Fall 2003 Commercial Vegetable Variety Trials

May 2004
Regional Bulletin 12
Auburn University
Mississippi State University
University of Georgia

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

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Introduction: Tips for Interpreting Vegetable Variety Performance Results

Joe Kemble and Edgar Vinson

The Fall 2003 Vegetable Variety Trials regional bulletin includes results from Alabama, Georgia, and Mississippi. Trials conducted at various locations provide a wealth of information to growers, extension specialists, researchers, and seed companies.

The main purpose of vegetable variety evaluation, however, is to provide growers and seed retailers practical information on varieties and to assist growers in selecting an appropriate variety. Here are a few tips for interpreting vegetable variety trial resuslts.

Open Pollinated vs. Hybrid Varieties

In general, hybrids (also referred to as F1) mature earlier and produce a more uniform crop. Often, they have improved disease, pest, or virus tolerances and/or resistances. Generally, hybrid seed is more expensive than that of open-pollinated (OP) varieties, and seeds cannot be collected and saved for planting next year's crop. Despite the advantages hybrids offer, OP varieties are still planted in Alabama. Selecting a hybrid variety, however, is the first step toward earliness and improved crop quality.

Yield Potential

Yields reported in variety trial results are extrapolated from small plots. Depending on the vegetable crop, plot sizes range from 50 to 600 square feet. Yields per acre are estimated by multiplying plot yields by corrective factors ranging from 100 to 1,000. Small errors can be amplified, and estimated yields per acre may not be realistic. Therefore, locations cannot be compared to one another by just looking at the range of yields actually reported. The relative differences in performance among varieties within a location are realistic, however, and can be used to identify the 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 differences due to small plots (sampling error) and true (but unknown) differences among entries.

R^2 values range between zero and one. Values close to one 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 pumpkin trial presented in this issue conducted at the North Alabama Horticulture Research Center, 'Pro Gold 500' yielded 87,459 pounds per acre, while 'Howdy Doody' and 'Racer' yielded 72,857 and 64,410 pounds per acre, respectively. The LSD for this test was 15,000. Since there was less than a 15,000 difference between 'Pro Gold 500' and Howdy Doody' , there is no statistical difference between these two varieties. However, the yield difference between 'Pro Gold 500' and 'Racer' was 23,049, indicating that there is a real difference between these two varieties.

From a practical point of view, producers should place the greatest importance on LSD values when interpreting results.

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 1). 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. Results from trials with ratings of 2 and under are not reported.

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 2), planting dates, fertilizer rates, and detailed spray schedules is provided to help producers compare their own practices to the standard one used in the trials and make relevant adjustments.

Where to Get Seeds

Because seeds are alive, their performance and germination rate depend on how old they are, where and how they were collected, and how they have been handled and stored. It is always preferable to purchase certified seeds from a reputable source, such as the ones listed in Seed Sources for Alabama Trials at the end of this publication.

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 planting a large number of a single variety.

Vegetable Trials on the Web

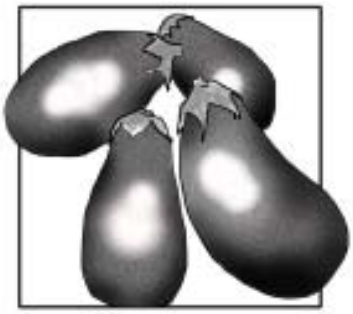
For more vegetable variety information be sure to visit the Commercial Vegetable Production at AU Web page at http://www.aces.edu/dept/com_veg/veg_trial/vegetabl.htm. Here you will find description of variety types, a ratings system, and information about participating seed companies.

Table 1. 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

Table 2. Soil Types at the Locations of the AlabamaTrials

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 Substation (Camden)	0.13 - 0.15	Forkland fine sandy loam
E.V. Smith Research Center, Horticultural Unit (Shorter)	0.15 - 0.17	Norfolk-orangeburg loamy sand
Chilton Research and Extension Center (Clanton)	0.13 - 0.15	Luvernue sandy loam
Upper Coastal Plain Agricultural Research 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



Eggplant Trial Conducted at Brewton

Joe Kemble, Edgar Vinson, and Randy Akridge

An eggplant variety trial was conducted at the Brewton Agricultural Research Unit (BARU) in Brewton (Tables 1 and 2).

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. Current recommendations for pest and weed control in vegetable production in Alabama may be found in *IPM Commercial Vegetables: Insect, Disease, Nematode and Weed Control Recommendations* (Publication 2003IPM-2 from the Alabama Cooperative Extension System).

Eggplant transplants were set on plots that were 20 feet long and 6 feet wide on May 23 at a within row spacing of 2 feet. There was a 10-foot spacing between rows and a 5-foot spacing within a row. The experimental design was a randomized complete block with four replications.

Eggplants were harvested six times between July 7 and August 11(Table 3). Eggplants were then mowed to the ground and allowed to grow back for a fall harvest.

Table 1. Ratings of the 2003 Eggplant Variety Trials[1]

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

[1]See introduction for a description of rating scales.

Eggplants were harvested three times in the fall between October 3 and October 17 (Table 3).

In early season production, 'Epic', 'Dusky', and 'Green Giant' were the top three performers followed by 'Megal' and 'Ichiban'. These varieties were statistically similar. In total spring production, 'Night Shadow' produced yields that were significantly higher than all other varieties except 'Black Bell'. Again in the fall production 'Night Shadow' had significantly higher yields than all other varieties with the exception of 'Zebra'.

Table 2. Seed Source and Characteristics of Selected Eggplant Varieties

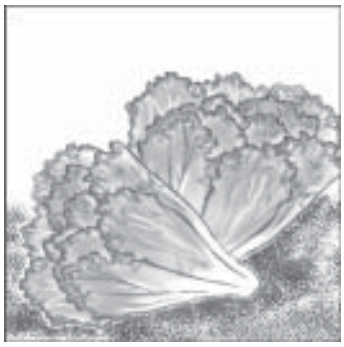
Variety	Type[1]	Seed source	Color[2]	Maturity	Disease resistance/tolerance[3]
Black Bell	F1	Stokes	B	65	—
Calliope	F1	Johnny's Select	P,W	64	—
Dusky	F1	Seminis	B	62	TMV
Epic	F1	Seminis	B	64	TOMV
Ghostbuster	F1	Harris	W	80	—
Green Giant	F1	Johnny's Select	G	62	—
Ichiban	F1	Gurney's	B	58	—
Megal	F1	Vilmorin	B	60	CMV,TMV
Night Shadow	F1	Stokes	B	75	—
Vernal	F1	Stokes	B	70	CMV,TMV
Zebra	F1	Johnny's Select	P,W	70	—

[1]Type: F1=Hybrid. [2]Color: B=Black; P=Purple, W=White.
[3] Disease resistance/tolerance: CMV=Cucumber Mosaic Virus; TMV=Tobacco Mosaic Virus; TOMV=Tomato Mosaic Virus.
—=not available from seed catalogues.

Table 3. Early Spring, Total Spring, and Total Fall Production of Selected Eggplant Varieties

Variety	Early marketable yield *lbs/ac*	Early fancy weight *lbs/ac*	Early US no.1 weight *lbs/ac*	Early US no.2 weight *lbs/ac*	Early fancy number *no/ac*	Early US no.1 number *no/ac*	Early US no.2 number *no/ac*
Early Spring Yield							
Epic	6,932	4,335	1,789	1,616	4,785	1,958	1,305
Dusky	6,212	3,973	2,160	318	4,350	2,936	435
Green Giant	5,699	4,303	1,093	1,151	4,241	1,160	1,088
Megal	5,663	3,854	1,269	1,079	7,178	1,740	1,740
Ichaban	5,351	2,805	969	1,577	8,374	2,501	3,589
Black Bell	4,235	3,636	523	305	3,806	435	435
Calliope	3,179	2,609	1,140	•	2,828	870	•
Zebra	2,888	1,869	793	848	2,066	870	435
Night Shadow	2,863	2,227	848	•	1,849	870	•
Ghostbusters	2,143	1,864	1,118	•	1,958	1,740	•
Vernal	1,971	1,679	583	•	2,501	653	•
R^2	***0.80***	***0.53***	***0.51***	***0.34***	***0.72***	***0.60***	***0.70***
CV	***26***	***35***	***52***	***75***	***37***	***54***	***72***
LSD	***1,605***	***1,530***	***878***	***1,465***	***2,098***	***1,208***	***2,112***
Total Spring Yield							
Night Shadow	38,209	17,426	16,597	4,186	17,400	8,156	3,915
Black Bell	30,130	17,521	8,303	4,307	18,596	7,721	4,894
Epic	27,379	14,994	6,748	5,637	16,965	7,286	5,764
Dusky	25,605	13,396	7,162	5,047	15,116	8,265	5,655
Green Giant	25,542	14,850	7,504	3,189	13,920	6,525	3,045
Megal	24,809	13,460	6,362	4,987	23,381	9,788	8,265
Ichiban	23,057	11,554	5,340	6,164	32,843	12,941	12,506
Vernal	21,500	13,248	4,777	3,475	19,031	6,525	4,459
Ghostbuster	19,625	10,478	4,507	2,588	13,376	5,546	2,610
Zebra	19,575	10,675	4,806	1,827	13,811	6,416	2,030
Calliope	14,568	11,126	4,093	1,057	14,790	5,655	870
R^2	***0.50***	***0.50***	***0.70***	***0.44***	***0.61***	***0.44***	***0.70***
CV	***27***	***20***	***23***	***42***	***24***	***42***	***47***
LSD	***9,905***	***3,951***	***7,653***	***3,558***	***6,070***	***2,698***	***3,598***
Total Fall Yield							
Night Shadow	15,852	12,139	2,660	1,054	15,225	3,806	1,631
Zebra	11,473	8,692	3,678	1,256	17,618	4,785	2,900
Ichiban	7,768	4,646	1,628	2,535	13,376	3,770	5,945
Vernal	6,628	4,888	2,320	•	10,114	4,350	•
Dusky	5,627	4,240	819	2,271	6,960	1,631	4,350
Calliope	5,492	4,317	1,251	944	9,461	4,060	3,045
Black Bell	3,634	2,562	1,182	744	3,589	1,595	1,740
Megal	3,350	2,240	1,797	422	5,003	4,568	1,088
Ghostbusters	3,240	2,534	941	•	5,111	1,595	•
Epic	3,212	2,514	594	418	3,806	1,196	870
Green Giant	2,205	1,815	1,562	•	2,284	1,740	•
R^2	***0.60***	***0.70***	***0.50***	***0.70***	***0.60***	***0.60***	***0.80***
CV	***59***	***55***	***70***	***55***	***54***	***47***	***48***
LSD	***5,327***	***3,620***	***2,296***	***1,165***	***6,562***	***1,164***	***2,221***

•=not found.



No Differences Found Among Romaine Lettuces

Joe Kemble, Edgar Vinson, and Jason Burkett

A lettuce variety trial containing butterhead, looseleaf, and romaine types was conducted at the E.V. Smith Research Center (EVSRC) in Shorter, Alabama (Tables 1 and 2). Beds were covered with white plastic mulch and drip irrigation was used.

On October 16 five-week-old lettuce transplants were set in double staggered rows space 12 inches apart with a within-row spacing of 12 inches. Plots were 10 feet long on 5-foot centers. This created a stand of approximately 17,400 plants per acre. The experimental design was a randomized complete block with four replications.

Fertilizer was applied according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

A liquid calcium nitrate solution and 20-10-20 were injected on September 19 and September 23 at a rate of 6 pounds of N per acre. Between October 16 and November 25, fertilization consisted of weekly injections of 6 pounds of N per acre, with alternate injections of calcium nitrate (9-0-0-11) and 20-10-20.

Table 1. Ratings of the 2003 Lettuce Variety Trials[1]

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

[1]See introduction for a description of rating scales.

Table 2. Seed Source, Earliness, and Disease Claims of Selected Lettuce Varieties

Variety	Head type	Seed source	Days to harvest	Leaf color	Disease claims[1]	Years evaluated
Optima	Butterhead	Vilmorin/Sieger's	55	Green	DM,LMV	95-97,02,03
Nancy	Butterhead	Johnny's	66	Red	—	96,97,02,03
Esmeralda	Butterhead	Sieger's	65	Green	DM,LMV	02,03
Tania	Butterhead	Harris	65	Green	DM	02,03
Harmony	Butterhead	Shamrock	68	Green	B,DM,TB	02,03
Athena	Looseleaf	Enza Zaden/Siegers	63	Green	CRR,DM,LMV,TB	02,03
Louisa	Looseleaf	Harris	56	Green	—	02,03
New Red Fire	Looseleaf	Takii	55	Red	—	95,96,02,03
Slobolt	Looseleaf	Siegers	57	Green	TB	96,97,02,03
Tango	Looseleaf	Johnny's	45	Green	—	98,003
Green Towers	Romaine	Harris	74	Green	—	02,03
Parris Island	Romaine	Stokes	65	Green	TB	96,97,02,03
Red Eye	Romaine	Stokes	•	Red	•	02,03

[1] Disease claims: B=Bolting, CRR=Cork root rot, DM=Downy mildew, LMV=Lettuce Mosaic Virus, TB=Tip burn.
—=not available from seed catalogues; •=not found.

Lettuce was harvested on December 5 and graded according to the *U.S. Standards for Grades of Romaine* (U.S. Dept. Of Agriculture Publication 60-6130) (Table 3). Among looseleaf types, 'Athena' and 'Slobolt' produced yields that were significantly higher than 'Tango', 'New Red Fire', and 'Louisa'. Butterhead types 'Nancy' and 'Tania' were similar in yield and had significantly higher yields than 'Esmeralda', 'Harmony' and 'Optima'. No differences were found among romaine types.

Table 3. Performance of Selected Romaine, Butterhead, and Looseleaf Lettuce Types

Variety	Type	Marketable weight *lbs/ac*	Marketable heads *no/ac*
Athena	Looseleaf	25,136	17,202
Slobolt	Looseleaf	20,724	16,985
Tango	Looseleaf	19,119	15,896
New Red Fire	Looseleaf	18,578	17,202
Louisa	Looseleaf	15,813	16,985
Green Tower	Romaine	24,719	17,202
Parris Island	Romaine	22,659	15,025
Red Eye	Romaine	20,858	17,420
Nancy	Butterhead	23,703	17,202
Tania	Butterhead	20,738	17,202
Esmeralda	Butterhead	19,665	17,202
Harmony	Butterhead	18,625	17,202
Optima	Butterhead	16,427	16,985
R^2		***0.60***	***0.50***
CV		***13***	***5***
LSD		***3,909***	***2,472***

Hot Pepper Trials Contain Ancho, Cayenne, and Jalepeño Types

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

Hot pepper varieties trials were conducted at the Brewton Agriculture Research Unit (BARU) in Brewton and the North Alabama Horticulture Research Center (NAHRC) in Cullman (Tables 1 and 2).

Fertilizer was applied according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

Table 1. Ratings of the 2003 Hot Pepper Variety Trials[1]

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

[1]See introduction for a description of rating scales.

At BARU, hot peppers were planted on bare ground on plots that were 3 feet by 7 feet with a within-row spacing of 12 inches. Drip irrigation was used. Peppers were

Table 2. Seed Source, Fruit Characteristics, and Earliness of Selected Hot Pepper Varieties

Variety	Type[1]	Classification	Seed source	Days to harvest	Pod shape	Color[2]	RSR[3]	Disease claims[4]
Tiburon	F1	Ancho	Siegers	81	Tapered	G–R	1,000-3,000	—
Ancho San Luis	OP	Ancho	Seminis	78	Blunt point	G–R	1,500-4,500	—
Ancho San Martin	F1	Ancho	Seminis	75	Tapered	G–R	—	—
Ancho 101	OP	Ancho	Rupp	78	Tapered	G–R	1,000-1,500	—
Andy	F1	Cayenne	Johnny's Select	65	Thin	G–R	—	TMV
Cayar	F1	Cayenne	Seedway	63	Thin	G–R	—	—
Cayenne LS	OP	Cayenne	Rupp	72	Thin	G–R	30,000-50,000	—
Mesilla	F1	Cayenne	Seminis	87	Thin	G–R	2,000-4,000	PVY,TEV,TbP
TM 888 Thin Hot	F1	Cayenne	Seedway	71	Thin	G–R	—	—
Ixtapa X3R	F1	Jalapeño	Seminis	75	Blunt point	G–R	4,000-6,000	BLS(1,2,3)
Grande	F1	Jalapeño	Seminis	75	Blunt point	G–R	4,000-6,000	PVY TEV
Mitla	F1	Jalapeño	Seminis	72	Blunt point	G–R	4,000-5,000	—
Summer Heat 105	F1	Jalapeño	Abbott & Cobb	—	Blunt point	G–R	—	—
Summer Heat 5000	F1	Jalapeño	Abbott & Cobb	75	Blunt point	G–R	—	CMV,PVY, TEV,TMV
Tula	F1	Jalapeño	Seminis	—	Blunt point	G–R	4,000-6,000	TMV

[1]Type: OP=Open pollinated, F1=Hybrid. [2]Color: G–R=Green fruit turning red. [3]RSR: Relative Scoville Rating=the higher the rating, the hotter the variety. [4]Disease claims: BLS (1,2,3)=Bacterial Leaf Spot races 1,2,and 3; PVY=Potato Virus Y; TEV=Tobacco Etch Virus; TbP=Tobamo Virus; TMV=Tobacco Mosaic Virus.
—=not available from seed catalogues.

transplanted on June 3. At NAHRC, hot peppers transplants were set on plots that were 8 feet by 10 feet on June 16. Beds were covered in white plastic mulch and drip irrigation was used. The experimental design was a randomized complete block with four replications.

At BARU, peppers were harvested on July 17, July 24, July 31, and August 12. At NAHRC peppers were harvested on July 30, August 26, and September 18. At both locations the weight of 25 pods was also determined (Table 3).

At NAHRC, jalapeño and ancho type peppers were tried. Jalapeño varieties 'Tula', 'Summer Heat 5000', and 'Summer Heat 105' were statistically similar. 'Tiburon' was the best of the three ancho types.

At BARU, ancho, cayenne, and jalapeño peppers were tried. Of the ancho types, 'Ancho 101' had the lowest yield. 'Andy' and 'TM 888 Thin Hot' were the two top yielding cayenne varieties. The jalapeño variety 'Ixtapa' had significantly higher yields than the standard variety 'Mitla'.

Table 3. Performance of Selected Jalepeño, Ancho, and Cayenne Hot Pepper Varieties

Variety	Type	Total marketable weight *lbs/ac*	25-pod weight *lbs*
North Alabama Horticulture Research Center			
Tula	Jalapeño	33,632	5.69
Summer Heat #5000	Jalapeño	32,205	5.32
Summer Heat #105	Jalapeño	30,397	5.15
Ixtapa	Jalapeño	26,353	5.77
Grande	Jalapeño	21,984	4.46
Tiburon	Ancho	21,880	13.46
Ancho San Martin	Ancho	16,673	12.00
Ancho San Luis	Ancho	13,144	10.78
R^2		***0.80***	***0.93***
CV		***15***	***15***
LSD		***6,213***	***1.6***
Brewton Agricultural Research Unit			
Tiburon	Ancho	8,452	2.81
Ancho San Martin	Ancho	6,792	1.70
Ancho 101	Ancho	3,427	1.23
Andy	Cayenne	13,813	1.75
TM 888 Thin Hot	Cayenne	11,516	0.76
Mesilla	Cayenne	10,857	2.72
Cayar	Cayenne	7,860	1.16
Rupp LS Cayenne	Cayenne	4,402	0.52
Ixtapa	Jalapeño	16,156	2.89
Grande	Jalapeño	12,724	2.32
Mitla	Jalapeño	11,858	2.74
Tula	Jalapeño	10,074	2.30
R^2		***0.84***	***0.84***
CV		***19***	***21***
LSD		***2,611***	***0.5***

Comparison of *Cucurbita moschata* Germplasm to Commercial Pumpkin Varieties

George E. Boyhan, Gerard W. Krewer, Darbie M. Granberry, and W. Terry Kelley

Pumpkin (*Cucurbita pepo* & *C. maxima*) is an important crop in the United States particularly for fall Halloween sales. Georgia produced only 510 acres of pumpkins in 2001 with a value just under $2 million. The top five pumpkin-producing counties that year were Dawson, Bacon, Brooks, Mitchell, and White Counties, which represented 263 acres with about half of this produced in Dawson and White Counties in north Georgia.

In 2001, the United States harvested 35,600 acres of pumpkins concentrated in six states: California, Illinois, Michigan, New York, Ohio, and Pennsylvania. This does not include the smaller acreage that is produced throughout the United States primarily for fall harvest.

Although south Georgia is the primary vegetable-producing region of the state, conditions are not conducive for fall pumpkin production. Diseases such as mosaic viruses, downy mildew, and powdery mildew preclude fall production due to the high susceptibility of most pumpkin varieties.

Several years ago, seed of *Cucurbita moschata* was obtained from Brazil and a program of selection was initiated to select for material with high disease resistance and fruit characteristics suitable for the fall Halloween market. The objective of this study was to compare this material to commercial pumpkin varieties under fall production in south Georgia.

Seed from the spring 2003 season selections were sown on July 21, 2003 in a randomized complete block design with three replications. Each plot consisted of 10 hills planted with an in-row spacing of 6 feet and a between-row spacing of 12 feet. Fertilization and weed control followed University of Georgia Cooperative Extension Service recommendations. There was no disease control program used. Plots were harvested on October 22, 2003 with each fruit weighed individually. Yield data were calculated based on a 360 square foot plot.

Plots were rated on September 3, 2003 for disease incidence. Each plot was assigned a disease severity rating of 1-5, with 1 indicating no disease symptoms and 5 severe symptoms. Although both downy mildew and mosaic disease symptoms were present, no attempt was made to identify specific diseases. The disease rating was based primarily on mosaic disease symptoms.

Because we wished to use the most recently selected material (spring 2003), we did not sow seed for this trial until July 21, which only allowed approximately 90 days to harvest. This material, we feel, would have performed better if it were sown one month earlier allowing for 120 days to maturity. Consequently, the fruit were smaller and yields lower than expected.

The disease rating information was the most dramatic development of this trial. The commercial varieties—'Merlin', 'Gold Strike', and 'Magic Lantern'—all had severe disease infections particularly to virus diseases, which affected yield. All of the experimental material had significantly lower disease incidence than the commercial varieties. This is important because disease incidence is the most limiting factor to south Georgia pumpkin production. There is no virus control measure that is effective in all cases; therefore, host-plant resistance will be an important attribute in this material.

Yields ranged from 1,416 pounds per acre for 'Gold Strike' to 30,278 pounds per acre for #8 (see table). These yields are considerably lower than have been recorded in recent trials. A trial held at Blairsville, Georgia, in 2002 had yields ranging from approximately 30,000 pounds per acre to more than 100,000 pounds per acre.

Experimental varieties #8, #6, and #17 all had significantly greater yields than the highest yielding commercial variety, 'Magic Lantern'. The high yields of the experimental varieties are the direct result of higher disease resistance. Commercial varieties exhibited virus disease symptoms early on which appeared to dramatically reduce growth and yield.

We plan to continue the selection process during the 2004 spring and fall seasons. In addition, variety tri-

als with the most promising material are planned for both spring and fall. It is hoped the spring trial will give us a good idea on yield potential in comparison to commercial varieties under favorable growing conditions, while the fall trial should give us another assessment of disease resistance along with production potential.

Pumpkin Yield and Fruit Characteristics

Variety	Source	Yield *lbs/ac*	Yield *no/ac*	Avg. fruit weight *lbs*	Fruit size range *lbs*	Disease rating[1]
Merlin	Harris Moran	3,081	484	6.4	2.5 – 10.2	4.3
Gold Strike	Rupp	1,416	202	7.0	3.6 – 12.3	4.0
Magic Lantern	Harris Moran	7,365	1,210	6.1	1.7 – 12.7	4.0
#12	Experimental	13,544	1,734	7.8	1.4 – 15.7	2.2
#17	Experimental	24,567	3,630	6.8	2.4 – 13.9	1.0
#6	Experimental	23,817	4,638	5.1	1.4 – 16.6	1.6
#8	Experimental	30,278	3,832	7.9	1.8 – 18.7	1.0
CV		***36%***				***10%***
Fisher's Protected LSD (p≤0.05)		***9,423***				***1.0***

[1] Virus disease rating: 1-5, 1=no visible symptoms, 5=severe symptoms.

High Pumpkin Yields at North Alabama

Joe Kemble, Edgar Vinson, and Arnold Caylor

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

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

Pumpkins were direct seeded in hills on rows that were 60 feet long on July 16. There was a 10-foot spacing between rows and a 5-foot spacing within a row. The experimental design was a randomized complete block with four replications.

Beds were made and weekly applications of 5 pounds per acre of N as ammonium nitrate were injected through the drip irrigation from July 21 through September 7. Plots received no other fertilization. Pesticides were applied weekly from July 24 through September 25.

Table 1. Ratings of 2003 Pumpkin Variety Trials[1]

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

[1]See introduction for a description of rating scales.

Pumpkins were harvested on October 14. Because color development stops after harvest, pumpkins were harvested at the full-color stage and graded as marketable or non marketable (Table 3).

Overall, yields were higher in 2003 (Table 3) than in 2002. 'Pro Gold 500' produced only 18,599 pounds per acre in 2002 while in 2003 it produced 87,459 pounds per acre. On the other hand, 'Sorcerer' yielded 44,398 pounds per acre and 54,928 pounds per acre in 2002 and 2003, respectively. 'Sorcerer' was among the best performers in 2002 but in 2003 it was among the poorest. The industry standard 'Appalachian' was also among the poorest performers in 2003.

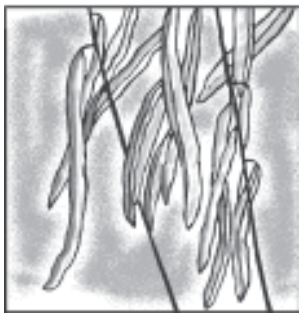
Table 2. Seed Source, Relative Earliness, and Fruit Size of Selected Pumpkin Varieties

Variety	Type[1]	Seed source	Maturity *(days)*	Fruit weight *(lbs)*
Appalachian	F1	Seminis	90	20 – 25
Gold Bullion	F1	Rupp Seeds	110	15 – 25
Gold Medal	OP	Rupp Seeds	108	>25
Howdy Doody	—	Rupp Seeds	90	15 – 25
Sorcerer	F1	Harris Moran	105	15 – 25
Phantom	F1	Seminis	110	20 – 30
Pro Gold 300	F1	Abbot and Cobb	88	15 – 25
Pro Gold 510	F1	Abbott and Cobb	95	20 – 30
Pro Gold 500	F1	Abbott and Cobb	95	20 – 30
Magic Lantern	F1	Harris Moran	115	15 – 25
Racer	F1	Johnny's Seeds	98	15 – 25
Rocket	F1	Johnny's Seeds	85	15 – 25

[1]Type: F1=Hybrid, OP=Open pollinated. —=not available from seed catalogues.

Table 3. Performance of Selected Pumpkin Varieties at North Alabama Horticulture Research Center

Variety	Marketable yield *lbs/ac*	Marketable number *no/ac*	Individual fruit weight *lbs*
Pro Gold 500	87,459	6,837	12.64
Howdy Doody	72,857	6,321	11.51
Racer	64,410	5,074	12.72
Phantom	63,603	3,827	16.67
Pro Gold 300	62,880	6,880	9.14
Gold Bullion	58,428	4,601	12.56
Sorcerer	54,982	5,031	10.74
Magic Lantern	53,471	3,956	13.36
Rocket	52,350	3,569	14.09
Gold Medal	50,989	3,698	13.45
Pro Gold 510	50,831	4,945	10.31
Appalachian	48,304	3,225	16.13
R^2	***0.20***	***0.41***	***0.40***
CV	***41***	***35***	***25***
LSD	***15,000***	***1,015***	***4.5***



Results of the 2003 Southernpea Cooperative Trials

Joe Kemble, Edgar Vinson, and Arnold Caylor

Replicated and observational southernpea cooperative trials were conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama (Tables 1 and 2). The purpose of these trials is to evaluate the performance of southernpea cultigens that have not been released in comparison to current standard varieties.

Southernpeas were planted into bare ground plots that were 20 feet long and 3 feet wide on July 11. The experimental design was a randomized complete block with four replications. Plots had a within-row spacing of 1 foot. Overhead irrigation was used.

Fertilization consisted of a preplant application of 5-10-15 at a rate of 500 pound per acre. Southernpeas were harvested at the dry stage on September 3 and September 10. Dry and imbibed yields were determined. To estimate yield and to compensate for different percentages of dry

Table 1. Ratings of the 2003 Southernpea Cooperative Trials[1]

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

[1]See introduction for a description of rating scales.

Table 2. Yield of Selected Entries in the 2002 Replicated and Observational Southernpea Cooperator's Trial

Variety	Type	Shelled weight *lbs/ac*	Imbibed weight *lbs/ac*	Shellout *%*
Replicated				
US 1071	Blackeye	2,239	3,825	42.58
Coronet	Cream	1,847	1,907	28.10
TX 116BE	Blackeye	1,815	1,896	27.65
AR 01-1293	Pinkeye	1,728	1,796	26.73
TX 123BE	Blackeye	1,383	2,777	54.51
LA 9461	Pinkeye	1,287	1,225	24.19
Ark Blackeye #1	Blackeye	1,258	1,910	39.85
US 1031	Cream	1,192	1,958	38.82
US 1076	Pinkeye	1,186	1,669	35.77
LA 94-55	Pinkeye	1,144	1,272	29.27
TX 158Egc	Pinkeye	1,130	1,571	36.79
AR 01-1657	Blackeye	1,081	1,243	28.08
LA 96-4	Cream	453	1,955	23.62
AR 96-868	Pinkeye	408	560	
R^2		***0.54***	***0.53***	
CV		***39***	***44***	
LSD		***732***	***1,144***	

Variety	Type	Shelled weight *lbs/ac*	Imbibed weight *lbs/ac*	Shellout *%*
Observational				
AR 01-633	Blackeye	2,272	3,245	•
US-1086	Pinkeye	2,204	3,306	•
Coronet	Pinkeye	1,815	1,896	•
AR 01-1237	Pinkeye	1,624	2,346	•
TX 160BE	Blackeye	1,604	2,129	•
US-1088	Pinkeye	1,562	976	•
AR 96-854	Pinkeye	1,428	1,428	•
LA 94-1	Pinkeye	1,280	1,746	•
Ark Blackeye #1	Blackeye	1,258	1,910	•
AR 01-874	Red Holstein	1,236	2,884	•
TX 162PE	Pinkeye	1,128	1,611	•
US-1084	Pinkeye	1,026	1,369	•
US-1080	Creame	981	1,963	•
TX 158BEgc	Blackeye	778	1,557	•
LA 91-30cr	Creame	306	383	•

•=not found.

and mature green pods, all peas shelled from each plot were placed into containers with water to allow the dry peas to soak up water (imbibe) overnight. Comparisons are then more realistic since all peas are at the same moisture level. Imbibed weights are estimates of mature green, shelled weight yield (Table 2). Bushels of fresh, in-pod yield per acre may be estimated by multiplying the imbibed weight by 2 (assuming an average shellout of 50 percent) and dividing it by 25 (the average weight of a bushel of fresh, unshelled southernpeas).

Summer Squash Trials Reveal Few Differences

Joe Kemble, Edgar Vinson, and Randy Akridge

A yellow and scallop summer squash variety trial was conducted at the Brewton Agricultural Research Unit (BARU) in Brewton (Tables 1 and 2).

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of the chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

Plants were direct seeded on April 18. Plots were 20 feet long with 5-foot spacing between rows and a within row spacing of 2 feet. The experimental design was a randomized complete block with four replications. Silver plastic mulch and drip irrigation were used. Plots were fumigated with methyl bromide at a rate of 250 pounds per acre.

Table 1. Ratings of 2003 Summer Squash Variety Trials[1]

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

[1]See introduction for a description of rating scales.

As a pre-plant fertilizer, 5-10-15 was applied at a rate of 600 pounds per acre. Thereafter, fertilization consisted of weekly injections of N as calcium nitrate for a total of 20 pounds of N per acre.

Squash were harvested three times per week between May 28 and June 13. Squash were graded as marketable and non marketable according to the *United Stated Standards for Grades of Summer Squash* (U.S. Dept. Agr. G.P.O 1987-180-916:40730AMS) (Tables 3 and 4).

In the scallop squash category, 'Starship' had sig-

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
ACX 204	F1	A&C	—	—	02,03
Butter Scallop	F1	Novartis	48	—	03
Dixie	F1	Seminis	41	—	94-96,98-00,03
Gentry	F1	Novartis	43	—	95-99,02,03
Medallion	F1	A&C	53	—	96,02,03
Patty Green Tint	F1	Seminis	52	—	03
Precious II*	F1	Harris	53	—	02,03
Prelude II	F1	Seminis	40	PM,WMV,ZYMV	97-01,03
Seneca Supreme*	F1	Rupp	45	CMV,WMV	94,97,98,03
Starship	F1	Novartis	45	—	03
Supersette*	F1	Harris Moran	—	CMV,WMV	94,96,03
Sunburst	F1	Novartis	50	—	03
Sunray*	F1	Seedway	—	CMV,PM,WMV	03
Zephyr*	F1	Johnny's Select	54	—	99,01-03

[1]Type: F1=Hybrid. [2]Disease claims: PM=Powdery Mildew; ZYMV=Zucchini Yellow Mosaic Virus; WMV=Watermelon Mosaic Virus
*=Precocious variety. —=not available from seed catalogues.

nificantly higher yields than 'Patty Green Tint' or 'Sunburst' in both early and total yield. In the yellow summer squash category there were few differences in early yield. All varieties were similar in yield with the exceptions of 'Seneca Supreme' and 'Sun Ray'. There were no significant differences in total yield.

Table 3. Early Yield of Selected Yellow and Scallop Summer Squash at Brewton Agricultural Research Unit

Variety	Type[1]	Early marketable yield *lbs/ac*	Early number *no/ac*
Starship	S	4,638	11,419
Patty Green Tint	S	2,920	7,069
Sunburst	S	500	1,196
Gentry	Y	5,410	29,689
Medallion	Y	5,264	29,254
Supersette	Y	5,187	29,254
Prelude II	Y	4,812	27,514
ACX 204	Y	4,747	23,273
Precious II	Y	4,589	21,206
Zephyr	Y	3,997	14,681
Seneca Supreme	Y	3,485	21,533
Sun Ray	Y	3,339	17,944
R^2		***0.70***	***0.90***
CV		***25***	***22***
LSD		***1,478***	***6,119***

[1] Type: S=Scallop; Y=Yellow.

Table 4. Total Yield of Selected Yellow and Patty Pan Squash Varieties

Variety	Type[1]	Total marketable yield *lbs/ac*	Total number *no/ac*	Cull *lbs/ac*	Percent marketable *%*	Individual fruit weight *lbs*
Starship	P	10,810	28,710	7,598	59	0.38
Patty Green Tint	P	7,852	21,206	7,074	53	0.37
Sunburst	P	7,123	21,315	3,882	65	0.33
Seneca Supreme	Y	13,023	68,023	865	94	0.19
Starship	Y	12,876	25,665	6,525	66	0.50
Sun Ray	Y	12,805	56,441	1,588	89	0.23
Zephyr	Y	12,637	45,566	5,177	71	0.28
Medallion	Y	12,327	62,640	2,904	81	0.20
Gentry	Y	12,022	65,468	4,236	74	0.18
Supersette	Y	11,946	69,600	2,452	83	0.17
ACX 204	Y	11,914	49,264	2,898	80	0.24
Prelude II	Y	11,060	61,118	7,210	61	0.18
PreciousII	Y	10,947	46,545	3,290	77	0.24
R^2		***0.63***	***0.93***	***0.60***		***0.90***
CV		***14***	***11***	***51***		***13***
LSD		***2,282***	***7,557***	***2,996***		***0.05***

[1]Type: P=Patty pan; Y=Yellow.

Results of the 2003 National Sweetpotato Collaborators' Trials

Joe Kemble, Edgar Vinson, and Arnold Caylor

National sweetpotato collaborators' trials were conducted at the North Alabama Horticulture Research Center (NAHRC) in Cullman, Alabama (Table 1.).

Sweetpotato seed roots from selected commercial varieties and breeding lines were planted in a heated bed at NAHRC on April 15 for slip production. Sweetpotato slips were planted on June 11. Varieties were replicated three times. Plots contained two rows that were 25 feet long and 3.5 feet wide. Within-row spacing was 1 foot.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Per acre fertilization consisted of 80 pounds of N, 40 pounds of P_2O_5, and 80 pounds of K_2O total. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

Table 1. Ratings of the 2003 Sweet potato Collaborators' Trials[1]

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

[1]See introduction for a description of rating scales.

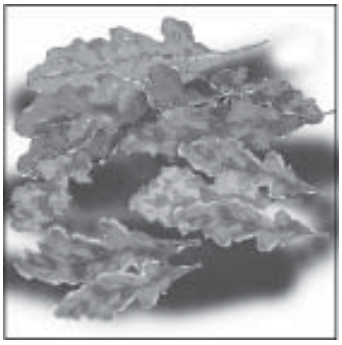
Sweetpotatoes were harvested on October 9. Roots were graded as US no.1 (roots 2 to 3.5 inches in diameter, 3 to 9 inches in length, well shaped, and free of defects), canner (roots 1 to 2 inches in diameter, 2 to 7 inches in length), jumbo (roots that exceed the diameter, length, and weight requirements of the US no.1 grade, but that are of marketable quality), or cull

Table 2. Yield and Grade Distribution of Selected Sweetpotato Breeding Lines and Cultivars

Variety	Total marketable	US no.1[1]	Canner[2]	Jumbo[3]	US no.1[4]	Cull[5]
	50-lb bushels/ac				*—% of total yield—*	
Beauregard (B94-14-G1 NC)	805	596	90	147	72	29
Beauregard (B63-G1- LSU)	796	607	120	69	76	28
Carolina Ruby	779	623	99	57	80	46
MS -I52*	752	610	140	7	81	66
MS-K39	700	503	72	125	73	20
L-99-35	686	503	48	134	73	19
R^2	***0.30***	***0.50***	***0.70***	***0.34***	***0.20***	***0.30***
CV	***14***	***12***	***26***	***57***	***10***	***63***
LSD	***185***	***122***	***40***	***111***	***66***	***33***

[1] US no.1: Roots 2 to 3.5 inches in diameter, length 3 to 9 inches; must be well shaped and free of defects. [2] Canners: Roots 1 to 2 inches in diameter, 2 to 7 inches in length. [3] Jumbos: Roots that exceed the diameter, length, and weight requirements of the above two grades, but are of marketable quality. [4] Percent US no.1: Calculated by dividing the weight of US no.1's by the total marketable weight (Culls not included). [5] Culls: Roots must be 1 inch or larger in diameter and so misshapen or unattractive that they could not fit as marketable roots in any of the above three grades.*MSI-152 was not replicated due to insufficient number of slips. Averages yields are given on a per acre basis.

(roots at least 1 inch in diameter but so misshapen or unattractive that they could not be classified as marketable roots). Marketable yield was calculated by adding the yields of the US no. 1, canner, and jumbo grades. Percent US no.1 was calculated by dividing the yield of the US no.1 grade by the marketable yield (Table 2).



'All Top' Turnip Tops All

Joe Kemble, Edgar Vinson, and Randy Akridge

A leafy green variety trial was conducted at the Brewton Agricultural Research Unit (BARU) in Brewton, Alabama (Tables 1 and 2). Collard and turnip greens were direct-seeded on October 10 into plots that were 20 feet long and 5 feet wide. The experimental design was a randomized complete block with four replications.

Fertilizer was applied according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

Leafy greens were harvested when they reached marketable size (Table 3). Turnip leaves were harvested on December 1, 2003, and entire collard plants were harvested on January 13, 2004. Yields were expressed in 30-pound bushels.

Table 1. Ratings of the 2003 Leafy Greens Variety Trials[1]

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

[1]See introduction for a description of rating scales.

'SCO 0104', a new collard variety, performed better than the older standard varieties 'Vates' and 'Champion'. 'Flash', an improved hybrid 'Vates' type, had yields that were higher than both 'Champion' and its predecessor 'Vates'. Among the turnip varieties there were few differences with 'All Top' producing significantly more bushels per acre than all other turnip varieties. No other differences were found among varieties.

Table 2. Seed Source and Earliness of Selected Leafy Green Varieties

Variety	Type[1]	Crop	Seed source	Days to harvest
Champion	OP	Collard	Harris	75
Flash	F1	Collard	A&C/Stokes	73
Heavi-Crop	F1	Collard	Takii	70
Top Bunch	F1	Collard	Sakata	70
Vates	OP	Collard	Stokes	56
SCO 0104	F1	Collard	Sakata	70
All Top	F1	Turnip	Sakata	50
Purple Top White Globe	OP	Turnip	Seminis/Stokes	60
Royal Crest	F1	Turnip	Siegers	45
Seven Top	OP	Turnip	Seminis/Stokes	45
Topper	F1	Turnip	Rupp	60
Top Star	F1	Turnip	Sakata	36
White Lady	F1	Turnip	Stokes	35

[1] Type: F1=Hybrid, OP=Open pollinated.

Table 3. Performance of Selected Collard and Turnip Varieties

Variety	Type	Leaf yield *no of 30-lb bu/ac*
Top Bunch	Collard	634
SCO0104	Collard	583
Flash	Collard	566
Champion	Collard	423
Vates	Collard	374
Hevi-Crop	Collard	315
R^2		***0.90***
CV		***12***
LSD		***83***
All Top	Turnip	651
Top Star	Turnip	523
Topper	Turnip	520
Seven Top	Turnip	499
White Lady	Turnip	495
Royal Crest	Turnip	389
Purple Top White Globe	Turnip	371
R^2		***0.90***
CV		***8***
LSD		***56***

Triploid Watermelon Cultivar Evaluation, Summer 2003

Richard G. Snyder, Peter Hudson, Kent Cushman, and Thomas Horgan

Eleven varieties of triploid (seedless) watermelon (*Citrullus lanatus L.)* were included in a variety trial at the Truck Crops Experiment Station in Crystal Springs, Mississippi, in the summer of 2003. A similar evaluation was conducted at the North Mississippi Research and Extension Center at Verona, but this report summarizes only results at the Crystal Springs location.

Eleven varieties of triploid (seedless) watermelon (*Citrullus lanatus)* were included in a variety trial at the Truck Crops Experiment Station in Crystal Springs in the summer of 2003. This is the second year for evaluating the elongated, seedless types.

Seed of eleven varieties of triploid watermelon were seeded in the greenhouse into 72-cell trays on March 13, 2003. All test varieties were red-fleshed, elongated, and in the 18- to 22-pound size class according to seed company descriptions. 'Cooperstown', an oval 'Tri-X 313' type triploid watermelon, was used as a standard cultivar of known good performance. Seed sources are shown in Table 1.

Triploids were transplanted on April 11. Plants were arranged in a randomized complete block design with four replications. Plants were spaced 4 feet apart within the row, and 6 feet apart between rows (24 square feet per plant), with 10 plants per plot. This is equivalent to a plant population of 1,815 plants per acre.

To insure good pollination, 'Charleston Elite' was selected as a pollinizer variety. This variety, with a solid, light green color, has a different appearance than the triploids being tested, which is important to avoid confusion

Table 1. Seed Source, Fruit Yield, and Earliness, Triploid Watermelon Cultivar Evaluation, Summer 2003

Entry	Seed source	Market yield[1] *lbs/ac*	Market yield[1] *no/ac*	Early harvest[2] *lbs/ac*	Early harvest[2] *no/ac*	Size early harvest[1] *lbs*
Vertigo	Hazera	18,050 c-e	953 b-e	1,325	91	14.6 e
Cooperstown	Seminis	23,075 a-c	1,361 a	5,921	363	16.3 c-e
Banner	Sunseeds	24,813 ab	1,225 a-c	6,130	340	18.0 b-d
WX28	Willhite	17,660 c-e	703 e	4,460	182	24.6 a
Triple Seven	SeedWay	22,114 a-d	1,270 a-c	4,576	250	18.3 b-d
Seedless Sangria	Syngenta	26,454 a	1,270 a-c	3,517	182	19.4 bc
SWX4016	Sunseeds	21,156 a-d	1,157 a-d	7,283	363	20.1 b
SR8026	Sunseeds	20,566 a-e	1,021 a-e	4,152	204	20.3 b
Revolution	Sunseeds	14,125 e	817 de	3,746	227	16.5 c-e
Freedom	Sunseeds	16,517 de	930 c-e	4,522	227	19.9 b
Hazera 1042	Hazera	23,121 a-c	1,339 ab	3,285	212	15.5 de
significance	**—**	*****	*****	***ns***	***ns***	*****
p-value	**—**	***0.0158***	***0.0307***	***0.054***	***0.08***	***0.0006***
LSD or mean LSD[3]	**—**	***6,443***	***402***	**—**	**—**	***3.32***

[1] Yield and size of marketable melons, based on melons greater than 10 pounds. Yield based on plant population of 1,815 plants per acre (24 square feet per plant). Rows spaced 6 feet apart with plants 4 feet apart in the row.
[2] Early yield indicates portion of the weights or numbers of melons from the first of three harvests.
[3] Least Significant Difference (LSD) at $p \leq 0.05$. Treatments not significantly different (ns); significant at $p \leq 0.05$ (*), $p \leq 0.01$ (**), $p \leq 0.001$ (***).

during harvest. Seeding and transplant dates of the pollinizer variety were the same as the triploids. They were planted in every other plot in each block using a checkerboard pattern to be certain that pollen was well distributed among test varieties. Also, two honey bee hives were placed adjacent to the field to be sure that bee population was adequate.

The soil at the Truck Crops Experiment Station is a Providence Silt Loam (fine-silty, mixed, thermic, Typic Fragiudalf). The rows were established on raised beds and were covered with black plastic mulch with trickle irrigation tubing beneath (rated at 0.5 gallons per 100 feet at 10 pounds per square inch). Plants were hand planted through holes cut in the mulch. Preplant and sidedressing fertilizer were applied according to the results of a soil test performed at the Mississippi State University Soil Testing Lab, with sidedressings via drip tape. This included applying 60 pounds of N, 100 pounds of P, and 200 pounds of K per acre preplant, then sidedressing with an additional 30 pounds of N per acre from calcium nitrate on May 16 when vines began to run, and again on May 29.

Melons were harvested on July 1, July 9, and July 15. Each melon was weighed individually. Data collected included total and marketable numbers and weights of fruit. Fruit smaller than 10 pounds were considered unmarketable. Early yield was calculated from marketable weights and numbers of fruit harvested on July 1. In addition, fruit Brix (soluble solids) was recorded on two dates. On each date, one mature fruit per plot was cut and two samples were drawn from near the center. The two readings from each fruit were averaged. Brix was read with a hand held refractometer.

Data were analyzed using SAS, utilizing proc GLM and proc MIXED, with mean separations by Least Significant Difference. Percentage data were arc sin transformed, and analyses performed on the transformed data. Means of variables analyzed with proc MIXED were separated by calculating mean lsd values from the product of the two-tailed t-value for $\alpha = 0.05$ and the mean standard deviation for all pairwise comparisons.

There were significant differences in marketable weights and numbers of fruit (Table 1). By weight, 'Seedless Sangria' had the highest yield, but it was not significantly different from 'Banner', 'Hazera 1042', 'Cooperstown', 'Triple Seven', SWX4016, or SR8026. 'Revolution' had the lowest yield by weight. As for yield by number of fruit per acre, 'Cooperstown' was the highest, but statistically the same as 'Hazera 1042', 'Triple Seven', 'Seedless Sangria', 'Banner', SWX4016, and SR8026. WX28 had the lowest yield by fruit number.

There were no differences in early yield, either by weights or numbers of fruit (Table 1). However, there were differences in the size of early fruit harvested (Table 1). WX28 had the largest early fruit, averaging 24.6 pounds, and 'Vertigo' had the smallest, at 14.6 pounds. All of the others were in the 16- to 20-pound range.

Fruit size over the whole season was also significantly different (Table 2). Again, WX28 had the largest fruit, averaging 25.1 pounds, but 'Cooperstown' had the smallest, at 17 pounds. It is not surprising that 'Cooperstown' would be the smallest since it is a 'Tri-X 313' type and not as elongated as the other triploids in this trial. However, it is surprising that it was not significantly different in size than 'Triple Seven', SWX4016, 'Revolution', 'Freedom', or 'Hazera 1042', which were all in the 17- to 18-pound range. Other varieties were intermediate in size, averaging 19 to 21 pounds. Fruit were divided into five size classes: less than 10 pounds, 10 to 14 pounds, 14 to 18 pounds, 18 to 22 pounds, and more than 22 pounds. Table 3 shows the size distribution of fruit.

There was no difference in the number of colored seeds, which ranged from 0 to 2.5 seeds per fruit, but arc sin transformed data of percentage colored seeds were different, with 'Triple Seven' having more than the others (Table 2). However at 0.63 percent, this is still an extremely low incidence of seeds, and very acceptable to the market. Notable is that 'Revolution' had zero seeds, and it was the only variety with that claim.

As with colored seeds, there were differences with hollowheart (Table 2). However the numbers were all extremely low, with well under 1 percent of fruit showing symptoms of this defect. 'Hazera 1042' had the highest incidence, at 0.81 percent, but this was not significantly different from four other varieties. 'Revolution' had no hollowheart at all, the only variety without any incidence. For those with hollowheart, the width of the opening at the widest point varied from 0.4 to 2 inches. 'Hazera 1042' and SWX4016 had the largest gap, but this was not significantly different from five other varieties. Again, it is important to keep in mind that the occurrence of hollowheart was very low in all varieties.

Soluble solids, an indication of sweetness, was significantly different among varieties tested (Table 2). 'Vertigo' had the highest sugars (12.6 percent brix), followed by SR8026 (12.5 percent), 'Hazera 1042' (12 percent), and 'Freedom' (11.9 percent). The lowest was WX28 with 10.9 percent.

There was no problem in the Crystal Springs trial with rind necrosis.

Any of the varieties tested would be considered of suitable yield and quality for triploid watermelons in this size class. For marketable yield, the best were 'Seedless Sangria', 'Banner', 'Hazera 1042', 'Triple Seven', SWX4016, or SR8026. 'Cooperstown' also had high yield

in this trial, but it was included only as a reference variety because it had performed well in the past few years at this location. For fruit quality (colored seeds, hollowheart, rind necrosis, undersized fruit), all varieties were very acceptable. 'Vertigo', SR8026, 'Hazera 1042', and 'Freedom' were the sweetest.

Table 2. Fruit Size and Quality, Triploid Watermelon Cultivar Evaluation, Summer 2003

Entry	Size[1] *lbs*	Colored seed[2] *no*	Colored seed[2] *%*	Hollow heart[2] *%*	Hollow heart[2] *in*	Soluble solids content[2] *%*
Vertigo	18.9 d	1.3	0.39 a-d	0.44 a-c	1.90 ab	12.6 a
Cooperstown	17.0 e	1.0	0.26 b-e	0.06 d	1.00 a-c	11.2 de
Banner	20.3 bc	1.2	0.52 a-c	0.31 b-d	0.40 c	11.8 b-d
WX28	25.1 a	1.0	0.13 de	0.63 ab	1.70 a-c	10.9 e
Triple Seven	17.4 de	2.2	0.63 a	0.13 cd	0.90 a-c	11.3 c-e
Seedless Sangria	20.8 b	2.5	0.26 b-e	0.69 ab	0.50 bc	11.3 c-e
SWX4016	18.3 de	1.0	0.20 c-e	0.16 d	2.00 a	11.4 c-e
SR8026	20.1 bc	1.0	0.26 b-e	0.44 a-c	0.50 bc	12.5 ab
Revolution	17.3 de	0.0	0.0 e	0.00 d	0.00 d	11.7 cd
Freedom	17.8 de	1.2	0.59 ab	0.06 d	1.00 a-c	11.9 a-d
Hazera 1042	17.3 de	1.7	0.35 a-e	0.81 a	2.00 a	12.0 a-c
significance	***	***ns***	*	***	*	***
p-value	***< 0.0001***	***0.814***	***0.04***	***0.0003***	***0.0136***	***0.0009***
LSD or mean LSD[3]	***1.71***	***-***	***0.37***	***0.566***	***1.49***	***0.714***

[1]Size of melons based on marketable melons greater than 10.0 pounds. Yield based on plant population of 1,815 plants per acre (24 square feet per plant). Rows spaced 6 feet apart with plants 4 feet apart in the row. Least square means reported.
[2]Average of two samples from each of four replications; least square means reported; p-value and lsd from arc sin transformed data shown where appropriate.
[3] Least Significant Difference (LSD) at $p \leq 0.05$. Treatments not significantly different (ns);significant at $p \leq 0.05$ (*), $p \leq 0.01$ (**), $p \leq 0.001$ (***).

Table 3. Fruit Size Distribution, Triploid Watermelon Cultivar Evaluation, Summer 2003

Entry	<10 lb *%*	10-14 lb *%*	14-18 lb *%*	18-22 lb *%*	>22 lb *%*
Vertigo	0	10	33	31	26
Cooperstown	2	13	52	28	5
Banner	2	2	22	44	31
WX28	0	0	10	20	71
Triple Seven	2	14	35	40	9
Seedless Sangria	0	0	20	41	39
SWX4016	0	18	31	41	16
SR8026	0	11	13	42	33
Revolution	5	16	42	29	8
Freedom	2	17	33	33	14
Hazera 1042	0	8	51	31	10

Winter Squash Varieties Exhibit Few Differences

Joe Kemble, Edgar Vinson, and Tony Dawkins

A winter squash variety trial was conducted at the Sand Mountain Research and Extension Center (SMREC) in Crossville, Alabama (Tables 1 and 2).

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. For current recommendations for pest and weed control in vegetable production in Alabama, consult your county Extension agent (see http://www.aces.edu/counties/) or view recommendations online at http://www.aces.edu/pubs/docs/A/ANR-0500/VOL-0001/COMMVEG.pdf.

On June 26, three types of winter squash (acorn, butternut, and spaghetti) were direct seeded in hills on rows that were 60 feet long. There was a 10-foot spacing between rows and a 5-foot spacing within a row. The experimental design was a randomized complete block with four replications.

The ground was roto-tilled on June 25. Preplant fertilization consisted of one application of 5-10-15 (at a rate of 1,000 pounds per acre) on June 25. Additional applications of ammonium nitrate (at a rate of 10 pounds per acre) were made on August 6, August 12, and August 18. Pesticides were applied weekly at recommended rates between June 26 and August 26.

Winter squash was harvested on September 30. There were few differences found among winter squash varieties. Among the spaghetti squash types, 'Small Wonder' and 'Spaghetti' were similar. Both were significantly higher than 'Trivoli'. There were no differences found among the butternut and acorn types.

Table 1. Ratings of the 2003 Winter Squash Variety Trials[1]

Location	SMREC
Weather	5
Fertility	5
Irrigation	5
Pests	5
Overall	5

[1]See introduction for a description of rating scales.

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

Variety	Type[1]	Description	Seed source	Days to harvest	Growth habit
Small Wonder	F1	Spaghetti	Hollar	90	Vining
Spaghetti	F1	Spaghetti	Hollar	105	Vining
Tivoli	F1	Spaghetti	Sakata	90	Bush
Butternut Supreme	F1	Butternut	Stokes	97	Vining
Chieftan	F1	Butternut	Rupp	80	Semi-Bush
Waltham Butternut	OP	Butternut	Seminis	90	Vining
Bugle	OP	Butternut	Rupp	80	Semi-Bush
Creme of the Crop	F1	Acorn	Rogers	75	Bush
Mesa Queen	F1	Acorn	Hollar	75	Semi-Bush
Tuffy	F1	Acorn	Johnny's	90	Vining

[1]Type: F1=Hybrid; OP=Open pollinated.

TABLE 3. PERFORMANCE OF SELECTED WINTER SQUASH VARIETIES

Variety	Type[1]	Market-able yield *lbs/ac*	Marketable number *no/ac*	Cull weight *lbs/ac*	Percent marketable *%*	Individual fruit weight *lbs*
Small Wonder	S	18,483	12,342	1,246	94	1.49
Spaghetti	S	16,583	6,413	768	96	2.59
Tivoli	S	9,559	3,751	606	94	2.50
Butternut	B	8,827	5,627	357	96	1.57
Chieftan	B	8,639	7,139	200	98	1.20
Waltham	B	6,895	5,143	42	99	1.31
Bugle	B	6,516	7,623	73	99	0.85
Creme of the Crop	A	6,391	3,025	502	93	3.33
Mesa Queen	A	3,975	3,388	278	93	1.17
Tuffy	A	2,608	3,146	196	93	0.85
R^2		***0.80***	***0.82***	***0.43***		***0.40***
CV		***31***	***25***	***109***		***69***
LSD		***4,015***	***2,060***	***675***		***1.67***

[1]Type: S=Spaghetti; B=Butternut; A=Acorn.

Seed Sources for Alabama Trials

Abbot and Cobb, Inc.
To order: (800) 345-SEED
In TX: (800) 277-8177
Tech. Rep: Russ Becham
146 Old US Highway 84
West Boston, GA 31626
Office/fax: (229) 498-2366
E-mail: rbeckham@rose.net

Enza Zaden North America, Inc.
1352 Burton Ave.
Salinas, CA 93901
Ph: (831) 751-0937
Fax: (831) 751- 6103
E-mail:seed@enzasalinas.com

Gurney's Seed Company and Nursery
P.O. Box 4178
Greenville, IN 47025-4178
Ph: (513) 354-1491
Fax: (513) 354-1493

Harris Seeds
To order: (800) 544-7938
Tech. Rep: Mark Wills
355 Paul Rd.
P.O. Box 24966
Rochester, NY 14624-0966
Ph: (716) 442-0410
Fax: (877) 892-9197

Harris Moran Seed Co.
Tech. Rep: Brad Conrad
Ph: (941) 543-7300
Fax: (941) 543-7003

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

Johnny's Select Seeds
To order: (207) 437-4395
Tech. Rep: Steve Woodward
1 Foss Hill Road 2580
RR 1 Box 2580
Albion, ME 04910-9731
Fax: (800) 437-4290

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

Sakata Seed America, Inc.
Tech Rep: Atlee Burpee
P.O. Box 880
Morgan Hill, CA 95038
Ph: (610) 316-6063

Rogers/Syngenta
7500 Olson Memorial Hwy
Golden Valley, MN 55427
Ph: (763) 593-7333
Fax: (763) 593-7218

Seedway
Tech Rep: Dean Cotton
P.O. Box 250
Hall, NY 14463
Ph: (717) 367-1075
Fax: (717) 367-0387
E-mail: info@seedway.com

Seminis Vegetable Seeds, Inc.
Tech. Rep: Jack Stuckey
2221 North Park Ave.
Tifton, GA 31796
Ph: (229) 386-0750

Shamrock Seed Co., Inc
To order: (408) 351-4443
3 Harris Place
Salinas, CA 93901-4586
Ph: (800) 351-4443
Fax: (831) 771-1517

Sieger Seeds
13031 Reflections Dr.
Holland, MI
Ph: (800) 962-4999

Stokes Seeds
To order: (800) 396-9238
P.O. Box 548
Buffalo, NY 14240-0548
Fax: (888) 834-3334

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

Takii Seeds
301 Natividad Rd
Salinas, CA 93906
Ph: (408) 443-4901
Fax: (831) 443-3976

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

Vilmorin
251 North Dragoon
Tucson, AZ 85745
Ph: (520) 884-0011
Fax: (520) 884-5102

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 publication process for the next regional bulletin (spring 2004).

When: September 24, 2004
Deadline for spring 2004 variety trial report submissions.

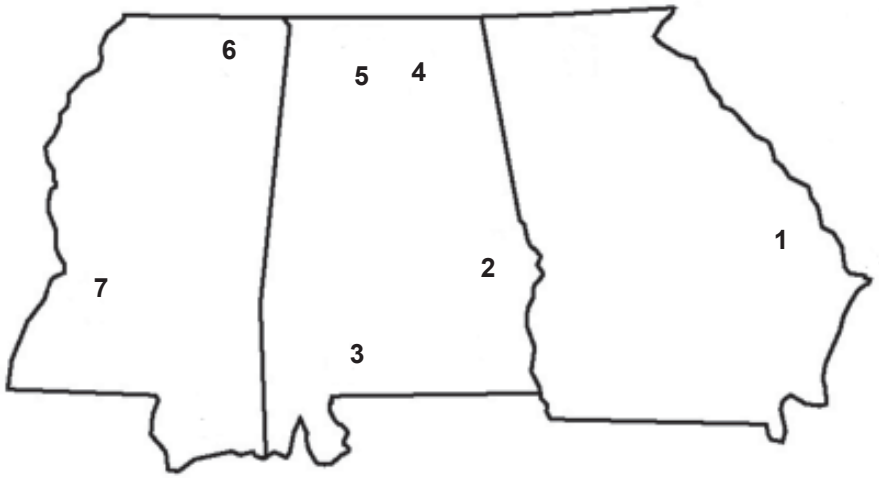
What: Results pertaining to variety evaluation in a broad sense. This includes field performance, quality evaluation, and disease resistance. Here are a few tips:

- Follow the format used in the first eleven regional bulletins.
- Include 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, or
kembljm@auburn.edu



UNIVERSITY OF GEORGIA
1. Vidalia Onion and Vegetable Research Center, Lyons, GA

AUBURN UNIVERSITY
2. E.V. Smith Research Center, Shorter, AL
3. Brewton Agricultural Research Unit, Brewton, AL
4. Sand Mountain Research and Extension Center, Crossville, AL
5. North Alabama Horticulture Research Center, Cullman, AL

MISSISSIPPI STATE UNIVERSITY
6. North Mississippi Research and Extension Center, Verona, MS
7. Truck Crops Experiment Station, Crystal Springs, MS