SURVEY OF WEED CONTROL AND PRODUCTION PRACTICES ON SUGARBEET IN MINNESOTA AND EASTERN NORTH DAKOTA IN 2010

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Other portions of the survey are published in the Entomology and Plant Pathology sections.

The forty-second annual weed control and production practices questionnaire was mailed in September, 2010 to sugarbeet growers producing sugarbeet for American Crystal Sugar Company, Minn-Dak Farmers Cooperative, and Southern Minnesota Beet Sugar Cooperative. Growers were asked to evaluate weed control and sugarbeet injury from specific herbicides, and to list the most important weed and production problems related to sugarbeet grown in 2010. In addition, growers were asked to list insecticide use, fungicide use, acreage by sugarbeet type, acres of hand-weeded sugarbeet, herbicide application methods, and cost of hand weeding in sugarbeet grown in 2010. Growers were also requested to list any glyphosate-resistant weeds found in Roundup Ready sugarbeet fields. Insecticide use and fungicide use portions of the survey can be found in the Entomology and Plant Pathology sections of this book.

Sugarbeet growers planted 652,552 acres of sugarbeet in the Red River Valley and West Central Minnesota in 2010. Two hundred sixty-eight growers responded to the survey, representing 21% of the total acres planted. The percentage of acreage reported in 2010 is an increase of 7% from 2009. The greatest number of growers responded to the survey from Polk County (44, representing 22,817 acres) (Table 15). Of the acres reported, 93% were Roundup Ready® (RR) sugarbeet and 7% conventional sugarbeet. The percentage of RR sugarbeet acreage planted in Eastern North Dakota and Minnesota according to the grower survey has increased over time from 49% in 2008, 88% in 2009, to 93% in 2010, making RR sugarbeet the most rapidly adopted transgentic crop. The lowest percentage of RR sugarbeet acreage reported in the survey was planted in Polk (69%) and Grand Forks (86%) Counties (Tables 5 to 22). Roundup Ready sugarbeet was planted to 100% of the reported acres in Clay, Kittson, Pembina, Richland, and Walsh, and Chippewa and Swift, Norman and Mahnomen, and Wilkin and Ottertail Counties, and Renville and Traverse Counties plus those counties grouped with them (Tables 5 to 22). Those growers planting both RR and conventional sugarbeets, planted approximately 63% of their acreage to RR sugarbeet in 2010 (Table 4).

A summary of herbicide use and performance averaged over sugarbeet type and all counties is presented in Table 1. The number of growers reporting the use of an herbicide treatment is listed and the acres treated is expressed as a percentage of the total acreage reported. Multiple herbicide treatments are tabulated for each grower, therefore the number of growers reporting herbicide treatments exceeds the total number of survey responses. Also, multiple herbicide treatments on the same acreage are listed separately in the tables, thus acres treated exceeds 100%. Weed control and sugarbeet injury are presented as the percentage of growers evaluating weed control or sugarbeet injury according to the categories listed. Table 2 and 3 provides a summary of herbicide use and performance averaged over growers planting only conventional sugarbeet or only RR sugarbeet, respectively. A summary of herbicide use and performance averaged over sugarbeet type by counties is presented in Tables 5 through 22.

The herbicide trade names listed in the tables are the original trade names. The original trade names also represent the generic formulations of the same active ingredient. Thus Nortron also represents Etho SC and Ethotron; Betamix also represents D-P Mix and Phen-Des 8+8; Betanex also represents Des and Alphanex; Progress also represents Des-Phen-Etho and BnB Plus; Stinger also represents Clopyr Ag, Garrison, and Spur; Select also represents Select Max, Prism, Arrow, Clethodim 2EC, Intensity, Intensity One, Section, Shadow, Trigger, and Volunteer; and Assure II also represents Targa.

Total sugarbeet acreage treated with herbicides in 2010 was 256% (Tables 1 and 4) compared to 230% in 2009, 308% in 2008, 383% in 2007, 386% in 2006, 378% in 2005, 427% in 2004, 437% in 2003, 428% in 2002 and 368% in 2001. The acres treated do not include “other weed control methods” which were non-herbicidal methods. The reduction in the percentage of total sugarbeet acreage treated with herbicides since 2007 is attributed to the increased planting of RR sugarbeet since 2007. Growers planting only conventional sugarbeet in 2010 applied herbicides to 385% of their acreage (Tables 2 and 4), compared to 299% in 2009 and 407% in 2008, a return to the normal percentage of treated acres. Growers planting only RR sugarbeet in 2010 applied herbicides to 245% of their acreage (Tables 3 and 4)

compared to 225% in 2008 and 2009. The increase in the number of glyphosate applications in 2010 is likely caused by increased early and season-long weed pressure from early planting of sugarbeet in 2010 and the continued emergence of weeds during the season due to abundant rainfall.

Nortron or Dual was the only soil-applied herbicides reportedly used in 2010. Soil-applied herbicide use for all sugarbeet acreage was 47% in 1989, 32% in 1993, 11% in 1998, 4% in 2002, 29% in 2003, 31% in 2004, 24% in 2005, 23% in 2006, 25% in 2007, 20% in 2008, 5% in 2009 and 2% in 2010 (Table 1). Soil-applied herbicide use for only conventional sugarbeet was 4% in 2010 (Table 2), 18% in 2009, and 35% in 2008. The exact reason for the decline in soil-applied herbicide usage in only conventional sugarbeets is unknown, but may be due to choosing fields with minimal kochia populations. Almost no growers planting RR sugarbeet reported use of soil-applied herbicides in 2010 (0.2%) (Table 3), similar to 2008 (0%) and 2009 (0.4%).

Postemergence herbicide use for all sugarbeets increased in 2010 to 253% (Table 1) compared to 224% in 2009, but still less than 279% in 2008, 340% in 2007, 335% in 2006, 336% in 2005, 379% in 2004, 380% in 2003, 388% in 2002 and 342% in 2001. Postemergence herbicide use for only conventional sugarbeet returned to its usual percentage in 2010 (378%) (Table 2) compared to 259% in 2009 and 346% in 2008. Postemergence herbicide use for only RR sugarbeet increased in 2010 to 247% (Table 3), compared to 225% in 2009 and 223% in 2008. Growers planting only RR sugarbeet reduced the number of postemergence herbicide applications by 1.3 in 2010, compared to growers planting only conventional sugarbeet (378% - 247%/100). This difference is greater than in 2009 (0.35 applications), but similar to 2008 (1.2 applications). The reduction in the number of postemergence herbicide applications is likely due to the effectiveness of glyphosate and the increase in time between applications compared to conventional sugarbeet.

The most common herbicide treatment reported by all growers in 2010 was glyphosate applied at 0.75 lb acid equivalent per acre [0.75 lb ae/A = 22 fl oz/A of Roundup PowerMAX/WeatherMAX and 32 fl oz/A of 3.0 lb ae/gal products] (122%) (Table 1), the same treatment in 2009 (107%). Glyphosate (all rates and combinations) was applied postemergence to 224% of the total sugarbeet acreage reported in 2010 (Table 1), compared to 190% in 2009 and 105% in 2008. Glyphosate (all rates and combinations) was applied to 242% of the only RR sugarbeet acreage reported in 2010 (Table 3), compared to 224% in 2009 and 223% in 2008. Glyphosate plus Stinger (8.4%) and glyphosate plus Select (2.0%) were the most frequently reported herbicide combinations by growers planting only RR sugarbeet in 2010 (Table 3). The greatest percentage of RR sugarbeet acreage treated with glyphosate plus Stinger was reported by growers in Norman and Mahnomen Counties (29%) and Kandiyohi (22%) and Traill (21%) Counties (Tables 13, 10, and 16, respectively). Growers used this combination to most likely control volunteer RR soybean and/or glyphosate-resistant ragweed.

The average total rate of glyphosate applied per acre to RR sugarbeets in 2010 was 2.09 pounds acid equivalent per acre (lb ae/A), compared to 1.85 in 2009 and 1.95 lb ae/A in 2008. This increase over the two previous seasons is likely due to early planting and the presence of difficult to control weeds. The average total rate of glyphosate applied per acre is calculated by multiplying the percentage of acres applied at a particular glyphosate rate by the total acres in Table 1 by that glyphosate rate. Repeat that procedure for each glyphosate rate, add the pounds applied for each rate, and then divide by the total RR sugarbeet acreage in Table 4. The rate for GLYP OTHER LB was set at 0.94 lb ae/A and the rate for GLYP+STINGER, GLYP+SELECT, and GLYP+ASSURE II was set as the weighted average reported by growers (raw data not shown) (0.79 lb ae/A). Growers planting RR sugarbeet in 2010 in Becker, Kittson, Polk, and Traill Counties applied the lowest total rate per acre of glyphosate, 1.71, 1.79, 1.92, and 1.92 lbs ae/A, respectively. Conversely, in 2010 RR sugarbeet growers in Richland, Traverse, Kandiyohi, and Walsh Counties applied the greatest total rate per acre of glyphosate, 3.0, 2.46, 2.29, and 2.29 lb ae/A, respectively. Kittson, and Richland County growers applied glyphosate similarly in 2009 at 1.51 and 2.17 lb ae/A, respectively. Growers in Richland, Traverse, and Kandiyohi Counties likely applied greater amounts of glyphosate due to having problems controlling common lambsquarters, kochia, pigweed, and waterhemp according to responses to the worst weed problem.

The usage of postemergence grass herbicides (Select, Assure II, or Poast) was 32% (Table 1) of all sugarbeet acreage in 2010 as compared to 29% in 2009, 104% in 2008, 189% in 2007, 215% in 2006, 203% in 2005, 226% in 2004, 214% in 2003, 209% in 2002 and 214% in 2001. The usage of postemergence grass herbicides was 233% of the only conventional sugarbeet acreage in 2010 (Table 2). The rapid decline in postemergence grass herbicide usage after 2007 is due to the rapid adoption of RR sugarbeet. Select was used on 190% of the total acreage in 2002, 180% in 2003, 198% in 2004, 165% in 2005, 199% in 2006, 167% in 2007, 92% in 2008, 26% in 2009, and at least 15% in 2010 (Table 1). Select was used on 233% of the only conventional sugarbeet acres in 2010, comparable to usage prior to RR sugarbeet. Most of the postemergence grass herbicides were applied in combination with the micro-rate or mid-rate herbicide treatments which included an oil adjuvant (15%), although 5% of the postemergence grass herbicides (Select or Assure II) were applied in combination with glyphosate (Table 1) to control volunteer RR corn. The greatest

percentage of RR sugarbeet acreage treated with Assure II or Select was reported by growers in Kandiyohi (73%) County, Chippewa and Swift Counties (44%), and Renville plus other grouped counties (37%) (Tables 10, 7, and 16, respectively), all Southern Minnesota Beet Sugar Cooperative growers in which corn is the most frequently planted crop prior to sugarbeet.

Betanex, Betamix, and Progress usage could not be separated in 2010 due to a change in the survey format. Betanex, Betamix, or Progress was applied to only 23% of total sugarbeet acreage in 2010 (Table 1), compared to 320% in 2007, the year prior to RR sugarbeet. The decline in usage of Betanex, Betamix, and Progress is directly correlated to the planted acreage of RR sugarbeet, since these products were not applied to RR sugarbeet. Betanex, Betamix, or Progress was applied to at least 356% of the only conventional sugarbeet acreage in 2010 (Table 2), similar to the usage in 2007. The most common conventional herbicide treatment in 2010 was Progress + Stinger + UpBeet + Select + Oil adjuvant, applied to 8.2% of total sugarbeet acreage (Table 1), the same as 2009. Combination treatments that include oil generally would be micro-rate or mid-rate treatments. Treatments including oil were applied to 17% of 2010 (Table 1) total sugarbeet acreage, 26% in 2009, 128% in 2008, 250% in 2007, 258% in 2006, 241% in 2005, 273% in 2004, 297% in 2003, 301% in 2002 and 265% in 2001. Treatments including oil were applied to 233% of 2010 (Table 2) only conventional sugarbeet acreage, the lowest percentage from 2001 to 2008. Conventional herbicide treatments were applied to 45 and 119% of the total acreage in Grand Forks and Polk Counties, respectively, verifying the greatest concentration of conventional sugarbeet acreage in eastern North Dakota and Minnesota (Tables 9 and 15).

Based upon total postemergence herbicide applications, 71% of growers planting only RR sugarbeet reported excellent weed control (Table 3) compared to 21% of growers planting only conventional sugarbeet (Table 2). The percentage of RR sugarbeet growers reporting excellent weed control has declined slightly since the introduction of RR sugarbeet in 2008. In 2009, 77% of growers planting only RR sugarbeet reported excellent control compared to 85% in 2008. Historically (1974 to 2010), only 6 (1974) to 38% (1989) with an average of 25% of conventional sugarbeet growers have reported excellent weed control. Glyphosate provides superior postemergence weed control in RR sugarbeet compared to conventional herbicides.

Due to changes in the survey, the herbicide used in a lay-by treatment could not be determined. Lay-by treatments were only applied to 0.3 and 0.2% of total sugarbeet acreage by growers planting only conventional and only RR sugarbeet, respectively in 2010 (Table 1).

The rotary hoe or harrow were used on only 2.8% of all acres in 2010 (Table 1) compared to 2.4% in 2009, 15% in 2008, 25% in 2007, 41% in 2006, 56% in 2005, 64% in 2004, 65% in 2003, 42% in 2002, 63% in 2001 and 62% in 2000. The rotary hoe or harrow has nearly vanished as a tool to control weeds in sugarbeet compared to history. The greatest reason for the decline is the introduction of RR sugarbeet. The electrical discharge system, weed pullers, mowing or swathing were reportedly not used in 2010 compared to 7.6% of the acreage in 1995, 1.6% in 1997, 2.4% in 2001, 3.1% in 2002, 2% in 2003, 0.5% in 2004, 1.9% in 2005, 1.7% in 2006, 2.6% in 2007, 0.4% in 2008, and <1% in 2009.

Sugarbeet acreage operated by respondents to the survey in 2010 varied from less than 50 acres to greater than 2,000 acres (Table 23) with the median sugarbeet acreage being 400 acres and the average being 516 acres. The most common acreage range was 400 to 599 acres for 20% of the respondents. Other common acreage ranges were 100 to 199 acres at 12%, 200 to 299 acres at 15%, 300 to 399 acres at 14%, and 600 to 799 acres at 16%. Eleven percent of the respondents reported over 1,000 acres and 16% had over 800 acres.

All but 3% of survey respondents planting conventional sugarbeet reported a “worst weed” problem in 2010 (Table 25). Kochia (38%), pigweed (25%), and common lambsquarters (21%) were named most often as the “worst weed” problem by respondents planting conventional sugarbeet in 2010(Table 24). Kochia returned to the top of the list as the “worst weed” problem in 2010 with common lambsquarters falling back to its usual spot of the third “worst weed” problem. Common mallow and biennial wormwood were the only other species mentioned as the “worst weed” problem by respondents planting conventional sugarbeet in 2010 (Table 24 and 25). Conventional sugarbeet growers in Polk and Grand Forks Counties reported kochia and common lambsquarters and pigweed as the “worst weed” problem in 2010, respectively.

None (30%) was reported most frequently as the “worst weed” problem by growers planting RR sugarbeet in 2010 (Table 26). This was the third year in a row that none was chosen most often by growers, however the percentage of growers reporting none has declined from 54% in 2008 (Table 26). Common lambsquarters (23%), and pigweed (17%) were the next most often reported “worst weed” problem by survey respondents planting RR sugarbeet in 2010 (Table 26). After three years of planting RR sugarbeet, common lambsquarters and pigweed appear to be the “worst weeds”

for growers. Kochia certainly is not as big of a problem for growers planting RR sugarbeet as compared to planting conventional sugarbeet. Common cocklebur, kochia, foxtail, ragweed, smartweed, velvetleaf, wild buckwheat, wild oat, waterhemp, RR crops (canola, corn, and soybean), volunteer wheat, wild mustard, common mallow, biennial wormwood, and late season weeds were also named "worst weed" problems by respondents planting RR sugarbeet in 2010. Volunteer RR crops are a problem in RR sugarbeet compared to conventional sugarbeet (Tables 24 and 26). Growers in Richland, Kandiyohi, and/or Traverse Counties reported the greatest frequency of "worst weed" problems for common lambsquarters, kochia, pigweed, and waterhemp. Waterhemp was reported as a "worst weed" problem by growers in Becker, Chippewa and Swift, Grand Forks, Kandiyohi, Pembina, Renville and others, and Traill Counties. Waterhemp appears to be spreading farther north based upon the report in Pembina County (Table 27). Growers in Cass County reported the greatest frequency of none (83%) for the "worst weed" problem.

Rhizoctonia/Aphanomyces were named most often as the "most serious production" problem by all survey respondents in 2010 at 53 % of responses, compared to 30% in 2009, 24% in 2008, 18% in 2007, 13% in 2006, 22% in 2005, and 8% in 2004 (Table 28), the greatest percentage of responses since 1991. Rhizoctonia was reported as the "most serious production" problem by 44% of conventional and RR sugarbeet growers in 2010 (Tables 29 and 30). The wet and warm growing season and shifts in the Rhizoctonia population are likely causes for the increase in Rhizoctonia. In 2010, Rhizoctonia was named most often as the "most serious production" problem by respondents in Grand Forks, Richland, Norman, Wilkin, No Response, Kandiyohi, and Polk Counties at 80, 70, 62, 60, 58, 57, and 55% of responses, respectively (Tables 29 and 30).

No problem, weather, and weeds were the next most frequently reported "most serious production" problems by all growers in 2010 (Table 28). No problem was mentioned at similar levels by RR and conventional sugarbeet growers, but was second for RR sugarbeet growers and third for conventional growers (Tables 29 and 30). Weeds were named as the "most serious production" problem by only 6% of all sugarbeet growers in 2010 (Table 28), but were named by 30% of conventional sugarbeet growers as the second "most serious production" problem (Table 29) and by only 3% of RR sugarbeet growers (Table 30). Weeds were named as the "most serious production" problem by all survey respondents in 2009 at 7% of responses, compared to 30% in 2008, 46% in 2007, 57% in 2006, 36% in 2005, 47% in 2004, and 61% in 2003 (Table 28). Weeds have never been reported so infrequently by all survey respondents in the history of the survey. Respondents planting only RR sugarbeet named weeds as the "most serious production" problem at 3% of responses in 2009, compared to 2% of responses in 2008. The effectiveness of RR sugarbeet and the amount of acreage planted has drastically reduced weeds as a "most serious production"problem. Weeds were named more often by survey respondents planting RR sugarbeet in Kandiyohi and Becker Counties compared to respondents from other counties in 2010 (Table 30). This helps to explain why growers in Kandiyohi County applied the third highest total rate of glyphosate for the season.

Common lambsquarters, waterhemp, wild mustard, wild buckwheat, ragweed, redroot pigweed, field bindweed, and smartweed were reported by survey respondents to be suspected of being glyphosate-resistant in 2010 RR sugarbeet fields. Only waterhemp and ragweed species have been confirmed glyphosate-resistant in Minnesota and/or North Dakota at this time. Common lambsquarters is more difficult to control today compared to the introduction of RR soybean, but proper glyphosate rates, timing, and adjuvants should control most plants in most populations yet today. Wild mustard, wild buckwheat, redroot pigweed, field bindweed, and smartweed have not been confirmed glyphosate-resistant at this time and do not expect resistance in this species for some time. However, most of these species are more difficult to control with glyphosate, requiring maximum glyphosate rates with proper application timing. Proper management of glyphosate in all RR crops is necessary to maintain long-term effectiveness of glyphosate in RR sugarbeet.

The percentage of acreage hand-weeded was 62% in 1996, 45% in 1997, 28% in 1998, 25% in 2000, 23% in 2001, 32% in 2002, 30% in 2003, 28% in 2004, 23% in 2005, 28% in 2006 and 2007, 20% in 2008, 4% in 2009 and 1% in 2010 (Table 31). Hand-weeded acres continue to decline with the planting of RR sugarbeet. Survey respondents from Grand Forks and Polk Counties reported the greatest hand-weeded acreage in 2010. This can be explained by the fact these counties had the greatest percentage of acreage planted to conventional sugarbeet in 2010.

The cost of hand weeding and hand thinning ranged from zero to $40/A in 2010 (Table 32). The most common cost in 2010 was zero dollars as reported by 98% of survey respondents. Zero cost responses were 57% in 2001, 48% in 2002, 41% in 2003, 47% in 2004, 57% in 2005, 45% in 2006, 48% in 2007, 62% in 2008, and 89% in 2009. When averaged over all survey respondents, the average cost of hand weeding as calculated from Table 32 was $0.57/A in 2010 as compared to $ 11.32/A in 2008, $15.50/A in 2007, $14.37/A in 2006, $10.78/A in 2005, $12.61/A in 2004, $13.75/A in 2003, $15.95/A in 2002, $11.15/A in 2001 and $34/A in 1995. The effectiveness of glyphosate and the percentage of acreage planted to RR sugarbeet have caused the reduction in the average cost of hand weeding averaged over all

respondents. When averaged over growers who reported hand-weeded acres, the average cost of hand weeding in 2010 was $29.46/A, compared to $27.58/A in 2009, $27.41/A in 2008, and $29.40/A in 2007.

Averaged over all herbicides, herbicides were band-applied to 4%, broadcast-applied with a ground sprayer to 93%, and broadcast-applied by air to 3% of the sugarbeet acreage in 2010 (Table 33). In 1998, 40% of the acreage was band-applied, 37% was band-applied in 2000, and 38% in 2002. Herbicides were applied by air to 17% of the acreage in 1998, 9% in 2000, and 14% in 2002. Glyphosate is nearly always broadcast-applied with a ground sprayer to RR sugarbeet (96%) compared to postemergence herbicides broadcast-applied with a ground sprayer to conventional sugarbeet (81%) (Table 33).

A change in the design of the 2010 grower survey caused a slight change in the data for row crop cultivations. Only 74% of the conventional sugarbeet acreage was reportedly row crop cultivated in 2010 (Table 34). This is similar to the number of survey respondents reporting row crop cultivations for weed control. In 2009, 100% of survey respondents planting conventional sugarbeet used row crop cultivation, compared to 95% in 2008 and 99% in 2007. Only 11% of RR sugarbeet acreage was reportedly row crop cultivated in 2010 (Table 34). In 2009, only 28% of respondents used row crop cultivation for weed control in RR sugarbeet, compared to 32% in 2008. The average number of row crop cultivations reported by RR sugarbeet growers in 2010 was 1, compared to 1.5 cultivations reported by conventional sugarbeet growers (Table1). The average number of row crop cultivations per acre can be calculated by multiplying the average number of row crop cultivations found in Table 1 by the percentage of acreage cultivated in Table 34. This calculation provides comparable information to the previously calculated average number of row crop cultivations per field. The average number of row crop cultivations per cultivated acre for conventional sugarbeet in 2010 is 1.11. This compares to the average number of row crop cultivations per field planted to only conventional sugarbeet in 2009 at 1.9, in 2008 at 1.4, in 2007 and 2006 at 1.7, in 2005 at 1.9, in 2000 at 2.0, in 1998 at 2.4, in 1992 at 3.2, and in 1987 at 3.4. The average number of row crop cultivations per cultivated acre for RR sugarbeet in 2010 is 0.11. This value is similar to the average number of cultivations per field planted to only RR sugarbeet in 2009 at 0.3 and in 2008 at 0.1. RR sugarbeet has reduced row crop cultivation for weed control compared to conventional sugarbeet. Row crop cultivation continues to decline in conventional sugarbeet, but is still greater than row crop cultivation in RR sugarbeet.

TABLE 1. SUMMARY OF ALL HERBICIDES USED IN SUGARBEET REPORTED IN 2010. **268** GROWERS REPORTED ON **138,288** ACRES. OF THIS TOTAL **1** GROWER WITH **1,086** ACRES REPORTED NO HERBICIDES USED.

HERBICIDES (IN ORDER OF ACRES TREATED)	NUMBER GROWERS RPTG.	ACRES TREATED % OF TOTAL	Avg no. of appl	% GROWERS REPORTING WEED CONTROL NR*	EXC	GD	FR	PR	% GROWERS REPORTING CROP INJURY NR	None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:													
NORT/DUAL(PRE/PPI) CONV	8	1.7	1.0	13	38	50	0	0	25	75	0	0	0
NORT/DUAL(PRE/PPI) RR	1	0.2	1.0	0	0	100	0	0	0	100	0	0	0
TOTAL-PPI&PRE	9	1.9	1.0	11	33	56	0	0	22	78	0	0	0
B. POSTEMERGENCE HERBICIDES:													
GLYPHOSATE 0.75 LB	174	122.0	2.1	7	76	14	1	1	10	86	3	1	1
GLYPHOSATE 1.0 LB	91	59.1	1.8	16	71	11	1	0	18	82	0	0	0
GLYPHOSATE 1.125 LB	37	31.1	1.9	3	73	14	5	5	5	84	5	0	5
NEX/MIX/PR+ST+UP+SEL+OIL	18	8.2	2.2	11	22	44	22	0	11	22	67	0	0
GLYP+STINGER	25	7.2	1.2	16	56	20	8	0	24	64	8	0	4
NEX/MIX/PRO+UPB+SEL+OIL	8	3.7	1.5	13	38	50	0	0	13	38	50	0	0
SEL/POAST/ASUR II (RR)	16	3.2	1.0	13	63	19	6	0	13	88	0	0	0
NEX/MIX/PRO+STING+UPB	2	2.4	2.0	0	0	100	0	0	0	50	50	0	0
NEX/MIX/PRO+STNG+UPB+OIL	4	2.0	1.8	0	50	25	25	0	0	50	25	25	0
GLYP OTHER LB	3	1.9	2.3	0	67	0	0	33	33	67	0	0	0
NX/MX/PR+ST+UP+NR+SL+OIL	6	1.7	1.7	0	67	33	0	0	0	50	50	0	0
GLYP+SELECT	11	1.7	1.1	18	64	18	0	0	27	73	0	0	0
PROGRESS	3	1.6	1.7	0	0	100	0	0	0	33	67	0	0
SEL/POAST/ASUR II (CONV)	6	1.2	1.3	17	50	33	0	0	33	67	0	0	0
OTHER COMBINAT. (CONV)	3	1.2	2.3	0	67	0	33	0	0	67	33	0	0
NEX/MIX/PROG+UPBEET	4	1.1	1.3	25	0	75	0	0	50	0	50	0	0
NX/MX/PR+ST+UP+NRT+OIL	4	1.0	1.5	0	75	25	0	0	0	50	50	0	0
OTHER COMBINATIONS (RR)	5	0.9	1.2	40	40	0	0	20	40	40	20	0	0
NEX/MIX/PROG+STINGER	1	0.7	3.0	0	0	100	0	0	100	0	0	0	0
GLYP+ASSURE II	3	0.5	1.0	0	67	0	0	33	0	100	0	0	0
BETAMIX	1	0.3	2.0	0	0	100	0	0	0	0	100	0	0
TOTAL-POST	425	252.9	1.8	10	67	18	3	1	14	76	9	0	1
C. PREEMERGE & LAY-BY HERBICIDES:													
GLYP (PRE) – (CONV)	2	0.4	1.0	0	100	0	0	0	0	100	0	0	0
DUAL/OTLK/TREF(LBY)(CONV)	2	0.3	1.0	0	50	50	0	0	0	100	0	0	0
DUAL/OTLK/TREF (LBY) (RR)	2	0.2	1.0	0	0	100	0	0	0	50	50	0	0
GLYP (PRE) – (RR)	1	0.2	1.0	0	100	0	0	0	0	100	0	0	0
TOTAL-PRE&LAY-BY	7	1.1	1.0	0	57	43	0	0	0	86	14	0	0
D. OTHER WEED CONTROL METHODS:													
ROW CULTIVATIONS (RR)	46	10.0	1.0	52	13	13	20	2	52	26	22	0	0
ROW CULTIVATIONS (CONV)	22	5.2	1.5	27	32	36	5	0	27	64	9	0	0
ROTARY HOE (CONV)	5	1.0	1.0	20	20	20	40	0	20	60	20	0	0
ROTARY HOE (RR)	6	0.6	1.0	50	0	0	33	17	50	17	33	0	0
HARROW (CONV)	1	0.2	1.0	0	100	0	0	0	0	0	100	0	0
TOTAL-OTHER	80	17.0	1.2	43	19	19	18	3	43	38	20	0	0
TOTAL TREATMENTS	521	272.9	1.7	15	59	19	5	2	18	70	11	0	1

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 2. SUMMARY OF ALL HERBICIDES USED BY RESPONDENTS WHO **GREW ONLY CONVENTIONAL SUGARBEET** IN 2010. **9** GROWERS REPORTED ON **4,660 ACRES**.

HERBICIDES (IN ORDER OF ACRES TREATED)	NUMBER GROWERS RPTG.	ACRES TREATED % OF TOTAL	Avg no. of appl	% GROWERS REPORTING WEED CONTROL					% GROWERS REPORTING CROP INJURY				
				NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:													
NORT/DUAL(PRE/PPI) CONV	1	4.3	1.0	100	0	0	0	0	100	0	0	0	0
TOTAL-PPI&PRE	1	4.3	1.0	100	0	0	0	0	100	0	0	0	0
B. POSTEMERGENCE HERBICIDES:													
NEX/MIX/PRO+UPB+SEL+OIL	6	104.6	1.7	17	33	50	0	0	17	33	50	0	0
NEX/MIX/PR+ST+UP+SEL+OIL	5	101.3	1.6	0	20	20	60	0	0	20	80	0	0
NEX/MIX/PRO+STING+UPB	1	64.4	2.0	0	0	100	0	0	0	100	0	0	0
PROGRESS	2	29.5	1.0	0	0	100	0	0	0	0	100	0	0
NX/MX/PR+ST+UP+NR+SL+OIL	1	26.7	3.0	0	100	0	0	0	0	100	0	0	0
OTHER COMBINAT. (CONV)	1	22.9	3.0	0	0	0	100	0	0	0	100	0	0
NEX/MIX/PROG+UPBEET	2	20.5	1.0	50	0	50	0	0	50	0	50	0	0
BETAMIX	1	8.6	2.0	0	0	100	0	0	0	0	100	0	0
TOTAL-POST	19	378.4	1.7	11	21	47	21	0	11	26	63	0	0
C. PREEMERGE & LAY-BY HERBICIDES:													
GLYP (PRE) – (CONV)	1	2.6	1.0	0	100	0	0	0	0	100	0	0	0
TOTAL-PRE&LAY-BY	1	2.6	1.0	0	100	0	0	0	0	100	0	0	0
D. OTHER WEED CONTROL METHODS:													
ROW CULTIVATIONS (CONV)	5	56.0	1.4	60	20	20	0	0	60	40	0	0	0
ROTARY HOE (CONV)	2	14.3	1.0	0	0	50	50	0	0	100	0	0	0
TOTAL-OTHER	7	70.3	1.3	43	14	29	14	0	43	57	0	0	0
TOTAL TREATMENTS	28	455.6	1.5	21	21	39	18	0	21	36	43	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 3. SUMMARY OF HERBICIDES USED BY RESPONDENTS WHO **GREW ONLY RR SUGARBEET** IN 2010. **237** GROWERS REPORTED ON **119,959 ACRES**.

HERBICIDES (IN ORDER OF ACRES TREATED)	NUMBER GROWERS RPTG.	ACRES TREATED % OF TOTAL	Avg no. of appl	% GROWERS REPORTING WEED CONTROL					% GROWERS REPORTING CROP INJURY				
				NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:													
NORT/DUAL(PRE/PPI) RR	1	0.2	1.0	0	0	100	0	0	0	100	0	0	0
TOTAL-PPI&PRE	1	0.2	1.0	0	0	100	0	0	0	100	0	0	0
B. POSTEMERGENCE HERBICIDES:													
GLYPHOSATE 0.75 LB	161	132.1	2.1	7	76	15	1	1	10	86	2	1	1
GLYPHOSATE 1.0 LB	82	62.0	1.8	16	72	11	1	0	17	83	0	0	0
GLYPHOSATE 1.125 LB	32	34.8	2.1	3	69	16	6	6	6	81	6	0	6
GLYP+STINGER	25	8.4	1.2	16	56	20	8	0	24	64	8	0	4
SEL/POAST/ASUR II (RR)	16	3.7	1.0	13	63	19	6	0	13	88	0	0	0
GLYP OTHER LB	3	2.1	2.3	0	67	0	0	33	33	67	0	0	0
GLYP+SELECT	11	2.0	1.1	18	64	18	0	0	27	73	0	0	0
OTHER COMBINATIONS (RR)	5	1.1	1.2	40	40	0	0	20	40	40	20	0	0
GLYP+ASSURE II	3	0.6	1.0	0	67	0	0	33	0	100	0	0	0
TOTAL-POST	338	246.8	1.8	10	71	14	2	2	14	82	3	0	1
C. PREEMERGE & LAY-BY HERBICIDES:													
DUAL/OTLK/TREF (LBY)(RR)	2	0.4	1.0	0	50	50	0	0	0	100	0	0	0
GLYP (PRE) – (RR)	1	0.2	1.0	0	100	0	0	0	0	100	0	0	0
TOTAL-PRE&LAY-BY	3	0.6	1.0	0	67	33	0	0	0	100	0	0	0
D. OTHER WEED CONTROL METHODS:													
ROW CULTIVATIONS (RR)	42	10.7	1.0	52	10	14	21	2	52	24	24	0	0
ROTARY HOE (RR)	6	0.7	1.0	50	0	0	33	17	50	17	33	0	0
TOTAL-OTHER	48	11.4	1.0	52	8	13	23	4	52	23	25	0	0
TOTAL TREATMENTS	390	259.0	1.7	15	63	14	5	2	18	75	5	0	1

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

Table 4. Acres of sugarbeet and percent of sugarbeet acres treated with herbicide by grower groups in 2010.

Respondents who grew…[1]	Respondents	Acres	% of Acres treated with herbicide
RR Sugarbeet	259	128,594	246
Conventional Sugarbeet	31	9,694	391
Only RR Sugarbeet	237	119,959	248
Only Conventional Sugarbeet	9	4,660	385
All Sugarbeet	268	138,288	256

[1]Growers with Roundup Ready sugarbeet may or may not have grown conventional sugarbeet. Likewise, growers with conventional sugarbeet may or may not have grown Roundup Ready sugarbeet. Growers with both Roundup Ready and conventional sugarbeet grew at least one acre of each type of sugarbeet.

TABLE 5. **BECKER COUNTY: 4** GROWERS REPORTED ON **2,172** ACRES. OF THESE ACRES 1,972 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	2	2000	92.1	1.0	0	2	0	0	0	0	2	0	0	0
GLYPHOSATE 1.0 LB	3	1644	75.7	1.7	0	2	1	0	0	0	3	0	0	0
NEX/MIX/PR+ST+UP+SEL+OIL	1	400	18.4	2.0	0	0	1	0	0	0	0	1	0	0
GLYP+STINGER	1	300	13.8	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL-POST	7	4344	200.0	1.4	0	5	2	0	0	0	6	1	0	0
TOTAL TREATMENTS	7	4344	200.0	1.4	0	5	2	0	0	0	6	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 6. **CASS COUNTY: 7** GROWERS REPORTED ON **2,958** ACRES. OF THESE ACRES 2,847 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	6	5411	182.9	2.0	0	6	0	0	0	0	6	0	0	0
GLYP+STINGER	2	1234	41.7	1.5	0	1	1	0	0	0	2	0	0	0
GLYPHOSATE 1.0 LB	1	1100	37.2	2.0	0	1	0	0	0	0	1	0	0	0
NX/MX/PR+ST+UP+NR+SL+OIL	1	222	7.5	2.0	0	1	0	0	0	0	0	1	0	0
OTHER COMBINATIONS (RR)	1	80	2.7	1.0	0	0	0	0	1	0	1	0	0	0
TOTAL-POST	11	8047	272.0	1.8	0	9	1	0	1	0	10	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROTARY HOE (CONV)	1	111	3.8	1.0	0	1	0	0	0	0	1	0	0	0
ROW CULTIVATIONS (CONV)	1	111	3.8	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL-OTHER	2	222	7.5	1.0	0	2	0	0	0	0	2	0	0	0
TOTAL TREATMENTS	13	8269	279.5	1.7	0	11	1	0	1	0	12	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 7. **CHIPPEWA AND SWIFT COUNTIES: 9** GROWERS REPORTED ON **3,150** ACRES. OF THESE ACRES 3,150 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:														
NORT/DUAL (PRE/PPI) RR	1	260	8.3	1.0	0	0	1	0	0	0	1	0	0	0
TOTAL-PPI&PRE	1	260	8.3	1.0	0	0	1	0	0	0	1	0	0	0
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	7	3133	99.5	1.6	0	6	1	0	0	0	7	0	0	0
GLYPHOSATE 1.0 LB	3	2387	75.8	1.3	0	2	1	0	0	0	3	0	0	0
GLYP+ASSURE II	3	703	22.3	1.0	0	2	0	0	1	0	3	0	0	0
SEL/POAST/ASUR II (RR)	2	356	11.3	1.0	0	1	1	0	0	0	2	0	0	0
GLYP+SELECT	1	324	10.3	1.0	0	1	0	0	0	0	1	0	0	0
GLYPHOSATE 1.125 LB	1	260	8.3	1.0	0	1	0	0	0	0	1	0	0	0
GLYP OTHER LB	1	260	8.3	1.0	0	0	0	0	1	0	1	0	0	0
TOTAL-POST	18	7423	235.7	1.3	0	13	3	0	2	0	18	0	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	6	1772	56.3	1.2	3	1	1	1	0	3	2	1	0	0
TOTAL-OTHER	6	1772	56.3	1.2	3	1	1	1	0	3	2	1	0	0
TOTAL TREATMENTS	25	9455	300.2	1.2	3	14	5	1	2	3	21	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 8. **CLAY COUNTY: 23** GROWERS REPORTED ON **11,446** ACRES. OF THESE ACRES 11,446 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	14	13302	116.2	2.2	0	13	0	0	1	1	12	0	0	1
GLYPHOSATE 1.125 LB	4	6476	56.6	2.0	0	4	0	0	0	0	3	0	0	1
GLYPHOSATE 1.0 LB	8	5790	50.6	1.8	1	5	2	0	0	1	7	0	0	0
GLYP+STINGER	2	1314	11.5	1.5	0	2	0	0	0	0	2	0	0	0
TOTAL-POST	28	26882	234.9	2.0	1	24	2	0	1	2	24	0	0	2
C. PREEMERGE & LAY-BY HERBICIDES:														
DUAL/OTLK/TREF (LBY)(RR)	1	110	1.0	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL-PRE&LAY-BY	1	110	1.0	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL TREATMENTS	29	26992	235.8	2.0	1	25	2	0	1	2	25	0	0	2

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 9. **GRAND FORKS COUNTY: 15** GROWERS REPORTED ON **7,337** ACRES. OF THESE ACRES 6,340 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	9	5746	78.3	1.9	0	6	3	0	0	0	9	0	0	0
GLYPHOSATE 1.0 LB	5	5665	77.2	2.0	1	4	0	0	0	1	4	0	0	0
GLYPHOSATE 1.125 LB	2	2576	35.1	2.0	0	1	1	0	0	0	2	0	0	0
OTHER COMBINAT. (CONV)	3	1665	22.7	2.3	0	2	0	1	0	0	2	1	0	0
NEX/MIX/PR+ST+UP+SEL+OIL	2	774	10.5	2.5	0	0	1	1	0	0	1	1	0	0
NX/MX/PR+ST+UP+NR+SL+OIL	1	360	4.9	2.0	0	0	1	0	0	0	0	1	0	0
BB+STINGR+UPBEET	1	324	4.4	2.0	0	0	1	0	0	0	0	1	0	0
NX/MX/PR+ST+UP+NRT+OIL	1	180	2.5	1.0	0	0	1	0	0	0	0	1	0	0
TOTAL-POST	24	17290	235.7	2.0	1	13	8	2	0	1	18	5	0	0
C. PREEMERGE & LAY-BY HERBICIDES:														
DUL/OTLK/TRF(LBY)(CONV)	2	330	4.5	1.0	0	0	2	0	0	0	1	1	0	0
TOTAL-PRE&LAY-BY	2	330	4.5	1.0	0	0	2	0	0	0	1	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (CONV)	4	1060	14.4	1.8	2	2	0	0	0	2	2	0	0	0
ROW CULTIVATIONS (RR)	1	750	10.2	1.0	1	0	0	0	0	1	0	0	0	0
ROTARY HOE (CONV)	1	90	1.2	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-OTHER	6	1900	25.9	1.5	4	2	0	0	0	4	2	0	0	0
TOTAL TREATMENTS	32	19520	266.0	1.8	5	15	10	2	0	5	21	6	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 10. **KANDIYOHI COUNTY: 8** GROWERS REPORTED ON **2,549** ACRES. OF THESE ACRES 2,549 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 1.125 LB	1	2600	102.0	2.0	0	1	0	0	0	0	1	0	0	0
SEL/POAST/ASUR II (RR)	4	1342	52.6	1.0	0	3	1	0	0	0	4	0	0	0
GLYPHOSATE 0.75 LB	4	1318	51.7	2.0	1	3	0	0	0	1	3	0	0	0
GLYPHOSATE 1.0 LB	4	1062	41.7	1.8	1	3	0	0	0	1	3	0	0	0
GLYP+STINGER	2	571	22.4	1.0	1	0	1	0	0	1	1	0	0	0
GLYP+SELECT	2	524	20.6	1.0	1	0	1	0	0	1	1	0	0	0
TOTAL-POST	17	7417	291.0	1.5	4	10	3	0	0	4	13	0	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	3	1053	41.3	1.0	1	1	0	1	0	1	1	1	0	0
TOTAL-OTHER	3	1053	41.3	1.0	1	1	0	1	0	1	1	1	0	0
TOTAL TREATMENTS	20	8470	332.3	1.4	5	11	3	1	0	5	14	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 11. **KITTSON COUNTY: 12** GROWERS REPORTED ON **5,009** ACRES. OF THESE ACRES 5,009 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	9	7339	146.5	1.9	0	8	1	0	0	0	8	1	0	0
GLYPHOSATE 1.0 LB	4	2837	56.6	1.5	1	3	0	0	0	1	3	0	0	0
GLYPHOSATE 1.125 LB	2	536	10.7	1.0	0	2	0	0	0	0	2	0	0	0
TOTAL-POST	15	10712	213.9	1.7	1	13	1	0	0	1	13	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	2	550	11.0	1.0	1	0	1	0	0	2	0	0	0	0
ROTARY HOE (RR)	1	320	6.4	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-OTHER	3	870	17.4	1.0	2	0	1	0	0	3	0	0	0	0
TOTAL TREATMENTS	18	11582	231.2	1.6	3	13	2	0	0	4	13	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 12. **MARSHALL COUNTY: 20** GROWERS REPORTED ON **12,423** ACRES. OF THESE ACRES 11,973 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	13	20422	164.4	2.4	4	8	1	0	0	4	9	0	0	0
GLYPHOSATE 1.0 LB	9	8038	64.7	2.1	1	6	1	1	0	1	8	0	0	0
NEX/MIX/PR+ST+UP+SEL+OIL	1	1350	10.9	3.0	1	0	0	0	0	1	0	0	0	0
GLYPHOSATE 1.125 LB	2	445	3.6	1.5	0	0	1	0	1	0	1	1	0	0
TOTAL-POST	25	30255	243.5	2.2	6	14	3	1	1	6	18	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	5	1405	11.3	1.0	4	0	0	1	0	3	1	1	0	0
ROTARY HOE (CONV)	1	450	3.6	1.0	0	0	0	1	0	0	0	1	0	0
ROW CULTIVATIONS (CONV)	1	450	3.6	1.0	0	0	1	0	0	0	0	1	0	0
TOTAL-OTHER	7	2305	18.6	1.0	4	0	1	2	0	3	1	3	0	0
TOTAL TREATMENTS	32	32560	262.1	2.0	10	14	4	3	1	9	19	4	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 13. **NORMAN AND MAHNOMEN COUNTIES: 14** GROWERS REPORTED ON **7,028** ACRES. OF THESE ACRES 7,028 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	7	8354	118.9	2.0	2	3	2	0	0	2	5	0	0	0
GLYPHOSATE 1.0 LB	8	5537	78.8	1.8	1	6	1	0	0	1	7	0	0	0
GLYP+STINGER	4	2057	29.3	1.5	1	2	1	0	0	1	1	1	0	1
GLYPHOSATE 1.125 LB	2	757	10.8	1.5	0	1	0	1	0	0	2	0	0	0
GLYP+SELECT	1	250	3.6	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-POST	22	16955	241.2	1.7	5	12	4	1	0	5	15	1	0	1
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	1	340	4.8	1.0	1	0	0	0	0	1	0	0	0	0
ROTARY HOE (RR)	1	20	0.3	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-OTHER	2	360	5.1	1.0	2	0	0	0	0	2	0	0	0	0
TOTAL TREATMENTS	24	17315	246.4	1.7	7	12	4	1	0	7	15	1	0	1

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 14. **PEMBINA COUNTY: 19** GROWERS REPORTED ON **17,390** ACRES. OF THESE ACRES 17,390 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	13	16150	92.9	1.8	3	8	2	0	0	3	10	0	0	0
GLYPHOSATE 1.125 LB	3	13100	75.3	2.0	0	2	0	1	0	0	3	0	0	0
GLYPHOSATE 1.0 LB	9	10803	62.1	1.8	1	8	0	0	0	1	8	0	0	0
GLYP+STINGER	3	635	3.7	1.0	1	2	0	0	0	1	1	1	0	0
OTHER COMBINATIIONS (RR)	1	100	0.6	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-POST	29	40788	234.5	1.7	6	20	2	1	0	6	22	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	5	2203	12.7	1.0	3	0	1	1	0	3	0	2	0	0
ROTARY HOE (RR)	1	40	0.2	1.0	0	0	0	1	0	0	0	1	0	0
TOTAL-OTHER	6	2243	12.9	1.0	3	0	1	2	0	3	0	3	0	0
TOTAL TREATMENTS	35	43031	247.4	1.6	9	20	3	3	0	9	22	4	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 15. **POLK COUNTY: 44** GROWERS REPORTED ON **22,817** ACRES. OF THESE ACRES 15,706 WERE ROUNDUP READY. 1 GROWER REPORTED NO HERBICIDE USED ON 1,086 ACRES.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
					NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:														
NORT/DUAL(PRE/PPI) CONV	6	1553	6.8	1.0	0	3	3	0	0	1	5	0	0	0
TOTAL-PPI&PRE	6	1553	6.8	1.0	0	3	3	0	0	1	5	0	0	0
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	21	17568	77.0	2.1	2	17	2	0	0	3	17	1	0	0
GLYP 1.0 LB	13	12716	55.7	2.2	4	8	1	0	0	4	9	0	0	0
BB+ST+UP+SEL+OIL	14	8769	38.4	2.1	1	4	6	3	0	1	3	10	0	0
NEX/MIX/PRO+UPB+SEL+OIL	8	5153	22.6	1.5	1	3	4	0	0	1	3	4	0	0
GLYPHOSATE 1.125 LB	6	3373	14.8	1.8	0	5	1	0	0	0	6	0	0	0
BB+STINGR+UPBEET	1	3000	13.1	2.0	0	0	1	0	0	0	1	0	0	0
PROGRESS	3	2277	10.0	1.7	0	0	3	0	0	0	1	2	0	0
NX/MX/PR+ST+UP+NR+SL+OIL	4	1822	8.0	1.5	0	3	1	0	0	0	3	1	0	0
SEL/POAST/ASUR II (CONV)	6	1676	7.3	1.3	1	3	2	0	0	2	4	0	0	0
NEX/MIX/PROG+UPBEET	4	1552	6.8	1.3	1	0	3	0	0	2	0	2	0	0
NX/MX/PR+ST+UP+NRT+OIL	3	1142	5.0	1.7	0	3	0	0	0	0	2	1	0	0
NEX/MIX/PROG+STINGER	1	900	3.9	3.0	0	0	1	0	0	1	0	0	0	0
OTHER COMBINATIONS (RR)	1	510	2.2	2.0	1	0	0	0	0	1	0	0	0	0
GLYP+STINGER	1	400	1.8	1.0	0	1	0	0	0	1	0	0	0	0
NEX/MIX/PRO+STNG+UPB+OIL	3	320	1.4	1.0	0	2	0	1	0	0	2	0	1	0
GLYP OTHER LB	1	165	0.7	3.0	0	1	0	0	0	0	1	0	0	0
TOTAL-POST	90	61343	268.8	1.9	11	50	25	4	0	16	52	21	1	0
C. PREEMERGE & LAY-BY HERBICIDES:														
GLYP (PRE) – (CONV)	2	510	2.2	1.0	0	2	0	0	0	0	2	0	0	0
TOTAL-PRE&LAY-BY	2	510	2.2	1.0	0	2	0	0	0	0	2	0	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (CONV)	16	5568	24.4	1.5	4	4	7	1	0	4	11	1	0	0
ROW CULTIVATIONS (RR)	5	1136	5.0	1.2	2	2	1	0	0	2	3	0	0	0
ROTARY HOE (CONV)	2	665	2.9	1.0	0	0	1	1	0	0	2	0	0	0
HARROW (CONV)	1	300	1.3	1.0	0	1	0	0	0	0	0	1	0	0
TOTAL-OTHER	24	7669	33.6	1.4	6	7	9	2	0	6	16	2	0	0
TOTAL TREATMENTS	122	71075	311.5	1.7	17	62	37	6	0	23	75	23	1	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 16. **RENVILLE, FARIBAULT, LAC QUI PARLE, MCLEOD, MEEKER, REDWOOD, SIBLEY, AND YELLOW MEDICINE COUNTIES: 16** GROWERS REPORTED ON **6,170** ACRES. OF THESE ACRES 6,170 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	16	15148	245.5	2.3	0	14	1	1	0	0	14	1	1	0
SEL/POAST/ASUR II (RR)	7	1946	31.5	1.0	2	4	0	1	0	2	5	0	0	0
GLYPHOSATE 1.0 LB	2	661	10.7	1.0	0	2	0	0	0	0	2	0	0	0
GLYP+SELECT	1	363	5.9	1.0	0	1	0	0	0	0	1	0	0	0
OTHER COMBINATIONS (RR)	1	300	4.9	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL-POST	27	18418	298.5	1.8	2	22	1	2	0	2	23	1	1	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	6	1133	18.4	1.0	2	1	1	1	1	2	2	2	0	0
ROTARY HOE (RR)	2	347	5.6	1.0	1	0	0	0	1	1	1	0	0	0
TOTAL-OTHER	8	1480	24.0	1.0	3	1	1	1	2	3	3	2	0	0
TOTAL TREATMENTS	35	19898	322.5	1.6	5	23	2	3	2	5	26	3	1	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 17. **RICHLAND COUNTY: 12** GROWERS REPORTED ON **5,857** ACRES. OF THESE ACRES 5,857 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	8	11764	200.9	3.4	0	5	3	0	0	0	8	0	0	0
GLYPHOSATE 1.125 LB	2	2790	47.6	3.5	0	2	0	0	0	0	1	0	0	1
GLYPHOSATE 1.0 LB	1	2628	44.9	3.0	0	1	0	0	0	0	1	0	0	0
GLYP OTHER LB	1	2145	36.6	3.0	0	1	0	0	0	1	0	0	0	0
GLYP+STINGER	2	570	9.7	1.0	0	1	0	1	0	1	1	0	0	0
GLYP+SELECT	3	440	7.5	1.3	0	3	0	0	0	1	2	0	0	0
TOTAL-POST	17	20337	347.2	2.7	0	13	3	1	0	3	13	0	0	1
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	1	425	7.3	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-OTHER	1	425	7.3	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL TREATMENTS	18	20762	354.5	2.6	1	13	3	1	0	4	13	0	0	1

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 18. **TRAILL COUNTY: 16** GROWERS REPORTED ON **7,118** ACRES. OF THESE ACRES 6,918 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:														
NORT/DUAL(PRE/PPI) CONV	1	200	2.8	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-PPI&PRE	1	200	2.8	1.0	1	0	0	0	0	1	0	0	0	0
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 1.0 LB	8	5438	76.4	1.1	1	7	0	0	0	1	7	0	0	0
GLYPHOSATE 0.75 LB	8	4534	63.7	1.8	1	7	0	0	0	1	7	0	0	0
GLYPHOSATE 1.125 LB	2	2880	40.5	2.0	0	2	0	0	0	0	2	0	0	0
GLYP+STINGER	3	1480	20.8	1.7	0	2	1	0	0	0	3	0	0	0
BETAMIX	1	400	5.6	2.0	0	0	1	0	0	0	0	1	0	0
TOTAL-POST	22	14732	207.0	1.5	2	18	2	0	0	2	19	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	2	315	4.4	1.0	1	0	0	1	0	1	0	1	0	0
TOTAL-OTHER	2	315	4.4	1.0	1	0	0	1	0	1	0	1	0	0
TOTAL TREATMENTS	25	15247	214.2	1.5	4	18	2	1	0	4	19	2	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 19. **TRAVERSE, BIG STONE, GRANT, AND STEVENS COUNTIES: 5** GROWERS REPORTED ON **4,046** ACRES. OF THESE ACRES 4,046 WERE ROUNDUP READY.

					NO. OF GROWERS REPORTING									
					WEED CONTROL						CROP INJURY			
TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NR*	EXC	GD	FR	PR	NR	None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 1.0 LB	2	6610	163.4	2.5	1	1	0	0	0	2	0	0	0	0
GLYPHOSATE 0.75 LB	3	3988	98.6	2.7	0	2	0	1	0	0	2	1	0	0
GLYP+STINGER	1	425	10.5	1.0	0	0	1	0	0	0	1	0	0	0
TOTAL-POST	6	11023	272.4	2.3	1	3	1	1	0	2	3	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	1	160	4.0	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL-OTHER	1	160	4.0	1.0	1	0	0	0	0	1	0	0	0	0
TOTAL TREATMENTS	7	11183	276.4	2.1	2	3	1	1	0	3	3	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 20. **WALSH COUNTY: 15** GROWERS REPORTED ON **6,790** ACRES. OF THESE ACRES 6,790 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 1.0 LB	8	7161	105.5	1.6	2	3	3	0	0	2	6	0	0	0
GLYPHOSATE 0.75 LB	7	5967	87.9	1.9	0	3	4	0	0	0	7	0	0	0
GLYPHOSATE 1.125 LB	4	3508	51.7	2.0	0	2	2	0	0	0	3	1	0	0
TOTAL-POST	19	16636	245.0	1.8	2	8	9	0	0	2	16	1	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	3	1057	15.6	1.0	1	1	0	1	0	1	2	0	0	0
TOTAL-OTHER	3	1057	15.6	1.0	1	1	0	1	0	1	2	0	0	0
TOTAL TREATMENTS	22	17693	260.6	1.7	3	9	9	1	0	3	18	1	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 21. **WILKIN AND OTTERTAIL COUNTIES: 16** GROWERS REPORTED ON **8,418** ACRES. OF THESE ACRES 8,418 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	18	19877	236.1	2.1	0	14	4	0	0	3	14	1	0	0
GLYP+STINGER	3	585	6.9	1.0	1	1	0	1	0	1	2	0	0	0
GLYPHOSATE 1.125 LB	3	520	6.2	2.0	1	1	0	0	1	2	1	0	0	0
GLYPHOSATE 1.0 LB	1	224	2.7	1.0	0	1	0	0	0	0	1	0	0	0
GLYP+SELECT	1	160	1.9	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL-POST	26	21366	253.8	1.9	2	18	4	1	1	6	19	1	0	0
C. PREEMERGE & LAY-BY HERBICIDES:														
DUAL/OTLK/TREF (LBY)(RR)	1	370	4.4	1.0	0	0	1	0	0	0	1	0	0	0
TOTAL-PRE&LAY-BY	1	370	4.4	1.0	0	0	1	0	0	0	1	0	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	3	921	10.9	1.0	2	0	0	1	0	2	1	0	0	0
ROTARY HOE (RR)	1	96	1.1	1.0	0	0	0	1	0	0	0	1	0	0
TOTAL-OTHER	4	1017	12.1	1.0	2	0	0	2	0	2	1	1	0	0
TOTAL TREATMENTS	31	22753	270.3	1.7	4	18	5	3	1	8	21	2	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

TABLE 22. **NO RESPONSE COUNTY: 13** GROWERS REPORTED ON **5,610** ACRES. OF THESE ACRES 4,985 WERE ROUNDUP READY.

TREATMENT	NO. RPTG.	ACRES TRTED	% OF TOTAL	Ave # App	NO. OF GROWERS REPORTING: WEED CONTROL NR*	EXC	GD	FR	PR	NR	CROP INJURY None	Slt	Mod	Sev
A. SOIL APPLIED HERBICIDES:														
NORT/DUAL(PRE/PPI) CONV	1	550	9.8	1.0	0	0	1	0	0	0	1	0	0	0
TOTAL-PPI&PRE	1	550	9.8	1.0	0	0	1	0	0	0	1	0	0	0
B. POSTEMERGENCE HERBICIDES:														
GLYPHOSATE 0.75 LB	9	6667	118.8	2.0	0	8	1	0	0	0	9	0	0	0
GLYPHOSATE 1.125 LB	3	3184	56.8	2.3	0	3	0	0	0	0	3	0	0	0
NEX/MIX/PRO+STNG+UPB+OIL	1	2500	44.6	4.0	0	0	1	0	0	0	0	1	0	0
GLYPHOSATE 1.0 LB	2	1490	26.6	2.0	0	2	0	0	0	0	2	0	0	0
SEL/POAST/ASUR II (RR)	3	845	15.1	1.0	0	2	1	0	0	0	3	0	0	0
GLYP+STINGER	1	450	8.0	1.0	0	1	0	0	0	0	1	0	0	0
GLYP+SELECT	2	310	5.5	1.0	0	1	1	0	0	0	2	0	0	0
OTHER COMBINATIONS (RR)	1	300	5.3	1.0	0	1	0	0	0	0	0	1	0	0
TOTAL-POST	22	15746	280.7	1.8	0	18	4	0	0	0	20	2	0	0
C. PREEMERGE & LAY-BY HERBICIDES:														
GLYP (PRE) – (RR)	1	250	4.5	1.0	0	1	0	0	0	0	1	0	0	0
TOTAL-PRE&LAY-BY	1	250	4.5	1.0	0	1	0	0	0	0	1	0	0	0
D. OTHER WEED CONTROL METHODS:														
ROW CULTIVATIONS (RR)	2	650	11.6	1.0	0	0	1	1	0	0	0	2	0	0
TOTAL-OTHER	2	650	11.6	1.0	0	0	1	1	0	0	0	2	0	0
TOTAL TREATMENTS	26	17196	306.5	1.7	0	19	6	1	0	0	22	4	0	0

*NR=NO RESPONSE; EXC=EXCELLENT; GD=GOOD; FR=FAIR; PR=POOR.

Table 23. Total sugarbeet acreage operated by survey respondents in 2010.

County	Respondents	Acres of sugarbeet: <50	50-99	100-199	200-299	300-399	400-599	600-799	800-999	1000-1499	1500-1999	2000+
		% of respondents										
Becker	4	-	-	-	25	25	-	25	-	25	-	-
Cass	7	-	14	29	-	14	29	-	-	14	-	-
Chippewa[1]	9	-	23	11	23	11	11	11	11	-	-	-
Clay	23	4	-	9	17	22	26	9	-	9	-	4
Grand Forks	15	-	-	13	7	20	27	20	7	7	-	-
Kandiyohi	8	-	12	50	12	-	13	-	-	13	-	-
Kittson	12	-	8	25	33	-	-	17	8	8	-	-
Marshall	20	5	15	5	5	-	15	30	5	15	-	5
Norman[2]	14	7	7	14	7	36	-	14	7	-	-	7
Pembina	19	-	-	11	5	21	15	11	11	5	11	11
Polk	44	-	7	2	18	9	27	27	-	5	5	-
Renville[3]	16	6	6	25	38	13	6	-	-	-	-	6
Richland	12	-	-	17	8	8	25	33	8	-	-	-
Traill	16	-	-	6	31	25	19	-	13	6	-	-
Traverse[4]	5	-	-	-	20	-	20	20	20	-	20	-
Walsh	15	-	7	13	13	20	27	7	7	7	-	-
Wilkin[5]	16	6	13	13	-	13	25	19	-	-	13	-
No Response	13	-	-	15	15	8	38	15	8	-	-	-
Total	268	2	6	12	15	14	20	16	5	6	3	2

[1]Includes Swift County
[2]Includes Mahnomen County
[3]Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4]Includes Big Stone, Grant, and Stevens Counties
[5]Includes Ottertail County

Table 24. A summary of the worst weed problem responses in conventional sugarbeet for the past 25 years.

Year	PIWE[1]	FXTL	COLQ	WIOA	WIBW	WIMU	KOCZ	COCB	SMWE	EBNS	COMA	LASA	VELE	WAHE	RAWE
								% of responses							
1986	71	5	4	3	2	1	5	4	-	-	-	-	-	-	-
1987	61	7	6	3	6	2	6	2	-	-	-	-	-	-	-
1988	75	2	5	1	2	<1	9	1	-	-	-	-	-	-	-
1989	54	5	4	1	5	<1	21	1	-	-	-	-	-	-	-
1990	51	2	8	1	5	0	23	1	3	-	-	-	-	-	-
1991	59	3	4	0	2	0	18	2	3	-	-	-	-	-	-
1992	47	4	8	3	4	<1	16	3	8	-	-	-	-	-	-
1993	38	3	6	6	8	1	13	3	9	3	2	-	-	-	-
1994	61	2	6	2	8	1	8	2	6	2	1	-	-	-	-
1995	71	2	4	1	2	1	4	1	8	4	1	-	-	-	-
1996	72	4	4	2	1	1	3	2	6	2	1	-	-	-	-
1997	53	7	4	2	6	1	3	2	5	4	1	-	-	-	-
1998	51	9	7	2	4	1	13	1	4	1	<1	-	-	-	-
1999	40	2	10	2	1	<1	33	1	3	1	<1	2	-	-	-
2000	18	2	19	<1	2	<1	43	2	3	<1	<1	2	-	1	-
2001	43	1	10	<1	1	0	32	1	4	4	<1	1	-	2	-
2002	44	<1	14	<1	<1	0	26	1	4	<1	<1	<1	2	5	-
2003	25	<1	18	<1	<1	0	46	<1	4	<1	<1	1	1	2	-
2004	21	<1	25	1	0	0	41	1	4	1	1	1	2	1	-
2005	42	<1	15	0	<1	0	29	2	4	<1	0	<1	1	1	-
2006	35	0	18	0	0	0	41	<1	3	0	0	0	1	<1	-
2007	34	<1	16	0	0	0	41	0	1	<1	<1	0	1	4	-
2008	24	0	19	0	0	0	33	5	10	2	0	0	0	0	-
2009	25	0	41	0	0	0	23	2	2	0	0	-	0	2	2
2010	31	0	21	0	0	0	38	0	0	-	3	-	0	0	0

[1]PIWE=pigweed species, FXTL=green & yellow foxtail, COLQ=common lambsquarters, WIOA=wild oat, WIBW=wild buckwheat, WIMU=wild mustard, KOCZ=kochia, COCB=common cocklebur, SMWE=smartweed, EBNS=eastern black nightshade, COMA=common mallow, LASA=lanceleaf sage, VELE=velevetleaf, WAHE=waterhemp, RAWE=ragweed, and "-"=not listed on survey.

Table 25. Worst weed problem in conventional sugarbeet by county in 2010.

County	Responses	KOCZ[6]	COLQ	PIWE	COMA	BIWW	No Problem
		% of responses					
Becker	0	-	-	-	-	-	-
Cass	1	-	-	-	100	-	-
Chippewa[1]	0	-	-	-	-	-	-
Clay	0	-	-	-	-	-	-
Grand Forks	5	20	40	40	-	-	-
Kandiyohi	0	-	-	-	-	-	-
Kittson	0	-	-	-	-	-	-
Marshall	1	100	-	-	-	-	-
Norman[2]	0	-	-	-	-	-	-
Pembina	0	-	-	-	-	-	-
Polk	20	40	20	35	-	-	5
Renville[3]	0	-	-	-	-	-	-
Richland	0	-	-	-	-	-	-
Traill	1	-	-	-	-	100	-
Traverse[4]	0	-	-	-	-	-	-
Walsh	0	-	-	-	-	-	-
Wilkin[5]	0	-	-	-	-	-	-
No Response	1	100	-	-	-	-	-
Total	29	38	21	31	3	3	3

[1]Includes Swift County
[2]Includes Mahnomen County
[3]Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4]Includes Big Stone, Grant, and Stevens Counties
[5]Includes Ottertail County
[6]KOCZ=kochia; COLQ=common lambsquarters; PIWE=pigweed species; COMA=common mallow; BIWW=biennial wormwood; "-"=no response.

Table 26. A summary of the worst weed problem responses in RR sugarbeet for the past 3 years.

Year	Response	None	COCB[1]	KOCZ	COLQ	FXTL	PIWE	RAWE	SMWE	VELF	WIBW	WIOA	WAHE	RR Crops
		% of responses												
2008	57	54	0	7	7	0	16	-	0	0	5	4	2	5
2009	178	39	2	3	30	0	12	2	1	1	2	2	3	2
2010	246	30	2	4	23	1	17	2	2	1	5	2	5	2

[1] COCB=common cocklebur; KOCZ=kochia; COLQ=common lambsquarters; FXTL=foxtail species; PIWE=pigweed species; RAWE=ragweed; SMWE=smartweed; VELF=velvetleaf; WIBW=wild buckwheat; WIOA=wild oat; WAHE=waterhemp; RR Crops=Roundup Ready crops (corn, soybean, and canola); "-"=not listed on survey.

Table 27. Worst weed problem in RR sugarbeet by county in 2010.

County	Responses	None	COCB[6]	KOCZ	COLQ	FXTL	PIWE	RAWE	SMWE	VELF	WIBW	WIOA	WAHE	Other[7]
		% of responses												
Becker	4	-	-	25	-	-	25	-	-	-	-	-	25	25
Cass	6	83	-	-	-	-	17	-	-	-	-	-	-	-
Chippewa[1]	9	33	-	-	33	-	-	-	11	-	-	-	22	-
Clay	23	22	4	4	35	4	13	-	4	-	4	-	-	4
Grand Forks	14	21	-	-	29	-	14	-	-	14	7	7	7	-
Kandiyohi	8	13	-	-	50	-	12	-	-	-	-	-	25	-
Kittson	12	25	-	-	8	8	25	-	-	-	8	25	-	-
Marshall	19	11	-	5	16	5	16	-	5	-	16	5	-	21
Norman[2]	14	14	-	7	29	-	21	7	-	-	7	-	-	14
Pembina	17	41	6	-	29	-	12	-	-	-	6	-	6	-
Polk	33	36	3	-	15	-	18	3	3	-	9	3	-	9
Renville[3]	16	38	-	-	19	-	13	-	-	6	-	-	25	-
Richland	10	20	-	-	50	-	30	-	-	-	-	-	-	-
Traill	15	40	-	-	27	-	13	7	-	-	7	-	7	-
Traverse[4]	5	20	-	40	40	-	-	-	-	-	-	-	-	-
Walsh	15	47	-	7	13	-	13	-	-	-	7	-	-	13
Wilkin[5]	14	29	7	-	14	-	36	7	-	-	-	-	-	7
No Response	12	42	-	8	17	-	25	8	-	-	-	-	-	-
Total	246	30	2	4	23	1	17	2	2	1	5	2	5	6

[1] Includes Swift County
[2] Includes Mahnomen County
[3] Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4] Includes Big Stone, Grant, and Stevens Counties
[5] Includes Ottertail County
[6] COCB=common cocklebur; KOCZ=kochia; COLQ=common lambsquarters; FXTL=foxtail species; PIWE=pigweed species; RAWE=ragweed; SMWE=smartweed; VELF=velvetleaf; WIBW=wild buckwheat; WIOA=wild oat; WAHE=waterhemp; "-"=no response.
[7] Other=RR corn(2), RR soybean(2), RR canola(2), vol wheat(3), wild mustard(2), common mallow(2), biennial wormwood(1), late season weeds(1)

Table 28. A summary of the most serious production problem responses for the past 25 years.

	Production problem indicated as worst in sugarbeet									
Year	No Problem	Weeds	Weather	Emergence/ Stand	Labor mgmt.	Root maggot	Cercospora leaf spot	Rhizoctonia/ Aphanomyces	Rhizomania	Herbicide Injury
	% of responses									
1986	4	39	31	18	1	1	1			
1987	5	42	23	22	2	0	2			
1988	1	37	12	40	1	1	1			
1989	5	38	19	16	3	8	2			
1990	5	42	20	10	2	8	4			
1991	3	26	4	18	1	26	7	8		
1992	11	45	9	15	5	9	1	3		
1993	3	40	21	16	4	1	2	12		
1994	3	56	12	13	4	1	3	8		
1995	2	51	6	2	3	<1	24	11		
1996	6	53	12	11	6	2	3	6		
1997	15	34	13	12	3	1	5	14	2	
1998	3	25	9	4	1	1	36	17	3	
1999	14	39	14	12	2	1	6	9	2	
2000	8	48	9	10	1	<1	3	18	2	
2001	6	52	13	5	2	1	1	16	3	
2002	4	53	11	19	1	<1	<1	9	3	
2003	7	61	9	4	1	<1	1	11	2	4
2004	6	47	10	21	2	1	0	8	1	1
2005	3	36	22	3	3	0	0	22	11	0
2006	9	57	5	9	1	0	<1	13	3	1
2007	4	46	7	18	<1	<1	<1	18	2	1
2008	12	30	4	21	3	0	<1	24	2	1
2009	14	7	12	21	2	1	1	30	5	1
2010	14	6	8	5	2	1	3	53	5	1

Table 29. Most serious production problem in conventional sugarbeet by county in 2010.

County	Response	No Problem	Cercospora	Rhizoctonia	Weeds	Herbicide Injury	Weather
		----------% of responses----------					
Becker	1	-	-	-	-	100	-
Cass	1	100	-	-	-	-	-
Grand Forks	5	-	-	80	20	-	-
Marshall	1	-	-	-	100	-	-
Polk	20	20	5	45	25	-	20
Traill	1	-	-	-	100	-	-
No Response	1	-	-	-	100	-	-
Total	30	17	3	44	30	3	3

Table 30. Most serious production problem in RR sugarbeet by county in 2010.

County	Responses	No Prob.	Weeds	Rhizoc-tonia	Emerg/ Stand	Weather	Rhizo-mania	Herbicide Injury	CLS[6]	Aphan-omyces	Labor Mangmt	Root Maggot	Other[7]
		----------% of responses----------											
Becker	4	25	25	25	-	-	-	-	-	25	-	-	-
Cass	6	50	-	33	-	-	-	-	-	-	17	-	-
Chippewa[1]	9	11	-	-	11	44	-	-	-	33	-	-	-
Clay	22	14	4	41	4	-	14	-	-	14	-	-	9
Grand Forks	14	21	7	43	-	7	21	-	-	-	-	-	-
Kandiyohi	7	-	29	57	-	-	-	-	14	-	-	-	-
Kittson	12	17	-	17	-	33	-	-	-	33	-	-	-
Marshall	18	-	-	39	11	17	11	-	6	11	6	-	-
Norman[2]	13	-	-	62	23	-	8	-	-	-	8	-	-
Pembina	17	23	6	35	-	12	-	-	6	12	-	6	-
Polk	34	11	3	55	6	9	3	-	-	6	-	-	6
Renville[3]	15	13	-	33	20	-	-	7	13	13	-	-	-
Richland	10	10	-	70	-	-	10	-	-	10	-	-	-
Traill	15	20	-	47	-	-	-	13	-	7	13	-	-
Traverse[4]	5	20	-	20	-	20	40	-	-	-	-	-	-
Walsh	14	14	-	43	7	21	-	-	-	7	-	7	-
Wilkin[5]	15	7	7	60	7	-	-	-	7	7	-	7	-
No Response	12	17	-	58	-	-	-	-	8	8	-	-	8
Total	242	14	3	44	6	9	5	1	3	10	2	1	2

[1]Includes Swift County
[2]Includes Mahnomen County
[3]Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4]Includes Big Stone, Grant, and Stevens Counties
[5]Includes Ottertail County
[6]CLS=Cercospora leaf spot
[7]Other= fusarium (2), sand syndrome (1), alternaria (1), court (1)

Table 31. Sugarbeet acreage that was hand-weeded in 2010.

County	Respondent acres planted	Hand-weeded
		% of acres planted
Becker	2,172	0
Cass	2,958	0
Chippewa[1]	3,150	0
Clay	11,446	**<1**
Grand Forks	7,337	**4**
Kandiyohi	2,549	0
Kittson	5,009	0
Marshall	12,423	0
Norman[2]	7,028	0
Pembina	17,390	0
Polk	22,817	**2**
Renville[3]	6,170	0
Richland	5,857	0
Traill	7,118	0
Traverse[4]	4,046	0
Walsh	6,790	0
Wilkin[5]	8,418	0
No Response	5,610	0
Total	138,288	**1**

[1]Includes Swift County
[2]Includes Mahnomen County
[3]Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4]Includes Big Stone, Grant, and Stevens Counties
[5]Includes Ottertail County

Table 32. Cost of hand weeding in 2010.

		Dollars per acre														
County	Respondents	0[6]	1-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	80+
		% of respondents														
Becker	4	100														
Cass	7	100														
Chippewa[1]	9	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clay	23	96	-	-	-	4	-	-	-	-	-	-	-	-	-	-
Grand Forks	15	86	-	-	-	-	-	7	7	-	-	-	-	-	-	-
Kandiyohi	8	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kittson	12	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marshall	20	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norman[2]	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pembina	19	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polk	44	94	-	2	2	-	2	-	-	-	-	-	-	-	-	-
Renville[3]	16	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Richland	12	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traill	16	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traverse[4]	5	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Walsh	15	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wilkin[5]	16	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Respons	13	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	268	98	-	<1	<1	<1	<1	<1	<1	0	0	0	0	0	0	0

[1]Includes Swift County
[2]Includes Mahnomen County
[3]Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4]Includes Big Stone, Grant, and Stevens Counties
[5]Includes Ottertail County
[6]0 includes both 'No Response' and '0' responses

Table 33. Method of herbicide application in 2010.

Herbicide	Acres treated	Method of application: Band	Broadcast Ground	Broadcast Air
		% of acres treated		
Glyphosate (PRE)	760	-	67	33
Nortron / Dual (PRE/PPI) Conv Beets	2103	100	-	-
Nortron / Dual (PRE/PPI/) RR Beets	260	100	-	-
Dual/Outlook/Treflan (Lay-By) Conv Beets	330	100	-	-
Dual/Outlook/Treflan (Lay-By) RR Beets	480	-	100	-
Poast / Select / Assure II Conv Beets	1376	-	93	7
Poast / Select / Assure II RR Beets	3909	-	100	-
Betanex/Betamix/Progress	2677	40	60	-
Bnex/Bmix/Prog+UpBeet	956	69	31	-
Bnex/Bmix/Prog+UpBeet+Stinger	3324	-	100	-
Bnex/Bmix/Prog+UpBeet+Stinger+Oil	2820	-	97	3
Bnex/Bmix/Prog+UpBeet+Grass+Oil	4265	28	72	-
Bnex/Bmix/Prog+UpBeet+Stinger+Grass+Oil	**9943**	**16**	**81**	**3**
Bnex/Bmix/Prog+UpBeet+Stinger+Nortron+Oil	1322	81	19	-
Bnex/Bmix/Prog+UpBeet+Stinger+Nortron+Grass+Oil	2404	76	24	-
Glyphosate (POST)	**250977**	**1**	**96**	**3**
Glyphosate+Stinger	6975	4	96	-
Glyphosate+Grass	2704	-	100	-
Other Combinations Conv Beets	1665	36	64	-
Other Combinations RR Beets	890	-	100	-
Total	300,140	4	93	3

Table 34. Percent of conventional and RR sugarbeet acres planted that were cultivated to control weeds in 2010.

County	RR Sugarbeet: Number of Respondents	Acres Planted	Acres Cultivated	Acres Cultivated	Conventional Sugarbeet: Number of Respondents	Acres Planted	Acres Cultivated	Acres Cultivated
				% of acres planted				% of acres planted
Becker	4	1,972	0	0	1	200	0	0
Cass	7	2,847	0	0	1	111	111	100
Chippewa[1]	9	3,150	1,772	56	0	-	-	-
Clay	23	11,446	0	0	0	-	-	-
Grand Forks	14	6,340	750	12	5	997	1,060	106
Kandiyohi	8	2,549	1,053	41	0	-	-	-
Kittson	12	5,009	550	11	0	-	-	-
Marshall	20	11,973	1,405	12	1	450	450	100
Norman[2]	14	7,028	340	5	0	-	-	-
Pembina	19	17,390	2,203	13	0	-	-	-
Polk	37	15,706	1,136	7	21	7,111	5,568	78
Renville[3]	16	6,170	1,133	18	0	-	-	-
Richland	12	5,857	425	7	0	-	-	-
Traill	15	6,918	315	5	1	200	0	0
Traverse[4]	5	4,046	160	4	0	-	-	-
Walsh	15	6,790	1,057	16	0	-	-	-
Wilkin[5]	16	8,418	921	11	0	-	-	-
No Response	13	4,985	650	13	1	625	0	0
Total	259	128,594	13,870	11	31	9,694	7,189	74

[1]Includes Swift County
[2]Includes Mahnomen County
[3]Includes Faribault, Lac Qui Parle, McLeod, Meeker, Redwood, Sibley, and Yellow Medicine Counties
[4]Includes Big Stone, Grant, and Stevens Counties
[5]Includes Ottertail County