Comparison of Original and New Generic Herbicides, 2002
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# COMPARISON OF ORIGINAL AND NEW GENERIC HERBICIDE FORMULATIONS, 2002.

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The patent has expired on several of the well established original herbicides that are widely used on sugarbeet in North Dakota and Minnesota. A few companies are planning to market generic formulations of these herbicides in 2003. The objective of these experiments was to compare sugarbeet yield, sugarbeet injury and weed control from original and generic formulations of the herbicides.

Dates and conditions for the locations of the experiments are provided in Tables 1 and 2. Herbicides were applied to the center four rows of six-row plots in 17 gpa water at 40 psi through 8002 nozzles. Sugarbeet injury and weed control were evaluated visually on July 1 and July 19 at Crookston; June 28 at Fargo; July 6 at St. Thomas; July 9 and August 16 at Raymond; and July 10 and August 15 at Maynard. Sugarbeet was harvested October 2 at St. Thomas, September 12 at Raymond and September 13 at Maynard.

AgValue desmedipham & phenmedipham applied three times at conventional rates gave less sugarbeet injury, less Amaranthus spp. (pigweed) control and less control of common lambsquarters than Betamix applied three times at conventional rates (Table 3). AgValue desmedipham applied three times at conventional rates gave less sugarbeet injury and similar weed control compared to Betanex applied three times at conventional rates.

Betamix + UpBeet + Stinger + MSO at the micro-rate applied four times gave weed control and sugarbeet injury similar to AgValue desmedipham & phenmedipham + UpBeet + Stinger + MSO at the micro-rate applied four times (Table 3). Substituting AgValue clopyralid for Stinger in the micro-rate had no significant influence on sugarbeet injury or weed control. Betanex + UpBeet + Stinger + MSO at the micro-rate gave weed control and sugarbeet injury similar to AgValue desmedipham + Upbeet + AgValue clopyralid + MSO at the micro-rate.

Plots at St. Thomas were seeded to Roundup Ready sugarbeet and were treated with Roundup Ultra Max at 3 pt/A on June 20 to control all weeds in the plots. The fact that yield from treated plots was similar to yield from the plots treated with Roundup alone suggests that none of the sugarbeet herbicide treatments caused sufficient sugarbeet injury to reduce yield (Table 3).

Herbicide treatments at Maynard and Raymond caused only 2 to 9% sugarbeet injury (Table 4). All of the herbicide treatments gave less Amaranthus spp. (pigweed) control than hand weeding. Several treatments gave control of common lambsquarters similar to hand weeding and all herbicide treatments gave similar control of common lambsquarters. Betamix applied four times at conventional rates gave Amaranthus spp. control similar to AgValue desmedipham & phenmedipham applied four times at conventional rates. Betanex applied four times at conventional rates gave greater control of Amaranthus spp. compared to AgValue desmedipham. Progress applied four times at conventional rates gave weed control and sugarbeet injury similar to AgValue desmedipham & phenmedipham + Etho SC applied four times at conventional rates. Etho SC was mixed with AgValue desmedipham & phenmedipham so that the proportion of active ingredients would be the same as in Progress.

Adding Nortron at 4 fl oz to the first two of four applications of conventional rates of Betamix resulted in improved control of Amaranthus spp. (Table 4). Adding Nortron at 4 fl oz to the first two of four applications of conventional rates of Betanex did not improve control of Amaranthus spp. Betamix + Stinger + UpBeet + MSO at the micro-rate applied four times gave weed control similar to AgValue desmedipham & phenmedipham + Stinger + UpBeet + MSO at the micro-rate applied four times.

**Table 1. Conditions at application for new formulation experiment at Crookston, Fargo and St. Thomas, 2002.**

| | | | | | |
|---|---|---|---|---|---|
| **CROOKSTON** | | | | | |
| Date | May 14 | June 3 | June 12 | June 18 | June 24 |
| Time of day | seeded | 1:15 P | 9:30 A | 11:00 A | 3:00 P |
| Air temp (F) | | 60 | 62 | 72 | 86 |
| Relative humidity (%) | | 34 | 52 | 52 | 40 |
| 6-inch soil temp (F) | | 55 | 61 | 61 | 80 |
| Soil moisture | good | fair | good | good | good |
| Sugarbeet (Crystal 999) | | cot-2 lf | 4 lf | 4-6 lf | 6-8 lf |
| Redroot piqweed | | cot-1 lf | 2-8 lf | 2 lf-1.5 inch | 2-5 inch |
| Common lambsquarters | | 2-6 lf | 4 lf-1.5 inch | 1-2 inch | 2-4 inch |
| Counter 15G applied MIF at planting | | | | | |
| **FARGO** | | | | | |
| Date | April 26 | May 28 | June 4 | June 12 | June 18 |
| Time of day | seeded | 11:30 A | 9:30 A | 5:00 P | 1:30 P |
| Air temp (F) | | 76 | 63 | 70 | 83 |
| Relative humidity (%) | | 40 | 37 | 35 | 61 |
| 6-inch soil temp (F) | | 60 | 57 | 67 | 69 |
| Soil moisture | good | good | good | good | good |
| Sugarbeet (Beta 2088) | | cot-2 lf | 2-4 lf | 4-6 lf | 6-10 lf |
| Redroot piqweed | | cot-1 lf | cot-2 lf | 2 lf-1 inch | 2 lf-3 inch |
| Common lambsquarters | | cot-6 lf | cot-6 lf | 6 lf-2 inch | 2-4 inch |
| **ST. THOMAS** | | | | | |
| Date | May 2 | May 29 | June 6 | June 14 | June 28 |
| Time of day | seeded | 9:00 A | 10:30 A | 11:00 A | 11:00 A |
| Air temp (F) | | 75 | 70 | 66 | 78 |
| Relative humidity (%) | | 51 | 36 | 52 | 50 |
| 6-inch soil temp (F) | | 58 | 60 | 57 | 72 |
| Soil moisture | good | fair | good | good | good |
| Sugarbeet (H. Horizon RR) | | cotyl | 2-4 lf | 4-6 lf | 6-10 lf |
| Counter 15G applied MIF at planting | | | | | |
| Roundup at 3 qt/A applied June 20 broadcast | | | | | |
| Lorsban 4E at 1 qt/A applied June 28 broadcast | | | | | |
| Harvested October 2 | | | | | |

**Table 2. Conditions at application for new formulation experiment at Maynard and Raymond, 2002.**

| | | | | | |
|---|---|---|---|---|---|
| **MAYNARD** | | | | | |
| Date | May 8 | May 23 | May 30 | June 6 | June 13 |
| Time of day | seeded | noon | 2:30 P | 3:30 P | 4:00 P |
| Air temp (F) | | 72 | 82 | 89 | 86 |
| Sugarbeet (ACH 999) | | cotyl | cot-2 lf | 2-4 lf | 4-6 lf |
| Amaranthus spp. | | cotyl | cot-0.5 inch | cot-2 inch | cot-4 inch |
| Common lambsquarters | | cotyl | cot-0.5 inch | cot-1.5 inch | cot-3 inch |
| **RAYMOND** | | | | | |
| Date | May 9 | May 27 | June 4 | June 11 | June 18 |
| Time of day | seeded | 2:00 P | 6:00 P | 8:30 P | 3:50 P |
| Air temp (F) | | 82 | 78 | 77 | 89 |
| Sugarbeet (Beta 4930) | | cotyl | cot-2 lf | 2-4 lf | 4-6 lf |
| Amaranthus spp. | | cotyl | cot-0.5 inch | cot-1.5 inch | cot-3.5 inch |
| Common lambsquarters | | cotyl | cot-0.5 inch | cot -2 inch | cot-4 inch |

**Table 3. Comparison of Bayer and AgValue herbicide formulations at Crookston, Fargo and St. Thomas, 2002. (Dexter and Luecke)**

| Treatment | Rate | Crook. St. Thom. Sugb. inj | Crook. Fargo Rrpw cntl | Crook. Fargo Colq Cntl | St. Thom[1] Extract sucrose |
|---|---|---|---|---|---|
| | fl oz or oz/A | % | % | % | lb/a |
| Weeded with Glyphosate only[1] | | - | - | - | 5030 |
| Betamix (3x) 25/32/32 | | 17 | 84 | 100 | 4890 |
| AgValue des & phen (3x) 25/32/32 | | 4 | 80 | 95 | 5160 |
| Betanex (3x) 25/32/32 | | 21 | 86 | 98 | 5290 |
| AgValue desmedipham (3x) 25/32/32 | | 2 | 86 | 97 | 5730 |
| Betamix + UpBeet + Stinger + MSO (4x) | 8 + 0.125 + 1.3 + 1.5% (4x) | 12 | 99 | 100 | 5580 |
| AgValue desmedipham & phenmedipham + UpBeet + Stinger + MSO (4x) | 8 + 0.125 + 1.3 + 1.5% (4x) | 14 | 98 | 98 | 5370 |
| AgValue des & phen + UpBeet + AgValue clopyralid + MSO (4X) | 8 + 0.125 + 1.3 + 1.5% (4x) | 17 | 98 | 99 | 5230 |
| Betanex + UpBeet + Stinger + MSO (4x) | 8 + 0.125 + 1.3 + 1.5% (4x) | 12 | 99 | 99 | 5720 |
| AgValue desmed + UpBeet + AgValue clopyralid + MSO (4x) | 8 + 0.125 + 1.3 + 1.5% | 16 | 97 | 100 | 5010 |
| | LSD (0.05) | 6 | 4 | 4 | NS |

[1]Roundup was broadcast over the Roundup Ready sugarbeet at St. Thomas to eliminate weed competition.

**Table 4. Comparison of Bayer and AgValue herbicide formulations at Maynard and Raymond, MN, 2002. (Bredehoeft)**

| Treatment | Rate | 2 loc. Sugb inj | 2 loc Amaranthus[1] spp. cntl | Raymond Colq cntl | 2 loc Extrac sucrose |
|---|---|---|---|---|---|
| | fl oz or oz/A | % | % | % | lb/a |
| Hand weeded[2] | | 0 | 99 | 98 | 4110 |
| Betamix (4x) 16/20/20/24 | | 4 | 76 | 94 | 3940 |
| Betanex (4x) 16/20/20/24 | | 2 | 83 | 90 | 4420 |
| Progress (4x) 11/14/14/17 | | 5 | 85 | 93 | 4210 |
| Betamix + Nortron (2x) 16+4/20+4/ + Betamix (2x) | 20/24 | 9 | 83 | 93 | 3770 |
| Betanex + Nortron (2x) 16+4/20+4/ + Betanex (2x) | 20/24 | 3 | 89 | 96 | 4060 |
| AgValue des & phen (4x) 16/20/20/24 | | 6 | 79 | 94 | 3660 |
| AgValue desm (4x) 16/20/20/24 | | 4 | 76 | 92 | 3620 |
| AgValue des & phen + Etho SC (4x) | 10 + 1.6/13 + 2.1/13 + 2.1/16 + 2.6 | 6 | 84 | 91 | 3460 |
| Betamix + Stinger + UpBeet + MSO (4x) | 8 + 1.25 + 0.125 + 1.5% (4x) | 4 | 78 | 95 | 4250 |
| Betamix + AgValue clopyralid + UpB + MSO (4x) | 8 + 1.25 + 0.125 + 1.5% (4x) | 4 | 85 | 96 | 4160 |
| AgValue des & phen + Stinger + UpBeet + MSO (4x) | 8 + 1.25 + 0.125 + 1.5% (4x) | 6 | 81 | 94 | 4490 |
| AgValue des & phen + clopy + UpB + MSO (4x) | 8 + 1.25 + 0.125 + 1.5% (4x) | 2 | 85 | 89 | 4060 |
| | LSD (0.05) | 6 | 7 | 8 | NS |

[1]Amaranthus spp. = pigweed species

[2]Herbicide - treated plots were not hand weeded.