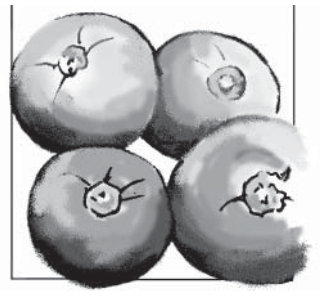
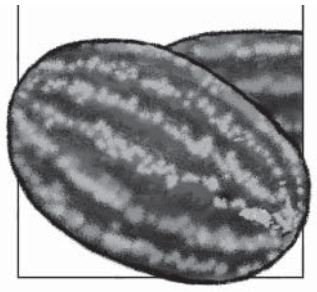
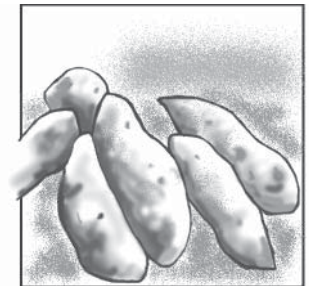
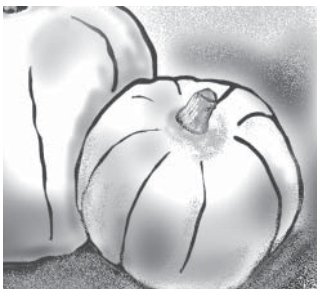
Fall 2005 Commercial Vegetable Variety Trials

July 2006

Regional Bulletin 16
Auburn University
Mississippi State University
North Carolina State University

Alabama Agricultural Experiment Station
Richard Guthrie, Director
Auburn University, Auburn, Alabama

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

Contents

Authors

Randy Akridge
Superintendent
Brewton Agriculture Research Unit
P.O. Box 217
Brewton, AL 36427
(251) 867-3139

Jason Burkett
Superintendent
E.V. Smith Research Center
(334) 727-6159

Arnold Caylor
Superintendent
North Alabama Horticulture Research Center
(256) 734-5820

Jane Hoehaver
Superintendent
Plant Science Research Center
475 Woodfield Dr.
Auburn, AL 36849

Thomas Horgan
Research Associate II
Mississippi State University
North Mississippi Research & Extension Center
P.O. Box 1690
Verona, MS 38879

Peter Hudson
Research Associate II
Mississippi Truck Crops Branch Experiment Station
P.O. Box 231
2024 Experiment Station Rd.
Crystal Springs, MS 39059
(601) 892-3731

Wilfred Jester
Extension Associate
Horticulturist, Vegetables
Department of Horticultural Science
N.C. State University
Kinston, NC 28501

Joe Kemble
Associate Professor and Extension Vegetable Specialist
Department of Horticulture
Auburn University, AL
(334) 844-3050
kemblejm@auburn.edu

Jonathan R. Scultheis
Professor and Extension Leader
Department of Horticultural Science
N.C. State University
Kinston, NC 28501

Richard G. Snyder
Vegetable Specialist
Truck Crops Experiment Station
Mississippi State University
Crystal Springs, MS

C. Bradley Taylor
Agricultural Research Technician
Department of Horticultural Science
N.C. State University
Kinston, NC 28501

W. Bradfred Thompson
Agricultural Research Assistant III
Department of Horticultural Science
N.C. State University
Kinston, NC 28501

Edgar Vinson
Research Associate III
Department of Horticulture
Auburn University, AL
(334) 844-8494
vinsoed@auburn.edu

Introduction: Tips for Interpreting Vegetable Varieties Performance Results

Edgar Vinson and Joe Kemble

The fall 2005 variety trial bulletin includes results from Auburn University, Mississippi State 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 F1) are earlier and produce a more uniform crop. They have improved disease, pest, or virus tolerance/resistance. F1 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 (r2), 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.

R2 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 Roma tomato trial presented in this issue conducted at the Brewton Agricultural Research Unit, 'Muriel' yielded 18,192 pounds per acre, while 'Hybrid 882' and 'Marianna' yielded 9,442 and 7,728 pounds per acre, respectively. Since there was less than a 9,587 difference between 'Hybrid 882' and 'Marianna', there is no statistical difference between these two varieties. However, the yield difference between 'Muriel' and 'Marianna' was 10,464, 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, and production methods is 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 for Alabama Trials.

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 www.aces.edu/dept/com_veg/veg_trial/cropveg.htm. Our Web site provides a description of variety types, a ratings system, and information about participating seed companies.

Table 1. Soil Types at the Location of the Trial

Location	Water holding capacity (in/in)	Soil type
Gulf Coast Research and Extension Center (Fairhope)	0.09-0.19	Malbis fine sandy loam
Brewton Agricultural Research Unit (Brewton)	0.12-0.14	Benndale fine sandy loam
Wiregrass Research and Extension Center (Headland)	0.14-0.15	Dothan sandy loam
Lower Coastal Plain Research and Extension (Camden)	0.13-0.15	Forkland fine sandy loam
EV Smith Research Center, Horticultural Unit (Shorter)	0.15-0.17	Norfolk-orangeburg loamy sand
Chilton Area Horticultural Substation (Clanton)	0.13-0.15	Luvernue sandy loam
Upper Coastal Plain Research and Extension Center (Winfield)	0.13-0.20	Savannah loam
North Alabama Horticultural Research Center (Cullman)	0.16-0.20	Hartsells-Albertville fine sandy loam
Sand Mountain Research and Extension Center (Crossville)	0.16-0.18	Wynnville fine sandy loam

Table 2. Description of Ratings

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

First Roma Tomato Variety Resistant to Tomato Spotted Wilt

Joe Kemble, Edgar Vinson, and Randy Akridge

A Roma tomato variety trial was conducted at the Brewton Agriculture Research Unit (BARU) in Brewton (Tables 1 and 2). Six-week-old Roma tomato transplants were set on May 4. Transplants were set into 20-foot long plots, at a within row spacing of 1.5 feet. Gray plastic mulch and drip irrigation were used. Tomatoes were then staked and tied as their growth required. See ANR-1156, "Guide to Commercial Staked Tomato Production in Alabama."

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

Preplant fertilization consisted of 70 pounds per acre of N as ammonium nitrate. Fertilization consisted of weekly injections of nitrogen alternating between calcium nitrate and potassium nitrate forms at a rate of 5 pounds of N per acre from May 19 through July 18.

Tomatoes were harvested three times, graded as marketable and non-marketable, and weighed (Table 3). Yields were lower due to an increase in the incidence of tomato spotted wilt virus (TSWV)—a disease caused by a virus spread by thrips. It is becoming increasingly important to plant varieties with resistance to TSWV.

'Muriel' a TSWV-resistant variety produced yields that were statistically similar to yields of the market standard 'Plum Dandy'. The only significant differences was between 'Muriel' and 'Mariana'. Cull fruit was mainly due to TSWV. 'Puebla' had the highest incidence of cull fruit similar to 'Mariana', 'Plum Dandy' and 'Muriel'. 'BHN 410' and 'Hybrid 882' produced cull fruit significantly lower than 'Puebla'.

Table 1. Ratings of the 2005 Roma Tomato Variety Trial[1]

Location	BARU
Weather	5
Fertility	5
Irrigation	4
Pests	3
Overall	5

[1] See introduction for description of ratings scales

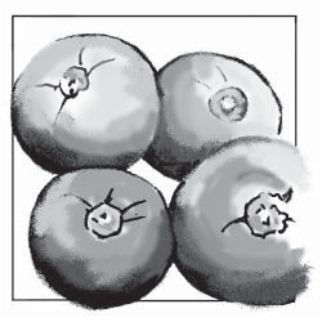
Table 2. Seed Source, Fruit Characteristics, and Relative Earliness of Selected Tomato Varieties

Variety	Type	Seed source	Plant habit	Fruit color	Days to harvest	Disease claims
BHN 410	F1	BHN	Det	Red	73	BSP,*FW, St,VW
Hybrid 882	F1	Seminis	Det	Red	72	ASC,BSP*FW,NE,St,VW
Mariana	F1	Seedway	Det	Red	74	ASC,*FW,NE,VW
Muriel	F1	Sakata	Det.	Red	—	ASC,FW,NE,St,TSWV,VW
Plum Dandy	F1	Harris Moran	Det.	Red	—	EB,FW
Puebla	F1	Seminis	Det.	Red	75	BSP,VW,*FW

Type: F1 = Hybrid
Plant habit: Det = Determinate
Disease claims: ASC = Alternaria Stem Canker; BSP = Bacterial speck; EB = Early blight; FCR = Fusarium Crown Rot; FW = Fusarium Wilt;NE = Root Knot Nematode; St = Stemphylium (grey leaf spot); VW = Verticillium Wilt;
TSWV = Tomato Spotted Wilt Virus
*Races 1 and 2.
— = not available from seed catalogues

Table 3. Marketable Yield of Selected Roma Tomato Varieties, Brewton Agricultural Research Unit

Variety	Marketable yield *lbs/a*	Culls *lbs/a*
Muriel	18,192	1,535
Puebla	18,187	2,178
BHN 410	15,818	1,395
Plum Dandy	15,712	1,790
Hybrid 882	9,442	1,045
Mariana	7,728	1,871
r2	***0.40***	***0.40***
CV	***46***	***32***
LSD	***9,587***	***780***



Greenhouse Tomatoes Produce Fewer Culls This Season

Joe Kemble, Edgar Vinson, and Jane Hoehaver

A greenhouse tomato variety trial was repeated during the fall of 2005 at the Plant Science Research Center (PSRC) on the campus of Auburn University (Table 1). Six-week-old tomato transplants were set into 2 cubic feet polyethylene bags filled with pine bark on October 20, 2005. There were two plants per bag and six plants per plot. Each variety was replicated four times.

Tomato plants were irrigated using drip emitters. Two emitters were placed in each bag. Irrigation was controlled by a timer. At each watering, fertilizer stock solution was injected into the irrigation system using a fertilizer injector. Fertilizer stock was prepared, made, and applied according to the Greenhouse Tomato Guide published through Mississippi State Extension Service (publication 1828). For more information concerning the greenhouse tomato guide and other useful information concerning greenhouse tomato production, go to www.msucares.com/crops/comhort/greenhouse.html.

Tomatoes were harvested, weighed, and graded 11 times between December 29, 2005 and March 28, 2006. Size distribution and cull grades of fresh market tomato were adapted from the USDA Standards for Grades of Greenhouse Tomatoes. Sizes were extra-large (greater than 0.9 pound), large (0.6-0.9 pound), and medium (0.2 - 0.6 pound). Marketable yield was the sum of extra-large, large, and medium grades (Table 3).Extra large is not a category of greenhouse tomatos recognized by the USDA. It was created in this case to reduce variation of large fruit.

The number of harvests were reduced this season due to reduced daylight hours (Tables 2 and 3). Consequently, overall yields were reduced.

For the second season ‘Trust’, a market standard, topped the list in total marketable fruit number: 154 and 119 fruit per plot for 2005 and 2006, respectively. In this category, ‘Trust’ was significantly higher than all other varieties. ‘Trust’ also produced one of the lowest yields of extra large fruit along with ‘Match’. This same trend was observed during last season with 19 and 16 pounds per plot, respectively. ‘Match’ produced the highest yield of large fruit significantly higher than ‘Trust’. Though not statistically significant, ‘Geronimo’ and ‘DWR 7106’ produced the highest total marketable yields.

Overall, cull fruit yield was lower this season. This may be due to a lower number of harvests. Small fruit yields were not significantly different (Table 4). As observed last season, ‘Match’ produced the highest yield of small fruit: 1.35 pounds per plot (Table 5). The incidence of blossom end rot was reduced this season. During last season, there were a number of cloudy days, which can cause blossom end rot. This season had more sunny days.

Table 1. Seed Source, Fruit Characteristics, and Relative Earliness of Selected Greenhouse Tomato Varieties

Variety	Type	Seed source	Plant habit	Fruit color	Days to harvest	Disease claims	Years evaluated
DWR 7106	F1/Beefsteak	Paramount	Indet.	Red	—	—	05
Geronimo	F1/Beefsteak	Paramount	Indet.	Red	—	—	05
Match	F1/Beefsteak	Paramount	Indet.	Red	—	—	05
Matrix	F1/Beefsteak	Paramount	Indet.	Red	—	—	05
Trust	F1/Beefsteak	Paramount	Indet.	Red	—	—	05

Type: F1 = Hybrid
Plant habit: Indet = Indeterminate
— = not available from seed catalogues

Table 2. Yield of Greenhouse Tomato Varieties from a Fall 2005 Variety Trial, Plant Science Research Center[1]

Variety	Marketable *no/plot*	Marketable yield *lbs/plot*	Extra large yield *lbs/plot*	Large yield *lbs/plot*	Medium yield *lbs/plot*	Individual fruit weight *lb*
Trust	119	26	15.3	5.9	5.0	0.31
Matrix	94	30	22.0	4.0	5.0	0.36
DWR 7106	92	33	24.4	3.8	5.8	0.36
Geronimo	83	34	23.4	5.8	5.2	0.42
Match	67	27	15.2	7.2	4.3	0.40
r2	***0.12***	***0.30***	***0.40***	***0.40***	***0.12***	***0.20***
CV	***58***	***20***	***31***	***35***	***30***	***26***
LSD	***13***	***8.8***	***9.4***	***3.0***	***2.4***	***0.8***

[1] Yields are based on six-plant plots and are averaged over the entire fall season.

Table 3. Yield of Beefsteak Greenhouse Tomato Varieties from a Winter 2005 Variety Trial, Plant Science Research Center[1]

Variety	Marketable *no/plot*	Marketable yield *lbs/plot*	Extra large yield *lbs/plot*	Large yield *lbs/plot*	Medium yield *lbs/plot*	Individual fruit weight *lb*
Trust	154	39	19	13	7	0.30
Geronimo	137	39	28	8	3	0.31
Match	130	35	16	12	7	0.31
DWR 7106	117	42	23	14	5	0.36
Matrix	103	38	25	8	5	0.37
r2	***0.11***	***0.22***	***0.50***	***0.70***	***0.60***	***0.13***
CV	***49***	***14***	***23***	***18***	***25***	***26***
LSD	***89***	***8.1***	***7.8***	***3.0***	***2.0***	***0.13***

[1] Yields are based on six-plant plots and are averaged over the entire fall season.

Table 4. Cull Production of Selected Greenhouse Tomato Varieties from a Fall 2005 Variety Trial[1]

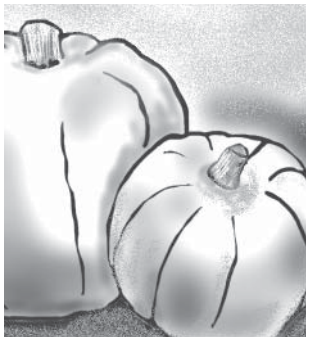
Variety	Small *lbs/plot*	Russeting *lbs/plot*	Zipper scar *lbs/plot*	Concentric cracking *lbs/plot*	Radial cracking *lbs/plot*	Cat-facing *lbs/plot*	Blossom end rot *lbs/plot*
Match	1.04	0.34	0.06	0.15	2.38	0.75	0.15
Matrix	0.95	0.21	0.09	•	0.34	0.03	0.68
Trust	0.88	0.11	0.11	•	1.55	0.09	0.13
Geronimo	0.62	0.24	0.07	•	•	0.25	0.55
DWR7106	0.59	0.30	0.24	•	•	0.21	0.39
r2	***0.10***						
CV	***73***						
LSD	***3.6***						

[1] Yields are based on six-plant plots and are averaged over the entire fall season.

Table 5. Cull Production of Selected Beefsteak Greenhouse Tomato Varieties from a Winter 2005 Variety Trial[1]

Variety	Small *lbs/plot*	Russeting *lbs/plot*	Zipper scar *lbs/plot*	Concentric cracking *lbs/plot*	Radial cracking *lbs/plot*	Cat-facing *lbs/plot*	Blossom end rot *lbs/plot*
Match	1.35	2.90	0.34	2.19	3.97	0.87	0.78
Geronimo	1.61	2.03	0.61	1.23	0.47	0.22	1.61
Trust	0.91	1.40	0.34	2.19	6.83	0.31	0.29
DWR 7106	1.19	2.30	•	1.38	1.31	0.01	0.63
Matrix	1.52	2.70	0.60	1.29	0.97	0.18	1.29
r2	***0.15***	***0.17***	***0.96***		***0.45***	***0.80***	***0.30***
CV	***51***	***60***	***10***		***92***	***52***	***94***
LSD	***1.01***	***2.04***	***0.25***		***6.01***	***0.59***	***1.5***

[1] Yields are based on six-plant plots and are averaged over the entire spring season.



‘Appalachian’ Stands Tall Despite Low Pumpkin Numbers

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).

Pumpkins were direct seeded into rows that were 60 feet long on June 28. There was a 10-foot spacing between rows and a 5-foot spacing between plants within a row. The experimental design was a randomized complete block with four replications.

Soil was fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Beds were made and weekly applications of 5 pounds per acre of N as ammonium nitrate were injected through the drip irrigation from July 5 through September 17. Plots received no other fertilization. Pesticides were applied weekly from July 7 through September 8. Consult your county Extension agent for current recommendations for pest and weed control for pumpkin production in Alabama. Also see ANR-1041 Guide to Commercial Pumpkin and Winter Squash Production.

Pumpkins were harvested on September 27. Because color development stops after harvest, pumpkins were harvested at the full-color stage and graded as marketable or non-marketable (Tables 3).

Table 1. Ratings of the 2005 Pumpkin Variety Trial[1]

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

[1] See introduction for description of ratings scales

Lower yields this year than in 2004 were attributed to rain at less than ideal times. The market standard ‘Appalachian’ produced significantly higher yields than all other varieties. ‘Appalachian’ continues to produce even during times of drought stress and excess rain.

Though not statistically significant ‘Dependable’ produced higher yields than ‘Sorcerer’ due to a higher individual fruit weight. With the exceptions of ‘Golden Osprey’ and ‘Reliable’, all varieties produced individual fruit weights below their described average fruit weight (Table 3).

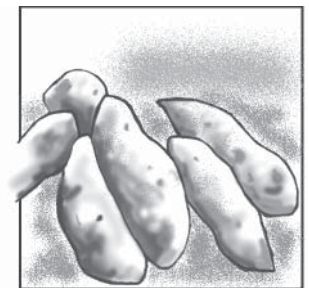
Table 2. Seed Source, Relative Earliness, and Fruit Size of Selected Pumpkin Varieties

Variety	Type	Seed source	Maturity (days)	Avg. weight (pounds)
Appalachian	F1	Seminis	90	20-25
Autumn King	F1	Siegers Seeds	105	> 25
Dependable	F1	Abbott & Cobb	—	25-28
Gold Bullion	F1	Rupp Seeds	110	15-25
Gold Medal	OP	Rupp Seeds	108	>25
Golden Osprey	F1	Meyers Seeds	115	12-16
Howdy Doody	—	Rupp Seeds	90	15-25
King Midas	F1	Siegers Seeds	115	25-28
Oktoberfest	F1	Siegers Seeds	115	15-25
Reliable	F1	Abbott and Cobb	—	12-20
Scarecrow	—	Meyers Seeds	—	15-25
Sorcerer	F1	Harris Moran	105	15-25
Trojan	OP	Siegers Seeds	110	20-30

Type: OP=open pollinated; F1=hybrid. — = not found, from seed catalogues.

Table 3. Performance of Selected Pumpkin Varieties

Variety	Marketable yield *lbs/a*	Marketable fuits *no/a*	Individual fruit weight *lb*
Appalachian	24,545	1,631	15.36
Dependable	17,541	1,196	15.01
Sorcerer	15,080	1,378	11.18
Scarecrow	14,772	1,124	12.88
Gold Bullion	13,271	870	14.13
Trojan	11,930	834	15.35
Howdy Doody	11,354	870	12.91
Autumn King	10,215	653	15.58
Gold Medal	10,169	628	16.29
Golden Osprey	9,005	653	13.40
King Midas	8,820	616	14.30
Reliable	6,050	508	12.05
Oktoberfest	4,999	508	10.89
r2	***0.50***	***0.52***	***0.30***
CV	***49***	***42***	***25***
LSD	***4,257***	***269***	***4.7***



Results of the 2005 National Sweetpotato Collaborators' Trial

Joe Kemble, Edgar Vinson, and Arnold Caylor

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

Sweetpotato roots from selected commercial varieties and breeding lines were planted in a heated bed at NAHRC on April 12 for slip production. Slips of two sweetpotato lines were planted on July 6. Varieties were replicated four times. Plots contained two rows that were 20 feet long and 3.5 feet wide. Within-row spacing was 1 foot.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory and consisted of (per acre) 85 pounds N, 184 pounds P_2O_5, and 156 pounds K_2O total. Consult your local county Extension agent for current recommendations for pest and weed control in vegetable production in Alabama. See also ANR-982 Guide to Commercial Sweetpotato Production in Alabama.

Sweetpotatoes were harvested on October 28. Roots were graded as *US #1* (roots: 2 to 3.5 inches in diameter, 3 to 9 inches in length, well shaped and free of defects), *canners* (roots: 1 to 2 inches in diameter, 2 to 7 inches in length), *jumbos* (roots: that exceed the diameter, length, and weight requirements of the US #1 grade, but that are of marketable quality), or *culls* (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 #1, canner, and jumbo grades. Percent US #1 was calculated by dividing the yield of the US #1 grade by the marketable yield (Table 2).

Table 1. Ratings of the 2005 Sweetpotato Collaborators' Trial[1]

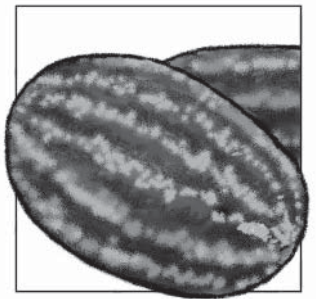
Location	NAHRC
Weather	5
Fertility	5
Irrigation	5
Pests	5
Overall	5

[1] See introduction for description of ratings scales

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

Variety	Total [1] marketable 50 lb bu/ac	US#1 50 lb bu/ac	Canner 50 lb bu/ac	Jumbo 50 lb bu/ac	Percent US#1 50 lb bu/ac	Cull 50 lb bu/ac
Covington	418	315	62	42	75	57
Beauregard (B94-14-G2)	355	248	62	45	70	48
r2	***0.40***	***0.40***	•	•	***0.12***	***0.10***
CV	***12***	***17***	•	•	***11***	***34***
LSD	***80***	***84***	•	•	***67***	***31***

Averages yields are given on a per acre basis.
US #1's: Roots 2 to 3 1/2 inches in diameter, 3 to 9 in length; must be well shaped and free of defects.
Canners: Roots 1 to 2 inches in diameter, 2 to 7 inches in length.
Jumbos: Roots that exceed the diameter, length, and weight requirements of the above two grades, but are of marketable quality.
Percent US #1's: Calculated by dividing the weight of US #1's by the total marketable weight (Culls not included).
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.



Palm Melon Trial in North and Central Mississippi

Thomas Horgan, Rick Snyder, and Peter Hudson

Ten cultivars of the "mini" or personal size seedless watermelons were evaluated in 2005 at two locations: North Mississippi Research and Extension Center, Verona, Mississippi, and Truck Crops Experiment Station, Crystal Springs, Mississippi (Tables 1 and 2). This study was also conducted at E.V. Smith Research and Extension Center in Shorter, Alabama, and those results were published in the Spring 2005 Commercial Vegetable Variety Trial (regional bulletin 15) and a synopsis is included in the discussion below.

Seedlings were started in a greenhouse four weeks prior to planting. Soils were fertilized according to soil testing lab recommendations. All plots used drip irrigation and black plastic mulch. A personal size diploid (seeded) variety, 'Jenny', was used as the pollinator. One pollinator was planted for every three triploid plants. In all locations, seedlings were transplanted to the field in early June and harvested starting in late July to early August. Four harvests were made at each location on 7- to 10-day intervals. Yields reported are based on a population of 2074 triploid plants per acre. Plant spacing was 14 square feet per plant.

Determining melon ripeness posed a challenge. The criteria used to judge melon ripeness in the field included all of the following: dried tendrils, a ground spot, and the thumping tone.

Table 1. Ratings of the 2005 Personal Size Watermelon Variety Trial[1]

Location	Truck Crops Experiment Station	North Miss. Research Extension Center	EVSRC
Weather	4	4	5
Fertility	5	5	5
Irrigation	5	5	5
Pests	4	4	5
Overall	4	4	5

[1] See introduction for description of ratings scales

'Valdoria' and 'Demi-Sweet' were among the top producers at Verona, MS, and Shorter, AL. 'Mini Yellow' was a top producer at all locations. At Verona 'betsy' has similar fruit numbers to all other varieties with the exception of 'Petite Treat,' which had significantly lower fruit numbers than 'Betsy.'

At E.V. Smith, 'Valdoria' had fruit numbers similar to 'Demi-Sweet', 'Mini Yellow', and 'Vanessa'. Fruit numbers per acre for 'Valdoria' were significantly higher than all other varieties.

At Crystal Springs, MS, there were no significant differences in fruit numbers per acre.

'Betsy', 'Wonder', and 'Vanessa' had the overall lowest individual fruit weights (pounds per fruit). 'Demi-Sweet' had the highest individual fruit weight in central Alabama and north Mississippi. One problem observed was

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

Variety	Seed source	Rind aspect	Fruit shape	Flesh color	Years evaluated[3]
Betsy	Nunhems	DGS-LB	Round	Red	2005
Bobbie	Nunhems	DGS-LB	Round	Red	2005
Demi-Sweet	Del Sol	DG	Round	Red	2005
Extasy	Seminis	DG	Round	Red	2005
Mini Yellow	Palmer Seeds	DG	Round	Yellow	2005
Petite Treat	Del Sol	DGS-LB	Round	Red	2005
Solitaire	Seminis	DGS-LB	Round	Red	2005
Valdoria	Nunhems	DG	Round	Red	2005
Vanessa	Nunhems	DG	Round	Red	2005
Wonder	Seminis	DG	Round	Red	2005

Rind aspect: DGS=Dark green stripe, DG-=Dark green, LB=Light background.

that a number of melons among cultivars were above or below size class.

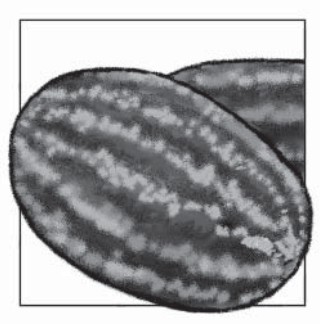
The soluble solids concentration (sweetness) of all melons was acceptable. 'Demi-Sweet' had the highest incidence of hollow heart. 'Wonder' and 'Extazy' had no incidences of hollow heart at any location. Rind thickness had no significant differences; however, in both locations 'Mini Yellow' had the thinnest rind. Rind necrosis was not encountered.

Table 3. Total Yield, Soluble Solids, Hollow Heart Ratings, and Rind Thickness

Variety	Marketable yield [1] lbs/a	Marketable fruits [1] no/a	Individual fruit weight [1] lb	Soluble solids (Brix)	Hollow heart [2] %	Hollow heart in	Rind thickness in
North Mississipppi Extension Center, Verona, MS							
Demi Sweet	26,400	3,000	8.8	11.3	58	0.7	0.6
Betsy	22,980	3,380	6.8	13.1	17	0.5	0.7
Valdoria	22,340	3,280	6.6	11.3	0	0	0.6
Mini Yellow	22,130	3,000	7.4	12.3	28	1	0.4
Bobbie	20,640	2,960	7.0	12.5	0	0	0.6
Solitaire	20,080	2,920	6.9	11.4	0	0	0.6
Extazy	19,740	2,720	7.2	11.5	0	0	0.6
Wonder	17,750	2,800	6.3	12.0	0	0	0.5
Vanessa	17,690	1,920	6.1	11.3	17	0	0.5
Petite Treat	14,780	1,530	6.4	11.6	21	0.2	0.5
LSD	***5,880***	***1,838***	***0.70***	***0.5***	***NS***	***NS***	•
Truck Crops Experiment Station, Crystal Spings, MS							
Petite Treat	27,210	3,470	7.9	10.9	8	0.3	•
Mini Yellow	24,900	2,820	8.8	10.9	8	0.5	•
Bobbie	24,480	3,470	7.0	11.5	17	0.7	•
Wonder	22,580	2,620	8.6	11.2	0	0.0	•
Betsy	22,440	3,270	6.9	11.2	8	0.6	•
Valdoria	22,140	2,820	8.0	11.0	8	0.6	•
Vanessa	21,560	2,520	8.9	10.7	8	0.5	•
Demi-Sweet	20.,480	2,420	8.1	11.3	25	1.1	•
Solitaire	19,740	2,420	8.2	11.1	25	0.4	•
Extazy	18,550	2,370	7.7	11.3	0	0.00	•
LSD avg @ 0.5	***NS***	***NS***	***1.7***	***NS***	***NS***	***NS***	•
E.V. Smith Research and Extension Center, Shorter, AL							
Valdoria	38,559	4,901	7.86	11.52	•	0.53	0.67
Demi Sweet	36,278	3,630	9.99	10.91	•	2.81	0.83
Mini Yellow	30,619	3,812	8.03	11.41	•	1.49	0.36
Vanessa	28,004	4,114	6.81	11.69	•	2.83	0.54
Petite Treat	25,654	3,267	7.85	11.47	•	2.94	0.65
Extazy	24,917	3,207	7.76	11.50	•	0.00	0.75
Wonder	23,971	3,570	6.71	11.19	•	1.19	0.68
Solitaire	22,015	3,146	6.99	11.96	•	0.00	0.73
Bobbie	19,516	2,481	7.86	11.91	•	1.21	0.78
Betsy	17,270	2,420	7.14	11.25	•	1.00	0.81
LSD	***12,145***	***1,838***	***0.71***	***1.16***	•	***0.59***	***0.60***

[1] Yields reported are based on 2074 triploids and 1037 pollinizer plants per acre. A pollinizer:triploid ratio of 1:2 was used. Plant spacing was 14 square feet per plant. Least square means reported. NS = Not significantly different

[2] Hollow heart and rind thickness reported as the relative number of melons sampled. Hollowheart is reported as maximum width of internal cracking measured in inches. Least squares means of three watermelons sampled from each of four replications.



In-Depth Report: 2005 N.C. Muskmelon and Honeydew Melon Evaluations

Wilfred Jester, Johnathan R. Schlultheis, C. Bradley Taylor, and W. Bradfred Thompson

Commercial production of muskmelon, honeydew, and specialty melons has increased in eastern North Carolina in the last eight years. During this period eastern muskmelons have represented the primary increase, increasing by more than five times to about 4,100 acres in 2005 versus 1997, with 'Athena' being the primary cultivar grown. The muskmelon acreage in 2005 continued to contract slightly with increasing competition. The total gross income from North Carolina muskmelons in 2005 was estimated to be more than $25 million.

Production of specialty melons such as sprite, honeydew, and various others is increasing as growers discover new markets and adapted cultivars. An objective of the North Carolina Specialty Crops Program and the melon trials is to identify adapted cultivars that North Carolina growers can grow profitably. Because of these efforts and a vigorous Extension educational program, the acreage of specialty melons for shipping and local sales has also increased. Grower and market interest in eastern grown honeydew melons is increasing. Several honeydew cultivars were identified as superior in these trials and were test marketed by several chain stores in 2005 with very positive results. An estimated 65 acres was grown in North Carolina in 2005. Total North Carolina specialty melon acreage in 2005 was estimated to be 515 acres with a total value of $5 million.

The muskmelon trials were sown on April 5, 2005.Seed were acid treated for bacterial fruit blotch. Transplants were grown in LE 1803 transplant trays containing Carolina Choice Soil Mix.

Field plots were established in a Norfolk fine sandy loam using a full-bed black polyethylene mulch system with drip irrigation. Preplant fertilizer, 10-20-20, was broadcast and incorporated on April 5, 2005 at a rate of 500 pounds per acre. On April 12, 2005, beds were formed on 5-foot centers and fumigated with 98% methyl bromide- 2% chloropicrin at a rate of 165 pounds per acre and immediately covered with 1.25 mil-thick 60-inch wide, black polyethylene mulch. An 8-mil drip tube with a 12-inch emitter spacing was placed beneath the soil surface at this time. The remaining N and K was fertigated weekly for a season total of 137 pounds per acre N and 270 pounds per acre K_2O.

Plots in the muskmelon and honeydew trials were arranged in a randomized complete-block design with four replicates. Plants were transplanted 2 feet apart into 20-foot plots (10 plants per plot). Planting in the field occurred on May 5, 2005. Transplant water contained 20-20-20 at a rate of 1 pound per 150 gallons of water and Diazinon AG500 at 1 ounce per 35 gallons of water. Irrigation was provided throughout the growing season on a daily basis. Watering was reduced two weeks prior to harvest to increase fruit quality. Melon fruit were harvested from plots three times a week. The eastern and western muskmelon trials were harvested 14 times from July 5 to August 1. The honeydew trial was harvested 13 times from July 5 to August 8.

Preventative insecticide, miticide, fungicide, and herbicide applications were made during the entire growing season. Insecticides were applied as a preventative measure as follows: May 20, May 27, June 10, and June 24 (Permethrin 3.2EC); and May 13, June 3, June 17, July 1, July 8, July 23, and July 29 (Asana XL 0.66 EC). Miticides were applied as follows: July 12 (Kelthane 50W) and July 16 (Agrimek 0.15EC). Similarly, the following fungicide products were used on July 23 (Bravo Weatherstik 6F and Previcur Flex). The weeds in the row middles were controlled with a shielded sprayer using pre-emergence herbicide applied on April 21 (Curbit 3EC) followed on June 3 (Gramoxone Max) as a burn down.

The 2005 planting season was hotter than normal and with below-average rainfall. This resulted in better-than-average quality melons. Daily temperatures from May through August averaged 0.4 ^{o}F above normal. Precipitation during the same period was 2 inches below the 30-year normal.

All harvested fruits were graded and the weights recorded. Total soluble solids were taken on five fruit per plot using a portable refractometer throughout the season and as dictated by the ripening of the melon. External and internal descriptions were recorded for all the melons. Muskmelon

descriptions were made by rating the different characteristics and are presented in Tables 1 and 3. Canopy ratings (fruit vine cover) and disease ratings were taken on the muskmelons and the honeydew melons.

Penetrometer readings were taken on the honeydew melons. Melons were cut in half and probed on three sides of the top half of the melon. Three melons were tested per plot.

Performance of selected eastern, western, honeydew melons are presented in Tables 2, 4, and 5.

Table 1. Seed Source, Fruit Characteristics, and Disease Severity of Selected Eastern Muskmelon Varieties

Variety	Seed source	Stem shape	Flesh color	Cavity	Canopy	Powdery mildew severity
Athena	Syngenta	Oval	2.5	Medium-Large	2.1	22.9
HMX 4587	Harris Moran	Oval	2.5	Medium-Large	2.0	22.8
HMX 4589	Harris Moran	Round-Oval	3.5	Medium	4.3	32.8
HMX 5590	Harris Moran	Round-Oval	2.8	Medium	2.5	57.6
HMX 8593	Harris Moran	Round-Oval	3.0	Small	2.1	12.9
HSR 4272	Hollar Seeds	Oval	2.5	Small	3.5	45.3
Minerva	Syngenta	Oblong-Asymetrical	2.0	Medium-Large	2.8	45.1
MPX 6411	Harris Moran	Oval	2.5	Small-Medium	1.9	57.5
MPX 6884	Harris Moran	Round-Oval	2.5	Medium	1.9	60.0
MPX 7167	Harris Moran	Oval	3.5	Medium	1.1	52.6
SVR 3171	Seminis	Oval-Round	3.6	Small-Medium	1.9	50.0
SVR 3179	Seminis	Oval	4.0	Medium	2.8	50.1
XME 1456	Sakata	Oblong-Asymetrical	2.0	Medium-Large	2.0	45.3
XME 1568	Sakata	Oblong-Asymetrical	2.0	Small	3.4	10.6
Aphrodite	Syngenta	Oblong-Asymetrical	2.5	Medium	3.5	30.1
Average			***2.8***		***2.5***	***39.7***
LSD (P=.05)					***0.6***	***18.8***

Flesh color: 1 = light orange, 5 = deep orange.
Canopy: 1 = sparse fruit cover, 5 = full fruit cover (rated July 15).
Severity of powdery mildew was assessed on July 28 and represents percent leaf area affected.

Table 2. Performance of Selected Eastern Muskmelon Varieties

Variety	Marketable yield *no/a*	Marketable fuits *cwt/a*	Individual fruit weight *lbs*	Soluble solids *brix*
Athena	12,415 c	758 bcd	6.1 de	10.3
HMX 4587	10,999 cde	943 a	8.6 ab	9.9
HMX 4589	15,028 b	707 cd	4.7 f	9.7
HMX 5590	10,672 cde	657 d	6.2 cde	10.8
HMX 8593	15,246 ab	742 cd	4.9 f	9.2
HSR 4272	12,741 c	841 bc	6.6 cde	10.2
Minerva	10,019 de	902 a	9.0 a	10.0
MPX 6411	10,999 cde	690 d	6.3 cde	9.9
MPX 6884	17,097 a	609 de	3.6 g	10.5
MPX 7167	7,841 f	485 e	6.2 de	12.7
SVR 3171	11,652 cd	745 cd	6.4 cde	11.8
SVR 3179	12,306 c	728 cd	5.9 e	9.3
XME 1456	10,999 cde	750 cd	6.9 cd	9.5
XME 1568	8,930 ef	633 d	7.1 c	11.3
Aphrodite	11,108 cde	893 ab	8.1 b	11.0
Average	***1,1870***	***739***	***6.4***	***10.4***
LSD (P=.05)	***1,366***	***129***	***0.8***	***1.1***

Melons harvested three times per week, 10 plants per plot at 20 feet.
Means followed by the same letter within a column do not significantly differ (P=0.05, Duncan's New MRT).
Total soluble solids reflects the sugar content of 20 fruit samples.

Table 3. Seed Source, Fruit Characteristics, and Disease Severity of Selected Western Muskmelon Varieties

Variety	Seed source	Stem shape	Flesh color	Cavity	Powdery mildew severity
Desert King	Nunhems	Oval-Asymetrical	2.5	Small-Medium	50.1 b-e
Desert Prince	Nunhems	Oval	3.0	Small	42.5 def
Desert Princess	Nunhems	Oval	2.5	Small-Medium	57.6 a-e
Desert Queen	Nunhems	Oval-Asymetrical	2.5	Medium	67.6 abc
Durango	Seminis	Elliptical	3.0	Small	25.5 f
Expedition	Harris Moran	Oval	2.0	Medium	65.0 a-d
Hy-Mark	Seminis	Oval	2.5	Small-Medium	40.1 ef
Impac	Seminis	Oval-Asymetrical	1.5	Medium-Large	72.8 ab
Magellan	Seminis	Oval	3.5	Small	40.0 ef
Navigator	Harris Moran	Oval-Asymetrical	2.5	Medium	50.0 b-e
Super 45	Willhite	Oval	1.0	Small	80.1 a
SXM 7208	Nunhems	Elliptical-Oval	2.5	Medium	66.3 abc
UGX-303	United Genetics	Oval	3.5	Medium-Small	62.5 a-e
UGX-1302	United Genetics	Oval-Round	2.0	Small-Medium	67.5 abc
Voyager	Nunhems	Elliptical-Round	2.0	Medium	47.8 cde
XME 0059	Sakata	Oval-Round	3.5	Small	62.8 a-e
Primo	Syngenta	Oval-Oblong	2.5	Medium	55.1 b-e
Motagua	Syngenta	Oval-Oblong	2.0	Small	80.1 a
Riorico	Syngenta	Oval-Asymetrical	3.0	Medium-Large	60.1 a-e
Average			***2.5***		***57.6***
LSD (P=.05)					***0.9***

Flesh color: 1 = light orange, 5 = deep orange.
Severity of powdery mildew was assessed on 28 July and represents percent leaf area affected.

Table 4. Performance of Selected Western Muskmelon Varieties

Variety	Marketable yield *no/a*	Marketable fuits *cwt/a*	Individual fruit weight *lbs*	Soluble solids *brix*
Desert King	23,305 a	815	3.5 h	10.5 a-d
Desert Prince	19,602 a-d	735	3.8 gh	9.6 def
Desert Princess	18,186 b-e	761	4.2 fg	10.5 a-d
Desert Queen	20,691 abc	811	3.9 fgh	10.4 a-d
Durango	17,533 c-f	769	4.4 ef	9.9 b-f
Expedition	16,335 d-g	911	5.6 bc	10.0 b-e
Hy-Mark	17,642 c-f	640	3.7 gh	11.0 ab
Impac	12,306 g	851	6.3 a	8.9 f
Magellan	19,602 a-d	861	4.4 ef	10.2 bcd
Navigator	13,928 fg	676	5.0 de	10.4 a-d
Super 45	21,998 ab	752	3.5 h	10.9 abc
SXM 7208	21,127	824	3.9 fgh	11.0 ab
UGX-303	17,424 c-f	886	5.1 cd	10.7 abc
UGX-1302	18,949 b-e	847	4.5 ef	9.9 b-f
Voyager 5	19,166 a-e	732	3.9 fgh	11.3 a
XME 0059	20,909 abc	819	3.9 fgh	9.9 b-f
Primo	15,682 d-g	767	4.9 de	9.8 c-f
Motagua	15,246 efg	798	5.3 bcd	10.5 a-d
Riorico	15,682 d-g	905	5.8 b	9.1 ef
Average	***18,174***	***798***	***4.5***	***10.2***
LSD (P=.05)	***3,568***	***NS***	***0.5***	***0.9***

Means followed by the same letter within a column do not significantly differ (P=0.05, Duncan's New MRT).
NS = there were no significant treatment differences winin a column.
Total soluble solids reflects the sugar content of 20 fruit samples.

Table 5. Performance of Selected Honeydew Melon Varieties

Variety	Marketable yield *no/a*	Marketable fuits *cwt/a*	Individual fruit weight *lbs*	Soluble solids *brix*
Crème de Menthe	14,266 bc	1,014 a	7.1 abc	12.1 d
Destacado	12,306 cde	885 a	7.1abc	13.9 abc
Double Dew	10,781 ef	717 abc	6.0 de	13.0 bcd
HDM-03-09	12,524 cde	787 de	6.2 cde	13.5 abc
PS 3911298	11,543 def	691 cde	6.0 de	14.2 ab
Honey Star	9,692 f	706 e	7.3 ab	13.7 abc
HMX 4593	11,435 def	841 b-e	7.4 ab	13.1 bcd
Morning Dew	9,583 f	693 e	7.2 ab	13.4 a-d
NUN 7223	15,682 ab	893 abc	5.3 ef	14.6 a
NUN 7225	13,395 bcd	752 cde	5.6 ef	14.3 ab
NUN 7227	12,850 cde	714 de	5.6 ef	14.0 abc
RML 0126	13,613 bcd	985 ab	7.3 ab	13.1 bcd
RML 0133	11,979 c-f	898 abc	7.6 ab	12.6 cd
Rocio	11,217 def	864 a-d	7.8 a	12.8 bcd
Santa Fe	10,346 ef	684 e	6.7 bcd	13.3 a-d
Snow Mass	17,206 a	803 cde	4.7 f	14.1 ab
Average	***12,401***	***808***	***6.5***	***14***
LSD (P=.05)	**2,170**	**142**	**0.9**	**0.9**

Means followed by the same letter within a column do not significantly differ (P=0.05, Duncan's New MRT).

Total soluble solids reflects the sugar content of 20 fruit samples.

Seed Sources for Alabama Trials

Seeds Donated by

Nunhems/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

D. Palmer Seed Co.
8269 S. Highway 95
Yuma, AZ 85365
(928) 341-8494

Paramount Seeds
P.O. Box 1866
Palm City, FL 34991
Ph: (772) 221-0653
Fax: (772) 221-0102

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

Seminis Vegetable Seeds, Inc
Tech Rep: Rusty Autry
2221 North Park Ave.
Tifton, GA 31796
Ph: (229) 386-0750
Tifton Seed Distribution Center
Tech Rep: Van Lindsey
Ph: (912) 382-1815

Other Seed Sources

Abbot and Cobb, Inc.
Tech Rep: Russ Beckham
146 Old US Highway 84 West
Boston, GA 31626
rbeckham@rose.net

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

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

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

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

Meyers Seeds
600 South Carolina St.
Baltimore, MD 21231
(410) 342-4224

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

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

Seedway
Tech Rep: James J. Pullins
1225 Zeager Road
Elizabethtown, PA 17022
(800) 952-7333
E-mail: info@seedway.com

Siegers Seed Company
13031 Reflections Drive
Holland, MI 49424
Ph: (800) 962-4999

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 (spring 2006).

When: September 22, 2006
Deadline for spring 2006 variety trial report submissions.

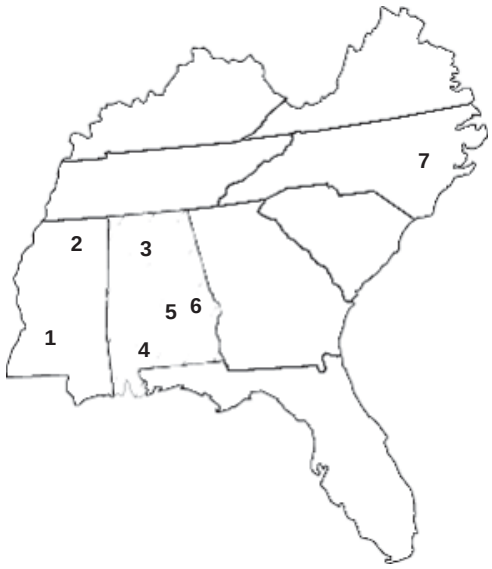
What: Results pertaining to variety evaluation in a broad sense. This includes field performance, quality evaluation, and disease resistance. Here are a few tips:

- 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



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

AUBURN UNIVERSITY
3. North Alabama Horticulture Research Center, Cullman, AL
4. Brewton Agricultural Research Unit, Brewton, AL
5. E.V. Smith Research Center, Shorter, AL
6. Plant Science Research Center, Auburn, AL

NORTH CAROLINA STATE UNIVERSITY
7. Cunningham Research Station, Kinston, NC