Alabama Soybean Commission Report
For 2005

Title: Soybean Production Tools for Alabama

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Objective 1: Evaluate soybean cultivars suitable for Alabama under producer practices and growing conditions. Large-scale on-farm variety trials were conducted in Hale (2), Pickens, Coffee, and DeKalb Counties.

Group IV Roundup Ready^{R} Soybean Varieties, Hale County:

Eleven Maturity Group IV soybean cultivars, all Roundup Ready^{R}, were planted on 11 May 2005 in Hale County north of Gallion 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 – 25 ft. wide * approx. 1100 feet long, after conventional tillage. All seed was fungicide treated and inoculated before planting.

Plots were rated for iron chlorosis on 27 May, 18 June, and 14 July (Table 1). Plots were harvested with the producer's combine and a weigh wagon on 04 October, with yields adjusted to 13% moisture and 60 lb/bu.

Table 1. 2005 Hale County High pH Group IV RR^{R} Soybeans

	Iron chlorosis*			Yield
	Date of rating			**Bu/A @ 13.0%**
Variety	**27-May**	**18-Jun**	**14-Jul**	**4-Oct**
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

*(10 = dead, 0 = deep green)

Group III and IV Roundup Ready^{R} Soybean Varieties, DeKalb County:

Twenty-four Maturity III and IV soybean cultivars, all Roundup Ready^{R}, were planted on 10 May 2005 with cooperator Allen Duke in DeKalb County. All plots were 6 * 30-inch rows (15 ft) wide * approx. 300 – 500 ft 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 28 September, using the producer's combine and a weigh wagon. Yields were adjusted to 13% moisture and 60 lb/bu, and are presented in Table 2 below.

Table 2. 2005 Group III and IV Roundup Ready^{R} Varieties, DeKalb County

Company	Variety	Lodged*	Bu/A @ 13.0%
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

* Lodging ratings: 1 = All Plants erect, 3 = All plants leaning 45%, 5 = All plants down

High pH Soil, Group V Roundup Ready^{R} Soybean Varieties, Hale County:
Eleven Maturity Group V soybean cultivars, all Roundup Ready^{R}, were planted on 18 June 2005 in Hale County near Demopolis 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 8, 30-inch rows, in strips 20 ft. wide * approx. 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 12 October, with yields adjusted to 13% moisture and 60 lb/bu (Table 3).

Table 3. 2005 Hale County High pH Group V RR^{R} Soybeans

Company	Variety*	Bu/A @13.0%
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
* All are Roundup Ready		

Black Belt Soil, Group V Conventional Soybean Varieties, Pickens County:
Ten conventional (non-GMO) Maturity Group V and late IV soybeans were planted at the Dee River Ranch near Aliceville on a Black Belt soil. Each variety was planted on 09 May in 12, 30-inch rows in field-length blocks of approximately one acre each. Growing conditions were generally excellent, as reflected in the yields. Plots were harvested in early October, using the producer's combine and yield monitor (Table 4).

Table 4. 2005 Pickens County Conventional Group V Soybean Variety Trial

Brand	Variety	Yield (Bu/A)
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

Group VI Roundup Ready^{R} Soybean Varieties, Irrigated, Coffee County:

Nine Maturity Group VI soybean cultivars, all Roundup Ready^{R}, were planted with strip-tillage and in-row subsoiling near Ino on the Carnley farm. Seed was planted at approximately 47 lb/A with a twin-row (9-inch) planter set on 36-inch main centers on 09 June 2005. Plots were 18 to 36 ft wide * approx. 1400 ft long, and were irrigated and sprayed with fungicides as needed. Plots were harvested with the producer's combine and a weigh wagon on 04 November when pods and seeds were mature. Yields were adjusted to 13% moisture and 60 lb/bu, and are presented in Table 5.

As with many soybean fields in Alabama that had been 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, and are also listed in Table 5.

Table 5. 2005 Coffee County Irrigated Group VI Roundup Ready Soybean Variety Trial

Company	Variety*	Bu/A @ 13.0%	Moisture %	Green leaves/stalks**
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

* All Varieties were Roundup Ready

** Green leaf/stalk rating 1 = very dry, 3 = some green leaves, 5 = lush/full moisture

Objective 2: To evaluate use of early maturing soybean varieties (Groups III and IV) under Alabama conditions, with the goal of avoiding late summer heat and moisture stress.

Methods

Tests were conducted at the Plant Breeding Unit (PBU) of the EV Smith Research Center near Tallassee, and at the Sand Mountain Research and Education Center (SMREC) near Crossville in 2005. Four Maturity Group 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 7 * 7-inch rows on 11 April and again on 29 April at PBU, and on 11 and 25 April 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 02 September to 20 September at PBU, and 13 September to 20 September at Sand Mountain. Yields were adjusted to 13% moisture and 60 bu/A (Tables 6 and 7), and samples taken for seed quality analysis.

Table 6. Planting Dates for Grp III and IV Soybeans, PBU 2005

Planting Date	Cultivar	Yield bu/A	Total Height (in)	Lowest Pod Ht (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 7. Planting Dates for Grp III and IV Soybeans, SMREC 2005

Planting Date	Cultivar	Yield bu/A	Total Height (in)	Lowest Pod Ht (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**

Discussion

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 III's (76 vs 60 bu/A), 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 Sand Mountain, 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 for the first planting date, but was no difference between planting dates for height of the lowest pod. There was no significant different 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 make good growth and excellent yields in 2005.