

**SURVEY OF WEED CONTROL AND PRODUCTION PRACTICES
ON SUGARBEET IN WESTERN NORTH DAKOTA AND
EASTERN MONTANA - 2005**

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The eleventh weed control and production practices questionnaire was mailed in September 2005 to sugarbeet growers in western North Dakota and eastern Montana. The last survey was conducted in 2003. Growers were requested to evaluate weed control and sugarbeet injury from specific herbicides, list total sugarbeet acreage, and the most important production and weed problems. Growers planted 39,000 acres of sugarbeet in western North Dakota and eastern Montana in 2005. Growers representing 20% 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 a 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 and sugarbeet injury are presented as the percentage of growers who judged weed control as excellent, good, fair or poor or injury as none, slight, moderate or severe.

All respondents to the survey indicate some use of herbicides (Table 1). Several generic formulations of old herbicides were available in 2005. All the generic formulations are included under the old trade names. Thus, Betanex represents Des and Alphanex; Betamix represents D-P Mix and Phen-Des; Progress represents Des-Phen-Etho; Nortron represents Etho and Ethotron; Stinger represents ClopyrAg; and Select represents Prism and Arrow. Total sugarbeet acreage treated with herbicides was 400% of the total acreage reported on the survey. Sugarbeet acreage treated in 1993, 1995, 1997, 1999, 2001 and 2003 was 268, 370, 398, 411, 408 and 440%, respectively. The acreage treated with soil-applied herbicides (not including Roundup) decreased from 100% in 1991 to 78% in 1993, 40% in 1995, 27% in 1997, 10% in 1999 and 11% in 2001. However, Nortron use increased considerably in 2003 and 60% of the acreage was treated. Nortron was applied to 34% of the acreage in 2005. Postemergence herbicide use was 94% in 1991, 192% in 1993, 330% in 1995, 312% in 1997, 322% in 1999, 335% in 2001, 312% in 2003 and 311% in 2005. Betamix was used on 80% of the acreage in 2005, 45% in 2003, 106% in 2001, 117% in 1999, 144% in 1997 and 101% in 1995. Betanex was used on 5% of the acreage in 2005, 9% in 2003, 72% in 2001, 96% in 1999, 42% in 1997 and 34% in 1995. Progress was used on 183% of the acreage in 2005, 248% in 2003, 130% in 2001, 76% in 1999, 30% in 1997 and 98% in 1995. Progress has become dominant among the desmedipham-phenmedipham products probably because kochia is the worst weed problem. UpBeet was used on 248% of the acreage in 2005, 285% in 2003, 303% in 2001, 270% in 1999 and on 134% in 1997. Stinger use was 66% in 1995, 130% in 1997, 262% in 1999, 269% in 2001, 302% in 2003 and 269% in 2005. Select was applied to 141%, Poast to 0%, and Assure II to 19% of the acreage. Preemergence Roundup was used on 54% of the acreage in 2005, 64% in 2003, 61% 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 or mid-rate treatments. These were used on 151% of the acreage in 2005, 251% in 2003, 275% in 2001 and 205% in 1999. The two most common treatments were Betamix/Progress+Stinger+UpBeet at conventional rates without oil adjuvant. The three most common treatments in 2003 were all micro-rate treatments. Difficulty with controlling kochia has likely led to this change in herbicide useage. Weed control was rated as poor or fair by 27% of the respondents in 2005, 17% in 2003, 45% in 2001 and 12% in 1999. Severe sugarbeet injury was not reported for any of the herbicide treatments

in 2005.

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 in 2005, 24% of treatments were applied broadcast with a ground sprayer and 76% were band applied (Table 9). In 2003, 73% were broadcast with a ground sprayer, 25% were band applied and 3% were applied by air. In 2001, 56% of treatments were broadcast with a ground sprayer, 44% were banded and none were applied by air. In 1999, 59% of treatments were broadcast with a ground sprayer, 38% were banded and 3% applied by air. The increase in band spraying in 2005 was probably related to the increased use of conventional herbicide rates.

Weeds was listed as the most serious production problem in sugarbeet by 48% of the respondents in 2005 as compared to 36% in 2003, 23% in 2001, 42% in 1999, 24% in 1997 and 44% in 1995 (Table 10). Cercospora was not listed by any respondent as the most serious problem in 2005. Cercospora was listed as worst problem by 5% in 2003, 39% in 2001, 24% in 1999, 20% in 1997 and 26% in 1995. Emergence and stand problems were listed by 14% in 2005, 10% in 2003, 25% in 2001, 9% in 1999, 22% in 1997, and 13% in 1995. Root rot (Rhizoctonia/Aphanomyces) was listed by 5% of the respondents in 1995, 6% in 1997, 11% in 1999, 6% in 2001 17% in 2003 and 10% in 2005.

Redroot pigweed was listed as the most important weed problem by 8% of the respondents in 2005 as compared to 11% in 2003, 14% in 2001, 19% in 1999, 58% in 1997, 52% in 1995 and 17% in 1993 (Table 11). Kochia was listed as worst weed by 75% of the respondents in 2005, 61% in 2003, 62% 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 13% of the respondents as worst weed in 2005, by 16% in 2003, 16% in 2001, 21% in 1999 and 16% in 1997.

In 2005, 41% of the acreage was hand weeded (Table 12) compared to 62% in 1993, 51% in 1995, 26% in 1997, 21% in 1999, 23% in 2001 and 38% in 2003.

In 2005, 23% of the respondents spent more than \$40 per acre for hand weeding and hand thinning (Table 13). The average cost for labor in 2005 was \$18.93/A. In 2005, 50% of the respondents hired no hand labor for weeding as compared to 38% in 2003, 69% in 2001, 68% in 1999, 49% in 1997 and 15% in 1993.

Sugarbeet acreage produced by respondents is reported in Table 14. The most common acreage was 300 to 399 acres. Over 1000 acres were produced by 4% of the respondents in 2005 while 7% of the respondents indicated over 1000 acres in 2001.

TABLE 9. Method of herbicide application average over counties, 2005.

Herbicide	Band	Broadcast with ground sprayer	Broadcast with aerial application
-----% of treated acres-----			
Nortron	94	6	0
Select	76	24	0
Bmix/Bnex/Prog+Stinger+UpBeet+Nort+Grass H	55	45	0
Bmix/Bnex/Prog+Stinger+UpBeet+Nortron	100	0	0
Bmix/Bnex/Prog+Stinger	100	0	0
Bmix/Bnex/Prog+Stinger+UpBeet	94	6	0
Bmix/Bnex/Prog+Stinger+UpBeet+Grass H	79	21	0
Outlook (Lay-by)	100	0	0
Roundup (PRE)	12	88	0
Total	76	24	0

TABLE 10. Most serious production problem in sugarbeet in 2005 as indicated by survey respondents.

County	Total Respondents	None	Weather	Labor management	Rhizoctonia/Aphanomyces	Weeds	Rhizomania	Emerg & Stand	CLS ¹	Other ²
-----% of respondents-----										
Custer	2	0	0	0	0	0	0	0	0	100
Dawson	5	0	20	0	20	20	0	20	0	20
McKenzie	5	20	20	0	0	60	0	0	0	0
Prairie	1	0	0	0	0	0	0	100	0	0
Richland	4	0	0	0	0	75	0	25	0	0
Roosevelt	1	0	0	0	0	100	0	0	0	0
Williams	3	0	0	0	33	67	0	0	0	0
Total	21	5	10	0	10	48	0	14	0	14

¹CLS = Cercospora leaf spot, ²Other=Curly top (2) and Low profit (1)

TABLE 11. Worst weed problem in sugarbeet in 2005 as indicated by survey respondents.

County	Total Respondents	Rrpw ¹	Vele	Colq	Kocz
-----% of respondents-----					
Custer	1	0	0	100	0
Dawson	5	20	0	20	60
McKenzie	5	0	0	0	100
Prairie	2	0	50	0	50
Richland	7	14	0	14	71
Roosevelt	1	0	0	0	100
Williams	3	0	0	0	100
Total	24	8	4	13	75

¹Rrpw = redroot pigweed; Vele = velvetleaf; Colq = common lambsquarters; Kocz = kochia.

TABLE 12. Summary of acres planted by respondents, percent of sugarbeet acres that were hand weeded, 2005.

County	Acres Planted	Hand Weeded
		% of respondents
Custer	140	36
Dawson	1188	4
McKenzie	1500	38
Prairie	520	15
Richland	1885	52
Roosevelt	905	17
Williams	1595	79
Total	7,733	41

TABLE 13. Summary of survey questions regarding cost per acre for hand weeding and hand thinning, 2005.

County	Total Respondents	Dollars per Acre					
		0	1-10	11-15	16-20	21-25	26-30
-----% of respondents-----							
Custer	2	100	0	0	0	0	0
Dawson	5	100	0	0	0	0	0
McKenzie	5	20	0	20	20	0	0
Prairie	2	50	0	0	0	50	0
Richland	5	20	0	0	0	0	20
Roosevelt	2	50	0	0	0	0	0
Williams	3	33	0	0	0	33	0
Total	24	50	0	4	4	8	4

Table continued.

TABLE 13. (con't) Summary of survey questions regarding cost per acre for hand weeding and hand thinning, 2005.

County	Dollars per Acre					
	31-35	36-40	41-45	46-50	51-55	56-60
-----% of respondents-----						
Custer	0	0	0	0	0	0
Dawson	0	0	0	0	0	0
McKenzie	0	0	0	20	0	20
Prairie	0	0	0	0	0	0
Richland	20	20	0	0	0	20
Roosevelt	0	0	0	50	0	0
Williams	0	0	0	0	33	0

Total	4	4	3	8	4	8
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TABLE 14. Sugarbeet acres produced by survey respondents, 2005.

County	No. of Resp.	Sugarbeet acres								
		1-49	50-99	100-199	200-299	300-399	400-599	600-799	800-999	1000-1500
		----- of respondents-----								
Custer	2	0	100	0	0	0	0	0	0	0
Dawson	5	20	0	20	20	40	0	0	0	0
McKenzie	5	0	0	0	40	60	0	0	0	0
Prairie	2	0	0	50	0	50	0	0	0	0
Richland	5	0	20	0	0	40	20	20	0	0
Roosevelt	2	0	0	0	0	50	50	0	0	0
Williams	3	0	0	67	0	0	0	0	0	33
Total	24	4	13	17	13	38	8	4	0	4