RR-CORN WEED CONTROL

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ABSTRACT: The purpose of this study was to evaluate time of Roundup Ultra Max (glyphosate) herbicide application applied alone or in combination with preemergence (PRE) herbicides and for weed control in Roundup Ready (RR) corn. Broadleaf weed species present were: pitted morningglory (*Ipomoea lacunosa*) and spotted spurge (*Euphorbia maculata*). Grass weed species present were: goosegrass (*Eluesine indica*) and red sprangletop (*Leptochloa filiformis*). Weed infestations were low and no treatments caused any crop injury. All treatments, except the check (no herbicide), provided excellent (93 to 96%) early season grass control. Bicep II Magnum (atrazine + s-metolachlor) + atrazine at 3.6 pt + 1 pt/ac and at 1.8 pt +0.5 pt/ac applied PRE provided 81 and 96% early season broadleaf weed control, respectively, 4 weeks after planting in the RR hybrid. This was comparable to Bicep II Magnum + atrazine at 3.6 pt + 1 pt/ac applied PRE in the conventional hybrid (non-RR) which provided 88% early season control. Early season broadleaf weed control was less than 72% for all other treatments. At 6 weeks after planting and through the rest of the growing season, all treatments, except the check, provided excellent (92 to 99%) late season control of both broadleaf and grass weeds. Yields ranged from 170 to 185 bu/ac with no differences among all treatments, including the check. Weed infestations levels were insufficient to affect corn yield.

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KEYWORDS: Roundup Ready corn, weed control

MATERIALS AND METHODS: A field study was conducted on a Leeper silty clay loam soil at Verona, Mississippi during the 2002 growing season to evaluate the effect Roundup herbicide (alone or in combination with PRE herbicides) and time of postemergence (POT) Roundup application had on weed control and RR-corn yield. A non RR-corn hybrid (Pioneer 3223) with a standard conventional herbicide weed control treatment was included as a standard for comparison. The study was conducted as a randomized complete block with 4 replications. Plot size was 4 rows (30-inch) by 40 ft.

Soil test results indicated a high P level and a medium K level. Therefore, 250 lb/ac of potash (K_2O) was broadcast to the soil surface on 9/25/01. Land preparation consisted of a fall paratilling (12/08/01), bed-roller 12/11/01, and rebed-roller on 3/05/02. A burndown application of Roundup Ultra Max + Clarity (banvel) at 1.6 pt/ac + 6 oz/ac was applied to all treatments except the check on 4/15/02. DK 687RR corn hybrid and Pioneer 3223 were planted on 4/15/02 with Lorsban (chlorpyrifos) 15G at 1.3 lb ai/ac applied in-furrow. Nitrogen fertilizer solution (32% N as UAN) at 175 lb N/ac was applied sidedress, 6 inches from the row and 2 inches deep,

with a coulter-knife system on 5/14/02. A foliar application of Intrepid (methoxyfenozide) at .063 lb ai/ac was applied on 6/24/02 for southwestern corn borer (*Diatraea grandiosella*) control. PRE treatments were applied after planting on 4/15/02. Early postemegence (EPOT) treatments were applied 5/15/02 at 8 to 12 inch corn. Late postemergence over-the-top of corn (LPOT) treatments were made on 6/3/02 at 40 to 42 inch corn. All treatments were applied at 10 gpa with 8002VS nozzles. Plots were rated for broadleaf and grass weed control on 5/14/02, 5/28/02, 6/11/02 and 8/28/02. A rating scale of 0 equaled no weed control up to 100% equaled complete weed control or kill was used.

The center two rows in each plot were harvested with a plot combine. The corn was weighed, and grain moisture and test weight were determined using a Dickey John® 2000 grain analysis computer. Plot weights were converted to bu/ac and adjusted to 15% moisture. All data were subjected to analysis of variance and treatment means were separated using Fisher's Protected LSD at the 5% significance level.

RESULTS AND DISCUSSION: Rainfall during the growing season was above normal for May and July, which resulted in excellent weed control and yield. Broadleaf weed species present were pitted morningglory and spotted spurge. Grass weed species present were goosegrass and red sprangletop. Weed infestation levels were low and no crop injury was observed.

All treatments provided excellent (93 to 96%) early season (4 weeks after planting) grass control (Table 1). Bicep II Magnum + Atrazine at 3.6 pt + 1 pt/ac and at 1.8 pt + 0.5 pt/ac provided 96 and 81% early season broadleaf weed control, respectively, in the RR-hybrid; and Bicep II Magnum + atrazine at 3.6 pt + 1 pt/ac applied PRE provided 88% control in the non-RR-hybrid (Pioneer 3223). Treatments with no PRE herbicide provided lower (69 to 71%) early season broadleaf weed control. Except for the check, 6 weeks after planting and through the rest of the growing season all treatments provided excellent (92 to 99%) control of both broadleaf and grass weeds (Table 1 and 2).

Yields ranged from 170 to 185 bu/ac with no differences among treatments, including the check (Table 2). Weed infestation levels were at insufficient levels to affect corn yield.

COOPERATORS: None

PUBLICATIONS: None

Table 1. Weed control as influenced by PRE herbicide and time of POST application in RR-corn on a Leeper silty clay loam soil in 2002, Verona, MS.

Hybrid/herbicide treatment	Rate/ac	Appl Time[1]	----% control---- -----5/14/02-----		----% control---- ------5/28/02----	
			Brl[2]	Gr[3]	Brl	Gr
1. DK687RR						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Rup Max	1.6 pt	EPOT	69	94	92	99
2. DK687RR						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Rup Max	1.6 pt	EPOT				
Atrazine	3.0 pt	EPOT	69	95	97	99
3. P3223						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Bicep II Magnum	3.6 pt	PRE				
Atrazine	1.0 pt	PRE	88	94	98	99
4. DK687RR						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Bicep II Magnum	3.6 pt	PRE				
Atrazine	1.0 pt	PRE	96	96	95	99
5. DK687RR						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Rup Max	1.6 pt	EPOT				
Rup Max	1.6 pt	LPOT	70	94	93	99
6. DK687RR						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Rup Max	1.6 pt	EPOT				
Atrazine	3.0 pt	EPOT				
Rup Max	1.6 pt	LPOT	71	93	98	99
7. DK687RR						
Rup Max	1.6 pt	BP				
Clarity	6.0 oz	BP				
Bicep II Magnum	1.8 pt	PRE				
Atrazine	0.5 pt	PRE				
Roundup Max	1.25 pt	EPOT	81	95	93	99
8. DK687RR						
Untreated check			0	0	0	0
LSD (.05)			21	3	7	1
% CV			21	2	6	1

[1] BP means treatments were applied before planting. PRE means treatments were applied after planting before crop emergence. EPOT means treatments were applied post over top when corn was 8 to12 inches tall. LPOT means treatments were applied when corn was 40 to 42 inches tall.
[2] BRL means broadleaf weeds present were: pitted morningglory and spotted spurge. Infestation levels were low.
[3] GR means annual grasses present were: goosegrass and red sprangletop. Infestation levels were low.

Table 2. Weed control and corn yield as influenced by PRE herbicide and time of POST application in RR-corn on a Leeper silty clay loam soil in 2002, Verona, MS.

Hybrid/herbicide Treatment	Rate/ac	Appl Time[1]	---% control-- ----6/11/02---- Brl[2]	Gr[3]	--% control-- ----8/28/02--- Brl	Gr	Yield bu/ac
1. DK687RR							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Rup Max	1.6 pt	EPOT	97	98	99	97	184.5
2. DK687RR							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Rup Max	1.6 pt	EPOT					
Atrazine	3.0 pt	EPOT	99	99	99	94	183.9
3. P3223							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Bicep II Magnum	3.6 pt	PRE					
Atrazine	1.0 pt	PRE	98	99	99	97	182.7
4. DK687RR							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Bicep II Magnum	3.6 pt	PRE					
Atrazine	1.0 pt	PRE	99	99	99	98	181.5
5. DK687RR							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Rup Max	1.6 pt	EPOT					
Rup Max	1.6 pt	LPOT	93	99	99	95	180.0
6. DK687RR							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Rup Max	1.6 pt	EPOT					
Atrazine	3.0 pt	EPOT					
Rup Max	1.6 pt	LPOT	99	99	99	98	178.2
7. DK687RR							
Rup Max	1.6 pt	BP					
Clarity	6.0 oz	BP					
Bicep II Magnum	1.8 pt	PRE					
Atrazine	0.5 pt	PRE					
Roundup Max	1.25 pt	EPOT	97	99	99	96	177.7
8. DK687RR							
Untreated check			0	0	0	0	169.6
LSD (.05)			5	1	4	1	NS
% CV			4	1	3	1	5

[1]BP means treatments were applied before planting. PRE means treatments were applied after planting. EPOT means treatments were applied post over top when corn was 8 to12 inches tall. LPOT means treatments were applied when corn was 40 to 42 inches tall.
[2]BRL means broadleaf weeds present were: pitted morningglory and spotted spurge. Infestation levels were low.
[3]GR means annual grasses present were: goosegrass and red sprangletop. Infestation levels were low.