SUGARBEET RESEARCH

2001

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SUGARBEETS

Sugarbeet acreage has decreased slightly each of the last three years and now stands at less than 60,000 acres. Sugarbeets are the number one cash crop in the state with a production value of over $45 million. A large part of a sugarbeet grower's cost of production is the cost of obtaining an adequate stand of weed-free sugarbeets. Sugarbeet growers presently use a combination of chemical, mechanical and manual weed control methods.

The micro-rate program has been widely accepted by the growers in the state with well over two-thirds of the acreage treated with this program in 2001. However, much of the kochia in the Big Horn Basin has developed resistance to the sulfonylurea family of herbicides because of repeated applications of tribenuron (Express) in barley and triflusulfuron (UpBeet) in sugarbeets.

Control of sulfonylurea resistant kochia should commence in the crop preceding sugarbeets. Several options are available in both barley and corn and should include applications of bromoxynil or fluroxypyr, two of the more effective herbicide treatments on kochia. For adequate control in sugarbeet, growers should consider using preemergence applications of ethofumesate in combination with standard rate applications of desmedipham/phenmedipham/ethofumesate postemergence. Growers currently cannot use sugarbeet seed that has been genetically altered to tolerate glyphosate and glufosinate. Concern over maintaining foreign market shares have guided sugar company decisions. However, both herbicides would provide another option for control of sulfonylurea resistant kochia.

Much of our effort this year was devoted to control of kochia in sugarbeets. Sugarbeet trials were conducted at Torrington, Powell and cooperator sites, and included a trial comparing glyphosate formulations in Roundup Ready sugarbeets, alternative desmedipham/phenmedipham formulations, alternative herbicides for kochia control in sugarbeets, an additive comparison study with micro-rate applications, a fluroxypyr tolerance study and weed control trials on Venice mallow and redstem filaree. A total of eleven reports are included in this section.

Comparison of several weed management systems in sugarbeets (01-130). Plots were established under sprinkler irrigation at the Research and Extension Center, Torrington, WY to compare weed control and sugarbeet response in several weed management systems. Plots were 10 by 40 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Monohikari) was planted to stand (68,000 seed/A) in 30-inch rows in a sandy loam soil (78% sand, 12% silt, 10% clay, 1.2% organic matter and pH 7.7) April 17, 2001. Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Application and climatic information are presented in the table below. Weed and crop stand counts were made June 19, visual crop injury ratings June 25 and plots harvested September 25. Common lambsquarters (CHEAL) infestations were heavy (11 plants/10 ft. row)and redroot pigweed (AMARE), kochia (KCHSC), Russian thistle (SASKR), hairy nightshade (SOLSA), wild buckwheat (POLCO) and green foxtail (SETVI) infestations moderate (3 to 6 plants/ft. row) and uniform throughout the experimental site.

Table 1. Application and climatic data. Torrington, WY.

		PE	CO	7D	14D	21D	28D	35D
Date		4/17	5/07	5/15	5/22	5/29	6/06	6/11/01
Air temp.		65	66	66	65	70	75	80
Rel. hum.		30	35	30	35	47	28	35
Wind		7SW	calm	3 SW	10NW	calm	calm	5NW
Sky		clear	clear	cloudy	cloudy	cloudy	clear	clear
Soil temp.	0	78	88	74	66	74	78	88
	2	60	73	70	60	70	72	80
	4	58	68	66	60	66	71	78
Sugarbeet		------	coty to 2-lf	2 to 4-lf	4 to 6-lf	6 to 8-lf	8-lf	8 to 10-lf
Weeds		------	0.5 in.	0.5 to 1 in.	0.5 to 1 in.	1 to 2 in.	1 to 2 in.	1 to 3 in.

No herbicide treatment reduced sugarbeet stand and only slight injury (2 to 3%) was evident with several treatments containing ethofumesate or dimethenamid. Complementary preemergence/postemergence applications provided the highest levels of broadspectrum weed control and sugarbeet root yields in the study. Sucrose percentage was not influenced by herbicide treatment; however, extractable sucrose yields were closely related to weed control and root yield. Standard rate postemergence treatments were generally more effective than micro-rate treatments on common lambsquarters.

Table 2. Sugarbeet response in several weed management systems. Torrington Research and Extension Center, 2001.

Treatment[1]	Rate	Application	Sugarbeet[2] Injury	Stand	Yield	Sucrose	Ext. Sucrose
	lb/A		%	1000/A	T/A	%	lb/A
Ethofumesate (etho)	2.0	PPI	0	31.9	16.0	14.1	4512
Etho/desmedipham-phen-ethofumesate(dpe)/dpe/dpe	1.0/0.25/0.33/0.33	PPI/CO/7D/14D	2	33.1	18.5	14.4	5328
Etho/dpe+clopyralid(clop)+triflusulfuron(trif)+Sun-It(MS)/dpe+clop+trif+MS/dpe+clop+trif+MS	1.0/0.08+0.023+0.004+1.5%(3X)	PPI/CO/7D/14D	0	32.8	20.6	14.3	5892
Etho/desmedipham-phenmedipham(dp)/dp/dp	1.0/0.25/0.33/0.33	PPI/CO/7D/14D	2	33.4	18.7	14.3	5348
Etho/dp+clop+trif+MS/dp+clop trif+MS/dp+clop+trif+MS	1.0/0.08+0.023+0.004+1.5%(3X)	PPI/CO/7D/14D	0	33.4	20.4	14.3	5834
DPE/dpe/dpe	0.25/0.33/0.33	CO/7D/14D	0	32.5	15.9	14.2	4516
DPE/dpe/dpe+clethodim(clet)	0.25/0.33/0.33+0.078	CO/7D/14D	0	32.5	16.0	14.2	4544
Dpe+clop+trif+MS(2X)/dpe+clop+trif+clet+MS	0.08+0.023+0.004+1.5%(2X)/0.08+0.023+0.004+0.078+1.5%	CO/7D/14D/	0	33.7	14.0	14.3	4004
Dpe+clop+trif+clet+MS(3X)	0.08+0.023+0.004+0.023+1.5%(3X)	CO/7D/14D	0	33.4	13.7	14.3	3918
Dp/dp/dp	0.25/0.33/0.33	CO/7D/14D	0	33.4	14.7	14.3	4204
Dp/dp/dp+clet	0.25/0.33/0.33+0.078	CO/7D/14D	0	33.4	15.1	14.3	4319
Dp+clop+trif+MS(2X)dp+clop+trif+clet+MS	0.08+0.023+0.004+1.5%(2X)/0.08+0.023+0.004+0.078+1.5%	CO/7D/14D/	0	34.0	13.9	14.5	4031
Dp+clop+trif+clet+MS(3X)	0.08+0.023+0.004+0.023+1.5%(3X)	CO/7D/14D/	0	32.8	14.5	14.1	4205
Dpe/dpe+dimethenamid(dime)/dpe	0.25/0.33+0.65/0.33	CO/7D/14D	0	33.4	16.7	14.4	4810
Dpe/dpe/dpe+dime	0.25/0.33/0.33+0.65	CO/7D/14D	2	34.3	17.7	14.6	5168
Dpe/dpe/dpe+dime	0.25/0.33/0.33/0.65	CO/7D/14D/21D	3	32.8	17.9	14.3	5120
Dpe/dpe/dpe+dime	0.25/0.33/0.33/0.65	CO/7D/14D/28D	2	32.5	13.5	14.2	3834
Dpe/dpe/dpe+dime	0.25/0.33/0.33/0.65	CO/7D/14D/35D	3	32.8	14.2	14.3	4061
Hand weeded check	----------	----------	0	30.2	16.5	14.4	4752
Weedy check	----------	----------	0	22.4	0.7	11.5	161

[1] Treatments applied April 17, May 7, 15, 22, 29, June 6 and June 11, 2001.

[2] Sugarbeet stand counts were made June 19, injury evaluated June 25 and plots harvested September 25, 2001.

Table 3. Weed control with several weed management systems in sugarbeets. Torrington Research and Extension Center, 2001.

Treatment[1]	Rate	Appli-ation	Weed control[2]						
			CHEAL	AMARE	KCHSC	SASKR	SOLSA	POLCO	SETVI
			----------%----------						
Ethofumesate (etho)	2.0	PPI	77	100	70	100	86	13	100
Etho/desmedipham-phen-ethofumesate(dpe)/dpe/dpe	1.0/0.25/0.33/0.33	PPI/CO/7D/14D	100	100	85	100	100	75	100
Etho/dpe+clopyralid(clop)+triflusulfuron(trif)+Sun-It(MS)/dpe+clop+trif+MS/dpe+clop+trif+MS	1.0/0.08+0.023+0.004+1.5%(3X)	PPI/CO/7D14D	93	95	100	100	100	100	100
Etho/desmedipham-phenmedipham(dp)/dp/dp	1.0/0.25/0.33/0.33	PPI/CO/7D/14D	97	100	85	100	100	63	100
Etho/dp+clop+trif+MS/dp+clop trif+MS/dp+clop+trif+MS	1.0/0.08+0.023 +0.004+1.5%(3X)	PPI/CO/7D/14D	97	100	100	100	100	100	100
DPE/dpe/dpe	0.25/0.33/0.33	CO/7D/14D	92	95	70	60	93	63	74
DPE/dpe/dpe+clethodim(clet)	0.25/0.33/0.33+0.078	CO/7D/14D	92	95	62	70	93	63	100
Dpe+clop+trif+MS(2X)/dpe+clop+trif+clet+MS	0.08+0.023+0.004+1.5%(2X)/0.08+0.023 +0.004+0.078+1.5%	CO/7D/14D/	90	95	100	80	100	100	100
Dpe+clop+trif+clet+MS(3X)	0.08+0.023+0.004 +0.023+1.5%(3X)	CO/7D/14D	90	95	92	70	100	100	100
Dp/dp/dp	0.25/0.33/0.33	CO/7D/14D	82	100	54	60	93	63	68
Dp/dp/dp+clet	0.25/0.33/0.33+0.078	CO/7D/14D	81	100	54	70	93	75	100
Dp+clop+trif+MS(2X)dp+clop+trif+clet+MS	0.08+0.023+0.004 +1.5%(2X)/0.08+0.023+0.004+0.078+1.5%	CO/7D/14D/	84	95	100	60	100	100	100
Dp+clop+trif+clet+MS(3X)	0.08+0.023+0.004 +0.023+1.5%(3X)	CO/7D/14D/	84	100	100	80	93	100	100
Dpe/dpe+dimethenamid(dime)/dpe	0.25/0.33+0.65/0.33	CO/7D/14D	93	100	70	90	100	63	100
Dpe/dpe/dpe+dime	0.25/0.33/0.33+0.65	CO/7D/14D	92	100	77	80	100	63	100
Dpe/dpe/dpe+dime	0.25/0.33/0.33/0.65	CO/7D/14D/21D	92	100	62	90	100	63	95
Dpe/dpe/dpe+dime	0.25/0.33/0.33/0.65	CO/7D/14D/28D	93	100	77	70	86	63	84
Dpe/dpe/dpe+dime	0.25/0.33/0.33/0.65	CO/7D/14D/35D	93	100	70	80	93	63	84
Hand weeded check	----------	----------	81	85	90	100	90	75	95
Weedy check	----------	----------	0(1.1)	0(0.3)	0(0.3)	0(0.3)	0(0.4)	0(0.3)	0(0.6)

[1] Treatments applied April 17, May 7, 15, 22, 29, June 6 and 11, 2001.

[2] Weed counts were made June 19, 2001 and numbers in ( )= plant/ft. row.

ALS resistant kochia control in sugarbeets (01-131). Plots were established under sprinkler irrigation at the Research and Extension Center, Torrington, WY to evaluate kochia control and sugarbeet response with flumioxisin, carfentrazone and fluroxypyr. Plots were 10 by 40 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Monohikari) was planted to stand (68,000 seed/A) in 30-inch rows in a sandy loam soil (78% sand, 12% silt, 10% clay, 1.2% organic matter and pH 7.6) April 17, 2001. Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Application date and environmental conditions are presented in the table below. Sugarbeet injury was visually evaluated June 6 while kochia and sugarbeet counts were made June 11. Kochia infestations were moderate (11.2 plants/10 ft. row) and uniform throughout the experimental site. Plots were not harvested for yield because of severe crop injury and stand reductions in many treatments.

Table 1. Application date and climatic data, Torrington, WY

		PE	CO	7D	14D	21D
Date		4/17/01	5/07/01	5/16/01	5/22/01	5/29/01
Air temp.		65	66	65	65	70
Rel. hum.		30	35	40	30	45
Wind		7SW	calm	5SW	20NW	calm
Sky		clear	clear	cloudy	cloudy	cloudy
Soil temp.	0	78	88	72	72	74
	2	60	73	70	66	66
	4	58	68	66	64	64
Sugarbeet		------	coty to 2-lf	2 to 4-lf	4 to 6-lf	6 to 8-lf
Kochia		------	<0.5 in.	1.0 in.	1.5 in.	2 to 3 in.

Sugarbeet stands were reduced 77 to 83% by preemergence applications of flumioxisin and 4 to 30% by postemergence applications of fluroxypyr. Sugarbeet injury was evident in all treatments ranging from 9 to 15% in treatments with carfentrazone, 18 to 27% in treatments with flumioxisin and 43 to 85% in treatments with fluroxypyr. ALS resistant kochia control ranged from 37 to 87% in treatments with flumioxisin, 75 to 78% in treatments with carfentrazone and 87 to 100% in treatments with fluroxypyr. Kochia control with fluroxypyr increased as application timing was delayed.

Table 2. ALS resistant kochia control and sugarbeet response with several herbicide treatments. Torrington Research and Extension Center, 2001.

Treatment[1]	Application	Rate	Kochia[2] Control	Sugarbeet[3] Injury	Sugarbeet[3] Stand
		lb/A	%	%	1000/A
Flumioxisin (flum)	PE	0.032	37	18	6.4
Flumioxisin	PE	0.063	84	27	4.4
Flum/desmedipham+phenmedipham+ ethofumesate(dpe)/dpe/dpe	PE/CO/ 7D/14D	0.032/0.25/ 0.33(2X)	87	23	6.4
Flum/dpe+triflusulfuron(trif)+ clopyralid(clop)+Sun-It(MS)/dpe +clop+trif+ms/dpe+trif+clop+ms	PE/CO/ 7D/ 14D	0.032/0.08+ 0.004+0.023 +1.5%(3X)	87	20	7.6
Dpe/dpe/ dpe+carfentrazone(carf)	CO/7D/ 14D	0.25/0.33/ 0.33+0.008	75	9	30.2
Dpe/dpe/dpe/ carf	CO/7D/14D 21D	0.25/0.33/0.33/ 0.008	78	15	29.3
Dpe+clop/dpe+ fluroxypyr(flur)/dpe	CO/7D/ 14D	0.25+0.094/0.33+ 0.063/0.33	87	70	25.0
Dpe+clop/dpe+ flur/dpe	CO/7D/ 14D	0.25+0.094/0.33+ 0.125/0.33	91	83	21.5
Dpe+clop/dpe+clop +flur/dpe	CO/7D/ 14D	0.25+0.094/0.33+ 0.094+0.063/0.33	97	72	21.5
Dpe+clop/dpe+clop +flur/dpe	CO/7D/ 14D	0.25+0.094/0.33+ 0.094+0.125/0.33	100	85	20.9
Dpe+clop/dpe+clop/ dpe+flur	CO/7D/ 14D	0.25+0.094/0.33+ 0.094/0.33+0.063	94	67	18.6
Dpe+clop/dpe+clop/ dpe+flur	CO/7D/ 14D	0.25+0.094/0.33+ 0.094/0.33+0.125	97	77	19.5
Dpe/dpe+clop/ dpe+clop+flur	CO/7D/ 14D	0.25/0.33+0.094/	100	73	20.6
Dpe/dpe+clop/ dpe+clop+flur	CO/7D/ 14D	0.33+0.094+0.063 0.25/0.33+0.094/	100	83	20.3
Dpe/dpe+clop/ dpe+clop/flur	CO/7D/ 14D/21D	0.33+0.094+0.125	97	63	22.4
Dpe/dpe+clop/ dpe+clop/flur	CO/7D/ 14D/21D	0.25/0.33+0.094/ 0.33+0.094/0.063	100	67	21.5
Dpe/dpe+flur/ dpe	CO/7D/ 14D	0.25/0.33+0.094/ 0.33+0.094/0.125	100	70	22.4
Dpe/dpe+flur/ dpe	CO/7D/ 14D	0.25/0.33+0.063/ 0.33	100	88	22.4
Dpe/dpe/ dpe+flur	CO/7D/ 14D	0.25/0.33+0.125/ 0.33	100	33	25.7
Dpe/dpe/ dpe+flur	CO/7D/ 14D	0.25/0.33/ 033+0.063	100	73	20.0
Dpe/dpe/ dpe/flur	CO/7D/ 14D/21D	0.25/0.33/ 0.33+0.125	97	43	21.5
Dpe/dep/ dpe/flur	CO/7D/ 14D/21D	0.25/0.33/ 0.33/0.063	97	67	19.7
Weedy check	----------	0.25/0.33/ 0.33/0.125 ----------	0(1.2)	0	26.7

[1] Treatments applied April 17, May 7, 16, 22 and 29, 2001.

[2] Kochia counts determined June 11, 2001 and number in ( )=plant/ft. row.

[3] Sugarbeet injury visually evaluated June 6 and stand counted June 11, 2001.

Glyphosate formulation comparison in sugarbeets (01-132). Plots were established under sprinkler irrigation at the Research and Extension Center, Torrington, WY to compare weed control and sugarbeet response with six glyphosate formulations at two application timings. Plots were 10 by 40 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. HM1605 RR) was planted to stand (68,000 seed/A) in 30-inch rows in a sandy loam soil (76% sand, 13% silt, 11% clay, 1.1% organic matter and pH 7.7) April 17, 2001. Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Application and climatic information are presented in the table below. Visual crop injury ratings were made June 14, weed and sugarbeet counts June 26 and plots harvested September 26. Common lambsquarters (CHEAL) and green foxtail (SETVI) infestations were very heavy (17 to 24 plants/10 ft. row) while redroot pigweed (AMARE) and common purslane (POROL) infestations were moderate (3 to 6 plant/10 ft. row) and uniform throughout the experimental site.

Table 1. Application and climatic data. Torrington, WY.

		7D	14D	21D	28D
Date		5/15	5/23	5/29	6/06
Air temp.		65	68	72	72
Rel. hum.		30	38	45	28
Wind		5 SW	15NW	calm	3W
Sky		cloudy	clear	cloudy	clear
Soil temp.	0	74	80	74	82
	2	70	66	68	74
	4	60	60	66	70
Sugarbeet		2-lf	4-lf	6-lf	8-lf
Weeds		1 to 2 in	2 to 4 in	<0.5"	<0.5"

No sugarbeet injury or stand reduction was evident with any treatment. Broad spectrum weed control was good to excellent (90 to 100% control of all weed species) with all glyphosate treatments regardless of formulation or application timing. Sugarbeet yields were 20.5 to 22.2 T/A higher and extractable sucrose yields 5685 to 6216 lb/A higher in herbicide treated compared to weedy check plots. Sugarbeet root yields and extractable sucrose yields were similar in herbicide treated or hand weeded plots.

Table 2. Sugarbeet response to six glyphosate formulations applied at two application times. Torrington Research and Extension Center, 2001.

Treatment[1]	Rate	Application	Sugarbeet[2]				
			Injury	Stand	Yield	Sucrose	Ext. Sucrose
	lb/A		%	1000/A	T/A	%	lb/A
Sulfosate (Touchdown)	0.75	7D/21D	0	28.5	24.7	13.8	6817
Sulfosate (Touchdown)	0.75	14D/28D	0	28.5	23.6	13.9	6561
Glyphosate (Glyphomax)	0.75	7D/21D	0	29.6	24.7	13.8	6817
Glyphosate (Glyphomax)	0.75	14D/28D	0	29.3	24.1	14.1	6796
ETK-2303	0.75	7D/21D	0	29.0	25.5	13.6	6936
ETK-2303	0.75	14D/28D	0	29.0	24.2	13.3	6437
Glyphosate (Ultra)	0.75	7D/21D	0	29.0	25.1	13.6	6827
Glyphosate (Ultra)	0.75	14D/28D	0	29.6	24.3	14.1	6853
Glyphosate+AMS (Ultra)	0.75+1.7	14D/28D	0	28.2	24.0	14.1	6768
Glyphosate (Ultra Max)	0.75	7D/21D	0	29.9	24.7	13.4	6620
Glyphosate (Ultra Max)	0.75	14D/28D	0	29.3	23.5	13.9	6533
Glyphosate+AMS(Ultra Max)	0.75+1.7	14D/28D	0	28.7	24.4	13.9	6783
Glyphosate (Cornerstone)	0.75	7D/21D	0	29.3	25.0	13.4	6700
Glyphosate (Cornerstone)	0.75	14D/28D	0	29.0	23.9	13.4	6405
Hand weeded check	---	---	0	26.7	24.7	13.2	6521
Weedy check	---	---	0	19.7	3.0	12.0	720

[1] Treatments applied May 15, 23, 29 and June 6, 2001; AMS=spray grade ammonium sulfate.

[2] Sugarbeet injury visually evaluated June 14, stand determined June 26 and plots harvested September 26, 2001.

Table 3. Weed control in sugarbeets with six glyphosate formulations applied at two application times. Torrington Research and Extension Center, 2001.

Treatment[1]	Rate	Application	Weed control[2]			
			CHEAL	AMARE	POROL	SETVI
	lb/A		----------%----------			
Sulfosate (Touchdown)	0.75	7D/21D	98	100	90	94
Sulfosate (Touchdown)	0.75	14D/28D	100	100	100	100
Glyphosate (Glyphomax)	0.75	7D/21D	99	98	100	96
Glyphosate (Glyphomax)	0.75	14D/28D	100	100	100	100
ETK-2303	0.75	7D/21D	98	98	100	96
ETK-2303	0.75	14D/28D	100	100	100	100
Glyphosate (Ultra)	0.75	7D/21D	98	98	100	96
Glyphosate (Ultra)	0.75	14D/28D	100	100	100	100
Glyphosate+AMS (Ultra)	0.75+1.7	14D/28D	100	100	100	100
Glyphosate (Ultra Max)	0.75	7D/21D	98	100	100	96
Glyphosate (Ultra Max)	0.75	14D/28D	100	100	100	100
Glyphosate+AMS(Ultra Max)	0.75+1.7	14D/28D	100	100	100	100
Glyphosate (Cornerstone)	0.75	7D/21D	98	100	90	95
Glyphosate (Cornerstone)	0.75	14D/28D	100	100	100	100
Hand weeded check	---	---	92	93	100	93
Weedy check	---	---	0(1.7)	0(0.6)	0(0.3)	0(2.4)

[1] Treatments applied May 15, 23, 29 and June 6, 2001; AMS=spray grade ammonium sulfate.

[2] Weed control based on counts made June 14, 2001 and number in ( )=plant/ft. row.

Sugarbeet tolerance to fluroxypyr (01-133). Plots were established under sprinkler irrigation at the Research and Extension Center, Torrington, WY to evaluate sugarbeet tolerance to fluroxypyr under weed free conditions. Plots were 10 by 40 ft. with three replications arranged in a randomized complete block design and were maintained under weed free conditions with two applications of glyphosate at 0.75 lb/A. Sugarbeet (var. HM1605 RR) was planted to stand (68,000 seed/A) in 30-inch rows in a sandy loam soil (76% sand, 13% silt, 11% clay, 1.1% organic matter and pH 7.7) April 17, 2001. Fluroxypyr treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Application and climatic information are presented in the table below. Visual crop injury ratings were made June 18, sugarbeet stand counted June 26 and plots harvested September 26.

Table 1. Application and climatic data. Torrington, WY.

		7D	14D	21D	28D	35D
Date		5/16	5/23	5/29	6/4	6/11
Air temp.		65	68	72	70	80
Rel. hum.		30	38	45	28	40
Wind		3W	15NW	calm	3SW	5NW
Sky		cloudy	clear	cloudy	clear	clear
Soil temp.	0	74	80	74	82	88
	2	70	66	68	74	80
	4	60	60	66	70	78
Sugarbeet		2-lf	4-lf	6-lf	8-lf	10-lf

No fluroxypyr treatment reduced sugarbeet stand; however, moderate injury (10 to 20%) was evident with all fluroxypyr treatments regardless of rate or application timing. Fluroxypyr treatments reduced sugarbeet root yields 2.0 to 13.2 T/A and extractable sucrose yields 895 to 3766 lb/A when compared to the untreated weed free check. Sugarbeet root yield and extractable sucrose yields were reduced least when fluroxypyr was applied 35 days after emergence.

Table 2. Sugarbeet response to fluroxypyr at various application timings. Torrington Research and Extension Center, 2001.

			Sugarbeet[2]				
Treatment[1]	Rate	Application	Injury	Stand	Yield	Sucrose	Ext. Sucrose
	lb/A		%	1000/A	T/A	%	lb/A
Fluroxypyr	0.031	7D	12	24.7	14.2	13.4	3806
Fluroxypyr	0.063	7D	20	24.1	11.5	13.0	2990
Fluroxypyr	0.031	14D	10	25.0	17.5	13.9	4550
Fluroxypyr	0.063	14D	15	25.0	16.6	13.6	4515
Fluroxypyr	0.031	21D	13	24.7	13.6	13.3	3618
Fluroxypyr	0.063	21D	18	25.0	10.2	13.2	2693
Fluroxypyr	0.031	28D	17	26.1	14.3	13.4	3832
Fluroxypyr	0.063	28D	20	23.8	12.4	12.6	3125
Fluroxypyr	0.031	35D	12	24.4	21.4	13.0	5564
Fluroxypyr	0.063	35D	13	25.3	18.8	12.6	4738
Check (weed free)	--------	------	0	25.3	23.4	13.8	6459

[1] Treatments applied May 16, 23, 29, June 4 and June 11, 2001.

[2] Sugarbeet injury evaluated June 18, plant stand counted June 26 and plots harvested September 26,

2001.

Additive comparison with micro-rates of sugarbeet herbicides (01-134). Plots were established under sprinkler irrigation at the Research and Extension Center, Torrington, WY to evaluate the influence of additives on weed control and sugarbeet response with micro-rate herbicide applications. Plots were 10 by 40 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Monihikari) was planted to stand (68,000 seed/A) in 30-inch rows in a sandy loam soil (78% sand, 12% silt, 10% clay, 1.2% organic matter and pH 7.7) April 17, 2001. Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Application and climatic information are presented in the table below. Visual crop injury ratings were made June 6, weed and sugarbeet counts June 8 and plots harvested September 25. Common lambsquarters (CHEAL) infestations were heavy (15 plants/10 ft. row) and redroot pigweed (AMARE), kochia (KCHSC), Russian thistle (SASKR) and hairy nightshade (SOLSA) infestations moderate (3 to 6 plants/10 ft. row) and uniform throughout the experimental site.

Table1. Application and climatic data. Torrington, WY.

		CO	7D	14D
Date		5/07/01	5/16/01	5/22/01
Air temp.		67	61	57
Rel. hum.		45	68	40
Wind		3 NW	5 S	10 NW
Sky		Clear	Cloudy	Partly cloudy
Soil temp.	0	80	70	58
	2	67	70	58
	4	58	68	62
Sugarbeet		Cotyl to 2-lf	2 to 4-lf	4 to 6-lf
Weeds		< 0.25 in	0.75 to 1.0 in	0.75 to 1.5 in

No injury or stand reduction was evident with any treatment. Weed control was similar with desmedipham-phenmedipham or desmedipham-phenmedipham-ethofumesate. Sun-It appeared to be the most effective and Prime Oil the least effective additive with micro-rate treatments in sugarbeets. Sugarbeet yields were highest in the hand weeded check and lowest in the weedy check. Herbicide treated plots yielded 2.4 to 7.6 T/A less than the hand weeded check.

Table 2. Sugarbeet response to micro-rate herbicide applications with various additives. Torrington Research and Extension Center, 2001.

Treatment[1]	Rate	Application	Sugarbeet[2] Injury	Stand	Yield	Sucrose	Ext. Sucrose
	lb/A		%	1000/A	T/A	%	lb/A
Desmedipham-phenmedipham(dp)+ clopyralid(clop)+triflusulfuron(trif) +Sun-It(3X)	0.08+0.023+ 0.004+1.5%	CO/ 7D/ 14D	0	36.6	14.7	14.3	4204
Dp+clop+trif+Destiny(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	37.2	16.2	14.2	4601
Dp+clop+trif+Rivet(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	36.3	13.3	14.5	3857
Dp+clop+trif+Newtone(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	36.3	15.1	14.1	4258
Dp+clop+trif+Quad 7(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	35.4	15.5	14.1	4371
Dp+clop+trif+Prime Oil(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	37.5	11.0	14.7	3234
Dp+clop+trif+Sun-It+Quad 7(3X)	0.08+0.023+ 0.004+0.75%+0.75%	CO/7D/ 14D	0	36.6	14.1	14.4	4061
Desmedipham-phenmedipham- ethofumesate(dpe)+clop+ trif+Sun-It(3X)	0.08+0.023+ 0.004+1.5%	CO/ 7D/ 14D	0	36.0	15.3	14.7	4498
Dpe+clop+trif+Destiny(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	36.3	13.5	14.1	3807
Dpe+clop+trif+Quad 7(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	0	36.9	16.2	14.4	4666
Dpe+clop+trif+Sun-It+Quad 7(3X)	0.08+0.023+ 0.004+0.75%+0.75%	CO/7D/ 14D	0	35.1	15.5	14.7	4557
Hand weeded check	----------	----------	0	37.5	18.6	14.3	5320
Weedy check	-- ---------- --	----------	0	29.6	2.2	11.8	519

[1] Treatments applied May 7, 16 and 22, 2001.

[2] Sugarbeet injury visually evaluated June 6, stand counts determined June 8 and plots harvested September 25, 2001.

Table 3. Influence of additives on weed control in sugarbeets with micro-rate application of herbicides. Torrington Research and Extension Center, 2001.

Treatment[1]	Rate	Application	Weed control[2]				
			CHEAL	AMARE	KCHSC	SASKR	SOLSA
	lb/A		----------%----------				
Desmedipham-phenmedipham(dp)+ clopyralid(clop)+triflusulfuron(trif) +Sun-It(3X)	0.08+0.023+ 0.004+1.5%	CO/ 7D/ 14D	91	100	84	86	94
Dp+clop+trif+Destiny(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	88	100	72	79	100
Dp+clop+trif+Rivet(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	83	100	72	79	100
Dp+clop+trif+Newtone(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	84	100	72	79	100
Dp+clop+trif+Quad 7(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	82	97	72	82	100
Dp+clop+trif+Prime Oil(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	82	89	67	82	94
Dp+clop+trif+Sun-It+Quad 7(3X)	0.08+0.023+ 0.004+0.75%+0.75%	CO/7D/ 14D	83	93	67	79	94
Desmedipham-phenmedipham- ethofumesate(dpe)+clop+ trif+Sun-It(3X)	0.08+0.023+ 0.004+1.5%	CO/ 7D/ 14D	92	100	83	89	100
Dpe+clop+trif+Destiny(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	84	100	78	82	94
Dpe+clop+trif+Quad 7(3X)	0.08+0.023+ 0.004+1.5%	CO/7D/ 14D	85	93	78	80	100
Dpe+clop+trif+Sun-It+Quad 7(3X)	0.08+0.023+ 0.004+0.75%+0.75%	CO/7D/ 14D	88	96	72	89	100
Hand weeded check	----------	----------	89	85	94	93	100
Weedy check	-- ---------- --	----------	0(1.5)	0(0.5)	0(0.3)	0(0.6)	0(0.4)

[1] Treatments applied May 7, 16 and 22, 2001.

[2] Weed counts determined June 8, 2001 and number in ( )= plants/ft. row.

Comparison of standard and oil base formulations in sugarbeets (01-135). Plots were established under sprinkler irrigation at the Research and Extension Center, Torrington, WY to evaluate weed control and sugarbeet response with standard and oil base formulations of desmediphan, desmedipham/ phenmedipham or desmedipham/phenmedipham/ethofumesate. Plots were 10 by 40 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Monohikari) were planted to stand (68,000 seed/A) in 30 inch rows in a sandy loam soil (78% sand, 12% silt, 10% clay, 1.2% organic matter and pH 7.7) April 17, 2001. Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Application and climatic information are presented in the table below. Visual crop injury ratings were made June 6 and weed and sugarbeet counts June 11. Common lambsquarters (CHEAL) infestations were heavy (15 plants/10 ft. row), redroot pigweed (AMARE) and kochia (KCHSC) infestations moderate (5 plants/10 ft. row) and Russian thistle (SASKR) and hairy nightshade (SOLSA) infestations light (2 plants/10 ft. row) but uniform throughout the experimental site. Plots were not harvested for yield because of poor sugarbeet stands caused by a heavy Rhizoctonia solani infestation.

Table1. Application and climatic data, Torrington, WY.

		CO	7D	14D
Date		5/07/01	5/16/01	5/22/01
Air temp.		67	61	57
Rel. hum.		45	68	40
Wind		3 NW	5 S	10 NW
Sky		Clear	Cloudy	Partly cloudy
Soil temp.	0	80	70	58
	2	67	70	58
	4	58	68	62
Sugarbeet		Cotyl to 2-lf	2 to 4-lf	4 to 6-lf
Weeds		< 0.25 in	0.75 to 1.0 in	0.75 to 1.5 in

No treatment reduced sugarbeet stand and only slight injury (3 to 7%) was evident with micro-rate treatments spiked with ethofumesate. Crop response and weed control was similar with standard or oil base formulations. Common lambsquarters and redroot pigweed control were reduced while kochia and hairy nightshade control increased in micro-rate compared to conventional rate applications. Micro-rate applications of desmedipham-phenmedipham spiked with ethofumesate provided the highest level of broad spectrum weed control in the trial.

Table 2. Weed control and sugarbeet response with standard and oil base formulations of desmedipham, desmedipham/phenmedipham or desmedipham/ phenmedipham/ethofumasate. Torrington Research and Extension Center, 2001.

			Weed control[2]					Sugarbeet[3]	
Treatment[1]	Application	Rate	CHEAL	AMARE	KCHSC	SASKR	SOLSA	Injury	Stand
		lb/A	----------%----------					%	1000/A
AEBO-49913 (913)	CO/7D/14D	0.25/0.33/0.33	95	95	79	80	87	0	34.6
desmedipham-phenmedipham-ethofumesate (dpe)	CO/7D/14D	0.75/0.33/0.33	97	100	75	80	87	0	34.0
913+clopyralid (clop)+triflusulfuron (trif)+Sun-It (MS)	CO/7D/14D	0.08+0.23+ 0.004+1.5%(3X)	80	97	93	80	100	0	33.7
Dpe+clop+trif+MS	CO/7D/14D	0.08+0.023+ 0.004+1.5%(3X)	80	97	86	90	100	0	33.4
Dpe+clop+trif+ethofumesate (etho)+MS	CO/7D/14D	0.08+0.023+0.004 +0.032+1.5%(3X)	89	92	89	80	100	0	34.6
AEBO-38584 (584)	CO/7D/14D	0.25/0.33/0.33	89	90	79	80	87	0	34.0
Desmedipham-phenmedipham(dp)	CO/7D/14D	0.25/0.33/0.33	81	97	79	70	87	0	34.0
584+clop+trif+MS	CO/7D/14D	0.08+0.023+ 0.004+1.5%(3X)	77	100	89	90	100	0	33.4
Dp+clop+trif+MS	CO/7D/14D	0.08+0.023+ 0.004+1.5%(3X)	85	85	86	80	100	0	32.5
Dp+clop+trif+etho+MS	CO/7D/14D	0.08+0.023+0.004 +0.032+1.5%(3X)	87	97	82	90	100	3	34.3
Dp+clop+trif+etho+MS	CO/7D/14D	0.08+0.023+0.004 0.063+1.5%(3X)	89	100	92	90	100	5	33.1
Dp+clop+trif+etho+MS	CO/7D/14D	0.08+0.023+0.004 0.079+1.5%(3X)	97	97	96	100	100	7	33.7
AEBO-38107 (107)	CO/7D/14D	0.25/0.33/0.33	97	97	61	80	87	0	34.6
Desmedipham (desm)	CO/7D/14D	0.25/0.33/0.33	96	100	61	90	75	0	32.8
107+clop+trif+MS	CO/7D/14D	0.08+0.023+ 0.004+1.5%(3X)	83	95	86	70	100	0	32.2
Desm+clop+trif+MS	CO/7D/14D	0.08+0.023+ 0.004+1.5%(3X)	85	97	86	80	100	0	32.2
Weedy check	----------	----------	0(1.5)	0(0.5)	0(0.5)	0(0.2)	0(0.2)	0	26.1

[1] Treatments applied May 7, 16 and 22, 2001.

[2] Weed control based on counts made June 11, 2001 and number in ( )=plants/ft.row.

[3] Injury visually evaluated June 6 and stand determined June 11, 2001.

Micro-rate system with sethoxydim and dimethenamid-p for weed control in sugarbeets (2001-02). Plots were established under furrow irrigation at the Research and Extension Center, Powell, WY to evaluate weed control and sugarbeet response with the micro-rate system desm-phen-etho+ triflusulfuron (trif)+clopyralid(clop)+methylated seed oil (MS) applied alone or in combination with sethoxydim and dimethenamid-P. Plots were 11 by 30 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Ranger) was planted to stand in 22-inch rows April 26, in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter and pH 7.6). Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. The first application was applied to cotyledon (Co) sugarbeet and 1 to 2-inch weeds on May 28, (air temperature 86F, relative humidity 32%, wind calm, sky partly cloudy and soil temperature at 0-inch 95F, 2-inch 84F, and 4-inch 78F). The second application was applied 7 days later (7d) to 2-leaf sugarbeets and 1 to 2-inch weeds on June 4, (air temperature 52F, relative humidity 62%, wind Northwest at 3 mph., sky very cloudy and soil temperature at 0-inch 53F, 2-inch 54F, and 4-inch 55F). The third application was applied 14 days after the first application (14d) to 4-leaf sugarbeets and 1 to 2-inch weeds on June 11, (air temperature. 70F, relative humidity 60%, wind calm., sky mostly cloudy and soil temperature a 0- inch 91F, 2-inch 79F, and 4-inch 74F). The fourth application was applied 21 days after the first application (21d) to 4-leaf sugarbeets and 1 to 2-inch weeds on June 18, (air temperature. 80F, relative humidity 45%, wind calm., sky clear and soil temperature a 0- inch 93F, 2-inch 82F, and 4-inch 76F). Wild mustard (SINAR) and redroot pigweed (AMARE) infestations were moderate to heavy (10 to 25 plants/10 ft. of row) and uniform throughout the experimental site. Grass weeds; green foxtail (SETVI) and wild oat (AVEFA) infestations were moderate (10 to 15 plants/10 ft. of row) and uniform throughout the experimental site. Weed counts, sugarbeet stand counts and injury ratings were made July 10.

No sugarbeet stand reduction was evident with any treatment; however, some treatments caused slight injury (3 to 7%) to sugarbeet. The highest injury (7%) was caused by treatments containing dimethenamid-P when applied to 2-leaf sugarbeet. Broadleaf weed control was good to excellent (85 to 100%) depending on the treatment and weed species. The treatment containing grass herbicides improved wild oat and green foxtail control by 10%. Grass weed control with micro rate and full rate grass herbicides was similar.

Table. Weed control and sugarbeet response to the micro-rate system in combination with sethoxydim and dimethenamid-P herbicides. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	Weed Control			Sugbeet[3]
			AMARE	SINAR	AVEFA	Injury
	lb/A	Leaf no.		(%)		(%)
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid+MS	0.08+ 0.004+0.023	Co/7d/7d/7d	90	94	85	0
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Sethoxydim	0.08+ 0.004+0.023+0.047	Co/7d/7d/7d	92	96	94	0
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Sethoxydim	0.08+ 0.004+0.023+0.07	Co/7d/7d/7d	92	96	97	0
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Sethoxydim	0.08+ 0.004+0.023+0.09	Co/7d/7d/7d	98	100	100	0
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Sethoxydim/ Dimethenamid-P	0.08+ 0.004+0.023+0.09 0.65	Co/7d/7d/7d --/7d/--/--	100	100	100	7
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Sethoxydim/ Dimethenamid-P	0.08+ 0.004+0.023+0.09 0.65	Co/7d/7d/7d --/7d/7d/--	100	100	100	5
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Clethodim	0.08+ 0.004+0.023+0.031	Co/7d/7d/7d	98	100	100	0
Desmedipham-Phen-Ethofumesate+MS+ Triflusulfuron+Clopyralid+Quizalofop	0.08+ 0.004+0.023+0.0275	Co/7d/7d/7d	95	95	98	0
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid+MS/ Sethoxydim	0.08+ 0.004+0.023 0.21	Co/7d/7d/7d 14d	97	98	100	3
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid+MS/ Clethodim	0.08+ 0.004+0.023 0.073	Co/7d/7d/7d 14d	93	96	98	0
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid+MS/ Quizalofop	0.08+ 0.004+0.023 0.063	Co/7d/7d/7d 14d	95	95	96	0
Weedy Check	----------	----------	--	--	–	0

[1] Treatments applied May 28, June 4, 11, and 18, 2001; MS=Methylated seed oil at 1.5%v/v, and /=split application.

[2] Weed control visually evaluated July 10, 2001.

[3] Sugarbeet injury evaluated July 10, 2001.

Redstem filaree control in sugarbeets (2001-04). Plots were established under furrow irrigation at the Research and Extension Center, Powell, WY to evaluate redstem filaree control and sugarbeet response to preplant treatments of ethofumesate and/or pyrazon complemented by full or miro-rate application of desmedipham-phenmediphan-ethofumesate applied in combination with triflusulfuron and clopyralid. Plots were 11 by 30 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Ranger) was planted to stand in 22-inch rows April 19, in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter and pH 7.6). Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Preplant treatments were applied on April 19, (air temperature 80F, relative humidity 40%, wind calm, sky partly cloudy and soil temperature at 0-inch 81F, 2-inch 69F, and 4 inch 55F). The first post application was applied to sugarbeet in the cotyledon (CO) stage and 1 to 2-inch weeds on May 21, (air temperature 86F, relative humidity 40%, wind calm, sky partly cloudy and soil temperature at 0-inch 85F, 2-inch 72F, and 4 inch 66F). The second application was applied 7 days later (7D) to 2-leaf sugarbeets and 1 to 2-inch weeds on May 21, (air temperature 72F, relative humidity 52%, wind East at 2 mph., sky partly cloudy and soil temperature at 0-inch 76F, 2-inch 63F, and 4-inch 58F). The third application was applied 14 days after the first application (14D) to 4-leaf sugarbeets and 1 to 2-inch weeds on May 28, (air temperature. 85F, relative humidity 34%, wind calm., sky partly cloudy and soil temperature a 0- inch 88F, 2-inch 72F, and 4 inch 68F). Redstem filaree (EROCI) infestations were were moderate to heavy (15 to 25 plants/10 ft. of row) and uniform throughout the experimental site. Weed counts, sugarbeet stand counts and injury ratings were made June 20. Plots were harvested October 11, 2001.

No sugarbeet stand reduction was evident with any treatment; however, some treatments caused slight to moderate injury (3 to 13%). The highest injury (10 to 13%) was observed with treatments containing carfentrazone. Redstem filaree control was good (80 to 90%) depending on the treatment. The highest control was achieved with ethofumesate+pyrazon preplant followed by three application using the micro rate system. Sugarbeet root yields were 1.4 to 9.4 T/A higher in herbicide treated compared to the weedy check plot. In general sugarbeet root yields were closely related to redstem filaree control and/or sugarbeet injury. Sugar content among treatments including the weedy check and the weed free plots ranged from 16.8 to 17.7%.

Table. Redstem filaree control and sugarbeet response to preplant treatments in combination with post emergence treatments. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	EROCl[2] control	Sugbeet[3] Injury	Yield	Sucrose
	lb/A	Leaf no.	(%)			(%)
Ethofumesate	1.5	PPI	80	8	23.7	17.6
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d				
Pyrazon	3.1	PPI	86	5	28.2	16.7
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d				
Ethofumesate+Pyrazon	1.0+2.0	PPI	85	3	28.4	17.1
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d				
Ethofumesate	1.5	PPI	82	0	25.6	17.0
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d				
Pyrazon	3.1	PPI	84	0	26.7	17.4
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d				
Ethofumesate+Pyrazon	1.0+2.0	PPI	90	3	30.1	16.9
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d				
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	2lf/7d	76	5	22.1	17.4
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d/7d	82	5	24.4	17.3
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d	84	3	24.7	17.2
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d/7d	86		25.6	17.5
Pyrazon	3.1	Co	88	0	26.5	17.2
Desm-Phen-Ethof+Trif+Clop+MS	0.25+0.016+0.09	Co/7d/7d				
Pyrazon	3.1	Co	90	0	27.7	17.2
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d				
Flumioxizin	0.032	PPI	86	0	26.8	17.0
Desm-Phen-Ethof+Trif+Clop+MS	0.08+0.004+0.023	Co/7d/7d				
Flumioxizin	0.032	PPI	82	5	26.9	16.8
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d				
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co	80	0	27.7	17.5
Desm-Phen-Ethof+Trif+Clop	0.33+0.016+0.09	7d/7d				
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d/7d	76	10	22.1	17.6
Carfentrazone	0.008	--/--/7d				
Desm-Phen-Ethof+Trif+Clop	0.25+0.016+0.09	Co/7d/7d	80	13	27.5	17.7
Carfentrazone+Nis	0.008	--/--/--/7d				
Weedy Check	----------	----------	10plts/ft^2	--	20.7	17.1

[1] Treatments applied PPI; April 19, Post; May 14, 21, 29, and June 5, 2001; MS=Methylated seed oil at 1.5%v/v; and /=split application.

[2] Redstem filaree control based on counts determined June 20, 2001.

[3] Sugarbeet injury evaluated June 20, and plots harvested October 11, 2001.

Weed management systems in sugarbeets (2001-310). Plots were established under furrow irrigation at the Research and Extension Center, Powell, WY to evaluate weed control and sugarbeet response with full and micro-rates of desmedipham-phenmedipham or desmedipham-phenmediphan-ethofumesate when applied in combination with triflusulfuron, clopyralid, clethodim, dimethenamid and/or ethofumesate. Plots were 11 by 30 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Ranger) was planted to stand in 22-inch rows April 19, in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter and pH 7.6). Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Preplant treatments were applied April 19, (air temperature 74F, relative humidity 40%, wind calm, sky partly cloudy and soil temperature at 0-inch 75F, 2-inch 70F, and 4 inch 69F). Postemergence consisted of many applications. The first post application was applied to sugarbeet at the cotyledon (CO) stage and 1 to 2-inch weeds on May 14, (air temperature 80F, relative humidity 46%, wind northwest 3 mph, sky partly cloudy and soil temperature at 0-inch 82F, 2-inch 75F, and 4 inch 72F). The second application was applied 7 days later (7D) to 2-leaf sugarbeets and 1 to 2-inch weeds on May 21, (air temperature 86F, relative humidity 46%, wind east at 5 mph., sky very cloudy and soil temperature at 0-inch 86F, 2-inch 73F, and 4-inch 69F). The third application was applied 14 days after the first application (14D) to 4-leaf sugarbeets and 1 to 2-inch weeds on May 29, (air temperature 86F, relative humidity 46%, wind north at 3 mph., sky clear and soil temperature a 0- inch 90F, 2-inch 78F, and 4 inch 72F). Dimethenamid-P was also applied alone 21,28 and 35 days after the first application to 6, 8 and 10 sugarbeet leaf stage on June 5, 12 and 19. Wild mustard (SINAR) and redroot pigweed (AMARE) infestations were moderate to heavy (10 to 25 plants/10 ft. of row) and uniform throughout the experimental site. Wild buckwheat (POLCO) infestations were light (5 to plants/10 ft. of row) and variable throughout the experimental site and grass infestations consisting of green foxtail (SETVI) and wild oat (AVEFA) were moderate (10 to 15 plants/10 ft. of row) and uniform throughout the experimental site. Weed counts, sugarbeet stand counts and injury ratings were made July 5. Plots were harvested October 11, 2001.

No sugarbeet stand reduction was evident with any treatment; however, some treatments caused sugarbeet injury (3 to 7%) . The highest injury (7%) was observed with treatments containing dimethenamid. Weed control was good to excellent (88 to 100%) depending on the treatment and weed species. Weed control with ethofumesate applied alone as a preplant was between 50 and 62%. The treatment containing grass herbicides slightly improved wild oat and green foxtail control. Sugarbeet root yields were 2.7 to 18.3 T/A higher in herbicide treated compared to the weedy check plot and were closely related to weed control. Sugar content among all treatments including the weedy check and the weed free plots ranged from 17.0 to 17.9%.

Table 1. Sugarbeet response with full and micro-rate systems. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	Sugarbeet[2]		
			Injury	Yield	Sucrose
	(lb/A)	(leaf no.)	(%)	(T/A)	(%)
Ethofumesate	2.5	PPI	0	12.6	17.2
Ethofumesate/Desmedipham-Phen-Ethofumesate	1.25/0.25/0.33/0.33	PPI/Co/7d/7d	5	24.6	17.7
Ethofumesate/Desm-Phen-Ethof+Trif+Clop+MS	1.25/0.08+0.004+0.023	PPI/Co/7d/7d	0	25.2	17.2
Ethofumesate/Desmedipham-Phenmedipham	1.25/0.25/0.33/0.33	PPI/Co/7d/7d	5	25.5	17.7
Ethofumesate/Desm-Phen+Triflusulfuron+ Clopyralid+MS	1.25/0.08+0.004+ 0.023	PPI/Co/7d/7d	0	28.2	17.6
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/7d	3	22.0	17.5
Desmedipham-Phenmedipham-Ethofumesate Clethodim	0.25/0.33/0.33 0.078	Co/7d/14d 14d	3	23.2	17.9
Desm-Phen-Ethof+Triflusulfuron+Clopyralid+MS Clethodim	0.08+0.004+0.023 0.078	Co/7d/14d 14d	0	24.3	17.6
Desm-Phen-Etho+Trif+Clop+MS+ Clethodim	0.08+.004+.023+ 0.026	Co/7d/14d	0	25.1	17.4
Desmedipham-Phenmedipham	0.25/0.33/0.33	Co/7d/14d	3	22.1	17.7
Desmedipham-Phenmedipham Clethodim	0.25/0.33/0.33 0.078	Co/7d/14d 14d	3	23.6	17.3
Desm-Phen+Triflusulfuron+Clopyralid+MS Clethodim	0.08+0.004+0.023 0.078	Co/7d/14d 14d	0	22.6	17.2
Desm-Phen+Trif+Clop+MS+Clethodim	0.08+.004+.023+0.026	Co/7d/14d	0	22.7	17.4
Desmedipham-Phenmedipham-Ethofumesate Dimethenamid-P	0.25/0.33/0.33 0.65	Co/7d/14d 7d	7	23.3	17.7
Desmedipham-Phenmedipham-Ethofumesate Dimethenamid-P	0.25/0.33/0.33 0.65	Co/7d/14d 14d	7	23.2	17.0
Desmedipham-Phenmedipham-Ethofumesate Dimethenamid-P	0.25/0.33/0.33 0.65	Co/7d/14d 21d	3	26.8	17.4
Desmedipham-Phenmedipham-Ethofumesate Dimethenamid-P	0.25/0.33/0.33 0.65	Co/7d/14d 28d	3	27.6	17.4
Desmedipham-Phenmedipham-Ethofumesate Dimethenamid-P	0.25/0.33/0.33 0.65	Co/7d/14d 35d	7	24.9	17.8
Hand Weeded Check	----	----	0	23.5	17.5
Weedy Check	----	----	--	9.9	17.5

[1] Treatment applied PPI; April 19, and postemergence May 14, 21, 29, June 5, 12, 19, 2001; MS=Methylated seed oil Sun-It at 1.5% v/v, and /=split application.

[2] Sugarbeet injury visually evaluated on July 5 and plot harvested October 11, 2001.

Table 2. Weed control with full and micro-rate systems. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	Weed Control[2]			
			AMARE	SINAR	POLCO	GRASS
	(lb/A)	(leaf no.)	----------(%)----------			
Ethofumesate	2.5	PPI	55	62	50	60
Ethofumesate/Desmedipham-Phen-Ethofumesate	1.25/0.25/0.33/0.33	PPI/Co/7d/7d	88	92	73	88
Ethofumesate/Desm-Phen-Ethof+Trif+Clop+MS	1.25/0.08+0.004+0.023	PPI/Co/7d/7d	90	96	84	90
Ethofumesate/Desmedipham-Phenmedipham	1.25/0.25/0.33/0.33	PPI/Co/7d/7d	92	100	85	90
Ethofumesate/Desm-Phen+Triflusulfuron+ Clopyralid+MS	1.25/0.08+0.004+ 0.023	PPI/Co/7d/7d	100	100	84	88
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/7d	90	94	80	90
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/14d	92	95	81	98
Clethodim	0.078	14d				
Desm-Phen-Ethof+Triflusulfuron+Clopyralid+MS	0.08+0.004+0.023	Co/7d/14d	96	100	88	100
Clethodim	0.078	14d				
Desm-Phen-Etho+Trif+Clop+MS+Clethodim	0.08+.004+.023+0.026	Co/7d/14d	95	100	86	90
Desmedipham-Phenmedipham	0.25/0.33/0.33	Co/7d/14d	98	100	90	92
Desmedipham-Phenmedipham	0.25/0.33/0.33	Co/7d/14d	100	100	88	100
Clethodim	0.078	14d				
Desm-Phen+Triflusulfuron+Clopyralid+MS	0.08+0.004+0.023	Co/7d/14d	100	98	84	100
Clethodim	0.078	14d				
Desm-Phen+Trif+Clop+MS+Clethodim	0.08+.004+.023+0.026	Co/7d/14d	100	100	80	95
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/14d	100	100	86	98
Dimethenamid-P	0.65	7d				
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/14d	98	100	82	92
Dimethenamid-P	0.65	14d				
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/14d	100	100	88	94
Dimethenamid-P	0.65	21d				
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/14d	100	100	84	90
Dimethenamid-P	0.65	28d				
Desmedipham-Phenmedipham-Ethofumesate	0.25/0.33/0.33	Co/7d/14d	96	100	88	92
Dimethenamid-P	0.65	35d				
Hand Weeded Check	----	----	100	100	100	100
Weedy Check	----	----	---	---	---	---

[1] Treatment applied PPI; April 19, and postemergence May 14, 21, 29, June 5, 12, 19, 2001; MS=Methylated seed oil Sun-It at 1.5% v/v, and /=split application.

[2] Weed control based on counts taken July 5, 2001. Grass weeds=green foxtail(SETVI)+wild oats(AVEFA)

ALS resistant kochia control in sugarbeet (2001-311). Plots were established under furrow irrigation at the Research and Extension Center, Powell, WY to evaluate ALS resistant kochia control and sugarbeet response with desmedipham-phenmediphan-ethofumesate alone or in combination with clopyralid, ethofumesate, fluroxypyr, and/or flumioxisin. Plots were 11 by 30 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Ranger) was planted to stand in 22-inch rows, April 19, in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter and pH 7.6). Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Preemergence treatments were applied April 27, (air temperature 74F, relative humidity 40%, wind calm, sky partly cloudy and soil temperature at 0-inch 75F, 2-inch 70F, and 4 inch 69F). Postemergence treatments consisted of several application treatments. The first application was applied to sugarbeet at the cotyledon (CO) stage and 1 to 2-inch weeds on May 14, (air temperature 80F, relative humidity 46%, wind northwest 3 mph, sky partly cloudy and soil temperature at 0-inch 82F, 2-inch 75F, and 4 inch 72F). The second application was applied 7 days later (7D) to 2-leaf sugarbeets and 1 to 2-inch weeds on May 21, (air temperature 86F, relative humidity 46%, wind east at 5 mph., sky very cloudy and soil temperature at 0-inch 86F, 2-inch 73F, and 4-inch 69F). The third application was applied 14 days after the first application (14D) to 4-leaf sugarbeets and 1 to 2-inch weeds on May 29, (air temperature 86F, relative humidity 46%, wind north at 3 mph., sky clear and soil temperature a 0- inch 90F, 2-inch 78F, and 4 inch 72F). The fourth application was applied 21 days after the first application (21D) to 4-leaf sugarbeets and 1 to 2-inch weeds on June 5, (air temperature 66F, relative humidity 56%, wind calm at 3 mph., sky partly cloudy and soil temperature a 0- inch 61F, 2-inch 59F, and 4 inch 55F). Wild mustard (SINAR), kochia (KCHSC), and redroot pigweed (AMARE) infestations were moderate to heavy (15 to 25 plants/10 ft. of row) and uniform throughout the experimental site. Wild oat (AVEFA) infestations were moderate (10 to 15 plants/10 ft. of row) and variable throughout the experimental site. Weed counts, sugarbeet stand and injury ratings were made June 22. Plots were harvested October 11, 2001.

Sugarbeet injuries were light to severe ranging from 7 to 27%. Fluroxypyr caused the highest injury (25 to 27%) when applied 21 days after the cotyledon stage of sugarbeet. When fluroxypryr was applied at the 2-leaf stage of sugarbeet the injuries were between 12 and 17%. Flumioxisin applied preemergence did not have any effect on weeds. Sugarbeet root yields were closely related to sugarbeet injury and/or weed control. Sugar content among all treatments including the weedy check and weed free plots ranged from 16.7 to 17.7%.

Table 1. Sugarbeet response to pre and postemergence herbicides. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	Sugarbeet[2]		
			Injury	Yield	Sucrose
	(lb/A)	(lf no.)	(%)	(T/A)	(%)
Flumioxisin	0.032	PE	0	10	16.9
Flumioxisin	0.063	PE	0	14	17.0
Flumioxisin/Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho+Clethodim	0.032/0.25/0.33 0.33+0.078	PE/Co/7d 14d	0	21	17.0
Flumioxisin/Desm-Phen-Etho+Trif+ Clop+MS+Clethodim	0.032/0.08+0.004+ 0.023+0.026	PE/Co/7d/ 14d	0	20	17.1
Desm-Phen-Ethofumesate/Desm-Phen-Etho/ Desm-Phen-Etho+Carfentrazone	0.25/0.33/ 0.33+0.008	Co/7d/ 14d	7	17	17.1
Desm-Phen-Ethofumesate/Desm-Phen-Etho/ Desm-Phen-Etho/Carfentrazone+Nis	0.25/0.33/ 0.33/0.008	Co/7d/ 14d/21d	8	18	17.1
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr/Desm-Phen-Etho	0.25+0.094/0.33+ 0.063/0.33	Co/7d/ 14d	12	20	17.1
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr/Desm-Phen-Etho	0.25+0.094/0.33+ 0.125/0.33	Co/7d/ 14d	13	18	17.1
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr+Clop/Desm-Phen-Etho	0.25+0.094/0.33+ 0.063+0.094/0.33	Co/7d/ 14d	15	21	17.2
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr+Clop/Desm-Phen-Etho	0.25+0.094/0.33+ 0.125+0.094/0.33	Co/7d/ 14d	17	17	17.5
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Clop/Desm-Phen-Etho+Fluroxypyr	0.25+0.094/0.33+ 0.094/0.33+0.063	Co/7d/ 14d	15	19	17.1
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Clop/Desm-Phen-Etho+Fluroxypyr	0.25+0.094/0.33+ 0.094/0.33+0.125	Co/7d/ 14d	27	12	17.4
Desm-Phen-Etho+/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop+Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094+0.063	Co/7d/ 14d	19	19	16.9
Desm-Phen-Etho+/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop+Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094+0.125	Co/7d/ 14d	25	14	17.2
Desm-Phen-Etho+/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop/Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094/0.063	Co/7d/ 14d/21d	25	15	17.0
Desm-Phen-Etho/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop/Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094/0.125	Co/7d/ 14d/21d	27	15	17.6
Desm-Phen-Etho/Desm-Phen-Etho+Fluroxypyr/ Desm-Phen-Etho	0.25/0.33+0.063/ 0.33	Co/7d/ 14d	15	18	17.5
Desm-Phen-Etho/Desm-Phen-Etho+Fluroxypyr/ Desm-Phen-Etho	0.25/0.33+0.125/ 0.33	Co/7d/ 14d	25	14	17.6
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho+Fluroxypyr	0.25/0.33/ 0.33+0.063	Co/7d/ 14d/	20	17	17.7
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho+Fluroxypyr	0.25/0.33/ 0.33+0.125	Co/7d/ 14d/	23	15	17.1
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho/Fluroxypyr	0.25/0.33/ 0.33/0.063	Co/7d/ 14d/21d	19	16	16.7
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho/Fluroxypyr	0.25/0.33/ 0.33+0.125	Co/7d/ 14d/21d	27	15	17.2
Hand Weeded Check	---	---	0	23	17.7
Weedy Check	---	---	0	11	17.0

[1] Treatment applied; Preemergence April 27; Postemergence May 14, 21, 29 and June 5, 2001 and /=split application.

[2] Sugarbeet injury and stand evaluated on June 22 and plots harvested October 11, 2001.

Table 2. ALS resistant kochia control with pre and postemergence treatments in sugarbeets. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	Weed Control[2]			
			AMARE	SINAR	KCHSC	AVEFA
	(lb/A)	(lf no.)	----------(%)----------			
Flumioxisin	0.032	PE	0	45	0	0
Flumioxisin	0.063	PE	50	55	45	50
Flumioxisin/Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho+Clethodim	0.032/0.25/0.33 0.33+0.078	PE/Co/7d 14d	84	92	73	95
Flumioxisin/Desm-Phen-Etho+Trif+ Clop+MS+Clethodim	0.032/0.08+0.004+ 0.023+0.026	PE/Co/7d/ 14d	86	94	70	96
Desm-Phen-Ethofumesate/Desm-Phen-Etho/ Desm-Phen-Etho+Carfentrazone	0.25/0.33/ 0.33+0.008	Co/7d/ 14d	85	92	78	88
Desm-Phen-Ethofumesate/Desm-Phen-Etho/ Desm-Phen-Etho/Carfentrazone+Nis	0.25/0.33/ 0.33/0.008	Co/7d/ 14d/21d	84	90	80	84
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr/Desm-Phen-Etho	0.25+0.094/0.33+ 0.063/0.33	Co/7d/ 14d	90	96	88	80
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr/Desm-Phen-Etho	0.25+0.094/0.33+ 0.125/0.33	Co/7d/ 14d	90	95	92	88
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr+Clop/Desm-Phen-Etho	0.25+0.094/0.33+ 0.063+0.094/0.33	Co/7d/ 14d	88	92	90	90
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Fluroxypyr+Clop/Desm-Phen-Etho	0.25+0.094/0.33+ 0.125+0.094/0.33	Co/7d/ 14d	92	96	92	87
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Clop/Desm-Phen-Etho+Fluroxypyr	0.25+0.094/0.33+ 0.094/0.33+0.063	Co/7d/ 14d	92	95	92	91
Desm-Phen-Etho+Clop/Desm-Phen-Etho+ Clop/Desm-Phen-Etho+Fluroxypyr	0.25+0.094/0.33+ 0.094/0.33+0.125	Co/7d/ 14d	90	90	91	88
Desm-Phen-Etho+/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop+Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094+0.063	Co/7d/ 14d	84	95	88	86
Desm-Phen-Etho+/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop+Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094+0.125	Co/7d/ 14d	90	96	92	89
Desm-Phen-Etho+/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop/Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094/0.063	Co/7d/ 14d/21d	94	98	86	92
Desm-Phen-Etho/Desm-Phen-Etho+Clop/ Desm-Phen-Etho+Clop/Fluroxypyr	0.25/0.33+0.094/ 0.33+0.094/0.125	Co/7d/ 14d/21d	90	90	93	88
Desm-Phen-Etho/Desm-Phen-Etho+Fluroxypyr/ Desm-Phen-Etho	0.25/0.33+0.063/ 0.33	Co/7d/ 14d	92	94	86	88
Desm-Phen-Etho/Desm-Phen-Etho+Fluroxypyr/ Desm-Phen-Etho	0.25/0.33+0.125/ 0.33	Co/7d/ 14d	89	98	90	90
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho+Fluroxypyr	0.25/0.33/ 0.33+0.063	Co/7d/ 14d/	92	96	84	85
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho+Fluroxypyr	0.25/0.33/ 0.33+0.125	Co/7d/ 14d/	90	92	88	88
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho/Fluroxypyr	0.25/0.33/ 0.33/0.063	Co/7d/ 14d/21d	94	96	85	85
Desm-Phen-Etho/Desm-Phen-Etho/ Desm-Phen-Etho/Fluroxypyr	0.25/0.33/ 0.33+0.125	Co/7d/ 14d/21d	96	96	90	85
Hand Weeded Check	---	---	100	100	100	100
Weedy Check	---	---	--	--	--	--

[1] Treatment applied; Preemergence April 27; Postemergence May 14, 21, 29 and June 5, 2001; and /=split application.

[2] Weed control based on counts taken June 22, 2001.

Venice mallow control in sugarbeet (2001-05). Plots were established under furrow irrigation at Howard Wildman's farm, Big Horn County, WY to evaluate Venice mallow control and sugarbeet response with postemergence herbicide treatments. Plots were 11 by 30 ft. with three replications arranged in a randomized complete block design. Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi to 2-leaf sugarbeets and 2-leaf Venice mallow on June 1, (air temperature 76F, relative humidity 52%, wind west at 5mph, sky mostly cloudy, and soil temperature at 0-inch 79F, 2-inch 74F, 4-inch 68F); to 4-leaf sugarbeet and 2-leaf Venice mallow on June 8, (air temperature 78F, relative humidity 47%, wind calm, sky partly cloudy and soil temperature at 0-inch 93F, 2-inch 82F, and 4-inch 78F); to 8-leaf sugarbeet and 2 to 4-leaf Venice mallow on June 15, (air temperature 80F, relative humidity 38%, wind calm, sky clear, and soil temperature at 0-inch 84F, 2-inch 76F, and 4-inch 70F). Layby treatments consisted of dimethenamid and were applied on July 9 (air temp. 92F, relative humidity 38%, wind calm, sky clear, and soil temperature at 0-inch 90F, 2-inch 79F, and 4-inch 77F). Venice mallow (HIBTR) infestations were moderate to heavy and uniform throughout the experimental site. Sugarbeet injury ratings were taken June 30 and July 17. Venice mallow control was evaluated on July 17, and plots were harvested October 10, 2001.

No treatments reduced sugarbeet stand; however, sugarbeet injuries were between 3 and 7%. The highest sugarbeet injury (7%) was caused by the full rate application of desmedipham-phen-etho+trif+clop+dimethenamid as a laybay. Venice mallow control was excellent (92 to 100%). Highest Venice mallow control was achieved with the three way full rate combination of desmedipham-phenmedipham-ethofumesate + triflusulfuron+clopyralid and dimethenamid as a layby. Layby treatments improved Venice mallow control 4 to 6%. Sugarbeet yields were 8.2 to 10.5 T/A higher in herbicide treated compared to the weedy check plots (20 T/A). However, no difference was evident concerning sugar content. Sugarbeet yields were closely related to Venice mallow control and/or sugarbeet injury.

Table. Venice mallow and sugarbeet response to postemergence treatments, Big Horn County, 2001.

Treatment[1]	Rate	Applic. timing	HIBTR[2] control	Sugbeet[3] Injury	Yield	Sucrose
	lb/A	Leaf no.	(%)	(%)	(T/A)	(%)
Desmedipham-Phenmedipham+ Triflusulfuron+Clopyralid+MS	0.08+ 0.008+0.023	2lf/7d/7d	92	0	29.3	17.5
Desmedipham-Phenmedipham+ Triflusulfuron+Clopyralid	0.25+ 0.016+0.09	2lf/7d/7d	98	0	30.5	17.7
Desmedipham-Phenmedipham+ Triflusulfuron+Clopyralid+MS/ Dimethenamid	0.08+ 0.008+0.023/ 1.0	2lf/7d/7d	98	5	30.1	17.6
Desmedipham-Phenmedipham+ Triflusulfuron+Clopyralid/ Dimethenamid	0.08+ 0.008+0.023/ 1.0	2lf/7d/7d LB	96	5	29.0	17.4
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid+MS	0.08+ 0.008+0.023	2lf/7d/7d	96	3	30.9	17.1
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid	0.25+ 0.016+0.09	2lf/7d/7d	100	3	30.1	17.0
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid+MS/ Dimethenamid	0.08+ 0.008+0.023/ 1.0	2lf/7d/7d LB	94	5	28.2	17.3
Desmedipham-Phen-Ethofumesate+ Triflusulfuron+Clopyralid/ Dimethenamid	0.25+ 0.016+0.09/ 1.0	2lf/7d/7d LB	100	7	29.0	17.3
Weedy Check	----------	---	5plts/ft^2	0	20.0	17.1

[1] Treatments applied June 1, 8, 15 and July 9, 2001; MS=Methylated seed oil at 2%v/v; LB=layby, and /=split application.

[2] Venice mallow control visually evaluated July 17, 2001.

[3] Sugarbeet injury evaluated June 30, and July 17, and plots harvested October 10, 2001.

Weed control and sugarbeet response to ethofumesate in combination with micro-rates (2001-06). Plots were established under furrow irrigation at the Research and Extension Center, Powell, WY to evaluate redstem filaree, broadleaf and grass weed control and sugarbeet response with miro-rate system alone or in combination with ethofumesate and/or quizalofop. Plots were 11 by 30 ft. with three replications arranged in a randomized complete block design. Sugarbeet (var. Ranger) was planted to stand in 22-inch rows April 19, in a clay loam soil (40% sand, 24% silt, 36% clay, 1.3% organic matter and pH 7.6). Herbicide treatments were applied broadcast with a CO_2 pressurized knapsack sprayer delivering 20 gpa at 40 psi. Preplant treatments were applied on April 19. Postemergence treatments consisted of many applications; The first application was applied to cotyledon sugarbeet (Co) and 1 to 2-inch weeds on May 15, (air temperature 76F, relative humidity 35%, wind calm, sky partly cloudy and soil temperature at 0-inch 85F, 2-inch 76F, and 4-inch 73F). The second application was applied 7 days later (7d) to 2-leaf sugarbeets and 1 to 2-inch weeds on May 22, (air temperature 62F, relative humidity 42%, wind northwest at 2 mph., sky mostly cloudy and soil temperature at 0-inch 63F, 2-inch 56F, and 4-inch 54F). The third application was applied 14 days after the first application (14d) to 4-leaf sugarbeets and 1 to 3-inch weeds on May 29, (air temperature. 70F, relative humidity 50%, wind northwest 3 mph., sky partly cloudy and soil temperature a 0- inch 84F, 2-inch 80F, and 4-inch 74F). The fourth application was applied 21 days after the first application (21d) to 4-leaf sugarbeets and 1 to 3-inch weeds on June 4, (air temperature. 54F, relative humidity 65%, wind northwest 3 mph., sky very cloudy and soil temperature a 0- inch 53F, 2-inch 54F, and 4-inch 55F). Wild mustard (SINAR), redroot pigweed (AMARE) and redstem filaree infestations were moderate to heavy (10 to 25 plants/10 ft. of row) and uniform throughout the experimental site. Wild oat (AVEFA) infestations were moderate (10 to 15 plants/10 ft. of row) and uniform throughout the experimental site. Weed counts, sugarbeet stand counts and injury ratings were made July 15. Plots were harvested October 11, 2001.

No sugarbeet stand reduction was evident with any treatment; however, some treatments caused slight injury (3 to 5%) to sugarbeet. The highest injury (5%) was caused by treatments containing ethofumesate when applied to 4 and 6 leaf sugarbeets. Broadleaf weed control was good to excellent (88 to 100%) depending on the treatment and weed species. The treatment containing grass herbicides slightly improved wild oat control. In general, redstem filaree control was excellent (88 to 96%). Sugarbeet root yields were 3.3 to 11 T/A higher in herbicide treated compared to the weedy check plots. Sugarbeet root yields were closely related to weed control and/or sugarbeet injury. Sugar content among all treatments including the weedy check and the weed free plots ranged from 17.4 to 17.8%.

Table 1. Sugarbeet response to ethofumesate herbicide in combination with micro-rates. Powell Research and Extension Center, 2001.

Treatment[1]	Rate	Applic. timing	Sugbeet[3]		
			Injury	Yield	Sucrose
	lb/A	Leaf no.			(%)
Desm-Phen+Trif+Clop+MS+Ethof	.05+.005+.023+.027	Co/7d	0	27.3	17.8
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.03+.04	14d/21d			
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.023+.04	Co/7d	0	27.1	17.5
Desm-Phen+Trif+Clop+MS+Ethof	0.12+.005+.03+.04	14d/21d			
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.023+.04	Co/7d	5	21.3	17.6
Desm-Phen+Trif+Clop+MS+Ethof	0.12+.005+.03+.08	14d/21d			
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.023+.04	Co	3	24.9	17.8
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.03+.08	7d			
Desm-Phen+Trif+Clop+MS+Ethof	0.12+.005+.03+.08	14d			
Desm-Phen+Trif+Clop+MS	0.12+.005+.03	21d			
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.023+.08	Co/7d	3	25.5	17.8
Desm-Phen+Trif+Clop+MS+Ethof	0.12+.005+.03+.12	14d			
Desm-Phen+Trif+Clop+MS	0.12+.005+.03	21d			
Ethofumesate	1.12	PPI	0	29.0	17.4
Desm-Phen+Trif+Clop+MS+Ethof	.05+.005+.03+.027	Co/7d			
Desm-Phen+Trif+Clop+MS+Ethof	0.08+.005+.03+.04	14d/21d			
Desm-Phen+Trif+Clop+MS+	0.08+0.005+0.03+	Co/7d/14d/	0	28.2	17.4
Ethofumesate+Quizalofop	0.04+0.016	21d			
Desm-Phen+Trif+Clop+MS+Ethof	.08+.005+.03+.04	Co/7d/14d	0	27.3	17.6
Desm-Phen+Trif+Clop+MS+Ethof+	.08+.005+.03+.04+	21d			
Quizalofop	0.055				
Hand Weeded Check	---	---	--	28.0	17.8
Weedy Check	---	---	--	18.0	17.4

[1] Treatments applied PPI; April 27, Post; May 14, 22, 29, June 4, 2001; MS=Methylated seed oil at 1.5%v/v; and /=split application.

[3] Sugarbeet injury evaluated June 28, and plots harvested October 11, 2001.

Appendix A. Index by common name and trade name with rates expressed as lb ai/A; product broadcast oz/A and product banded oz/planted/A.

		Rate			
Common name or Code	Trade name	lb ai/A	broadcast oz/A	banded oz/A	broadcast $/A

AEBO-38584	None	0.125	6	2.0	—
		0.25	12	4.6	—
		0.5	24	8.0	—
AEBO-49913	None	0.125	7	2.3	—
		0.25	14	4.6	—
		0.5	28	9.3	—
AEBO-38107	None	0.125	7	2.3	—
		0.25	14	4.6	—
		0.5	28	9.3	—
clethodim (2EC)	Select	0.031	2	0.7	2.61
		0.073	5	1.7	6.52
clopyralid (3SC	Stinger	0.023	1	0.3	3.79
		0.09	4	1.3	15.16
desmedipham	Betamix	0.25	8	2.7	6.25
		0.33	33	1	22.78
desmedipham/ phenmedipham (1.13 ED)	Betamix	0.08	8	2.7	6.25
		0.25	25	8.3	19.53
		0.33	33	11.0	25.78
desmedipham/ phenmedipham/ ethofumesate (1.8EC)	Betamix Progress	0.08	6	2	5.53
		0.25	18	6	16.60
dimethenamid (6 EC)	Frontier	1.0	22	7.3	14.61
ethofumesate (4.17F)	Nortron	1.0	31	10.0	42.87
		1.5	46	15.3	63.61
fluroxypyr	Starane	0.016	1.25	0.4	0.83
		0.032	2.5	0.8	1.65
		0.063	5	1.5	3.30
		0.125	10	3	6.60
glyphosate (3SC)	Ultra	0.75	32	10.7	10.0
(4SC)	Ultra max	0.75	26	8.7	9.00
(3SC)	Glyphomax	0.75	32	10.7	9.00
(3SC)	Cornerstone	0.75	32	10.7	9.00
(1.3SC)	ETK-2303	0.75	73	24.5	------
quizalofop (0.88 EC)	Assure II	0.028	4	1.3	3.88
		0.063	10	3.3	9.69
sethoxydim (1.5 EC)	Poast	0.063	5.3	1.8	3.23
		0.19	16.0	5.3	9.75
s-metolachlor	Dual II Magnum	1.25	21	7	16.57
sulfosate (5 SL	Touchdown	0.75	20	6.7	7.97
triflusulfuron (50 DF)	UpBeet	0.004	0.125	0.042	5.6
		0.016	0.5	0.17	22.75