

Purpose of this Booklet

This booklet is provided as a guide to the 2003 sugar beet weed control research plots. The experiments outlined in this booklet were located at Ridgetown College

We appreciate the cooperation and assistance provided by the chemical companies and their representatives, their ideas, the chemical samples they have provided for the research work carried out at Ridgetown College, University of Guelph, as well as the monetary assistance so kindly provided by a number of chemical companies. Funding for the 2003 research program on sugar beet weed control was provided by the following:

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We trust 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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**2003
RIDGETOWN
WEATHER DATA**

RAINFALL IN MM.

DATE	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.
1	3.8	15.2	0	0	0	25.0	0
2	0	12.4	0	0	5.2	0.4	0.2
3	0	0	0	0	21.0	0	4.8
4	25.0	0	0.8	1.8	0.2	0	0.6
5	0.4	16.8	0.4	0	7.6	0	0
6	6.2	0	0	0	1.0	0	0
7	0.2	0	0	0	0	0	0
8	0	1.6	11.8	0.2	0	0	0
9	0	2.4	0.2	1.4	0	0	0
10	0	0.4	0	12.2	0	0	0
11	0	7.2	0.6	1.2	0	0.2	0
12	0	0.6	17.0	3.0	1.6	0	0
13	0	0.2	0.2	0.2	0.2	0	0
14	0	0	0.2	0	0	0.6	34.4
15	0	1.2	0	4.6	0	19.8	2.4
16	0	1.6	0	0.2	1.0	0	0
17	0	0	0.2	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	12.2	0	0	29.6	0
20	2.6	13.8	0	1.8	0	0	0
21	0	0	0	8.8	0	0	0
22	0	0.2	0	0.6	0	24.8	4.2
23	0.2	11.7	0	0	0	0.2	0
24	0	1.5	0	0	0	5.8	0.2
25	0	0	0	0	0	1.2	2.4
26	0	0	4.6	0	13.0	0.6	7.0
27	0.2	3.0	0.2	0	0	14.0	0
28	0	0	0	0	0	0	7.6
29	0	0	5.2	0	1.0	0.2	0.2
30	55.8	0.8	0	0	0	0.2	0
31		18.4		0	0.8		0
TOTAL	94.4	109.0	41.4	36.0	52.6	122.6	64.0
30 YEAR AVG.	80.2	75.4	80.0	83.6	100.0	90.7	62.2

TEMPERATURE (C)

MEAN MAX	26.4	23.5	30.9	30.5	31.3	26.9	25.7
MEAN MIN	-6.3	1.5	4.2	8.4	6.5	3.6	-2.4
MEAN	10.0	12.5	17.6	19.4	18.9	15.2	11.6

TEMPERATURE, 30 YEAR AVERAGE (C)

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

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>
AMASS	Pigweed species	<i>Amaranthus sp.</i>
AMBEL	Common ragweed	<i>Ambrosia artemisiifolia</i>
ARTBI	Biennial wormwood	<i>Artemisia biennis</i>
ATXPA	Spreading atriplex	<i>Atriplex patula</i>
CAGSE	Hedge bindweed	<i>Calystegia sepium</i>
CAPBP	Shepherd's-purse	<i>Capsella bursa-pastoris</i>
CHEAL	Common lamb's-quarters	<i>Chenopodium album</i>
CIRAR	Canada thistle	<i>Cirsium arvense</i>
CONAR	Field bindweed	<i>Convolvulus arvensis</i>
DAUCA	Wild carrot	<i>Daucus carota</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>
GAETE	Hempnettle	<i>Galeopsis tetrahit</i>
HIBTR	Flower-of-an-hour	<i>Hibiscus trionum</i>
LACSE	Prickly lettuce	<i>Lactuca serriola</i>
LAMAM	Henbit	<i>Lamium amplexicaule</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>
POROL	Purslane	<i>Portulaca oleracea</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>
TRFPR	Red clover	<i>Trifolium pratense</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>
CCHPA	Longspine sandbur	<i>Cenchrus pauciflorus</i>
DIGIS	Smooth crabgrass	<i>Digitaria ischaemum</i>
DIGSA	Large (hairy) 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>
SETFA	Giant foxtail	<i>Setaria faberii</i>
SETLU	Yellow foxtail	<i>Setaria glauca</i>
SETVI	Green foxtail	<i>Setaria viridis</i>

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CROP: BEAVA, SUGAR BEET (E17). Planted: Apr-24-03, 118000 SE/HA, 2 CM Deep, 75 CM Row Width. Planting Method: MONOSEM VACUUM PLANTER.
 Emerged On: May-04-03.
 FIELD Site. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RCAT - K range.
 D.A.T. = Days after initial postemergence treatment applied. Back half of plots maintained weed free. "A" applied Apr. 26/03.
 Post B applied May 22/03, Post C applied May 7/03, Post D applied May 17/03, Post E applied May 28/03, Post F applied June 6/03,
 Post G applied June 17/03.
 Site Description: Soil Texture: LOAM. %OM: 5.5 %Sand: 51.3 %Silt: 32.4 %Clay: 16.4 pH: 7.2 CEC: 19.

APPLICATION DESCRIPTION

Application:	A	B	C	D	E	F	G
Date	Apr-26-03	May-07-03	May-17-03	May-22-03	May-26-03	Jun-06-03	Jun-17-03
Time of Day	0900	0700	0800	1000	1400	1100	800
Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Timing	PREPRE	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS
Placement	BROSOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp	10 C	9.8 C	18 C	12 C	22 C	24 C	20 C
% Humidity	42	89	68	49	59	58	80
Wind Speed	8 KPH	3 KPH	15 KPH	11 KPH	12 KPH	9 KPH	10 KPH
Dew Present	Y	N	N	N	N	N	N
Soil Moisture	EXCESSIVE	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE
Cloud Cover	0%	100%	50%	50%	80%	10%	70%
Equipment	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY
Pressure	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
Nozzle Size	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR
Noz.Spacing	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM
Carrier	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
Propellant	CO2	CO2	CO2	CO2	CO2	CO2	CO2

STAGE AT APPLICATION

Crop 1 BEAVA COT	COT	2 LF	3 LF	4 LF	4-5 LF	8-9 LF
Weed 1 ABUTH	COT	COT	COT	COT- 1 LF	2 LF	COT
Stg.Scale:						
Density :	9 SQ M	13 SQ M	10 SQ M	16 SQ M	8 SQ M	7 SQ M
Weed 2 CHEAL				COT -2 LF	2-4 LF	COT
Stg.Scale:						
Density :				13 SQ M	13 SQ M	6 SQ M
Weed 4 SETVI					2-3 LF	1-3 LF
Density :					11 SQ M	37 SQ M

Weed Code	Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	ABUTH	CHEAL
Part Rated					STAND A	STAND B		BEAVA	BEAVA
Rating Data Type		INJURY	INJURY	INJURY	COUNT	COUNT		CONTROL	CONTROL
Rating Unit		%	%	%	4 M ROW	4 M ROW		%	%
Rating Date		May-16-03	May-23-03	Jun-06-03	Jun-11-03	Jun-11-03		Jun-06-03	Jun-06-03
Crop Stage		2 LF	2-4 LF	4-6 LF	4-6 LF	4-6 LF		4-6 LF	4-6 LF
Crop Stage Scale		1.0 CM	1.5-2 CM	3 CM	3 CM	3 CM			
Weed Stage								2 LF	2-4 LF
Weed Density, Unit								8 SQ.M.	13 SQ.M.
Trt-Eval Interval		9 DAT	16 DAT	30 DAT	35 DAT	35 DAT		30 DAT	30 DAT

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code									
1	UNTREATED CHECK							0	a 0	c 0	c 26	ab 30	ab 0	d 0	b	
2	NORTRON	480	SC	1.5	LAC	pre	A	0	a 1	bc 1	bc 27	ab 31	ab 96	c 99	a	
	PYRAMIN	430	SC	2.1	LAC	pre	A									
	BETAMIX	150	EC	2.7	LAC	post	B									
	MERGE		SO	0.4	LAC	post	B									
3	NORTRON	480	SC	1.5	LAC	pre	A	0	a 0	c 0	c 25	abc 30	ab 99	a 99	a	
	PYRAMIN	430	SC	2.1	LAC	pre	A									
	BETAMIX	150	EC	2.7	LAC	post	B									
	NORTRON	480	SC	1.4	LAC	post	B									
4	NORTRON	480	SC	1.5	LAC	pre	A	0	a 13	a 14	a 18	cd 21	c 99	a 99	a	
	PYRAMIN	430	SC	2.1	LAC	pre	A									
	BETAMIX	150	EC	1.35	LAC	post	C									
	UPBEET	50	DF	14	GAC	post	C									
	BETAMIX	150	EC	1.35	LAC	post	D									
	LONTREL	360	SN	0.135	LAC	post	D									
	UPBEET	50	DF	14	GAC	post	D									
	MERGE		SO	0.4	LAC	post	D									

Weed Code							ABUTH	CHEAL													
Crop Code	Part Rated	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA														
Rating Data Type	Rating Unit	INJURY	INJURY	INJURY	BEAVA	BEAVA	BEAVA														
Rating Date	Crop Stage	%	%	%	STAND	STAND	CONTROL														
Crop Stage Scale	Weed Stage	May-16-03	May-23-03	Jun-06-03	COUNT	COUNT	CONTROL														
Weed Density, Unit	Trt-Eval Interval	2 LF	2-4 LF	4-6 LF	4 M ROW	4 M ROW	%														
		1.0 CM	1.5-2 CM	3 CM	3 CM	3 CM	%														
							2 LF														
							8 SQ.M.														
							13 SQ.M.														
		9 DAT	16 DAT	30 DAT	35 DAT	35 DAT	30 DAT														
							30 DAT														
							30 DAT														
5	NORTRON	480	SC	1.5	L/JAC	pre	A	0	a	3	bc	3	bc	24	bcd	31	ab	98	ab	99	a
	PYRAMIN	430	SC	2.1	L/JAC	pre	A														
	BETAMIX	150	EC	0.67	L/JAC	post	C														
	LONTREL	360	SN	0.067	L/JAC	post	C														
	UPBEET	50	DF	7.2	G/JAC	post	C														
	MERGE		SO	0.4	L/JAC	post	C														
	BETAMIX	150	EC	0.67	L/JAC	post	E														
	LONTREL	360	SN	0.067	G/JAC	post	E														
	UPBEET	50	DF	7.2	L/JAC	post	E														
	MERGE		SO	0.4	L/JAC	post	E														
	BETAMIX	150	EC	0.67	L/JAC	post	F														
	LONTREL	360	SN	0.067	L/JAC	post	F														
	UPBEET	50	DF	7.2	L/JAC	post	F														
	MERGE		SO	0.4	L/JAC	post	F														
	BETAMIX	150	EC	0.67	L/JAC	post	G														
	LONTREL	360	SN	0.067	L/JAC	post	G														
	UPBEET	50	DF	7.2	G/JAC	post	G														
	MERGE		SO	0.41	L/JAC	post	G														
6	NORTRON	480	SC	1.5	L/JAC	pre	A	0	a	3	bc	3	bc	26	ab	29	ab	99	a	99	a
	PYRAMIN	430	SC	2.1	L/JAC	pre	A														
	PYRAMIN	430	SC	2.0	L/JAC	post	B														
	CITOWETT PLUS		SO	0.25	% V/V	post	B														
7	NORTRON	480	SC	1.5	L/JAC	pre	A	0	a	0	c	0	c	26	ab	28	abc	99	a	99	a
	PYRAMIN	430	SC	2.1	L/JAC	pre	A														
	PYRAMIN	430	SC	2.0	L/JAC	post	B														
	NORTRON	480	SC	1.4	L/JAC	post	B														
8	NORTRON	480	SC	1.5	L/JAC	pre	A	0	a	9	ab	9	ab	17	d	21	c	99	a	99	a
	PYRAMIN	430	SC	2.1	L/JAC	pre	A														
	PYRAMIN	430	SC	1.10	L/JAC	post	C														
	UPBEET	50	DF	14	G/JAC	post	C														
	PYRAMIN	430	EC	1.01	L/JAC	post	D														
	LONTREL	360	SN	1.01	L/JAC	post	D														
	UPBEET	50	DF	14	G/JAC	post	D														
	CITOWETT PLUS		SO	0.25	% V/V	post	D														
9	NORTRON	480	SC	1.5	L/JAC	pre	A	0	a	9	ab	9	ab	20	bcd	25	bc	99	a	99	a
	PYRAMIN	430	SC	2.1	L/JAC	pre	A														
	PYRAMIN	430	SC	0.5	L/JAC	post	C														
	LONTREL	360	SN	.067	L/JAC	post	C														
	UPBEET	50	DF	7.2	G/JAC	post	C														
	CITOWETT PLUS		SO	0.25	% V/V	post	C														
	PYRAMIN	430	SC	0.5	L/JAC	post	E														
	LONTREL	360	SN	.067	L/JAC	post	E														
	UPBEET	50	DF	7.2	G/JAC	post	E														
	CITOWETT PLUS		SO	0.25	% V/V	post	E														
	PYRAMIN	430	SC	0.5	L/JAC	post	F														
	LONTREL	360	SN	.067	L/JAC	post	F														
	UPBEET	50	DF	7.2	G/JAC	post	F														
	CITOWETT PLUS		SO	0.25	% V/V	post	F														
	PYRAMIN	430	SC	0.5	L/JAC	post	G														
	LONTREL	360	SN	.067	L/JAC	post	G														
	UPBEET	50	DF	7.2	G/JAC	post	G														
	CITOWETT PLUS		SO	0.25	% V/V	post	G														
10	BETAMIX	150	EC	.67	L/JAC	post	C	0	a	5	abc	6	abc	31	a	28	abc	97	bc	99	a
	LONTREL	360	SN	.067	L/JAC	post	C														
	UPBEET	50	DF	7.2	G/JAC	post	C														
	MERGE		SO	0.4	L/JAC	post	C														
	BETAMIX	150	EC	0.67	L/JAC	post	E														
	LONTREL	360	SN	.067	L/JAC	post	E														
	UPBEET	50	DF	7.2	G/JAC	post	E														
	MERGE		SO	0.4	L/JAC	post	E														
	BETAMIX	150	EC	.67	L/JAC	post	F														
	LONTREL	360	SN	.067	GL/JAC	post	F														
	UPBEET	50	DF	7.2	G/JAC	post	F														
	MERGE		SO	1	L/HA	post	F														
	BETAMIX	150	EC	0.67	L/JAC	post	G														
	LONTREL	360	SN	.067	L/JAC	post	G														
	UPBEET	50	DF	7.2	G/JAC	post	G														
	MERGE		SO	0.4	L/JAC	post	G														

WEED MANAGEMENT IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M1

Weed Code						ABUTH	CHEAL														
Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA														
Part Rated						STAND A	STAND B														
Rating Data Type	INJURY	INJURY	INJURY	STAND COUNT	STAND COUNT	CONTROL	CONTROL														
Rating Unit	%	%	%	4 M ROW	4 M ROW	%	%														
Rating Date	May-16-03	May-23-03	Jun-06-03	Jun-11-03	Jun-11-03	Jun-06-03	Jun-06-03														
Crop Stage	2 LF	2-4 LF	4-6 LF	4-6 LF	4-6 LF	4-6 LF	4-6 LF														
Crop Stage Scale	1.0 CM	1.5-2 CM	3 CM	3 CM	3 CM																
Weed Stage						2 LF	2-4 LF														
Weed Density, Unit						8 SQ.M.	13 SQ.M.														
Trt-Eval Interval	9 DAT	16 DAT	30 DAT	35 DAT	35 DAT	30 DAT	30 DAT														
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit Unit	Grow Stg	Appl Code														
11	PYRAMIN	430	SC	0.5	L/AC	post	C	0	a	6	abc	6	abc	26	ab	35	a	99	a	99	a
	LONTREL	360	SN	.067	L/AC	post	C														
	UPBEET	50	DF	7.2	G/AC	post	C														
	CITOWETT PLUS		SO	0.25	% V/V	post	C														
	PYRAMIN	430	SC	0.5	L/AC	post	E														
	LONTREL	360	SN	.067	L/AC	post	E														
	UPBEET	50	DF	7.2	G/AC	post	E														
	CITOWETT PLUS		SO	0.25	% V/V	post	E														
	PYRAMIN	430	SC	0.5	L/AC	post	F														
	LONTREL	360	SN	.067	L/AC	post	F														
	UPBEET	50	DF	7.2	G/AC	post	F														
	CITOWETT PLUS		SO	0.25	% V/V	post	F														
	PYRAMIN	430	SC	0.5	L/AC	post	G														
	LONTREL	360	SN	.067	L/AC	post	G														
	UPBEET	50	DF	7.2	G/AC	post	G														
	CITOWETT PLUS		SO	0.25	% V/V	post	G														
	LSD (P=.05)							0.0	7.9	7.7	7.1	7.8	1.5	0.0							
	Standard Deviation							0.0	5.4	5.3	4.9	5.4	1.0	0.0							
	CV							0.0	126.04	117.34	20.31	19.34	1.17	0.0							

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

Trt No.	Treatment Name	Form Conc	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code	SETVI BEAVA	ABUTH BEAVA	CHEAL BEAVA	PANDI BEAVA	SETVI BEAVA	BEAVA WEEDY YIELD NO/PLOT	BEAVA HOED YIELD NO/PLOT	
								CONTROL %	CONTROL %	CONTROL %	CONTROL %	CONTROL %	Oct-16-03	Oct-16-03	
								Jun-06-03	Jul-02-03	Jul-02-03	Jul-02-03	Jul-02-03			
								4-6 LF	10-11 LF	10-11 LF	10-11 LF	10-11 LF			
								2-3 LF	2-4 LF	16-20+ L	5-7 LF	3-7 LF			
								11 SQ.M.	10 SQ.M.	25 SQ M	8 SQ M	18 SQ M			
								30 DAT	56 DAT	56 DAT	56 DAT	56 DAT			
1	UNTREATED CHECK							0	c 0	d 0	c 0	c 0	c 25	cd 57	a
2	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 96	bc 99	a 97	a 96	ab 44	ab 57	a
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	BETAMIX	150	EC	2.7	L/AC	post	B								
	MERGE		SO	0.4	L/AC	post	B								
3	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 97	abc 99	a 98	a 98	a 40	a-d 52	ab
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	BETAMIX	150	EC	2.7	L/AC	post	B								
	NORTRON	480	SC	1.4	L/AC	post	B								
4	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 96	bc 99	a 96	a 97	a 26	cd 34	d
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	BETAMIX	150	EC	1.35	L/AC	post	C								
	UPBEET	50	DF	14	G/AC	post	C								
	BETAMIX	150	EC	1.35	L/AC	post	D								
	LONTREL	360	SN	.135	L/AC	post	D								
	UPBEET	50	DF	14	G/AC	post	D								
	MERGE		SO	0.4	L/AC	post	D								
5	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 98	ab 99	a 99	a 98	a 42	abc 53	ab
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	BETAMIX	150	EC	.67	L/AC	post	C								
	LONTREL	360	SN	.067	L/ACG	A/HA	post C								
	UPBEET	50	DF	7.2	G/AC	post	C								
	MERGE		SO	0.4	L/AC	post	C								
	BETAMIX	150	EC	0.67	L/AC	post	E								
	LONTREL	360	SN	.067	L/AC	post	E								
	UPBEET	50	DF	7.2	G/AC	post	E								
	MERGE		SO	1	L/HA	post	E								
	BETAMIX	150	EC	.67	L/AC	post	F								
	LONTREL	360	SN	.067	L/AC	post	F								
	UPBEET	50	DF	7.2	G/AC	post	F								
	MERGE		SO	0.4	L/AC	post	F								
	BETAMIX	150	EC	0.67	L/AC	post	G								
	LONTREL	360	SN	.067	L/AC	post	G								
	UPBEET	50	DF	7.2	G/AC	post	G								
	MERGE		SO	0.4	L/AC	post	G								
6	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 95	c 97	b 96	a 97	a 39	a-d 58	a
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	PYRAMIN	430	SC	2.0	L/AC	post	B								
	CITOWETT PLUS		SO	0.25	% V/V	post	B								
7	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 97	abc 99	a 98	a 99	a 48	a 48	abc
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	PYRAMIN	430	SC	2.0	L/AC	post	B								
	NORTRON	480	SC	1.4	L/AC	post	B								
8	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 97	abc 98	ab 95	a 96	a 23	d 41	bcd
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	PYRAMIN	430	SC	1.01	L/AC	post	C								
	UPBEET	50	DF	14	G/AC	post	C								
	PYRAMIN	430	EC	1.01	L/AC	post	D								
	LONTREL	360	SN	.135	L/AC	post	D								
	UPBEET	50	DF	14	G/AC	post	D								
	CITOWETT PLUS		SO	0.25	% V/V	post	D								
9	NORTRON	480	SC	1.5	L/AC	pre	A	99	a 99	a 99	a 97	a 98	a 28	bcd 36	cd
	PYRAMIN	430	SC	2.1	L/AC	pre	A								
	PYRAMIN	430	SC	0.5	L/AC	post	C								
	LONTREL	360	SN	.067	L/AC	post	C								
	UPBEET	50	DF	7.2	L/AC	post	C								
	CITOWETT PLUS		SO	0.25	% V/V	post	C								
	PYRAMIN	430	SC	0.5	L/AC	post	E								
	LONTREL	360	SN	.067	L/AC	post	E								
	UPBEET	50	DF	7.2	L/AC	post	E								
	CITOWETT PLUS		SO	0.25	% V/V	post	E								
	PYRAMIN	430	SC	0.5	L/AC	post	F								
	LONTREL	360	SN	.067	L/AC	post	F								
	UPBEET	50	DF	7.2	L/AC	post	F								
	CITOWETT PLUS		SO	0.25	% V/V	post	F								
	PYRAMIN	430	SC	0.5	L/AC	post	G								
	LONTREL	360	SN	0.67	L/AC	post	G								
	UPBEET	50	DF	7.2	G/AC	post	G								
	CITOWETT PLUS		SO	0.25	% V/V	post	G								

WEED MANAGEMENT IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M1

Weed Code	SETVI	ABUTH	CHEAL	PANDI	SETVI	BEAVA	BEAVA															
Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA															
Part Rated						WEEDY	HOED															
Rating Data Type	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	YIELD	YIELD															
Rating Unit	%	%	%	%	%	NO/PLOT	NO/PLOT															
Rating Date	Jun-06-03	Jul-02-03	Jul-02-03	Jul-02-03	Jul-02-03	Oct-16-03	Oct-16-03															
Crop Stage	4-6 LF	10-11 LF	10-11 LF	10-11 LF	10-11 LF																	
Crop Stage Scale																						
Weed Stage	2-3 LF	2-4 LF	16-20+ L	5-7 LF	3-7 LF																	
Weed Density, Unit	11 SQ.M.	10 SQ.M.	25 SQ M	8 SQ M	18 SQ M																	
Trt-Eval Interval	30 DAT	56 DAT	56 DAT	56 DAT	56 DAT																	
Trt No.	Treatment Name	Form	Form	Rate	Unit	Grow Stg	Appl Code															
10	BETAMIX	150	EC	.67	L/JAC	post	C	98		b	99	a	99	a	76	b	96	ab	35	a-d	47	abc
	LONTREL	360	SN	.067	L/JAC	post	C															
	UPBEET	50	DF	7.2	G/JAC	post	C															
	MERGE		SO	0.4	L/JAC	post	C															
	BETAMIX	150	EC	.67	L/JAC	post	E															
	LONTREL	360	SN	.067	L/JAC	post	E															
	UPBEET	50	DF	7.2	G/JAC	post	E															
	MERGE		SO	0.4	L/JAC	post	E															
	BETAMIX	150	EC	.67	L/JAC	post	F															
	LONTREL	360	SN	.067	L/JAC	post	F															
	UPBEET	50	DF	7.2	L/JAC	post	F															
	MERGE		SO	0.4	L/JAC	post	F															
	BETAMIX	150	EC	0.5	L/JAC	post	G															
	LONTREL	360	SN	.067	L/JAC	post	G															
	UPBEET	50	DF	7.2	G/JAC	post	G															
	MERGE		SO	0.4	L/JAC	post	G															
11	PYRAMIN	430	SC	0.5	L/JAC	post	C	99	a	99	a	99	a	89	ab	91	b	31	a-d	44	bcd	
	LONTREL	360	SN	0.067	L/JAC	post	C															
	UPBEET	50	DF	7.2	G/JAC	post	C															
	CITOWETT PLUS		SO	0.25	% V/V	post	C															
	PYRAMIN	430	SC	0.5	L/JAC	post	E															
	LONTREL	360	SN	0.067	L/JAC	post	E															
	UPBEET	50	DF	7.2	L/JAC	post	E															
	CITOWETT PLUS		SO	0.25	% V/V	post	E															
	PYRAMIN	430	SC	0.5	L/JAC	post	F															
	LONTREL	360	SN	.067	L/JAC	post	F															
	UPBEET	50	DF	7.2	G/JAC	post	F															
	CITOWETT PLUS		SO	0.25	% V/V	post	F															
	PYRAMIN	430	SC	0.5	L/JAC	post	G															
	LONTREL	360	SN	.067	L/JAC	post	G															
	UPBEET	50	DF	7.2	G/JAC	post	G															
	CITOWETT PLUS		SO	0.25	% V/V	post	G															
LSD (P=.05)								0.9	2.6	1.4	19.5	4.8	18.0	12.7								
Standard Deviation								0.6	1.8	0.9	13.5	3.3	12.5	8.8								
CV								0.67	2.08	1.06	15.77	3.76	36.1	18.44								

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

Weed Code									
Crop Code						BEAVA	BEAVA	BEAVA	BEAVA
Part Rated						WEEDY	HOED	WEEDY	HOED
Rating Data Type						YIELD	YIELD	YIELD	YIELD
Rating Unit						T/HA	T/HA	T/AC	T/AC
Rating Date						Oct-16-03	Oct-16-03	Oct-16-03	Oct-16-03
Crop Stage									
Crop Stage Scale									
Weed Stage									
Weed Density, Unit									
Trt-Eval Interval									

Trt No.	Treatment Name	Form Conc	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code												
1	UNTREATED CHECK							31.7	d	76.6	d	14.1	d	34.2	d				
2	NORTRON	480	SC	1.5	L/AC	pre	A	68.6	abc	113.9	abc	30.6	abc	50.8	abc				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	BETAMIX	150	EC	2.7	L/AC	post	B												
	MERGE		SO	0.4	L/AC	post	B												
3	NORTRON	480	SC	1.5	L/AC	pre	A	78.2	a	124.8	a	34.9	a	55.7	a				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	BETAMIX	150	EC	2.7	L/AC	post	B												
	NORTRON	480	SC	1.4	L/AC	post	B												
4	NORTRON	480	SC	1.5	L/AC	pre	A	50.7	bcd	83.9	bcd	22.6	bcd	37.4	bcd				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	BETAMIX	150	EC	1.35	L/AC	post	C												
	UPBEET	50	DF	14	G/AC	post	C												
	BETAMIX	150	EC	1.35	L/AC	post	D												
	LONTREL	360	SN	.135	L/AC	post	D												
	UPBEET	50	DF	14	G/AC	post	D												
	MERGE		SO	0.4	L/AC	post	D												
5	NORTRON	480	SC	1.5	L/AC	pre	A	71.2	ab	114.2	ab	31.7	ab	50.9	ab				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	BETAMIX	150	EC	0.67	L/AC	post	C												
	LONTREL	360	SN	0.067	L/AC	post	C												
	UPBEET	50	DF	7.2	L/AC	post	C												
	MERGE		SO	0.4	L/AC	post	C												
	BETAMIX	150	EC	0.67	L/AC	post	E												
	LONTREL	360	SN	0.067	L/AC	post	E												
	UPBEET	50	DF	7.2	G/AC	post	E												
	MERGE		SO	0.4	L/AC	post	E												
	BETAMIX	150	EC	0.67	L/AC	post	F												
	LONTREL	360	SN	.067	L/AC	post	F												
	UPBEET	50	DF	7.2	G/AC	post	F												
	MERGE		SO	0.4	L/AC	post	F												
	BETAMIX	150	EC	0.67	L/AC	post	G												
	LONTREL	360	SN	.067	L/AC	post	G												
	UPBEET	50	DF	9	G/AC	post	G												
	MERGE		SO	0.4	L/AC	post	G												
6	NORTRON	480	SC	1.5	L/AC	pre	A	69.6	abc	119.4	a	31.1	abc	53.2	a				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	PYRAMIN	430	SC	2.7	L/AC	post	B												
	CITOWETT PLUS		SO	0.25	% V/V	post	B												
7	NORTRON	480	SC	1.5	L/AC	pre	A	73.0	ab	119.5	a	32.5	ab	53.3	a				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	PYRAMIN	430	SC	2.7	L/AC	post	B												
	NORTRON	480	SC	1.4	L/AC	post	B												
8	NORTRON	480	SC	1.5	L/AC	pre	A	44.6	cd	85.1	bcd	19.9	cd	38.0	bcd				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	PYRAMIN	430	SC	2.0	L/AC	post	C												
	UPBEET	50	DF	14	G/AC	post	C												
	PYRAMIN	430	EC	1.01	L/AC	post	D												
	LONTREL	360	SN	.135	L/AC	post	D												
	UPBEET	50	DF	14	G/AC	post	D												
	CITOWETT PLUS		SO	0.25	% V/V	post	D												
9	NORTRON	480	SC	1.5	L/AC	pre	A	48.5	bcd	84.6	bcd	21.6	bcd	37.7	bcd				
	PYRAMIN	430	SC	2.1	L/AC	pre	A												
	PYRAMIN	430	SC	0.5	L/AC	post	C												
	LONTREL	360	SN	.067	L/AC	post	C												
	UPBEET	50	DF	7.2	G/AC	post	C												
	CITOWETT PLUS		SO	0.25	% V/V	post	C												
	PYRAMIN	430	SC	0.5	L/AC	post	E												
	LONTREL	360	SN	.067	L/AC	post	E												
	UPBEET	50	DF	7.2	G/AC	post	E												
	CITOWETT PLUS		SO	0.25	% V/V	post	E												
	PYRAMIN	430	SC	0.5	L/AC	post	F												
	LONTREL	360	SN	0.067	L/AC	post	F												
	UPBEET	50	DF	7.2	G/AC	post	F												
	CITOWETT PLUS		SO	0.25	% V/V	post	F												
	PYRAMIN	430	SC	0.5	L/AC	post	G												
	LONTREL	360	SN	0.067	L/AC	post	G												
	UPBEET	50	DF	7.2	G/AC	post	G												
	CITOWETT PLUS		SO	0.25	% V/V	post	G												

Weed Code
 Crop Code BEAVA BEAVA BEAVA BEAVA
 Part Rated WEEDY HOED WEEDY HOED
 Rating Data Type YIELD YIELD YIELD YIELD
 Rating Unit T/HA T/HA T/AC T/AC
 Rating Date Oct-16-03 Oct-16-03 Oct-16-03 Oct-16-03
 Crop Stage
 Crop Stage Scale
 Weed Stage
 Weed Density, Unit
 Trt-Eval Interval

Trt No.	Treatment Name	Form Conc	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code						
10	BETAMIX	150	EC	.67	L/AC	post	C	52.6	a-d	94.2	a-d	23.5	a-d 42.0 a-d
	LONTREL	360	SN	.067	L/AC	post	C						
	UPBEET	50	DF	7.2	G/AC	post	C						
	MERGE		SO	0.4	L/AC	post	C						
	BETAMIX	150	EC	.67	L/AC	post	E						
	LONTREL	360	SN	.067	L/AC	post	E						
	UPBEET	50	DF	7.2	G/AC	post	E						
	MERGE		SO	0.4	L/AC	post	E						
	BETAMIX	150	EC	.67	L/AC	post	F						
	LONTREL	360	SN	.067	L/AC	post	F						
	UPBEET	50	DF	7.2	G/AC	post	F						
	Merge		SO	0.4	L/AC	post	F						
	BETAMIX	150	EC	.67	L/AC	post	G						
	LONTREL	360	SN	.067	L/AC	post	G						
	UPBEET	50	DF	7.2	G/AC	post	G						
	MERGE		SO	0.4	L/AC	post	G						
11	PYRAMIN	430	SC	.50	L/AC	post	C	50.0	bcd	81.6	cd	22.3	bcd 36.4 cd
	LONTREL	360	SN	.067	L/AC	post	C						
	UPBEET	50	DF	7.2	G/AC	post	C						
	CITOWETT PLUS		SO	0.25	% V/V	post	C						
	PYRAMIN	430	SC	.50	L/AC	post	E						
	LONTREL	360	SN	.067	L/AC	post	E						
	UPBEET	50	DF	7.2	G/AC	post	E						
	CITOWETT PLUS		SO	0.25	% V/V	post	E						
	PYRAMIN	430	SC	.50	L/AC	post	F						
	LONTREL	360	SN	.067	L/AC	post	F						
	UPBEET	50	DF	7.2	G/AC	post	F						
	CITOWETT PLUS		SO	0.25	% V/V	post	F						
	PYRAMIN	430	SC	.50	L/AC	post	G						
	LONTREL	360	SN	60	.067	post	G						
	UPBEET	50	DF	7.2	G/AC	post	G						
	Citowett Plus		SO	0.25	% V/V	post	G						
LSD (P=.05)								25.84	32.33	11.53	14.42		
Standard Deviation								17.90	22.39	7.98	9.99		
CV								30.82	22.44	30.82	22.44		

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 different herbicide programs on visual injury and yield of sugar beet. We applied single postemergence treatments BETAMIX (1000 g a.i. ha-1), PYRAMIN (2150 g a.i. ha-1), standard split treatments BETAMIX + UPBEET + LONTREL (500+17.5+120 g a.i. ha-1) and PYRAMIN+ UPBEET + LONTREL (1075+17.5+120 g a.i. ha-1), and micro-rate treatments of BETAMIX + UPBEET + LONTREL (250+9+60 g a.i. ha-1) and PYRAMIN + UPBEET + LONTREL (537.5+9+60 g a.i. ha-1) following pre-emergent treatments of NORTRON + PYRAMIN (1750+2260 g a.i. ha-1), and micro-rates BETAMIX + UPBEET + LONTREL (250+9+60 g a.i. ha-1) and PYRAMIN + UPBEET + LONTREL (537.5+9+60 g a.i. ha-1) alone. The other half of the trial was not hand weeded to determine treatment effects on weed efficacy. Stunted plants and reduced emergence were observed when NORTRON + PYRAMIN applied preemergence was followed by standard split applications of BETAMIX + UPBEET + LONTREL, PYRAMIN + UPBEET + LONTREL, or micro-rates of PYRAMIN + UPBEET + LONTREL. Visual injury was commercially significant (i.e. >10%) only in the standard split applications of BETAMIX + UPBEET + LONTREL. Visual injury in the remaining treatments was less than 10%, and was outgrown before the end of the growing season.

Stand counts and final beet numbers were reduced when NORTRON + applied preemergence was followed by standard split applications of BETAMIX + UPBEET + LONTREL or PYRAMIN+ UPBEET + LONTREL. The remaining treatments did not reduce stand counts compared to the untreated, weed-free check.

All treatments provided excellent season long control of velvetleaf, common lamb's-quarters and green foxtail. The micro-rate treatments of PYRAMIN+ UPBEET + LONTREL and BETAMIX + UPBEET + LONTREL did not provide full season control of fall panicum.

Sugar beet yields in all treatments were comparable to, or greater than, yield in the untreated weed-free check. Standard splits of PYRAMIN + UPBEET + LONTREL, following low rates of NORTRON + PYRAMIN have potential to provide equivalent yields to standard splits and micro-rates BETAMIX + UPBEET + LONTREL

APPLICATION OF MICRO RATES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M2

CROP: BEAVA, SUGAR BEET (E17). Planted: Apr-24-03, 118000 SE/HA, 2 CM Deep, 75 CM Row Width. Planting Method: MONOSEM VACUUM PLANTER. Emerged On: May-04-03. FIELD Site. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RCAT - K WEST. Back half of all plots were weeded. Treatments applied on the following dates TR. 2 - APR. 26, TR. 3 - MAY 8, MAY 26. TR. 3 - MAY 8, MAY 26, JUNE 6, JUNE 16 TR. 4 - MAY 8, MAY 26, JUNE 6, JUNE 20 TR. 5 - MAY 8, MAY 26, JUNE 10, JUNE 20 TR. 6 - MAY 8, MAY 30, JUNE 10, JUNE 20 TR. 7 - MAY 8, MAY 30, JUNE 10, JUNE 20 TR. 8 - MAY 8, MAY 17, MAY 26, JUNE 6, JUNE 16 TR. 9 - MAY 8, MAY 17, MAY 30, JUNE 10. DAT = days following initial postemergence application
 Site Description: Soil Texture: LOAM. %OM: 5.5 %Sand: 51.3 %Silt: 32.4 %Clay: 16.4 pH: 7.2 CEC:19

APPLICATION DESCRIPTION

Application:	A	B	C	D	E	F	G	H
Date	Apr-26-03	May-07-03	May-17-03	May-26-03	Jun-06-03	Jun-10-03	Jun-16-03	Jun-20-03
Time of Day:	0900	0700	0800	1400	1100	1100	1100	800
Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Timing	PREPRE	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS
Placement	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp.	10	9.8	18 C	22 C	24 C	20 C	26 C	15 C
% Humidity	42	89	68	59	58	70	64	78
Wind Speed	8 KPH	3 KPH	15 KPH	12 KPH	9 KPH	10 KPH	8 KPH	9 KPH
Dew Present:		Y	N	N	N	N	N	N
Soil Moist.:	DRY	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE	ADQUATE
Cloud Cover:	0%	100%	50%	80%	10%	50%	90%	0%
Equipment	CO2 SPRAY	CO2 SPRAY	CO2 Backp	CO2 Backp	CO2 Backp	CO2 Backp	CO2 Backp	CO2 Backp
Pressure	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
Nozzle Size:	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR
Noz. Spacing:	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height:	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM	50 CM
Carrier	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
Propellant	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2

STAGE AT APPLICATION

Crop 1 BEAVA	COT	COT	1-2 LF	3 LF	4-6 LF	7-8 LF	8-9 LF
Weed 1 ABUTH	COT	COT-2 LF	COT-2 LF	2-3 LF	2-3 LF		
Density :	3 SQ M	8 SQ M	8 SQ M	13 SQ M	13 SQ M	0 SQ M	0 SQ M
Weed 2 CHEAL	COT	COT- 2 LF	COT-2LF	2-4 LF	2-4 LF	COT- 2LF	COT- 2 LF
Density :	1 SQ M	1 SQ M	3 SQ M	17 SQ M	17 SQ M	6 SQ M	6 SQ M
Weed 4 SETVI			2-3 LF	2-3 LF	2-3 LF	1-3	1-3
Density :			9 SQ M	9 SQ M	9 SQ M	41 SQ M	41 SQ M

Weed Code								ABUTH	
Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	
Part Rated								STAND A	STAND B
Rating Data Type	INJURY	INJURY	INJURY	INJURY	INJURY	COUNT	COUNT	CONTROL	
Rating Unit	%	%	%	%	%	#/m2	#/m2	%	
Rating Date	May-16-03	May-23-03	Jun-06-03	Jun-20-03	Jun-11-03	Jun-11-03	Jun-06-03		
Crop Stage	2 LF	3 LF	4 LF	8-9 LF	4-5 LF	4-5 LF	4 LF		
Crop Stage Scale	1.0 CM	1.5-2 CM	3 CM	5 CM	3 CM	3 CM			
Weed Stage								2 LF	
Weed Density Unit								8 SQ M	

Trt-Eval Interval														
Trt Treatment No. Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	9 DAT	16 DAT	30 DAT	44 DAT	35 DAT	35 DAT	28 DAT	
1 UNTREATED CHECK							0	a 0	a 0	a 0.0	a 26	a 30	a 0	c
2 PYRAMIN	430	SC	2.1	L/AC	A		0	a 0	a 0	a 0.0	a 27	a 31	a 97	b
NORTRON	480	SC	1.5	L/AC	A									
3 BETAMIX	150	EC	.67	L/AC	B		0	a 0	a 0	a 0.0	a 25	a 28	a 98	ab
UPBEET	50	DF	7.2	G/AC	B									
LONTREL	360	SN	.067	L/AC	B									
MERGE		SO	0.4	L/AC	B									
4 BETAMIX	150	EC	.67	L/AC	C		0	a 0	a 0	a 0.0	a 27	a 24	a 98	ab
UPBEET	50	DF	7.2	G/AC	C									
LONTREL	360	SN	.067	L/AC	C									
MERGE		SO	0.4	L/AC	C									
5 BETAMIX	150	EC	.67	L/AC	D		0	a 0	a 0	a 0.0	a 26	a 21	a 99	a
UPBEET	50	DF	7.2	G/AC	D									
LONTREL	360	SN	.067	L/AC	D									
MERGE		SO	0.4	L/AC	D									
6 BETAMIX	150	EC	0.67	L/AC	E		0	a 0	a 0	a 0.0	a 24	a 26	a 98	ab
UPBEET	50	DF	7.2	G/AC	E									
LONTREL	360	SN	.067	L/AC	E									
MERGE		SO	0.4	L/AC	E									
7 BETAMIX	150	EC	0.67	L/AC	F		0	a 0	a 0	a 0.0	a 29	a 23	a 97	b
UPBEET	50	DF	7.2	G/AC	F									
LONTREL	360	SN	.067	L/AC	F									
MERGE		SO	0.4	L/AC	F									
8 BETAMIX	150	EC	0.67	L/AC	G		0	a 0	a 0	a 0.0	a 25	a 24	a 98	ab
UPBEET	50	DF	7.2	G/AC	G									
LONTREL	360	SN	.067	L/AC	G									
MERGE		SO	0.4	L/AC	G									

APPLICATION OF MICRO RATES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M2

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code								
9	BETAMIX	150	EC	248	G A/HA	H	H	0	a 0	a 0	a 0.0	a 25	a 20	a 98	ab
	UPBEET I	5	DF	9	G A/HA	H	H								
	LONTREL	360	SN	60	G A/HA	H	H								
	Merge		SO	1	L/HA	H	H								
LSD (P=.05)								0.0	0.0	0.0	0.00	8.4	11.5	1.8	
Standard Deviation								0.0	0.0	0.0	0.00	5.8	7.9	1.2	
CV								0.0	0.0	0.0	0.0	22.37	31.4	1.43	

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

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code								
1	UNTREATED CHECK							0	c 0	b 0	c 0	c 0	c 0	c 34	a
2	PYRAMIN	430	SC	2.1	L/AC	A	A	98	b 99	a 93	b 87	b 94	b 94	b 28	a
	NORTRON	480	SC	1.5	L/AC	A	A								
3	BETAMIX	150	EC	0.67	L/AC	B	B	99	a 99	a 99	a 99	a 99	a 99	a 40	a
	UPBEET	50	DF	7.2	G/AC	B	B								
	LONTREL	360	SN	.067	L/AC	B	B								
	MERGE		SO	0.4	L/HA	B	B								
4	BETAMIX	150	EC	0.67	L/AC	C	C	99	a 99	a 99	a 99	a 96	ab 98	a 37	a
	UPBEET	50	DF	7.2	G/AC	C	C								
	LONTREL	360	SN	0.067	L/AC	C	C								
	MERGE		SO	0.4	L/AC	C	C								
5	BETAMIX	150	EC	0.67	L/AC	D	D	99	a 99	a 99	a 99	a 97	ab 99	a 41	a
	UPBEET	50	DF	7.2	G/AC	D	D								
	LONTREL	360	SN	.067	L/AC	D	D								
	MERGE		SO	0.4	L/AC	D	D								
6	BETAMIX	150	EC	0.67	L/AC	E	E	99	a 99	a 99	a 99	a 96	ab 97	a 35	a
	UPBEET	50	DF	7.2	G/AC	E	E								
	LONTREL	360	SN	.067	L/AC	E	E								
	MERGE		SO	7.2	G/AC	E	E								
7	BETAMIX	150	EC	.67	L/AC	F	F	99	a 99	a 99	a 99	a 98	a 98	a 42	a
	UPBEET	50	DF	7.2	G/AC	F	F								
	LONTREL	360	SN	.067	L/AC	F	F								
	MERGE		SO	0.4	L/AC	F	F								
8	BETAMIX	150	EC	.67	L/AC	G	G	99	a 99	a 99	a 99	a 99	a 99	a 34	a
	UPBEET	50	DF	7.2	G/AC	G	G								
	LONTREL	360	SN	.067	L/AC	G	G								
	MERGE		SO	0.4	L/AC	G	G								
9	BETAMIX	150	EC	.67	L/AC	H	H	99	a 99	a 99	a 99	a 98	a 98	a 37	a
	UPBEET	50	DF	7.2	G/AC	H	H								
	LONTREL	360	SN	.067	L/AC	H	H								
	MERGE		SO	0.4	L/AC	H	H								
LSD (P=.05)								1.0	0.0	4.4	9.0	3.9	3.3	15.5	
Standard Deviation								0.7	0.0	3.0	6.2	2.7	2.3	10.6	
CV								0.76	0.0	3.45	7.11	3.13	2.6	29.19	

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

APPLICATION OF MICRO RATES IN SUGAR BEETS ACCORDING TO CROP HEAT UNITS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M2

Weed Code
 Crop Code BEAVA BEAVA BEAVA BEAVA BEAVA
 Part Rated HOED WEEDY HOED WEEDY HOED
 Rating Data Type YIELD 2R YIELD 2R YIELD 2R YIELD 2R YIELD 2R
 Rating Unit NO/PLOT T/HA T/HA T/A T/A
 Rating Date Oct-16-03 Oct-16-03 Oct-16-03 Oct-16-03 Oct-16-03
 Crop Stage
 Crop Stage Scale
 Weed Stage
 Weed Density, Unit
 Trt-Eval Interval

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code						
1	UNTREATED CHECK							44	a	43.6	b	63.0	a 19.5 b 28.1 a
2	PYRAMIN	430	SC	2.1	L/AC	A	A	43	a	46.0	ab	73.2	a 20.5 ab 32.6 a
3	NORTRON	480	SC	1.5	L/AC	A	A						
3	BETAMIX	150	EC	.67	L/AC	B	B	39	a	60.1	ab	64.0	a 26.8 ab 28.5 a
	UPBEET	50	DF	7.2	G/AC	B	B						
	LONTREL	360	SN	.067	L/AC	B	B						
	MERGE		SO	0.4	L/AC	B	B						
4	BETAMIX	150	EC	.67	L/AC	C	C	41	a	68.5	a	68.0	a 30.6 a 30.3 a
	UPBEET	50	DF	7.2	G/AC	C	C						
	LONTREL	360	SN	.067	L/AC	C	C						
	MERGE		SO	0.4	L/AC	C	C						
5	BETAMIX	150	EC	.67	L/AC	D	D	40	a	61.5	ab	68.4	a 27.5 ab 30.5 a
	UPBEET	50	DF	7.2	G/AC	D	D						
	LONTREL	360	SN	.067	L/AC	D	D						
	MERGE		SO	0.4	L/AC	D	D						
6	BETAMIX	150	EC	0.67	L/AC	E	E	42	a	57.9	ab	76.2	a 25.8 ab 34.0 a
	UPBEET	50	DF	7.2	G/AC	E	E						
	LONTREL	360	SN	.067	L/AC	E	E						
	MERGE		SO	0.4	L/AC	E	E						
7	BETAMIX	150	EC	.67	L/AC	F	F	40	a	65.0	ab	70.2	a 29.0 ab 31.3 a
	UPBEET	50	DF	7.2	G/AC	F	F						
	LONTREL	360	SN	.067	L/AC	F	F						
	MERGE		SO	0.4	L/AC	F	F						
8	BETAMIX	150	EC	.67	L/AC	G	G	40	a	59.2	ab	72.9	a 26.4 ab 32.5 a
	UPBEET	50	DF	7.2	G/AC	G	G						
	LONTREL	360	SN	60	L/AC	G	G						
	MERGE		SO	0.4	L/AC	G	G						
9	BETAMIX	150	EC	.67	L/AC	H	H	35	a	63.3	ab	59.8	a 28.3 ab 26.7 a
	UPBEET	50	DF	7.2	G/AC	H	H						
	LONTREL	360	SN	.067	L/AC	H	H						
	MERGE		SO	0.4	L/AC	H	H						
	LSD (P=.05)							14.0	23.58	19.49	10.52	8.69	
	Standard Deviation							9.6	16.15	13.35	7.21	5.96	
	CV							23.87	27.68	19.52	27.68	19.52	

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 BETAMIX + UPBEET + LONTREL (248+9+60 g a.i. ha⁻¹) were applied every 150 or 200 CHUs, at alternating 150 or 200 CHU intervals, every 10 days, or by scouting for weeds at the cotyledon to one-leaf stage.

None of the treatments resulted in visual injury of above-ground growth of sugar beets, nor did they reduce sugar beet stands 21 days after the first micro-rate application (DAT) or the number of harvestable sugar beets in the weed-free portion of each treatment.

All treatments provided excellent season-long control of velvetleaf, common lamb's-quarters, fall panicum and green foxtail. The preemergence application of NORTRON+PYRAMIN provided excellent season-long control of velvetleaf, fall panicum and green foxtail, and good control of common lamb's-quarters.

Harvestable sugar beet number and yields were not different among any of treatments.

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M3

CROP: BEAVA, SUGAR BEET (E17). Planted: Apr-24-03, 118000 SE/HA, 2 CM Deep, 75 CM Row Width. Planting Method: MONOSEM VACUUM PLANTER. Emerged On: May-04-03. DAT = Days after initial postemergence treatment
 FIELD Site. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RCAT - K.
 Site Description: Soil Texture: LOAM. %OM: 5.5 %Sand: 51.3 %Silt: 32.4 %Clay: 16.4 pH: 7.2 CEC: 19.

APPLICATION DESCRIPTION

Application:	A	B	C	D	E
Date	May-07-03	May-17-03	May-26-03	Jun-06-03	Jun-17-03
Time of Day	0700	0800	1400	1100	800
Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Timing	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS
Placement	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp.	9.8	18 C	22 C	24 C	20 C
% Humidity	89	68	59	58	80
Wind Speed	3 KPH	15 KPH	12 KPH	9 KPH	10 KPH
Dew Present	Y	N	N	N	N
Soil Moist.	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE
Cloud Cover	100%	50%	80%	10%	70%
Equipment	CO2 SPRAY	CO2 Backp	CO2 Backp	CO2 Backp	CO2 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	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR
Noz. Spacing	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height	50 CM	50 CM	50 CM	50 CM	50 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	3 LF	4 LF	8-9 LF		
Weed 1 ABUTH COT	COT	COT	2 LF	COT	
Stg. Scale:					
Density	5 SQ M	24 SQ M	7 SQ M	12 SQ M	6 SQ M
Weed 2 CHEAL	COT	COT -2 LF	2-4 LF	COT-2 LF	
Stg. Scale:					
Density	3 SQ M	9 SQ M	13 SQ M	22 SQ M	
Weed 4 SETVI		1 LF	2 LF	1-3 LF	
Stg. Scale:					
Density		8 SQ M	5 SQ M	11 SQ M	

Weed Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	ABUTH
Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA
Part Rated							
Rating Data Type	INJURY	INJURY	% INJURY	% INJURY	% INJURY	STAND A	STAND B
Rating Unit	%	%	%	%	%	COUNT #/M	COUNT #/M
Rating Date	May-16-03	May-23-03	Jun-06-03	Jun-20-03	Jun-11-03	Jun-11-03	Jun-06-03
Crop Stage	2 LF	3 LF	4 LF	8-10 LF	4-5 LF	4-5 LF	4-6 LF
Crop Stage Scale							
Weed Stage							2 LF
Weed Density, Unit							12 SQ M

Trt-Eval Interval						9 DAT	16 DAT	30 DAT	44 DAT	35 DAT	35 DAT	30 DAT
Trt Treatment No. Name	Form Conc	Form Type	Rate Rate	Unit	Grow Stg	Appl Code						
1 UNTREATED CHECK						0	a 0	a 0	a 0	a 26	a 27	a 0 c
2 BETAMIX	150	EC	0.67	L/AC	post A	0	a 0	a 0	a 0	a 21	a 23	ab 99 a
UPBEET	50	DF	7.2	G/AC	post A							
MERGE		SO	0.4	L/AC	post A							
3 BETAMIX	150	EC	0.67	L/AC	post A	0	a 0	a 0	a 0	a 22	a 25	ab 97 b
UPBEET	50	DF	7.2	G/AC	post A							
ASSURE II	96	EC	.076	L/AC	post A							
MERGE		SO	0.4	L/AC	post A							
4 BETAMIX	150	EC	0.67	L/AC	post A	0	a 0	a 0	a 0	a 18	a 19	b 99 a
UPBEET	50	DF	7.2	G/AC	post A							
LONTREL	360	SN	.067	L/AC	post A							
MERGE		SO	0.4	L/AC	post A							
5 BETAMIX	150	EC	0.67	L/AC	post A	0	a 0	a 0	a 0	a 20	a 23	ab 99 a
UPBEET	50	DF	7.2	G/AC	post A							
LONTREL	360	SN	0.67	L/AC	post A							
ASSURE II	96	EC	.076	L/AC	post A							
MERGE		SO	0.4	L/AC	post A							
6 BETAMIX	150	EC	0.67	L/AC	post A	0	a 0	a 0	a 0	a 20	a 19	b 99 a
UPBEET	50	DF	7.2	G/AC	post A							
ASSURE II	96	EC	0.3	L/AC	post B							
MERGE		SO	0.4	L/HA	post A							
7 BETAMIX	150	EC	0.67	L/AC	post A	0	a 0	a 0	a 0	a 23	a 19	b 99 a
UPBEET	50	DF	7.2	G/AC	post A							
LONTREL	360	SN	0.067	L/AC	post A							
ASSURE II	96	EC	0.3	L/AC	post B							
MERGE		SO	0.4	L/AC	post A							

MICRO RATE AND GRAMINICIDE TANK MIXES IN SUGAR BEETS

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M3

Weed Code	Crop Code	Part Rated	Rating Data Type	Rating Unit	Rating Date	Crop Stage	Crop Stage Scale	Weed Stage	Weed Density, Unit	Trt-Eval Interval	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	ABUTH	
											INJURY	INJURY	% INJURY	% INJURY	% COUNT	COUNT	BEAVA	
											May-16-03	May-23-03	Jun-06-03	Jun-20-03	Jun-11-03	Jun-11-03	Jun-06-03	
											2 LF	3 LF	4 LF	8-10 LF	4-5 LF	4-5 LF	4-6 LF	
											9 DAT	16 DAT	30 DAT	44 DAT	35 DAT	35 DAT	2 LF	
																	12 SQ M	
																	30 DAT	
8	BETAMIX	150	EC	0.67	L/AC	post	A				0	a 0	a 0	a 0	a 21	a 25	ab 99	a
	UPBEET	50	DF	7.2	G/AC	post	A											
	POAST ULTRA	450	EC	0.45	L/AC	post	B											
	MERGE		SO	0.4	L/AC	post	A											
9	BETAMIX	150	EC	0.67	L/AC	post	A				0	a 0	a 0	a 0	a 19	a 21	ab 99	a
	UPBEET	50	DF	7.2	G/AC	post	A											
	LONTREL	360	SN	0.67	L/AC	post	A											
	POAST ULTRA	450	EC	0.45	L/AC	post	B											
	MERGE		SO	0.4	L/AC	post	A											
	LSD (P=.05)										0.0	0.0	0.0	0.00	7.7	6.9	1.1	
	Standard Deviation										0.0	0.0	0.0	0.00	5.3	4.7	0.8	
	CV										0.0	0.0	0.0	0.0	25.31	21.17	0.88	

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	Crop Stage Scale	Weed Stage	Weed Density, Unit	Trt-Eval Interval	CHEAL	SETVI	ABUTH	CHEAL	PANDI	SETVI	BEAVA	
											BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	
											CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	YIELD	
											Jun-06-03	Jun-06-03	Jul-02-03	Jul-02-03	Jul-02-03	Jul-02-03	NO/PLOT	
											4-6 LF	4-6 LF	11 LF	11 LF	11 LF	11 LF	Oct-13-03	
											2-4 LF	2 LF	2-3 LF	8-20+LF	3-9 LF	3-7 LF		
											13 SQ M	5 SQ M	4 SQ M	23 SQ M	3 SQ M	9 SQ M		
											30 DAT	30 DAT	56 DAT	56 DAT	56 DAT	56 DAT		
1	UNTREATED CHECK										0	b 0	b 0	c 0	c 0	d 0	c 43	a
2	BETAMIX	150	EC	0.67	L/AC	post	A				99	a 99	a 98	b 97	b 95	c 96	b 39	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	MERGE		SO	0.4	L/AC	post	A											
3	BETAMIX	150	EC	0.67	L/AC	post	A				99	a 99	a 99	a 99	a 99	a 99	a 38	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	ASSURE II	96	EC	.076	L/AC	post	A											
	MERGE		SO	0.4	L/AC	post	A											
4	BETAMIX	150	EC	0.67	L/AC	post	A				99	a 99	a 99	a 99	a 96	bc 98	a 35	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	LONTREL	360	SN	.067	L/AC	post	A											
	MERGE		SO	0.4	L/AC	post	A											
5	BETAMIX	150	EC	0.67	L/AC	post	A				99	a 99	a 99	a 99	a 98	ab 99	a 31	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	LONTREL	360	SN	0.067	L/AC	post	A											
	ASSURE II	96	EC	.076	L/AC	post	A											
	MERGE		SO	0.4	L/AC	post	A											
6	BETAMIX	150	EC	0.67	L/AC	post	A				99	a 99	a 99	a 99	a 99	a 99	a 37	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	ASSURE II	96	EC	0.3	L/AC	post	B											
	MERGE		SO	0.4	L/AC	post	A											
7	BETAMIX	150	EC	0.67	L/AC	post	A				99	a 99	a 99	a 99	a 99	a 99	a 36	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	LONTREL	360	SN	.067	L/AC	post	A											
	ASSURE II	96	EC	0.3	L/AC	post	B											
	MERGE		SO	0.4	L/AC	post	A											
8	BETAMIX	150	EC	.67	L/AC	post	A				99	a 99	a 99	a 99	a 99	a 99	a 36	ab
	UPBEET	50	DF	7.2	G/AC	post	A											
	POAST ULTRA	450	EC	0.45	L/AC	post	B											
	MERGE		SO	0.4	L/AC	post	A											
9	BETAMIX	150	EC	.67	L/AC	post	A				99	a 99	a 99	a 99	a 98	ab 99	a 29	b
	UPBEET	50	DF	7.2	G/AC	post	A											
	LONTREL	360	SN	.067	L/AC	post	A											
	POAST ULTRA	450	EC	.45	L/AC	post	B											
	MERGE		SO	0.45	L/HA	post	A											
	LSD (P=.05)										0.0	0.0	1.0	1.1	2.3	1.3	11.7	
	Standard Deviation										0.0	0.0	0.7	0.8	1.6	0.9	8.0	

Weed Code
 Crop Code
 Part Rated
 Rating Data Type
 Rating Unit
 Rating Date
 Crop Stage
 Crop Stage Scale
 Weed Stage
 Weed Density, Unit
 Trt-Eval Interval

BEAVA BEAVA BEAVA BEAVA BEAVA
 HOED WEEDY HOED WEEDY HOED
 YIELD YIELD YIELD YIELD YIELD
 NO/PLOT T/HA T/HA T/AC T/AC
 Oct-13-03 Oct-13-03 Oct-13-03 Oct-13-03 Oct-13-03

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code										
1	UNTREATED CHECK							42	a	64.5	a	72.5	a	28.8	a	32.3	a
2	BETAMIX	150	EC	0.67	L/AC	post	A	39	a	53.9	a	81.0	a	24.0	a	36.1	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	MERGE		SO	0.4	L/AC	post	A										
3	BETAMIX	150	EC	0.67	L/AC	post	A	43	a	57.4	a	75.3	a	25.6	a	33.6	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	ASSURE II	96	EC	.076	L/AC	post	A										
	MERGE		SO	0.4	L/AC	post	A										
4	BETAMIX	150	EC	.67	L/AC	post	A	35	a	66.4	a	75.4	a	29.6	a	33.6	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	LONTREL	360	SN	.067	L/AC	post	A										
	MERGE		SO	0.4	L/AC	post	A										
5	BETAMIX	150	EC	0.67	L/AC	post	A	40	a	60.8	a	68.4	a	27.1	a	30.5	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	LONTREL	360	SN	.067	L/AC	post	A										
	ASSURE II	96	EC	.076	L/AC	post	A										
	MERGE		SO	0.4	L/AC	post	A										
6	BETAMIX	150	EC	.67	L/AC	post	A	36	a	65.9	a	69.1	a	29.4	a	30.8	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	ASSURE II	96	EC	0.3	L/AC	post	B										
	MERGE		SO	0.4	L/AC	post	A										
7	BETAMIX	150	EC	0.67	L/AC	post	A	37	a	67.4	a	73.0	a	30.1	a	32.6	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	LONTREL	360	SN	.067	L/AC	post	A										
	ASSURE II	96	EC	0.3	L/AC	post	B										
	MERGE		SO	0.4	L/AC	post	A										
8	BETAMIX	150	EC	0.67	L/AC	post	A	41	a	63.1	a	67.5	a	28.2	a	30.1	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	POAST ULTRA	450	EC	.45	L/AC	post	B										
	MERGE		SO	0.4	L/AC	post	A										
9	BETAMIX	150	EC	.67	L/AC	post	A	34	a	57.6	a	74.0	a	25.7	a	33.0	a
	UPBEET	50	DF	7.2	G/AC	post	A										
	LONTREL	360	SN	.067	L/AC	post	A										
	POAST ULTRA	450	EC	.45	L/AC	post	B										
	MERGE		SO	0.4	L/AC	post	A										
LSD (P=.05)								12.2	15.13	14.71	6.75	6.56					
Standard Deviation								8.4	10.37	10.08	4.63	4.50					
CV								21.78	16.76	13.82	16.76	13.82					

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 ASSURE II(18 72 g a.i. ha-1) or POAST ULTRA(500 g a.i. ha-1) to tank mixtures of BETAMIX + UPBEET (248+9 g a.i. ha-1) and BETAMIX + UPBEET + LONTREL (248+9+60 g a.i. ha-1)on annual grass control, and sugar beet injury and yield.

There was no visual injury, reduction in stand, or yield loss in any treatments.

Excellent season-long control of velvetleaf, common lamb's-quarters, fall panicum and green foxtail was observed in all treatments.

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

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M4

CROP: BEAVA, SUGAR BEET (E17). Planted: Apr-21-03, 118000 SE/HA, 2 CM Deep, 75 CM Row Width. Planting Method: MONOSEM VACUUM PLANTER.

Emerged On: May-04-03. DAT = Days after initial postemergence treatment.

FIELD Site. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 1.5 M x 44 M. Expt. Location: RCAT - K.

Site Description: Soil Texture: LOAM. %OM: 5.5 %Sand: 51.3 %Silt: 32.4 %Clay: 16.4 pH: 7.2 CEC: 19.

APPLICATION DESCRIPTION

Application:	A	B	C	D	E
Date	May-07-03	May-17-03	May-26-03	Jun-06-03	Jun-17-03
Time of Day	0700	0800	1400	1320	800
Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Timing	POSPOS	POSPOS	POSPOS	POSPOS	POSPOS
Placement	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp.	9.8	18 C	22 C	25 C	20 C
% Humidity	89	68	59	36	80
Wind Speed	3 KPH	15 KPH	12 KPH	10 KPH	10 KPH
Dew Present	Y	N	N	N	N
Soil Moist.	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE
Cloud Cover	100%	50%	80%	10%	70%
Equipment	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY	CO2 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	8002 XR	8002 XR	8002 XR	8002 XR	8002 XR
Noz.Spacing	50 CM	50 CM	50 CM	50 CM	50 CM
Boom Length	1.5 M	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height	50 CM	50 CM	50 CM	50 CM	50 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	2 LF	3 LF	4LF	8-9 LF
Weed 1 ABUTH COT	COT	COT	3 LF	COT
Density : 11 SQ M	25 SQ M	4 SQ M	19 SQ M	5 SQ M
Weed 2 CHEAL		COT-2 LF	2-6 LF	2 LF
Density :		6 SQ M	15 SQ M	4 SQ M
Weed 4 SETVI			2-3 LF	2-3 LF
Density :			10 SQ M	9 SQ M

Weed Code

Crop Code	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	ABUTH
Part Rated	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA
Rating Data Type	INJURY	INJURY	INJURY	INJURY	COUNT	COUNT	CONTROL	
Rating Unit	%	%	%	%	#/M	#/M	%	
Rating Date	May-16-03	May-23-03	Jun-06-03	Jun-20-03	Jun-11-03	Jun-11-03	Jun-06-03	
Crop Stage	2 LF	2-3 LF	4 LF	8-9 LF	4-5 LF	4-5 LF	4 LF	
Crop Stage Scale								
Weed Stage								3 LF
Weed Density, Unit								19 SQ M
Trt-Eval Interval	9 DAT	16 DAT	30 DAT	42 DAT	35 DAT	35 DAT	30 DAT	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	0	a 0	a 0	a 0	c 30	abc 36	a 0	c
1	UNTREATED CHECK							0	a 0	a 0	a 0	c 30	abc 36	a 0	c
2	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 3	abc 31	ab 30	a 98	a
	UPBEET	50	DF	7.2	L/AC	POST	A								
3	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 3	abc 28	abc 32	a 99	a
	UPBEET	50	DF	7.2	G/AC	POST	A								
	MERGE		SO	0.4	L/AC	POST	A								
4	BETAMIX	150	EC	.67	L/AC	POST	A	0	a 0	a 0	a 4	abc 30	abc 35	a 99	a
	UPBEET	50	DF	7.2	G/AC	POST	A								
	METHYLATED SEED OIL		SO	1.5%	V/V	POST	A								
5	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 1	bc 30	abc 35	a 99	a
	UPBEET	50	DF	7.2	G/AC	POST	A								
	REDDY-IT		SO	0.25	% V/V	POST	A								
	UAN 28%		SO	0.5	L/AC	POST	A								
6	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 3	abc 28	abc 33	a 74	b
	UPBEET	50	DF	7.2	G/AC	POST	A								
	AGRAL90		SO	0.2	% V/V	POST	A								
7	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 8	a 27	abc 31	a 99	a
	UPBEET	50	DF	7.2	G/AC	POST	A								
	MERGE		SO	0.4	L/AC	POST	A								
	HEADLINE	250	EC	0.36	L/AC	POST	B								
8	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 4	abc 26	abc 32	a 99	a
	UPBEET	50	DF	7.2	G/AC	POST	A								
	LONTREL	360	SN	0.067	L/AC	POST	A								
9	BETAMIX	150	EC	0.67	L/AC	POST	A	0	a 0	a 0	a 5	abc 28	abc 28	a 99	a
	UPBEET	50	DF	7.2	G/AC	POST	A								
	LONTREL	360	SN	0.067	L/AC	POST	A								
	MERGE		SO	0.4	L/AC	POST	A								

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M4

Weed Code									ABUTH
Crop Code									BEAVA
Part Rated									
Rating Data Type		BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	
Rating Unit		INJURY	INJURY	INJURY	INJURY	STAND	A STAND	B	
Rating Date		%	%	%	%	COUNT	COUNT	CONTROL	
Crop Stage		May-16-03	May-23-03	Jun-06-03	Jun-20-03	Jun-11-03	Jun-11-03	Jun-06-03	
Crop Stage Scale		2 LF	2-3 LF	4 LF	8-9 LF	4-5 LF	4-5 LF	4 LF	
Weed Stage									3 LF
Weed Density, Unit									19 SQ M
Trt-Eval Interval		9 DAT	16 DAT	30 DAT	42 DAT	35 DAT	35 DAT	30 DAT	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Grow Stg	Appl Code		
10	BETAMIX	150	EC	0.67	L/AC	POST A	A	0	
	UPBEET	50	DF	7.2	G/AC	POST A	A	a 0	
	LONTREL	360	SN	0.067	L/AC	POST A	A	a 0	
	METHYLATED SEED OIL		SO	1.5%	V/V	POST A	A	a 8	
11	BETAMIX	150	EC	0.67	L/AC	POST A	A	0	
	UPBEET	50	DF	7.2	G/AC	POST A	A	a 0	
	LONTREL	360	SN	0.067	L/AC	POST A	A	a 0	
	REDDY-IT		SO	0.25	% V/V	POST A	A	a 5	
	UAN 28%		SO	0.5	L/AC	POST A	A	abc 25	
12	BETAMIX	150	EC	0.67	L/AC	POST A	A	0	
	UPBEET	50	DF	7.2	G/AC	POST A	A	a 0	
	LONTREL	360	SN	.067	L/AC	POST A	A	a 0	
	AGRAL90		SO	0.2	% V/V	POST A	A	a 4	
13	BETAMIX	150	EC	0.67	L/AC	POST A	A	0	
	UPBEET	50	DF	7.2	G/AC	POST A	A	a 0	
	LONTREL	360	SN	.067	L/AC	POST A	A	a 0	
	MERGE		SO	0.4	L/AC	POST A	A	a 6	
	HEADLINE	250	EC	0.36	L/AC	POST B	B	ab 22	
LSD (P=.05)								0.0	
Standard Deviation								0.0	
CV								0.0	
								0.0	
								5.6	
								7.8	
								10.2	
								19.7	
								3.9	
								5.4	
								7.1	
								13.8	
								98.97	
								19.8	
								22.35	
								15.39	

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

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M4

Weed Code		CHEAL	SETVI	ABUTH	CHEAL	PANDI	SETVI	BEAVA						
Crop Code		BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA	BEAVA						
Part Rated		CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	WEEDY						
Rating Data Type		%	%	%	%	%	%	NO/PLOT						
Rating Unit		Jun-06-03	Jun-06-03	Jul-02-03	Jul-02-03	Jul-02-03	Jul-02-03	TOTAL						
Rating Date		4 LF	4 LF					Oct-16-03						
Crop Stage														
Crop Stage Scale														
Weed Stage		2-6 LF	2-3	2-3 LF	10-20+	3-7 LF	5-9 LF							
Weed Density, Unit		15 SQ M	10 SQ M	8 SQ M	14 SQ M	17 SQ M	27 SQ M							
Trt-Eval Interval		30 DAT	30 DAT	56 DAT	56 DAT	56 DAT	56 DAT							
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code							
1	UNTREATED CHECK					0	c	0 c	0 b	0 b	0 d	0 c	44	bcd
2	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 98	ab 99	a 56	a
	UPBEET	50	DF	7.2	G/AC	POST A								
3	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 98	ab 98	a 53	ab
	UPBEET	50	DF	7.2	G/AC	POST A								
	MERGE		SO	0.4	L/AC	POST A								
4	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 97	bc 99	a 50	abc
	UPBEET	50	DF	7.2	G/AC	POST A								
	METHYLATED SEED OIL		SO	1.5	% V/V	POST A								
5	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 98	ab 99	a 48	a-d
	UPBEET	50	DF	7.2	G/AC	POST A								
	REDDY-IT		SO	0.25	% V/V	POST A								
	UAN 28%		SO	0.5	L/AC	POST A								
6	BETAMIX	150	EC	0.67	L/AC	POST A	74	b 74	b 99	a 99	a 97	bc 98	a 48	a-d
	UPBEET	50	DF	7.2	G/AC	POST A								
	AGRAL90		SO	0.2	% V/V	POST A								
7	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 97	bc 99	a 38	d
	UPBEET	50	DF	7.2	G/AC	POST A								
	MERGE		SO	0.4	L/AC	POST A								
	HEADLINE	250	EC	0.36	L/AC	POST B								
8	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 96	c 99	a 50	abc
	UPBEET	50	DF	7.2	G/AC	POST A								
	LONTREL	360	SN	0.067	L/AC	POST A								
9	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 97	bc 98	a 46	a-d
	UPBEET	50	DF	7.2	G/AC	POST A								
	LONTREL	360	SN	0.067	L/AC	POST A								
	MERGE		SO	0.4	L/AC	POST A								
10	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 97	bc 99	a 42	cd
	UPBEET	50	DF	7.2	G/AC	POST A								
	LONTREL	360	SN	0.067	L/AC	POST A								
	METHYLATED SEED OIL		SO	1.5	% V/V	POST A								
11	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 99	a 99	a 45	bcd
	UPBEET	50	DF	7.2	G/AC	POST A								
	LONTREL	360	SN	0.67	L/AC	POST A								
	REDDY-IT		SO	0.25	% V/V	POST A								
	UAN 28%		SO	0.5	L/AC	POST A								
12	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 97	bc 98	a 51	abc
	UPBEET	50	DF	7.2	G/AC	POST A								
	LONTREL	360	SN	0.067	L/AC	POST A								
	AGRAL90		SO	0.2	% V/V	POST A								
13	BETAMIX	150	EC	0.67	L/AC	POST A	99	a 99	a 99	a 99	a 97	bc 96	b 38	d
	UPBEET	50	DF	7.2	G/AC	POST A								
	LONTREL	360	SN	0.067	G/AC	POST A								
	MERGE		SO	0.4	L/AC	POST A								
	HEADLINE	250	EC	0.36	L/AC	POST B								
LSD (P=.05)							19.6	19.6	0.0	0.0	1.8	1.7	10.4	
Standard Deviation							13.7	13.7	0.0	0.0	1.3	1.2	7.3	
CV							15.34	15.34	0.0	0.0	1.43	1.32	15.54	

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

DAVE BILYEA, DARREN ROBINSON

Experiment ID: SB03M4

Weed Code														
Crop Code						BEAVA	BEAVA	BEAVA	BEAVA	BEAVA				
Part Rated						HOED	WEEDY	HOED	WEEDY	HOED				
Rating Data Type						NO/PLOT	YIELD	YIELD	YIELD	YIELD				
Rating Unit						TOTAL	T/HA	T/HA	T/AC	T/AC				
Rating Date						Oct-16-03	Oct-16-03	Oct-16-03	Oct-16-03	Oct-16-03				
Crop Stage														
Crop Stage Scale														
Weed Stage														
Weed Density, Unit														
Trt-Eval Interval														

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code										
1	UNTREATED CHECK							61	a	59.4	d	97.5	ab	26.5	d	43.5	ab
2	BETAMIX	150	EC	0.67	L/AC	POST	A	60	a	74.8	a-d	105.0	a	33.4	a-d	46.8	a
	UPBEET	50	DF	7.2	G/AC	POST	A										
3	BETAMIX	150	EC	0.67	L/AC	POST	A	56	ab	75.6	abc	93.6	ab	33.7	abc	41.7	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	MERGE		SO	0.4	L/AC	POST	A										
4	BETAMIX	150	EC	0.67	L/AC	POST	A	57	ab	84.4	a	95.6	ab	37.6	a	42.7	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	METHYLATED SEED OIL		SO	1.5	% V/V	POST	A										
5	BETAMIX	150	EC	0.67	L/AC	POST	A	57	ab	77.4	abc	97.7	ab	34.5	abc	43.6	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	REDDY-IT		SO	0.25	% V/V	POST	A										
	UAN 28%		SO	0.5	L/AC	POST	A										
6	BETAMIX	150	EC	0.67	L/AC	POST	A	51	ab	74.3	a-d	95.6	ab	33.1	a-d	42.7	ab
	UPBEET	50	DF	7.2	L/AC	POST	A										
	AGRAL90		SO	0.2	% V/V	POST	A										
7	BETAMIX	150	EC	0.67	L/AC	POST	A	45	b	62.4	cd	89.2	ab	27.8	cd	39.8	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	MERGE		SO	0.4	L/AC	POST	A										
	HEADLINE	250	EC	0.36	L/AC	POST	B										
8	BETAMIX	150	EC	0.67	L/AC	POST	A	52	ab	75.9	abc	89.8	ab	33.9	abc	40.0	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	LONTREL	360	SN	0.067	L/AC	POST	A										
9	BETAMIX	150	EC	0.67	L/AC	POST	A	48	ab	79.0	ab	93.5	ab	35.2	ab	41.7	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	LONTREL	360	SN	0.067	L/AC	POST	A										
	MERGE		SO	0.4	L/AC	POST	A										
10	BETAMIX	150	EC	0.67	L/AC	POST	A	47	b	69.6	a-d	83.9	b	31.0	a-d	37.4	b
	UPBEET	50	DF	7.2	G/AC	POST	A										
	LONTREL	360	SN	0.067	L/AC	POST	A										
	METHYLATED SEED OIL		SO	1.5	% V/V	POST	A										
11	BETAMIX	150	EC	0.67	L/AC	POST	A	49	ab	76.6	abc	83.8	b	34.2	abc	37.4	b
	UPBEET	50	DF	7.2	G/AC	POST	A										
	LONTREL	360	SN	0.067	L/AC	POST	A										
	REDDY-IT		SO	0.25	% V/V	POST	A										
	UAN 28%		SO	0.5	L/AC	POST	A										
12	BETAMIX	150	EC	0.67	L/AC	POST	A	54	ab	75.2	abc	93.1	ab	33.6	abc	41.5	ab
	UPBEET	50	DF	7.2	G/AC	POST	A										
	LONTREL	360	SN	0.067	L/AC	POST	A										
	AGRAL90		SO	0.2	% V/V	POST	A										
13	BETAMIX	150	EC	0.67	L/AC	POST	A	49	ab	65.8	bcd	86.6	b	29.3	bcd	38.6	b
	UPBEET	50	DF	7.2	G/AC	POST	A										
	LONTREL	360	SN	0.067	GL/AC	POST	A										
	MERGE		SO	0.4	L/AC	POST	A										
	HEADLINE	250	EC	.36	L/AC	POST	B										
	LSD (P=.05)							12.7	15.72	16.89	7.01	7.54					
	Standard Deviation							8.9	11.00	11.82	4.91	5.27					
	CV							16.86	15.04	12.75	15.04	12.75					

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 adjuvant (MERGE, MSO, REDDY-IT+28% UAN, AND AGRAL 90) or the addition of Headline® fungicide 225 g a.i. ha-1) in tank mixtures of BETAMIX + UPBEET (248+9 g a.i. ha-1), BETAMIX UPBEET + LONTREL (248+9+60 g a.i. ha-1) 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.

Visual injury was noted following the final micro-rate application on June 17th, when micro-rates were tank-mixed with Headline® fungicide, or when the MSO was used as an adjuvant. The beets were at the 8-9 leaf stage at this application timing.

All treatments provided excellent full-season control of velvetleaf, common lamb's-quarters, fall panicum and green foxtail.

Marketable yields were not less than the weed-free untreated check in any of the treatments, though there was a trend for yield reduction when micro-rates were tank-mixed with Headline fungicide.