

# SURVEY OF INSECTICIDE USE IN SUGARBEET IN MINNESOTA AND EASTERN NORTH DAKOTA IN 2016

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NOTE: Other portions of the survey relating to herbicide and fungicide use are reported in the *Weed Control* and *Plant Pathology* sections of this publication.

Sugarbeet growers reported on their 2016 insecticide use by completing the annual pesticide use survey conducted by the NDSU Extension Service. This year's survey reports on insecticide usage on 51,671 acres of sugarbeet in Minnesota and eastern North Dakota. Averaged over all insecticides and counties, 143% of the respondents' acreage was treated with an insecticide in 2016 (combined totals from Tables 1-3), compared to 65% in 2015, 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. These percentages are based on the sum of all insect control efforts, as some acreage received more than one or two applications.

Usage of the insecticidal seed treatments Poncho Beta (clothianidin + betacyfluthrin), NipsIt Inside (clothianidin), and Cruiser (thiamethoxam) for insect control in 2016 are presented in Table 1. Poncho Beta was used on 63% of the reported acres, compared to 28% in 2015, 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 mostly reported as used to target the sugarbeet root maggot and wireworms, with other reported use of this material being to manage cutworms and springtails. Respective uses of NipsIt Inside and Cruiser in 2016 were 2% and 13%, compared to 1% and 4%, respectively, in 2015. Key targets of NipsIt Inside uses were the sugarbeet root maggot and springtails, while Cruiser was mostly used to manage the sugarbeet root maggot, wireworms, and cutworms.

Table 1. Seed treatment use reported by survey respondents in 2016

County	Respondent acres planted	Number of applications	NipsIt	Cruiser	Poncho Beta	Total seed treatment use
-----% of acres planted-----						
Cass	1,050	2	-	-	100	100
Chippewa <sup>1</sup>	3,296	-	-	-	-	-
Clay <sup>2</sup>	4,060	2	-	10	17	27
Grand Forks <sup>3</sup>	8,278	17	1	25	59	85
Kittson	1,155	1	-	-	23	23
Marshall	2,383	5	17	7	76	100
Norman	3,017	3	1	-	29	30
Pembina	2,077	4	-	-	100	100
Polk <sup>4</sup>	13,121	22	2	12	64	78
Renville	820	-	-	-	-	-
Richland	2,564	1	-	-	3	3
Traverse <sup>5</sup>	5,665	-	-	-	-	-
Walsh	817	2	-	24	76	100
Wilkin	3,368	-	-	-	-	-
Totals	51,671	59	2	13	63	78

<sup>1</sup>Includes Kandiyohi and Swift Counties

<sup>2</sup>Includes Becker County

<sup>3</sup>Includes Traill County

<sup>4</sup>Includes Pennington County

<sup>5</sup>Includes Grant and Stevens Counties

Counter 20G and Lorsban 15G were applied to 31% and 1% of reported acreage in 2016, respectively, compared to 5% and 2% in 2015, 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 it

gradually replaced the 15G formulation that was phased out during the subsequent one to two years. An unusual result of the survey in 2016 was that there were no reported uses of Thimet 20G. This, unfortunately, is probably an artifact of Thimet users choosing not to participate in the survey in 2016, because previous surveys have indicated over 9,000 sugarbeet acres being treated with this material in some years.

**Table 2. Granular insecticide use reported by survey respondents in 2016**

County	Respondent acres planted	Number of applications	Not treated	Counter 20G	Thimet 20G	Lorsban 15G	Total granular insecticide use
-----% of acres planted-----							
Cass	1,050	-	100	-	-	-	-
Chippewa <sup>1</sup>	3,296	-	100	-	-	-	-
Clay <sup>2</sup>	4,060	3	38	56	-	6	62
Grand Forks <sup>3</sup>	8,278	1	90	10	-	-	10
Kittson	1,155	-	100	-	-	-	-
Marshall	2,383	-	100	-	-	-	-
Norman	3,017	-	100	-	-	-	-
Pembina	2,077	-	100	-	-	-	-
Polk <sup>4</sup>	13,121	7	77	23	-	-	23
Renville	820	-	100	-	-	-	-
Richland	2,564	1	86	14	-	-	14
Traverse <sup>5</sup>	5,665	-	100	-	-	-	-
Walsh	817	-	100	-	-	-	-
Wilkin	3,368	4	54	46	-	-	46
<b>Totals</b>	<b>51,671</b>	<b>16</b>	<b>62</b>	<b>31</b>	<b>-</b>	<b>1</b>	<b>38</b>

<sup>1</sup>Includes Kandiyohi and Swift Counties

<sup>2</sup>Includes Becker County

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As indicated in Table 3, Chlorpyrifos-based liquid insecticides (i.e., Lorsban 4E, Lorsban Advanced, and generics) were applied to 15% of reported sugarbeet acres in 2016, compared to 11% in 2015, 10% in 2014, 8% in 2013, 9% in 2012, 7% in 2011, 10% in 2010, 4% in 2009, 2% in 2008, 4% in 2007, 5% in 2006, and 4% of the acres in 2005. Mustang Maxx was used on 9% of the acreage in 2016, 9% in 2015, 9% in 2014, 11% in 2013, 21% in 2012, 18% in 2011, 14% in 2010, 10% in 2009, 31% in 2008, 23% in 2007, 28% in 2006, and 21% of acres in 2005. Asana was applied to only 3% of reported acres in 2016, which was similar to the low use (i.e., 2% of acres treated) of Asana in both 2014 and 2015. Mustang Maxx was primarily applied at planting, whereas Lorsban and Asana were mostly applied postemergence.

**Table 3. Liquid insecticide use reported by survey respondents in 2016**

County	Respondent acres planted	Number of applications	Not treated	Lorsban <sup>1</sup>	Mustang Maxx	Asana	Total liquid insecticide use
-----% of acres planted-----							
Cass	1,050	-	100	-	-	-	-
Chippewa <sup>2</sup>	3,296	-	100	-	-	-	-
Clay <sup>3</sup>	4,060	1	80	-	20	-	20
Grand Forks <sup>4</sup>	8,278	2	92	7	1	-	8
Kittson	1,155	1	23	-	77	-	77
Marshall	2,383	2	62	38	-	-	38
Norman	3,017	-	100	-	-	-	-
Pembina	2,077	2	55	45	-	-	45
Polk <sup>5</sup>	13,121	1	97	3	-	-	3
Renville	820	1	71	-	-	29	29
Richland	2,564	-	100	-	-	-	-
Traverse <sup>6</sup>	5,665	1	96	-	-	4	4
Walsh	817	-	100	-	-	-	-
Wilkin	3,368	2	84	-	16	-	16
<b>Totals</b>	<b>51,671</b>	<b>13</b>	<b>73</b>	<b>15</b>	<b>9</b>	<b>3</b>	<b>27</b>

<sup>1</sup>Includes Lorsban Advanced, Lorsban 4E, and multiple generics

<sup>2</sup>Includes Kandiyohi and Swift Counties

<sup>3</sup>Includes Becker County

<sup>4</sup>Includes Traill County

<sup>5</sup>Includes Pennington County

<sup>6</sup>Includes Grant and Stevens Counties

Grower evaluations of insect control by insecticide, averaged over all counties, are presented in Table 4. This 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). Fifty-four percent of respondents who used seed treatments reported satisfactory control of sugarbeet root maggot, and 42% reported very satisfactory root maggot control.

**Table 4. Grower assessment of insect control from granular, liquid, and seed treatment insecticides in 2016**

Insecticide	No. of responses	Sugarbeet Root Maggot Control			No. of Responses	Other Insect Control		
		Very Satisfied	Satisfied	Unsatisfied		Very Satisfied	Satisfied	Unsatisfied
		-----% of responses-----				-----% of responses-----		
Poncho Beta	42	40	58	2	42	38	62	-
Cruiser	15	40	53	7	12	33	67	-
NipsIt	14	50	43	7	11	45	55	-
<b>Seed trt. subtotal</b>	<b>71</b>	<b>42</b>	<b>54</b>	<b>4</b>	<b>65</b>	<b>38</b>	<b>62</b>	<b>0</b>
Counter 20G	15	67	33	-	15	60	40	-
Lorsban 15G	2	100	-	-	1	100	-	-
<b>Granular subtotal</b>	<b>17</b>	<b>71</b>	<b>29</b>	<b>0</b>	<b>16</b>	<b>62</b>	<b>38</b>	<b>0</b>
Lorsban	9	56	44	-	9	44	56	-
Mustang	8	38	62	-	6	50	50	-
Asana	2	-	100	-	2	-	100	-
<b>Liquid subtotal</b>	<b>19</b>	<b>42</b>	<b>58</b>	<b>0</b>	<b>17</b>	<b>41</b>	<b>59</b>	<b>0</b>
<b>Totals</b>	<b>107</b>	<b>47</b>	<b>50</b>	<b>3</b>	<b>98</b>	<b>43</b>	<b>57</b>	<b>0</b>

The sugarbeet root maggot was the target pest for 31% of the insecticide applications in 2016 (Table 5). Wireworms and springtails were targeted in 24 and 22% of the applications, respectively, suggesting that these insects were the most common non-maggot insect pests of sugarbeet in the area. Cutworms, Lygus bugs, white grubs, and ‘other insects’ were identified as other pests targeted for control with insecticide applications in the area.

**Table 5. Insects targeted for control with insecticide applications by survey respondents in 2016**

County	Number of responses							
		Cutworm	Lygus bugs	Springtail	Wireworm	White Grub	Root Maggot	Other Insects
		-----% of responses-----						
Cass	6	33	-	17	33	17	-	-
Chippewa <sup>1</sup>	0	-	-	-	-	-	-	-
Clay <sup>2</sup>	12	8	-	25	25	-	34	8
Grand Forks <sup>3</sup>	33	6	6	18	18	6	40	6
Kittson	4	-	-	25	50	-	25	-
Marshall	13	8	8	23	23	-	38	-
Norman	9	22	-	22	34	-	22	-
Pembina	9	-	-	-	33	-	67	-
Polk <sup>4</sup>	63	16	2	24	24	2	32	-
Renville	1	100	-	-	-	-	-	-
Richland	4	-	-	50	25	25	-	-
Traverse <sup>5</sup>	2	100	-	-	-	-	-	-
Walsh	2	50	-	50	-	-	-	-
Wilkin	13	24	-	23	23	15	15	-
<b>Totals</b>	<b>171</b>	<b>15</b>	<b>2</b>	<b>22</b>	<b>24</b>	<b>4</b>	<b>31</b>	<b>2</b>

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Spoon was the most commonly reported placement method for applying granular insecticides in 2016 (Table 6). However, a substantial amount of granular applications were made using band, and to a slightly lesser extent, modified in-furrow placement. There were no reported broadcast applications of granular insecticides.

**Table 6. Granular insecticide placement methods reported as used for insect control in sugarbeet during 2016**

Insecticide	No. of responses	Band	Spoon	Mod. In-Furrow	Broadcast
-----% of responses-----					
Counter 20G	15	33	40	27	-
Lorsban 15G	1	-	100	-	-
<b>Totals</b>	<b>16</b>	<b>31</b>	<b>44</b>	<b>25</b>	<b>0</b>

Counter 20G application rates ranged from 4.5 to 9 lb product per acre (Table 7). Only one respondent reported using Lorsban 15G, and the use rate by that grower was between 6.6 and 7.5 lb/ac. Counter 20G and Lorsban 15G were primarily used as planting-time treatments.

**Table 7. Granular insecticide application rates used for insect control in sugarbeet in 2016**

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	15	33	41	13	13	-
Lorsban 15G	1	-	-	100	-	-
<b>Totals</b>	<b>16</b>	<b>31</b>	<b>37</b>	<b>19</b>	<b>13</b>	<b>0</b>

Survey data on liquid insecticide placement methods used by sugarbeet growers in 2016 is listed in Table 8. Postemergence (POST) broadcast applications were the most common spray placement method when averaged across all liquid insecticides reported. That placement method was used for 100% of the applications of Lorsban and Asana sprays, whereas Mustang Maxx was most commonly reported as being applied in-furrow at planting.

**Table 8. Liquid insecticide placement methods reported in sugarbeet in 2016**

Insecticide	No. of responses	Band at Plant	In-Furrow	POST Broadcast	POST Band
-----% of responses-----					
Lorsban	7	-	-	100	-
Mustang	8	-	63	37	-
Asana	2	-	-	100	-
<b>Totals</b>	<b>17</b>	<b>0</b>	<b>29</b>	<b>71</b>	<b>0</b>