FALL 1995 COMMERCIAL VEGETABLE VARIETY TRIALS

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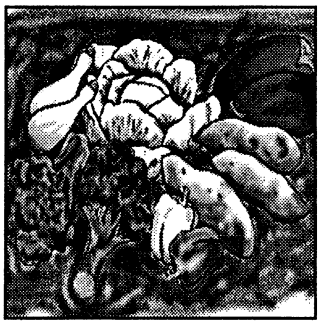


Introduction:
Some Tips to Get the Most Out of Vegetable Variety Trial Results

ERIC SIMONNE

In order to select top-performing varieties, a producer must consider crop type, produce characteristics, yield potential, and reaction to insects and diseases. Therefore, glancing rapidly at the yield results may not give all the information about the good varieties. Here are few tips to get the most out of vegetable variety trials results.

Open pollinated vs. hybrid varieties -- In general, hybrids (also referred to as F1) are earlier and produce a more uniform crop or more uniform plants. They have improved disease, pest, or virus tolerance/resistance. F1 plants are often more expensive than open-pollinated varieties (OP), and seeds cannot be kept from one crop to the next. Despite the advantages hybrids offer, OP plants are still often planted. Selecting a hybrid variety is the first step toward earliness and quality.

Types within a crop -- For each commodity, a standard type has been adopted by the industry. The bulk of commercial production aims at supplying the standard type, but other types should not be ignored. Examples of unusual types include yellow-peduncled summer squash; purple-calixed eggplant; white-fleshed sweetpotato; yellow-fleshed watermelon; yellow, orange, and other colored bell peppers; or small melons, such as honey dew, canary, Spanish or French charentais. Unusual types have been included in AU variety trials in an attempt to reflect the evolution of available types. At the same time, these uncommon types may represent alternate marketing opportunities.

Commercial variety and advanced breeding lines -- Variety trials aim at comparing varieties that are commercially available. Because of year-to-year variability, the evaluation has to be conducted over several growing seasons. However, it is unpractical to wait for several years after release to know whether or not a variety is well adapted to Alabama growing conditions. Because the development and release of a new variety takes several years, it is possible to evaluate a genotype as an advanced breeding line, before it becomes commercially available. Advanced breeding lines usually have names that are combinations of letters and numbers. The advantage of evaluating an advanced breeding line is to be able to have two to three years of evaluation before it actually reaches the market. The life of commercial varieties is sometimes limited to a few years. Evaluating a genotype as an advanced breeding line is definitely an advantage.

Selection of entries -- Literally hundreds of varieties are available for most vegetable crops. Variety trials only include those varieties which are believed to have good potential for the area. Thus, the biggest selection process takes place before planting. Therefore, it is not a good approach to look at the first-ranked variety and consider it the best, and look at the bottom one and consider it the worst.

Earliness -- Having produce to sell early in the season is often synonymous with higher prices. Usually, earliness is part of standard variety information available in seed catalogues. This makes the comparison among varieties from the same seed source easy. However, because no standard measurement of earliness exists, it is often difficult to compare varieties from different sources. Sometimes, this information is not provided for fear of legal responsibility.

Two scales are commonly used for describing earliness. In the first one, "average" or "estimated" days after planting are provided. This scale is apparently accurate since, in theory, a one-day difference in earliness between two varieties can be identified. However, days to maturity depend on planting date and weather conditions. Comparing varieties from different seed sources may not be accurate. To avoid this shortfall, several seed suppliers use qualifiers to describe earliness. Instead of numbers, the scale consists of extra-early, early, mid-season, and main season. Other terms may even be used. This scale is more flexible because it is not as accurate, but the comparison between seed sources is still approximate. In addition, the relative earliness of plants grown from transplants also depends on cell size and transplant age.

Earliness as reported in seed catalogues is included in AU vegetable variety trial reports for information. For the reasons discussed above, this may be of lim-

DESCRIPTION OF RATINGS USED TO EVALUATE FALL 1995 VARIETY TRIALS

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

ited practical use. Another way to evaluate the relative earliness for vegetable production in Alabama is to compare early yields provided in the AU variety trial reports. For once-over harvest crops, actual earliness can also be determined from planting dates and days to first harvest.

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

Testing condition -- 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 planting dates, fertilizer rates and detailed spray schedule is provided to help producers compare their own practices to the standard ones used in the trials, and make the relevant adjustments. Detailed information on weather conditions and disease situation is therefore provided to help account for differences among locations and growing seasons.

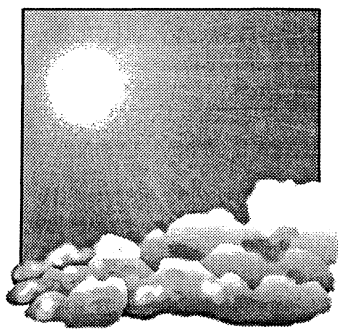
At each location, variety trial conditions were rated on a 1-5 scale, based on weather conditions, fertilizer, irrigation, pest pressure, and overall condition (see table). Results from trials with ratings of 2 and under are not reported. These numbers may be used to interpret differences in performance from location to location. The overall rating may be used to give more importance to the results of variety performance under good growing conditions.

The numbers behind the numbers -- Just reviewing the yield data and other information included in this report may not give producers a complete picture of the best-performing varieties. Without some statistical analysis, it can be difficult to distinguish true differences in varieties from apparent differences that are caused by the use of small plots (sampling error). Therefore, this report includes the statistical information to help pinpoint the real differences between entries. These data include the least significant difference, coefficient of determination, and coefficient of variation. These three statistical parameters help evaluate the potential errors due to the use of small plots. If it were possible to plant larger plots of each variety, these parameters would be of less importance.

Statistically, there must be a minimum yield difference between two varieties before one can 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 a 1995 broccoli trial, Packman yielded 5,313 pounds per acre, while Signal and Landmark yielded 4,878 and 2,874 pounds per acre, respectively. Since there was less than 1,803 difference between Packman and Signal, there is no statistical difference between the varieties. However, the difference between Packman and Signal was 2,439, 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.

The coefficient of determination (R^2) and coefficient of variability (CV) are measures of variability in research conditions. R^2 ranges between 0-1; 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 replication and true differences in variety. Random, uncontrolled errors were less important when high R^2 values are obtained. CV is an expression of yield variability relative to yield mean The lower the CV, the closer the mean is to reflecting a true picture of a crop's yield. CV values under 20% are desirable but are not always achieved.

In conclusion, several factors other than yield have to be considered when choosing a vegetable variety. The main factors are type, resistance and tolerance to diseases, earliness and of course, availability and cost of seeds. Ultimately, it is always better to try two to three varieties on a small scale before making a large planting of a single variety.



Fall 1995 Weather Conditions

KARL HARKER AND ELLEN BAUSKE

Hurricane Opal highlighted the fall 1995 growing season. As Opal made its northeastward path through Alabama in early October, it produced widespread crop and property damage. Maximum wind gusts of 50-60 mph were common as far north as Auburn. Heavy rains just prior to Opal saturated the top soil, making Opal's passage even more devastating. The Alabama Mesonet of automated weather stations captured the severity of the storm as it moved through the state by recording peak wind speeds and total rainfall.

Excluding Opal, the remainder of the fall growing season was not extraordinary. August continued the summer string of hotter-than-normal months, with a sharp turn to colder than normal conditions in November (see figures).

FALL VARIETY TRIALS PLANTED AND LOST DUE TO ADVERSE ENVIRONMENTAL CONDITIONS[1]

Location[2]	Broccoli	Cabbage	Lettuce	Pumpkin	Southern pea	Summer squash	Sweet potato
BEF	D	D	NP	NP	NP	D	NP
WS	R	NP	R	R	NP	NP	NP
EVSRC	R	R	R	R	R	NP	R
PS	D	D	NP	NP	NP	NP	NP
CAHS	D	D	NP	R	NP	D	R
UCPS	D	NP	D	NP	NP	NP	NP
NAHS	NP	R	R	R	NP	NP	R
SMS	D	NP	R	R	NP	NP	NP

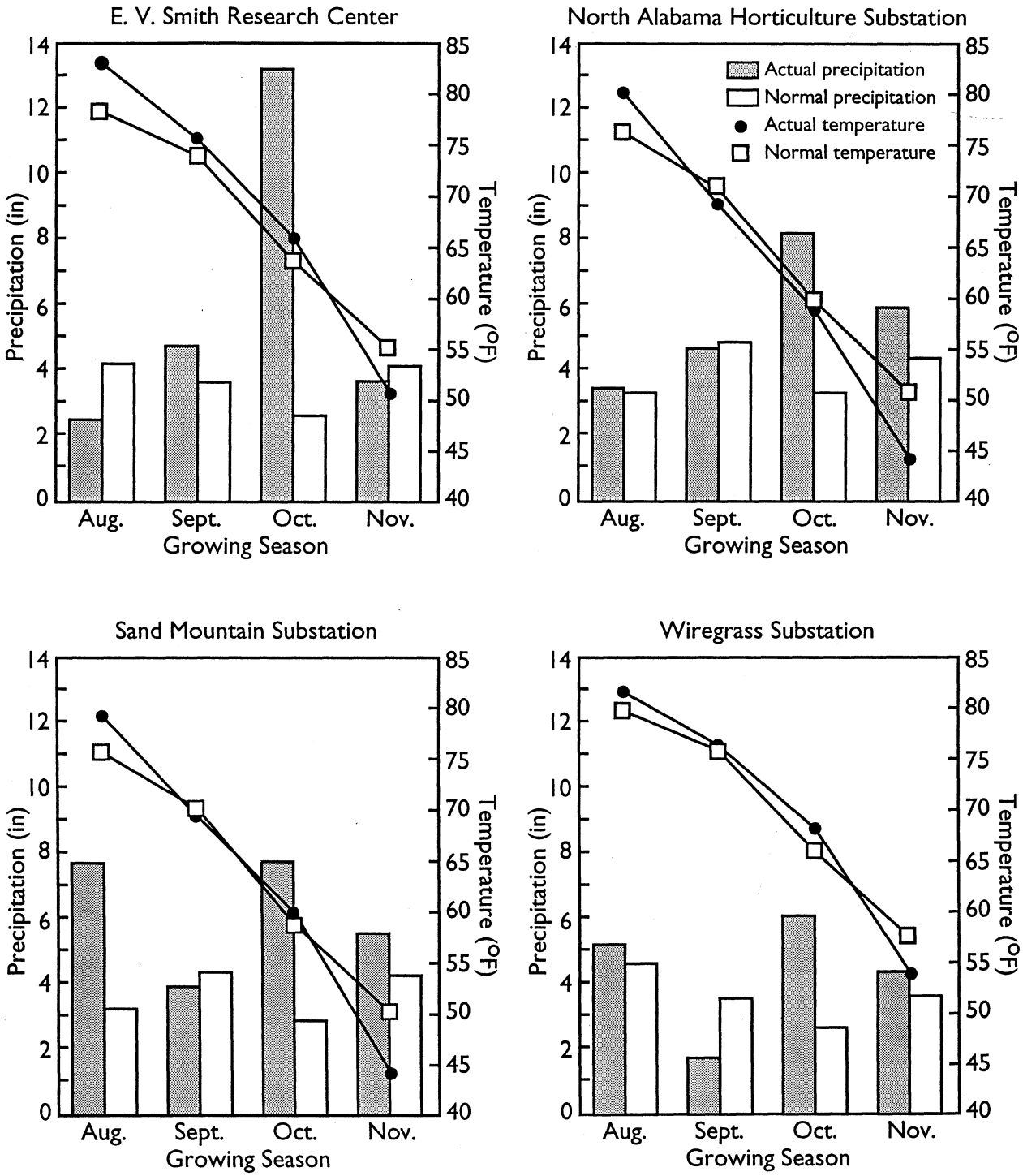
[1]D = destroyed trials or insufficient data; R = trials reported; NP = not planted at this location.
[2]BEF = Brewton Experiment Field; WS = Wiregrass Substation; EVSRC = E.V. Smith Research Center; PS = Piedmont Substation; CAHS = Chilton Area Horticulture Substation; UCPS = Upper Coastal Plain Substation; NAHS = North Alabama Horticulture Substation; and SMS = Sand Mountain Substation.

August temperatures averaged 2° higher than normal at the Wiregrass Substation. There were eight days when maximum temperatures reached 95°, with an extreme of 101° on Aug. 15. August rainfall was close to normal. Only 1.7 inches of rain fell in September, which was less than half of the normal total. September temperatures were normal. About six inches of rain fell in early October with very little rain occurring the remainder of the month. Temperatures in October averaged 2° above normal. It became much colder in November with monthly temperatures averaging almost 4° below normal. The first freeze of the fall occurred on Nov. 12.

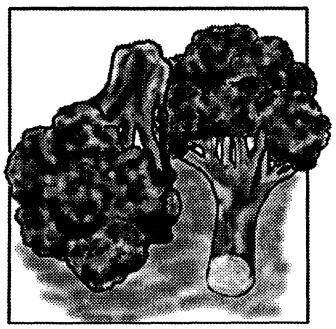
An intense heat prevailed at the E.V. Smith Research Center during mid-August, with maximum temperatures of 100° or above each day from Aug. 14-19. A maximum of 104° was recorded on Aug. 16. Rain amounts in August totaled only 2.5 inches, which was 1.5 inches less than normal. September rainfall and temperatures were close to normal. Flooding rains came in early October; more than 12 inches fell in a two-day period ending with the passage of Opal. The remainder of October was relatively dry with temperatures averaging 2° above normal. November turned much colder with average temperatures for the month 4° below normal. The first fall freeze occurred on Nov. 9, which was about on target for the average date.

It was a hot August at the North Alabama Horticulture Substation with temperatures averaging 4° above normal. There were 11 days with maximum temperatures of 95° or above. August rain totals were near normal. Normal rains continued in September with temperatures averaging slightly cooler than normal. October had more than twice the normal amount of rain. However, three-quarters of the total rain occurred during the first week of the month. October temperaturesdeviated very little from normal. November turned cold with temperatures averaging 6° below normal. However, the first fall freeze was about 10 days later than normal, occurring on Nov. 4.

August was hotter and wetter than normal at the Sand Mountain Substation. Temperatures averaged 4° above normal with rainfall totaling twice the normal amount. September was normal for temperature and rainfall. Precipitation was almost twice the normal amount in October as a result of Opal. October temperatures were close to normal. November turned sharply colder with temperatures for the month averaging 6° below normal. First freeze occurred on Nov. 4, which was about a week later than normal.



Total monthly precipitation, average temperatures, and normal precipitation and temperatures (based on 30-year averages) for the E.V. Smith Research Center, North Alabama Horticulture Substation, Sand Mountain Substation, and Wiregrass Substation.



Fall Weather Interferes with Broccoli Evaluation

ERIC SIMONNE, JIM BANNON, BRIAN GAMBLE, JOE KEMBLE, LARRY WELLS, AND JIMMY WITT

Broccoli variety trials were conducted using plastic mulch and drip irrigation at the Wiregrass Substation (WS) in Headland and Horticulture Unit of the E.V. Smith Research Center (EVSRC) in Shorter (Tables 1 and 2). Most fall broccoli in Alabama is grown on bare ground or new plastic mulch (as a first crop), but the potential exists for broccoli production following a spring crop on the same plastic. This practice is referred to as double-cropping.

Fertilization was done according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. Current recommendations for pest and weed control in vegetable production in Alabama may be found in *IPM Commercial Vegetables: Insect, Disease, Nematode and Weed Control Recommendations* (Publication 95IPM-2 from the Alabama Cooperative Extension Service).

TABLE 1. RATINGS OF 1995 BROCCOLI VARIETY TRIALS[1]

	WS	EVSRC
Weather	4	3
Fertility	5	5
Irrigation	5	4
Pests	5	5
Overall	5	4

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

At both locations, six-week-old broccoli plants were transplanted in staggered, double rows 12 inches apart at an in-row spacing of 12 inches. Rows were five feet apart. Plots were 10 feet long and contained 20 plants, which created a stand of approximately 21,800 plants per acre. Transplanting date was Sept. 8 at both locations.

At WS, broccoli was grown as a first crop on white plastic. One ton of dolomitic limestone and 1,000 pounds of 13-13-13 were preplant broadcast applied on Aug. 10. Injections of 10 pounds of N as calcium nitrate were made on Sept. 15, Sept. 25, Oct. 10, Oct. 25, Nov. 7; and as potassium nitrate on Oct. 2, Oct. 17, and Nov. 15. The fungicides Bravo 720 (at a rate of 1.5 pints per acre) and Asana XL (nine ounces per acre) were sprayed on Nov. 29, Oct. 6, and Oct. 11. Dimilin 4L was applied on Nov. 6 at a rate of four ounces per acre.

Broccoli was grown as a double crop at EVSRC. Watermelon vines were sprayed with Gramoxone (three pints per acre) and mowed to remove crop residues. New holes were punched for broccoli establishment. Fertilization consisted of a preplant injection of 35 pounds of N and 112 pounds of K_2O as potassium nitrate (13-0-44) per acre on Aug. 30. After transplanting, weekly injection of six pounds of N per acre were made, from a liquid calcium nitrate solution (9-0-0-11) on Sept. 6, Sept. 20, Oct. 4, Oct. 18, Oct. 25, Nov. 8, Nov. 22, and Dec. 6; and from a 20-20-20 fertilizer

TABLE 2. SEED SOURCE, EARLINESS AND DISEASE CLAIMS OF SELECTED BROCCOLI VARIETIES

Variety	Seed source	Earliness[1]	Disease claims[2]
		days	
Arcadia	Sakata	95	DM
Barbados	Ferry-Morse	62	None
Claudia	Ferry-Morse	70	DM
Eureka	Stokes	87	BR, DM
Greenbelt	Sandoz Rogers	75	None
Green Comet	Takii	75	None
Landmark	Takii	66	None
Mariner	Petoseed	77	BLS, DM
Olympus	Takii	NA	NA
Packman	Petoseed	78	None
Paragon	Stokes	75	None
Pinnacle	Takii	68	DM
Premium Crop	Takii	82	DM
PS 10990	Petoseed	NA	NA
Regal	Ferry-Morse	80	None
Ritol	Nunhems	NA	NA
Signal	Sandoz Rogers	57	None
Title IST	Takii	NA	NA

[1]This information was obtained from seed catalogues. In some cases, this information was not available (NA).
[2]DM = Downy Mildew; BR = Black Rot; BLS = Bacterial Leaf Spot; NA = not available; None = no disease claims.

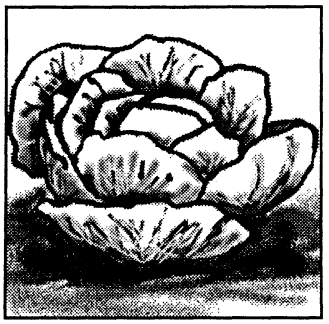
on Sept. 13, Sept. 27, Oct. 11, Nov. 1, Nov. 15, Nov. 29, and Dec. 13. Insect control consisted of applications of LannateLV (three pints per acre) on Sept. 15, 22 and 29; and Larvin 3.2EC (two pints per acre) on Oct. 19.

Broccoli heads were harvested and graded when they reached six inches in diameter. Harvest dates were Nov. 1, Nov. 8, Nov. 20, Nov. 27, and Dec. 5 at WS; and Nov. 16, Nov. 22, Nov. 27, Dec. 1, Dec. 8 at EVSRC. Marketable weight (in numbers of 23-pound cartons) and corresponding number of heads were recorded (Table 3). To account for the possible loss of plants with double cropping, corrected yields were calculated by adjusting for stand. These estimates may be useful to compare variety performance across locations and cropping systems.

TABLE 3. ACTUAL AND CORRECTED NUMBER OF 23-POUND CARTONS, MARKETABLE YIELD AND NUMBER OF HEADS OF BROCCOLI[1]

Variety	Actual marketable 23-lb. cart	Actual marketable yield	Actual marketable heads	Actual pct. marketable weight	Actual cull yield	Actual percent stand	Corrected marketable 23-lb. cart
	no./a.	*lb./a.*	*no./a.*	*pct.*	*lb./a.*	*pct.*	*no./a.*
			Wiregrass Substation				
Packman	231	5,313	20,469	100	0	83	301
Signal	212	4,878	24,170	100	0	70	305
Premium Crop	172	3,949	18,291	100	0	71	239
PS 10990	154	3,542	14,226	100	0	75	208
Landmark	125	2,874	10,017	100	0	58	185
Mariner	106	2,439	12,630	100	0	83	121
Pinnacle	101	2,323	10,452	100	0	79	136
Eureka	88	2,032	11,033	100	0	70	133
Paragon	73	1,684	8,420	100	0	39	206
Barbados	58	1,336	6,387	100	0	56	94
Arcadia	--	0	--	--	--	85	--
Greenbelt	--	0	--	--	--	60	--
R^2		*0.79*	*0.86*				
CV		*32*	*21*				
lsd		*1,803*	*5,496*				
			E.V. Smith Research Center				
Packman	320	7,361	11,105	100	0	71	460
PS 10990	237	5,440	5,444	100	0	66	364
Mariner	191	4,395	5,226	100	0	68	310
Regal	167	3,840	6,097	100	0	53	276
Green Comet	131	3,018	4,137	100	0	40	351
Olympus	112	2,570	3,702	100	0	53	179
Title IST	92	2,108	2,831	100	0	66	148
Claudia	38	869	1,742	100	0	45	88
Ritol	33	752	871	100	0	35	59
R^2		*0.55*	*0.61*				
CV		*66*	*61*				
lsd		*1,480*	*4,094*				

[1]See Introduction for definitions of R^2, CV, and lsd.



Head and Chinese Cabbage Included in Variety Trial

ERIC SIMONNE, JIM BANNON, ARNOLD CAYLOR, JOE KEMBLE AND JIMMY WITT

Cabbage variety trials were conducted using plastic mulch and drip irrigation at the Horticulture Unit of the E.V. Smith Research Center (EVSRC) in Shorter, and North Alabama Horticulture Substation (NAHS) in Cullman (Tables 1 and 2).

While fall cabbage can be grown on bare ground or new plastic mulch (as a first crop), the potential exists for double-cropping cabbage after a spring crop. Therefore, the evaluation of selected cabbage varieties was done as a double crop. At EVSRC, the test was conducted on black plastic following a watermelon crop. At NAHS, cabbage was planted on white plastic after tomato and eggplant (two replications following each spring crop). Spring crops were sprayed with Gramoxone (three pints per acre) at EVSRC and Roundup (approximately four quarts per acre) at NAHS. Plots were then mowed to remove dried crop residues. New holes were punched for cabbage establishment.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. Current recommendations for pest and weed control in vegetable production in Alabama may be found in *IPM Commercial Vegetables: Insect, Disease, Nematode and Weed Control Recommendations* (Publication 95IPM-2 from the Alabama Cooperative Extension Service).

At both locations, six-week-old cabbage plants were transplanted in staggered, double rows 12 inches apart at an in-row spacing of 12 inches. Rows were five feet apart. Plots were 10 feet long and contained 20 plants, which created a stand of approximately 21,800 plants per acre. Transplanting dates were Sept. 8 at EVSRC and Sept. 12 at NAHS.

At EVSRC, fertilization consisted of a preplant injection of 35 pounds of N and 112 pounds of K_2O as potassium nitrate (13-0-44) per acre on Aug. 30. After transplanting, weekly injection of six pounds of N per acre were made, from a liquid calcium nitrate so-

TABLE 1. RATINGS OF 1995 CABBAGE VARIETY TRIALS [1]

	EVSRC	NAHS
Weather	3	3
Fertility	5	5
Irrigation	4	5
Pests	5	5
Overall	4	4

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

TABLE 2. SOURCE, EARLINESS, AND DISEASE RESISTANCE/TOLERANCE OF SELECTED CABBAGE VARIETIES

Variety	Seed source	Earliness[1]	Disease claims[2]
		days	
Head Cabbage			
Blue Pak	Ferry-Morse	80	FY
CB-7	Sandoz Rogers	NA	NA
Cheers	Takii	75	BR, FY
Constanza	Petoseed	87	BR, FW, TB
FMX 388	Ferry-Morse	NA	NA
Fortress	Ferry-Morse	69	BR, FY
Greenboy	Sandoz Rogers	87	BLS, FY
Green Cup	Takii	73	BR, FY
Hercules	Sandoz Rogers	NA	NA
Izalco	Sandoz Rogers	87	BLS, BR, FY
PS 4390	Petoseed	NA	NA
Quick Start	Takii	NA	NA
Rio Verde	Sandoz Rogers	87	BLS, FY
Royal Vantage	Sakata	88	BLS, BR, FY, TB
SCB 3319	Sakata	NA	NA
Survivor	Stokes	85	BR, FY
Wanda	Nunhems	NA	NA
Oriental Cabbage			
China Flash	Sakata	58	TB
Kasumi	Stokes	64	None
Monument	Stokes	70	None
Pak Choi-Lei Choi	Sandoz Rogers	47	None
Shinki	Takii	75	None
Shori 60	Nunhems	60	NA
Summertime II	Stokes	67	ALS, DM, WS
Yuki	Sakata	67	CR

[1]This information was obtained from seed catalogues. In some cases, this information was not available (NA).
[2]FY = Fusarium Yellows; BR = Black Rot; FW = Fusarium Wilt; TB = Tip Burn; BLS = Bacterial Leaf Spot; ALS = Alternaria Leaf Spot; DM = Downy Mildew; WS = White Spot; CR = Clubroot; NA = not available; None = no disease claims.

lution (9-0-0-11) on Sept. 6, Sept. 20, Oct. 4, Oct. 18, Oct. 25, Nov. 8, Nov. 22, and Dec. 6. A 20-20-20 fertilizer was injected on Sept. 13, Sept. 27, Oct. 11, Nov. 1, Nov. 15, Nov. 29, and Dec. 13. Insect control consisted of applications of Lannate LV (three pints per acre) on Sept. 15, 22, and 29; and Larvin 3.2EC (two pints per acre) on Oct. 19.

At NAHS and following soil test results, P and K were not applied. One-third (40 pounds per acre) of the recommended N rate was injected preplant as ammonium nitrate on Sept. 6. Remaining N was injected weekly as ammonium nitrate and calcium nitrate for seven weeks. Pest control consisted of applications of the insecticide Asana (9.6 ounces per acre) and the fungicide Ridomil/Bravo (two pounds per acre) on Sept. 29, Oct. 6, and Oct.17. The insecticide Lannate LV (three pints per acre) was used on Oct. 11. The insecticide Xentari (two pounds per acre) was used on Oct. 11 and 17.

When they reached marketable size, cabbage heads were harvested with four wrapper leaves and graded according to *United States Standards for Grades of Cabbage* (U.S. Department of Agriculture 46 FR 63203). Harvest dates were Dec. 1 and 11 at EVSRC, and Nov. 8 at NAHS.

Marketable weight (in numbers of 50-pound cartons) and corresponding number of heads were recorded (Table 3). To account for the possible loss of plants due to double cropping, corrected yields were calculated by adjusting for stand. These estimates may be useful to compare variety performance across locations and cropping system.

TABLE 3. ACTUAL AND CORRECTED NUMBER OF 50-POUND CARTONS, MARKETABLE YIELD AND NUMBER OF HEADS OF CABBAGE[1]

Variety	Actual marketable 50-lb. cart.	Actual marketable yield	Actual marketable heads	Actual pct. marketable weight	Actual cull weight	Actual percent stand	Corrected marketable 50-lb. Box
	no./a.	*lb./a.*	*no./a.*	*pct.*	*lb./a.*	*pct.*	*no./a.*
			E.V. Smith Research Center				
Cheers	397	19,845	7,621	100	0	80	510
Constanza	367	18,372	7,186	100	0	75	485
Izalco	199	9,926	4,573	100	0	76	269
Quick Start	180	8,989	3,920	100	0	39	444
Green Cup	153	7,672	3,266	100	0	41	425
FMX 388	104	5,214	2,178	100	0	51	224
PS4390	56	2,783	1,307	100	0	70	88
SCB 3319	53	2,644	1,089	100	0	30	281
Rio Verde	35	1,734	1,089	100	0	33	78
Blue Pack	5	259	218	100	0	29	34
R^2		*0.77*	*0.68*				
CV		*53*	*60*				
lsd		*5,883*	*2,796*				
			North Alabama Horticulture Substation				
Shori 60	812	40,606	11,541	99	346	65	1,378
Kasumi	796	39,798	15,243	98	738	86	956
Shinki	788	39,387	13,501	99	618	83	971
Yuki	571	28,536	8,275	84	5,228	65	920
Summertime II	553	27,643	8,057	99	486	99	926
China Flash	536	26,818	8,129	93	1,939	70	828
Pak Choi-Lei Choi	521	26,056	11,541	87	3,889	78	672
Monument	495	24,730	10,017	100	0	73	701
R^2		*0.55*	*0.56*	*0.55*			
CV		*21*	*23*	*116*			
lsd		*3,344*	*3,345*	*2,848*			

[1]See Introduction for definitions of R^2, CV, and lsd.

Non-Heading Leaf Lettuce Varieties Show Good Potential for Alabama

ERIC SIMONNE, JIM BANNON, ARNOLD CAYLOR, BRIAN GAMBLE, JOE KEMBLE, MARVIN RUF, LARRY WELLS, AND JIMMY WITT

Lettuce production in Alabama is presently restricted to a very small acreage. Since lettuce is a fast-growing, relatively cold tolerant crop, lettuce variety trials were conducted in the Fall at the Wiregrass Substation (WS) in Headland, Horticulture Unit at the E.V. Smith Research Center (EVSRC) in Shorter, North Alabama Horticulture Substation (NAHS) in Cullman, and Sand Mountain Substation (SMS) in Crossville (Table 1).

Lettuce was grown as a first crop at WS, and double crop at EVSRC, NAHS and SMS (Table 2). At all locations, six-week-old lettuce plants were transplanted in staggered, double rows 12 inches apart at an in-row spacing of 12 inches. Plastic-mulched, drip-irrigated plots were 10 feet long and contained 20 plants (Table 3). Rows were five feet apart. This created a stand of approximately 21,800 plants per acre. Transplanting date was Sept. 8 at WS and EVSRC, and Sept. 12 at NAHS and SMS.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. Current recommendations for pest and weed control in vegetable production in Alabama may be found in *IPM Commercial Vegetables: Insect, Disease, Nematode and Weed Control Recommendations* (Publication 95IPM-2 from the Alabama Cooperative Extension Service).

TABLE 2. CROPPING SYSTEMS USED IN LETTUCE EVALUATIONS

Location	Plastic color	Previous crop
WS	White	None
EVSRC[1]	Black	Watermelon
NAHS[1]	White	Tomato and Eggplant[2]
SMS[1]	Silver	Tomato and Bell Pepper[2]

[1]Double-cropping.
[2]Each in half of the field.

TABLE 1. RATINGS OF 1995 LETTUCE VARIETY TRIALS

	WS	EVSRC	NAHS	SMS
Weather	4	4	4	4
Fertility	5	5	5	5
Irrigation	5	4	5	5
Pests	5	5	5	5
Overall	5	5	5	5

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

At WS, one ton of dolomitic limestone and 1,000 pounds of 13-13-13 were preplant broadcast applied on Aug. 10. Injections of 10 pounds of N as calcium nitrate were made on Sept. 15, Sept. 25, Oct. 10, Oct. 25, and Nov. 7; and as potassium nitrate on Oct. 2, Oct. 17, and Nov. 15. The fungicides Bravo 720 (1.5 pints per acre) and Asana XL (nine ounces per acre) were sprayed on Nov. 29, Oct. 6, and Oct. 11. Dimilin 4L was applied on Nov. 6 at a rate of four ounces per acre.

For double-cropping, spring crops were sprayed with Gramoxone (three pints per acre) at EVSRC and Roundup (approximately four quarts per acre) at NAHS and SMS. New holes were punched for lettuce establishment.

At EVSRC, fertilization consisted of a preplant injection of 35 pounds of N and 112 pounds of K_2O as potassium nitrate (13-0-44) per acre on Aug. 30. After transplanting, weekly injection of six pounds of N per acre were made, from a liquid calcium nitrate solution (9-0-0-11) on Sept. 6, Sept. 20, Oct. 4, Oct. 18, Oct.25, Nov. 8, Nov. 22; and Dec. 6. A 20-20-20 fertilizer was injected on Sept. 13, Sept. 27, Oct. 11, Nov. 1, Nov. 15, Nov. 29, and Dec. 13. Insect control consisted of applications of Lannate LV (three pints per acre) on Sept. 15, Sept. 22, and Sept. 29 and Larvin 3.2EC (two pints per acre) on Oct. 19.

Following soil test results at NAHS, P and K were not applied. One-third (40 pounds per acre) of the recommended N rate was injected preplant as ammonium nitrate on Sept. 6. Remaining N was injected weekly as ammonium nitrate and calcium nitrate for seven

weeks. Pest control consisted of applications of the insecticide Asana (9.6 ounces per acre) and the fungicide Ridomil/Bravo (two pounds per acre) on Sept. 29, Oct. 6, and Oct. 17. The insecticide Lannate LV (three pints per acre) was used on Oct. 11. The insecticide Xentari (two pounds per acre) was used on Oct. 11 and 17.

At SMS, fertilization consisted of injections of potassium nitrate (13-0-44) at a rate of 10 pounds of N and 35 pounds of K_2O per acre on Sept. 12, Oct. 4, and Oct. 18; five pounds of N and 17 pounds of K_2O per acre were applied on Oct. 20. Additional injections included 20-20-20 (10 pounds of N per acre) on Sept. 28, 20-20-20 plus ammonium nitrate (four plus six pounds of N per acre) on Oct. 12, and calcium nitrate (10 pounds of N per acre) on Oct. 26 and Nov. 1.

Insect control consisted of applications of Sevin (one pint per acre) on Sept. 13, Sept. 18, Sept. 25, Oct. 19, and Oct. 23; and Asana (nine ounces per acre) on Sept. 15, Sept. 29, and Oct. 16. B.T. was also applied on Sept. 18, Sept. 25, and Oct. 19 at a rate of half a pound per acre.

Lettuce was harvested when it reached marketable size and graded according to the *U.S. Standards for Grades of Romaine* (U.S. Dept. of Agriculture Publication 60-6130). Harvest dates were Nov. 1, Nov. 20, and Nov. 27 at WS; Oct. 27 and Nov. 3 at EVSRC; Oct. 24 and Nov. 8 at NAHS; and Oct. 24, Nov. 5, and Nov. 9 at SMS. Yields were expressed in 50-pound boxes of 24 units (Table 4, Page 12) calculated by dividing the number of marketable heads by 24. Heads were culled because of bolting or insufficient head size. To account for the difference between first and double crops, corrected yields were calculated by adjusting for stand. These estimates may be useful to compare variety performance across locations and cropping system. At several locations, rapid and non-scientific taste tests were conducted by non-trained panelists. Unpleasant bitterness was not markedly reported.

TABLE 3. SEED SOURCE, EARLINESS, AND DISEASE CLAIMS OF SELECTED LETTUCE VARIETIES

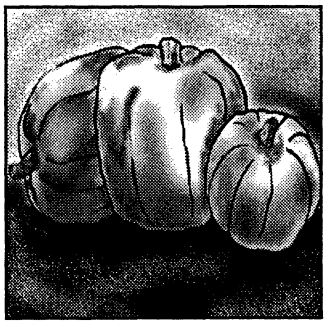
Variety	Seed source	Maturity class[1]	Type	Disease claims[2]
		days		
Aquarius	Sakata	Very Early	Butterhead, Compact	NA
Augustus	Petoseed	Main (70)	Romaine	CR, LMV, TB
Brunia	Vilmorin	62	Red Oak Leaf	NA
Bullseye	Petoseed	Main (77)	Salinas	TB
Divina	Vilmorin	45	Green Butterhead	NA
Epic	Sakata	Early	Ithaca	NA
Gemini	Sakata	Mid Early	Compact, unique	TB
Legacy	Takii	NA	NA	NA
Nevada	Vilmorin	Medium (58)	Green Butterhead	DM, LMV, TB
New Red Fire	Takii	45	Red Leaf	NA
Optima	Vilmorin	Mid Early	Butterhead	DM, LMV
Parris Island	Stokes	Main (65)	Romaine	NA
Red Salad Bowl	Vilmorin	50	Red Leaf	NA
Salinas 88 Supreme	Sakata	Main	Salinas	LMV
Sangria MTO	Vilmorin	55	Red Butterhead	DM, TB
Sierra	Vilmorin	NA	Red Batavia	DM, TB
Target	Petoseed	NA	NA	NA

[1]This information was obtained from seed catalogues. In some cases, this information was not available (NA).
[2]CR = Clubroot; LMV = Lettuce Mosaic Virus; TB = Tip Burn; DM = Downy Mildew; NA = not available; None = no disease claims.

TABLE 4. ACTUAL AND CORRECTED NUMBER OF 50-POUND CARTONS (OF 24 HEADS), MARKETABLE YIELD AND NUMBER OF HEADS OF LETTUCE[1]

Variety	Actual market. yield	Actual market. heads	Actual market. 50-lb. cart.[2]	Actual cull weight	Actual cull heads	Actual pct. market. weight	Actual pct. market. number	Actual percent stand	Corrected market. yield	Corrected market. 50-lb. cart.
	lb./a.	*no./a.*	*no./a.*	*lb./a.*	*no./a.*	*pct.*	*pct.*	*pct.*	*lb./a.*	*no./a.*
Wiregrass Substation										
Target	7,897	6,968	290	0	0	100	100	77	9,871	362
Epic	1,263	1,307	54	0	0	100	100	31	3,157	136
Salinas 88 Supreme	610	871	36	0	0	100	100	38	813	48
Gemini	566	653	27	0	0	100	100	54	921	44
Sangria MTO	174	581	24	0	0	100	100	13	581	81
Aquarius	0	0	0	0	0	100	100	44	0	0
Legacy	0	0	0	0	0	100	100	36	0	0
Optima	0	0	0	0	0	100	100	39	0	0
Red Salad Bowl	0	0	0	0	0	100	100	17	0	0
R^2	*0.70*	*0.65*								
CV	*180*	*179*								
lsd	*2,976*	*2,428*								
E.V. Smith Research Center										
Bullseye	8,186	20,033	835	312	218	97	99	96	8,533	867
Augustus	5,344	15,025	626	1,332	3,484	80	82	98	5,451	640
Legacy	4,256	8,928	372	1,591	5,008	71	61	96	4,360	382
Gemini	2,947	8,057	336	2,334	6,968	60	55	94	3,099	354
Epic	2,166	6,315	263	149	436	95	95	63	3,681	452
Salinas 88 Supreme	2,061	5,879	245	77	218	97	97	90	2,224	269
Aquarius	2,003	8,710	363	1,605	5,879	56	58	95	2,106	382
Rouge Salad Bowl	1,572	6,387	266	0	0	100	100	68	2,114	368
Sangria MTO	1,313	6,097	254	38	218	99	98	90	1,513	292
Divina	1,304	4,936	206	64	290	98	97	63	2,268	370
Optima	954	3,049	127	2,626	8,275	22	24	75	1,217	163
R^2	*0.71*	*0.72*		*0.70*	*0.80*					
CV	*55*	*42*		*81*	*63*					
lsd	*1,262*	*6,725*		*1,309*	*3,136*					
North Alabama Horticulture Substation										
Bullseye	21,991	14,372	599	0	0	100	100	98	22,416	612
Nevada	16,179	17,420	726	0	0	100	100	100	16,179	726
Sierra	13,204	16,549	690	0	0	100	100	100	13,228	692
Augustus	12,529	16,114	671	54	218	99	99	94	13,221	716
Brunia	9,119	16,331	680	161	653	98	96	98	9,369	698
New Red Fire	8,534	16,114	671	0	0	100	100	96	8,827	697
R^2	*0.45*	*0.30*		*0.30*	*0.34*					
CV	*42*	*10*		*289*	*265*					
lsd	*8,544*	*2,395*		*157*	*575*					
Sand Mountain Substation										
Bullseye	7,774	15,460	644	0	0	100	100	89	8,670	726
Augustus	7,643	23,735	989	261	218	97	99	138	5,840	721
Legacy	7,404	14,807	617	457	653	95	96	89	8,339	694
Salinas 88 Supreme	6,881	25,041	1,043	392	436	95	98	145	4,875	719
Epic	6,794	23,735	989	0	0	100	100	136	5,081	726
Gemini	5,161	14,154	590	1,219	2,178	84	86	94	5,643	621
Red Salad Bowl	4,355	12,775	532	0	0	100	100	73	6,242	726
Sangria MTO	3,854	16,114	671	0	0	100	100	93	4,186	726
Aquarius	0	0	0	3,266	13,718	0	0	79	0	0
Optima	0	0	0	2,286	13,718	0	0	79	0	0
R^2	*0.79*	*0.92*		*0.80*						
CV	*34*	*20*		*77*						
lsd	*2,491*	*4,346*		*906*						

[1]See Introduction for definitions of R^2, CV, and lsd. Actual percent stands above 100% may occur when cells were multiple-seeded during transplant production.
[2]The number of 50-pound cartons of 24 heads was calculated by dividing the number of heads by 24.



Yes! Pumpkins Can Be Grown in Alabama

ERIC SIMONNE, JIM BANNON, BOBBY BOOZER, ARNOLD CAYLOR, BRIAN GAMBLE, MARVIN HOLLINSWORTH, JOE KEMBLE, JIM PITTS, MARVIN RUF, LARRY WELLS, AND JIMMY WITT

Like watermelon and cantaloupe, pumpkins are cucurbits. They are botanically very similar to squash. Hence, the cultural requirements for commercial pumpkin production are similar to the needs of these crops. Pumpkins need to be fertilized, irrigated, and sprayed to control downy mildew and other foliar diseases.

Pumpkin variety trials were conducted at the Wiregrass Substation (WS) in Headland, Horticulture Unit at the E.V. Smith Research Center (EVSRC) in Shorter, Chilton Area Horticulture Substation (CAHS) in Clanton, North Alabama Horticulture Substation (NAHS) in Cullman, and Sand Mountain Substation (SMS) in Crossville (Tables 1 and 2).

At all locations, hills containing two plants each were spaced 10 feet apart. Between-row spacing was 10 feet. Planting dates were July 20 at WS, June 24 at EVSRC, June 29 at CAHS, July 11 at NAHS, and July 14 at SMS.

Soils were fertilized according to the recommendations of the Auburn University Soil Testing Laboratory. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. Current recommendations for pest and weed control in vegetable production in Alabama may be found in *IPM Commercial Vegetables: Insect, Disease, Nematode and Weed Control Recommendations* (Publication 95IPM-2 from the Alabama Cooperative Extension Service).

At WS, preplant fertilization consisted of 250 pounds of 13-13-13 and two tons of broiler litter per acre applied on July 12. On Aug. 28, plants were sidedressed with 80 pounds of N per acre as ammonium nitrate. Plots were cultivated on Aug. 8. The fungicide Bravo 720 (two pints per acre) was applied on Aug. 25, Sept. 5, Sept. 13, and Sept. 22. Pumpkins were over-head irrigated with one inch of water on Aug. 16, Aug. 31, and Sept. 25.

At EVSRC, a 5-10-15 fertilizer was broadcast applied preplant on July 13 to provide 50 pounds of N, 80 pounds of P_2O_5 and 120 pounds of K_2O per acre. On Aug. 14, ammonium nitrate (34-0-0) was banded to provide 40 pounds of N per acre. Preplant herbicide was Prefar 4E applied on July 13 at a rate of five quarts per acre. Insect control was provided by applications of Thiodan 3EC (1.5 pints per acre) on Aug. 5, Aug. 23, and Sept. 12; Lannate LV (three pints per acre) on Aug. 12, Sept. 1, and Sept. 15; and Ambush (eight ounces per acre) on Sept. 8.

Fungicides used were Dithane DF (two pounds per acre) on Aug. 5 and Sept. 8; Ridomil MZ58 (two pounds per acre) on Aug. 12; Ridomil/Bravo 81W (three pounds per acre) on Aug. 23; Bravo 720 (three pints per acre) on Aug. 25; Manzate 200 (two pounds per acre) on Sept. 1; Kocide DF (two pounds per acre) on Sept. 1, 8, and 15; and Manex (two quarts per acre) on Sept. 15.

At CAHS, preemergence herbicide was Curbit applied at a rate of two pints per acre on June 30. Fertilization consisted a preplant application of 1,000 pounds of a 5-20-20 fertilizer. Plants were sidedressed with 30 pounds of N per acre as ammonium nitrate on July 25. Between Aug. 1 and until harvest, irrigation was applied over-head at a rate of one inch per week.

Insect control was provided by applications of Lannate (two pints per acre) on Aug. 2, Aug. 25, and Sept. 29; Sevin (one pound per acre) on Sept. 14; and Dipel (two pints per acre) on Sept. 29. Fungicides used were Dithane (two pounds per acre) on Aug. 2, Aug. 18, and Sept. 14; Benlate (two pound per acre) and Captan (four pounds per acre) on Aug. 10; Kocide (three pounds per acre) on Aug. 18; and Bravo (two quarts per acre) on Aug. 25 and Sept. 29.

At NAHS, preplant fertilization consisted of 1,000 pounds per acre of 13-13-13 on July 10. Pre-plant herbicide was Command incorporated at a rate of 1.5 pints per acre on July 11. Pest control consisted of applications of the insecticide Asana and fungicide Ridomil/Bravo on Aug. 5, Aug. 18, Aug. 25, Sept. 1, Sept. 8, Sept. 15, and Sept. 29.

TABLE 1. RATINGS OF 1995 PUMPKIN VARIETY TRIALS

	WS	EVSRC	CAHS	NAHS	SMS
Weather	4	4	4	4	4
Fertility	5	5	5	5	5
Irrigation	5	5	5	5	5
Pests	4	5	5	5	4
Overall	5	5	5	5	4

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

At SMS, preplant fertilization consisted of 150 pounds of ammonium nitrate, 120 pounds of concentrated superphosphate and 120 pounds of potassium chloride (muriate of potash) applied per acre on July 13. Plants were sidedressed with 100 pounds per acre of ammonium nitrate on Aug. 10. Preplant herbicide was Prefar applied on July 13 at a rate of four quarts per acre. Plants were sprayed with the fungicides Bravo (two pints per acre) on July 31, Aug. 11, Aug. 22, Sept. 1, Sept. 9, Sept.15, and Sept. 29; Ridomil (1.5 pounds per acre) on Aug. 14 and 28; and Benlate (one-half pound per acre) on Aug. 16, Aug. 28, and Sept. 13. The insecticide Asana (six ounces per acre) was sprayed on Aug. 24 and 30.

Harvest dates were Oct. 12 at WS, Oct. 10 at EVSRC, Oct. 9 at CAHS, Oct. 10 at NAHS, and Sept. 28 and Oct. 13 at SMS. Hurricane Opal had limited effect on pumpkin variety trials because it reached Alabama a few days before harvest. Nevertheless, it interfered with the last-week spray schedule and damaged the vines. In some cases, pumpkins had to be harvested before they were fully colored. Under normal conditions, pumpkins have to be harvested at the full-color stage because color development stops after harvest. Hence, the pumpkins that were green at harvest stayed green in storage.

Pumpkins were graded as marketable or non-marketable (Table 3). Most of the non-marketable fruits were culled because of decay due to excessive moisture or because they were harvested after the optimum harvest date.

Except Cinderella (Rouge Vif d'Etampes) and Alagold, all selected varieties were primarily ornamental pumpkins. Cinderella is best suited for cooking. Alagold was released in the 1950s by the AAES as a substitute for sweet potatoes for baking and pies. Small (between 0.3 and eight pounds) or white pumpkins are best suited for decoration or painting. Orange pumpkins weighing between 10 and 30 pounds are well suited for carving.

TABLE 2. SEED SOURCE, RELATIVE EARLINESS, AND FRUIT SIZE OF SELECTED PUMPKIN VARIETIES

Variety	Type[1]	Seed source	Maturity	Fruit weight
			days	*lb.*
Alagold	OP	Auburn University	95	10-15
Appalachian	F1	Rupp Seeds	90	20-25
Autumn Gold	F1	Sandoz Rogers	90	8-10
Baby Bear	OP	Rupp Seeds	105	1-2
Big Autumn	F1	Sandoz Rogers	90	15-20
Casper[2]	OP	Rupp Seeds	90	10-20
Early Sweet Sugar	OP	Sandoz Rogers	90	6-8
Howden	OP	Stokes, Harris Seeds, Rupp Seeds	100	15-20
Jack-Be-Little	OP	Sandoz Rogers	95	0.25
Jack-Be-Quick	OP	Rupp Seeds	95	0.25
Jack-of-All-Trades	F1	Rupp Seeds	88	9-10
Jackpot	F1	Harris Seeds	100	10-12
Jumpin' Jack	OP	Rupp Seeds	120	30-50
Little Lantern	OP	Stokes	100	1-2
Oz	F1	Harris Seeds	105	3-5
Pankows Field	OP	Harris Seeds	120	15-20
Peek-A-Boo	F1	Rupp Seeds	90	3-4
Cinderella[3] (Rouge Vif d'Etampes)	OP	Vilmorin	95	20-30
RS 1294	F1	Rupp Seeds	NA	20-30
Spirit	F1	Petoseed	98	10-12
Spookie	OP	Harris Seeds	105	5-6
Spooktacular	F1	Petoseed	85	3-5
Sugar Treat	F1	Rupp Seeds	90	3-5
Sweetie Pie	OP	Stokes	110	0.25
Tallman	OP	Stokes	110	15-30
Trick-or-Treat	F1	Petoseed	98	10-12
Var #300	F1	A&C	NA	15-20
Var #500	F1	A&C	95	18-22
Var #510	F1	A&C	95	22-26
Wizard	F1	Harris Seeds	115	10-15

[1]OP = Open Pollinated; F1 = Hybrid; NA = not available. This information was obtained from seed catalogues
[2]Most selected pumpkins are of different shades of orange. Casper is white.
[3]Except Cinderella (Rouge Vif d'Etampes) and Alagold, all selected varieties are primarily ornamental pumpkins. Cinderella is best suited for cooking or painting; Alagold, for cooking.

TABLE 3. YIELD AND INDIVIDUAL FRUIT WEIGHTS OF SELECTED PUMPKIN VARIETIES

Variety	Market. yield	Market. fruit	Cull yield	Total yield	Ind. fruit wt.
	lb./a.	*no./a.*	*lb./a.*	*lb./a.*	*lb.*
Wiregrass Substation					
Var #300	13,616	1,262	1,044	14,660	11
Var #500	11,832	1,044	2,153	13,985	11
Autumn Gold	11,027	2,393	674	11,702	5
Pankows Field	9,983	1,109	1,283	11,267	9
Jack-of -All-Trades	8,722	1,022	2,045	10,766	8
Big Autumn	6,873	848	3,698	10,571	8
Early Sweet Sugar	6,786	2,849	413	7,199	2
Spookie	6,569	2,610	0	6,569	3
Var #510	5,720	522	1,109	6,830	11
Howden	4,785	370	3,089	7,874	12
Peek-A-Boo	4,241	1,892	609	4,850	2
Jack-Be-Quick	3,154	12,006	109	3,263	0.3
Jack-Be-Little	2,610	11,136	109	2,719	0.2
R^2	*0.82*	*0.95*		*0.78*	*0.95*
CV	*26*	*34*		*28*	*18*
lsd	*2,761*	*1,468*		*3,502*	*2*
E.V. Smith Research Center					
Spirit	24,242	2,132	794	24,386	11
Trick-or-Treat	22,726	1,936	418	22,918	12
Cinderella	20,294	1,131	1,034	20,486	17
Jumpin' Jack	18,864	1,262	1,483	19,008	15
Wizard	18,331	1,805	202	18,475	10
Jackpot	18,230	1,305	216	18,374	14
Sugar Treat	10,967	2,158	545	11,389	6
Oz	10,670	3,850	38	10,814	3
Spooktacular	9,277	3,596	2,368	11,261	3
Casper	8,945	1,240	276	9,185	7
Tallman	7,907	696	948	8,099	12
Alagold	4,330	1,501	122	4,474	3
Howden	3,852	392	0	3,852	10
Baby Bear	3,034	1,914	233	3,754	8
R^2	*0.75*	*0.76*		*0.74*	*0.60*
CV	*37*	*34*		*36*	*44*
lsd	*6,800*	*860*		*6,800*	*6*
Chilton Area Horticulture Substation					
Var #300	25,422	2,807	NA	25,422	9
Big Autumn	19,291	2,267	NA	19,291	9
Trick-or-Treat	17,985	2,207	NA	17,985	8
RS 1294	17,834	1,155	NA	17,834	15
Var #510	17,666	1,439	NA	17,666	11
Appalachian	17,098	1,570	NA	17,098	11
Jumpin' Jack	16,590	1,826	NA	16,590	11
Pankows Field	15,977	1,504	NA	15,977	11
Var #500	14,462	1,570	NA	14,462	9
Spirit	14,059	2,115	NA	14,059	7
Howden	13,982	1,264	NA	13,982	12
Cinderella	12,068	1,163	NA	12,068	10
Alagold	8,834	2,463	NA	8,834	3
Jack-be-Quick	2,122	8,022	NA	2,122	0.3
R^2	*0.40*	*0.79*		*0.40*	*0.78*
CV	*49*	*45*		*49*	*25*
lsd	*9,832*	*1,352*		*9,832*	*3*

Variety	Market. yield	Market. fruit	Cull yield	Total yield	Ind. fruit wt.
	lb./a.	*no./a.*	*lb./a.*	*lb./a.*	*lb.*
North Alabama Horticulture Substation					
Jack-of -All-Trades	13,503	1,240	NA	13,503	11
Appalachian	10,242	870	NA	10,242	12
Peek-A-Boo	9,284	3,502	NA	9,284	3
Early Sweet Sugar	7,148	2,262	NA	7,148	3
Autumn Gold	6,443	1,153	NA	6,443	5
Spookie	4,912	1,327	NA	4,912	4
Howden	4,611	551	NA	4,611	9
RS 1294	3,875	218	NA	3,875	17
Sweetie Pie	3,629	11,636	NA	3,629	0.3
Alagold	3,045	1,175	NA	3,045	3
Jack-Be-Little	2,515	8,374	NA	2,515	0.3
Jack-Be-Quick	1,451	5,416	NA	1,451	0.3
R^2	*0.58*	*0.81*		*0.58*	*0.91*
CV	*57*	*58*		*57*	*34*
lsd	*5,560*	*3,106*		*5,560*	*6*
Sand Mountain Substation					
Spirit	6,979	845	3,251	10,230	8
Var #300	5,766	899	2,066	7,832	6
Var #500	4,276	409	1,660	5,935	10
Spooktacular	4,060	2,153	1,153	5,213	2
Trick-or-Treat	3,970	463	3,194	7,164	8
Var #510	3,117	1,063	1,485	4,603	4
Wizard	2,728	436	3,496	6,224	7
Jackpot	2,469	300	1,433	3,902	7
Casper	2,371	382	5,589	7,960	7
Howden	1,883	191	1,755	3,638	10
Sugar Treat	1,725	681	842	2,567	3
Oz	842	300	973	1,815	3
Little Lantern	371	218	79	450	2
Jack-Be-Quik	313	1,036	174	488	0.3
Baby Bear	164	109	621	785	2
R^2	*0.45*	*0.44*		*0.51*	*0.73*
CV	*90*	*103*		*72*	*38*
lsd	*2,810*	*745*		*3,767*	*4*

[1]See Introduction for definitions of R^2, CV, and lsd.

Results of 1995 Southernpea Cooperator's Trial

GENE HUNTER, JIM BANNON, OYETTE CHAMBLIS, AND JIMMY WITT

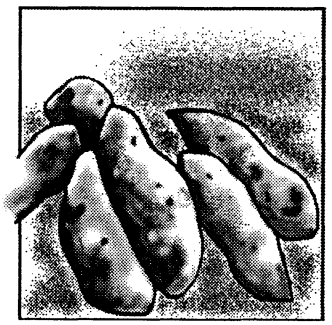
The E.V. Smith Research Center in Shorter has been one of 10 sites in the Southeast, from Texas to South Carolina, where southernpea breeding lines were tested to evaluate their adaptability and yield potential. The AAES submitted three breeding lines in 1994 and two in 1995. AU-93-M-C and AU-93-E are bush pinkeye purplehulls with persistent green seedcoats. AU-93-G is a bush cream type with large pods. The following standard pinkeye varieties were used as checks for AU93M-C and AU93M-E: Coronet, C.T. Pinkeye, and Pinkeye Purplehull-BVR. The cream Early Acre was used as a check for AU93M-G.

Planting dates were May 27, 1994 and May 23, 1995. Plants were thinned to four inches apart in rows 30 inches apart. Overhead irrigation with conventional flat planting in 1994 and drip lines with raised rows in 1995 were used to provide a minimum of one inch of water per week. In both years, 120 pounds per acre of phosphorus and potassium were incorporated before seeding and plants were side-dressed with 30 pounds per acre of nitrogen.

All pods, including "snaps," were harvested from each plot when 80% of the pods were dry. To estimate yield and compensate for different percentages of dry and mature green pods among the plots, all peas shelled from each plot's harvest were soaked in water overnight (imbibed) to bring all peas to the same level of moisture. This step makes comparisons more realistic. 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 shell-out of 50%) and dividing this by 25 (the average weight of a bushel of fresh, unshelled southern peas).

DAYS TO MATURITY AND YIELD OF SELECTED SOUTHERNPEA BREEDING LINES AND VARIETIES

Variety	Days to maturity		Imbibed shelled yield		Bushels per acre	
	1994	1995	1994	1995	1994	1995
	days	*days*	*lb./a.*	*lb./a.*	*no.*	*no.*
AU93M-C	74	65	1,398	1,355	112	108
AU93M-E	68	63	1,169	2,085	93	167
AU93M-G	74	--	1,360	--	108	--
Coronet	72	64	1,590	2,135	127	179
CT Pinkeye	--	67	--	1,947	--	156
PEPH-BVR	68	65	1,960	1,995	157	160
Early Acre	70	--	728	--	58	--



Two New Sweetpotato Varieties for 1996

ERIC SIMONNE, JIM BANNON, BOBBY BOOZER, ARNOLD CAYLOR, MARLIN HOLLINGSWORTH, JOE KEMBLE, JIM PITTS, AND JIMMY WITT

Sweetpotato variety trials were conducted at the Horticulture Unit at the E.V. Smith Research Center (EVSRC) near Shorter, Chilton Area Horticulture Substation (CAHS) in Clanton, and North Alabama Horticulture Substation (NAHS) in Cullman (Tables 1 and 2).

Plots were fertilized according to the Auburn University Soil Testing Laboratory. Within-row spacing was one foot. Names of chemicals are mentioned only for describing the production practices used. This represents neither a recommendation nor an endorsement of these products. Current recommendations for pest and weed control in vegetable production in Alabama may be found in *IPM Commercial Vegetables: Insect, Disease, Nematode and Weed Control Recommendations* (Publication 95IPM-2 from the Alabama Cooperative Extension Service).

Sweetpotato seed roots from selected varieties and breeding lines were planted in a heated bed at NAHS in early April for slip production. Slips were removed from the beds as needed and bundled for shipment to the locations of the trials. Plots in all trials were 30 feet long and 3.5 feet wide.

TABLE 1. RATINGS OF 1995 SWEETPOTATO VARIETY TRIALS

	EVSRC	CAHS	NAHS
Weather	5	5	5
Fertility	5	5	5
Irrigation	5	5	5
Pests	5	5	5
Overall	5	5	5

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

At EVSRC, preplant fertilization consisted of a broadcast application of 13-13-13 at a rate of 300 pounds per acre. Planting date was May 16. Dacthal herbicide was applied on May 17 at a rate of 10 pounds per acre. On June 14, sweetpotatoes were sidedressed with 40 pounds of N per acre as NH_4NO_3. Overhead irrigation was applied as needed.

At CAHS, 1,000 pounds per acre of a 5-10-15 fertilizer were preplant applied on May 25. On May 26, slips were transplanted and Temik insecticide (20 pounds per acre) and Eptam herbicide (3.4 pints a.i. per acre) were applied. Sencore herbicide was applied on May 30 at a rate of 0.66 pounds per acre. No irrigation was necessary.

At NAHS, a 5-10-15 fertilizer was broadcast applied on May 12 at a rate of 1,000 pounds per acre. Slips were transplanted on May 30. Weed control was provided by an application of Command (one quart per acre) on May 31. No irrigation was used.

Sweetpotatoes were harvested on Aug. 30 at EVSRC, Oct. 13 at CAHS, and Sept. 27 at NAHS. Roots were graded as US#1 (roots two to 3.5 inches in diameter, three to nine

TABLE 2. DISEASE RESISTANCE AND TOLERANCE OF SELECTED SWEETPOTATO VARIETIES[1]

Variety	Origin (year)[2]	Resistance[3]	Susceptibility[3]
Beauregard	LSU (1987)	FW, SR(P), IC, SB, CS	SRN, BSR
Carolina Nugget	NCSU, AU (1985)	see Jewel[4]	see Jewel[4]
Cordner	TAM, OSU (1984)	FW, StR, SRN	SR(P)
Darby	LSU (1995)	SR, FW, StR, IC, FRR, BRR, SoR	SRN, RN
Georgia Jet	UGA (1974)	None	StR, N
Hernandez	LSU (1992)	FW, SRN, SoR, BRR	IC, StR
Jewel	NCSU (1970)	None	StR, N

[1]Source: release notes from HortScience and Experiment Station Bulletins.
[2]AU = Auburn University; LSU = Louisiana State University; NCSU = North Carolina State University; OSU = Oklahoma State University; TAM = Texas A&M; UGA = University of Georgia. In parentheses is the year each variety was released.
[3]FW = Fusarium Wilt, SRN = Southern Root-Knot Nematode, SR(P) = Soil Rot (Pox), BSR = Bacterial Soft Rot, IC = Internal Cork, SB = Sclerotia Blight, CS = Circular Spot, StR = Stem Rot, SR = Soil Rot, RN = Reniform Nematode, FRR = Fusarium Root Rot, BRR = Bacterial Root Rot, SoR = Soft Rot, and N = Nematodes.
[4]The disease resistance and susceptibility of Carolina Nugget is comparable to that of Jewel.

inches long, well shaped, and free of defects), canner (roots one to two inches in diameter, two to seven inches long), jumbo (roots that exceed the diameter, length, and weight requirements of the US#1 grade but are of marketable quality), or cull (roots at least one 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 3).

NC-C59 and NC-C75 will be released in 1996 by the North Carolina State University sweetpotato breeding program. The names of these new varieties are not known yet, but the roots can be unofficially described as follows:

NC-C59 -- Smooth to light russet, copper skin roots; roots elongate on one end, round on the other end; attractive deep orange flesh; high yields; good baking and canning quality; 18.2% dry matter; good ability for slip production.

NC-C75 -- Attractive red skin with some lenticels; nice shaped roots; orange flesh; high yields; early; this line scored poorly in baking and canning tests; 18.4% dry matter; good ability for slip production.

TABLE 3. MARKETABLE YIELD AND GRADE DISTRIBUTION (IN 50-POUND BUSHELS) OF SELECTED SWEETPOTATO ADVANCED BREEDING LINES AND COMMERCIAL VARIETIES[1]

Selection	US #1[2]	Canner[2]	Jumbo[2]	Cull[2]	Market. yield[3]	Pct. US#1[4]
	bu./a.	*bu./a.*	*bu./a.*	*bu./a.*	*bu./a.*	*pct.*
E.V. Smith Research Center						
NC-C58	353	121	136	158	610	56
NC-C75	345	170	49	228	565	61
NC-C59	340	117	97	228	554	64
L-87-54	333	106	29	162	468	71
Hernandez	302	138	0	97	440	69
Georgia Jet	287	76	74	524	437	68
L-89-72	273	150	22	260	445	60
Beauregard	267	116	22	204	405	67
L-89-110	264	104	19	285	387	67
Cordner	255	75	19	174	350	70
Darby	230	64	71	231	366	66
Carolina Nugget	209	61	55	178	325	67
Hernandez	186	127	25	147	338	58
Jewel	121	49	0	270	170	74
W-210	52	33	0	240	94	64
R^2	*0.42*	*0.38*	*0.53*	*0.50*	*0.48*	*0.19*
CV	*43*	*55*	*94*	*47*	*35*	*18*
lsd	*175*	*90*	*68*	*173*	*250*	*20*
Chilton Area Horticulture Substation						
L-89-72	262	68	107	62	437	59
NC-C58	214	46	53	63	313	68
NC-C59	211	73	68	53	352	60
L-89-110	204	52	83	123	339	60
Georgia Jet	199	51	108	185	358	57
NC-C75	198	67	35	39	300	66
Beauregard	194	36	67	101	298	66
Darby	159	33	103	65	295	54
Cordner	138	36	57	82	231	60
Carolina Nugget	134	58	29	118	220	61
Hernandez	128	44	40	62	212	57
L-87-54	122	21	106	48	249	53
Jewel	108	33	38	117	179	61
W-210	27	8	3	103	37	76
R^2	*0.59*	*0.48*	*0.47*	*0.61*	*0.63*	*0.19*
CV	*34*	*49*	*63*	*41*	*30*	*21*
lsd	*80*	*32*	*58*	*51*	*119*	*19*
North Alabama Horticulture Substation						
L-89-110	635	152	35	53	823	78
Darby	607	119	211	67	937	65
L-87-54	590	95	193	21	877	67
L-91-150	537	183	47	60	767	67
Georgia Jet	526	93	116	86	735	71
NC-C58	480	83	45	45	608	79
Hernandez	477	117	14	42	608	78
Cordner	466	140	17	53	623	73
L-89-72	449	166	21	39	636	69
NC-C59	431	125	56	77	612	71
L-91-189	420	131	45	40	596	71
NC-C75	416	169	34	32	620	67
Beauregard	350	116	80	23	546	71
Jewel	302	204	9	65	515	56
Carolina Nugget	276	182	33	82	491	57
W-210	263	145	4	50	412	63
R^2	*0.61*	*0.38*	*0.66*	*0.27*	*0.65*	*0.31*
CV	*26*	*42*	*89*	*84*	*20*	*18*
lsd	*166*	*83*	*77*	*64*	*189*	*18*

[1]See Introduction for definitions of R^2, CV, and lsd.
[2]US#1 = 2-3.5 inches in diameter, 3-9 inches long, well shaped, and free of defects; Canner = 1-2 inches in diameter, 2-7 inches long; Jumbo = exceed the diameter, length, and weight requirements of the US#1 but are of marketable quality; Culls = at least 1 inch in diameter but too misshapen or unattractive.
[3]Marketable yield was calculated by adding the yields of the US #1, canner and jumbo grades
[4]Percent US#1 was calculated by dividing the yield of the US#1 by marketable yield (culls not included).

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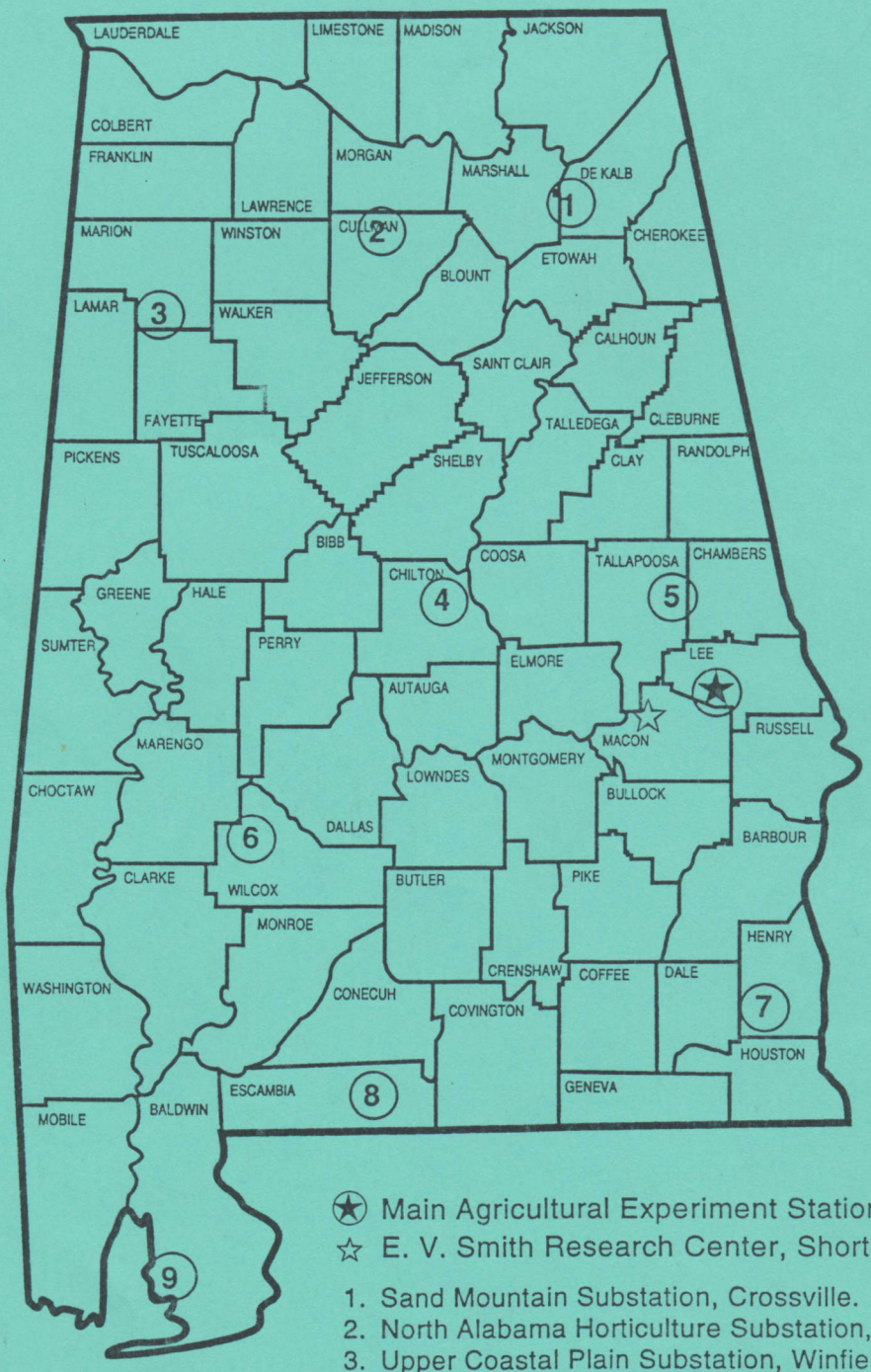
LOCATIONS OF PARTICIPATING RESEARCH UNITS



★ Main Agricultural Experiment Station, Auburn.

☆ E. V. Smith Research Center, Shorter.

1. Sand Mountain Substation, Crossville.
2. North Alabama Horticulture Substation, Cullman.
3. Upper Coastal Plain Substation, Winfield.
4. Chilton Area Horticulture Substation, Clanton.
5. Piedmont Substation, Camp Hill.
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