

Effect of adjuvants on weed control in imidazolinone tolerant corn at Lamberton, MN in 2001.

Getting, Jodie K. and Bruce D. Potter. The objective of this study was to evaluate adjuvants tank mixed with either [imazethapyr & imazapyr] or [dicamba & diflufenzopyr & nicosulfuron] for annual grass and annual broadleaf control in corn. This study was conducted on a Normania loam soil containing 4.4% organic matter, pH 6.2 and soil test P and K levels of 60 and 422 lb/A, respectively. A randomized complete block design with four replications and a plot size of 10 by 30 ft was used. The site was planted to oats in 2000 and was fall chiseled. The area was fertilized with 180 lb/A of nitrogen as urea. On May 17, 2001, Northrup King 'N42-B7' imidazolinone tolerant/glufosinate resistant field corn was planted in 30-inch rows at a seeding rate of 33,000 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 | June 16 |
| Treatment | POST |
| Temperature (F) | |
| air | 59 |
| soil (4 inch) | 62 |
| Relative humidity (%) | 88 |
| Wind (mph) | W 2-5 |
| Sky | clear |
| Soil moisture | dry |
| Corn | |
| leaf no. | 3-collar |
| height (inch) | 5 |
| Yellow foxtail | |
| leaf no. | 2 to 4 |
| height (inch) | 1 to 4 |
| no./ft ² | 45 |
| Common lambsquarters | |
| leaf no. | 1 to 3 |
| height (inch) | 1 to 2 |
| no./ft ² | 6 |
| Redroot pigweed | |
| leaf no. | 1 to 2 |
| height (inch) | 0.25 to 1.0 |
| no./ft ² | 3 |
| Rainfall after application (inch) | |
| 1 week | 0.01 |
| 2 week | 0.33 |
| 3 week | 0.17 |

All treatments provided 91% or less control of yellow foxtail. The reduced rate of [Imep&Impr] with Impressive DB or AMS + NIS providing less control than the full rate of [Imep&Impr] and reduced rate with other adjuvants. Similarly, the reduced rate of [Dica&SAN1269H&Nico] with AMS+NIS provided less foxtail control than the full rate or other adjuvant combinations. Most rates and adjuvant combinations of [Dica&SAN1269H&Nico] provided similar common lambsquarters and redroot pigweed control. The reduced rate of [Dica&SAN1269H&Nico] + AMS + NIS provide less pigweed control than other adjuvants and the higher rate. All rates and adjuvant combinations of [Imep&Impr] provided similar common lambsquarters control and redroot pigweed control with the exception of Basic Blend reducing pigweed control. Reduced rates tended to provide less control than the higher rate of [Dica&SAN1269H&Nico] and most [Dica&SAN1269H&Nico] adjuvant combinations. The full rate of [Imep&Impr] and Nico + AMS + COC treatments yielded less but did not appear to be related to weed control. (Southwest Research and Outreach Center, University of Minnesota, Lamberton).

Table. Effect of adjuvants on weed control in imidazolinone tolerant corn at Lamberton, MN in 2001 (Getting and Potter).

| Treatment ^a | Rate (lb/A or %) | Injury | | SETLU | | | CHEAL | | | AMARE | | | Yield (bu/A) ^b |
|---|-----------------------------------|-----------------------|------|-------|-----|------|-------|-----|------|-------|-----|------|------------------------------|
| | | 6/25 | 6/28 | 6/28 | 7/9 | 9/11 | 6/28 | 7/9 | 9/11 | 6/28 | 7/9 | 9/11 | |
| | | -----(% control)----- | | | | | | | | | | | |
| POST (3-collar corn) | | | | | | | | | | | | | |
| [Imep&Impr]+AMS+NIS | [0.021&0.007]+2.0+0.25% | 0 | 0 | 86 | 85 | 80 | 88 | 91 | 91 | 91 | 91 | 91 | 150 |
| [Imep&Impr]+Basic Blend | [0.021&0.007]+1.0% | 2 | 0 | 88 | 92 | 89 | 91 | 95 | 92 | 86 | 84 | 86 | 149 |
| [Imep&Impr]+Impressive DB | [0.021&0.007]+2.25 | 3 | 0 | 88 | 86 | 84 | 88 | 94 | 90 | 96 | 91 | 90 | 152 |
| [Imep&Impr]+AMS+COC | [0.021&0.007]+2.0+1.0% | 0 | 0 | 89 | 92 | 90 | 93 | 94 | 93 | 90 | 88 | 88 | 144 |
| [Dica&SAN 1269H&Nico] +AMS+NIS | [0.068&0.027&0.016] +2.0+0.25% | 1 | 0 | 83 | 88 | 83 | 86 | 96 | 95 | 97 | 98 | 85 | 145 |
| [Dica&SAN 1269H&Nico] +Basic Blend | [0.068&0.027&0.016] +1.0% | 0 | 0 | 91 | 89 | 87 | 93 | 97 | 94 | 97 | 96 | 94 | 145 |
| [Dica&SAN 1269H&Nico] +Impressive DB | [0.068&0.027&0.016] +2.25 | 0 | 0 | 86 | 92 | 89 | 89 | 95 | 93 | 95 | 95 | 94 | 160 |
| [Dica&SAN 1269H&Nico] +AMS+COC | [0.068&0.027&0.016] 2.0+1.0% | 0 | 0 | 87 | 91 | 89 | 89 | 97 | 96 | 97 | 97 | 96 | 148 |
| [Imep&Impr]+AMS+NIS | [0.042&0.014]+2.0+2.5% | 0 | 0 | 93 | 93 | 91 | 91 | 95 | 93 | 87 | 90 | 92 | 139 |
| [Dica&SAN 1269H&Nico] +AMS+NIS | [0.137&0.053&0.031] +2.0+0.25% | 1 | 0 | 86 | 88 | 86 | 91 | 97 | 96 | 97 | 97 | 95 | 154 |
| [Nico&Rims]+AMS+COC | [0.023&0.012]+2.0+1.0% | 3 | 0 | 93 | 91 | 88 | 89 | 90 | 93 | 95 | 94 | 93 | 153 |
| Nico+AMS+COC | 0.031+2.0+1.0% | 4 | 0 | 89 | 91 | 89 | 80 | 89 | 91 | 98 | 91 | 93 | 140 |
| Weedy Check | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| Weed-free | | 0 | 0 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 154 |
| | LSD (0.10) | 2.1 | ns | 4.3 | 4.6 | 5.6 | 4.8 | 3.1 | 3.4 | 5.7 | 5.7 | 4.7 | 12.5 |

^a [Dica&SAN 1269H&Nico] = Celebrity Plus 75.3DF; [Imep&Impr] = Lightning 70SG; Nico = Accent 75DF; [Nico&Rims] = Steadfast 75DF; COC = 83% paraffinic oil + 17% emulsifier; Basic Blend = surfactant blend + ammoniated salts; Impressive DB = dry blended ammonium sulfate + NIS; NIS = 90% non-ionic surfactant; AMS = ammonium sulfate.

^b Yield adjusted to 15.5% moisture.