

**SURVEY OF WEED CONTROL AND PRODUCTION PRACTICES
ON SUGARBEET IN WESTERN NORTH DAKOTA AND
EASTERN MONTANA - 2001**

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The ninth weed control and production practices questionnaire was mailed in September 2001 to sugarbeet growers in Western North Dakota and Eastern Montana. The last survey was conducted in 1999. Growers were requested to evaluate weed control and sugarbeet injury from specific herbicides, and list total sugarbeet acreage, thinning practices, and the most important production and weed problems. Approximately 375 growers planted 46,300 acres of sugarbeet in Western North Dakota and eastern Montana in 2001. Growers representing 48% of the total acres responded to the survey. Other portions of the survey are reported in the Entomology and Plant Pathology sections.

Table 1 is a summary of herbicide use and performance averaged over all counties. The number of growers reporting the use of herbicide treatment is listed and the acres treated are expressed as a percentage of the total reported acreage. Multiple herbicide treatments are tabulated for each herbicide treatment, thus the number of growers reporting in Table 1 exceeds the total number of responses. Also, multiple herbicide treatments on the same acreage are listed separately in the tables, thus acres treated exceeds 100%. The ratings of weed control are presented as the percentage of growers who judged weed control as excellent, good, fair or poor.

All respondents to the survey indicate some use of herbicides (Table 1). Total sugarbeet acreage treated with herbicides was 408% of the total acreage reported on the survey. Sugarbeet acreage treated in 1990, 1991, 1992, 1993, 1995, 1997 and 1999 was 135, 194, 266, 268, 370, 398, and 411% respectively. The acreage treated with soil-applied herbicides (not including Roundup) decreased from 100% in 1991 to 85% in 1992, 78% in 1993, 40% in 1995, 27% in 1997, 10% in 1999 and 11% in 2001. Postemergence herbicide use increased from 94% in 1991, to 181% in 1992, 192% in 1993, 330% in 1995 312% in 1997, 322% in 1999 and 335% in 2001. Betamix was used on 106% of the acreage in 2001, 117% in 1999, 144% in 1997 and 101% in 1995. Betanex was used on 72% of the acreage in 2001, 96% in 1999, 42% in 1997 and 34% in 1995. Progress was used on 130% of the acreage in 2001, 76% in 1999, 30% in 1997 and 98% in 1995. UpBeet was used on 303% of the acreage in 2001, 270% in 1999 and on 134% in 1997. Stinger use was 66% in 1995, 130% in 1997, 262% in 1999 and 269% in 2001. Select was applied to 237%, Poast to 6%, and Assure II to 33% of the acreage. Preemergence Roundup was used on 61% of the acreage in 2001, 79% in 1999 and 58% in 1997.

The treatments in Table 1 that were applied with oil adjuvant (Oil) are the micro-rate treatments. These were used on 275% of the acreage in 2001 and on 205% in 1999. The three most common treatments were Betamix/Betanex/Progress+Stinger+UpBeet+grass herbicide+oil adjuvant. The rating of weed control in 2001 was much less favorable than in 1999. Weed control was rated as poor or fair by 45% of the respondents in 2001 while only 12% of the respondents in 1999 rated weed control as poor or fair.

The results of the herbicide use and production practice survey are reported by county in Tables 2 through 8. The sugarbeet injury evaluations in the county tables however, are reported as number of responses per category rather than percentage of respondents.

Over all herbicides, 56% of treatments were applied broadcast with a ground sprayer, 44% were band applied, and none were applied by air (Table 9). In 1999, 59% of treatments were applied broadcast with a ground sprayer, 38% were banded and 3% applied by air. In 1997, 81% of the treatments were band applied, 19% were broadcast ground applied, and none were applied by air. The switch from band to broadcast from 1997 to 1999 and 2001 was probably due to the availability of the micro-rate in 1999 and 2001 but not in 1997. The micro-rate is affordable as

a broadcast treatment.

Weeds was listed as the most serious production problem in sugarbeet by 23% of the respondents in 2001 as compared to 42% in 1999, 24% in 1997 and 44% in 1995 ([Table 10](#)). Cercospora was listed by 39% in 2001, 24% in 1999, 20% in 1997 and 26% in 1995. Emergence and stand problems were listed by 25% in 2001, 9% in 1999, 22% in 1997, and 13% in 1995. Root rot (Rhizoctonia/Aphanomyces) was listed by 25% of the respondents in 1991, 5% in 1992, 7% in 1993, 5% in 1995, 6% in 1997, 11% in 1999 and 6% in 2001.

Redroot pigweed was listed as the most important weed problem by 14% of the respondents in 2001 as compared to 19% in 1999, 58% in 1997, 52% in 1995, and 17% in 1993 ([Table 11](#)). Kochia was listed as worst weed by 62% of the respondents in 2001 and 45% in 1999, a large increase from 1997 when only 12% listed kochia. Much of the kochia probably was ALS resistant and would not be controlled by UpBeet. Common lambsquarters was listed by 16% of the respondents as worst weed in 2001, by 21% in 1999 and 16% in 1997.

In 2001, 23% of the acreage was hand weeded ([Table 12](#)) compared to 62% in 1993, 51% in 1995, 26% in 1997 and 21% in 1999. In 2001, 98% of the acreage was not thinned, a large reduction in thinning since 1993 when 56% of the acreage was not thinned.

In 2001, 6% of the respondents spent \$46 per acre or more for hand weeding and hand thinning ([Table 13](#)), compared to zero in 1999, 12% in 1997, 12% in 1995 and 50% in 1993. In 2001, 69% of the respondents hired no hand labor for weeding as compared to 68% in 1999, 49% in 1997 and 15% in 1993.

In 2001, 2% of the respondents did not cultivate, 16% cultivated once, 69% cultivated twice and 13% cultivated three times ([Table 14](#)). In 1999, 2% of the respondents did not cultivate, 24% cultivated once, 60% twice, and 13% three times. In 1997, 2% cultivated once, 43% twice, and 55% three times. The average number of cultivations was 2.5 in 1997, 1.8 in 1999 and 1.9 in 2001.

Sugarbeet acreage produced by respondents is reported in [Table 15](#). The most common acreage was 100 to 99 acres. Over 1000 acres were produced by 7% of the respondents in 2001 while only 2% of the respondents indicated over 1000 acres in 1999.

TABLE 9. Method of herbicide application average over counties, 2001.

Herbicide	Band	Broadcast with ground sprayer	Broadcast with aerial application
-----% of treated acres-----			
Ro-Neet	100	0	0
Nortron	100	0	0
Betamix/Betanex/Progress	96	4	0
UpBeet	100	0	0
Stinger	100	0	0
Poast/Select/Assure II	72	28	0
Bmix/Bnex/Prog+UpBeet	100	0	0
Bmix/Bnex/Prog+UpBeet+Grass H	9	91	0
Bix/Bex/Pro+Sting+UpBeet	79	21	0
Bix/Bex/Pro+Stinger+UpBeet+Grass H	43	57	0
Roundup (PRE)	0	100	0
Total	44	56	0

TABLE 10. Most serious production problem in sugarbeet in 2001 as indicated by survey respondents.

County	Total Respondents	Weather	Labor management	Rhizoctonia/ Aphanomyces	Weeds	Emerg & Stand	CLS ¹
-----% of respondents-----							
Custer	6	0	0	0	33	67	0
Dawson	7	14	0	0	43	14	29
McKenzie	18	6	0	0	11	33	50
Prairie	4	25	0	25	25	25	0
Richland	22	0	4	9	23	9	54
Roosevelt	2	0	0	0	0	100	0
Williams	5	0	0	20	40	0	40
Total	64	3	2	6	23	25	39

¹CLS = Cercospora leaf spot**TABLE 11. Worst weed problem in sugarbeet in 2001 as indicated by survey respondents.**

County	Total Respondents	Rrpw ¹	Vele	Colq	Kocz	Smwe	Nish
-----% of respondents-----							
Custer	6	17	0	33	50	0	0
Dawson	7	0	14	43	43	0	0
McKenzie	18	24	0	6	53	12	6
Prairie	4	0	0	0	100	0	0
Richland	22	18	0	18	64	0	0
Roosevelt	2	0	0	0	100	0	0
Williams	5	0	0	0	80	20	0

Total 64 14 2 16 62 5 2

¹Rrpw = redroot pigweed; Vele = velvetleaf; Colq = common lambsquarters; Kocz = kochia; Smwe = smartweed; Nish = nightshade.

TABLE 12. Summary of acres planted by respondents, percent of sugarbeet acres that were hand thinned, not thinned, and hand weeded, 2001.

County	Total Respondents	Acres Planted	Hand Thinned	Mechanical thinned	Not Thinned	Hand Weeded
-----% of respondents-----						
Custer	6	501	0	0	100	8
Dawson	7	1126	0	0	100	0
McKenzie	18	8547	3	0	97	19
Prairie	4	766	0	0	100	2
Richland	22	8235	1	0	99	26
Roosevelt	2	735	0	5	95	0
Williams	5	2215	0	0	100	61
Total	64	22,125	2	<1	98	23

TABLE 13. Summary of survey questions regarding cost per acre for hand weeding and hand thinning.

County	Total Respondents	Dollars per Acre					
		0	1-10	11-15	16-20	21-25	26-30
-----% of respondents-----							
Custer	6	83	0	0	0	0	0
Dawson	7	100	0	0	0	0	0
McKenzie	18	78	0	0	6	0	11
Prairie	4	100	0	0	0	0	0
Richland	23	48	4	0	4	17	13
Roosevelt	2	100	0	0	0	0	0
Williams	5	40	0	0	0	0	0
Total	65	69	2	0	3	6	8

Table continued.

TABLE 13. (con't) Summary of survey questions regarding cost per acre for hand weeding and hand thinning.

County	Dollars per Acre				
	31-35	36-40	46-50	56-60	61-70
-----% of respondents-----					
Custer	0	17	0	0	0
Dawson	0	0	0	0	0
McKenzie	0	0	6	0	0
Prairie	0	0	0	0	0
Richland	4	9	0	0	0
Roosevelt	0	0	0	0	0

Williams	20	0	0	20	20
Total	3	5	2	2	2

TABLE 14. Number of postemergence row crop cultivations, 2001.

County	Number of cultivations			
	Zero	One	Two	Three
-----% of respondents-----				
Custer	0	20	80	0
Dawson	0	0	67	33
McKenzie	6	18	71	6
Prairie	0	25	50	25
Richland	0	18	64	18
Roosevelt	0	0	100	0
Williams	0	20	80	0
Total	2	16	69	13

TABLE 15. Sugarbeet acres produced by survey respondents, 2001.

County	Sugarbeet acres									
	1-49	50-99	100-199	200-299	300-399	400-599	600-799	800-999	1000-15000	>2000
----- of respondents-----										
Custer	17	50	33	0	0	0	0	0	0	0
Dawson	0	29	57	14	0	0	0	0	0	0
McKenzie	6	6	11	39	6	11	11	6	0	6
Prairie	0	50	25	0	0	25	0	0	0	0
Richland	4	4	35	17	17	0	9	0	13	0
Roosevelt		50	0	0	0	0	50	0	0	0
Williams	0	0	20	20	20	0	40	0	0	0
Total	5	15	28	20	9	5	11	2	5	2