

Herbicide performance in soybeans at Luverne, MN in 2002. Getting, Jodie K., Jeffrey L. Gunsolus, and Thomas R. Hoverstad. The objective of this study was to evaluate soybean herbicide combinations for annual grass and annual broadleaf weed control in glyphosate-resistant soybeans. 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. On May 22, 2002 preplant incorporated treatments were applied and tilled twice with a field cultivator set to till 3 to 4 inches deep and operated at 5 to 6 mph. The same day Asgrow 'AG 1602' glyphosate-resistant soybeans were planted in 30-inch rows at a seeding rate of 160,000 seeds/A. 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 | May 23 | June 18 | June 24 | July 29 |
|-----------------------------------|--------|----------|-----------|-----------|----------|
| Treatment | PPI | PRE | POST I | POST II | POST III |
| Temperature (F) | | | | | |
| air | 58 | 64 | 82 | 72 | 85 |
| soil (4 inch) | 54 | 57 | 76 | 74 | 84 |
| Relative humidity (%) | 60 | 30 | 40 | 65 | 46 |
| Wind (mph) | SE 10 | NW 10-15 | SE 8-10 | calm | SW 2-5 |
| Sky | cloudy | clear | p. cloudy | p. cloudy | clear |
| Soil moisture | moist | dry | dry | dry | dry |
| Soybean | | | | | |
| leaf no. | - | - | V2 | V3 | R3 |
| height (inch) | - | - | 4 | 6 | 24 |
| Giant foxtail | | | | | |
| leaf no. | - | - | 2 to 4 | 3 to 4 | 4 to 6 |
| height (inch) | - | - | 2 to 4 | 5 to 8 | 4 to 6 |
| no./ft ² | - | - | 14 | 12 | <1 |
| Common lambsquarters | | | | | |
| leaf no. | - | - | 2 to 5 | 2 to 6 | 2 to 5 |
| height (inch) | - | - | 2 to 3 | 2 to 5 | 2 to 3 |
| no./ft ² | - | - | 1 | 1 | <1 |
| Tall waterhemp | | | | | |
| leaf no. | - | - | 2 to 4 | 2 to 5 | 2 to 4 |
| height (inch) | - | - | 1 to 3 | 2 to 4 | 1 to 3 |
| no./ft ² | - | - | <1 | <1 | <1 |
| Rainfall after application (inch) | | | | | |
| 1 week | 0.90 | 0.90 | 0.41 | 0.00 | 2.43 |
| 2 week | 1.03 | 1.03 | 0.00 | 0.00 | 1.81 |
| 3 week | 0.94 | 0.94 | 0.35 | 1.11 | 0.16 |

Low weed densities occurred in this trial. On June 18, prior to POST treatments, [s-metolachlor & metribuzin] provided 88% giant foxtail control. Sulfentrazone + cloransulam + [s-metolachlor & metribuzin] had 89% control. Pendimethalin obtained 86 to 91% control. All other soil applied treatments had 76% or less control. All soil applied herbicide treatments resulted in 90% or greater common lambsquarters control. Sulfentrazone + cloransulam had 83% tall waterhemp control. All other soil applied treatments had 92% or greater control. In September, sulfentrazone + cloransulam + [s-metolachlor & metribuzin] had 86% giant foxtail control. All other herbicide treatments had 96% or greater control. Flumetsulam followed by cloransulam + clethodim + lactofen + NIS + AMS and flumioxazin followed by cloransulam + lactofen + clethodim + NIS + AMS had 85% and 86% common lambsquarters control, respectively. All other treatments had 94% or greater control. Pendimethalin followed by imazamox + cloransulam + NIS + AMS had 75% tall waterhemp control. All other herbicide treatments had 93% or greater control. (Southwest Research and Outreach Center, University of Minnesota, Lamberton).

Table. Herbicide performance in soybeans at Luverne, MN in 2002 (Getting, Gunsolus and Hoverstad).

| Treatment ^a | Rate (lb/A or %) | SETFA | | | CHEAL | | | AMATU | | |
|---|--|-------|-----|------|-------|-----|------|-------|-----|------|
| | | 6/18 | 7/3 | 9/13 | 6/18 | 7/3 | 9/13 | 6/18 | 7/3 | 9/13 |
| -----(% control)----- | | | | | | | | | | |
| <u>Preplant incorporate 2X/POST I (4-inch weeds)</u> | | | | | | | | | | |
| Pend/Immx+Acif+NIS+AMS | 1.0/0.031+0.1875+0.25%+3.4 | 88 | 96 | 98 | 95 | 100 | 99 | 95 | 100 | 100 |
| Pend/Immx+Clms+NIS+AMS | 1.0/0.031+0.01+0.25%+3.4 | 86 | 98 | 100 | 97 | 100 | 99 | 94 | 89 | 75 |
| Pend/[Imep&glyphosate]+NIS+AMS | 1.0/[0.063&0.75]+0.13%+2.6 | 91 | 100 | 100 | 97 | 100 | 99 | 97 | 98 | 98 |
| <u>Preemergence</u> | | | | | | | | | | |
| Sulfentrazone+Clms+[S-meto&Metr] | 0.25+0.031+[0.82&0.2] | 89 | 85 | 86 | 97 | 98 | 94 | 97 | 95 | 93 |
| <u>Preemergence/POST I (4-inch weeds)</u> | | | | | | | | | | |
| Flumetsulam/Clsm+Clet+Lact +NIS+AMS | 0.053/0.016+0.125+0.125 +0.25%+2.5 | 18 | 94 | 96 | 91 | 90 | 85 | 96 | 100 | 100 |
| Sulfentrazone+Clms/[Flfp-P&Fenx] +COC+AMS | 0.25+0.031/[0.156&0.044] +0.625%+2.5 | 75 | 96 | 99 | 96 | 100 | 98 | 93 | 98 | 97 |
| Flumioxazin/Clms+Lact+Clet +NIS+AMS | 0.078/0.016+0.125+0.125 +0.25%+2.5 | 76 | 94 | 96 | 96 | 95 | 86 | 97 | 100 | 99 |
| [S-meto&Metr]/Fome +[Flfp-P&Fenx]+COC+AMS | [0.82&0.2]/0.24 +[0.125&0.035]+1.0%+2.5 | 88 | 99 | 100 | 93 | 100 | 96 | 93 | 100 | 99 |
| Sulfentrazone/Fome+Qufp-P +COC+AMS | 0.21/0.24+0.06 +1.0%+2.5 | 39 | 100 | 98 | 95 | 99 | 99 | 96 | 100 | 100 |
| <u>PreemergencePOST II (6-inch weeds)</u> | | | | | | | | | | |
| Sulfentrazone/glyphosate ² +Clim+AMS | 0.16/0.75+0.016+2.5 | 63 | 100 | 100 | 96 | 100 | 100 | 92 | 100 | 100 |
| Flumetsulam/glyphosate ¹ +AMS | 0.053/0.75+2.5 | 55 | 100 | 100 | 93 | 100 | 100 | 93 | 100 | 100 |
| Sulfentrazone+Clms/glyphosate ¹ +AMS | 0.127+0.016/0.75+2.5 | 58 | 100 | 100 | 90 | 100 | 100 | 83 | 100 | 100 |
| Flumioxazin/glyphosate ² +AMS | 0.0625/0.75+2.5 | 75 | 100 | 100 | 97 | 100 | 99 | 97 | 100 | 99 |
| [S-meto&Metr]/glyphosate ³ +AMS | [0.82&0.2]/0.75+2.5 | 88 | 100 | 100 | 93 | 100 | 100 | 96 | 100 | 100 |
| [Flufenacet&Metr]/glyphosate ² +AMS | [0.15&0.23]/0.56++2.5 | 23 | 100 | 100 | 93 | 97 | 100 | 95 | 100 | 100 |
| Sulfentrazone/glyphosate ² +Clim+AMS | 0.19/0.75+2.5 | 23 | 100 | 100 | 96 | 100 | 100 | 92 | 100 | 100 |
| <u>POST I (4-inch weeds)</u> | | | | | | | | | | |
| Fome+[Flfp-P&Fenx] +Thif+COC+AMS | 0.24+[0.156&0.044] +0.002+1.0%+2.5 | 0 | 100 | 97 | 0 | 100 | 98 | 0 | 100 | 100 |
| <u>POST II (6-inch weeds)/POST III (soybean canopy)</u> | | | | | | | | | | |
| Glyphosate ² +AMS/glyphosate ² +AMS | 0.75+2.5/0.75+2.5 | 0 | 99 | 100 | 0 | 98 | 100 | 0 | 100 | 100 |
| <u>POST II (6-inch weeds)</u> | | | | | | | | | | |
| Glyphosate ¹ +Carf+AMS | 0.75+0.004+2.5 | 0 | 100 | 100 | 0 | 100 | 100 | 0 | 98 | 100 |
| Glyphosate ¹ +Clsm+AMS | 0.75+0.016+2.5 | 0 | 100 | 100 | 0 | 100 | 100 | 0 | 100 | 100 |
| [Imep&glyphosate]+NIS+AMS | [0.063&0.75]+0.13%+2.6 | 0 | 100 | 100 | 0 | 100 | 100 | 0 | 100 | 100 |
| Glyphosate ² +AMS | 0.75+2.5 | 0 | 100 | 100 | 0 | 100 | 99 | 0 | 99 | 100 |
| Weedy Check | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Weed-free check | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | LSD (0.10) | 17.0 | 3.4 | 2.8 | 4.3 | 2.8 | 3.6 | 5.5 | 3.8 | 7.6 |

^a Acif or acifluorfen = Ultra Blazer 2L; Clet or clethodim = Select 2L; Clim or chlorimuron = Classic 75DF; Clsm or cloransulam = FirstRate 84WG; [Flfp-P&Fenx] or [fluazifop-P & fenoxaprop] = Fusion 2.56F; Flms or flumetsulam = Python 85DF; flumioxazin = Valor 50DF; [flufenacet&Metr] or [flufenacet & metribuzin] = Domain 60DF; Fome or fomesafen = Flexstar 1.88L; glyphosate¹ = Glyphomax Plus 3L; glyphosate² = Roundup Ultra Max 3.75L; glyphosate³ = Touchdown IQ 3L; [Imep&glyphosate] or [imazethapyr & glyphosate] = Extreme 2.17L; Immx or imazamox = Raptor 1L; Lact or lactofen = Phoenix 2EC; Pend or pendamethalin = Prowl H₂O 3.8; Qufp-P or quizalofop-P = Assure II 0.88E; [s-meto&metr] or [s-metolachlor & metribuzin] = Boundary 6.5EC; sulfentrazone = Authority 75DF; Thif or thifensulfuron = Harmony GT 75DF; COC = crop oil concentrate; NIS = nonionic surfactant; AMS = spray grade ammonium sulfate.