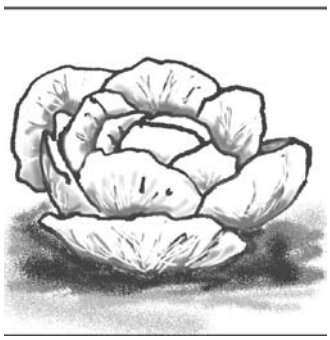
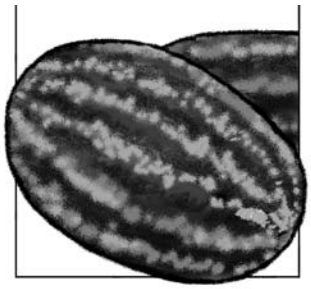
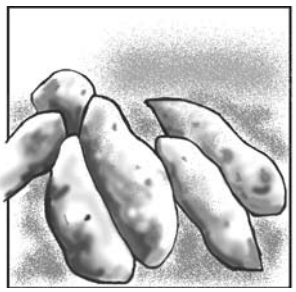
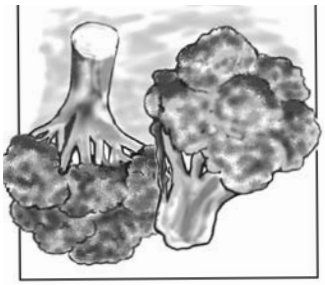
Fall 2006 Commercial Vegetable Variety Trials

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Introduction: Tips for Interpreting Vegetable Varieties Performance Results

Edgar Vinson and Joe Kemble

The fall 2006 variety trial bulletin includes results from Auburn University, Mississippi State University, and the University of Georgia. The information provided by this report must be studied carefully in order to make the best selections possible. Although yield is a good indicator of varietal performance, other information must be studied. The following provides a few tips to help adequately interpret results in this report.

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

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

Statistical interpretation. The coefficient of determination (R^2), coefficient of variation (CV) and least significant difference (LSD, 5%) are reported for each test. These numbers are helpful in separating the differences due to small plots (sampling error) and true (but unknown) differences among entries.

R^2 values range between 0 and 1. Values close to 1 suggest that the test was conducted under good conditions and most of the variability observed was mainly due to the effect of variety and replication. Random, uncontrolled errors were of lesser importance. CV is an expression of yield variability relative to yield mean. Low CVs (less than 0.20) 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, 'Sunoma' yielded 14,310 pounds per acre, while 'Plum Crimson' and 'Hybrid 882' yielded 11,428 and 10,845 pounds per acre, respectively. Since there was less than a 3,328 difference between 'Sunoma' and 'Plum Crimson', there is no statistical difference between these two varieties. However, the yield difference between 'Sunoma' and 'Hybrid 882' was 3,465, indicating that there is a real difference between these two varieties. From a practical point of view, LSD values are the most important for 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 compare specific practices to the standard in order to 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 living, 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.

Table 1. Soil Types at the Location of the Trial

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

Table 2. Description of Ratings

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

Experimental Roma Tomato Entries Resistant to Tomato Spotted Wilt Virus

Joe Kemble, Edgar Vinson, and Randy Akridge

A Roma tomato variety trial was conducted at the Brewton Agriculture Research Unit (BARU) in Brewton, Alabama (Tables 1 and 2). Six-week-old Roma tomato transplants were set on June 1. Transplants were set into 20-foot long plots on 6-foot centers, at a within row spacing of 1.5 feet. White plastic mulch and drip irrigation were used. Tomato plants were staked and tied for support.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Standard cultural practices for Roma tomatoes were used based on the Southeastern U.S. Vegetable Crop Handbook (www.aces.edu/dept/com_veg/2007_SEVG5.pdf)

Ammonium nitrate was applied pre-plant at a rate of 70 pounds per acre of N. Fertilization continued with weekly injections of N alternating between calcium nitrate and potassium nitrate at a rate of 7 pounds of N per acre from June 19 through August 18.

Tomatoes were harvested three times, graded as marketable or non-marketable, and weighed (Table 3). Yields were low again this year but unlike last year did not seem to be due to tomato spotted wilt (TSWV)—a disease caused by a virus which is spread by thrips.

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

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

[1] See introduction for description of ratings scales

'Muriel', a variety that is resistant/tolerant to TSWV, produced yields that were significantly lower than 'Plum Crimson' but similar to the market standard 'Plum Dandy'. 'Sunoma' produced yields similar to 'Plum Crimson'. In marketable fruit number, 'Sunoma' was similar to 'Plum Crimson' and significantly higher than all other varieties. 'Puebla' had the lowest incidence of cull fruit but these numbers were similar to 'NC 01599', 'Plum Dandy', and 'Hybrid 882'.

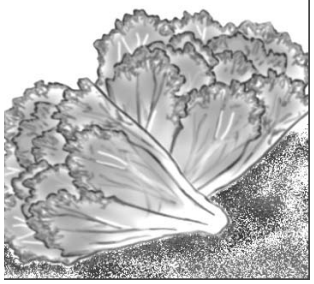
Table 2. Seed Source, Fruit Characteristics, and Relative Earliness of Selected Tomato Varieties

Variety	Type	Seed source	Plant habit	Fruit color	Days to harvest	Disease claims
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
NC 0199	F1	NC State	Det	Red	—	TSWV
NC 05255	F1	NC State	Det	Red	—	TSWV
Plum Crimson	F1	Harris Moran	Det	Red	80	EB, *FW
Plum Dandy	F1	Harris Moran	Det	Red	—	EB, FW
Puebla	F1	Seminis	Det	Red	75	BSP, VW, *FW
Sunoma	F1	Seedway	Det	Red	70	BSP, FW, NE, St, VW

Type: F1 = Hybrid
Plant habit: Det = Determinate
Disease claims: ASC = Alternaria Stem Canker; BSP = Bacterial speck; EB = Early blight; 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 Agriculture Research Unit, 2006

Variety	Marketable yield *lbs/a*	Marketable fruit *no/a*	Unmarketable wieght *lbs/a*	Individual weight *oz*
Sunoma	14,310	76,956	5,486	2.99
Plum Crimson	11,428	67,427	4,222	2.71
Hybrid 882	10,845	67,034	3,660	2.60
NC 05199	10,488	44,468	3,765	3.76
Mariana	9,604	52,544	5,006	2.95
Muriel	9,402	41,745	4,996	3.64
Puebla	8,269	49,277	2,845	2.78
Plum Dandy	7,820	55,721	3,136	2.24
NC 05255	7,443	32,852	4,194	3.62
R^2	***0.52***	***0.55***	***0.55***	***0.90***
CV	***0.22***	***0.26***	***0.21***	***0.07***
LSD	***3,328***	***20,819***	***1,314***	***0.02***



New Looseleaf Lettuce Varieties Top Standards

Joe Kemble, Edgar Vinson, and Randy Akridge

A lettuce variety trial was conducted at the Brewton Agriculture Research Unit in Brewton (Tables 1 and 2).

On October 18, five-week-old butterhead, looseleaf, and romaine lettuce transplants were set in staggered double rows with a 12-inch spacing between plants within a row. Plots were covered in white plastic mulch and drip irrigation was installed. Plots were 20 feet long on 6-foot centers. This created a stand of approximately 7,200 plants per acre. Experimental plots were arrange in a randomized complete block.

Fertilizers were applied according to the recommendations of the Auburn University Soil Testing Laboratory. Lettuce received weekly injections of a calcium nitrate or potassium nitrate mixture totaling 100 pounds per acre between October 24 and November 21. Insecticides were applied on November 3 and 14. A fungicide was applied on November 14. Standard cultural practices for lettuce were used based on the Southeastern U.S. Vegetable Crop Handbook (www.aces.edu/dept/com_veg/2007_SEVG5.pdf)

Lettuce was harvested and graded according to the Standards for Grades of Lettuce (U.S. Dept. Of Agriculture Publication 60-6130) (Table 3) on January 3, 2007.

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

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

[1] See introduction for description of ratings scales

Among the butterhead lettuce types, 'Optima' had a marketable yield that was significantly higher than all other butterhead types. 'Red Butter', a new entry to the lettuce trials, produced a marketable yield similar to established varieties 'Harmony', 'Nancy', 'Esmeralda', and 'Tania'. 'Optima' also produced a significantly higher number of marketable heads per acre while 'Tania' produced the lowest number.

Three new looseleaf entries—'Tehema', 'Bergam's Green', and 'New Red Wave'—were included in the looseleaf lettuce category. 'Tehema' and 'Bergam's Green' ranked one and two respectively with yields significantly higher than the standard, 'Slobolt'. 'Tehema'

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

Variety	Head type	Seed source	Days to harvest	Leaf color	Disease claims	Years evaluated
Optima	Butterhead	Vilmorin\Sieger's	55	G	DM,LMV	95-97,02-04, 06
Nancy	Butterhead	Johnny's	66	R	—	96,97,02-04, 06
Esmeralda	Butterhead	Siegers	65	G	DM,LMV	02-04, 06
Tania	Butterhead	Harris	65	G	DM	02-04, 06
Harmony	Butterhead	Shamrock	68	G	B,DM,TB	02-04, 06
Red Butter	Butterhead	Siegers	61	G-R	—	06
Bergam's Green	Looseleaf	Siegers	57	G	CRR, TB	06
Red Wave	Looseleaf	Evergreen	—	R	—	06
Slobolt	Looseleaf	Siegers	57	G	TB	96,97,02-04,06
Tehema	Looseleaf	Siegers	53	G	B, CRR, TB	06
Athena	Romaine	Enza Zaden/Siegers	63	G	CRR,DM,LMV,TB	02-04, 06
Green Towers	Romaine	Harris	74	G	—	02-04,06
Paramount	Romaine	Siegers	60	G	CRR	
Red Eye Cos	Romaine	Stokes	—	R	—	02-04,06
Red Hot Cos	Romaine	Stokes	70	R	—	06
Rubicon	Romaine	Siegers	67	G	CRR, LMV	06

Disease claims: B=Bolt tolerant/resistant; CRR=Cork Root Rot; DM=Downy Mildew; LMV=Lettuce Mosaic Virus; TB = Tip Burn
— = not available from seed catalogues

produced the largest number of marketable heads per acre of all other looseleaf varieties. There were no significant differences found in marketable head number.

Three new romaine entries—'Paramount', 'Red Hot Cos', and 'Rubicon'—had marketable yields similar to 'Green Towers'. Higher marketable yields corresponded to higher marketable head number as 'Paramount', 'Red Hot Cos', and 'Rubicon' were the top three lettuce varieties in the marketable head number category.

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

Variety	Type	Marketable weight *lbs/a*	Marketable heads *no/a*	Cull heads *no/a*
Optima	Butterhead	8,386	13,936	•
Harmony	Butterhead	6,306	13,283	131
Red Butter	Butterhead	6,154	13,065	666
Nancy	Butterhead	6,121	12,412	345
Esmeralda	Butterhead	5,391	11,323	2,207
Tania	Butterhead	5,313	12,630	135
Tehema	Looseleaf	9,535	13,718	17
Bergam's Green	Looseleaf	9,339	12,412	187
Slobolt	Looseleaf	6,058	13,283	105
New Red Wave	Looseleaf	5,601	13,501	240
Paramount	Romaine	8,693	13,718	392
Red Hot Cos	Romaine	8,237	13,936	•
Rubicon	Romaine	8,070	13,718	52
Green Towers	Romaine	7,822	13,501	183
Athena	Romaine	6,975	13,065	135
Red Eye Cos	Romaine	5,481	12,194	49
R^2		***0.50***	***0.40***	***0.84***
CV		***0.24***	***0.09***	***0.92***
LSD		***1,028***	***597***	***253***

• = none, no data

Results of the 2006 Southernpea Cooperative Trial

Joe Kemble, Edgar Vinson, and Randy Akridge

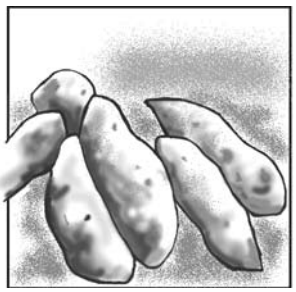
Replicated and observational southernpea cooperative trials were conducted at the Brewton Agricultural Research Unit (BARU) in Brewton, Alabama (see table). The purpose of these trials is to evaluate the performance of southernpea cultigens that have not been released for use by growers, comparing these unreleased cultigens to their performance against current standard varieties.

Southernpeas were planted into bareground plots that were 20 feet long and 3 feet wide on August 1. The experimental design was a randomized complete block with four replications. Plots had a within-row spacing of 1 foot. Overhead irrigation was used. Standard cultural practices for southernpeas were used based on the Southeastern U.S. Vegetable Crop Handbook (www.aces.edu/dept/com_veg/2007_SEVG5.pdf)

Fertilization consisted of a preplant application of 5-10-15 at a rate of 500 pounds per acre. Southernpeas were harvested five times between September 26 and October 10. Dry and imbibed yields were determined. To estimate yield and to compensate for different percentages of dry 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 (see table). Bushels of fresh, in-pod yield per acre may be estimated by multiplying the imbibed weight by two (assuming an average shellout of 50 percent) and dividing it by 25 (the average weight of a bushel of fresh, unshelled southernpeas).

2007 Southernpea Southern Cooperators' Trial, Brewton Agricultural Research Unit

Variety	Hand shellout	Shelled yield	Imbibed shelled yield
	%	*lbs/a*	*lbs/a*
ARK01-874	71	4,002	6,452
ARK01-1704	67	3,224	4,495
ARK01-1781	64	2,889	3,986
ARK01-1764	67	2,682	4,024
ARK1	73	2,555	4,123
ARK00-178	77	2,529	4,792
ARK01-1293	75	2,476	4,331
ARK01-821	76	2,343	3,730
Early Acre	73	2,155	3,617
R^2	***0.75***	***0.80***	***0.81***
CV	***0.12***	***0. 13***	***0.11***
LSD	***2***	***738***	***424***



Results of the 2006 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, Alabama (Table 1).

Sweetpotato roots from selected commercial varieties and breeding lines were planted in a heated bed at NAHRC on April 1 for slip production. Slips were planted on July 24. Varieties were replicated four times. Plots contained two rows that were 25 feet long and 3.5 feet wide with a 1-foot row spacing.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory and consisted of (per acre) 80 pounds of N, 184 pounds of P_2O_5, and 156 pounds of K_2O total. Standard cultural practices for sweet potatoes were used based on the Southeastern U.S. Vegetable Crop Handbook (www.aces.edu/dept/com_veg/2007_SEVG5.pdf)

Sweetpotatoes were harvested on October 28. 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 (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).

Table 1. Ratings of the 2006 Sweetpotato Collaborators' Trial[1]

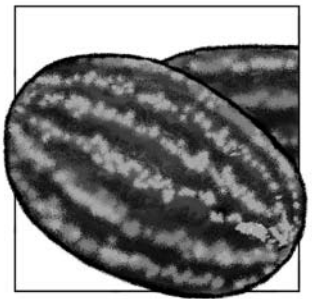
Location	NAHRC
Weather	5
Fertility	5
Irrigation	5
Pests	5
Overall	5

[1] See introduction for description of ratings scales

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

Variety	Total marketable *50-lb bu/a*	US No.1 *50-lb bu/a*	Canner *50-lb bu/a*	Jumbo *50-lb bu/a*	Percent US No.1 *50-lb bu/a*	Cull *50-lb bu/a*
*bu/ac*L99-35	382	277	28	76	73	32
NC99-573	371	249	17	105	68	41
Beauregard (B94-14-G2)	265	223	18	24	83	10
Beauregard (B63-G1-LSU)	345	192	23	97	67	30
Covington	248	180	29	39	74	94
R²	***0.60***	***0.60***	***0.19***	***0.53***	***0.60***	***0.61***
CV	***0.24***	***0.28***	***0.47***	***0.55***	***0.12***	***0.61***
LSD	***266***	***162***	***17***	***67***	***16***	***67***

Averages yields are given on a per acre basis.
US No. 1: Roots 2 to 3 1/2 inches in diameter, 3 to 9 in length; must be 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 above two grades, but are of marketable quality.
Percent US No.1: Calculated by dividing the weight of US No.1's by the total marketable weight (Culls not included).
Cull: 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.



The Melons of Uzbekistan

Richard Snyder and David Nagel

Eight varieties of melons from Uzbekistan were evaluated to determine growth and yield in Mississippi as well as market potential (Tables 1 and 2). Uzbek melons were evaluated in a randomized complete block design with four replications.

Seeds were started on May 19, 2006 and transplanted on June 5, 2006 at the Truck Crops Experiment Station in Crystal Springs, Mississippi. Spacing was 3 feet between plants, 6 feet between rows, with eight plants per plot. Black plastic mulch (4 feet wide) and drip irrigation were used.

Nitrogen, at the rate of 44 pounds per acre, was provided with ammonium nitrate, and potassium, at the rate of 92 pounds per acre, was provided with 0-0-60, preplant. The crop was sidedressed with ammonium nitrate at 44 pounds per acre. No limestone was required.

Standard production practices for melons were used, based on the Southeastern U.S. Vegetable Crop Handbook (Sanders, et al., 2006).

Harvests were on July 31, August 8, and August 14.

The melon varieties from Uzbekistan exhibited a broad degree of variability, both among and within varieties. This is most likely due to these being open pollinated types, saved over many generations of production.

'Khandalak' was much earlier than the other varieties, with 68 percent being harvested on the first of three harvest dates (data not shown). There were no differences in yield (weight) per acre. However, 'Khandalak' had more fruit (number) per acre than all others. This is likely due to its diminutive size (3.6 pounds), which is significantly smaller than six other varieties. 'Kukcha' was the largest variety (9.1 pounds).

While yield was good, quality was generally low. There were wide variations in size, shape, and sugars within varieties. Susceptibility to downy mildew and other diseases was very high (a second trial in North Mississippi was destroyed by high disease pressure). Harvest windows were extremely short, with fruit rot very rapid if harvested a day or two late.

Sugars were poor to mediocre in all varieties except 'Kukcha' and 'Berddor' which averaged a Brix of 11. However, due to high variability, this high sugar level was not significantly different from half the remaining varieties.

These varieties do not appear to be well suited to the climate of Mississippi. Market conditions demand better uniformity.

Table 1. Uzbek Melon Descriptions[1]

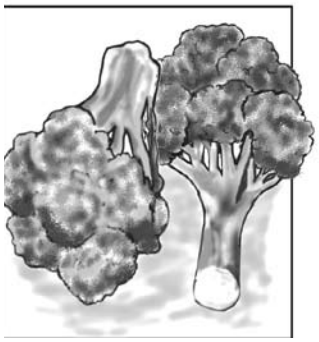
Name	Description
Mirzachul	Elongated melons, white inside and out, mid-season, very popular
Obinavot-Large (Honey Water)	Larger variety, round, yellow outside, white inside, sweet and soft, early season
Obinavot-Small (Honey Water)	Smaller variety, round, yellow outside, white inside, sweet and soft, early season
Kukcha (green)	Late season, green outside, white inside, very sweet, medium size, oblong
Red melon	Yellow outside, orange/red inside, late season
Khandalak	Very early season, small round, strong aroma, yellow outside, white inside
Berddor	Late season
Unknown name	Average size, early season, strong aroma

[1]Names and descriptors are based on local Uzbek nomenclature and conditions; one name was unknown but the melon was included in the trial anyway.

Table 2. Yield and Sugar Content of Uzbek Melons, Crystal Springs, MS, 2006

Variety	Yield	Size	Sugar content	Soluble solids
	lbs/a	*no/a*	*lbs/melon*	*brix*
Mirzachul	26,234	3,376 BC[1]	7.7 BC	7.8 AB
Obinavot - Large	22,749	4,683 B	4.8 EF	7.1 BC
Obinavot - Small	21,791	3,267 BC	6.7 CD	9.2 AB
Kukcha	28,641	3,158 C	9.1 A	11.0 A
Red melon	22,172	2,940 C	7.5 BC	8.2 AB
Khandalak	26,996	6,425 A	4.2 F	3.6 C
Berddor	21,606	3,812 BC	5.7 DE	11.1 A
Unknown name	33,323	4,247 BC	7.9 B	7.1 B

[1] Means within a column followed by different letters are significantly different.



Huge Differences Among Broccoli Cultivars in Georgia Trials

William Terry Kelley and Denne Bertrand

The 2006 broccoli variety trial in Georgia showed some significant differences among commercially available varieties. The growing season was very favorable throughout the spring season (Table 1). The overall yields were low, however, likely due to the planting arrangement, which was based on current University of Georgia recommendations. Companion tests were conducted last season as well, to refine the recommended planting arrangements. The plant populations that worked best in the spacing studies conducted at the same time as this variety trial revealed that plant densities as much as three times what was used here will produce higher yields. Comparisons between varieties are still valid, however, since these were all planted at the same population.

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

Location	Coastal Plain Experiment Station
Weather	4
Fertility	5
Irrigation	3
Pests	4
Overall	3

[1] See introduction for description of ratings scales

Twenty commercially available broccoli varieties were compared at the Tifton Vegetable Park at the Coastal Plain Experiment Station (elevation 382 feet) in Tifton, Georgia. Containerized broccoli transplants were produced in greenhouses on the research station. Broccoli was transplanted to the field on March 2, 2006 into a Tifton sandy loam soil (fine, loamy, siliceous, thermic Plinthic Kandiudult). Plots consisted of single rows which contained ten plants each spaced 12 inches apart. Rows were spaced 36 inches apart. The planting was arranged in a randomized complete block design with four replications.

Table 2. Yield of Fancy and No. 1, Total Marketable Yield, and Marketability of Selected Broccoli Varieties, Tifton, Georgia, 2006

Variety	Sponsor	Fancy yield [1]	No. 1 yield [1]	Total marketable yield [1]	Marketable
		24-lb box/a			*%*
Arcadia	Sakata	321.4	18.9	340.3	98.5
Captain	Seminis	103.4	28.4	131.8	74.5
Decathlon	Rupp	213.0	59.2	272.3	85.5
Emperor	Clifton	10.1	73.1	83.2	55.3
Everest	Syngenta	139.9	35.3	175.2	88.9
General	Seminis	97.1	69.3	166.4	91.0
Greenbelt	Sakata	240.1	52.3	292.4	67.1
Green Magic	Sakata	235.1	0.0	235.1	94.7
Gypsy	Siegers	218.7	31.5	250.2	95.1
Laguna	Syngenta	127.3	40.4	167.6	68.5
Major	Seminis	218.1	9.5	227.5	89.3
Marathon	Rupp	59.3	22.7	82.0	25.6
Monaco	Syngenta	29.6	40.3	70.0	28.0
Packman	Seminis	110.3	34.7	145.0	81.5
Patriot	Sakata	253.3	46.0	299.3	100.0
Patron	Sakata	267.9	12.0	279.8	97.2
Premium Crop	Rupp	90.8	27.1	117.9	57.0
TLALOC	Seminis	247.7	58.6	306.3	94.6
Triathlon	Sakata	142.4	0.0	142.4	36.1
Windsor	Syngenta	112.8	43.5	156.3	80.4
Mean of Test		***161.9***	***35.1***	***197.0***	***75.4***
LSD (0.05)		***90.6***	***56.4***	***94.5***	***33.0***
CV (%)		***39.5***	***113.4***	***33.9***	***30.9***

One-row plot, 10 feet long x 3 feet wide

[1] Marketable yield

Normal cultural practices were used for bare ground broccoli culture in Georgia. Base fertilizer consisted of 1000 pounds per acre of 10-10-10 incorporated prior to planting. Trifluralin (0.5 pound ai per acre) was applied pre-plant and incorporated for weed control. An additional 80 pounds per acre of N were applied through drip irrigation, and one granular side dress with 250 pounds per acre of 34-0-0 was applied. Fungicide and insecticide applications were made according to current Uni-

versity of Georgia recommendations. Drip irrigation was applied as needed.

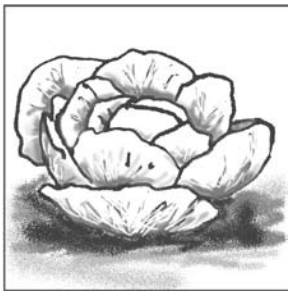
Broccoli was harvested at maturity on April 21, April 24, April 28, May 2, May 5, May 9, May 12, May 16, May 19, May 23, and May 25, 2006. Data were collected on yield by grade, marketability, average head weight, and average head and stem diameter (Tables 2 and 3).

Overall yields were low. Total marketable yield seemed to be superior in 'Arcadia', 'TLALOC', 'Decathlon', 'Greenbelt', 'Gypsy', 'Patriot', and 'Patron' compared to the other varieties as these all averaged more than 250 boxes per acre. 'Marathon', 'Monaco' and 'Emperor' were the only green entries that averaged less than 100 boxes per acre. Marketability was extremely variable with 'Patriot' showing the highest and 'Marathon' the lowest. Loose heads were the primary reason for lack of marketability. Average head and stem diameter were reasonably similar among all varieties tested. There were differences among varieties for average head weight. 'Triathlon', 'TLALOC', and 'Arcadia' produced the heaviest heads while 'Monaco', 'Emperor', and 'Captain' had the lightest.

Table 3. Average Stem Diameter, Head Diameter, and Head Weight of Selected Broccoli Varieties, Tifton, GA, 2006

Variety	Sponsor	Average head diameter *in*	Average stem diameter *in*	Average head weight *oz*
Arcadia	Sakata	5.31	1.20	10.5
Captain	Seminis	4.51	1.20	6.3
Decathlon	Rupp	4.96	1.19	9.9
Emperor	Clifton	4.35	1.11	6.3
Everest	Syngenta	4.66	1.18	6.6
General	Seminis	4.76	1.22	9.5
Greenbelt	Sakata	4.98	1.31	10.3
Green Magic	Sakata	4.61	1.24	8.3
Gypsy	Siegers	4.89	1.20	8.8
Laguna	Syngenta	4.89	1.20	7.1
Major	Seminis	4.68	1.23	7.7
Marathon	Rupp	4.91	1.30	8.8
Monaco	Syngenta	4.96	1.32	5.8
Packman	Seminis	4.66	1.21	6.4
Patriot	Sakata	4.98	1.21	9.8
Patron	Sakata	5.08	1.25	10.5
Premium Crop	Rupp	5.24	1.13	6.8
TLALOC	Seminis	5.26	1.30	11.1
Triathlon	Sakata	4.85	1.36	11.5
Windsor	Syngenta	4.58	1.16	6.8
Mean of Test		***4.86***	***1.23***	***8.4***
LSD (0.05)		***0.36***	***0.10***	***3.6***
CV (%)		***5.25***	***5.78***	***30.8***

One-row plot, 10 feet long x 3 feet wide



Cabbage Variety Trials Reveal Marked Differences in Georgia

William Terry Kelley and Denne Bertrand

The 2006 cabbage variety trial in Georgia showed some distinct differences among commercially available varieties. The growing season was very favorable throughout the spring season (Table 1) and resulted in some very good yields (Table 2). However, growers should keep in mind that yields in these small plot trials are greater than would be expected in large field production. Comparisons between varieties, however, remains valid. The test included two experimental lines and three red types.

Sixteen commercially available cabbage varieties and two experimental lines were compared at the Tifton Vegetable Park at the Coastal Plain Experiment Station (elevation 382 feet) in Tifton, Georgia. Containerized cabbage transplants were produced in greenhouses on the research station. Cabbage were transplanted to the field on March 2, 2006 into a Tifton sandy loam soil (fine, loamy, siliceous, thermic Plinthic Kandiudult). Plots consisted of single rows which contained ten plants each spaced 12 inches apart.

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

Location	Coastal Plain Experiment Station
Weather	4
Fertility	5
Irrigation	5
Pests	4
Overall	4

[1] See introduction for description of ratings scales

Rows were spaced 36 inches apart. The planting was arranged in a randomized complete block design with four replications.

Normal cultural practices were used for bare ground cabbage culture in Georgia. Base fertilizer consisted of 1000 pounds per acre of 10-10-10 incorporated prior to planting. Trifluralin (0.5 pound ai per acre) was applied pre-plant and incorporated for weed control. An additional 80 pounds per acre of N were applied through drip irrigation, and one granular side dress with 250 pounds per acre of 34-0-0 was applied. Fungicide and insecticide applications were made according to current University of Georgia recommendations. Drip irrigation was applied as needed.

Cabbage were harvested at maturity on May 22, May 26, June 1, June 5, June 12, June 19 and June 28, 2006. Data were collected on yield, marketability, average head weight and average head circumference. Results are summarized in Table 2.

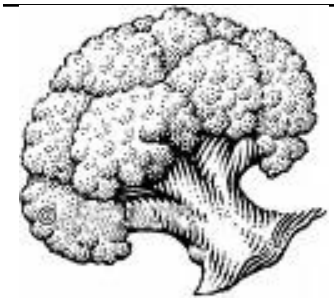
Table 2. Yield, Marketability, Head Circumference, and Average Head Weight of Selected Cabbage Varieties, Tifton, Georgia, 2006

Variety	Sponsor	Yield [1]	Marketable	Average head weight	Average head circum.
		50-lb box/a	*%*	*lb*	*in*
Blue Dynasty	Seminis	911	100.0	3.14	19.5
Blue Thunder	Harris Moran	963	100.0	3.50	19.9
Blue Vantage	Sakata	729	100.0	3.18	19.2
Bravo	Harris Moran	1,188	100.0	4.09	20.7
Early Thunder	Harris Moran	984	92.5	3.87	20.6
Emblem	Sakata	1,034	100.0	3.65	20.3
Green Cup	Clifton	1,034	100.0	3.64	20.4
Golden Dynasty	Seminis	1,220	100.0	4.40	22.6
HMX 3240	Harris Moran	887	100.0	3.40	19.8
HMX 3241	Harris Moran	1,108	100.0	3.75	21.1
Platinum Dynasty	Seminis	972	97.7	3.67	20.3
Silver Dynasty	Seminis	978	100.0	3.43	19.6
Solid Blue #780	Abbott&Cobb	841	100.0	2.87	18.4
Red Dynasty	Seminis	560	100.0	2.18	17.2
Red Jewel	Sakata	518	97.5	2.02	16.6
Rio Verde	Clifton	1,019	100.0	3.69	20.1
Ruby Dynasty	Seminis	544	87.5	2.25	17.3
Royal Vantage	Sakata	1,017	100.0	3.50	19.9
Mean of Test		***917***	***98.6***	***3.35***	***19.6***
LSD (0.05)		***241.8***	***7.59***	***0.64***	***1.42***
CV (%)		***18.57***	***5.42***	***13.58***	***5.10***

[1] One-row plot, 10 feet long x 3 feet wide

[1] Marketable yield

Overall yields were exceptional. ‘Bravo’, ‘Emblem’, ‘Green Cup’, ‘Golden Dynasty’, ‘Rio Verde’, and ‘Royal Vantage’ all averaged more than 1,000 boxes per acre. ‘Blue Vantage’, ‘HMX 3240’, and ‘Solid Blue #780’ were the only green entries that averaged less than 900 boxes per acre. Marketability was high on all varieties except ‘Ruby Dynasty’ and ‘Early Thunder’. Average head weights ranged from 3.14 pounds for ‘Blue Dynasty’ to 4.40 pounds for ‘Golden Dynasty’. Head circumference was very similar among all green varieties and also among red varieties. All three red cabbages were similar in yield and head weight.



Some Cauliflower Varieties Better Suited for Georgia Than Others

William Terry Kelley and Denne Bertrand

The 2006 cauliflower variety trial in Georgia showed some wide differences among commercially available varieties. The growing season was very favorable throughout the spring and yields were fairly good (Table 1). Cauliflower has never been grown to any great extent commercially in Georgia, but due to transportation costs more growers are becoming interested in the crop, and variety trial data is needed to identify varieties that will perform well under Southeastern conditions. This test showed that there are certainly some varieties more well adapted than others.

Fourteen commercially available cauliflower varieties were compared at the Tifton Vegetable Park at the Coastal Plain Experiment Station (elevation 382 feet) in Tifton, Georgia. Containerized cauliflower transplants were produced in greenhouses on the research station. Cauliflower was transplanted to the field on March 2, 2006 into a Tifton sandy loam soil (fine, loamy, siliceous, thermic Plinthic Kandiudult). Plots consisted of single rows which contained ten plants each spaced 15 inches apart. Rows were spaced 36 inches apart. The planting was arranged in a randomized complete block design with four replications.

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

Location	Coastal Plain Experiment Station
Weather	4
Fertility	5
Irrigation	5
Pests	4
Overall	4

[1] See introduction for description of ratings scales

Normal cultural practices were used for bare ground cauliflower culture in Georgia since very little previous work has been done on the crop. Base fertilizer consisted of 1000 pounds per acre of 10-10-10 incorporated prior to planting. Trifluralin (0.5 pound ai per acre) was applied pre-plant and incorporated for weed control. An additional 80 pounds per acre of N were applied through drip irrigation, and one granular side dress with 250 pounds per acre of 34-0-0 was applied. Fungicide and insecticide applications were made according to current University of Georgia recommendations. Drip irrigation was applied as needed.

Cauliflower was harvested at maturity on April 21, April 24, April 27, May 2, May 4, May 8, May 11, May 16, May 19, May 23, May 26, June 1, and June 8, 2006. Data were collected on yield, marketability, average head weight, and average head diameter (Table 2).

Table 2. Yield, Marketability, Head Diameter, and Average Head Weight of Selected Cauliflower Varieties, Tifton, Georgia, 2006

Variety	Sponsor	No. 1 yield [1] *25-lb box/a*	Marketable *%*	Average head weight *oz*	Average head diameter *in*
White Magic	Sakata	378.1	95.5	14.6	5.18
Symphony	Syngenta	369.4	97.2	13.5	4.89
Candid Charm	Sakata	322.3	97.7	11.7	4.75
Freedom	Seminis	315.4	100.0	11.4	4.65
Incline	Sakata	292.2	91.2	12.1	5.09
Fremont	Seminis	282.3	94.6	11.0	4.71
Minuteman	Seminis	273.6	92.8	10.8	4.73
Cortes	Syngenta	272.4	79.6	12.8	4.65
Shasta	Syngenta	246.3	84.8	10.2	4.59
Amazing	Twilley	243.9	97.9	8.9	4.61
Snow Crown	Siegers	221.3	77.6	9.9	4.79
Majestic	Twilley	161.5	64.9	8.4	4.64
Cheddar	Seminis	35.4	50.0	4.9	4.13
Montana	Twilley	25.0	15.0	6.7	4.76
Mean of Test		***245.6***	***81.3***	***10.5***	***4.72***
LSD (0.05)		***87.5***	***28.7***	***3.1***	***0.40***
CV (%)		***24.9***	***24.6***	***20.9***	***5.88***

One-row plot, 10 feet long x 3 feet wide

[1] Marketable yield

There were huge differences in the yield of marketable heads among varieties. ‘Symphony’, ‘White Magic’, ‘Candid Charm’, and ‘Freedom’ all produced yields of more than 300 cartons per acre. ‘Cheddar’ and ‘Montana’ produced very few marketable heads and had very little yield; both had fewer than 50 percent marketable heads.

Average head weight fell closely in line with yield for the most part. All varieties had similar head weights except the two lowest yielding ones. Average head diameter was very similar among varieties and ranged from 4.13 to 5.18 inches; all but one variety was greater than 4.59 inches.

Squash Variety Trial, 2006

George Boyhan, Chris Hopkins, and Randy Hill

Summer squash are an important crop in Georgia with both yellow and zucchini squash produced in the state. Production begins as early as is practical in the spring with growers usually staggering plantings every two weeks to entend the season into late spring and early summer. Squash are highly susceptible to a variety of aphid transmitted viruses, which preclude production in the summer when aphid populations are at a maximum level. Growers will often switch to virus resistant varieties later in the season to ameliorate this problem, but these varieties are not resistant to all potential virus diseases.

Yellow and winter squash production accounted for $33 million of production in 2005 and $11.5 million of production was zucchini squash. Combined, these represented almost 5 percent of vegetable farmgate value in 2005.

This study was undertaken to evaluate squash varieties—both yellow and zucchini types—for yield and graded yield in southeast Georgia.

Nine varieties of squash were direct seeded by hand with two to three seed per hill on May 26, 2006 in a randomized complete block design with four replications. Five of the entries were zucchini and four were yellow summer squash. After emergence, plants were thinned to one plant per hill. Each experimental unit or plot consisted of 10 hills with an in-row spacing of 3 feet and a between row spacing of 6 feet. Weed, disease, and fertilization followed University of Georgia Cooperative Extension Service recommendations for summer squash.

Harvest began on June 26, 2006 and continued until July 27, 2006. Fruit were harvested three times per week with a total of 13 harvests. Total weight per plot was recorded and fruit were graded into three classes according to the USDA grade standards for summer squash, which does not have a size requirement (USDA, 1997). They were graded into fancy grade (greater than or equal to 1.5 inches), No. 1 grade (greater than 1.5 inches and less than or equal to 2 inches), and No. 2 grade (greater than 2 inches).

Data were analyzed with an analysis of variance with the coefficient of variation (CV) and Fisher's Protected Least Significant Difference (LSD) was reported.

Total yield ranged from 21,308 to 37,897 pounds per acre (see table). The highest yielding variety was 'Independence II', which is a zucchini squash. 'Independence II', however, was only significantly different from 'Gentry' and 'Lemondrop L'. Four of the five zucchini squash ranked as the top four for total yield. 'Spineless Beauty' had a lower yield, but not significantly lower, ranking seventh overall.

Three of the entries were genetically modified organisms (GMO) and included 'Independence II', 'Justice III', and 'Prelude II'. The Roman numeral in the name indicates the number of viruses the variety is resistant to. 'Independence II' is resistant to watermelon mosaic virus (WMV) and zucchini yellow mosaic virus (ZYMV). 'Justice III' has resistance to cucumber mosaic virus (CMV), WMV, and ZYMV. Finally 'Prelude II' has resistance to WMV and ZYMV.

Fancy grade fruit are not generally offered for sale in our markets unless as a specialty item or for specific customers. They would also command a premium price, but the market is limited and under most circumstances growers would have trouble marketing them unless a specific market had been developed ahead of time. In our trial fancy fruit yield ranged from 3,013 pounds per acre for 'Gentry' to 1,089 pounds per acre for 'Independence II'. Since timing is so critical to squash harvest (they continue to rapidly increase in size) these values are not really of much use in determining suitability for this market niche. Quality parameters such as free from blemishes and scratches as well as uniformity in size would be more important. In our trial particularly with the earlier harvests the workers were picking fruit that were too small. Many fruit were picked in the flower stage, which would not have any value even in the fancy market.

No. 1 grade is the predominant size class marketed in Georgia. Yields ranged from 3,234 pounds per acre for 'Independence II' to 7,974 pounds per acre for 'Prelude II'. These yields may not be indicative of the potential performance of these varieties because the fruit continue

to increase in size. Fruit that could have been harvested in this size class may have been missed because of the rapid fruit growth.

No. 2 grade ranged in yield from 14,767 pounds per acre for 'Lemondrop L' to 29,500 pounds per acre for 'Independence II'. This mirrors almost exactly the variety rankings for total yield. This may be indicative of a problem with the trial. Our labor force does not work on the weekend; therefore, no fruit were harvested on Saturday or Sunday and even for this short period (Friday to Monday) the fruit grew so rapidly many fruit that might have been harvested in the No. 1 size class enlarged to the No. 2 size. The figure illustrates this problem with a spike in No. 2 yields every Monday. Although there is a No. 2 size class, it is not unlimited in size above 2 inches. Many of the fruit harvested in the No. 2 size class would be considered too large to market. Very large squash will have hard seed, which will render the fruit unedible.

'Lemondrop L' had significantly lower yields than any of the other varieties. When first sown, this variety was very slow to emerge. At first we thought the seed was no longer viable, but they finally germinated perhaps two weeks later than the other varieties. This is main reason this variety did so poorly in this trial.

In conclusion, zucchini squash yielded better than yellow summer squash, but generally not significantly so. It is unclear if this would be consistent in future trials. Fancy fruit has a very limited market; therefore, these yield data are not very useful. The No. 1 grade, which is the primary size for market may be lower than the potential for these varieties because no fruit was harvested on the weekends. No. 2 grade would also include a lot of fruit that would be too large to market.

Squash Variety Trial, Vidalia Onion and Vegetable Research Center, 2006

Variety	Type	Seed source	Harvest weight	Grade		
				Fancy	No. 1	No. 2
			lbs/a			
Independence II	Zucchini, GMO	Seminis	37,897	1,089	3,234	29,500
Radiant	Zucchini	Seminis	36,034	1,742	6,951	27,298
Justice III	Zucchini, GMO	Seminis	35,005	2,589	7,236	25,132
Cash Flow	Zucchini	Rogers	33,608	1,791	7,744	23,928
Dixie	Yellow Semi-crookneck	Seminis	32,337	2,287	6,389	22,712
Prelude II	Yellow Crookneck, GMO	Seminis	31,944	2,807	7,974	20,316
Spineless Beauty	Zucchini	Rogers	31,932	1,500	4,477	25,543
Gentry	Yellow Semi-crookneck	Rogers	31,351	3,013	7,187	19,723
Lemondrop L	Yellow Straightneck	Seminis	21,308	2,353	4,943	14,767
CV (%)			***13***	***31***	***20***	***15***
LSD (p=0.05)			***6,193***	***977***	***1,832***	***5,234***

Yield by grade size over time

Seed Sources for Alabama Trials

Seeds Donated by

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

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

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

Other Seed Sources

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

Evergreen Y.H. Enterprises
P.O. Box 17538
Anaheim, CA 92817
Phone: (714) 637-5769
eeseedsyh@aol.com

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

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

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

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

Seedway
To order: (800) 952-7333
Tech Rep: James J. Pullins
1225 Zeager Road
Elizabethtown, PA 17022
Phone: (717) 367-1075
fax: (717) 367-0387
E-mail: info@seedway.com

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

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

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

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 2007).

When: September 21, 2007
Deadline for spring 2007 variety trial report submissions.

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

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

How: Send a disk and hard copy to

Edgar Vinson or Joe Kemble
Department of Horticulture
101 Funchess Hall
Auburn University, AL 36849-5408

Or send e-mail to
vinsoed@auburn.edu
kembljm@auburn.edu

MISSISSIPPI STATE UNIVERSITY
1. Truck Crops Experiment Station, Crystal Springs, MS

AUBURN UNIVERSITY
2. North Alabama Horticulture Research Center, Cullman, AL
3. Brewton Agricultural Research Unit, Brewton, AL

THE UNIVERSITY OF GEORGIA
4. Coast Plain Experiment Station, Tifton, GA
5. Vidalia Onion and Vegetable Research Center, Lyons, GA