

## GLYPHOSATE TOLERANT GROUP IV NO-TILLAGE SOYBEAN VARIETY EVALUATION

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**ABSTRACT:** Twenty-nine glyphosate tolerant maturity group IV soybean varieties were evaluated for yield potential in a no-tillage environment. Yield ranged from 35.5 to 63.8 bu/ac with a mean yield of 52.5 bu/ac. Yields were at least 60 bu/ac with Deltapine 04-4352 (experimental), Pioneer 94B73, and Terral 48R207 (experimental). All other varieties yielded greater than 45 bu/ac except for Deltapine 04-4162 (experimental), DeltaKing 4868, Pioneer 9492, Dekalb 46-51, Terral 4886, and Deltapine 498, which yielded 44.9, 44.6, 44.5, 43.8, 40.1, 40.1, and 35.3 bu/ac, respectively.

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**KEYWORDS:** glyphosate tolerant, no-tillage, soybean

**MATERIALS AND METHODS:** A maturity group IV glyphosate tolerant soybean variety trial was established on a Falkner silt loam (fine-silty, siliceous, thermic Typic Hapludults) in 2004 to determine yield potential at the Pontotoc Ridge-Flatwoods Experiment Station. The experimental design was a randomized complete block with 4 replications. Plot size was 5 x 30 ft. Fertilizer and lime were applied in the spring according to Mississippi State Soil Testing Laboratory recommendations. A preplant burndown application of 1.0 lb ai/ac glyphosate was applied 2 weeks prior to planting. Soybean varieties were planted no-tillage in two 30-in rows on April 21 with a seeding rate of 129,000 seed/ac. Additional treatments of glyphosate were applied during the growing season to maintain a weed-free growing environment. A seed treatment of ApronMAXX RTA (12.5% metalaxyl) was applied at a rate of 5.0 fl oz/100 lb of seed. Cell-Tech Soybean, a soybean rhizobium inoculant was also applied at a rate of 2.1 fl oz/50 lb of seed. Plant lodging was recorded prior to harvest on a scale of 0 to 100, with 0 being all plants erect and 100 being all plants down. Shatter loss was visually observed and recorded on a scale of 0 to 100, with 0 being no yield loss due to preharvest shatter and 100 being complete yield loss due to preharvest shatter. The plots were harvested at 133 days after planting on September 1. Grain was cleaned with a 3-sieve seed cleaner, weighed, and seed moisture was determined with a GAC II seed moisture analyzer. Yields were adjusted to 13% seed moisture. Analysis of variance was conducted and means were separated using Fishers protected LSD ( $\alpha=0.05$ ).

**RESULTS AND DISCUSSION:** Twenty-nine glyphosate tolerant group IV soybean varieties were evaluated for yield potential in a no-tillage environment. Environmental growing conditions were good for soybean production in 2004. Rainfall during the growing season was

0.98, 9.77, 9.03, 4.61, and 3.45 inches following planting in April, May, June, July, and August, respectively. Preharvest shatter was not observed. Yield ranged from 35.5 to 63.8 bu/ac with a mean yield of 52.5 bu/ac (Table 1). Yields were at least 60 bu/ac with Deltapine 04-4352 (experimental), Pioneer 94B73, and Terral 48R207 (experimental). Varieties yielding greater than 55 bu/ac were Deltapine 4546, Armor 49P9, Pioneer 94B13, Deltapine 4891 (experimental), DeltaKing 4967, Asgrow 4902, and Terral 46R201. Varieties yielding less than 45 bu/ac were Deltapine 04-4162 (experimental), DeltaKing 4868, Pioneer 9492, Dekalb 46-51, Terral 4886, and Deltapine 498, which yielded 44.9, 44.6, 44.5, 43.8, 40.1, and 35.3 bu/ac, respectively. Lodging was 31% with Terral 4868, which was greater all other varieties. All other varieties lodged less than 10 percent except for Terral 49R12, Deltapine 4891 (experimental), and Deltapine 4933, which lodged at 18, 14, and 12 percent, respectively.

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**Table 1.** Glyphosate tolerant group IV no-tillage soybean variety trial at Pontotoc Ridge-Flatwoods Experiment Station in 2004.

Variety	Brand	Yield	Plant Height	Lodging <sup>1</sup>
		-----Bu/ac-----	-----Inches-----	-----Percent-----
DPX 04-4352	Deltapine	63.8	29.8	1
PI 94B73	Pioneer	63.6	33.3	1
TVX 48R207	Terral	61.6	37.3	2
DP 4546	Deltapine	59.3	32.8	8
49-P9	Armor	59.0	32.5	9
PI 94B13	Pioneer	59.0	31.3	0
DPX 4891	Deltapine	58.7	29.5	14
DK 4967	Delta King	57.5	29.3	2
AG 4902	Asgrow	57.0	34.3	0
TVX 46R201	Terral	56.5	38.3	8
DP 4724	Deltapine	54.8	29.3	8
DKB 44-51	Dekalb	54.7	31.5	1
DPX 99-00328	Deltapine	54.6	31.5	2
DP 4331	Deltapine	54.4	32.8	3
TV 49R12	Terral	54.2	39.0	18
DPX 99-1980	Deltapine	52.9	33.3	3
AG 4603	Asgrow	52.2	31.0	0
AG 4201	Asgrow	50.3	29.0	1
AG 4801	Asgrow	49.9	26.3	1
AG 4403	Asgrow	49.1	33.5	4
DP 4933	Deltapine	48.8	40.3	12
AG 4903	Asgrow	48.0	32.8	6
DP 4690	Deltapine	47.8	34.5	5
DPX 04-4162	Deltapine	44.9	29.5	0
DK 4868	Delta King	44.6	32.0	5
PI 9492	Pioneer	44.5	33.8	8
DKB 46-51	Dekalb	43.8	29.5	9
TV 4886	Terral	40.1	38.3	31
SG 498	Deltapine	35.3	31.0	2
LSD ( $\alpha=0.05$ )		5.5	3.8	9.5

<sup>1</sup>Lodging was rated on a scale of 0 to 100 percent; 0=all plants erect; 100=all plants down.