

GRASS CONTROL SYSTEMS IN NO-TILLAGE ROUNDUP READY CORN MEGA-PLOT TRIAL

M. W. Shankle and J. L. Main

Pontotoc Ridge-Flatwoods Branch Experiment Station; North Mississippi Research and Extension Center;
Mississippi State University, Pontotoc, MS 38863

ABSTRACT: Suppressed commodity prices and high production costs have many producers growing corn in a no-tillage environment. Commercially available Roundup-Ready corn varieties permit postemergence applications of glyphosate that compliments no-tillage systems. In this research, postemergence atrazine plus glyphosate to 11 in corn controlled broadleaf signalgrass and bermudagrass at least 97%, at seven weeks after planting. Corn yield with all treatments that included glyphosate were comparable. Yields were 104 bu/ac with preemergence atrazine plus metholachlor followed by postemergence glyphosate to 3 in weeds, 99 bu/ac with postemergence atrazine plus glyphosate to 11 in corn, and 91 with postemergence glyphosate to 3 in weeds.

CITATION: M. W. Shankle and J. L. Main. 2002. Grass Control Systems in No-Tillage Roundup Ready Corn Mega-Plot Trial. Annual Research Report of the North Mississippi Research & Extension Center. Miss. Agric. & For Expt. Sta. Info. Bull. 386 pp. 34-35.

KEYWORDS: Roundup Ready, corn, no-tillage.

MATERIALS AND METHODS: A Roundup Ready corn mega-plot trial was established on a Bude silt loam (fine-silty, mixed, thermic Glossaquic Fragiudalfs) to determine broadleaf signalgrass (*Brachiaria platyphylla*) bermudagrass (*Cynodon dactylon*) control and yield potential in a no-tillage environment. Fertilizer and lime were applied in the spring according to soil test recommendations. A preplant burndown application of 1 lb ai/ac glyphosate plus 0.5 lb ai/ac 2,4-D Amine was applied at 2 weeks before planting. The experiment design was a randomized block with 3 replications. Plot size was 15 x 225 ft. Asgrow RX738RR corn was planted in 30 in rows and a T-band treatment of 1.23 lb ai/ac chlorpyrifos was applied on April 23. Preemergence (PRE) treatments immediately followed planting. At 3 weeks after planting (WAP), postemergence (POST) treatments were applied to 3 in broadleaf signalgrass, 3 in bermudagrass, and 7 in corn. At 4.5 WAP, POST treatments were applied to 4-6 in broadleaf signalgrass, 4 in bermudagrass, and 8-12 in corn. A side-dress application of 150 lb N/ac (32%) was applied (6 in from row and 2 in deep) at the 6 to 8 leaf stages. The four center rows of each plot were harvested on September 20. Corn grain from each plot was weighed and seed moisture was determined using a MT3 Farmex grain moisture tester. Yield was adjusted to 15% moisture. Statistical analyses were conducted and means were separated using Fishers protected LSD ($\alpha=0.05$).

RESULTS AND DISCUSSION: This research was conducted to evaluate weed control systems for Roundup Ready no-tillage corn (Table 1.) A single PRE tank-mix treatment of 2 lb ai/ac atrazine plus 1 lb ai/ac metolachlor was included as a one-pass treatment. A single PRE tank-mix of 1 lb/ac atrazine plus 0.5 lb/ac metolachlor f/b (followed by) 0.8 lb ai/ac glyphosate applied POST to 3 in weeds to evaluate the need for additional control. A single POST tank-mix treatment of 1.5 lb/ac atrazine plus 1 lb/ac glyphosate applied to 11 in corn was included as a one-pass treatment with residual control. A single POST 1 lb/ac glyphosate application to 3 in weeds was included in a one-pass treatment. A sequential treatment of 1 lb/ac f/b 1 lb/ac glyphosate was originally included in this experiment, but rainfall timing did not allow the second glyphosate application. An untreated check was included for comparison.

At 7 WAP, grass control with a single POST application of 1.5 lb/ac atrazine plus 0.8 glyphosate to 11 in corn was at least 97% (Table 1). A single application of 1 lb/ac glyphosate applied POST to 3 in weeds controlled broadleaf signalgrass 83% and bermudagrass 78%, which was equivalent to the PRE atrazine plus metholachlor f/b POST glyphosate to 3 in weeds treatment. Broadleaf signalgrass and bermudagrass control was only 60 and 40%, respectively, with a single PRE application of atrazine plus metholachlor.

Corn yields were comparable among treatments that included glyphosate. The highest yield was 103 bu/ac with a PRE application of atrazine plus metholachlor f/b glyphosate applied POST to 3 in weeds. One-pass POST applications of atrazine plus glyphosate to 11 in corn or glyphosate alone to 3 in weeds yielded 99 and 91 bu/ac,

respectively. Corn yield was 85 bu/ac with a PRE application of atrazine plus metholachlor. The untreated check only yielded 53 bu/ac. This suggests that a POST application of glyphosate to 3" corn may prove to be the most economical treatment.

Table 1. Grass control systems and Asgrow RX7738RR corn yield in a no-tillage environment, 2001, Mississippi State University, Pontotoc Ridge-Flatwoods Experiment Station.

Trt	Trt name	Rate (lb ai/ac)	Application Timing	BRAPP % Control 7 WAP	CYNDA % Control 7 WAP	Yield (bu/ac)
1	Atrazine	2.0	PRE	60	40	85
1	Metolachlor	1.0	PRE			
2	Atrazine	1.0	PRE	85	77	105
2	Metolachlor	0.5	PRE			
2	Glyphosate	0.8	POST (3" weeds)			
3	Atrazine	1.5	POST (11" corn)	100	97	99
3	Glyphosate	1.0	POST (11" corn)			
4	Glyphosate	1.0	POST (3" weeds)	83	77	91
5	Check			0	0	53
LSD (0.05)				10	10	17

COOPERATORS: A. L. Catchot and J. A. Mills with Monsanto Agriculture Company.