

SURVEY OF FUNGICIDE USE IN SUGARBEET IN EASTERN NORTH DAKOTA AND MINNESOTA - 2005

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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 2005, averaged over all counties, was 206% as compared to 206% in 2004, 275% in 2003, 262% in 2002, and 248% in 2001 (Table 1). Acres not treated with fungicide was 6% in 2005 and less than 1% in 2001, 2002, 2003 and 2004. Fungicide usage in Chippewa County was 296% in 2005. Fungicide use was 852% in 1998, 599% in 1999, 409% in 2000, 299% in 2001, 304% in 2002, 295% in 2003 and 291% in 2004 in Chippewa County. Use was 702% in 1998, 625% in 1999, 430% in 2000, 308% in 2001, 297% in 2002, 308% in 2003, 305% in 2004 and 304% in 2005 in Renville County. Eminent and Headline were the most common fungicides and were used on 78% and 72% of the acres, respectively. Super Tin was used on 46% of the acres alone and on 1% of the acres in combination.

Eminent had a Section 18 label in 1999, 2000, 2001, 2002, 2003 and 2004 and was used on 165% of the acreage in 1999, 170% in 2000, 144% in 2001, 153% in 2002, 124% in 2003 and 99% in 2004 (Table 1). Eminent was fully labeled in 2005 and was used on 78% of the acreage in 2005. Headline was fully labeled in 2003 and was used on 85% of the acreage in 2003, 52% of the acreage in 2004 and 72% of the acreage in 2005. 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. *Cercospora* was not named as the worst production problem by a single respondent in 2004 or 2005.

Eminent and Headline are excellent fungicides but they should be rotated with other fungicides to reduce the risk of *Cercospora* developing resistance. Two of the 223 survey respondents used only Eminent for *Cercospora* and none of these growers applied Eminent more than once. Eleven of the 223 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-one percent of the respondents applied fungicides two or three times per acre. The average number of applications was 2.2 in 2005, 2.3 in 2004, 2.8 in 2003, 2.8 in 2002, and 2.5 in 2001.

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 22% in Traill County to 100% in Traverse County. The overall usage of ground sprayers was 63% in 2000, 60% in 2001, 67% in 2002, 79% in 2003, 73% in 2004 and 79% in 2005.

The date of the first *Cercospora* spraying was spread from June 20 to after August 1 (Table 4). The southern areas generally were sprayed earlier than more northern areas. In general, spraying started later in 2005 with 12% of the respondents starting treatments prior to July 11 in 2005, 20% starting prior to July 10 in 2004, 33% in 2003, 29% in

2002 and 22% in 2001.

The date of the last fungicide application was spread from before August 1 to after September 10 (Table 5). The last fungicide application was after August 20 by 49% of the respondents and after August 31 by 18% of the respondents. The last fungicide application was before August 11 by 16% of the respondents.

Cercospora leaf spot control was evaluated as excellent or good by 97% of the survey respondents averaged over all fungicides (Table 6). 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 evaluations were received from 98% of the respondents for Eminent, 97% for Super Tin/Agri Tin, and 98% for Headline.

The reported acreages of sugarbeet that were affected by Rhizomania in 2005 are given in Table 7. Chippewa, Grand Forks, Renville, Polk and Marshall counties had the greatest percent of respondents with Rhizomania acres. All other counties had less than 50 % of respondents acres reported as affected. All counties reported some affected acres.

Table 1. Fungicide use for Cercospora control by survey respondents in 2005.

County	Fungicide treated acres														Total acres treated
	Respondent acres planted	Acres not treated	Super/Agri tin	Tin+ Topsin	Topsin/Benlate	Headline	Mancozeb	Topsin+ Mancozeb	Tin+ Mancozeb	Eminent	GEM	Coppers	Other		
-----% of acres planted-----															
Cass	8124	0	65	2	0	84	0	0	0	86	0	0	0	237	
Chippewa ¹	15112	0	94	0	0	89	0	0	3	99	6	4	2	296	
Clay ²	9685	0	26	0	0	77	0	0	0	93	9	0	0	205	
Grand Forks	6335	0	59	0	0	87	0	0	0	95	0	0	0	242	
Kittson	6487	64	<1	0	0	17	0	0	0	9	0	0	0	27	
Marshall	9613	13	7	0	0	63	0	0	0	72	0	0	0	143	
Norman ³	3565	0	54	15	0	82	0	0	0	100	7	0	0	258	
Pembina	7754	10	18	0	0	66	0	0	0	45	0	0	0	129	
Polk	23349	1	24	1	0	90	4	0	0	86	0	0	0	206	
Renville ⁴	6763	0	105	2	0	66	0	4	0	94	34	0	0	304	
Richland	4776	0	71	0	0	9	0	0	0	61	27	0	0	168	
Trail	1620	0	22	0	0	78	0	0	0	100	0	0	0	201	
Traverse ⁵	2740	1	30	0	51	65	0	0	0	30	0	0	0	176	
Walsh	4566	13	63	0	0	70	0	0	0	78	13	0	0	224	
Wilkin ⁶	3170	5	70	0	0	43	0	0	0	63	0	0	0	176	
Total	113659	6	46	1	1	72	1	<1	<1	78	6	1	<1	206	

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.

Table 2. Number of fungicide applications by survey respondents in 2005.

County	Respondents	Number of applications						
		0	1	2	3	4	5	>5
-----% of respondents-----								
Cass	11	0	9	36	55	0	0	0
Chippewa ¹	31	0	0	6	94	0	0	0
Clay ²	15	0	7	53	40	0	0	0
Grand Forks	12	0	17	50	25	8	0	0
Kittson	13	62	31	0	8	0	0	0
Marshall	16	19	25	50	6	0	0	0
Norman ³	11	0	0	36	64	0	0	0
Pembina	12	17	33	33	17	0	0	0
Polk	43	2	5	67	23	2	0	0
Renville ⁴	24	4	0	4	88	4	0	0
Richland	8	0	0	25	75	0	0	0
Traill	4	0	0	75	25	0	0	0
Traverse ⁵	5	20	20	40	20	0	0	0
Walsh	11	9	0	55	36	0	0	0
Wilkin ⁶	7	14	14	57	14	0	0	0
Total	223	8	9	37	44	1	0	0

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.**Table 3. Ground and aerial application of fungicides, 2005.**

County	Ground	Aerial
	-----% of treated acres-----	
Cass	96	4
Chippewa ¹	91	9
Clay ²	88	12
Grand Forks	63	37
Kittson	86	14
Marshall	89	11
Norman ³	35	65
Pembina	35	65
Polk	75	25
Renville ⁴	98	2
Richland	79	21
Traill	22	78
Traverse ⁵	100	0
Walsh	67	33
Wilkin ⁶	64	36
Total	79	21

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.

Table 4. Date of first fungicide application, 2005.

County	June 20-30	July 1-10	July 11-20	July 21-31	After Aug. 1
-----% of respondents-----					
Cass	0	0	36	64	0
Chippewa ¹	0	31	65	4	0
Clay ²	0	7	21	43	29
Grand Forks	0	9	18	55	18
Kittson	0	0	0	0	100
Marshall	0	0	9	27	64
Norman ³	0	0	13	88	0
Pembina	0	0	0	44	56
Polk	0	0	11	27	62
Renville ⁴	5	43	48	5	0
Richland	0	13	38	38	13
Trails	0	0	0	100	0
Traverse ⁵	0	0	0	50	50
Walsh	0	0	13	88	0
Wilkin ⁶	0	0	67	33	0
Total	1	11	28	34	26

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.**Table 5. Date of last fungicide application, 2005.**

County	Before Aug. 1	Aug. 1-10	Aug. 11-20	Aug. 21-31	Sept. 1-10	After Sept. 10
-----% of respondents-----						
Cass	0	0	20	50	30	0
Chippewa ¹	0	17	58	25	0	0
Clay ²	0	0	43	43	14	0
Grand Forks	0	8	33	25	25	8
Kittson	0	25	25	0	50	0
Marshall	11	0	22	44	11	11
Norman ³	11	22	0	0	67	0
Pembina	0	0	14	14	71	0
Polk	0	3	19	65	14	0
Renville ⁴	0	38	48	14	0	0
Richland	13	25	38	25	0	0
Trails	0	25	25	0	50	0
Traverse ⁵	0	50	0	0	50	0
Walsh	0	13	13	75	0	0
Wilkin ⁶	0	60	40	0	0	0
Total	2	14	31	34	17	1

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.

Table 6. Fungicide control of cercospora leafspot in 2005.

Fungicide	Number of Responses	Cercospora leafspot control rating			
		Excellent	Good	Fair	Poor
		-----% of respondents-----			
Super Tin/Agri Tin	104	74	23	3	0
Coppers	1	0	100	0	0
Headline	152	82	16	3	0
Mancozebs	1	100	0	0	0
Topsin/Benlate	1	100	0	0	0
Tin + Topsin	6	100	0	0	0
Tin + Mancozeb	1	100	0	0	0
Topsin + Mancozeb	1	100	0	0	0
Eminent	164	82	16	2	0
GEM	14	71	21	7	0
Other	1	100	0	0	0
Total	446	80	17	3	0

Table 7. Acres affected by Rhizomania, 2005.

County	Respondent acres planted	Acres reported as affected by Rhizomania	Acres seeded to Rhizomania Resistant Variety
		-----% of respondents-----	
Cass	8,124	39	11
Chippewa ¹	15,112	68	68
Clay ²	9,685	46	36
Grand Forks	6,335	65	35
Kittson	6,487	8	4
Marshall	9,613	50	24
Norman ³	3,565	26	15
Pembina	7,754	29	24
Polk	23,349	55	37
Renville ⁴	6,763	59	62
Richland	4,776	19	9
Trails	1,620	36	36
Traverse ⁵	2,740	19	14
Walsh	4,566	37	36
Wilkin ⁶	3,170	8	8
Total	113,659	45	33

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.