

## NEW AND GENERIC FORMULATIONS OF OLD SUGARBEET HERBICIDES

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The patent has expired on several sugarbeet herbicides including Nortron, Betamix, Betanex, Progress, Select and Stinger. Also, Bayer CropSciences is developing new formulations of Betamix, Betanex, and Progress which have approximately double the concentration of active ingredients compared to the old formulations. The objective of these experiments was to compare weed control, sugarbeet injury and sugarbeet yield from various formulations of the herbicides.

Dates and conditions for the three locations are in [Table 1](#). 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. Sugarbeet was harvested from the center two rows at St. Thomas on September 30. Plots at St. Thomas were seeded to Hillehog 8277 Roundup Ready sugarbeet and were treated with Roundup UltraMax at 2 qt/A on June 19. Plots were hand weeded, hand thinned and cultivated with a row-crop cultivator. The purpose of the plots at St. Thomas was to determine the influence of herbicides treatments on nearly weed-free sugarbeet.

Weed control and sugarbeet injury were greater from POST micro-rate alone and PRE ethofumesate formulations followed by POST micro-rate than from PRE ethofumesate formulations alone ([Table 2](#)). Weed control and sugarbeet injury were similar among the three formulations of ethofumesate. Sugarbeet yield was similar among plots treated with the three formulations of ethofumesate alone and among plots treated with ethofumesate followed by POST micro-rate. This suggests that the three formulations of ethofumesate affected sugarbeet similarly.

Weed control, sugarbeet injury, and sugarbeet yield were similar from plots treated with the four formulations of desmedipham ([Table 3](#)) or desmedipham & phenmedipham ([Table 4](#)).

Sugarbeet injury, sugarbeet yield, and common lambsquarters control were similar from plots treated with the three formulations of desmedipham & phenmedipham & ethofumesate ([Table 5](#)). Des-Phen-Etho gave better control of pigweed species than Progress. Des-Phen-Etho + UpBeet + Stinger + MSO gave better control of pigweed species than Progress + UpBeet + Stinger + MSO or Progress-IF + UpBeet + Stinger + MSO.

**Table 1. Conditions at application for formulation comparison experiments at Crookston, Fargo and St. Thomas, 2003.**

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**CROOKSTON**

Date	4/29	5/21	5/28	6/5	6/13
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Time of day	5:30P	9:00-11:00A	9:00-11:00A	9:00-11:00A	9:00-10:00A
Air temp (F)	60	58	60	70	70
Relative humidity (%)	17	46	20	55	60
6-inch soil temp (F)	46	47	54	54	58
Soil moisture	good	good	good	good	good
Sugarbeet (Beta 6225)	seeded	cot	2-4 lf	4-6 lf	8-10 lf
Pigweed spp.	-	cot	2 lf	4-5 lf	5-6 lf
Foxtail spp.	-	1-2 lf	3 lf	4-6 lf	6-8 lf

### FARGO

Date	5/13	6/3	6/11	6/18	6/30
Time of day	3:00P	8:00-10:00A	9:00-11:00A	9:00-11:00A	10:00-11:00A
Air temp (F)	70	57	70	78	76
Relative humidity (%)	28	51	57	28	57
6-inch soil temp (F)	50	52	54	62	56
Soil moisture	good	good	good	good	good
Sugarbeet (VDH 46140)	seeded	2 lf	4-6 lf	8-10 lf	12-14 lf
Pigweed spp.	-	cot-2 lf	4-6 lf	8 lf	10 inch
Foxtail spp.	-	2-4 lf	6-7 lf	12 inch	heading

### ST. THOMAS

Date	5/1	5/22	5/29	6/6	6/16
Time of day	7:00P	10:00-11:30A	9:00-11:00A	9:30-11:30A	noon-1:00P
Air temp (F)	62	64	80	71	77
Relative humidity (%)	11	50	34	55	67
6-inch soil temp (F)	54	49	54	60	65
Soil moisture	good	good	good	good	good
Sugarbeet (Hilles. 8277RR)	seeded	cotyl	2-4 lf	6 lf	8-10 lf

Counter 15G at 12 lb/A applied at all locations.

Roundup UltraMax at 2 qt/A, cultivation and hand weeding used for general weed control at St. Thomas.

Sugarbeet at St. Thomas harvested Sept. 30.

**Table 2. Comparison of Bayer, United Phosphorus and Ag Value formulations of ethofumesate at Crookston, Fargo, and St. Thomas.**

Treatment	Rate	3 loc. Sugb inj	Crook Fargo Pigwd spp cntl	Crook Fargo Fxtl spp. cntl	St. Thom Extrac. sucrose <sup>1</sup>
	fl oz	%	%	%	lb/A
Nortron (PRE)	112	0	91	81	7360
Ethotron (PRE)	112	1	89	79	7210
Etho (PRE)	112	2	86	75	6910
Nortron (PRE) fb. <sup>3</sup> micro-rate <sup>2</sup> (3x)	96	15	100	100	6940
Nortron (PRE) fb. micro-rate <sup>2</sup> (4x)	96	16	100	100	6520
Ethotron (PRE) fb. micro-rate <sup>2</sup> (3x)	96	14	100	100	6810
Etho (PRE) fb. micro-rate <sup>2</sup> (3x)	96	17	100	100	6560
Micro-rate <sup>2</sup> (4x)		14	99	100	6670
LSD (0.05)		5	6	6	680

<sup>1</sup>Yield of plots maintained weed-free throughout the season.

<sup>2</sup>Micro-rate = POST Betamix + UpBeet + Stinger + Select + MSO at 0.5 pt/A + 0.125 oz/A + 1.3 fl oz/A + 2 fl oz/A + 1.5%

<sup>3</sup>fb - followed by

**Table 3. Comparison of Bayer, United Phosphorus and AgValue formulations of desmedipham at Crookston, Fargo, and St. Thomas.**

Treatment	Rate	3 loc Sugb inj	Fargo Crook Pigwd spp	Crook Colq cntl	St. Thom Extrac. Sucrose <sup>2</sup>
	fl oz or oz/A	%	%	%	lb/A
Betanex (3x)	24/32/32	9	100	100	7160
Betanex-IF <sup>1</sup> (3x)	12/16/16	9	98	99	7040
Alphanex (3x)	24/32/32	11		99	6790
	24/32/32	6	97	98	7100

Des (3x)					
Bnex + UpBeet + Sting + MSO (3x) 8 + 0.125 + 1.3 + 1.5%	12	98	99	6950	
Bnex-IF + UpB + Sting + MSO (3x) 4 + 0.125 + 1.3 + 1.5%	7	99	100	7240	
Alphanex + UpB + Sting + MSO (3x) 8 + 0.125 + 1.3 + 1.5%	8	99	100	7410	
Des + UpB + Sting + MSO (3x) 8 + 0.125 + 1.3 + 1.5%	8	100	100	7340	
LSD (0.05)	NS	NS	NS	NS	

<sup>1</sup>Isophorone - free formulation, more concentrated.

<sup>2</sup>Yield of plots maintained weed-free throughout the season.

**Table 4. Comparison of Bayer, United Phosphorus and AgValue formulations of desmedipham & phenmedipham at Crookston, Fargo and St. Thomas.**

Treatment	Rate	3 loc Sugb inj	Fargo Crook Pigwd spp cntl	Crook Colq cntl	St. Thom Extrac sucrose <sup>2</sup>
	fl oz or oz/A	%	%	%	lb/A
Betamix (3x)	24/32/32	9	97	100	7310
Betamix-IF <sup>1</sup> (3x)	12/16/16	7	98	100	7230
Phen-Des (3x)	24/32/32	10	97	100	6620
D-P Mix (3x)	24/32/32	10	94	100	7020
Bmix + UpBeet + Sting + MSO (3x) 8 + 0.125 + 1.3 + 1.5%		7	96	100	7170
Bmix-IF + UpB + Sting + MSO (3x) 4 + 0.125 + 1.3 + 1.5%		5	95	100	7140
Phen - Des + UpB + Sting + MSO (3x) 8 + 0.125 + 1.3 + 1.5%		7	94	100	7020
D-P Mix + UpB + Sting + MSO (3x) 8 + 0.125 + 1.3 + 1.5%		9	94	100	6460
LSD (0.05)		NS	NS	NS	NS

<sup>1</sup>Isophorone-free formulation, more concentrated.

<sup>2</sup>Yield of plots maintained weed-free throughout the season.

**Table 5. Comparison of Bayer and AgValue formulations of desmedipham & phenmedipham & ethofumesate at Crookston, Fargo and St. Thomas.**

Treatment	Rate	3 loc Sugb inj	Fargo Crook Pigwd spp cntl	Crook Colq cntl	St. Thom Extrac sucrose <sup>2</sup>
	fl oz or oz/A	%	%	%	lb/A
Progress (3x)	17.8/23.5/23.5	13	90	100	7200
Progress-IF <sup>1</sup> (3x)	8.9/11.7/11.7	11	96	100	7310
Des-Phen-Etho (3x)	17.8/23.5/23.5	9	98	100	7670
Progress + UpBeet + Sting + MSO (3x) 5.7 + 0.125 + 1.3 + 1.5%		12	92	100	7360
Prog-IF + UpB + Sting + MSO (3x) 2.8 + 0.125 + 1.3 + 1.5%		11	90	100	7260
Des-Phen-Etho + UpB + Sting + MSO (3x) 5.7 + 0.125 + 1.3 + 1.5%		12	98	100	7380

<sup>1</sup>Isophorone-free formulation, more concentrated.

<sup>2</sup>Yield of plots maintained weed-free throughout the season.