

Evaluation of herbicide combinations for weed control in soybean at Potsdam, MN in of 2004.

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The objective of this trial was to evaluate herbicide combinations for weed control in soybean in southeastern Minnesota. The research site was a Port Byron silt loam containing 3.2% organic matter with a pH of 6.7 and soil test P and K levels of 66 ppm and 376 ppm, respectively. The previous crop was corn. The field was disked and field cultivated once prior to planting. The soybean variety, Pioneer 92-M00, was planted on May 28, 2004 at a depth of 1.5 inches in 30-inch rows at 150,000 seeds/A. A randomized complete block design with four replications was used. Preplant incorporated (PPI), preemergence (PRE), and postemergence (POST I, II, and III) treatments were applied with a tractor-mounted sprayer, delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on July 1, July 20, and October 4, 2004. Application dates, environmental conditions, and crop and weed stages are listed below.

| Date | May 28 | May 28 | July 1 | July 14 | July 23 |
|-----------------------------------|--------|--------|----------|----------|----------|
| Treatment | PPI | PRE | POST I | POST II | POST III |
| Temperature (F) | | | | | |
| air | 60 | 69 | 77 | 78 | 67 |
| Relative humidity (%) | 61 | 45 | 64 | 53 | 56 |
| Wind (mph) | 5 | 9 | 0 | 12 | 13 |
| Soybean | | | | | |
| stage | -- | seeded | V3 | R1 | R2 |
| height (inches) | -- | -- | 6 | 14.5 | 19 |
| Giant ragweed | | | | | |
| weed density | -- | -- | moderate | moderate | moderate |
| height (inch) | -- | -- | 6 | 20 | 30 |
| Common lambsquarters | | | | | |
| weed density | -- | -- | moderate | moderate | moderate |
| height (inch) | -- | -- | 3 | 8 | 9 |
| Wild proso millet | | | | | |
| weed density | -- | -- | moderate | moderate | moderate |
| height (inch) | -- | -- | 1 | 14 | 22 |
| Rainfall after application (inch) | | | | | |
| week 1 | 1.30 | 1.30 | 2.08 | 1.85 | 0.65 |
| week 2 | 4.32 | 4.32 | 0.93 | 0.63 | 0.58 |
| week 3 | 3.19 | 3.19 | 0.19 | 0.38 | 0.11 |

Several herbicide treatments caused up to 26% injury to soybean. Pendimax / FirstRate + Select + Cobra caused 26% injury to soybean and Valor SX + FirstRate / Phoenix + V-10137 caused 20%. Weed control ratings were generally good with these two treatments however, yields may have been impacted by injury, especially the Pendimax / FirstRate + Select + Cobra which yielded only 27 bushels. Soybeans were chlorotic (July 1 rating) in plots with Pursuit Plus applied PPI.

All sequential and postemergence only herbicide programs provided over 90% control of wild proso millet by July 20 and October 4 ratings. The preemergence only program of Pendimax + Gangster V + Gangster FR provided only 73% to 79% control during the same rating dates, respectively.

Common lambsquarters control was over 95% with most herbicide programs by October 4 rating. Pendimax followed by FirstRate + Select + Cobra provided only 87% control and Flexstar + Fusion + FirstRate gave only 85% control.

Giant ragweed control was very good to excellent for all but one herbicide program by the July 20 and October 4 ratings. However, only five herbicide programs gave season long control, with only three of these providing over 90% control at the July 1 rating.

A comparison of three glyphosate products revealed that there were no differences in weed control or yield. (University of Minnesota Extension Service, Regional Center, Rochester, MN)

Table. Performance of herbicide combinations for weed control in soybean on July 1, July 20, and October 4 at Potsdam, MN in 2004 (Behnken, Breitenbach, Hoverstad and Gunsolus).

| Treatment | Rate | Giant ragweed control | | | Common lambsquarters control | | | Wild proso millet control | | | Soybean injury | Soybean yield |
|--|--|-----------------------|------|------|------------------------------|------|------|---------------------------|------|------|----------------|---------------|
| | | 7/1 | 7/20 | 10/4 | 7/1 | 7/20 | 10/4 | 7/1 | 7/20 | 10/4 | | |
| | (rate/A) | 7/1 7/20 10/4 (%) | | | 7/1 7/20 10/4 (%) | | | 7/1 7/20 10/4 (%) | | | 7/20 (%) | (bu/A) |
| PRE | | | | | | | | | | | | |
| Pendimax + Gangster V + Gangster FR | 3 pts + 3 oz + 0.6 oz | 92 | 91 | 95 | 99 | 96 | 98 | 87 | 73 | 79 | 0 | 33 |
| PPI / POST I | | | | | | | | | | | | |
| Prowl H ₂ O / Raptor + Ultra Blazer + NIS + AMS | 43 oz / 4 oz + 8 oz + 0.25 % v/v + 2.5 lbs | 0 | 92 | 88 | 63 | 93 | 96 | 70 | 92 | 93 | 19 | 34 |
| Pursuit Plus / Rezult B + Rezult G + NIS + AMS | 2.5 pts / 1.6 pts + 1.6 pts + 0.25 % v/v + 2.5 lbs | 75 | 93 | 91 | 96 | 95 | 97 | 87 | 93 | 98 | 8 | 36 |
| Prowl H ₂ O / Extreme+ NIS + AMS | 43 oz / 3 pts + 0.125 % v/v + 2.5 lbs | 0 | 98 | 99 | 65 | 99 | 99 | 76 | 98 | 99 | 6 | 36 |
| PRE / POST I | | | | | | | | | | | | |
| Valor SX + FirstRate / Phoenix + V-10137 + AMS | 3 oz + 0.6 oz / 10 oz + 16 oz + 2 lbs | 96 | 99 | 96 | 98 | 98 | 98 | 92 | 98 | 99 | 20 | 35 |
| Pendimax / FirstRate + Select + Cobra + COC + AMS | 3 pts / 0.3 oz + 8 oz + 6 oz + 1 % v/v + 2.5 lbs | 0 | 89 | 90 | 86 | 85 | 87 | 85 | 97 | 96 | 26 | 27 |
| Boundary/ Flexstar+ Fusion + COC + AMS | 1.5 pts / 16 oz + 8 oz + 1 % v/v + 2.5 lbs | 0 | 94 | 92 | 100 | 98 | 99 | 90 | 99 | 100 | 13 | 38 |
| Authority / Flexstar+ Assure II+ COC + AMS | 5.3 oz / 16 oz + 9 oz + 1 % v/v + 2.5 lbs | 0 | 100 | 96 | 100 | 100 | 100 | 85 | 99 | 100 | 11 | 38 |
| PRE / POST II | | | | | | | | | | | | |
| IntRRo / Roundup WeatherMax + AMS | 2 qts / 22 oz + 2.5 lbs | 0 | 90 | 100 | 64 | 99 | 99 | 83 | 99 | 100 | 0 | 39 |
| Prowl H ₂ O + Outlook/ Roundup WeatherMax + AMS | 1 pt + 12.6 oz / 22 oz + 2.5 lbs | 0 | 90 | 100 | 76 | 99 | 100 | 86 | 99 | 100 | 0 | 38 |
| Gangster V + Gangster FR / Roundup WeatherMax + AMS | 1.5 oz + 0.3 oz / 22 oz + 2.5 lbs | 95 | 97 | 100 | 95 | 100 | 100 | 81 | 100 | 100 | 0 | 44 |
| Boundary/ Touchdown Total + AMS | 1.25 pts / 24 oz + 2.5 lbs | 0 | 90 | 97 | 81 | 100 | 99 | 83 | 100 | 100 | 0 | 41 |
| Valor SX / Roundup WeatherMax + AMS | 2 oz / 22 oz + 2.5 lbs | 0 | 90 | 100 | 83 | 100 | 100 | 75 | 100 | 100 | 0 | 39 |
| Valor SX + Python / Roundup WeatherMax + AMS | 1.5 oz + 0.5 oz / 22 oz + 2.5 lbs | 55 | 91 | 99 | 100 | 99 | 100 | 77 | 99 | 100 | 0 | 41 |
| Authority / Roundup WeatherMax + AMS | 4 oz / 22 oz + 2.5 lbs | 0 | 90 | 97 | 100 | 99 | 100 | 76 | 99 | 100 | 0 | 39 |
| POST I | | | | | | | | | | | | |
| Flexstar+ Fusion + Harmony GT + COC + AMS | 16 oz + 10 oz + 0.04 oz + 1 % v/v + 2.5 lbs | 0 | 95 | 93 | 0 | 94 | 93 | 0 | 96 | 100 | 16 | 35 |
| Flexstar+ Fusion + FirstRate + COC + AMS | 16 oz + 10 oz + 0.3 oz + 1 % v/v + 2.5 lbs | 0 | 100 | 99 | 0 | 68 | 85 | 0 | 97 | 97 | 11 | 37 |
| POST I / POST III | | | | | | | | | | | | |
| Roundup WeatherMax + AMS / Roundup WeatherMax + AMS | 22 oz + 2.5 lbs / 22 oz + 2.5 lbs | 0 | 100 | 100 | 0 | 95 | 100 | 0 | 96 | 100 | 0 | 43 |
| POST II | | | | | | | | | | | | |
| GF 1279 + FirstRate + AMS | 24 oz + 0.3 oz + 2.5 lbs | 0 | 90 | 100 | 0 | 99 | 99 | 0 | 99 | 100 | 0 | 42 |
| ClearOut 41 Plus + AMS | 32 oz + 2.5 lbs | 0 | 90 | 97 | 0 | 99 | 99 | 0 | 99 | 100 | 0 | 43 |
| GF 1279 + AMS | 24 oz + 2.5 lbs | 0 | 90 | 99 | 0 | 99 | 99 | 0 | 99 | 100 | 0 | 40 |
| Roundup WeatherMax + AMS | 22 oz + 2.5 lbs | 0 | 90 | 97 | 0 | 99 | 100 | 0 | 99 | 100 | 0 | 41 |
| Weedy | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Weed-Free | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 41 |
| LSD (0.05) | | 4 | 6 | 6 | 8 | 4 | 3 | 9 | 3 | 5 | 2 | 6 |

NIS = AGRI-DEX nonionic surfactant, Helena, AMS = spray grade ammonium sulfate, Helena; and COC = crop oil concentrate, Helena.