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VARIETY TRIALS

Evaluating Maturity Group III and IV Soybean Varieties at Different Planting Dates, 2005

D. P. Delaney, K. S. Lawrence, E. J. Sikora, S. P. Nightengale, T. Dawkins, and K. Glass

Soybeans are traditionally planted in late April through June in Alabama, with Maturity Group (MG) V to VIII cultivars. This combination often places the critical blooming and pod fill stage during moisture deficit periods in late summer. Research in Mississippi has shown that when early maturing varieties from MG III and IV are planted early, they mature before soil moisture deficits become critical and outyield later soybeans. Approximately 60 percent of soybeans in Mississippi were planted with early varieties in 2004, but little work has been done in Alabama with this system and adapted varieties.

The purpose of this study was to evaluate use of early maturing soybean varieties (Maturity Groups III and IV) under Alabama conditions, with the goal of avoiding late summer heat and moisture stress.

Tests were conducted at the Plant Breeding Unit (PBU) of the E. V. Smith Research Center near Tallassee, Alabama, and at the Sand Mountain Research and Education Center (SMREC) near Crossville, Alabama, in 2005. Four MG III and four MG IV cultivars ranging from 3.3 to 4.9 were planted on each of two planting dates. Four replications in a split-plot design were used with planting dates as main plots. All varieties were planted with conventional tillage in seven 7-inch rows on April 11 and again on April 29 at PBU and on April 11 and April 25 at SMREC, after being delayed about one week due to wet conditions.

Plots were maintained weed-free with recommended herbicides, and fungicides were applied twice during pod-fill. Bloom and maturity dates, plant height at initial bloom and maturity, and height to the lowest pod were also recorded during the season.

Each treatment was harvested at maturity, from September 2 to September 20 at PBU, and September 13 to September 20 at Sand Mountain. Yields were adjusted to 13 percent moisture and 60 bushels per acre (Tables 1 and 2) and samples taken for seed quality analysis.

Yields were generally very good, due to plentiful rainfall in spring and early summer in 2005. At PBU, yields improved from the first to the second planting for most cultivars. For the late planting date, average yields of MG IV varieties were significantly greater that MG IIIs (76 vs 60 bushels per acre), but they were not different for the early planting. Total height also increased from the first to the second planting but was more pronounced for later maturing varieties. There was no significant difference between planting dates for height to the lowest pod, which can affect harvesting ability, in contrast to results from 2004.

At SMREC, heavy rains and cool weather after the second planting resulted in a thin stand for that date. Yields were greater for the first planting date, and total height was slightly greater

Table 1. Planting Dates for Group III and IV Soybeans, PBU 2005

Planting date	Cultivar	Yield *bu/ac*	Total height *in*	Lowest pod height *in*
Early April	DG 3392 NRR	53	24	2
Early April	DG 3390 NRR	54	20	1
Early April	Pioneer 93M90 RR	65	23	3
Early April	DP 3861 RR	62	26	2
Early April	Pioneer 94B13 RR	60	24	2
Early April	Pioneer 94M41 RR	70	27	4
Early April	DP 4724 RR	68	24	4
Early April	DP 4933 RR	72	33	5
Late April	DG 3392 NRR	65	28	2
Late April	DG 3390 NRR	56	24	2
Late April	Pioneer 93M90 RR	61	26	2
Late April	DP 3861 RR	59	27	2
Late April	Pioneer 94B13 RR	72	27	3
Late April	Pioneer 94M41 RR	75	30	4
Late April	DP 4724 RR	79	30	4
Late April	DP 4933 RR	80	40	5
LSD (P=.10)		**13**	**3**	**1**
Planting Date Means				
Early April		63	25	3
Late April		68	29	3
LSD (P=.10)		**4**	**1**	**NS**

Table 2. Planting Dates for Group III and IV Soybeans, SMREC 2005

Planting date	Cultivar	Yield *bu/ac*	Total height *in*	Lowest pod height *in*
Early April	DG 3392 NRR	73	35	3
Early April	DG 3390 NRR	74	31	2
Early April	Pioneer 93M90 RR	87	34	2
Early April	DP 3861 RR	83	32	4
Early April	Pioneer 94B13 RR	74	34	2
Early April	Pioneer 94M41 RR	86	38	5
Early April	DP 4724 RR	83	36	4
Early April	DP 4933 RR	84	43	6
Late April	DG 3392 NRR	63	36	4
Late April	DG 3390 NRR	59	30	3
Late April	Pioneer 93M90 RR	53	29	3
Late April	DP 3861 RR	60	31	4
Late April	Pioneer 94B13 RR	57	32	3
Late April	Pioneer 94M41 RR	65	34	4
Late April	DP 4724 RR	70	33	4
Late April	DP 4933 RR	53	40	4
LSD (P=.10)		**10**	**3**	**1**
Planting Date Means				
Early April		81	35	4
Late April		60	33	4
LSD (P=.10)		**5**	**1**	**1**

for the first planting date, but there was no difference between planting dates for height of the lowest pod. There was no significant difference between average yields of MG III and MG IV cultivars at either planting date. Generally, excellent growing conditions allowed even very early blooming and maturity treatments to grow well and produce excellent yields in 2005.

GROUP III AND IV ROUNDUP READY® SOYBEAN VARIETIES, DEKALB COUNTY, 2005

D. P. Delaney and D. Derrick

Twenty-four Maturity Group (MG) III and IV soybean cultivars, all Roundup Ready®, were planted on May 10, 2005 with cooperator Allen Duke in DeKalb County, Alabama. All plots were six 30-inch rows 15 feet wide and approximately 300 to 500 feet long. MG IV varieties were planted with no-till into a heavy bigflower vetch cover crop. Due to limited space, MG III varieties and one early IV were planted in an adjacent area of the field where the vetch had been tilled.

Rainfall and growing conditions were very good with Headline SBR fungicide applied at approximately the R3 growth stage. Plots were harvested on September 28, using the producer's combine and a weigh wagon. Yields were adjusted to 13 percent moisture and 60 pounds per bushel (see table).

GROUP III AND IV ROUNDUP READY® SOYBEAN VARIETIES, DEKALB COUNTY, 2005

Company	Variety	Lodged[1]	Yield
			bu/ac @ 13 pct
Monsanto	Asgrow 4703	1	63.9
Dyna-Gro	DG 3443	2	63.3
Delta King	DK 4366	1	62.6
Progeny	Progeny 4401	1	62.5
Pioneer	Pioneer 94M90	NA	61.9
Monsanto	Asgrow 4801	NA	61.5
AP/Garst	Garst 4512	1	60.4
Delta King	DK 4763	2	60.3
Monsanto	Asgrow 4404	1	59.3
UniSouth	USG 7434	1	58.8
Progeny	Progeny 4804	3	58.2
Monsanto	Asgrow 4403	1	57.8
Delta King	DK 4866	1	56.6
AP/Garst	Garst 4888	NA	54.2
Progeny	Progeny 4949	NA	53.9
Monsanto	Asgrow 4903	NA	53.5
Dyna-Gro	DG 3463	1	53.4
AP/Garst	Garst 484	1	53.3
Croplan	RC 4891	2	53.0
Delta King	DK 4967	NA	52.1
Croplan	RC 4842	1	51.6
Deltapine	DP 4646	4	50.7
Deltapine	DP 4724	2	49.7
UniSouth	USG 7482	2	48.9
Tilled soil			
AP/Garst	Garst 3824	4	57.4
Deltapine	DP 4331	1	54.8
UniSouth	USG 7393	1	41.5

[1] Lodging ratings: 1 = all plants erect, 3 = all plants leaning 45 percent, 5 = all plants down.

High pH Group IV Roundup Ready® Soybean Variety Trial, Hale County, 2005

D. P. Delaney, R. P. Yates, and E. J. Sikora

One of the most critical decisions a soybean producer makes each year is which variety to plant. Yield and other traits such as disease resistance can vary substantially between varieties in response to their environment. On-farm field trials are important to verify university research and to show how different varieties perform under typical producer management practices.

Eleven Maturity Group IV soybean cultivars, all Roundup Ready®, were planted on May 11, 2005 in Hale County north of Gallion, Alabama, with Chris Elliott, cooperator. Planting was delayed by wet soil in the spring. The Black Belt soil had an initial pH of 7.7 to 7.8 making it prone to iron chlorosis problems. All varieties were planted in 20-inch rows, in strips 20 to 25 feet wide and approximately 1100 feet long, following conventional tillage. All seed was fungicide treated and inoculated before planting.

Plots were rated for iron chlorosis on May 27, June 18, and July 14 (see table). Plots were harvested with the producer's combine and a weigh wagon on October 4, with yields adjusted to 13 percent moisture and 60 pounds per bushel.

High pH Group IV RR® Soybean Varieties, Hale County 2005

Variety	Iron cholorosis[1] Date of rating			Yield
	May 27	June 18	July 14	*bu/ac @ 13 pct* Oct 4
Progeny 4804 RR	2	2	1	60.0
Deltapine DP 4546 RR	1	2	1	56.5
Deltapine DP 4724 RR	1	1	1	55.6
DeltaKing DK 4763 RR	6	4	6	55.5
Progeny 4949 RR	2	4	4	54.6
Pioneer 94M90	5	3	2	53.7
Uni-South USG 7482nRR	3	2	1	52.4
DeltaKing DK 4866 RR	4	3	4	51.5
Dyna-Gro 3463NRR	3	3	4	51.0
Croplan RC 4842 RR	0	0	1	50.1
Dyna-Gro 3443NRR	2	1	1	47.2

[1] Iron cholorosis rating based on a 0 to 10 scale: 10 = dead, 0 = deep green.

High pH Group V Roundup Ready® Soybean Variety Trial, Hale County, 2005

D. P. Delaney, R. P. Yates, and E. J. Sikora

One of the most critical decisions a soybean producer makes each year is which variety to plant.Yield and other traits such as disease resistance can vary substantially between varieties in response to their environment. On-farm field trials are important to verify university research and to show how different varieties perform under typical producer management practices.

Eleven Maturity Group V soybean cultivars, all Roundup Ready®, were planted on June 18, 2005 in Hale County near Demopolis, Alabama, on Ken Diller's farm. Planting was delayed by excessively wet soil in the spring. The Black Belt soil had an initial pH of 7.8 to 7.9, making it prone to iron chlorosis problems. All varieties were planted in eight 30-inch rows, in strips 20 feet wide and approximately 450 feet long, with two replications of each variety. Continued rains slowed early top and root growth of soybeans, while late summer dry weather limited potential. Reliable iron chlorosis ratings could not be made due to the interaction of Septoria brown spot, soil conditions, and chlorosis. Both replications of each variety were harvested together with the producer's combine and a weigh wagon on October 12, with yields adjusted to 13 percent moisture and 60 pounds per bushel (see table).

High pH Group V RR® Soybeans, Hale County 2005

Company	Variety[1]	Yield *bu/ac @ 13 pct*
Deltapine	DP 5414	33.6
Croplan	RC 5555	32.4
Croplan	RC 5892	30.5
Pioneer	95M80	29.1
Deltapine	DP 5644	21.0
Progeny	5822	20.8
Croplan	RC 4992	16.4
Monsanto	AG 5903	15.9
Deltapine	DP 5806	13.7

[1] All varieties were Roundup Ready.

BLACK BELT GROUP V CONVENTIONAL SOYBEAN VARIETIES, PICKENS COUNTY, 2005

D. P. Delaney, E. J. Sikora, W. Griffith, and S. Wiggins

One of the most critical decisions a soybean producer makes each year is which variety to plant. A problem in Alabama unique to Black Belt soils is iron chlorosis on high pH soils. Variety selection is the only practical way to control this problem on these soils. On-farm field trials are important to verify university research and to show how different varieties perform under typical producer management practices.

Ten conventional (non-GMO) Maturity Group V and late IV soybeans were planted at the Dee River Ranch near Aliceville, Alabama, on a Black Belt soil. Each variety was planted on May 9 in 12 30-inch rows in field-length blocks of approximately 1 acre each. Growing conditions were generally excellent, as reflected in the yields. Iron chlorosis was not noted in 2005 due to plentiful soil moisture. Plots were harvested in early October, using the producer's combine and yield monitor (see table).

CONVENTIONAL GROUP V SOYBEAN VARIETY TRIAL, PICKENS COUNTY 2005

Company	Variety	Yield *bu/ac*
Public	Holladay	91.0
DeltaKing	DK 5995	80.6
Public	Hutcheson	74.1
Public	Anand	66.8
Deltapine	DP 5110S	66.2
Progeny	4910	65.0
Deltapine	DP 5989	60.0
DeltaKing	DP 5989	57.3
AgVenture	AVX 53C	53.0
DeltaKing	DK 5870	52.0

COFFEE COUNTY IRRIGATED GROUP VI ROUNDUP READY® SOYBEAN VARIETY DEMONSTRATION, 2005

D. P. Delaney, E. J. Sikora, and R. L. Petcher

One of the most critical decisions a soybean producer makes each year is which variety to plant. On-farm field trials are important to verify university research and to show how different varieties perform under typical management practices in producers' fields.

Nine Maturity Group VI soybean cultivars, all Roundup Ready®, were planted with strip-tillage and in-row subsoiling near Ino, Alabama, on the Carnley farm. Seed was planted at approximately 47 pounds per acre with a twin-row (9-inch) planter set on 36-inch main centers on June 9, 2005. Plots were 18 to 36 feet wide, approximately 1400 feet long, and were irrigated and sprayed with fungicides as needed. Plots were harvested with the producer's combine and a weigh wagon on November 4 when pods and seeds were mature. Yields were adjusted to 13 percent moisture and 60 pounds per bushel (see table).

As with many soybean fields in Alabama that were sprayed with a strobiluron or pre-mix (strobiluron + triazole) fungicide, leaves and stems remained green well after seed maturity. This caused difficult and slow harvest conditions as well as increased moisture and foreign material in harvested soybeans. Some variety differences were noted (see table).

IRRIGATED GROUP VI ROUNDUP READY® SOYBEAN VARIETIES, COFFEE COUNTY 2005

Company	Variety[1]	Yield *bu/ac @ 13 pct*	Harvest moisture *pct*	Green leaves/ stalks[2]
Deltapine	DP 6880	50.4	15.9	2
Monsanto	AG 6202	46.5	13.8	2
Monsanto	H 6255	45.9	13.8	2
Pioneer	96M20	45.8	16.1	3
Deltapine	DP 6215	42.3	17.9	4
Delta King	B64-51	41.9	14.7	2
Monsanto	AG 6702	41.0	14.5	2
Croplan	RC 6767	35.3	14.8	2
Croplan	RC 6655	33.1	14.8	2

[1] All varieties were Roundup Ready.

[2] Green leaf/stalk rating 1 = very dry, 3 = some green leaves, 5 = lush/full of moisture.

FUNGICIDE EVALUATIONS

Evaluation of Fungicides for Foliar Disease Control and Yield of Soybean in Alabama, 2005

K. S. Lawrence, D. P. Delaney, E. J. Sikora, and R. M. Durbin

A soybean fungicide trial was planted on May 23 at the Plant Breeding Unit of the E. V. Smith Research Center near Tallassee, Alabama. The soil type was a fine sandy loam. Plots consisted of four rows, 25 feet long, with a between-row spacing of 30 inches. Plots were arranged in a randomized complete-block design with four replications. A 10-foot alley separated blocks. The fungicide treatments were applied as a foliar spray at the R1 plant growth stage followed with a second application 21 days later or at the R3 and R5 plant growth stages. Soybean foliar diseases were evaluated by rating incidence and severity of each disease in the plot at the R6 to R7 growth stage. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were harvested on October 1. Data were statistically analyzed using PROC GLM, and means were compared with Fisher's protected least significant difference test ($P \leq 0.05$).

Weather conditions were favorable for high incidence of foliar disease on soybean as this area endured rains from the tropical storms Cindy as well as the hurricanes Dennis and Katrina. Cercospora leaf blight incidence and severity were relatively high in 2005; however, no differences between fungicide treatments and the control were observed. Target spot is not frequently observed in Alabama although incidence ranged from 31 to 50 percent during this wet summer. Fungicide applications did not reduce incidence or severity of target spot. Maturity and yield were affected by fungicide applications. Plants defoliated earlier in the control ($P \leq 0.05$) as compared to the Topsin M plus Quadris fungicide treatment. Yields were also increased over the untreated control by ($P \leq 0.05$) the two applications of Topsin M plus Quadris.

Evaluation of Fungicides for Foliar Disease Control and Yield of Soybean in Alabama, 2005

Treatment	Rate *fl oz/ac*	Timing	—Cercospora blight— incidence[1] Sept 20	severity[2] Sept 20	—Target spot— incidence Sept 20	severity Sept 20	Maturity[3] Sept 20	Yield *bu/ac* Oct 1
Control			50.0 a[4]	2.3 a	50.0 a	1.8 a	3.5 a	45.7 b
Penncozeb	2	R1 + 21 days	38.7 a	2.0 a	42.5 a	1.5 a	2.8 ab	49.7 ab
Topsin M + Folicur	15 + 4	R3 + R5	46.2 a	2.0 a	33.7 a	1.5 a	2.8 ab	48.1 b
Topsin M + Quadris	15 + 6.2	R3 + R5	42.5 a	1.9 a	31.2 a	1.6 a	2.3 b	53.2 a
LSD (P < 0.05)			**ns**	**ns**	**ns**	**ns**	**1.1**	**4.3**

[1] Disease incidence was based on the percentage of plants affected per row.
[2] Disease severity was based on percentage of leaf surface area affected of ten leaflets and was rated on a percentage scale: 1= 0-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 75-100%.
[3] Maturity was based on the percentage of necrosis and defoliation: 1= 0-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 75 -100%.
[4] Means within columns followed by different letters are significantly different according to Fisher's LSD ($P \leq 0.05$).

EVALUATION OF ABSOLUTE, FOLICUR, AND STRATEGO ON SOYBEAN FOLIAR DISEASE AND YIELD IN ALABAMA, 2005

K. S. Lawrence, D. P. Delaney, E. J. Sikora, and S. P. Nightengale

A soybean fungicide trial was planted on May 23 at the Plant Breeding Unit of the E. V. Smith Research Center near Tallassee, Alabama. The soil type was a Cahaba loamy sand. Plots consisted of four rows, 25 feet long, with a between-row spacing of 30 inches. Plots were arranged in a randomized complete-block design with four replications. A 10-foot alley separated blocks. The fungicide treatments were applied as a foliar spray at the R3 or R5 plant growth stages. Soybean foliar diseases were evaluated by rating incidence and severity of each disease in the plot at the R6 to R7 growth stage. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were harvested on October 1. Data were statistically analyzed using PROC GLM, and means were compared with Fisher's protected least significant difference test ($P \leq 0.05$).

Weather conditions were favorable for high incidence of foliar disease on soybean as this area endured rains from the tropical storms Cindy as well as the hurricanes Dennis and Katrina. Cercospera leaf blight incidence and severity were moderately high; however, no differences in disease suppression between fungicide treatments and the control were observed. Target spot incidence was also high for this region, and fungicides did not reduce incidence or severity. Rust developed late in the season with the greatest incidence observed in the control plots. Only the Folicur + Stratego applied at the low rate at the R3 stage showed any rust development, which was less than 10 percent of the plot affected. Rust was not observed on any of the other fungicide treatments. Maturity was affected by fungicide applications. Plants defoliated earlier in the control ($P \leq 0.05$) as compared to the Folicur + Stratego fungicide treatment applied at the high rate. Yields were not increased by ($P \leq 0.05$) the fungicide applications.

EVALUATION OF ABSOLUTE, FOLICUR, AND STRATEGO ON SOYBEAN FOLIAR DISEASE AND YIELD IN ALABAMA, 2005

Treatment	Rate	Timing	–Cercospora blight– incidence[1]	severity[2]	——Target spot—— incidence	severity[2]	Maturity[3]	Rust incidence[2]	Yield *bu/ac*
Untreated			60.0	2.25	57.5	2.50	3.88 a[4]	23.7	62.1
Folicur 3.6F SC + Stratego EC	4+ 10 fl oz/ac	R3	58.7	1.75	56.3	2.00	3.18 b	0	63.1
Folicur 3.6F SC + Stratego	4 + 7fl oz/ac	R3	67.5	2.38	58.8	1.13	3.38 ab	2.5	62.7
Folicur 3.6F SC + Stratego	4 + 7fl oz/ac	R5	65.0	2.00	51.3	1.88	3.63 ab	0	64.6
Absolute SC	5 fl oz/ac	R3	58.7	2.13	52.5	2.13	3.75 ab	0	66.4
Absolute SC	7 fl oz/ac	R3	63.7	2.25	58.8	2.38	3.75 ab	0	62.7
Folicur 3.6F	4 fl oz/ac	R3	63.7	1.13	55.0	2.25	3.38 ab	0	66.9
LSD ($P \leq 0.05$)			**12.4**	**0.7**	**13.7**	**0.7**	**0.7**	**14.6**	**11.0**

[1] Disease incidence was based on the percentage of plants affected per row: 0= 0%, 10 = 1-10%, 20 = 11-20%, 30 = 21- 30%, 40 = 31- 40%, 50 = 41- 50%, 60 = 51- 60%, 70 = 61 - 70%, 80 = 71- 80%, 90= 81- 90%, 100 = 91-100%.

[2] Disease severity was based on percentage of leaf surface area affected of ten leaflets and was rated on a percentage scale: 1= 0-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 75-100%.

[3] Maturity was based on the percentage of necrosis and defoliation: 1= 0-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 75 -100%.

[4] Means within columns followed by different letters are significantly different according to Fisher's LSD ($P \leq 0.05$).

Evaluation of Punch, Charisma, Folicur, and Manzate on Soybean Foliar Disease and Yield in Alabama, 2005

K. S. Lawrence, D. P. Delaney, E. J. Sikora, and S. P. Nightengale

A soybean fungicide trial was planted on May 23 at the Plant Breeding Unit of the E. V. Smith Research Center near Tallassee, Alabama. The soil type was a Cahaba loamy sand. Plots consisted of four rows, 25 feet long, with a between-row spacing of 30 inches. Plots were arranged in a randomized complete-block design with four replications. A 10-foot alley separated blocks. The fungicide treatments were applied as a foliar spray at the R1 plant growth stage followed with a second application 21 days later. Soybean foliar diseases were evaluated by rating incidence and severity of each disease in the plot at the R6 to R7 growth stage. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were harvested on October 1. Data were statistically analyzed using PROC GLM, and means were compared with Fisher's protected least significant difference test ($P \leq 0.05$).

Weather conditions were favorable for high incidence of foliar disease on soybean as this area endured rains from the tropical storms Cindy as well as the hurricanes Dennis and Katrina. Cercospera leaf blight incidence was relatively high with incidence ranging from a low ($P \leq 0.05$) of 46 percent in Charisma EC at 8 ounces per acre to a high of 62 percent in Punch EC at 5 ounces per acre. However, the severity of the Cercospera blight was low and the fungicide applications did not affect severity. Target spot incidence was also high for this region and the Manzate 75 DF did reduce ($P < 0.05$) incidence as compared to the control. Targot spot severity was not reduced by any fungicide treatment. Maturity and yield were affected by fungicide applications. Plants defoliated earlier in the Manzate 75 DF ($P \leq 0.05$) as compared to the Punch EC fungicide treatments. Yields were increased ($P \leq 0.05$) by the Folicur fungicide treatment as compared to the control, Charisma EC, Manzate, and Punch at 5 ounces per acre.

Evaluation of Punch, Charisma, Folicur, and Manzate on Soybean Foliar Disease and Yield in Alabama, 2005

Treatment	Rate	Timing	—Cercospora blight— incidence[1] Sept 20	severity[2] Sept 20	——Target spot—— incidence Sept 20	severity[2] Sept 20	Maturity[3] Sept 20	Rust incidence[1] Sept 20	Yield *bu/ac* Oct 1
Untreated control			56.33 ab[4]	2.0	60.0 a	2.1	3.2 ab	2.5	56.9 bc
Punch EC 400GL	4 fl oz/ac	R1 + 21 D	57.5 ab	2.1	60.0 a	2.5	2.8 b	5.0	64.7 ab
Punch EC 400GL	5 fl oz/ac	R1 + 21 D	62.5 a	2.3	58.7 ab	2.4	2.7 b	2.5	54.6 c
Charisma EC 207GL	8 fl oz/ac	R1 + 21 D	46.3 b	1.4	50.0 ab	2.0	3.6 ab	0	57.5 bc
Charisma EC 207GL	10 fl oz/ac	R1 + 21 D	57.5 ab	1.8	52.5 ab	2.0	3.5 ab	0	62.0 bc
Manzate 75 DF	2 lb/ac	R1 + 21 D	53.8 ab	1.5	42.5 b	2.0	4.0 a	0	62.0 bc
Folicur 3.6F	4 fl oz/ac	R1 + 21 D	60 ab	2.1	48.7 ab	2.4	3.2 ab	0	70.5 a
LSD ($P \leq 0.05$)			**15.7**	**0.9**	**17.1**	**0.7**	**1.01**	**5.2**	**8.3**

[1] Disease incidence was based on the percentage of plants affected per row: 0= 0%, 10 = 1-10%, 20 = 11-20%, 30 = 21- 30%, 40 = 31- 40%, 50 = 41- 50%, 60 = 51- 60%, 70 = 61 - 70%, 80 = 71- 80%, 90= 81- 90%, 100 = 91-100%.

[2] Disease severity was based on percentage of leaf surface area affected of ten leaflets and was rated on a percentage scale: 1= 0-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 75-100%.

[3] Maturity was based on the percentage of necrosis and defoliation: 1= 0-10%, 2 = 11-25%, 3 = 26-50%, 4 = 51-75%, 5 = 75 -100%.

[4] Means within columns followed by different letters are significantly different according to Fisher's LSD ($P < 0.05$).

EVALUATION OF BALLARD FOR CONTROL OF FOLIAR DISEASES OF SOYBEAN, 2005

E. J. Sikora, D. P. Delaney, K. S. Lawrence, A. Gutierrez-Estrada, and R. M. Durbin

A soybean fungicide trial was planted with Pioneer 96M20 on May 24 at the Plant Breeding Unit of the E. V. Smith Research Center near Tallassee, Alabama. Plots consisted of four rows, 20 feet long, with a between-row spacing of 30 inches and a seeding rate of 11.7 seeds per foot. Plots were arranged in a randomized complete-block design with four replications. A 10-foot alley separated blocks. The fungicide treatments were applied as a foliar spray on August 1 (R2 growth stage), August 15 (R3-R4), and September 1 (R5). Percent target spot was determined on September 15. Percent leaf defoliation and leaf greening (0-3 scale with 3 representing a high level of green foliage being retained by the plant) was determined on October 5. Incidence of Asian soybean rust (ASR) was determined on October 15 by examining five plants per plot. All plots were maintained throughout the season with standard herbicide, insecticide, and fertility production practices as recommended by the Alabama Cooperative Extension System. Plots were harvested on November 10.

Weather conditions were somewhat favorable for foliar disease as this area endured rains from tropical storm Cindy as well as the hurricanes Dennis and Katrina. Ballad at 0.5 quart, Ballad at 1 quart + Quadris at 8 ounces, and Quadris at 8 ounces all had less target spot than the control. Quadris at 8 ounces had less ASR incidence compared to all other treatments. Quadris at 8 ounces and Ballad at 0.5 quart had less incidence of ASR compared to the control. There were no significant differences among the other treatments. All treatments with the exception of Ballad at 2 quarts had less leaf defoliation than the control. Ballad at 0.5 quart, Ballad at 1 quart + Quadris at 4 ounces, Ballad at 1 quart + Quadris at 8 ounces, and Quadris at 8 ounces had less defoliation and higher levels of leaf greening among treatments. Ballad at 1 quart + Quadris at 8 ounces had higher yields than all other treatments. Quadris at 8 ounces had higher yields than the control and Ballad at 1 or 2 quarts. There were no significant differences in yield among the other treatments.

EVALUATION OF BALLARD FOR CONTROL OF FOLIAR DISEASES OF SOYBEAN, 2005

Treatment[1]	Rate *per acre*	Target spot *pct*	Defoliation *pct*	Leaf greening[2]	ASR Incidence[3] *pct*	Yield *bu/ac*
Control		13.5 ab[4]	96.5 a	1.0 c	100 a	58.6 c
Ballad SC	0.5 qt	6.25 cd	70.0 d	2.75 a	60 bc	64.3 bc
Ballad SC	1 qt	11.5 abcd	89.25 b	1.25 c	100 a	58.8 c
Ballad SC	2 qt	14.25 a	93.75 ab	1.0 c	100 a	58.5 c
Ballad SC + Quadris SC	0.5 qt + 4 oz	10.5 abc	82.25 c	1.75 b	100 a	63.6 bc
Ballad SC + Quadris SC	1 qt + 4 oz	3.5 c	69.25 d	3.0 a	75 ab	63.8 bc
Ballad SC + Quadris SC	1 qt + 8 oz	7.0 bcd	68.75 d	3.0 a	75 ab	70.3 a
Quadris SC	8 oz	3.25 c	64.5 d	3.0 a	45 c	64.8 b
LSD P = 0.05		**7**	**6.9**	**0.4**	**29.3**	**5.32**

[1] Treatments were applied on August 1 (R2 growth stage), August 15 (R3-R4), and September 1 (R5).
[2] Leaf greening was rated on a 0 to 3 scale with 3 representing a high level of green foliage being retained by the plant.
[3] Incidence of Asian soybean rust (ASR) was determined by examining five plants per plot.
[4] Means followed by the same letter are not significantly different.

SOYBEAN BREEDING

BREEDING IMPROVED SOYBEAN CULTIVARS FOR ALABAMA

D. B. Weaver

The testing and development of new soybean (*Glycine max* L.) cultivars continues to be an ongoing project of the Alabama Agricultural Experiment Station. Since its inception, the project has resulted in the release of three cultivars (Stonewall, Carver, and Kuell) and two germplasm lines. More lines are in various stages of development.

During 2005, experimental soybean lines were tested, including 30 Maturity Group (MG) VI lines and 80 MG VII lines tested at one location (Tallassee) with two repetitions in multiple-row plots. A total of 50 lines (20 MG VI, 20 MG VII, and 10 MG VIII) were tested in advanced trials at multiple locations in Alabama. The best-performing of these lines will be advanced to the next level of testing, the USDA Cooperative Uniform Tests. In the USDA tests, five of the best advanced lines were tested in the Preliminary VI test, four in the Preliminary VII test, and two in the Preliminary VIII test. Only one line, a MG VI line that ranked fifth overall in the 2004 Preliminary test, was advanced into the 2005 Uniform test. Several of these lines performed well in the 2005 Preliminary tests and will be advanced to the Uniform Tests for 2006. The future populations will be developed with the objective of cultivar development. Additional Breeder seed of Kuell were produced in 2005 and should be available to Registered and Certified Seed producers in 2006.

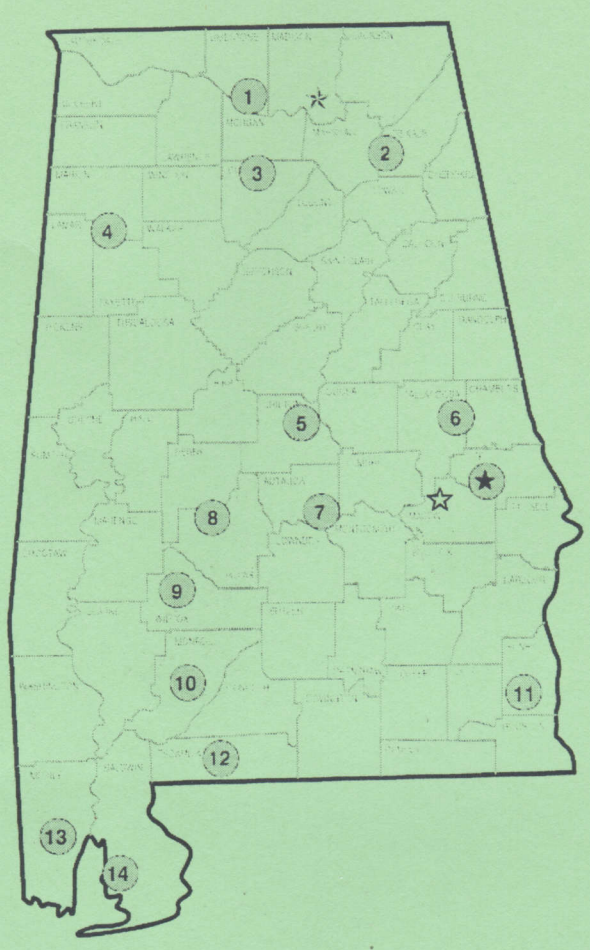
In a cooperative project with Clemson University, 38 different populations of material were grown with a combination of the long-juvenile trait (lack of photoperiod response, or photoperiod insensitive) and Roundup-Ready technology. Soybean cultivars that do not begin reproductive growth in response to daylength (photoperiod insensitive) have the potential to expand the range of planting dates with no detrimental effects on yield. This trait would allow lines to be planted either very early to avoid late-summer drought or planted late, in a double-cropping system following small grains or maize. Experimental lines have produced well at both planting dates and outperformed check cultivars at these extreme planting dates. Another trait carried by this material is resistance to soybean cyst nematode and root-knot nematode. Single-plant selections were made and will continue to be evaluated for the next couple of years with the objective of developing a germplasm or cultivar with these two traits. Several years of yield tests with experimental long-juvenile lines have been conducted, and the long-juvenile trait is now being combined with Roundup Ready technology for commercial production.

In cooperation with the USDA, 600 soybean accessions in MGs VI, VII, VIII, IX, and X were evaluated for reaction to the Asian soybean rust. These accessions were previously screened from the entire USDA germplasm collection, having shown some rust resistance potential in previous tests in an off-shore containment facility. Disease was monitored closely, but sufficient rust did not develop in time for meaningful results to be obtained.

Also in cooperation with the USDA Uniform Cooperative Tests, 11 tests are being conducted in three locations (Tallassee, Belle Mina, and Fairhope), and more than 200 public breeding lines of Maturity Groups V, VI, VII, and VIII in both Preliminary and Uniform Tests are being evaluated. This continues to be a major resource of genetic material as well as a great testing network for evaluation of new genotypes from all public breeding programs in the Southeast. These tests are conducted with support from the Alabama Agricultural Experiment Station and soybean checkoff funding.

Alabama's Agricultural Experiment Station
AUBURN UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, livestock, forestry, and horticultural producers in each region in Alabama. Every citizen of the state has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



Research Unit Identification

★ Main Agricultural Experiment Station, Auburn.
☆ Alabama A&M University.
☆ E. V. Smith Research Center, Shorter.

1. Tennessee Valley Research and Extension Center, Belle Mina.
2. Sand Mountain Research and Extension Center, Crossville.
3. North Alabama Horticulture Research Center, Cullman.
4. Upper Coastal Plain Agricultural Research Center, Winfield.
5. Chilton Research and Extension Center, Clanton.
6. Piedmont Substation, Camp Hill.
7. Prattville Agricultural Research Unit, Prattville.
8. Black Belt Research and Extension Center, Marion Junction.
9. Lower Coastal Plain Substation, Camden.
10. Monroeville Agricultural Research Unit, Monroeville.
11. Wiregrass Research and Extension Center, Headland.
12. Brewton Agricultural Research Unit, Brewton.
13. Ornamental Horticulture Research Center, Spring Hill.
14. Gulf Coast Research and Extension Center, Fairhope.