

Weed Management in Horticultural Crops

Research Report

2001

D.E. Robinson, D. Bilyea, and K. McNaughton

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It is hoped that the information provided by this research will further the science of weed control by assisting companies with the registration and labeling of their products. This information will also allow research and extension personnel to suggest proper herbicide recommendations, thereby enabling growers to achieve consistent, broad spectrum weed control with a minimum of crop damage.

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**2001
RIDGETOWN
WEATHER DATA**

RAINFALL IN MM.								
DATE	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.
1	1.2	0	6.2	1.8	0	0	0	0
2	0.4	0	10.8	0	0	0	0	14.4
3	4.6	0	2.2	1.6	0	0	0	12.8
4	0	0.2	0	3.0	0	0	1.4	0
5	0.6	0.6	0	0	0	0	31.6	0
6	9.0	0	0.2	0	0	0	3.6	0
7	9.6	0.4	0	0	11.4	0	0.2	0
8	0	12	0	0	0	4.0	0	4.4
9	1.6	0	0	0	0	2.8	0	0
10	0	0	22.2	3.0	10.4	4.8	0	0
11	1.0	20	2.8	0	0	0	19.4	0
12	3.4	0	0	0	3.0	0	17.4	0
13	0	0	0	0	0	1.8	1.6	0
14	0	0.2	0	0	0	0	20.6	0.2
15	17.8	1.2	1.6	0	0	0	0	17.8
16	6.0	0	1.4	0	2.8	0	11.8	1.2
17	0.2	1.0	0	0	0	0	0.2	0
18	0	0.4	0	0	0.4	0	0	0.2
19	0	0	7.6	0	5.8	23.8	0	5.6
20	7.2	0	1.6	0	1.0	0	0	0
21	6.6	16.6	1.4	6.8	0	16.2	10.8	0
22	0	2.4	5.2	0.2	0.6	0.2	1.4	0
23	0	0.2	0	0	0.2	8.8	10.6	0
24	0	2.0	5.2	0	0	7.0	3.2	1.6
25	0	4.8	0	1.0	0	11.4	11.4	8.8
26	0.2	6.2	0	0	11.0	6.2	3.4	0
27	2.0	6.8	0	0	0.2	6.0	11.6	0.4
28	0	14.2	0	0	2.2	0.2	0	3.6
29	0	0.2	0	0	0	0	0	15.4
30	0	0	2.0	0	0	0	1.2	5.6
31		0		0	4.2		4.4	
TOTAL	71.4	89.4	70.4	17.4	53.2	93.2	165.8	92.0
30 YEAR AVG.	80.2	75.4	80.0	83.6	100.0	90.7	62.2	80.0

TEMPERATURE (C)

MEAN MAX	14.3	19.8	25.0	27.0	28.2	21.8	15.6	12.2
MEAN MIN	2.7	9.4	14.0	14.9	14.9	9.4	6.2	3.4
MEAN	8.5	14.6	19.5	21.0	21.6	15.6	10.9	7.8

TEMPERATURE, 30 YEAR AVERAGE (C)

MEAN MAX	12.4	19.5	24.5	27.1	25.8	22.0	15.2	7.9
MEAN MIN	2.4	8.4	13.8	16.2	15.3	11.7	5.7	0.8
MEAN	7.4	13.9	19.2	21.6	20.6	16.8	10.4	4.3

BAYER CODE ABBREVIATIONS

Code	Common Name	Scientific Name
ABUTH	Velvetleaf	<i>Abutilon theophrasti</i>
ACARH	Three-seeded mercury	<i>Acalypha rhombiodes</i>
AMAPO	Green pigweed	<i>Amaranthus powellii</i>
AMARE	Redroot pigweed	<i>Amaranthus retroflexus</i>
AMBEL	Common ragweed	<i>Ambrosia artemisiifolia</i>
ARTBI	Biennial wormwood	<i>Artemisia biennis</i>
CAPBP	Shepherd's-purse	<i>Capsella bursa-pastoris</i>
CCHPA	Longspine sandbur	<i>Cenchrus pauciflorus</i>
CHEAL	Common lamb's-quarter	<i>Chenopodium album</i>
CIRAR	Canada thistle	<i>Cirsium arvense</i>
CNISA	Hemp	<i>Cannabis sativa</i>
CONAR	Field bindweed	<i>Convolvulus arvensis</i>
EQUAR	Field horsetail	<i>Equisetum arvense</i>
ERIAN	Annual fleabane	<i>Erigeron annuus</i>
ERICA	Canada fleabane	<i>Erigeron canadensis</i>
ERYCH	Wormseed mustard	<i>Erysimum cheiranthoides</i>
EUPHE	Sun spurge	<i>Euphorbia heiocopia</i>
GAETE	Hempnettle	<i>Galeopsis tetrahit</i>
HIBTR	Flower-of-an-hour	<i>Hibiscus trionum</i>
LACSE	Prickly lettuce	<i>Lactuca serriola</i>
LAPCO	Nippleweed	<i>Lapsanna communis</i>
OXAST	Common yellow woodsorrel	<i>Oxalis stricta</i>
PLAMA	Broad-leaved plantain	<i>Plantago major</i>
POLCO	Wild buckwheat	<i>Polygonum convolvulus</i>
POLLA	Green smartweed	<i>Polygonum lapathifolium</i>
POLPE	Lady's-thumb	<i>Polygonum persicaria</i>
SINAR	Wild mustard	<i>Sinapis arvensis</i>
SIYAN	Bur-cucumber	<i>Sicyos angulatus</i>
SOLCA	Horsenettle	<i>Solanum carolinense</i>
SOLPT	Eastern black nightshade	<i>Solanum ptycanthum</i>
SONAR	Perennial sowthistle	<i>Sonchus arvensis</i>
SONAS	Spiny annual sowthistle	<i>Sonchus asper</i>
SONOL	Annual sowthistle	<i>Sonchus oleraceus</i>
SOOCA	Canada goldenrod	<i>Solidago canadensis</i>
STAPA	Marsh hedge-nettle	<i>Stachys palustris</i>
STEME	Common chickweed	<i>Stellaria media</i>
TAROF	Dandelion	<i>Taraxacum officinale</i>
THLAR	Field pennycress	<i>Thlaspi arvense</i>
TRFSS	Clover species	<i>Trifolium spp.</i>
XANST	Common cocklebur	<i>Xanthium strumarium</i>
AGRGI	Redtop	<i>Agrostis gigantea</i>
AGRRE	Quackgrass	<i>Agropyron repens</i>
DIGSA	Large crabgrass	<i>Digitaria sanguinalis</i>
ECHCG	Barnyard grass	<i>Echinochloa crus-galli</i>
PANCA	Witch grass	<i>Panicum capillare</i>
PANDI	Fall panicum	<i>Panicum dichotomiflorum</i>
PANMI	Proso millet	<i>Panicum miliaceum</i>
SETLU	Yellow foxtail	<i>Setaria glauca</i>
SETVI	Green foxtail	<i>Setaria viridis</i>

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CONVENTIONAL SUGAR BEET TOLERANCE TO NEW HERBICIDES

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01A1

CROP: BEAVA, BEET, SUGAR (4546LL). Planted: Apr-27-01, 2 cm Deep, 75 cm Row Width. Planting Method: PRECISION PLANTER. Emerged On: May-14-01.
 Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RC - Range K1.

Site Description: Soil Texture: LOAM. %OM: 6.4 %Sand: 52.2 %Silt: 27.0 %Clay: 20.8 pH: 6.9

APPLICATION DESCRIPTION				STAGE AT APPLICATION				
Application:	A	B	C	D	Application:	A	B	C
Date	Apr-27-01	Apr-20-01	May-14-01	May-23-01	Crop 1	BEAVA	cot-2L	2-3 L
Time of Day	0800	0900	0800	0900	Height		0.5 cm	1.3 cm
Method					Weed 1			
Timing	PPI	PRE	POST 1	POST 2	Stg.Scale:			
Placement					Density			
Air Temp.	7 C	8 c	8 C	13 C				
% Humidity	94	71	86	74				
Wind Speed	1 km/h	9 km/h	11 km/h	8 km/h				
Dew Present								
Soil Moist.	DRY	DRY	DRY	WET				
Cloud Cover	50%	10%	0%	10%				
Equipment	C02 Backp	C02 Backp	C02 Backp	C02 Backp				
Pressure	207 kPa	207 kPa	207 kPa	207 kPa				
Nozzle Type	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN				
Nozzle Size	XR8002	XR8002	XR8002	XR8002				
Noz.Spacing	50 CM	50 CM	50 CM	50 CM				
Boom Length	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height	48 CM	48 CM	48 CM	48 CM				
Carrier	WATER	WATER	WATER	WATER				
Appl.Volume	200 L/ha	200 L/ha	200 L/ha	200 L/ha				
Propellant	CO2	CO2	CO2	CO2				

Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA
Part Rated						
Rating Data Type	INJURY	INJURY	INJURY	No/plot	T/ha	T/Ac
Rating Unit	%	%	%			
Rating Date	May-04-01	May-28-01	Jun-07-01	Oct-18-01	Oct-18-01	Oct-18-01
Trt-Eval Interval	7 DAT	14 DAT	28 DAT			

Trt No.	Treatment Name	Rate	Grow	Appl							
		Rate Unit	Stg	Code							
1	Untreated Check				0	a 0	a 0	a 107	a 82.6	a-d	37.2 a-d
2	s-metolachlor	1050 G A/HA	PPI	A	0	a 0	a 0	a 107	a 91.2	a	41.1 a
3	s-metolachlor	1600 G A/HA	PPI	A	0	a 0	a 0	a 105	ab 84.3	a-d	37.9 a-d
4	s-metolachlor	1050 G A/HA	PRE	B	0	a 0	a 0	a 100	abc 88.7	ab	39.9 ab
5	s-metolachlor	1600 G A/HA	PRE	B	0	a 0	a 0	a 100	abc 84.8	a-d	38.1 a-d
6	s-metolachlor	1050 G A/HA	< 2 LF	C		0	a 0	a 102	abc 88.9	ab	40.0 ab
7	s-metolachlor	1600 G A/HA	< 2 LF	C		0	a 0	a 85	bcd 64.3	e	28.9 e
8	s-metolachlor	1050 G A/HA	< 4 LF	D		0	a 0	a 89	a-d 76.2	a-e	34.3 a-e
9	s-metolachlor	1600 G A/HA	< 4 LF	D		0	a 0	a 94	abc 81.3	a-e	36.6 a-e
10	dimethenamid-p	750 G A/HA	PPI	A	0	a 0	a 0	a 73	d 69.9	cde	31.5 cde
11	dimethenamid-p	1500 G A/HA	PPI	A	0	a 0	a 0	a 104	ab 84.7	a-d	38.1 a-d
12	dimethenamid-p	750 G A/HA	PRE	B	0	a 0	a 0	a 108	a 91.9	a	41.4 a
13	dimethenamid-p	1500 G A/HA	PRE	B	0	a 0	a 0	a 90	a-d 76.7	a-e	34.5 a-e
14	dimethenamid-p	750 G A/HA	< 2 LF	C		0	a 0	a 82	cd 67.3	de	30.3 de
15	dimethenamid-p	1500 G A/HA	< 2 LF	C		0	a 0	a 95	abc 72.8	b-e	32.8 b-e
16	dimethenamid-p	750 G A/HA	< 4 LF	D		0	a 0	a 108	a 85.3	abc	38.4 abc
17	dimethenamid-p	1500 G A/HA	< 4 LF	D		0	a 0	a 103	ab 78.9	a-e	35.5 a-e
LSD (P=.05)					0.0	0.0	0.0	20.7	17.68		7.96
Standard Deviation					0.0	0.0	0.0	14.5	12.37		5.57
CV					0.0	0.0	0.0	14.93	15.35		15.35

Means followed by same letter do not significantly differ (P=.05, LSD)

Trial Comments

Conclusions: This trial was established to determine the effect of application timing of s-metolachlor and p-dimethenamid on visual injury, plant number, and yield of sugar beets. The trial was maintained weed free to eliminate any effect of weed competition on sugar beet yield.

s-metolachlor and p-dimethenamid applied pre-plant incorporated, preemergence, and postemergence at the 2 or 4 leaf stage did not cause visual injury, or reduce stand number or yield of sugar beets compared to the untreated check.

THE EFFECT OF ADJUVANTS ON THE EFFICACY OF MICRO RATE HERBICIDE PROGRAMS IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C1

CROP: BEAVA, BEET, SUGAR (4546LL). Planted: Apr-27-01, 2 cm Deep, 75 cm Row Width. Planting Method: PRECISION PLANTER. Emerged On: May-14-01.
Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RC - Range K1.

Site Description: Soil Texture: LOAM. %OM: 6.4 %Sand: 52.2 %Silt: 27.0 %Clay: 20.8 pH: 6.9

APPLICATION DESCRIPTION

Application:	A	B	C	D	E
Date	May-14-01	May-23-01	Jun-04-01	Jun-18-01	Jul-02-01
Time of Day	0800	1400	9:00	8:00	7:00
Timing	Pre	POST	POST	POST	POST
Air Temp.	8 C	20 C	14 C	22 C	5 C
% Humidity	86	54	63	57	95
Wind Speed	11 kph	13 km/h	7 KPH	11 KPH	3 KPH
Soil Moist.:	DRY				
Cloud Cover:	0%	0%	0%	90%	10%
Equipment	C02 Backp	C02 backp	C02 backp	C02 backp	C02 backp
Pressure	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa
Nozzle Type	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN
Nozzle Size	XR8002	XR8002	XR8002	XR8002	XR8002
Noz.Spacing	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length	1.5 M	2 M	2 M	2 M	2 M
Boom Height	48 CM	48 CM	48 CM	48 CM	48 CM
Carrier	WATER	WATER	WATER	WATER	WATER
Appl.Volume	200 L/ha	200 L/HA	200 L/HA	200 L/HA	200 L/HA
Propellant	CO2	CO2	CO2	CO2	CO2

STAGE AT APPLICATION

Crop 1 BEAVA COT.	2 LF	5 LF	12 LF	14 LF
Height : 0.5 cm	2 cm	3 CM	22 CM	28 CM
Weed 1 ABUTH COT.	COT-1 LF	COT-2 LF	2-4	4-6
Stg.Scale:				
Density : 1 M2	13 M2	14 M2	5 M2	5 M2
Weed 2 AMARE COT-2 LF	2-4 LF	COT-2 LF	2-10	4-12
Stg.Scale:				
Density : 33 M2	9 M2	12 M2	21 M2	16 M2
Weed 3 CHEAL COT-2 LF	COT-2 LF	2-6 LF	6-20+	16-20
Stg.Scale:				
Density : 8 M2	23 M2	24 M2	29 M2	31 M2
Weed 4 SETVI	3 LF	1	3-4	5-11
Stg.Scale:				
Density : M2	8 M2	1 M2	3 M2	6 M2

Weed Code	BEAVA	BEAVA	BEAVA	AMARE	CHEAL	ABUTH	SETVI	BEAVA
Crop Code				BEAVA	BEAVA	BEAVA	BEAVA	BEAVA
Part Rated								
Rating Data Type	INJURY	INJURY	INJURY	CONTROL	CONTROL	CONTROL	CONTROL	INJURY
Rating Unit	%	%	%	%	%	%	%	%
Rating Date	May-30-01	Jun-07-01	Jun-21-01	Jun-21-01	Jun-21-01	Jun-21-01	Jun-21-01	Jul-17-01
Crop Stage								
Trt-Eval Interval	7 DAT	14 DAT	28 DAT	28 DAT	28 DAT	28 DAT	28 DAT	56 DAT

Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code									
1	Untreated Check					0	a	0	a	0	f	0	e	0
2	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a	0	a	0	f	0	e	0
	Triflusalifuron-methyl	4.5	G A/HA	Post	A	0	a	0	a	78	e	73	d	80
3	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a	0	a	80	de	85	bc	85
	Triflusalifuron-methyl	4.5	G A/HA	Post	A								cde	93
	Merge	1.0	L/HA	Post	A								ab	0
4	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a	0	a	85	b-e	81	cd	90
	Triflusalifuron-methyl	4.5	G A/HA	Post	A								bcd	94
	Methylated Seed Oil	1.5	% V/V	Post	A								ab	0
5	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a	0	a	81	cde	73	d	83
	Triflusalifuron-methyl	4.5	G A/HA	Post	A								e	84
	Clopyralid	30	G A/HA	Post	A								d	0
6	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a	0	a	90	a-d	86	bc	90
	Triflusalifuron-methyl	4.5	G A/HA	Post	A								bcd	91
	Clopyralid	30	G A/HA	Post	A								bc	0
	Merge	1.0	L/HA	Post	A								bc	0
7	Desmedipham/Phenmedipham	148	G A/HA	Post	A	0	a	0	a	88	a-e	90	abc	93
	Triflusalifuron-methyl	4.5	G A/HA	Post	A								ab	91
	Clopyralid	30	G A/HA	Post	A								bc	0
	Methylated Seed Oil	1.5	% V/V	Post	A								bc	0
8	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a	0	a	88	a-e	84	c	84
	Triflusalifuron-methyl	9.0	G A/HA	Post	A								de	90
	Clopyralid	30	G A/HA	Post	A								bcd	0
	Merge	1.0	L/HA	Post	A								ab	0
9	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a	0	a	91	abc	94	ab	90
	Triflusalifuron-methyl	9.0	G A/HA	Post	A								bcd	95
	Merge	1.0	L/HA	Post	A								ab	0

THE EFFECT OF ADJUVANTS ON THE EFFICACY OF MICRO RATE HERBICIDE PROGRAMS IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C1

Weed Code	Crop Code	Part Rated	Rating Data Type	Rating Unit	Rating Date	Crop Stage	Trt-Eval Interval	BEAVA	BEAVA	BEAVA	AMARE BEAVA	CHEAL BEAVA	ABUTH BEAVA	SETVI BEAVA	BEAVA						
								INJURY	INJURY	INJURY	CONTROL	CONTROL	CONTROL	CONTROL	INJURY						
				%	May-30-01			%	%	%	%	%	%	%	%						
								7 DAT	14 DAT	28 DAT	28 DAT	28 DAT	28 DAT	28 DAT	56 DAT						
Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code																
10	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a	0	a	0	a	94	ab	96	a	91	bc	97	ab	0	a
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Methylated Seed Oil	1.5	% V/V	Post	A																
11	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a	0	a	0	a	89	a-d	89	abc	86	cde	94	ab	0	a
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Clopyralid	60	G A/HA	Post	A																
12	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a	0	a	0	a	96	a	96	a	95	ab	97	ab	0	a
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Clopyralid	60	G A/HA	Post	A																
	Merge	1.0	L/HA	Post	A																
13	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a	0	a	0	a	96	a	96	a	98	a	99	a	0	a
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Clopyralid	60	G A/HA	Post	A																
	Methylated Seed Oil	1.5	% V/V	Post	A																
LSD (P=.05)						0.0	0.0	0.0	10.2	9.1	6.6	7.2	0.0								
Standard Deviation						0.0	0.0	0.0	7.1	6.4	4.6	5.1	0.0								
CV						0.0	0.0	0.0	8.82	7.94	5.68	5.94	0.0								

Means followed by same letter do not significantly differ (P=.05, LSD)

Weed Code	Crop Code	Part Rated	Rating Data Type	Rating Unit	Rating Date	Crop Stage	Trt-Eval Interval	AMARE BEAVA	CHEAL BEAVA	ABUTH BEAVA	SETVI BEAVA	PANDI BEAVA	BEAVA A	BEAVA B	BEAVA A						
				%	Jul-17-01			CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	Total No/plot	Total No/plot	Yield T/ha						
								56 DAT	56 DAT	56 DAT	56 DAT	56 DAT	Oct-18-01 Weedy	Oct-18-01 Weeded	Oct-18-01 Weedy						
Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code																
1	Untreated Check					0	e	0	f	0	d	0	c	0	e	21	d	34	e	27.1	f
2	Desmedipham/Phenmedipham	124	G A/HA	Post	A	79	cd	70	e	69	c	91	b	90	cd	31	cd	48	abc	43.2	ef
	Triflusulfuron-methyl	4.5	G A/HA	Post	A																
3	Desmedipham/Phenmedipham	124	G A/HA	Post	A	81	bcd	85	bcd	90	ab	95	ab	94	a-d	37	bc	45	a-e	58.4	de
	Triflusulfuron-methyl	4.5	G A/HA	Post	A																
	Merge	1.0	L/HA	Post	A																
4	Desmedipham/Phenmedipham	124	G A/HA	Post	A	90	abc	79	cde	96	a	96	ab	96	ab	41	abc	43	a-e	59.8	cde
	Triflusulfuron-methyl	4.5	G A/HA	Post	A																
	Methylated Seed Oil	1.5	% V/V	Post	A																
5	Desmedipham/Phenmedipham	124	G A/HA	Post	A	76	d	73	de	84	b	91	b	89	d	47	ab	52	ab	74.4	a-d
	Triflusulfuron-methyl	4.5	G A/HA	Post	A																
	Clopyralid	30	G A/HA	Post	A																
6	Desmedipham/Phenmedipham	124	G A/HA	Post	A	90	abc	91	abc	95	ab	96	ab	93	bcd	48	ab	43	a-e	74.9	a-d
	Triflusulfuron-methyl	4.5	G A/HA	Post	A																
	Clopyralid	30	G A/HA	Post	A																
	Merge	1.0	L/HA	Post	A																
7	Desmedipham/Phenmedipham	148	G A/HA	Post	A	89	a-d	92	ab	91	ab	97	a	95	abc	52	a	41	b-e	96.4	a
	Triflusulfuron-methyl	4.5	G A/HA	Post	A																
	Clopyralid	30	G A/HA	Post	A																
	Methylated Seed Oil	1.5	% V/V	Post	A																
8	Desmedipham/Phenmedipham	248	G A/HA	Post	A	92	ab	92	abc	88	ab	97	a	92	bcd	45	ab	46	a-d	69.0	bcd
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
9	Desmedipham/Phenmedipham	248	G A/HA	Post	A	91	abc	96	ab	94	ab	97	a	96	ab	44	ab	35	de	86.0	ab
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Merge	1.0	L/HA	Post	A																
10	Desmedipham/Phenmedipham	248	G A/HA	Post	A	95	a	98	ab	97	a	98	a	96	ab	44	ab	49	abc	78.6	a-d
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Methylated Seed Oil	1.5	% V/V	Post	A																
11	Desmedipham/Phenmedipham	248	G A/HA	Post	A	92	ab	96	ab	84	b	97	a	95	ab	49	ab	39	cde	84.3	abc
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Clopyralid	60	G A/HA	Post	A																
12	Desmedipham/Phenmedipham	248	G A/HA	Post	A	97	a	99	a	96	a	98	a	98	a	44	ab	42	a-e	81.5	a-d
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Clopyralid	60	G A/HA	Post	A																
	Merge	1.0	L/HA	Post	A																
13	Desmedipham/Phenmedipham	248	G A/HA	Post	A	97	a	94	ab	97	a	98	a	97	ab	45	ab	52	a	74.4	a-d
	Triflusulfuron-methyl	9.0	G A/HA	Post	A																
	Clopyralid	60	G A/HA	Post	A																
	Methylated Seed Oil	1.5	% V/V	Post	A																
LSD (P=.05)						12.6	13.3	11.2	5.1	4.9	12.0	11.1	24.96								
Standard Deviation						8.8	9.3	7.9	3.6	3.4	8.3	7.7	17.28								
CV						10.76	11.35	9.49	4.05	3.91	19.81	17.61	24.75								

Means followed by same letter do not significantly differ (P=.05, LSD)

THE EFFECT OF ADJUVANTS ON THE EFFICACY OF MICRO RATE HERBICIDE PROGRAMS IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C1

Weed Code			
Crop Code	BEAVA	BEAVA	BEAVA
Part Rated	A	B	B
Rating Data Type	Yield	Yield	Yield
Rating Unit	T/Ac	T/ha	T/Ac
Rating Date	Oct-18-01	Oct-18-01	Oct-18-01
Crop Stage	Weedy	Weeded	Weeded
Trt-Eval Interval			

Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code						
1	Untreated Check					12.2	f	71.0	c	31.9	c
2	Desmedipham/Phenmedipham	124	G A/HA	Post	A	19.4	ef	84.2	abc	37.9	abc
	Triflusalufuron-methyl	4.5	G A/HA	Post	A						
3	Desmedipham/Phenmedipham	124	G A/HA	Post	A	26.3	de	82.9	abc	37.3	abc
	Triflusalufuron-methyl	4.5	G A/HA	Post	A						
	Merge	1.0	L/HA	Post	A						
4	Desmedipham/Phenmedipham	124	G A/HA	Post	A	26.9	cde	78.1	bc	35.2	bc
	Triflusalufuron-methyl	4.5	G A/HA	Post	A						
	Methylated Seed Oil	1.5	% V/V	Post	A						
5	Desmedipham/Phenmedipham	124	G A/HA	Post	A	33.5	a-d	98.3	a	44.2	a
	Triflusalufuron-methyl	4.5	G A/HA	Post	A						
	Clopyralid	30	G A/HA	Post	A						
6	Desmedipham/Phenmedipham	124	G A/HA	Post	A	33.7	a-d	76.1	c	34.2	c
	Triflusalufuron-methyl	4.5	G A/HA	Post	A						
	Clopyralid	30	G A/HA	Post	A						
	Merge	1.0	L/HA	Post	A						
7	Desmedipham/Phenmedipham	148	G A/HA	Post	A	43.4	a	81.7	abc	36.8	abc
	Triflusalufuron-methyl	4.5	G A/HA	Post	A						
	Clopyralid	30	G A/HA	Post	A						
	Methylated Seed Oil	1.5	% V/V	Post	A						
8	Desmedipham/Phenmedipham	248	G A/HA	Post	A	31.0	bcd	95.5	ab	43.0	ab
	Triflusalufuron-methyl	9.0	G A/HA	Post	A						
9	Desmedipham/Phenmedipham	248	G A/HA	Post	A	38.7	ab	78.4	bc	35.3	bc
	Triflusalufuron-methyl	9.0	G A/HA	Post	A						
	Merge	1.0	L/HA	Post	A						
10	Desmedipham/Phenmedipham	248	G A/HA	Post	A	35.4	a-d	84.7	abc	38.1	abc
	Triflusalufuron-methyl	9.0	G A/HA	Post	A						
	Methylated Seed Oil	1.5	% V/V	Post	A						
11	Desmedipham/Phenmedipham	248	G A/HA	Post	A	37.9	abc	70.2	c	31.6	c
	Triflusalufuron-methyl	9.0	G A/HA	Post	A						
	Clopyralid	60	G A/HA	Post	A						
12	Desmedipham/Phenmedipham	248	G A/HA	Post	A	36.7	a-d	79.2	abc	35.6	abc
	Triflusalufuron-methyl	9.0	G A/HA	Post	A						
	Clopyralid	60	G A/HA	Post	A						
	Merge	1.0	L/HA	Post	A						
13	Desmedipham/Phenmedipham	248	G A/HA	Post	A	33.5	a-d	79.3	abc	35.7	abc
	Triflusalufuron-methyl	9.0	G A/HA	Post	A						
	Clopyralid	60	G A/HA	Post	A						
	Methylated Seed Oil	1.5	% V/V	Post	A						
LSD (P=.05)						11.23		19.26		8.67	
Standard Deviation						7.78		13.34		6.00	
CV						24.75		16.37		16.37	

Means followed by same letter do not significantly differ (P=.05, LSD)

Trial Comments

Conclusions: One half of this trial was kept weed free to determine the effect of two adjuvants, a surfactant/solvent (Merge) and methylated seed oil (MSO) applied in tank mixtures of desmedipham/phenmedipham + triflusalufuron-methyl, and desmedipham/phenmedipham + triflusalufuron-methyl + clopyralid on visual injury and yield of sugar beets. The other half of the trial was not hand weeded to determine treatment effects on weed efficacy. Herbicides were applied at low and high micro rates.

None of the treatments caused visual injury to sugar beets, and in the weed-free plots there were no differences in yield in either adjuvant treatment. In the weedy plots, the increase in weed control due to the addition of either Merge or MSO resulted in corresponding increases in sugar beet stand number and yield.

At 28 days after treatment (DAT), the addition of either Merge or MSO improved control of ABUTH from good to excellent for each herbicide tank mix at the low micro rate. CHEAL control improved from fair to good with Merge and from fair to excellent with MSO at the low microrate of each tank mix. AMARE control was fair in the absence of an adjuvant at the low microrate. The desmedipham/phenmedipham + triflusalufuron-methyl tank mix provided good control with either adjuvant, while the desmedipham/phenmedipham + triflusalufuron-methyl + clopyralid tank mix provided excellent control of AMARE with either Merge or MSO. SETVI and PANDI control were excellent regardless of adjuvant used.

We did not observe any differences in overall weed efficacy between the two adjuvants tested for any herbicide tank mixture at either micro rate.

APPLICATION OF MICRO RATE HERBICIDES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C2

CROP: BEAVA, BEET, SUGAR (4546LL). Planted: Apr-27-01, 2 cm Deep, 75 cm Row Width. Planting Method: PRECISION PLANTER. Emerged On: May-14-01.

Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RC - Range K1.

Site Description: Soil Texture: LOAM. %OM: 6.4 %Sand: 52.2 %Silt: 27.0 %Clay: 20.8 pH: 6.9

APPLICATION DESCRIPTION

Application:	A	B	C	D	E	F	G	H	I
Date	May-14-01	May-23-01	May-26-01	May-28-01	May-30-01	Jun-04-01	Jun-07-01	Jun-11-01	Jun-12-01
Time of Day	0800	0900	0900	0800	0800	0900	0800	0800	0900
Timing	Post A-F	Post A	Post B	Post E	POST C	Pos A,D,F	Post B	Post E	Post A,C
Air Temp.	8 C	13 C	12 C	12 C	14 C	14 C	11 C	18 C	19 C
% Humidity	86	74	85	95	53	63	81	88	88
Wind Speed	11 kph	8 kph	12 kph	11 kph	5 km/h	7 kph	3 KPH	12 KPH	16 KPH
Dew Present	N	N	N	N	N	N	N	N	N
Soil Moist.	DRY	WET	Damp	Damp	DRY	Dry	DRY	DAMP	DRY
Cloud Cover	0%	10%	100%	100%	100%	90%	50%	80%	50%
Equipment	C02 Backp	C02 backp	C02 backp	C02 backp	C02 backp	C02 backp	C02 backp	C02 backp	C02 backp
Pressure	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa
Nozzle Type	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN
Nozzle Size	XR8002	XR8002	XR8002	XR8002	XR8002	XR8002	XR8002	XR8002	XR8002
Noz.Spacing	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length	1.5 M	2 M	2 M	2 M	2 M	2 M	2 M	2 M	2 M
Boom Height	48 CM	48 CM	48 CM	48 CM	48 CM	48 CM	48 CM	48 CM	48 CM
Carrier	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Appl. Volume	200 L/ha	200 L/HA	200 L/HA	200 L/HA	200 L/HA	200 L/HA	200 L/HA	200 L/HA	200 L/HA
Propellant	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2

J	K	L	M	N
Jun-18-01	Jun-23-01	Jun-25-01	Jun-27-01	Jun-30-01
0800	0900	0900	0800	0800
Pos A,B,D	Post C	Pos A,E,F	Post B	Post A,D
20 C	14 C	18 C	20 C	21 C
89	94	87	84	92
8 KPH	5 KPH	5 KPH	6 KPH	4 KPH
N	N	N	N	N
DRY	DRY	DRY	DRY	DRY
30%	50%	40%	50%	20%
C02 backp	C02 backp	C02 backp	C02 backp	C02 backp
207 kPa	207 kPa	207 kPa	207 kPa	207 kPa
FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN
XR8002	XR8002	XR8002	XR8002	XR8002
50 CM	50 CM	50 CM	50 CM	50 CM
2 M	2 M	2 M	2 M	2 M
48 CM	48 CM	48 CM	48 CM	48 CM
WATER	WATER	WATER	WATER	WATER
200 L/HA	200 L/HA	200 L/HA	200 L/HA	200 L/HA
CO2	CO2	CO2	CO2	CO2

STAGE AT APPLICATION

Crop 1 BEAVA	COT	2 LF	2-4LF	2-4 LF	2-4 LF	4-6 LF	4-6 LF	6-7 LF	8 LF
Height	: 0.5 cm	1.0 cm	1.5 cm	1.5 cm	1.5 cm	3 cm	3.5 cm	5 cm	20 cm
Weed 1 ABUTH	COT	COT-1 LF	COT-1 LF	COT-1 LF	COT-1 LF	2-4 LF	COT -2 LF	COT-2 LF	3-5 LF
Density	: 3 M2	24 M2	20 M2	6 M2	52 M2	13 M2	20 M2	20 M2	5 M2
Weed 2 CHEAL	COT-2 LF	2-4 LF	2-4 LF	2-4 LF	COT-6 LF	COT -6 LF	4-6 LF	4-6 LF	4-8 LF
Density	: 4 M2	6 M2	5 M2	34 M2	15 M2	38 M2	38 M2	24 M2	28 M2
Weed 3 AMARE	COT-2 LF	2 LF	2-4 LF	2-4 LF	COT-2 LF	COT- 4 LF	2-4 LF	2-4 LF	2 LF
Density	: 10 M2	20 M2	26 M2	16 M2	11 M2	5 M2	7 M2	7 M2	6 M2
12	12	13	14	14					
22 cm	22 cm	23 cm	26 cm	30 cm					
0	3 LF	0	0						
0 M2	4 M2	0 M2	0 M2						
6-10	8-14	8-14	8-20+						
13 M2	27 M2	13 M2							
2-6	2-6	12-20+							
3 M2	6 M2	7 M2	10 M2						

APPLICATION OF MICRO RATE HERBICIDES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C2

Weed Code					BEAVA	BEAVA	BEAVA	AMARE BEAVA	CHEAL BEAVA	ABUTH BEAVA	SETVI BEAVA	BEAVA		
Crop Code					INJURY	INJURY	INJURY	CONTROL	CONTROL	CONTROL	CONTROL	INJURY		
Part Rated					%	%	%	%	%	%	%	%		
Rating Data Type					May-30-01	Jun-07-01	Jun-21-01	Jun-21-01	Jun-21-01	Jun-21-01	Jun-21-01	Jul-16-01		
Rating Unit					7 DAT	14 DAT	28 DAT	28 DAT	28 DAT	28 DAT	28 DAT	56 DAT		
Rating Date														
Trt-Eval Interval														
Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code									
1	Untreated Check					0	a 0	a 0	a 0	e 0	e 0	d 0	a	
2	Desmedipham/Phenmedipham	124	G A/HA	150 CHU	A	0	a 0	a 0	a 93	ab 91	ab 90	bc 95	ab 0	a
	Triflusalufuron-methyl	4.5	G A/HA	150 CHU	A									
	Clopyralid	30	G A/HA	150 CHU	A									
	Merge	1.0	L/HA	150 CHU	A									
3	Desmedipham/Phenmedipham	124	G A/HA	200 CHU	B	0	a 0	a 0	a 90	bc 80	cd 93	abc 95	ab 0	a
	Triflusalufuron-methyl	4.5	G A/HA	200 CHU	B									
	Clopyralid	30	G A/HA	200 CHU	B									
	Merge	1.0	L/HA	200 CHU	B									
4	Desmedipham/Phenmedipham	124	G A/HA	250 CHU	C	0	a 0	a 0	a 83	d 74	d 83	d 93	bc 0	a
	Triflusalufuron-methyl	4.5	G A/HA	250 CHU	C									
	Clopyralid	30	G A/HA	250 CHU	C									
	Merge	1.0	L/HA	250 CHU	C									
5	Desmedipham/Phenmedipham	124	G A/HA	300 CHU	D	0	a 0	a 0	a 88	c 75	d 89	cd 90	c 0	a
	Triflusalufuron-methyl	4.5	G A/HA	300 CHU	D									
	Clopyralid	30	G A/HA	300 CHU	D									
	Merge	1.0	L/HA	300 CHU	D									
6	Desmedipham/Phenmedipham	124	G A/HA	14 DAYS	E	0	a 0	a 0	a 89	bc 82	bcd 94	abc 95	ab 0	a
	Triflusalufuron-methyl	4.5	G A/HA	14 DAYS	E									
	Clopyralid	30	G A/HA	14 DAYS	E									
	Merge	1.0	L/HA	14 DAYS	E									
7	Desmedipham/Phenmedipham	124	G A/HA	21 DAYS	F	0	a 0	a 0	a 91	bc 86	abc 90	bc 95	ab 0	a
	Triflusalufuron-methyl	4.5	G A/HA	21 DAYS	F									
	Clopyralid	30	G A/HA	21 DAYS	F									
	Merge	1.0	L/HA	21 DAYS	F									
8	Desmedipham/Phenmedipham	248	G A/HA	150 CHU	A	0	a 0	a 0	a 97	a 96	a 97	a 98	a 0	a
	Triflusalufuron-methyl	9.0	G A/HA	150 CHU	A									
	Clopyralid	60	G A/HA	150 CHU	A									
	Merge	1.0	L/HA	150 CHU	A									
9	Desmedipham/Phenmedipham	248	G A/HA	200 CHU	B	0	a 0	a 0	a 97	a 96	a 97	a 97	ab 0	a
	Triflusalufuron-methyl	9.0	G A/HA	200 CHU	B									
	Clopyralid	60	G A/HA	200 CHU	B									
	Merge	1.0	L/HA	200 CHU	B									
10	Desmedipham/Phenmedipham	248	G A/HA	250 CHU	C	0	a 0	a 0	a 93	ab 93	a 94	abc 95	ab 0	a
	Triflusalufuron-methyl	9.0	G A/HA	250 CHU	C									
	Clopyralid	60	G A/HA	250 CHU	C									
	Merge	1.0	L/HA	250 CHU	C									
11	Desmedipham/Phenmedipham	248	G A/HA	300 CHU	D	0	a 0	a 0	a 97	a 91	ab 95	abc 96	ab 0	a
	Triflusalufuron-methyl	9.0	G A/HA	300 CHU	D									
	Clopyralid	60	G A/HA	300 CHU	D									
	Merge	1.0	L/HA	300 CHU	D									
12	Desmedipham/Phenmedipham	248	G A/HA	14 DAYS	E	0	a 0	a 0	a 93	ab 93	a 98	a 95	abc 0	a
	Triflusalufuron-methyl	9.0	G A/HA	14 DAYS	E									
	Clopyralid	60	G A/HA	14 DAYS	E									
	Merge	1.0	L/HA	14 DAYS	E									
13	Desmedipham/Phenmedipham	248	G A/HA	21 DAYS	F	0	a 0	a 0	a 91	bc 93	a 96	ab 95	ab 0	a
	Triflusalufuron-methyl	9.0	G A/HA	21 DAYS	F									
	Clopyralid	60	G A/HA	21 DAYS	F									
	Merge	1.0	L/HA	21 DAYS	F									
	LSD (P=.05)					0.0	0.0	0.0	4.6	9.5	6.5	4.7	0.0	
	Standard Deviation					0.0	0.0	0.0	3.2	6.6	4.5	3.3	0.0	
	CV					0.0	0.0	0.0	3.78	8.18	5.23	3.73	0.0	

Means followed by same letter do not significantly differ (P=.05, LSD)

APPLICATION OF MICRO RATE HERBICIDES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C2

Weed Code	AMARE	CHEAL	ABUTH	SETVI	PANDI	BEAVA					
Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA				
Part Rated						A	B				
Rating Data Type	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	No/plot	No/plot				
Rating Unit	%	%	%	%	%	Weedy	Weeded				
Rating Date	Jul-16-01	Jul-16-01	Jul-16-01	Jul-16-01	Jul-16-01	Oct-19-01	Oct-19-01				
Trt-Eval Interval	56 DAT	56 DAT	56 DAT	56 DAT	56 DAT						
Trt No.	Treatment Name	Rate	Grow	Appl							
		Rate	Unit	Stg	Code						
1	Untreated Check				0	d	0				
2	Desmedipham/Phenmedipham	124	G A/HA	150 CHU	A	94	ab 97				
	Triflusalufuron-methyl	4.5	G A/HA	150 CHU	A						
	Clopyralid	30	G A/HA	150 CHU	A						
	Merge	1.0	L/HA	150 CHU	A						
3	Desmedipham/Phenmedipham	124	G A/HA	200 CHU	B	95	ab 86				
	Triflusalufuron-methyl	4.5	G A/HA	200 CHU	B						
	Clopyralid	30	G A/HA	200 CHU	B						
	Merge	1.0	L/HA	200 CHU	B						
4	Desmedipham/Phenmedipham	124	G A/HA	250 CHU	C	86	c 85				
	Triflusalufuron-methyl	4.5	G A/HA	250 CHU	C						
	Clopyralid	30	G A/HA	250 CHU	C						
	Merge	1.0	L/HA	250 CHU	C						
5	Desmedipham/Phenmedipham	124	G A/HA	300 CHU	D	90	bc 81				
	Triflusalufuron-methyl	4.5	G A/HA	300 CHU	D						
	Clopyralid	30	G A/HA	300 CHU	D						
	Merge	1.0	L/HA	300 CHU	D						
6	Desmedipham/Phenmedipham	124	G A/HA	14 DAYS	E	91	bc 81				
	Triflusalufuron-methyl	4.5	G A/HA	14 DAYS	E						
	Clopyralid	30	G A/HA	14 DAYS	E						
	Merge	1.0	L/HA	14 DAYS	E						
7	Desmedipham/Phenmedipham	124	G A/HA	21 DAYS	F	91	bc 84				
	Triflusalufuron-methyl	4.5	G A/HA	21 DAYS	F						
	Clopyralid	30	G A/HA	21 DAYS	F						
	Merge	1.0	L/HA	21 DAYS	F						
8	Desmedipham/Phenmedipham	248	G A/HA	150 CHU	A	99	a 99				
	Triflusalufuron-methyl	9.0	G A/HA	150 CHU	A						
	Clopyralid	60	G A/HA	150 CHU	A						
	Merge	1.0	L/HA	150 CHU	A						
9	Desmedipham/Phenmedipham	248	G A/HA	200 CHU	B	97	ab 97				
	Triflusalufuron-methyl	9.0	G A/HA	200 CHU	B						
	Clopyralid	60	G A/HA	200 CHU	B						
	Merge	1.0	L/HA	200 CHU	B						
10	Desmedipham/Phenmedipham	248	G A/HA	250 CHU	C	91	bc 91				
	Triflusalufuron-methyl	9.0	G A/HA	250 CHU	C						
	Clopyralid	60	G A/HA	250 CHU	C						
	Merge	1.0	L/HA	250 CHU	C						
11	Desmedipham/Phenmedipham	248	G A/HA	300 CHU	D	97	ab 94				
	Triflusalufuron-methyl	9.0	G A/HA	300 CHU	D						
	Clopyralid	60	G A/HA	300 CHU	D						
	Merge	1.0	L/HA	300 CHU	D						
12	Desmedipham/Phenmedipham	248	G A/HA	14 DAYS	E	93	abc 96				
	Triflusalufuron-methyl	9.0	G A/HA	14 DAYS	E						
	Clopyralid	60	G A/HA	14 DAYS	E						
	Merge	1.0	L/HA	14 DAYS	E						
13	Desmedipham/Phenmedipham	248	G A/HA	21 DAYS	F	94	ab 90				
	Triflusalufuron-methyl	9.0	G A/HA	21 DAYS	F						
	Clopyralid	60	G A/HA	21 DAYS	F						
	Merge	1.0	L/HA	21 DAYS	F						
LSD (P=.05)					7.3	7.8	6.5	3.6	4.9	10.8	13.3
Standard Deviation					5.1	5.5	4.6	2.5	3.4	7.5	9.3
CV					5.93	6.6	5.27	2.83	3.93	15.58	20.09

Means followed by same letter do not significantly differ (P=.05, LSD)

APPLICATION OF MICRO RATE HERBICIDES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C2

Weed Code				
Crop Code		BEAVA	BEAVA	BEAVA
Part Rated		A	A	B
Rating Data Type		T/ha	T/ha	T/ha
Rating Unit		Weedy	Weedy	Weeded
Rating Date		Oct-19-01	Oct-19-01	Oct-19-01
Trt-Eval Interval				

Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code								
1	Untreated Check					27.7	f	12.5	f	77.3	a	34.8	a
2	Desmedipham/Phenmedipham	124	G A/HA	150	CHU A	80.3	b-e	36.1	b-e	76.6	a	34.5	a
	Triflusalufuron-methyl	4.5	G A/HA	150	CHU A								
	Clopyralid	30	G A/HA	150	CHU A								
	Merge	1.0	L/HA	150	CHU A								
3	Desmedipham/Phenmedipham	124	G A/HA	200	CHU B	90.5	a-d	40.7	a-d	80.6	a	36.3	a
	Triflusalufuron-methyl	4.5	G A/HA	200	CHU B								
	Clopyralid	30	G A/HA	200	CHU B								
	Merge	1.0	L/HA	200	CHU B								
4	Desmedipham/Phenmedipham	124	G A/HA	250	CHU C	69.3	e	31.2	e	96.0	a	43.2	a
	Triflusalufuron-methyl	4.5	G A/HA	250	CHU C								
	Clopyralid	30	G A/HA	250	CHU C								
	Merge	1.0	L/HA	250	CHU C								
5	Desmedipham/Phenmedipham	124	G A/HA	300	CHU D	75.5	cde	34.0	cde	86.8	a	39.0	a
	Triflusalufuron-methyl	4.5	G A/HA	300	CHU D								
	Clopyralid	30	G A/HA	300	CHU D								
	Merge	1.0	L/HA	300	CHU D								
6	Desmedipham/Phenmedipham	124	G A/HA	14	DAYS E	72.6	de	32.7	de	76.2	a	34.3	a
	Triflusalufuron-methyl	4.5	G A/HA	14	DAYS E								
	Clopyralid	30	G A/HA	14	DAYS E								
	Merge	1.0	L/HA	14	DAYS E								
7	Desmedipham/Phenmedipham	124	G A/HA	21	DAYS F	84.5	a-e	38.0	a-e	88.1	a	39.6	a
	Triflusalufuron-methyl	4.5	G A/HA	21	DAYS F								
	Clopyralid	30	G A/HA	21	DAYS F								
	Merge	1.0	L/HA	21	DAYS F								
8	Desmedipham/Phenmedipham	248	G A/HA	150	CHU A	100.5	a	45.2	a	83.1	a	37.4	a
	Triflusalufuron-methyl	9.0	G A/HA	150	CHU A								
	Clopyralid	60	G A/HA	150	CHU A								
	Merge	1.0	L/HA	150	CHU A								
9	Desmedipham/Phenmedipham	248	G A/HA	200	CHU B	93.7	abc	42.2	abc	89.0	a	40.1	a
	Triflusalufuron-methyl	9.0	G A/HA	200	CHU B								
	Clopyralid	60	G A/HA	200	CHU B								
	Merge	1.0	L/HA	200	CHU B								
10	Desmedipham/Phenmedipham	248	G A/HA	250	CHU C	87.3	a-e	39.3	a-e	86.2	a	38.8	a
	Triflusalufuron-methyl	9.0	G A/HA	250	CHU C								
	Clopyralid	60	G A/HA	250	CHU C								
	Merge	1.0	L/HA	250	CHU C								
11	Desmedipham/Phenmedipham	248	G A/HA	300	CHU D	87.5	a-e	39.4	a-e	96.0	a	43.2	a
	Triflusalufuron-methyl	9.0	G A/HA	300	CHU D								
	Clopyralid	60	G A/HA	300	CHU D								
	Merge	1.0	L/HA	300	CHU D								
12	Desmedipham/Phenmedipham	248	G A/HA	14	DAYS E	95.9	ab	43.2	ab	87.9	a	39.5	a
	Triflusalufuron-methyl	9.0	G A/HA	14	DAYS E								
	Clopyralid	60	G A/HA	14	DAYS E								
	Merge	1.0	L/HA	14	DAYS E								
13	Desmedipham/Phenmedipham	248	G A/HA	21	DAYS F	81.1	b-e	36.5	b-e	76.2	a	34.3	a
	Triflusalufuron-methyl	9.0	G A/HA	21	DAYS F								
	Clopyralid	60	G A/HA	21	DAYS F								
	Merge	1.0	L/HA	21	DAYS F								
	LSD (P=.05)					18.28		8.23		20.38		9.17	
	Standard Deviation					12.79		5.76		14.26		6.42	
	CV					15.89		15.89		16.86		16.86	

Means followed by same letter do not significantly differ (P=.05, LSD)

Trial Comments

Conclusions: This experiment was established to compare the use of crop heat units (CHUs) with calendar days for weed control efficacy, yield, and visual injury of sugar beets. Tank mixtures of desmedipham/phenmedipham + triflusalufuron-methyl + clopyralid with Merge were applied at low and high micro rates at 150, 200, 250 or 300 CHUs, or every 14 or 21 days.

As CHUs increased from 150 to 300, there was a decrease in AMARE, CHEAL and ABUTH control from excellent to fair at the low microrate treatment. SETVI control was excellent in all CHU treatments. At either calendar day interval, control of AMARE, ABUTH, SETVI and PANDI was excellent. CHEAL control was good at either the 14 or 21-day interval.

At the high micro rate, none of the CHU or calendar day treatments caused a significant difference in weed control, though there was a trend for reduced control when applied according to calendar days as opposed to CHUs. ABUTH, AMARE, CHEAL, SETVI, PANDI control was excellent in all treatment intervals at the high micro rate.

MICRO RATE PLUS ASSURE II IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C3

CROP: BEAVA, BEET, SUGAR (4546LL). Planted: Apr-27-01, 2 cm Deep, 75 cm Row Width. Planting Method: PRECISION PLANTER. Emerged On: May-14-01.
 Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RC - Range K1.

Site Description: Soil Texture: LOAM. %OM: 6.4 %Sand: 52.2 %Silt: 27.0 %Clay: 20.8 pH: 6.9

APPLICATION DESCRIPTION

Application:	A	B	C	D	E
Date	May-14-01	May-23-01	Jun-04-01	Jun-18-01	Jul-03-01
Time of Day	0800	1400	900	800	700
Timing	PRE	POST	Post	Post	Post
Air Temp.	8 C	20 C	14 c	22 c	5 C
% Humidity	86	54	63	57	95
Wind Speed	11 km/h	13 km/h	7 kph	11 kph	3 kph
Dew Present	N	N	N	N	N
Soil Moist.:	DRY				
Cloud Cover:	0%	0%	0%	90%	10%
Equipment	C02 Backp	C02 backp	C02 backp	C02 backp	C02 backp
Pressure	207 kPa	207 kPa	207 kPa	207 kPa	207 kPa
Nozzle Type	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN
Nozzle Size	XR8002	XR8002	XR8002	XR8002	XR8002
Noz.Spacing	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length	1.5 M	2 M	2 M	2 M	2 M
Boom Height	48 CM	48 CM	48 CM	48 CM	48 CM
Carrier	WATER	WATER	WATER	WATER	WATER
Appl.Volume	200 L/ha	200 L/HA	200 L/HA	200 L/HA	200 L/HA
Propellant	CO2	CO2	CO2	CO2	CO2

STAGE AT APPLICATION

Crop	1	2	3	4	5
Crop 1 BEAVA COT		2 LF	5 LF	12	14
Height : 0.5 cm		2.5 cm	3 cm	22 cm	28 cm
Weed 1 AMARE cot-2 lf		COT-2 LF	2-4 LF	8-20+	10-20+
Stg.Scale:					
Density : 20 M2		16 M2	19 M2	26 M2	32 M2
Weed 2 CHEAL 2 LF		2-4 LF	4-6 LF	10-20+	14-20
Stg.Scale:					
Density : 1 M2		6 M2	2 M2	3 M2	
Weed 3 SETVI 2-3 LF		2-3 LF	2-3 LF	3-7	3-11
Stg.Scale:					
Density : 12 M2		16 M2	25 M2	28 M2	34 M2
Weed 4 ABUTH		COT-1 LF	2-3 LF	0	
Stg.Scale:					
Density :		9 M2	1 M2	0 M2	

Weed Code	BEAVA	BEAVA	BEAVA	CHEAL	ABUTH	AMARE	SETVI	BEAVA
Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA
Part Rated								
Rating Data Type	INJURY	INJURY	INJURY	CONTROL	CONTROL	CONTROL	CONTROL	INJURY
Rating Unit	%	%	%	%	%	%	%	%
Rating Date	May-30-01	Jun-07-01	Jun-19-01	Jun-19-01	Jun-19-01	Jun-19-01	Jun-19-01	Jul-17-01
Trt-Eval Interval	7 DAT	14 DAT	28 DAT	28 DAT	28 DAT	28 DAT	28 DAT	56 DAT

Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code								
1	Untreated Check					0	a 0	a 0	a 0	c 0	b 0	c 0	c 0
2	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a 0	a 0	a 91	b 94	a 76	b 76	b 0
	Triflusalufuron-methyl	4.5	G A/HA	Post	A								
	Merge	1.0	L/HA	Post	A								
3	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a 0	a 0	a 94	ab 94	a 85	ab 86	ab 0
	Triflusalufuron-methyl	4.5	G A/HA	Post	A								
	Quizalofop-p-ethyl	9	G A/HA	Post	A								
	Merge	1.0	L/HA	Post	A								
4	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a 0	a 0	a 93	ab 94	a 83	ab 81	ab 0
	Triflusalufuron-methyl	4.5	G A/HA	Post	A								
	Clopyralid	30	G A/HA	Post	A								
	Merge	1.0	L/HA	Post	A								
5	Desmedipham/Phenmedipham	124	G A/HA	Post	A	0	a 0	a 0	a 94	ab 94	a 85	ab 78	b 0
	Triflusalufuron-methyl	4.5	G A/HA	Post	A								
	Clopyralid	30	G A/HA	Post	A								
	Quizalofop-p-ethyl	9	G A/HA	Post	A								
	Merge	1.0	L/HA	Post	A								
6	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a 0	a 0	a 95	ab 94	a 84	ab 78	b 0
	Triflusalufuron-methyl	9.0	G A/HA	Post	A								
	Merge	1.0	L/HA	Post	A								
7	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a 0	a 0	a 97	a 97	a 93	a 95	a 0
	Triflusalufuron-methyl	9.0	G A/HA	Post	A								
	Quizalofop-p-ethyl	18	G A/HA	Post	A								
	Merge	1.0	L/HA	Post	A								

MICRO RATE PLUS ASSURE II IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C3

Weed Code	Crop Code	Part Rated	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	BEAVA	BEAVA	BEAVA	CHEAL BEAVA	ABUTH BEAVA	AMARE BEAVA	SETVI BEAVA	BEAVA
Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code									
							INJURY	INJURY	INJURY	CONTROL	CONTROL	CONTROL	CONTROL	INJURY
							%	%	%	%	%	%	%	%
							May-30-01	Jun-07-01	Jun-19-01	Jun-19-01	Jun-19-01	Jun-19-01	Jun-19-01	Jul-17-01
							7 DAT	14 DAT	28 DAT	28 DAT	28 DAT	28 DAT	28 DAT	56 DAT
8	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a 0	a 0	a 96	a 95	a 94	a 86	ab 0	a
	Triflusalufuron-methyl	9.0	G A/HA	Post	A									
	Clopyralid	60	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
9	Desmedipham/Phenmedipham	248	G A/HA	Post	A	0	a 0	a 0	a 96	a 96	a 82	ab 94	a 0	a
	Triflusalufuron-methyl	9.0	G A/HA	Post	A									
	Clopyralid	60	G A/HA	Post	A									
	Quizalofop-p-ethyl	18	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
	LSD (P=.05)					0.0	0.0	0.0	4.6	3.4	14.6	13.7	0.0	
	Standard Deviation					0.0	0.0	0.0	3.2	2.4	10.0	9.4	0.0	
	CV					0.0	0.0	0.0	3.79	2.8	13.25	12.55	0.0	

Means followed by same letter do not significantly differ (P=.05, LSD)

Weed Code	Crop Code	Part Rated	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	CHEAL BEAVA	ABUTH BEAVA	AMARE BEAVA	SETVI BEAVA	PANDI BEAVA	BEAVA A	BEAVA B	BEAVA A
Trt No.	Treatment Name	Rate	Unit	Grow Stg	Appl Code									
							CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	No/plot	No/plot	T/ha
							%	%	%	%	%	Weedy	Weeded	Weedy
							Jul-17-01	Jul-17-01	Jul-17-01	Jul-17-01	Jul-17-01	Oct-19-01	Oct-19-01	Oct-19-01
							56 DAT	56 DAT	56 DAT	56 DAT	56 DAT			
1	Untreated Check					0	c 0	c 0	c 0	c 0	c 0	c 25	c 50	a 24.2
2	Desmedipham/Phenmedipham	124	G A/HA	Post	A	96	b 96	ab 70	b 80	b 78	b 43	b 47	a 64.7	b
	Triflusalufuron-methyl	4.5	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
3	Desmedipham/Phenmedipham	124	G A/HA	Post	A	97	ab 95	b 81	ab 90	ab 83	b 52	ab 43	a 79.9	ab
	Triflusalufuron-methyl	4.5	G A/HA	Post	A									
	Quizalofop-p-ethyl	9	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
4	Desmedipham/Phenmedipham	124	G A/HA	Post	A	98	ab 97	ab 84	ab 89	ab 79	b 55	ab 44	a 79.6	ab
	Triflusalufuron-methyl	4.5	G A/HA	Post	A									
	Clopyralid	30	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
5	Desmedipham/Phenmedipham	124	G A/HA	Post	A	98	ab 98	ab 86	ab 90	ab 87	ab 54	ab 48	a 79.5	ab
	Triflusalufuron-methyl	4.5	G A/HA	Post	A									
	Clopyralid	30	G A/HA	Post	A									
	Quizalofop-p-ethyl	9	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
6	Desmedipham/Phenmedipham	248	G A/HA	Post	A	97	ab 95	b 91	a 94	a 89	ab 55	ab 49	a 80.9	ab
	Triflusalufuron-methyl	9.0	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
7	Desmedipham/Phenmedipham	248	G A/HA	Post	A	99	a 99	a 96	a 99	a 99	a 49	ab 45	a 91.5	a
	Triflusalufuron-methyl	9.0	G A/HA	Post	A									
	Quizalofop-p-ethyl	18	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
8	Desmedipham/Phenmedipham	248	G A/HA	Post	A	98	ab 98	ab 94	a 96	a 91	ab 59	a 46	a 92.4	a
	Triflusalufuron-methyl	9.0	G A/HA	Post	A									
	Clopyralid	60	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
9	Desmedipham/Phenmedipham	248	G A/HA	Post	A	98	ab 97	ab 82	ab 99	a 98	a 45	b 49	a 87.9	a
	Triflusalufuron-methyl	9.0	G A/HA	Post	A									
	Clopyralid	60	G A/HA	Post	A									
	Quizalofop-p-ethyl	18	G A/HA	Post	A									
	Merge	1.0	L/HA	Post	A									
	LSD (P=.05)					3.1	3.7	16.7	11.6	13.9	13.4	11.3	23.00	
	Standard Deviation					2.1	2.5	11.4	8.0	9.5	9.2	7.8	15.76	
	CV					2.46	2.95	15.06	9.74	12.19	18.96	16.61	20.84	

Means followed by same letter do not significantly differ (P=.05, LSD)

MICRO RATE PLUS ASSURE II IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB01C3

Weed Code			
Crop Code	BEAVA	BEAVA	BEAVA
Part Rated	A	B	B
Rating Data Type	T/Ac	T/ha	T/Ac
Rating Unit	Weedy	Weeded	Weeded
Rating Date	Oct-19-01	Oct-19-01	Oct-19-01
Trt-Eval Interval			

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	Appl Code				
1	Untreated Check	10.9	c	79.3	cd	35.7	cd		
2	Desmedipham/Phenmedipham	29.1	b	85.6	a-d	38.5	a-d		
	Triflusalufuron-methyl	4.5	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
3	Desmedipham/Phenmedipham	36.0	ab	82.3	bcd	37.0	bcd		
	Triflusalufuron-methyl	4.5	G A/HA	Post	A				
	Quizalofop-p-ethyl	9	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
4	Desmedipham/Phenmedipham	35.8	ab	84.5	bcd	38.0	bcd		
	Triflusalufuron-methyl	4.5	G A/HA	Post	A				
	Clopyralid	30	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
5	Desmedipham/Phenmedipham	35.8	ab	94.8	ab	42.7	ab		
	Triflusalufuron-methyl	4.5	G A/HA	Post	A				
	Clopyralid	30	G A/HA	Post	A				
	Quizalofop-p-ethyl	9	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
6	Desmedipham/Phenmedipham	36.4	ab	97.1	a	43.7	a		
	Triflusalufuron-methyl	9.0	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
7	Desmedipham/Phenmedipham	41.2	a	85.8	a-d	38.6	a-d		
	Triflusalufuron-methyl	9.0	G A/HA	Post	A				
	Quizalofop-p-ethyl	18	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
8	Desmedipham/Phenmedipham	41.6	a	76.2	d	34.3	d		
	Triflusalufuron-methyl	9.0	G A/HA	Post	A				
	Clopyralid	60	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
9	Desmedipham/Phenmedipham	39.5	a	89.0	abc	40.1	abc		
	Triflusalufuron-methyl	9.0	G A/HA	Post	A				
	Clopyralid	60	G A/HA	Post	A				
	Quizalofop-p-ethyl	18	G A/HA	Post	A				
	Merge	1.0	L/HA	Post	A				
LSD (P=.05)						10.35	12.48	5.62	
Standard Deviation						7.09	8.55	3.85	
CV						20.84	9.93	9.94	

Means followed by same letter do not significantly differ (P=.05, LSD)

Trial Comments

Conclusions: This trial was established to examine the effect of adding quizalofop-p-ethyl to tank mixtures of desmedipham/phenmedipham + triflusalufuron-methyl and desmedipham/phenmedipham + triflusalufuron-methyl + clopyralid on annual grass control, and sugar beet injury and yield.

No visual injury was observed in any of the treatments throughout the growing season. No differences in yield were detected among the various micro rate treatments, with or without the addition of quizalofop-p-ethyl.

CHEAL and ABUTH control was excellent for all treatments. Desmedipham/ phenmedipham + triflusalufuron-methyl provided fair to good control of AMARE, while desmedipham/phenmedipham + triflusalufuron-methyl + clopyralid gave good to excellent control of AMARE. SETVI control was good at the low micro rate and excellent at the high micro rate. The addition of quizalofop-p-ethyl increased control of PANDI from fair to good at the low micro rate, and from good to excellent at the high micro rate.