## TURNING POINT® SURVEY OF SUGARBEET INSECT PEST PROBLEMS AND MANAGEMENT PRACTICES IN MINNESOTA AND EASTERN NORTH DAKOTA IN 2021

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Attendees of the 2022 Winter Sugarbeet Grower Seminars held at Fargo, Grafton, and Wahpeton, ND were asked about their 2021 insect pest problems and associated management practices in a live polling session by using a Turning Point® interactive personal response system. Unfortunately, inclement winter weather forced cancellation of the in-person seminar at Grand Forks, and it was replaced with a virtual meeting. Therefore, no survey data were collected from the Grand Forks seminar. Other problems that affected the volume of data collected and the coverage area of the 2022 surveys included software failures at the Fargo and Grafton seminar locations that either precluded administering some insect pest management questions or resulted in lost data. Additional errors at the Wahpeton seminar involved either elimination or errantly rewritten response options.

Initial questioning at all surveyed locations involved identifying the county in which grower respondents produced the majority of their sugarbeet crop in 2021. Those results are presented in Tables 1, 2, and 3).

County	Number of responses	Percent of responses
Cass	2	29
Clay	1	14
Norman/Mahnomen	2	29
Richland	1	14
Traill	1	14
Total	ls 7	100

## Table 1. 2022 Fargo Grower Seminar – county in which sugarbeet was grown in 2021

#### Table 2. 2022 Grafton Grower Seminar – county in which sugarbeet was grown in 2021

County		Number of responses	Percent of responses
Grand Forks		1	6
Kittson		1	6
Marshall		2	13
Pembina		4	25
Walsh		6	38
Other		2	12
	Totals	16	100

### Table 3. 2022 Wahpeton Grower Seminar – county in which sugarbeet was grown in 2021

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County	Number of responses	Percent of responses
Clay	7	11
Grant	6	9
Richland	16	25
Traverse	3	4
Wilkin	33	51
Tota	ıls 65	100

This report is based on production activities on an estimated 67,200 acres of sugarbeet grown in 2021 by 93 survey respondents that attended the 2022 Fargo, Grafton, and Wahpeton Winter Sugarbeet Grower seminars (Table 4). The majority (32%) of respondents reported growing sugarbeet on between 300 and 599 acres during the 2021 production season. An additional 24% of producers grew sugarbeet on between 600 and 999 acres, whereas 11% produced sugarbeet on less than 200 acres. Similar to previous years, 12% of respondents reported growing sugarbeet on 1,500 acres or more in 2021.

						Acres	of sugar	beet			
	Number of		100-	200-	300-	400-	600-	800-	1000-	1500-	
Location	responses	<99	199	299	399	599	799	999	1499	1999	2000+
						% (	of respor	ses			
Fargo	12	17	0	0	17	17	8	0	17	17	8
Grafton	16	12	6	0	12	19	6	19	12	6	6
Wahpeton	65	3	6	14	14	18	14	12	9	8	2
Totals	93	6	5	10	14	18	12	12	11	9	3

From a combined total of 77 respondents at the Fargo, Grafton, and Wahpeton seminars, 43% overall indicated that grasshoppers were their worst insect pest problem during the 2021 growing season, and 17% reported that the sugarbeet root maggot was their worst insect pest problem (Table 5). However, majority of respondents at both Grafton (69% of respondents) and Fargo (36% of respondents) identified the sugarbeet root maggot as their worst insect pest problem. Other insect groups reported as being problematic included Cutworms (13% of all seminar location respondents, and 17% of respondents at Wahpeton), springtails (9 and 4% of respondents at Fargo and Wahpeton, respectively), and wireworms (9% of Fargo seminar respondents).

# Table 5. Worst insect pest problem in sugarbeet in 2021

	Number of			Lygus		Root	White	Grass-	
Location	responses	Springtails	Cutworms	bugs	Wireworms	maggot	grubs	hoppers	None
					% of respon	ses			
Fargo	12	9	0	0	9	36	0	27	19
Grafton	13	0	0	0	0	69	0	23	8
Wahpeton	52	4	17	0	0	0	4	52	23
Totals	77	4	13	0	1	17	3	43	19

Questions on insecticidal seed treatment use were mistakenly omitted from the survey set at the Wahpeton seminar, so data for those questions only pertain to respondents at Fargo and Grafton (Table 6). Seed treatment insecticides were used in 2021 by a total of 86% of all respondents at the Fargo and Grafton seminars, with the majority (81%) of producers reporting that they planted seed treated with Poncho Beta insecticidal seed treatment, and just 5% overall using Cruiser-treated seed. All use of Cruiser was reported by attendees of the Grafton seminar. There was no reported use of seed treated with NipsIt Inside in 2021, irrespective of growing area surveyed. Averaged across the two seminar locations where this question was asked (Fargo and Grafton), 14% of respondents reported not using an insecticidal seed treatment.

Table 6.	Seed treatment	insecticide us	e for sugarbeet	insect pest	management	in 2021
			· · · · <b>·</b>			

	Number of			NipsIt	
Location	responses	Poncho Beta	Cruiser	Inside	None
			% of respon	ses	
Fargo	11	73	0	0	27
Grafton	10	80	10	0	10
Totals	21	81	5	0	14

Planting-time granular insecticides were used in 2021 by an average of 32% of grower attendees of the Fargo, Grafton, and Wahpeton seminars (Table 7). An overall average of 28% of growers at these meetings reported using Counter 20G at planting time, whereas only 3% of attendees reported applying Lorsban 15G for planting-time protection of their sugarbeet crop from insect pests. Counter 20G use as a planting-time treatment by Fargo, Grafton, and Wahpeton seminar respondents was at 55, 29%, and 21%, respectively. An additional 4% of respondents at the Wahpeton seminar reported applying Lorsban 15G or a chlorpyrifos-based generic granular equivalent product for planting-time protection of their sugarbeet crop. Overall, 68% of respondents across all three grower seminars reported that they did not use a granular insecticide at planting for insect management in 2021.

	Number of					
Location	responses	Counter 20G	Lorsban 15G	Thimet 20G	Other	None
			% o	f responses		
Fargo	11	55	0	0	0	45
Grafton	7	29	0	0	0	71
Wahpeton	47	21	4	0	2	72
Totals	65	28	3	0	2	68

Table 7.	<b>Planting-time</b>	granular	<ul> <li>insecticides use</li> </ul>	ed for insect	pest manage	ment in sugarbo	eet during 202	21
	NT 1.	C						

Averaged across the two seminar locations where the question was asked (Fargo and Grafton), the low (5.25 lb product/ac) rate of Counter 20G was most the most commonly used (22% of all grower seminar attendees) planting-time granular insecticide for insect management in 2021 (Table 8). An additional 13% used Counter 20G at its moderate labeled rate (7.5 lb/ac), and another 9% applied it at the highest allowable rate of 8.9 lb/ac.

The majority of Fargo (42%) and Grafton (70%) respondents reported no use of a granular insecticide at planting in 2021. All respondents at both Fargo and Grafton who used a planting-time granular insecticide reported using Counter 20G. The survey question relating to planting-time granular application rates for data presented in Table 8 was errantly excluded at the Wahpeton seminar in 2022.

Table 8.	Application rates of <i>planting-time</i>	granular insecticides use	ed for sugarbeet insect pe	st management
in 2021				

	Number of		Counter	20G		Loi	sban 15	G		
Location	responses	9 lb	7.5 lb	5.25 lb		13.4 lb	10 lb	6.7 lb	Other	None
					%	of respor	ses			
Fargo	13	8	17	33		0	0	0	0	42
Grafton	10	10	10	10		0	0	0	0	70
Totals	23	9	13	22		0	0	0	0	57

Due to technical problems at the Fargo and Wahpeton grower seminars, the only data collected on postemergence insecticide use for root maggot control in 2021 was obtained at the Grafton seminar (Table 9). Overall, 73% of Grafton attendees reported that they applied a postemergence insecticide for sugarbeet root maggot control in 2021, which was a major increase over the 55% that reported using an insecticide for postemergence root maggot control in 2020.

Table 9.	<i>Postemergence</i> insecticide	use for sugarbeet root	<i>t maggot</i> management	in 2021
	0	0	00 0	

		Lorsban							
	Number of	(4E, Advanced,	Mustang		Other	Counter	Lorsban	Thimet	
Location	responses	or a generic)	Maxx	Asana	liquid	20G	15G	20G	None
				% of re	sponses-				
Grafton	15	40	0	0	0	0	7	27	27

Forty percent of the Grafton seminar respondents reported using a sprayable liquid formulation of chlorpyrifos, and 27% indicated that they applied Thimet 20G for postemergence root maggot control in 2021 (Table 9). Reported use of Thimet in 2021 by Grafton seminar attendees more than doubled that which was reported from that location during the previous year. An additional 7% of those respondents reported applying Lorsban 15G

for postemergence root maggot management in 2021, which was similar to the reported use of that product by Grafton respondents in previous years (e.g., 8% in 2020). Twenty-seven percent of survey respondents at Grafton indicated that they did not apply a postemergence insecticide to manage the sugarbeet root maggot in 2021.

Satisfaction with insecticide applications made for root maggot management in 2021 was rated as good to excellent by 90% of Grafton respondents (Table 10). That was a 9% increase in grower ratings of insecticide performance for root maggot control during 2020. An additional 10% of Grafton respondents rated their satisfaction with root maggot control tools as being fair. It should be noted that, due to low attendance at the Grafton grower seminar, a small number of responses was received for this question.

			0	00 0		
	Number of					
Location	responses	Excellent	Good	Fair	Poor	Unsure
			%	of responses		
Grafton	11	20	70	10	0	0

Table 10.	Satisfaction	with insecticide	treatments for	r sugarbeet	root maggot	management	in 2021

As presented in Table 11, an average of 48% of attendees at the Fargo and Grafton grower seminar locations used an insecticide for planting-time protection against springtails. The majority of those respondents, averaged across both locations, used Counter 20G (20%), whereas Poncho Beta seed treatment and Mustang Maxx were used by 16 and 8% of respondents, respectively. An overall average of 4% of respondents reported using Midac sprayable liquid insecticide for springtail control. This was the first reported use of Midac in the growing area in these surveys. About 48% of all growers surveyed at the two seminar locations reported not using any insecticide for springtail control, which was identical to the number recorded for the 2020 growing season.

At the Fargo seminar, Counter 20G and Poncho Beta were used by 27% and 20% of respondents, respectively, and 13% reported applying Mustang Maxx as their choice for springtail control in 2021. Midac was reported as being used by 7% of Fargo respondents, but no use of this material was reported by Grafton attendees. Insecticide use for springtail management by Grafton seminar attendees was evenly split between Poncho Beta and Counter 20G at 10% of respondents each. The majority (80%) of attendees at the Grafton seminar indicated that they did not use an insecticide to for protection from springtail injury. This question was mistakenly excluded at the Wahpeton grower seminar, so no data were collected on springtail management for that growing area.

		ior springe	and manage	,					
	Number of		NipsIt	Poncho	Mustang	Counter			
Location	responses	Cruiser	Inside	Beta	Maxx	20G	Midac	Other	None
					% of res	ponses			
Fargo	15	0	0	20	13	27	7	0	33
Grafton	10	0	0	10	0	10	0	0	80
Totals	25	0	0	16	8	20	4	0	52

Table 11. Insecticide use for *springtail* management in 2021

As presented in Table 12, an average of 71% of grower respondents surveyed at the Fargo and Grafton seminar locations rated their insecticide performance for springtail management as good to excellent, and no participants viewed their insecticide performance as either fair or poor. Satisfaction among Fargo attendees, with regard to insecticide performance for springtail control, was fairly strong, with 75% rating their insecticide performance as either springtail control as excellent, and the remaining 50% responded as unsure.

	Number of					
Location	responses	Excellent	Good	Fair	Poor	Unsure
			% (	of responses		
Fargo	14	8	67	0	0	25
Grafton	13	50	0	0	0	50
Totals	27	7	64	0	0	29

Table 12.	Satisfaction	with insecticide	treatments for	springtail	l management i	n 2021
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Although questions regarding use of insecticides for *Lygus* bug management in sugarbeet were presented to attendees of the Fargo and Grafton grower seminars, 100% of respondents, averaged across locations, reported that they did not use an insecticide *Lygus* control in 2021 (data not shown). This question was mistakenly excluded from being asked at the Wahpeton seminar.

Despite higher grasshopper populations occurring in 2021 than is typically observed in the growing area most years, only small numbers of grower respondents reported using insecticides to control them. Although the numbers of responses to this question were somewhat low, largely due to low grower seminar attendance in 2022, the results were consistent. All grower respondents at both Fargo and Grafton that reported applying an insecticide in 2021 for grasshopper control chose to use a sprayable liquid formulation of chlorpyrifos (Table 13). Averaged across the two seminar locations, 41% of respondents applied an insecticide for this purpose, and slightly more respondents at Grafton carried out an insecticide application for grasshopper control than did the Fargo respondents. This question was mistakenly excluded from the survey at the Wahpeton seminar location.

		0		Lorsban				
	Number of	(4E, Advanced Mustang						
Location	responses	Asana	Lannate	or generic)	Movento	Maxx	Other	None
				% of r	esponses			
Fargo	10	0	0	36	0	0	0	64
Grafton	13	0	0	46	0	0	0	54
Totals	23	0	0	41	0	0	0	59

Unfortunately, a software failure resulted in the loss of data for the question pertaining to satisfaction with insecticide performance for grasshopper control. As such, only data from the Grafton seminar location are presented in Table 14. Good to excellent grasshopper control was reported by 100% of Grafton seminar respondents, indicating that chlorpyrifos likely performed well for this use in 2021.

1 able 14. Sausfaction with insecticide treatments for grassnopper management in 2	Table 14.	. Satisfaction with	insecticide treatments for	grasshopper management	in 202
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	Number of					
Location	responses	Excellent	Good	Fair	Poor	Unsure
			%	of responses		
Grafton	14	33	67	0	0	0

Regarding spray output used for postemergence insecticide applications, 100% of grower respondents at the Grafton grower seminar location reported that they applied the insecticides in an output volume that ranged between six and 10 gallons per acre (GPA) in 2021 (Table 15). This differed considerably from previous surveys.

For example, between 56 to 63% of respondents at the 2021 Fargo, Grafton, and Grand Forks seminars indicated that they applied their postemergence insecticides in a 6- to 10-GPA spray volume during the 2020 growing season.

Table 15.	Spray volume outp	ut used for gro	und-applied po	stemergence in	secticide applica	tions in 2021		
	Number of	1–5	6–10	11-15	16-20	> 20		
Location	responses	GPA	GPA	GPA	GPA	GPA		
	% of responses%							
Grafton	13	0	100	0	0	0		

Overall, 58% of all respondents at the 2022 Winter Sugarbeet Grower Seminars (Grafton and Wahpeton locations combined) reported that their insecticide use in 2021 did not differ from the previous five years (Table 16). Although this was somewhat consistent among locations, the most significant change observed was that 33% of Grafton Growers Seminar attendees reported an increase in insecticide use in 2021 when compared to previous years. An additional 11% of respondents at the Wahpeton seminar location indicated that their insecticide use in sugarbeet had increased. The combination of increased sugarbeet root maggot infestation levels and numerous grasshopper outbreaks in the northern Red River Valley, combined with additional grasshopper problems in the MinnDak Farmers Cooperative growing area likely contributed to the reported insecticide use increases in 2021.

	Number of	0 0		•	No Insecticide	
Location	responses	Increased	Decreased	No Change	Use	
			% of responses			
Grafton	12	33	0	67	0	
Wahpeton	54	11	4	55	30	
Totals	66	15	3	58	24	

Table 16. Insecticide use in sugarbeet during 2021 compared to the previous 5 years