

## COMPARING YIELDS USING PREEMERGE HERBICIDE IN ROUNDUP READY COTTON

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**ABSTRACT:** Roundup Ready technology in cotton provides an opportunity for producers to control grasses and weeds with post emergence herbicide applications thereby omitting any preplant incorporated or preemergence herbicide application. A study was conducted at Holly Springs, and Nesbit to evaluate Cotoran and Staple sprayed on Roundup Ready cotton as a preemergence. There was no visible cotton injury in plots with PRE herbicide treatments by the time plants started initiating true leaves. Weeds and grasses had rapid emergence in the plots without a preemergence and in many cases were as tall or taller than the cotton at two weeks after emergence when Roundup was applied postemergence (POT). Four and eight weeks after planting, morninglory was the only species where the PRE application made a difference in control at Nesbit. Holly Springs location indicated no difference in weed control for all species. PRE had no effect on yield at both locations. Yields were lower at Holly Springs than Nesbit.

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### MATERIALS AND METHODS:

**Objective:** A herbicide study was conducted at the North Mississippi Branch Station, Holly Springs, MS and at a producer's field in Nesbit, Mississippi to determine if a preemergence applied to Roundup Ready cotton would improve weed control and yield.

Soils at Holly Springs were upland soils classified as Grenada silt loam. Soils at Nesbit were floodplain soils and classified as Collins silty loam. Weed and grass infestation at Nesbit was moderate and at Holly Springs was light. Weeds and grasses at Holly Springs that posed a threat to production were cocklebur (*Xanthium strumarium*), redroot pigweed (*Amaranthus retroflexus*), spiny amaranth (*Amaranthus spinosus*), marestalk (*Coryza Canadensis*), evening primrose (*Oenothera laciniata*), prickly sida (*Sida spinosa*), pitted morninglory (*Ipomoea lacunose*), common morninglory (*Ipomoea purpurea*), crabgrass (*Digitaria ciliaris*), goosegrass (*Eleusine indica*), seedling and rhizome johnsongrass (*Sorghum halepense*), and broadleaf signalgrass (*Brachiaria platphylla*). Weeds and grasses at Nesbit that posed a production threat were goosegrass, crabgrass, marestalk, redroot pigweed, rhizome johnsongrass, pitted morninglory, spiny amaranth, redvine (*Brunnichia cirrhosa*), and trumpet creeper (*Campsis radicans*). Plots were fifty feet long and consisted of 4, 38 inch rows at both locations.

The experimental design was a randomized complete block with 4 replications at each location. There were two preemergence treatments at each location, Cotoran (fluometuron) at 1.0 lb ai/ac + Staple (pyrithiobac) 0.51 oz ai/ac sprayed as a preemergence application and a set of plots that

received no preemergence. A post treatment of Roundup Ultra at 1.0 lb ai/ac mixed in 17 gallons of water was broadcast sprayed across the entire plot area at two weeks after emergence. The second Roundup treatment consisting of a mixture of Roundup Ultra 1.0 lb ai/ac. was post-directed sprayed underneath the cotton at six weeks after planting.

Tillage at Nesbit was done in the spring during March and April, the land was disked, bedded and the beds were smoothed before planting. A blend mix of 30-50-120 lb product/ac was broadcast spread at Nesbit after disking and before beds were hipped. A side dress application of 100 lb N/ac was made at Nesbit about six weeks after emergence.

There was no tillage before planting at Holly Springs. A herbicide burndown application of Roundup Ultra (glyphosate) 2.0 lb ai/ac was sprayed over the entire plot area at Holly Springs the last week of March. An additional burndown application was made prior to planting using Gramoxone (paraquat) 0.625-lb ai/ac per acre. A blend mix of 75-50-90 lb product/ac was broadcast spread at Holly Springs after the first burndown application in early April.

Sure-Grow 215 BG/RR at 3 seed/ft of row was planted the first week of May at both locations. Terrachlor 18.8G (pentachloronitrobenzene) at 1.5 lb ai/ac. + Temik 15G (aldicarb) at 0.75 lb. ai/ac was applied as granules in furrow at planting. Cotton was defoliated in mid-September using Superboll (ethephon) 1.5 lb. ai/ac + Def 6 (tribufos) 1.5 lb. ai/ac. Harvest was completed the first week of October.

**RESULTS AND DISCUSSION:** Herbicide injury was slight but noticeable in scattered locations of some preemerge plots. However, injury was short-lived and would have gone unnoticed if this was not a herbicide study. All locations had ample moisture for rapid emergence. There was no visible cotton injury in plots with PRE herbicide treatments by the time plants started initiating true leaves. Weeds and grasses had rapid emergence in the plots without a preemergence and in many cases were as tall or taller than the cotton at two weeks after emergence when Roundup was applied postemergence (POT). Four and eight weeks after planting, morninglory was the only species where the PRE application made a difference in control at Nesbit (Table 1). Holly Spring location indicated no difference in weed control for all species (Table 2). PRE had no effect on yield at both locations (Table 3). Yields were lower at Holly Springs than Nesbit. This could be attributed to Holly Springs being a hill site and having very little rain during the growing season. Nesbit was located in a bottomland floodplain region with a high water table. There was more growth for both cotton and weeds at the Nesbit site resulting in a more competitive environment.

**TABLES:**

**Table 1.** The percent weed and grass controlled in cotton plots four and eight weeks after planting (visual evaluation) at Nesbit in 2002.

Weeds & Grasses	Percent control at four weeks after planting		LSD	Percent control at eight weeks after planting		LSD
	No PRE	PRE	0.05	No PRE	PRE	0.05
Goosegrass	92	98	NS	98	100	NS
Crabgrass	98	100	NS	100	100	NS
Marestail	94	94	NS	98	98	NS
Pigweed	88	92	NS	94	94	NS
Spiny amaranth	96	98	NS	100	100	NS
Evening primrose	94	94	NS	100	100	NS
Red vine	98	98	NS	98	98	NS
Morningglory	78	96	9	82	98	11

**Table 2.** Percent weed and grass controlled four and eight weeks after planting (visual evaluation) at Holly Springs in 2002.

Weeds and Grasses	Four weeks after planting		LSD	Eight weeks after planting		LSD
	No PRE	PRE	0.05	No PRE	PRE	0.05
Cocklebur	98	98	NS	100	100	NS
Pigweed	94	94	NS	98	98	NS
Spiny amaranth	96	96	NS	100	100	NS
Marestail	94	94	NS	98	96	NS
Evening primrose	90	92	NS	98	98	NS
Prickly sida	98	100	NS	98	98	NS
Morningglory	98	100	NS	100	100	NS
Crabgrass	98	100	NS	100	100	NS
Goosegrass	96	100	NS	100	100	NS
Johnsongrass	96	98	NS	98	98	NS
Broadleaf signal-grass	98	100	NS	100	100	NS

**Table 3.** Cotton lint yields for Roundup Ready varieties with and without a preemergence.

Treatment	Holly Springs lint/ac	Nesbit lint/ac
Premerge + Rup	674	982
No Premerge + Rup	648	1013
LSD 0.05	NS	NS