SURVEY OF INSECTICIDE USE IN SUGARBEET IN MINNESOTA AND EASTERN NORTH DAKOTA IN 2015

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Other portions of the survey are published in the Weed Control and Plant Pathology sections of this publication.

Sugarbeet growers reported their 2015 insecticide use in sugarbeet acreage by completing the annual pesticide use survey conducted by the NDSU Extension Service. This year's survey reports on insecticide usage patterns for 58,776 acres in Minnesota and eastern North Dakota (Tables 1, 2, and 3). Poncho Beta (clothianidin + beta-cyfluthrin), NipsIt (clothianidin), and Cruiser (thiamethoxam) are used as insecticidal seed treatments at planting. In 2015, Poncho Beta was used on 28% of reported acres (Table 1) compared to 27% in 2014, 29% in 2013, 21% in 2012, 25% in 2011, 36% in 2010, and 29% in 2009 (the first year Poncho Beta was commercially available). Poncho Beta was reportedly used to target primarily sugarbeet root maggot and wireworm with other responses including cutworms and springtails as target pests. Respective use of NipsIt and Cruiser seed treatments on reported acres in 2015 were 1% and 4% (Table 1) compared to 5% and 3% in 2014, respectfully. NipsIt was reported as being used primarily against sugarbeet root maggot and springtails, while Cruiser was primarily used to target sugarbeet root maggot, wireworms and cutworms. Sixty-four percent of respondents who used seed treatments reported satisfactory control of sugarbeet root maggot and 22% reported excellent root maggot control (Table 4).

Counter 20G and Lorsban 15G were applied to 5% and 2% of reported acreage in 2015, respectively, compared to 17% and 1% in 2014, 26% and 2% in 2013, 23% and 2% in 2012, 29% and 4% in 2011, 19% and 2% in 2010, and 19 and 6% in 2009 (Table 2). Historical use rates listed for Counter include both 15G and 20G formulations. Counter 20G was initially registered for use in the 2009 growing season, and gradually replaced the 15G formulation during the subsequent one to two years.

Band and modified in-furrow were the most commonly used placement methods for all granular insecticides reported in 2015 (Table 6). Counter 20G application rates ranged from 4.5 to 9 lb product per acre (Table 8). Counter 20G, Lorsban 15G, Thimet 20G, and Mustang were primarily used as planting-time treatments, whereas Lorsban and Asana were mostly applied postemergence.

Chlorpyrifos-based liquid insecticides (i.e., Lorsban 4E, Lorsban Advanced, and generics) were applied to 4% of sugarbeet acres in 2005, 5% in 2006, 4% in 2007, 2% in 2008, 4% in 2009, 10% in 2010, 7% in 2011, 9% in 2012, 8% in 2013, 10% in 2014, and 11% in 2015 (Table 3). Mustang was used on 21% of the acreage in 2005, 28% in 2006, 23% in 2007, 31% in 2008, 10% in 2009, 14% in 2010, 18% in 2011, 21% in 2012, 11% in 2013, 9% in 2014, and 9% in 2015. Asana was applied to only 2% of reported acreage in 2015 as well as in 2014.

Averaged over all insecticides and counties, 65% of the respondents' acreage was treated with an insecticide in 2015, compared to 74% in 2014, 98% in 2013, 86% in 2012, 89% in 2011, 90 % in 2010, 71% in 2009, 92% in 2008, 80% in 2007, 83% in 2006, and 79% in 2005. Survey data on liquid insecticide placement methods by growers is listed in Table 8. Postemergence (POST) broadcast applications were the most common spray placement method when averaged across all liquid insecticides reported. Mustang was most commonly reported as being applied in-furrow at planting.

Grower evaluations of insect control by insecticide, averaged over all counties, are presented in Table 4. 2015 was the third year that an "unsure" or "not applicable" category was included for this question. A surprisingly large percentage of responses came back in this category. However, of those growers who did evaluate insect control, 99% evaluated sugarbeet root maggot control as good or excellent while 100% evaluated other insect control as good or excellent (calculated from Table 4). Sugarbeet root maggot was the target insect for 40% of insecticide treatments (Table 5). Cutworms, grasshoppers, Lygus bugs, springtails, wireworms, and white grubs were identified as insect pests other than sugarbeet root maggot that were targeted for control in areas treated with insecticides and insecticidal seed treatments in 2015 (Table 5). Respondents viewed wireworms and cutworms as the most common non-maggot insect pest problem in sugarbeet.

Table 1. Seed treatment use reported by survey respondents in 2015.

County	Respondent acres planted	Number of applications	NipsIt	Cruiser	Poncho Beta	Total Seed Treatments
			----------% of acres planted----------			
Cass	1,434	3	10	-	57	67
Chippewa[1]	7,976	2	-	-	8	8
Clay[2]	3,148	3	-	-	41	41
Grand Forks	5,143	7	4	2	90	96
Kittson	1,820	2	-	-	61	61
Marshall	1,425	1	-	-	60	60
Norman	3,404	2	-	-	18	18
Pembina	2,159	3	-	16	53	69
Polk[3]	6,486	12	6	28	32	66
Renville[4]	9,246	1	-	-	1	1
Richland	6,095	2	-	-	28	28
Traverse[5]	4,605	0	-	-	-	-
Walsh	1,985	5	5	5	73	83
Wilkin	3,850	0	-	-	-	-
Total	58,776	43	1	4	28	33

[1]Includes Kandiyohi and Swift Counties
[2]Includes Becker County
[3]Includes Pennington County
[4]Includes Redwood and Yellow Medicine Counties
[5]Includes Grant County

Table 2. Granular insecticide use reported by survey respondents in 2015.

County	Respondent acres planted	Number of applications	Not treated	Counter 20G	Thimet 20G	Lorsban 15G	Total Granular Insecticide
			----------% of acres planted----------				
Cass	1,434	0	100	-	-	-	-
Chippewa[1]	7,976	0	100	-	-	-	-
Clay[2]	3,148	1	76	24	-	-	24
Grand Forks	5,143	0	100	-	-	-	-
Kittson	1,820	0	100	-	-	-	-
Marshall	1,425	1	83	-	-	17	17
Norman	3,404	0	100	-	-	-	-
Pembina	2,159	3	2	31	67	-	98
Polk[3]	6,486	3	87	13	-	-	13
Renville[4]	9,246	0	100	-	-	-	-
Richland	6,095	1	94	6	-	-	6
Traverse[5]	4,605	0	100	-	-	-	-
Walsh	1,985	2	57	-	-	43	43
Wilkin	3,850	3	90	8	-	2	10
Total	58,776	14	90	5	3	2	10

[1]Includes Kandiyohi and Swift Counties
[2]Includes Becker County
[3]Includes Pennington County
[4]Includes Redwood and Yellow Medicine Counties
[5]Includes Grant County

Table 3. Liquid insecticide use reported by survey respondents in 2015.

County	Respondent acres planted	Number of applications	Not treated	Lorsban	Mustang	Asana	Total Liquid Insecticide
			% of acres planted				
Cass	1,434	0	100	-	-	-	-
Chippewa[1]	7,976	2	83	-	-	17	17
Clay[2]	3,148	1	83	-	17	-	17
Grand Forks	5,143	3	33	62	5	-	67
Kittson	1,820	0	100	-	-	-	-
Marshall	1,425	1	83	17	-	-	17
Norman	3,404	1	24	-	76	-	76
Pembina	2,159	3	29	71	-	-	71
Polk[3]	6,486	0	100	-	-	-	-
Renville[4]	9,246	1	95	5	-	-	5
Richland	6,095	1	97	-	3	-	3
Traverse[5]	4,605	0	100	-	-	-	-
Walsh	1,985	3	48	52	-	-	52
Wilkin	3,850	3	61	-	39	-	39
Total	58,776	19	78	11	9	2	22

[1]Includes Kandiyohi and Swift Counties
[2]Includes Becker County
[3]Includes Pennington County
[4]Includes Redwood and Yellow Medicine Counties
[5]Includes Grant County

Table 4. Evaluation of root maggot and other insect control reported by survey respondents in 2015.

Insecticide	Sugarbeet Root Maggot Control						Other Insect Control					
	No. of Responses	Exc	Good	Fair	Poor	Unsure or NA[1]	No. of Responses	Exc	Good	Fair	Poor	Unsure or NA
		% of responses						% of responses				
Poncho Beta	30	27	57	-	-	16	30	27	43	-	-	30
Cruiser	6	17	83	-	-	-	6	17	83	-	-	-
NipsIt	6	-	83	-	-	17	6	17	66	-	-	17
Seed Treatment Sub-Total	**42**	**22**	**64**	**0**	**0**	**14**	**42**	**24**	**52**	**0**	**0**	**24**
Counter 20G	8	75	25	-	-	-	8	63	13	-	-	24
Lorsban 15G	4	50	25	-	-	25	4	25	50	-	-	25
Thimet 20G	2	50	-	-	-	50	2	-	-	-	-	100
Granular Sub-Total	**14**	**64**	**22**	**0**	**0**	**14**	**14**	**43**	**21**	**0**	**0**	**36**
Lorsban	10	40	60	-	-	-	10	10	40	-	-	50
Mustang	7	29	29	-	13	29	7	29	29	-	-	42
Asana	2	-	100	-	-	-	2	-	100	-	-	-
Liquid Sub-Total	**19**	**32**	**53**	**0**	**5**	**10**	**19**	**16**	**42**	**0**	**0**	**42**
Total	**75**	**32**	**54**	**0**	**1**	**13**	**75**	**25**	**44**	**0**	**0**	**31**

[1]NA=Not applicable. Grower did not have the insect and therefore could not evaluate control.

Table 5. Insects other than root maggot that were targeted for control by survey respondents in 2015.

County	Number of Responses	Cutworm	Grasshopper	Lygus	Springtail	Wireworm	White Grub	SGBT Root Maggot
		% of responses						
Cass	9	11	11	11	33	11	11	11
Chippewa[1]	9	33	-	22	-	22	33	22
Clay[2]	9	22	-	-	11	33	-	33
Grand Forks	20	-	-	-	30	30	-	40
Kittson	7	14	-	-	14	29	14	29
Marshall	3	-	-	-	-	-	-	100
Norman	7	29	-	-	-	42	-	29
Pembina	10	10	-	-	-	10	-	80
Polk[3]	32	13	-	-	19	28	-	40
Renville[4]	2	100	-	-	-	-	-	-
Richland	5	20	-	-	-	40	20	20
Traverse[5]	0	-	-	-	-	-	-	-
Walsh	15	27	-	-	-	6	-	67
Wilkin	14	29	-	-	21	21	-	29
Total	142	18	<1	2	14	24	2	40

[1]Includes Kandiyohi and Swift Counties
[2]Includes Becker County
[3]Includes Pennington County
[4]Includes Redwood and Yellow Medicine Counties
[5]Includes Grant County

Table 6. Granular insecticide placement methods reported in sugarbeet in 2015.

Insecticide	No. of Responses	Band	Spoon	Mod. In-Furrow	Broadcast
		% of responses			
Counter 20G	8	38	24	38	-
Thimet 20G	2	100	-	-	-
Lorsban 15G	2	-	-	100	-
Total	12	42	16	42	0

Table 7. Insecticide use rates reported in sugarbeet in 2015.

Insecticide	No. of Responses	lb product per acre				
		4.5 to 5.5	5.6 to 6.5	6.6 to 7.5	7.6 to 9	10
		% of responses				
Counter 20G	8	38	25	25	12	-
Thimet 20G	1	-	-	100	-	-
Lorsban 15G	2	-	-	-	-	100
Total	11	27	18	27	10	18

Table 8. Liquid insecticide placement methods reported in sugarbeet in 2015.

Insecticide	No. of Responses	Band at Plant	In-Furrow	POST Broadcast	POST Band
		% of responses			
Lorsban	10	-	-	90	10
Mustang	7	-	100	-	-
Asana	2	-	-	100	-
Total	19	0	37	58	5