Jumbo (diameter greater than 3.5 inch), extra-large (diameter greater than 2.9 inch), large (diameter greater than 2.5 inch) and medium (diameter greater than 2.3 inch). Marketable yield was the sum of jumbo, extra-large, large, and medium grades (Table 3).

At BARU, the market standard 'Florida 47' produced remarkably lower total marketable yields than all other varieties. In this category, 'BHN 640', a standard TSWV resistant variety, performed as well as 'Nico', 'Bella Rosa', and 'Amelia' but produced yields that were significantly lower than 'OFRI'. In the individual fruit weight category, 'OFRI' produced significantly larger fruit than all other varieties. This accounts for 'OFRI' having the highest total marketable yield while also being one of the lowest producers in number of fruit per acre.

At NAHRC, four advanced experimental lines from North Carolina State University were included again in this trial. One experimental line, NC 07245, produced yields similar to 'BHN 640' and 'Florida 47'. The other experimental lines produced yields that were significantly lower than the standard varieties. These varieties performed as well or better than the 'Florida 47' and 'BHN 640'.

TABLE 1. RATINGS OF THE 2008 TOMATO VARIETY TRIAL¹

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

¹ See introduction for description of ratings scales

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

Variety	Type ¹	Seed source	Plant habit ²	Fruit color ³	Days to harvest	Disease claims ⁴	Years evaluated
Amelia	F ₁ /FM	Harris Moran	Det	Red	80	**FW,TSWV,VW	03-08
Bella Rosa	F ₁ /FM	Sakata	Det	Red	74	*FW,TSWV,VW	07-08
BHN 640	F ₁ /FM	BHN	Det	Red	75	**FW,TSWV,VW	03-08
Crista	F ₁ /FM	Harris Moran	Det	Red	74	**FW,NE,TSWV,VW	06-08
Florida 47	F ₁ /FM	Seminis	Det	Red	75	ASC,*FW,St,TY,VW	97-99,02-07
NC 057245	F ₁ /FM	NC State	Det	Red	—	TSWV	08
NC 0860	F ₁ /FM	NC State	Det	Red	—	TSWV	08
NC 07234	F ₁ /FM	NC State	Det	Red	—	TSWV	08
NC 07245	F ₁ /FM	NC State	Det	Red	—	TSWV	08
Phoenix	F ₁ /FM	Seminis	Det	Red	—	ASC,*FW,St,VW	06,08
Nico	F ₁ /FM	Harris Moran	Det	Red	—	FW,VW TSWV,Nt	05-07
Talladega	F ₁ /FM	Seedway	Det.	Red	76	*FW,St,TSWV,VW	07-08
OFRI	F ₁ /FM	Sieger	Det.	Red	—	ASC,*FW,St,VW	07-08

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. YIELD OF SELECTED TOMATO VARIETIES

Variety	Total market-able yield	Total market-able number	Extra large weight	Extra large number	Large weight	Large number	Medium weight	Medium number	Individual fruit weight	Cull weight
	lb/A	no/A	lb/A	no/A	lb/A	no/A	lb/A	no/A	lb	lb/A
Brewton Agricultural Research Unit										
OFRI	39,476	33,665	18,596	16,783	14,029	10,854	6,851	6,027	1.17	3,106
Nico	38,150	79,931	19,011	32,190	13,977	31,973	5,162	15,769	0.48	13,406
Bella Rosa	34,986	73,624	19,437	32,190	11,051	25,991	4,498	15,443	0.48	10,196
Amelia	33,807	61,009	24,477	36,975	7,130	16,748	2,200	7,286	0.55	11,812
BHN 640	30,747	67,316	12,760	22,946	12,958	30,559	5,030	13,811	0.46	15,468
Crista	29,941	59,921	17,062	26,535	9,325	21,424	3,554	11,963	0.50	10,624
Talladega	26,868	50,243	18,992	29,580	6,132	14,573	1,743	6,090	0.54	17,335
Phoenix	24,538	48,068	16,144	25,339	5,679	13,376	2,715	9,353	0.52	11,623
FL.47	9,020	20,989	4,481	8,048	3,167	8,374	1,372	4,568	0.44	7,770
R²	0.79	0.83	0.70	0.71	0.82	0.85	0.76	0.61	0.92	0.89
CV	19	19	26	26	24	22	35	43	15	15
LSD	8,470	15,196	6,409	9,569	3,218	6,134	1,855	6,370	0.122	2,540

continued

TABLE 3, CONT. TOTAL YIELD OF SELECTED TOMATO VARIETIES

Variety	Total market-able yield	Total market-able number	Extra large weight	Extra large number	Large weight	Large number	Medium weight	Medium number	Small weight	Individual fruit weight	Cull weight
	<i>lb/A</i>	<i>no/A</i>	<i>lb/A</i>	<i>no/A</i>	<i>lb/A</i>	<i>no/A</i>	<i>lb/A</i>	<i>no/A</i>	<i>lb/A</i>	<i>lb</i>	<i>lb/A</i>
North Alabama Horticulture Research Center											
BHN640	60,901	112,744	2,501	2,904	23,838	36,151	34,561	73,689	19,477	0.54	15,402
NC 07245	60,248	103,993	4,371	4,628	29,971	45,187	25,905	54,178	15,811	0.58	13,556
Crista	55,282	99,366	3,090	3,086	28,324	45,007	23,868	51,274	17,188	0.56	12,078
Bella Rosa	54,188	92,150	6,156	6,262	25,825	39,243	22,207	46,646	13,053	0.59	13,897
Florida 47	53,610	94,024	4,873	5,264	22,112	34,420	20,160	43,076	16,331	0.56	20,359
OFRI	50,706	96,546	2,362	2,541	19,943	32,070	22,290	50,003	21,244	0.53	17,526
Talladega	49,622	93,382	1,277	1,331	18,999	29,017	19,951	45,194	13,445	0.53	17,719
NC 0860	42,173	75,602	6,363	6,534	18,490	28,013	16,508	35,302	16,279	0.56	16,473
Nico	41,609	76,843	2,738	2,425	18,420	31,311	20,451	43,106	16,905	0.54	13,864
NC 07235	40,881	71,084	2,744	2,904	20,261	31,698	17,876	36,482	12,945	0.58	14,983
Amelia	40,373	83,127	4,273	4,719	16,545	25,837	19,990	46,010	14,160	0.49	11,279
Mt. Fresh	36,267	65,522	1,688	1,815	15,746	24,140	17,632	38,750	16,756	0.55	18,250
NC 0694	27,301	55,902	316	363	9,767	15,761	17,133	39,839	16,403	0.49	20,300
<i>R</i>²	0.70	0.74	0.62	0.64	0.58	0.60	0.53	0.50	0.33	0.56	0.51
<i>CV</i>	16	14	52	50	30	29	27	27	28	6	21
<i>LSD</i>	11,425	18,005	2,679	2,638	8,785	13,264	7,982	17,598	6,588	0.05	4,820

Top Summer Squash Varieties Show Early High Yields

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

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

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

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. At BARU, 13-13-13 was applied preplant at a rate of 500 pounds per acre. Fungicides were applied weekly from May 29 through June 13. Plants received weekly, alternating injections of calcium nitrate or potassium nitrate (at a rate of 10 pounds N per acre) from May 8 through June 17. At EVSRC, plants received weekly injections, alternating between potassium nitrate and calcium nitrate (at a rate of 7 pounds N per acre) from May 12 through June 30.

For current recommendations for pest and weed control in vegetable production in Alabama, consult your county extension agent or go online to <http://www.aces.edu/counties/>.

Squash were harvested nine times between July 2 and July 20 at BARU and 10 times from June 9 through July 2 at EVSRC. Squash were graded according to the United States Standards for Grades of Summer Squash (U.S. Dept. Agr. G.P.O 1987-180-916:40730 AMS) (Table 3).

At BARU, ‘Gentry’ and ‘Conqueror III’ were the top performers in early marketable yield. These varieties as well as ‘XPT 1832 III’ had significantly higher yields than the standard variety ‘Destiny III’. All other varieties, with the exception of ‘Liberator III’ and ‘Gold Star’, were similar in yield to ‘Destiny III’. In the US No. 1 category, ‘Gentry’ had higher yields than all other varieties. US No.1 grade is comprised of fruit of the higher quality. In total marketable yield, ‘XPT 1832 III’ was similar to ‘Gentry’. Both varieties produced significantly higher yields than all other entries. ‘Conqueror III’ was significantly higher than ‘Destiny III’. ‘Liberator’, ‘Lioness’, ‘Sunray’, and ‘Gold Star’ produced lower yields than ‘Destiny III’. Both ‘XPT 1832 III’ and ‘Gentry’ produced higher yields of US No. 1 fruit.

At EVSRC, ‘Lioness’ topped the list in early marketable yield. These yields were similar to ‘XPT 1832 III’ and ‘Gentry’. There were fewer differences in total marketable yield. ‘Gentry’ was one of the top performers overall. However, with the exception of ‘Sunray’, these yields were statistically similar to all other varieties.

TABLE 1. RATINGS OF THE 2008 SUMMER SQUASH VARIETY TRIAL¹

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

¹ See introduction for description of ratings scales

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	F ₁	Seminis	41	CMV, PRSV, WMV, ZYMV	05-08
Destiny III	F ₁	Seminis	41	CMV, WMV, ZYMV	97-01, 04-06, 08
Early Prolific	OP	Seedway	42	–	07, 08
Gentry	F ₁	Novartis	43	–	95-99, 02-08
Gold Star	F ₁	Seedway	44	CMV, PM	07, 08
Liberator III	F ₁	Seminis	41	CMV, WMV, ZYMV	06-08
Lioness	F ₁	Harris Moran	–	CMV, WMV, ZYMV	04-08
Sunray	F ₁	Seedway	45	CMV, PM, WMV	03, 04, 07, 08
XPT 1832 III	F ₁	Sieger	44	CMV, WMV, ZYMV	06-08

– = none; from seed catalogues

¹ Type: F₁ = Hybrid; OP = Open Pollinated.

² Disease Claims: CMV = Cucumber Mosaic Virus; PM = Powdery Mildew; PRSV = Papaya Ring Spot Virus; ZYMV = Zucchini Yellow Mosaic Virus; WMV = Watermelon Mosaic Virus.

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

Variety	Early marketable yield <i>lb/A</i>	Early marketable number <i>no/A</i>	Early nonmarketable weight <i>lb/A</i>	Early nonmarketable number <i>no/A</i>	Early US No. 1 weight <i>lb/A</i>	Early US No. 2 weight <i>lb/A</i>	Early US No. 1 number <i>no/A</i>	Early US No. 2 number <i>no/A</i>
Brewton Agriculture Research Unit								
Gentry	8,111				5,919	2,191	26,970	5,546
Conqueror III	7,296				5,514	1,782	19,249	3,589
XPT 1832 III	7,234				5,914	1,320	22,946	2,719
Destiny III	6,267				4,603	1,664	19,249	3,698
Sunray	5,713				4,246	1,467	17,400	3,371
Lioness	5,569				3,575	1,994	12,071	4,024
Early Prolific	5,484				3,789	1,695	14,573	4,133
Liberator III	5,305				4,371	934	15,551	1,958
Gold Star	4,323				3,330	993	15,008	2,393
R²	0.85				0.80	0.70	0.90	0.55
CV	10				12	28	12	32
LSD	876				793	685	3,039	1,642
E.V. Smith Research Center								
Lioness	9,632	34,931	9,479	5,264				
XPT 1832 III	7,292	40,194	1,172	10,049				
Gentry	6,539	62,444	2,991	26,796				
Liberator III	5,192	35,888	2,419	12,920				
Gold Star	4,835	40,194	3,744	21,772				
Conqueror III	4,704	37,084	2,227	11,963				
Destiny III	4,414	39,716	2,282	18,183				
Early Prolific	4,254	33,256	8,127	26,796				
Sunray	3,763	29,189	2,660	11,006				
R²	0.52	0.53						
CV	51	32						
LSD	4,108	17,467						

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

Variety	Total marketable yield	Total marketable number	Total nonmarketable weight	Total nonmarketable number	Total US No. 1 weight	Total US No. 2 weight	Total US No. 1 number	Total US No. 2 number
	<i>lb/A</i>	<i>no/A</i>	<i>lb/A</i>	<i>no/A</i>	<i>lb/A</i>	<i>lb/A</i>	<i>no/A</i>	<i>no/A</i>
Brewton Agriculture Research Unit								
XPT 1832 III	13,817				11,433	2,384	45,675	4,894
Gentry	13,730				10,599	3,131	48,611	7,830
Conqueror III	12,117				8,908	3,209	31,755	6,199
Early Prolific	10,940				7,720	3,220	30,124	7,613
Destiny III	10,548				8,200	2,348	35,996	5,220
Liberator III	9,865				7,938	1,927	28,601	4,024
Lioness	9,249				6,453	2,796	23,925	5,546
Sunray	8,973				7,145	1,828	30,341	4,024
Gold Star	7,288				5,941	1,347	26,426	3,263
<i>R</i>²	0.90				0.91	0.66	0.90	0.60
<i>CV</i>	8				8	28	11	30
<i>LSD</i>	1,287				910	1,076	5,163	2,372
E.V. Smith Research Center								
Conqueror III	15,958	113,883	6,618	42,587				
Gentry	15,905	143,072	10,115	94,743				
XPT 1832 III	13,829	113,883	11,584	47,850				
Destiny III	13,422	111,969	7,048	56,942				
Early Prolific	12,288	98,093	16,614	58,856				
Liberator III	11,771	85,652	9,034	45,936				
Lioness	11,766	86,609	15,188	29,189				
Gold Star	11,058	91,394	8,910	57,420				
Sunray	9,087	70,818	13,209	38,759				
<i>R</i>²	0.64	0.80	0.70	0.90				
<i>CV</i>	20	17	46	20				
<i>LSD</i>	6,039	39,118	10,903	23,628				

Replicated Seedless Table Grape Cultivar Trial

Carl Cantaluppi

A study was initiated in 2005 to look at the possibility of growing seedless, fresh market table grapes (*Vitis labrusca*) in the northern Piedmont of North Carolina. Research done on these grapes is scant, and no one has grown these grapes on a commercial scale in the North Carolina Piedmont.

A replicated cultivar trial of 14 different table grapes (Table 1) were grown on Angel's Nest farm (Doreathy Booth, owner) north of Oxford, North Carolina. The grapes were varieties from the breeding programs at Cornell University and the University of Arkansas. The planting consisted of 360 vines on 1 acre. A randomized complete block design with five plants per plot and five replications was used. Vines were spaced 10 feet between vines in the row and 10 feet between rows and were planted on May 18, 2005 in a clay loam soil.

An Innovative Program Grant, sponsored by NC A&T State University paid for the labor and the cost of the trellis wire and electric fence around the one-acre perimeter to control the deer. Out-of-pocket expenses included the grapevines, trellis posts, bamboo stakes, irrigation system, grow-tubes, mulch, fertilizer, herbicides, and insecticides, which amounted to about \$10,000 (Table 2).

During 2005 and 2006, the vines were trained and pruned to prepare for a first harvest in 2007. Despite a freeze on Easter weekend in 2007, which killed the primary buds, the secondary buds emerged and produced a crop of 909 pounds on the entire acre.

Trial Cultivar Descriptions^{1,2}

Grape breeders have responded to consumer preferences for seedless grapes with the development of numerous improved varieties. The seedless trait in grapes was originally derived from cultivars of ancient origin such as 'Thompson Seedless' and 'Black Monukka'. Most seedless grapes suitable for the eastern United States are descended from crosses with these two cultivars.

Because the trait originated in cultivars not suitable for surviving the cold temperatures of New York winters,

many seedless varieties are not sufficiently winter hardy in New York, although they are much hardier than their seedless parents. More recently named seedless cultivars such as 'Canadice', 'Einset Seedless', 'Reliance', and 'Vanessa' represent a distinct improvement in cold hardiness. Breeding programs in New York, Ontario, Arkansas, and elsewhere continue to produce seedless selections with improved hardiness and quality.

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

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

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

White Grapes

Marquis, a cross of 'Athens' x 'Emerald Seedless', released in 1996, is a white seedless grape with excellent mild American flavor. The berries are large, often 3.5 to 5.0 grams per berry, with a juicy, melting texture. Clusters are large and attractive, while the vines are very productive. Ripe fruit holds well on the vine, with the flavors going from a mild fruity flavor when first ripe, to a stronger *labrusca* flavor 2

¹ Comments adapted from Dr. Bruce Reisch, Grape Breeder, Cornell University.

² Most are New York varieties, except for Arkansas and Canada varieties, as noted.

weeks later. Vines are very vigorous and productive. Ripens in Oxford, North Carolina, from August 2 to August 10.

Himrod, produced from a cross between ‘Ontario’ and ‘Thompson Seedless’, is the most successful table grape released from the Cornell University grape breeding program (1952). It produces large bunches of white seedless grapes with excellent, honey-like flavor and melting, juicy texture. The clusters are loosely filled. Cluster weight is 0.36 pound; berry weight is 2.1g. Ripens in Oxford July 20 – 27.

Lakemont was also produced from the same cross as ‘Himrod’ but has a milder flavor and more compact clusters of small to medium-sized berries. Cluster thinning prevents overcropping. Cluster weight is 0.48 pounds; berry weight is 1.7g. Ripens in Oxford from July 26 to August 3.

Interlaken is a sister seedling of ‘Himrod’ (same parents) with seedless green to golden berries. The clusters are medium sized and compact with small, white berries that ripen very early. Cluster weight is 0.27 pound; berry weight is 1.5g. Grapes were not harvest in 2007 due to the vines not being planted until 2006.

Red Grapes

Einset Seedless resulted from the cross of ‘Fredonia’ x ‘Canner’ (‘Hunisa’ x ‘Sultanina’) made in 1963 by G.W. Remaily. The berries are oval and bright red with a light waxy bloom (powdery covering on the fruit). The medium soft seed remnant is not usually noticeable. Berries are medium size. Cluster weight is 0.32 pound; berry weight is 2.3g. The skin is slightly tough and adheres to the tender flesh. The flavor is fruity with a mild note of labrusca and sweet strawberry-like taste. Ripens in Oxford from July 20 to 26.

Vanessa was developed by the Horticultural Research Institute of Ontario, Canada, and is a red dessert grape of excellent quality. The seed remnant is usually large and soft when noticeable. Berries are medium in size on medium, well-filled clusters. The flavor is mild and fruity, and berry texture is firm to crisp. The fruit quality is among the best of the red seedless types. Ripens in Oxford from July 20 to 27.

Canadice produces medium, excessively compact clusters with small red berries. Cluster weight is 0.50 pound; berry weight is 1.6g. Ripens in Oxford on July 26.

Reliance comes from the University of Arkansas, and produces large clusters of round, red, medium-sized berries. The skin is tender, and the flesh is melting in texture, with a sweet labrusca flavor. Cold hardiness is among the highest of the seedless varieties. Cluster weight is 0.62 pound; berry weight is 2.3g. Grapes were not harvested in 2007 due to vines not being planted until 2006.

Suffolk Red produces medium to large clusters of mild-flavored red berries. The clusters are loose. Cluster weight is 0.32 pound; berry weight is 2.7g. Ripens in Oxford on August 10.

Blue Grapes

Mars is a release from the University of Arkansas, and is a vigorous, blue seedless grape. The flavor is mildly labrusca and the berries are slipskin (having a tough skin which separates readily from the pulpy flesh). Clusters are medium-sized, cylindrical, and well filled. Cluster weight is 0.40 pound; berry weight is 3g. A very high-yielding cultivar, it has a long ripening season from July 27 to August 10 in Oxford.

Venus, also from the University of Arkansas, is a vigorous and productive blue-black grape. The medium-large clusters produce large berries with mild labrusca flavors. Cluster weight is 0.60 pound; berry weight is 2.9g. Seed traces may be noticeable. Ripens from July 20 to August 3 in Oxford.

Glenora produces medium-sized blue berries. An excellent flavorful seedless variety. Ripens in Oxford from July 20 to July 27.

Jupiter was released from the University of Arkansas in 1998. It is an early maturing reddish-blue to blue variety when mature. It has large, firm, non-slipskin berries on medium-sized clusters. Fruit has a distinct ‘Muscat’ flavor. Cluster weight is 0.5 pound; berry weight is 5g. Ripens from July 20 to July 27 in Oxford.

Concord Seedless is similar in flavor and texture to ‘Concord’. The clusters and berries are much smaller than those of ‘Concord’. Productivity is erratic due to its uneven ripening under hot temperatures. Ripens on August 10 in Oxford.

TABLE 1. 2007 SEEDLESS TABLE GRAPE CULTIVAR TRIAL, ANGEL'S NEST FARM, OXFORD, NC

Cultivar	Yield ¹ lb/A	Sugar %	Harvest dates
Mars	329 a	17	7/27, 8/2, 8/10
Marquis	4295 a	18	8/2, 8/10
Venus	1972 b	18	7/20, 7/27, 8/3
Jupiter	1686 bc	19	7/20, 7/26
Lakemont	776 bc	20	7/26, 8/3
Einset	668 bc	19	7/20, 7/26
Glenora	564 bc	17	7/20, 7/27
Canadice	447 bc	18	7/26
Vanessa	402 bc	21	7/20/7/27
Concord Seedless	341 bc	19	8/10
Suffolk Red	200 c	22	8/10
Himrod	145 c	17	7/20, 7/27
Reliance	–	–	–
Interlaken	–	–	–

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

The actual yield from each row is extrapolated to come up with yield per acre. The actual yield of all the grape varieties added together amounted to 909 pounds on the entire acre this year.

Vines were purchased from Double A Vineyards, 10277 Christy Road, Fredonia, NY 14063
North Carolina State University does not endorse Double A Vineyards. It is just listed as a source and undoubtedly, there are other suitable sources of grape vines.

TABLE 2. VINEYARD ESTABLISHMENT COSTS

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

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
Phone: (772) 221-0653

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

Other 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

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

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

BHN

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

Seminis Vegetable Seeds, Inc

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

Harris Moran

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

Rupp Seeds

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

Siegers Seed Company

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

Harris Seeds

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

Sandoz Rogers/Novartis

To order: (912) 560-1863

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 2008).

When: June 25, 2009

Deadline for fall 2008 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:

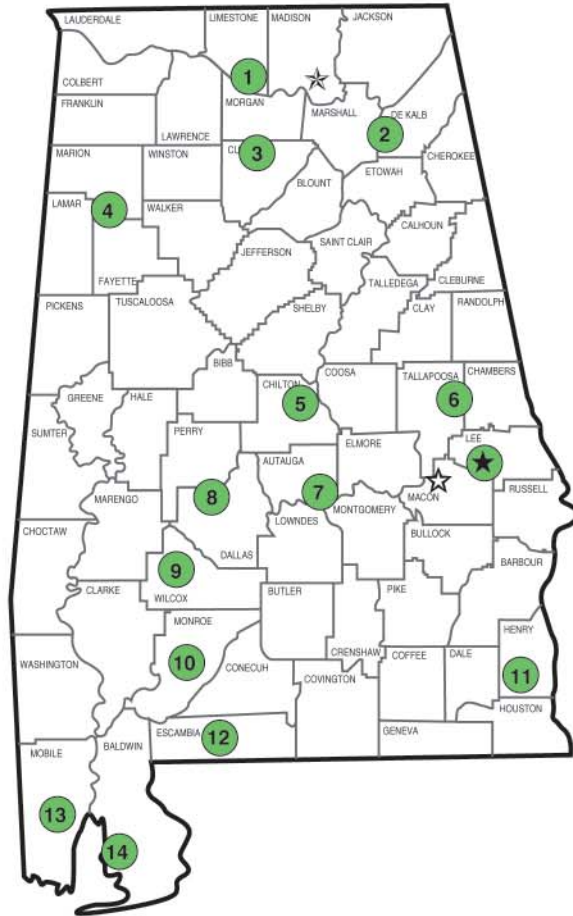
- Follow the format used in the other regional bulletins.
- Include each author's complete mailing address, e-mail address, and phone number.
- Follow your own unit's internal review process. Contributions will be edited, but not formally reviewed.

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.