

Herbicide performance in glyphosate-resistant corn at Luverne, MN in 2002. Getting, Jodie K. and Bruce D. Potter. The objective of this study was to evaluate glyphosate for annual grass and annual broadleaf weed control in glyphosate-resistant corn. This study was conducted on a Trent silty clay loam soil containing 5.2% organic matter, pH 6.2 and soil test P and K levels of 70 and 348 lb/A, respectively. A randomized complete block design with four replications and a plot size of 10 by 25 ft was used. The site was planted to corn in 2001 and was fall chiseled. The area was fertilized with 150 lb/A of nitrogen as urea. On May 22, 2002, Dekalb 'DKC 50-73RR' glyphosate-resistant field corn was planted in 30-inch rows at a seeding rate of 33,000 seeds/A. Tefluthrin (Force 3G) was applied at 4 oz/1000 row feet in a T-band for the control of northern corn rootworm larvae. All treatments were applied with a tractor-mounted sprayer delivering 20 gpa at a pressure of 40 psi. The sprayer was equipped with 8002 flat-fan nozzles spaced 15 inches apart on the boom. Application dates, environmental conditions, plant sizes and rainfall data are listed below:

| Date | May 22 | June 18 |
|-----------------------------------|--------|----------|
| Treatment | PRE | POST |
| Temperature (F) | | |
| air | 58 | 68 |
| soil (4 inch) | 54 | 70 |
| Relative humidity (%) | 60 | 40 |
| Wind (mph) | SE 10 | S 2-5 |
| Sky | cloudy | sunny |
| Soil moisture | moist | dry |
| Corn | | |
| leaf no. | - | 4-collar |
| height (inch) | - | 8 |
| Giant foxtail | | |
| leaf no. | - | 2 to 4 |
| height (inch) | - | 2 to 4 |
| no./ft ² | - | 4 |
| Common lambsquarters | | |
| leaf no. | - | 1 to 3 |
| height (inch) | - | 1 to 3 |
| no./ft ² | - | 1 |
| Tall waterhemp | | |
| leaf no. | - | 1 to 3 |
| height (inch) | - | 1 to 3 |
| no./ft ² | - | <1 |
| Rainfall after application (inch) | | |
| 1 week | 0.90 | 0.41 |
| 2 week | 1.03 | 0.00 |
| 3 week | 0.94 | 0.35 |

None of the herbicide treatments caused visible crop injury. Weed densities in the trial area were relatively low. On June 18, prior to POST treatments, [s-metolachlor & CGA-154281] applied PRE at 0.96 lb/A and 1.91 lb/A gave 91 to 93% and 96% giant foxtail control, respectively. Acetochlor at 1.0 lb/A and 1.09 lb/A gave 95% and 96% control, respectively. Dimethenamid-P at 0.94 lb/A provided 95% control. All soil applied herbicide treatments provided 89 to 94% common lambsquarters control. In September, all herbicide treatments resulted in 95% or greater control of giant foxtail, common lambsquarters, and tall waterhemp. (Southwest Research and Outreach Center, University of Minnesota, Lamberton).

Table. Herbicide performance in glyphosate-resistant corn at Luverne, MN in 2002 (Getting and Potter).

| Treatment ^a | Rate | SETFA | | | CHEAL | | | AMATU | | | Yield |
|---|----------------------------------|-----------------------|------|------|-------|------|------|-------|------|------|---------------------|
| | | 6/18 | 6/27 | 9/13 | 6/18 | 6/27 | 9/13 | 6/18 | 6/27 | 9/13 | |
| PRE/POST I (3 to 4" weeds) | (lb/A or %) | -----(% control)----- | | | | | | | | | (bu/A) ^b |
| Acetochlor ¹ /glyphosate ¹ +AMS | 1.0/0.75+2.5 | 95 | 98 | 98 | 90 | 98 | 97 | 96 | 98 | 98 | 138 |
| [S-meto&CGA-154281]/ glyphosate ² +AMS | 0.96/ 0.56+1.7 | 93 | 98 | 98 | 89 | 98 | 97 | 85 | 98 | 98 | 135 |
| [S-meto&CGA-154281]/ glyphosate ² +AMS | 0.96/ 0.75+1.7 | 91 | 98 | 98 | 89 | 98 | 97 | 93 | 98 | 98 | 150 |
| Dimt-P/[Dica&SAN 1269H] +NIS+AMS | 0.94/[0.128&0.051] +0.25%+1.0 | 95 | 98 | 97 | 94 | 98 | 98 | 93 | 98 | 98 | 153 |
| [S-meto&CGA-154281]/ [Prim&Dica]+COC+28%N | 1.91/ [0.023&0.125]+1.0%+2.5% | 96 | 98 | 97 | 91 | 98 | 98 | 91 | 97 | 98 | 143 |
| Acetochlor ² /glyphosate ³ +AMS | 1.09/0.75+2.5 | 96 | 98 | 98 | 91 | 98 | 98 | 95 | 98 | 98 | 155 |
| POST I (3 to 4" weeds) | | | | | | | | | | | |
| Glyphosate ³ +AMS | 0.75+2.5 | 0 | 98 | 98 | 0 | 98 | 95 | 0 | 98 | 98 | 144 |
| Acetochlor ² +glyphosate ³ +AMS | 1.09+0.75+2.5 | 0 | 98 | 98 | 0 | 98 | 98 | 0 | 98 | 98 | 141 |
| [S-meto&CGA-154281] +glyphosate ² +AMS | 0.96 +0.75+2.5 | 0 | 98 | 98 | 0 | 98 | 98 | 0 | 98 | 98 | 156 |
| Glyphosate ² +AMS | 0.75+2.5 | 0 | 98 | 98 | 0 | 98 | 96 | 0 | 98 | 98 | 148 |
| Checks | | | | | | | | | | | |
| Weedy check | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104 |
| Weed-free | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 161 |
| | LSD (0.10) | 1.8 | ns | 0.7 | 6.8 | ns | 2.0 | 5.0 | 0.5 | ns | 20.4 |

^a Acetochlor¹ = Surpass 6.4EC; acetochlor² = Harness 7E; [Dica&SAN 1269H] or [dicamba & SAN 1269H] = Distinct 70WG; Dimt-P or dimethenamid-P = Outlook 6L; glyphosate¹ = Glyphomax Plus 3L; glyphosate² = Touchdown 3L; glyphosate³ = Roundup Ultra Max 3.75L; [Prim&Dica] or [primsulfuron & dicamba] = Northstar 47.4WG; [s-meto&CGA-154281] or [s-metolachlor&CGA-154281] = Dual II Magnum 7.64EC; COC = crop oil concentrate, Class Additive 17%; NIS = nonionic surfactant, Class Preference; 28%N = an aqueous solution of urea and ammonium nitrate; AMS = spray grade ammonium sulfate.

^b Yield adjusted to 15.5% moisture.