

**SURVEY OF FUNGICIDE USE IN SUGARBEET IN EASTERN
NORTH DAKOTA AND MINNESOTA - 2003**

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Other portions of the survey are published in the
Weed Control and Entomology sections.

Sugarbeet growers were asked to report the fungicide used and the number of applications to sugarbeet acreage as part of the annual survey of sugarbeet growers. Multiple applications of fungicides to the same acreage were counted as multiple acres treated; thus, acres treated may exceed 100% of acres planted. All fungicides in [Table 1](#) would be used primarily for control of *Cercospora*.

Fungicide use in 2003, averaged over all counties, was 275% as compared to 262% in 2002, 248% in 2001, 304% in 2000, and 350% in 1999 ([Table 1](#)). Acres not treated with fungicide was less than 1% in 2001, 2002 and 2003 and was 1% in 1999 and 2000. Fungicide usage in Chippewa County was 295% in 2003. Fungicide use was 852% in 1998, 599% in 1999, 409% in 2000, 299% in 2001 and 304% in 2002 in Chippewa County. Use was 702% in 1998, 625% in 1999, 430% in 2000, 308% in 2001, 297% in 2002, and 308% in 2003 in Renville County. Eminent was the most common fungicide and was used on 124% of the acres. Super Tin was used on 45% of the acres alone and on 14% of the acres in combination.

Eminent had a Section 18 label in 1999, 2000, 2001, 2002 and 2003 and was used on 165% of the acreage in 1999, 170% in 2000, 144% in 2001, 153% in 2002 and 124% in 2003 ([Table 1](#)). Headline was fully labeled in 2003 and was used for the first time on 85% of the acreage. The Eminent and Headline use apparently had a large impact on *Cercospora* control. The percentage of respondents who named *Cercospora* as their worst production problem dropped from 36% in 1998 to 6% in 1999, 3% in 2000, 1% in 2001 and <1% in 2002 and 2003.

Eminent and Headline are excellent fungicides but they should be rotated with other fungicides to reduce the risk of *Cercospora* developing resistance. Four of the 382 survey respondents used only Eminent for *Cercospora* and none of these growers applied Eminent more than once. Three of the 382 survey respondents used only Headline and none of these growers applied Headline more than once. Eminent and Headline should never be used as the only fungicide for *Cercospora* unless the field is only treated once.

The number of fungicide applications varied from zero to four times per acre ([Table 2](#)). Eighty-eight percent of the respondents applied fungicides two or three times per acre. The average number of applications was 2.8 in 2003, 2.8 in 2002, 2.5 in 2001 and 3.1 in 2000.

Averaged over fungicides and counties, 79% of the fungicides were applied with a ground sprayer and 21% with aerial application ([Table 3](#)). The usage of ground sprayers varied from 46% in Traill County to 94% in Renville County. The overall usage of ground sprayers was 47% in 1998, 58% in 1999, 63% in 2000, 60% in 2001, 67% in 2002, and 79% in 2003.

The date of the first *Cercospora* spraying was spread from June 20 to after July 20 ([Table 4](#)). The southern areas generally were sprayed earlier than more northern areas. In general, spraying started earlier in 2003 and 2002 than in 2001 with 33% of the respondents starting treatments prior to July 10 in 2003, 29% starting prior to July 10 in 2002, and 22% in 2001.

Cercospora leaf spot control was evaluated as excellent or good by 91% of the survey respondents averaged over all fungicides ([Table 5](#)). Comparisons among all fungicides are of questionable value since the number of responses varies so greatly from one fungicide to another. However, a large number of responses were received for Eminent,

Headline and Super Tin/Agri Tin. Excellent or good valuations were received from 97% of the respondents for Eminent, 86% for Super Tin/Agri Tin, and 86% for Headline.

Water volumes used for fungicide application by ground and air are given in [Table 6](#). The spray volumes of less than 10 gpa by ground application primarily are from the air assist sprayers. The most common spray volume by ground sprayers was 15 to 19 gpa and the most common spray volume by aerial application was 5 gpa.

Spray pressures used for ground application of fungicides for Cercospora control are given in [Table 7](#). The spray pressures of less than 40 psi primarily are from the air assist sprayers. The most common spray pressures were 80 to 100 psi.

The reported acreages of sugarbeet that were affected by Rhizomania in 2003 are given in [Table 8](#). Renville, Chippewa, Polk and Clay counties had the greatest acres with Rhizomania. All other counties had less than 600 acres reported as affected but all counties except Kittson reported some affected acres.

Only 1274 acres were reported as treated with Quadris for Rhizoctonia control in 2003 over all counties ([Table 8](#)). The greatest useage was in Clay county with 850 acres reported as treated.

Table 1. Fungicide use for Cercospora control by survey respondents in 2003.

County	Respondent acres planted	Acres not treated	Fungicide treated acres										Total acres treated
			Super/Agri tin	Tin+ Topsis	Topsin/Benlate	Headline	Mancozeb	Topsin+ Mancozeb	Tin+ Mancozeb	Eminent	GEM	Dithane	
-----% of acres planted-----													
Cass	6470	0	91	0	0	76	0	0	0	143	2	0	312
Chippewa ¹	13769	0	89	0	0	82	0	3	0	111	10	0	295
Clay ²	20122	1	39	0	0	82	1	0	0	149	0	0	271
Grand Forks	7137	0	31	20	0	77	3	0	0	101	0	0	232
Kittson	9344	0	50	8	0	91	0	0	0	96	6	0	251
Marshall	14563	0	24	21	0	94	0	0	0	98	3	0	240
Norman ³	9435	0	34	27	0	97	0	0	0	136	0	0	294
Pembina	12249	0	44	0	0	88	0	0	0	98	2	0	232
Polk	29445	0	25	39	1	84	2	0	2	106	0	3	262
Renville ⁴	14055	<1	84	0	0	85	0	0	0	119	20	0	308
Richland	11223	0	24	0	0	81	0	0	0	184	0	0	289
Traill	6488	6	30	49	0	71	18	0	0	82	0	0	250
Traverse ⁵	10351	0	34	0	0	71	0	0	0	164	17	0	286
Walsh	7200	0	58	4	0	87	0	0	4	101	8	0	262
Wilkin ⁶	13254	0	34	13	6	90	0	0	0	166	0	0	309
Other ⁷	3220	0	89	0	0	102	0	0	0	102	1	0	294
Total	188325	<1	45	13	1	85	1	<1	1	124	4	1	275

¹Includes Swift and Kandiyohi Counties.

²Includes Becker County.

³Includes Mahnommen County.

⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle, and Sibley Counties.

⁵Includes Grant, Stevens, and Big Stone Counties.

⁶Includes Ottertail County.

⁷Includes Stearns, Meeker, Nicollet and Brown .

Table 2. Number of fungicide applications by survey respondents in 2003.

County	Respondents	Number of applications					
		0	1	2	3	4	5
		-----% of respondents-----					
Cass	14	0	0	0	79	21	0
Chippewa ¹	37	0	0	5	92	3	0
Clay ²	29	3	3	14	66	14	0
Grand Forks	17	0	0	53	47	0	0
Kittson	19	0	0	53	47	0	0
Marshall	25	0	0	48	52	0	0
Norman ³	17	0	6	18	53	24	0
Pembina	21	0	10	43	48	0	0
Polk	51	4	2	22	59	14	0
Renville ⁴	49	0	0	6	76	18	0
Richland	19	0	0	10	89	0	0
Traill	13	8	8	23	62	0	0
Traverse ⁵	17	0	6	18	59	18	0
Walsh	22	0	5	27	64	5	0
Wilkin ⁶	26	0	0	15	73	12	0
Other ⁷	6	0	0	33	67	0	0
Total	382	1	2	22	66	9	0

¹Includes Swift and Kandiyohi Counties.²Includes Becker County.³Includes Mahnommen County.⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle, and Sibley Counties.⁵Includes Grant, Stevens, and Big Stone Counties.⁶Includes Ottertail County.⁷Includes Stearns, Meeker, Nicollet and Brown.**Table 3. Ground and aerial application of fungicides, 2003.**

County	Ground	Aerial
-----% of treated acres-----		
Cass	76	24
Chippewa ¹	92	8
Clay ²	93	7
Grand Forks	77	23
Kittson	68	32
Marshall	81	19
Norman ³	61	39
Pembina	78	22
Polk	71	29
Renville ⁴	94	6
Richland	90	10
Traill	46	54
Traverse ⁵	85	15
Walsh	55	45
Wilkin ⁶	81	19
Other ⁷	100	0
Total	79	21

¹Includes Swift and Kandiyohi Counties.²Includes Becker County.³Includes Mahnommen County.⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle, and Sibley Counties.⁵Includes Grant, Stevens, and Big Stone Counties.⁶Includes Ottertail County.⁷Includes Stearns, Meeker, Nicollet and Brown.

Table 4. Date of first fungicide application, 2003.

County	June 20-30	July 1-10	July 11-20	After July 20
-----% of respondents-----				
Cass	7	7	79	7
Chippewa ¹	3	54	40	3
Clay ²	4	32	52	12
Grand Forks	0	7	43	50
Kittson	7	27	47	20
Marshall	0	17	78	4
Norman ³	7	33	47	13
Pembina	9	5	52	33
Polk	7	14	65	14
Renville ⁴	6	52	40	2
Richland	0	59	35	6
Trails	0	25	33	42
Traverse ⁵	0	7	64	29
Walsh	0	0	70	30
Wilkin ⁶	0	38	54	8
Other ⁷	25	50	50	0
Total	4	29	53	14

¹Includes Swift and Kandiyohi Counties.²Includes Becker County.³Includes Mahanomen County.⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle and Sibley Counties.⁵Includes Grant, Stevens and Big Stone Counties.⁶Includes Ottertail County.⁷Includes Stearns, Meeker, Nicollet, Brown.**Table 5. Fungicide control of cercospora leafspot in 2003.**

Fungicide	Number of Responses	Cercospora leafspot control rating			
		Excellent	Good	Fair	Poor
-----% of respondents-----					
Super Tin/Agri Tin	169	51	39	9	0
Headline	273	51	35	14	0
Mancozeb	3	67	33	0	0
Topsin/Benlate	2	0	100	0	0
Tin + Topsin	43	47	44	9	0
Tin + Mancozeb	2	0	100	0	0
Topsin + Mancozeb	1	100	0	0	0
Eminent	316	69	28	3	0
GEM	26	73	12	15	0
Dithane	2	50	0	50	0
Total	837	58	33	9	0

Table 6. Water volume used for fungicide application for Cercospora control, 2003.

County	Ground application water volume, gpa					Aerial application water volume, gpa				
	<10	10-14	15-19	20-25	>25	<4	4	5	6	>6
	-----% of respondents-----									
Cass	9	18	73	0	0	0	0	100	0	0
Chippewa ¹	0	20	49	31	0	14	14	71	0	0
Clay ²	0	36	64	0	0	0	33	67	0	0
Grand Forks	27	64	9	0	0	0	17	83	0	0
Kittson	25	33	42	0	0	0	38	62	0	0
Marshall	11	21	58	11	0	29	0	71	0	0
Norman ³	0	50	38	12	0	0	0	100	0	0
Pembina	0	25	31	44	0	0	0	100	0	0
Polk	29	41	15	15	0	0	0	100	0	0
Renville ⁴	0	15	61	24	0	14	14	71	0	0
Richland	12	12	35	41	0	0	33	67	0	0
Traill	50	0	17	33	0	25	0	50	25	0
Traverse ⁵	7	50	36	7	0	0	25	75	0	0
Walsh	25	25	33	17	0	0	11	67	0	22
Wilkin ⁶	0	17	33	39	11	15	8	77	0	0
Other ⁷	0	25	0	75	0	0	0	0	0	0
Total	10	27	42	21	1	7	11	80	1	2

¹Includes Swift and Kandiyohi Counties.

²Includes Becker County.

³Includes Mahanomen County.

⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle and Sibley Counties.

⁵Includes Grant, Stevens and Big Stone Counties.

⁶Includes Ottertail County.

⁷Includes Stearns, Meeker, Nicollet, Brown.

Table 7. Spray pressure for ground application of fungicide for Cercospora control.

County	Ground application spray pressure, psi.				
	<40	40-59	60-79	80-100	>100
	-----% of respondents-----				
Cass	9	45	36	0	9
Chippewa ¹	0	12	26	32	29
Clay ²	4	26	17	35	17
Grand Forks	30	20	10	40	0
Kittson	25	50	12	12	0
Marshall	0	47	11	32	11
Norman ³	0	67	22	11	0
Pembina	6	31	31	19	12
Polk	34	31	16	16	3
Renville ⁴	2	9	26	52	11
Richland	0	13	20	33	33
Traill	50	17	0	17	17
Traverse ⁵	0	21	14	57	7
Walsh	27	18	9	27	18
Wilkin ⁶	0	33	17	39	11
Other ⁷	0	0	25	75	0
Total	9	25	20	33	13

¹Includes Swift and Kandiyohi Counties.

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³Includes Mahanomen County.

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⁵Includes Grant, Stevens and Big Stone Counties.

⁶Includes Ottertail County.

⁷Includes Stearns, Meeker, Nicollet, Brown.

Table 8. Acres affected by Rhizomania and acres treated with Quadris for Rhizoctonia control, 2003.

County	Respondent acres planted	Acres reported as affected by Rhizomania	Acres treated with Quadris
Cass	6,470	100	0
Chippewa ¹	13,769	4948	310
Clay ²	20,122	2950	850
Grand Forks	7,137	165	0
Kittson	9,344	0	0
Marshall	14,563	2	0
Norman ³	9,435	10	0
Pembina	12,249	148	0
Polk	29,445	3581	0
Renville ⁴	14,055	5768	10
Richland	11,223	400	0
Traill	6,488	530	0
Traverse ⁵	10,351	250	0
Walsh	7,200	30	104
Wilkin ⁶	13,254	151	0
Other ⁷	3,220	0	0
Total	188,325	19,033	1274

¹Includes Swift and Kandiyohi Counties.

²Includes Becker County.

³Includes Mahnomen County.

⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle and Sibley Counties.

⁵Includes Grant, Stevens and Big Stone Counties.

⁶Includes Ottertail County.

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