

TURNING POINT® SURVEY OF SUGARBEET INSECT PEST PROBLEMS AND MANAGEMENT PRACTICES IN MINNESOTA AND EASTERN NORTH DAKOTA IN 2017

Mark A. Boetel¹, Professor
 Mohamed F.R. Khan², Professor
 Thomas J. Peters², Assistant Professor
 Peter C. Hakk³, Research Specialist

¹Department of Entomology, North Dakota State University, Fargo, ND

²North Dakota State University & University of Minnesota, Fargo, ND

³Plant Pathology Department, North Dakota State University, Fargo, ND

Attendees of the 2018 Winter Sugarbeet Grower Seminars were asked about their 2017 insect pest problems and associated management practices in a live polling questionnaire by using a Turning Point® interactive personal response system. Initial questioning identified the county in which respondents produced the majority of their sugarbeet crop in 2017 (Tables 1, 2, 3, and 4). This report does not include data from the Willmar Seminar because that survey did not include questions on insect pest incidence or insect pest management practices.

Table 1. 2018 Fargo Grower Seminar – survey respondents by county growing sugarbeet in 2017

County	Number of Responses	Percent of Responses
Becker	2	4
Cass	7	14
Clay	11	22
Norman ¹	22	45
Richland	1	2
Steele	1	2
Traill	4	8
Wilkin ²	1	2
Total	49	

¹Includes Mahnomen County

²Includes Otter Tail County

Table 2. 2018 Grafton Grower Seminar – survey respondents by county growing sugarbeet in 2017

County	Number of Responses	Percent of Responses
Grand Forks	5	8
Kittson	7	12
Marshall	5	8
Pembina	16	27
Polk	1	2
Ramsey	1	2
Walsh	25	42
Other	0	0
Total	60	

Table 3. 2018 Grand Forks Grower Seminar – survey respondents by county growing sugarbeet in 2017

County	Number of Responses	Percent of Responses
Grand Forks	23	28
Mahnomen	1	1
Marshall	10	12
Polk	35	43
Traill	4	5
Walsh	3	4
Other	5	6
Total	81	

Table 4. 2018 Wahpeton Grower Seminar – survey respondents by county growing sugarbeet in 2017

County	Number of Responses	Percent of Responses
Clay	2	5
Grant	5	12
Richland	10	24
Traverse	2	5
Wilkin	22	54
Total	41	

This report is based on an estimated 143,748 acres of sugarbeet grown in 2017 by 214 survey respondents that attended the Fargo, Grafton, Grand Forks, and Wahpeton Winter Sugarbeet Grower seminars (Table 5). The majority (38%) of respondents reported growing sugarbeet on between 300 and 599 acres during the 2017 production season. An additional 18% produced sugarbeet on 100 to 299 acres, and another 33% grew the crop on a reported range of between 600 and 1,499 acres in 2017.

Table 5. Ranges of sugarbeet acreage operated by respondents in 2017

Location	Number of Responses	Acres of sugarbeet									
		<99	100-199	200-299	300-399	400-599	600-799	800-999	1000-1499	1500-1999	2000+
		-----% of responses-----									
Fargo	46	4	4	4	22	20	15	9	9	7	7
Grafton	56	4	14	7	20	23	14	5	7	4	2
Grand Forks	72	6	8	10	14	22	12	11	10	1	6
Wahpeton	40	0	12	12	15	15	12	18	10	3	3
Totals	214	4	10	8	17	21	14	10	9	3	4

From a total of 211 respondents at the Fargo, Grafton, Grand Forks, and Wahpeton Grower seminars, 27% reported that the sugarbeet root maggot was their worst insect pest problem during the 2017 growing season (Table 5). The root maggot was reported as the worst insect pest problem by the majority of respondents at both the Grafton (55% of respondents) and Grand Forks (36% of respondents) locations. Other significant insect pest problems reported included springtails (23 and 8% of respondents at Fargo and Grand Forks, respectively), white grubs (19% of respondents at Wahpeton), and wireworms (9, 8, and 7% of respondents at Fargo, Grafton, and Grand Forks, resp.).

Table 6. Worst insect pest problem in sugarbeet in 2017

Location	Number of Responses	Worst insect pest problem						
		Springtails	Cutworms	Lygus bugs	Wireworms	Root maggot	White grubs	None
		-----% of responses-----						
Fargo	44	23	7	0	9	7	5	50
Grafton	51	2	0	2	8	55	2	31
Grand Forks	75	8	3	1	7	36	4	41
Wahpeton	41	0	5	0	0	0	19	76
Totals	211	8	3	1	6	27	7	47

Most of the seed treatment insecticide use in sugarbeet in 2017 was reported by grower attendees of the Fargo, Grafton, and Grand Forks Winter Sugarbeet Grower Seminars. The majority (54%) of respondents at the Fargo, Grafton, Grand Forks, and Wahpeton seminars indicated that they planted seed treated with Poncho Beta insecticidal seed treatment in 2017, whereas NipsIt Inside and Cruiser seed treatment insecticides were only reported as being used by 10 and 3% of respondents, respectively in 2017 (Table 7). The highest use of Poncho Beta in 2017 was reported by attendees at the Fargo, Grafton, and Grand Forks seminar locations; whereas, the highest use of NipsIt Inside was reported by Grafton and Grand Forks seminar attendees. A relatively large number (33%) of respondents at these events reported that they did not use any insecticidal seed treatment in 2017.

Table 7. Seed treatment insecticide use for sugarbeet insect pest management in 2017

Location	Number of Responses	Poncho Beta	Cruiser	NipsIt Inside	None
		-----% of responses-----			
Fargo	36	72	3	6	19
Grafton	48	69	0	14	17
Grand Forks	75	61	4	13	21
Wahpeton	37	3	3	3	92
Totals	196	54	3	10	33

Planting-time granular insecticides were used by an average of 36% of grower attendees of the Fargo, Grafton, Grand Forks, and Wahpeton seminars (Table 8). An overall average of 31% of growers at these meetings reported using Counter 20G at planting time, whereas only 2% of attendees reported applying Lorsban 15G for planting-time protection of their sugarbeet crop from insect pests. Grower-reported use of Counter 20G as a planting-time treatment by Fargo, Grafton, and Wahpeton seminar respondents was at 29, 25, ; whereas 40% of growers at the Grand Forks location reported using Counter 20G at planting to protect their sugarbeet crop. Overall, 63% of respondents across all four grower seminars reported that they did not use a granular insecticide at planting in 2017.

Table 8. Planting-time granular insecticides used for insect pest management in sugarbeet during 2017

Location	Number of Responses	Counter 20G	Lorsban 15G	Thimet 20G	Other	None
		-----% of responses-----				
Fargo	42	29	5	2	0	64
Grafton	51	25	4	6	2	63
Grand Forks	78	40	0	0	1	59
Wahpeton	42	24	2	0	2	71
Totals	213	31	2	2	1	63

Averaged across all seminar locations, growers' reported use of Counter 20G to protect their sugarbeet crop in 2017 mostly entailed applying it at either the moderate rate of 7.5 lb product/ac (13% of respondents) or the low labeled rate (5.25 lb product/ac; 11% of respondents), whereas only 7% used Counter at its highest labeled application rate (Table 9).

At the Fargo seminar, although 64% of all growers surveyed indicated that they did not use a granular insecticide material at planting time, the majority (20% of all Fargo respondents; 57% of those that used some form of planting-time granular insecticide) reported using Counter 20G at the 5.25-lb rate. Also, the majority of those surveyed at the Wahpeton seminar (15% of all respondents at this location; 50% of those attending this seminar that used a planting-time granular insecticide) reported using Counter 20G at the low (5.25-lb) labeled rate. Twenty percent of all grower attendees at the Grafton seminar (60% of those that used a granular insecticide at planting) reported using Counter 20G at either its moderate (7.5 lb product/ac; 33% of granule users) or high rate (9 lb/ac; 27% of granule users) in 2017. Similarly, 39% of all grower attendees at the Grand Forks seminar (93% of those that used a granular insecticide at planting) reported using Counter 20G; 54% of Grand Forks grower respondents that used Counter 20G applied it at its moderate rate (7.5 lb product/ac), and 29% of them used the high (9 lb/ac) rate of Counter.

A small number (6%) of growers at the Grafton seminar reported using Lorsban 15G (or generic granular chlorpyrifos product) for planting-time insecticide protection, and all of them chose to apply it at the highest labeled rate of 13.4 lb product per acre. Similarly, only 1% of respondents at the Grand Forks seminar reported using Lorsban 15G (or a generic equivalent) at planting, and all reported using it at its high (13.4 lb/ac) application rate. At the Wahpeton location, only 6% of respondents reported using Lorsban 15G, and there was an even split (3% each) between growers using it at its low and moderate labeled application rates (6.7 and 10 lb product/ac, respectively).

Table 9. Application rates of *planting-time granular* insecticides used for sugarbeet insect pest management in 2017

Location	Number of Responses	Counter 20G			Lorsban 15G			Other	None
		9 lb	7.5 lb	5.25 lb	13.4 lb	10 lb	6.7 lb		
-----% of responses-----									
Fargo	39	3	10	20	0	0	0	3	64
Grafton	47	9	11	6	6	0	0	0	68
Grand Forks	72	11	21	7	0	1	0	1	58
Wahpeton	39	3	5	15	0	3	3	3	69
Totals	197	7	13	11	1?	1	1?	2	64

Although 15% of Fargo grower seminar respondents reported that they applied Mustang Maxx for sugarbeet root maggot management in 2017, most of the postemergence insecticide use for this purpose was reported by growers that attended the Grafton and Grand Forks seminar locations (Table 10). At Grafton, the majority (51%) of respondents indicated that they used either Lorsban Advanced or Lorsban 4E (or a generic liquid form of chlorpyrifos), and an additional 12% reported using Thimet 20G. Similarly, 32% of respondents at the Grand Forks seminar reported using either Lorsban Advanced or Lorsban 4E (or a generic equivalent) for root maggot control. An average of 58% of the respondents across all locations indicated that they did not apply a postemergence insecticide to manage the sugarbeet root maggot. The majority of those respondents were attendees of the Fargo and Wahpeton locations, where a respective 67 and 84% of the respondents reported no use of a postemergence insecticide for root maggot control.

Table 10. Postemergence insecticide use for *sugarbeet root maggot* management in 2017

Location	Number of Responses	Lorsban	Lorsban	Mustang	Other	Counter	Lorsban	Thimet	None	
		4E	Advanced	Maxx	Asana liquid	20G	15G	20G		
-----% of responses-----										
Fargo	39	5	0	15	2	0	8	3	0	67
Grafton	49	47	4	4	0	2		2	12	29
Grand Forks	71	25	7	1	1	1	1	0	3	59
Wahpeton	37	0	0	5	3	3	2	0	3	84
Totals	196	22	4	6	1	1	2	1	5	58

Overall satisfaction with insecticide applications carried out for root maggot management was rated as good to excellent by 86% of respondents when averaged across the Fargo, Grafton, Grand Forks, and Wahpeton seminar locations (Table 11). At the Fargo location, 71% of respondents rated their satisfaction with root maggot management efforts as being good to excellent. Similarly, most of the respondents rated their satisfaction with root maggot management practices as being good to excellent at the Grafton and Grand Forks locations (98% and 90%, respectively). Although only 44% of respondents at the Wahpeton seminar rated their satisfaction with performance of root maggot management practices as good to excellent, the same proportion (44%) of those Wahpeton respondents provided an answer of “unsure” on this question. It also should be noted that, as indicated in Table 11, a total of only nine Wahpeton attendees responded to this question.

Table 11. Satisfaction with insecticide treatments for *sugarbeet root maggot* management in 2017

Location	Number of Responses	Excellent	Good	Fair	Poor	Unsure
		-----% of responses-----				
Fargo	17	53	18	0	6	23
Grafton	43	28	70	0	0	2
Grand Forks	52	63	27	4	0	6
Wahpeton	9	11	33	11	0	44
Totals	121	45	41	2	1	10

Overall, 71% of all respondents at the 2018 Winter Sugarbeet Grower Seminars (all locations combined) reported that their insecticide use in 2017 was not different from what it had been during the previous five years (Table 12). At the Fargo Growers Seminar, 10% of respondents indicated that their insecticide use in sugarbeet had decreased, and 80% of respondents at that location reported no change in insecticide use in comparison to the past five years. However, 15% of grower respondents at both Grafton and Grand Forks indicated that their insecticide use had increased when compared to the previous five years. This finding was probably due to sugarbeet root maggot population increases in 2017 in areas that typically experience lower root maggot infestations. At the Wahpeton seminar location, 10% of respondents reported no change in their insecticide use in 2017 when compared to that of previous years, and 45% indicated that their use of insecticides had decreased in comparison to the previous five years. Attendees at that location also had the highest percentage (43%) of no reported insecticide use in 2017.

Table 12. Insecticide use in sugarbeet during 2017 compared to the previous 5 years

Location	Number of Responses	Increased	Decreased	No Change	No Insecticide Use
Fargo	40	8	10	80	2
Grafton	48	15	4	81	0
Grand Forks	74	15	8	74	3
Wahpeton	42	2	10	45	43
Totals	204	11	8	71	10

At the 2018 Grafton Winter Sugarbeet Growers Seminar, 75% of respondents indicated using some form of online information (e.g., management guide, newsletter article, etc.) or decision-making tool (e.g., root maggot model, app, etc.) for sugarbeet insect pest management planning in 2017 (Table 13). That constituted a 13.6% increase in the use of online insect pest management information in 2017 when compared to 2016 (data from 2016 not shown). The majority (37%) of respondents at the Grafton seminar reported that they used the NDSU sugarbeet root maggot model application on the North Dakota Agricultural Weather Network (NDAWN) website. Grafton seminar attendees' use of other online/electronically delivered information also included the Crop & Pest Report weekly newsletter (12% of respondents), and NDSU's online posting of root maggot fly counts (12% of respondents) for guidance with management decisions. Unfortunately, errors in administration of the Turning Point® survey at Fargo, Grand Forks, and Wahpeton resulted in failures of this question being presented at those locations. As such, no data were collected on this item from those locations.

Table 13. Use of online decision-making tools for sugarbeet insect management in 2017

Location	Number of Responses	NDSU					
		Crop & Pest Report	NDAWN Root Maggot Model	Root Maggot Fly Counts (online)	Root Maggot Mobile App	Other	None
-----% of responses-----							
Fargo	NA ¹						
Grafton	49	12	37	12	4	10	25
Grand Forks	NA ¹						
Wahpeton	NA ¹						
Totals		12	37	12	4	10	25

¹Not available; question inadvertently omitted at Fargo, Grand Forks and Wahpeton due to errors in administration of the Turning Point® survey at those locations