

SURVEY OF FUNGICIDE USE IN SUGARBEET IN EASTERN NORTH DAKOTA AND MINNESOTA - 2000

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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 would be used primarily for control of *Cercospora*.

Fungicide use in 2000, averaged over all counties, was 304% as compared to 350% in 1999, 374% in 1998, 245% in 1997 and 264% in 1996 ([Table 1](#)). Acres not treated with fungicide was 1% in 2000 and 1% in 1999. Fungicide usage was highest in Renville County at 430%. Fungicide use dropped from 852% in 1998 to 599% in 1999 to 409% in 2000 in Chippewa County. Use dropped from 702% in 1998 to 625% in 1999 to 430% in 2000 in Renville County. Fungicide use increased slightly from 1999 to 2000 in Kittson and Traill counties while fungicide use declined in all other counties. Eminent was the most common fungicide and was used on 170% of the acres. Super Tin was used on 117% of the acres alone and on 9% of the acres in combination.

Eminent had a Section 18 label in 1999 and 2000 and was used on 165% of the acreage in 1999 and on 170% in 2000. The Eminent 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 and 3% in 2000.

Eminent is an excellent fungicide but it should be rotated with other fungicides to reduce the risk of *Cercospora* developing resistance. Twenty eight of the 523 survey respondents used only Eminent for *Cercospora* and 15 applied Eminent more than once to 4% of the total acres reported on the survey. If the growers that responded to the survey are typical of all growers then about 30,000 acres of sugarbeet were treated two or more times with Eminent and no other fungicide. This usage of Eminent alone is greatly increasing the risk of *Cercospora* developing resistance to Eminent. Spores produced in a few fields can move to other fields and resistance can spread rapidly even if only a small percentage of fields develop resistant strains of *Cercospora* due to multiple applications of a fungicide. Eminent 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 seven times per acre ([Table 2](#)). Eighty-seven percent of the respondents applied fungicides two, three or four times per acre.

Averaged over fungicides and counties, 63% of the fungicides were applied with a ground sprayer and 37% with aerial application ([Table 3](#)). The usage of ground sprayers varied from 34% to 100% of the treated acres within the counties. The overall usage of ground sprayers increased from 38% in 1997 to 47% in 1998, 58% in 1999 and 63% in 2000.

The date of the first *Cercospora* spraying was spread from June 20 to after July 20 ([Table 4](#)). Generally, the southern areas sprayed earlier than more northern areas. The daily infection value (DIV) or the *Cercospora* leaf spot (CLS) reading was used as a decision aid for *Cercospora* spraying by 30% of the survey respondents ([Table 5](#)).

Advice on spraying *Cercospora* primarily came from sugarbeet cooperative agriculturists and private crop consultants ([Table 6](#)). Also, 17% of the respondents indicated that those decisions were made without any outside input.

Table 1. Fungicide use by survey respondents in 2000.

Fungicide treated acres

County	Acres not treated	Super/Agri tin	Tin+ Topsin	Topsin/Benlate	Coppers	Mancozeb	Topsin+ Mancozeb	Tin+ Mancozeb	Eminent	Other	Total acres treated
-----% of acres planted-----											
Cass	1	100	0	0	0	0	0	0	179	0	279
Chippewa ¹	3	175	0	0	0	4	0	0	230	0	409
Clay ²	3	72	0	0	0	0	0	2	151	0	225
Grand Forks	0	103	4	4	0	8	4	7	154	0	283
Kittson	0	95	0	0	0	7	0	0	155	0	258
Marshall	0	101	1	2	0	15	2	<1	115	0	236
Norman ³	<1	80	4	0	0	4	0	3	184	0	274
Pembina	2	91	0	1	0	5	2	7	105	0	211
Polk	1	82	5	0	2	4	3	4	166	0	265
Renville ⁴	0	183	0	2	0	3	0	0	242	0	430
Richland	0	140	0	0	0	0	0	0	203	0	343
Traill	2	133	10	0	0	0	0	3	192	0	337
Traverse ⁵	0	145	2	5	0	5	0	0	173	0	330
Walsh	0	119	0	0	0	9	0	7	113	0	248
Wilkin ⁶	0	205	0	0	0	0	0	0	221	0	425
Other	0	102	0	0	0	0	0	0	158	0	260
Total	1	117	6	1	<1	5	1	3	170	0	304

Table 2. Number of fungicide applications by survey respondents in 2000.

County	Number of applications									
	0	1	2	3	4	5	6	7	8	
-----% of respondents-----										
Cass	0	4	4	82	11	0	0	0	0	0
Chippewa ¹	3	0	0	8	38	36	15	0	0	0
Clay ²	4	4	23	66	2	0	0	0	0	0
Grand Forks	0	14	24	41	17	3	0	0	0	0
Kittson	0	0	76	19	5	0	0	0	0	0
Marshall	0	3	36	56	5	0	0	0	0	0
Norman ³	0	0	14	72	14	0	0	0	0	0
Pembina	2	10	55	28	5	0	0	0	0	0
Polk	1	1	29	53	16	0	0	0	0	0
Renville ⁴	0	0	0	14	43	34	5	5	0	0
Richland	0	0	4	52	39	0	4	0	0	0
Traill	0	0	16	60	20	4	0	0	0	0
Traverse ⁵	0	4	12	28	56	0	0	0	0	0
Walsh	0	10	42	42	6	0	0	0	0	0
Wilkin ⁶	0	0	0	31	64	6	0	0	0	0
Other	0	0	0	100	0	0	0	0	0	0
Total	1	3	22	43	22	6	2	<1	0	0

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.

Table 3. Ground and aerial application of fungicides, 2000.

County	Ground	Aerial
	-----% of treated acres-----	
Cass	63	37
Chippewa ¹	88	12
Clay ²	62	38
Grand Forks	47	53
Kittson	43	57
Marshall	53	47
Norman ³	53	47
Pembina	65	35
Polk	37	63
Renville ⁴	95	5
Richland	85	15
Trails	34	66
Traverse ⁵	64	36
Walsh	42	58
Wilkin ⁶	74	26
Other	100	0
Total	63	37

Table 4. Date of first fungicide application, 2000.

County	June 20-30	July 1-10	July 11-20	After July 20
	-----% of respondents-----			
Cass	24	48	28	0
Chippewa ¹	33	61	6	0
Clay ²	3	50	34	13
Grand Forks	0	58	19	23
Kittson	0	44	50	6
Marshall	3	25	50	22
Norman ³	12	31	50	8
Pembina	3	15	55	27
Polk	0	41	51	8
Renville ⁴	30	60	8	2
Richland	9	73	18	0
Trails	12	33	33	21
Traverse ⁵	19	52	24	5
Walsh	16	28	36	20
Wilkin ⁶	13	80	7	0
Total	12	46	32	10

¹Includes Swift and Kandiyohi Counties.²Includes Becker County.³Includes Mahnomon County.⁴Includes Redwood, Faribault, Yellow Medicine, Lac Qui Parle and Sibley Counties.⁵Includes Grant, Stevens and Big Stone Counties.⁶Includes Ottertail County.**Table 5. Response to the question "Did you use the DIV or CLS reading to help decide when to spray for Cercosporis".**

Used DIV or CLS

County	-----% of respondents-----	
	Yes	No
Cass	21	79
Chippewa ¹	28	72
Clay ²	27	73
Grand Forks	23	77
Kittson	47	53
Marshall	32	68
Norman ³	17	83
Pembina	50	50
Polk	18	82
Renville ⁴	46	54
Richland	32	68
Traill	33	67
Traverse ⁵	21	79
Walsh	39	61
Wilkin ⁶	27	73
Total	30	70

Table 6. Responses to the question “Who assists you in decisions on Cercospora spraying”.

County	-----% of respondents-----						University Research/ Extension
	No one	Agriculturist	Consultant	Dealer	Company rep	Neighbor	
Cass	15	27	50	4	4	0	0
Chippewa ¹	14	70	14	0	0	0	3
Clay ²	17	58	20	2	2	0	0
Grand Forks	14	45	31	7	3	0	0
Kittson	0	50	22	17	11	0	0
Marshall	33	33	20	8	3	0	3
Norman ³	15	33	33	11	7	0	0
Pembina	16	42	21	10	3	0	8
Polk	13	50	28	3	4	0	2
Renville ⁴	31	52	12	5	0	0	0
Richland	9	59	32	0	0	0	0
Traill	12	58	21	8	0	0	0
Traverse ⁵	17	62	21	0	0	0	0
Walsh	31	38	14	3	0	3	10
Wilkin ⁶	9	68	21	0	0	3	0
Total	17	50	23	5	2	<1	2

¹Includes Swift and Kandiyohi Counties.

²Includes Becker County.

³Includes Mahanomen County.

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

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