

Evaluation of HPPD weed management systems in field corn at Rochester, MN, in 2007.

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The objective of this trial was to evaluate HPPD herbicide systems for weed control in field corn in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.9 and soil test P and K levels of 31 ppm and 132 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 13, at a rate of 99-23-60-24 (N-P-K-S). The area was side dressed with an additional 30 lb/A of N on June 7. The field was spring disked twice and field cultivated once prior to planting. The corn hybrid, NK N38B4, was planted on May 3, 2007, at a depth of 1.5 inches in 30 inch rows at 32,000 seeds per acre. A randomized complete block design was used with four replications. Preemergence (PRE) and postemergence (POST I) 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 May 22, June 4, June 11, June 21, July 2, and August 8. Application dates, environmental conditions, and weed stages are listed below. The center two rows of each plot were machine harvested on September 26, 2007.

| Date | May 3 | June 1 |
|---|--------------|---------------|
| Treatment | PRE | POST I |
| Temperature (F) | | |
| Air | 69 | 70 |
| soil | 64.4 | 68.9 |
| Relative Humidity (%) | 47 | 70 |
| Wind (mph) | 15 | 12 |
| Soil moisture | adequate | excessive |
| Corn | | |
| stage | -- | 5 collar |
| height (inch) | -- | 9.5 |
| Velvetleaf | | |
| weed density (ft ²) | -- | 3.5 |
| height (inch) | -- | 2.9 |
| Common Lambsquarters | | |
| weed density (ft ²) | -- | 33.6 |
| height (inch) | -- | 3.8 |
| Common Waterhemp | | |
| weed density (ft ²) | -- | 16.4 |
| height (inch) | -- | 2.0 |
| Giant Foxtail | | |
| weed density (ft ²) | -- | 98.5 |
| height (inch) | -- | 4.4 |
| Rainfall after each application (inch) | | |
| week 1 | 0.52 | 0.44 |
| week 2 | 0.34 | 0.00 |
| week 3 | 1.35 | 2.97 |

CONCLUSIONS

All conclusions are based on the final ratings taken on August 8, 2007. All three herbicides Callisto, Impact, and Laudis provided exceptional broadleaf weed control. Callisto and Laudis achieved statistically higher control of velvetleaf, common waterhemp, and lambsquarter when compared to Impact. Both Impact and Laudis provided statistically higher giant foxtail control when compared to Callisto.

Crop injury was not observed throughout the duration of this trial.

Table 1. Performance of HPPD herbicide systems for giant foxtail control in field corn on May 22, June 4, June 11, June 21, July 2, and August 8 at Rochester, MN, in 2007.

| Treatment | Rate (rate/A) | Giant Foxtail Control | | | | | |
|---|--|-----------------------|----------|----------|----------|----------|----------|
| | | 5/22 | 6/4 | 6/11 | 6/21 | 7/2 | 8/8 |
| Weedy | | 0 | 0 | 0 | 0 | 0 | 0 |
| Weed Free | | 100 | 100 | 100 | 100 | 100 | 100 |
| PRE / POST III | | | | | | | |
| Dual II Magnum / Impact + atrazine + MSO + 28%N | 1 pt / 0.5 oz +16 oz + 1% v/v + 2% v/v | 33 | 33 | 92 | 87 | 89 | 86 |
| Dual II Magnum / Callisto + atrazine + COC + 28%N | 1 pt / 2 oz + 16 oz + 1% v/v + 2% v/v | 33 | 33 | 81 | 71 | 69 | 68 |
| Dual II Magnum / Laudis + atrazine + MSO + 28% N | 1 pt / 2 oz + 16 oz + 1.5 pt + 2% v/v | 33 | 33 | 90 | 85 | 84 | 83 |
| LSD (P=0.10) | | 9 | 9 | 3 | 5 | 6 | 4 |

Table 2. Performance of HPPD herbicide systems for velvetleaf control in field corn on May 22, June 4, June 11, June 21, July 2, and August 8 at Rochester, MN, in 2007.

| Treatment | Rate (rate/A) | Velvetleaf Control | | | | | |
|---|--|--------------------|----------|----------|----------|----------|----------|
| | | 5/22 | 6/4 | 6/11 | 6/21 | 7/2 | 8/8 |
| Weedy | | 0 | 0 | 0 | 0 | 0 | 0 |
| Weed Free | | 100 | 100 | 100 | 100 | 100 | 100 |
| PRE / POST III | | | | | | | |
| Dual II Magnum / Impact + atrazine + MSO + 28%N | 1 pt / 0.5 oz +16 oz + 1% v/v + 2% v/v | 25 | 25 | 96 | 91 | 94 | 90 |
| Dual II Magnum / Callisto + atrazine + COC + 28%N | 1 pt / 2 oz + 16 oz + 1% v/v + 2% v/v | 25 | 25 | 99 | 98 | 99 | 98 |
| Dual II Magnum / Laudis + atrazine + MSO + 28% N | 1 pt / 2 oz + 16 oz + 1.5 pt + 2% v/v | 27 | 27 | 95 | 98 | 97 | 95 |
| LSD (P=0.10) | | 7 | 7 | 3 | 2 | 2 | 3 |

Table 3. Performance of HPPD herbicide systems for common waterhemp control in field corn on May 22, June 4, June 11, June 21, July 2, and August 8 at Rochester, MN, in 2007.

| Treatment | Rate (rate/A) | Common waterhemp control | | | | | |
|---|--|--------------------------|-----|------|------|-----|-----|
| | | 5/22 | 6/4 | 6/11 | 6/21 | 7/2 | 8/8 |
| Weedy | | 0 | 0 | 0 | 0 | 0 | 0 |
| Weed Free | | 100 | 100 | 100 | 100 | 100 | 100 |
| PRE / POST III | | | | | | | |
| Dual II Magnum / Impact + atrazine + MSO + 28%N | 1 pt / 0.5 oz +16 oz + 1% v/v + 2% v/v | 50 | 50 | 92 | 90 | 92 | 90 |
| Dual II Magnum / Callisto + atrazine + COC + 28%N | 1 pt / 2 oz + 16 oz + 1% v/v + 2% v/v | 50 | 50 | 98 | 97 | 99 | 99 |
| Dual II Magnum / Laudis + atrazine + MSO + 28% N | 1 pt / 2 oz + 16 oz + 1.5 pt + 2% v/v | 47 | 47 | 98 | 98 | 97 | 98 |
| | LSD (0.10) | 15 | 15 | 3 | 4 | 3 | 1 |

Table 4. Performance of HPPD herbicide systems for common lambsquarters control in field corn on May 22, June 4, June 11, June 21, July 2, and August 8 at Rochester, MN, in 2007.

| Treatment | Rate (rate/A) | Common lambsquarters Control | | | | | |
|---|--|------------------------------|-----|------|------|-----|-----|
| | | 5/22 | 6/4 | 6/11 | 6/21 | 7/2 | 8/8 |
| Weedy | | 0 | 0 | 0 | 0 | 0 | 0 |
| Weed Free | | 100 | 100 | 100 | 100 | 100 | 100 |
| PRE / POST III | | | | | | | |
| Dual II Magnum / Impact + atrazine + MSO + 28%N | 1 pt / 0.5 oz +16 oz + 1% v/v + 2% v/v | 24 | 24 | 93 | 91 | 96 | 94 |
| Dual II Magnum / Callisto + atrazine + COC + 28%N | 1 pt / 2 oz + 16 oz + 1% v/v + 2% v/v | 24 | 24 | 94 | 99 | 100 | 99 |
| Dual II Magnum / Laudis + atrazine + MSO + 28% N | 1 pt / 2 oz + 16 oz + 1.5 pt + 2% v/v | 25 | 25 | 95 | 98 | 100 | 99 |
| | LSD (P=0.10) | 5 | 5 | 3 | 2 | 2 | 2 |