

## Pest Control Products for Ontario Hops - 2014

This table lists pest control products registered on hops in Ontario as of May 1 2014. Note that the registration status of pest control products can change. This list is intended as a guide and does not replace product labels. **Always read the label** thoroughly before applying a pest control product and follow label instructions. Products that **may** be acceptable for organic production are indicated in the comments section, but may not be accepted by all certification bodies. Always check with your organic certification body before applying these products.

Trade name (Chemical Family <sup>1</sup> )	Active ingredient	Rate	Re-entry Interval	Pre- harvest Interval	Comments
<b>INSECTICIDES AND MITICIDES</b>					
<b>TWO-SPOTTED SPIDER MITE</b>					
Envidor 240 SC (23)	spirodiclofen	0.75 L/ha	2 days (stripping, training)  NS <sup>2</sup> (all other activities)	21 days	Thorough coverage required for effective control. No more than 1 application (0.75 L/ha) permitted per year.
Acramite 50 WS (UN)	bifenazate	851 g/ha	5 days (stripping, training)  NS <sup>2</sup> hours (all other activities)	14 days	Apply in at least 1000 L/ha. Thorough coverage of upper and leaf surface required for effective control. <b>No more than 1 application per year.</b>
Neusodan Commercial (NC)	potassium salts of fatty acids	Mix 8L product with 400 L water and apply at 700- 1900 L/ha	NS <sup>2</sup>	0 days	Repeat every 1-2 weeks as needed. Apply to a maximum of 3 consecutive applications to ensure plant injury does not occur. Additional applications may be possible – see label for details. May be acceptable for organic production – check with CB before applying.
Opal (NC)	potassium salts of fatty acids	Mix 8L product with 400 L water and apply at 700- 1900 L/ha	NS <sup>2</sup>	0 days	Repeat every 1-2 weeks as needed. Apply to a maximum of 3 consecutive applications to ensure plant injury does not occur. Additional applications may be possible – see label for details. May be acceptable for organic production – check with CB before applying.
<b>HOP APHID</b>					
Admire 240 DF (4)	imidacloprid	230 mL/ha	24 hrs	28 days	<b>No more than 2 foliar applications per season.</b>
Beleaf 50 SG (9C)	flonicamid	0.12 – 0.16 kg/ha	31 days (stripping and training)  NS (all other	31 days	Apply as populations begin to increase and before damaging levels become established. Apply in sufficient water to ensure good coverage (minimum 94 L/ha). Increase spray volume when foliage is dense. Allow at least 7 days between applications. <b>No more than</b>

			activities)		<b>3 applications (max. 0.48 kg product) per year.</b>
Movento 240 SC Movento 150 OD (23)	spirotetramat spirotetramat	SC: 365-435 mL/ha OD: 585-700 mL/ha	12 hrs	7 days	Apply early in infestation as populations begin to develop. Use a minimum application volume of 500 L water/ha. <b>No more than 920 mL/ha Movento 240 SC or 1.47 L/ha Movento 150 OD permitted per season.</b> Allow at least 14 days between applications.
Neusodan Commercial (NC)	potassium salts of fatty acids	Mix 8L product with 400 L water and apply at 700-1900 L/ha	NS <sup>2</sup>	0 days	See comments under spider mites.
Opal (NC)	potassium salts of fatty acids	Mix 8L product with 400 L water and apply at 700-1900 L/ha	NS <sup>2</sup>	0 days	See comments under spider mites.
<b>CATERPILLARS</b>					
Dipel 2XDF (11)	<i>Bacillus thuringiensis</i> var <i>kurstaki</i> ABTS-351	Hop Looper 275-550 g/ha Corn borer 560-1120 g/ha	NS <sup>2</sup>	0 days	Apply at first sign of infestation when larvae are small. Repeat if necessary at 3-14 day intervals. Apply in sufficient water to obtain thorough coverage. May be acceptable for organic production – check with CB before applying.
Bioprotec CAF (11)	<i>Bacillus thuringiensis</i> var <i>kurstaki</i> EVG 113-19	Hop Looper 1.4-2.8 L/ha Corn Borer 2.8-4.0 L/ha	NS	0 days	Apply at first sign of infestation when larvae are small. Repeat if necessary at 5-10 day intervals. Apply in sufficient water (minimum 300 L water/ha) to obtain thorough coverage. <b>For corn borer, no more than 3 applications per generation (max 6 applications per year).</b> May be acceptable for organic production – check with CB before applying.
<b>FUNGICIDES</b>					
<b>DOWNEY MILDEW</b>					
Ridomil Gold 480 SL (4)	metalaxyl	570 mL/ha	12 hrs	135 days	Apply in early April as a soil drench at the root site. Apply in 200 L water/ha. No more than 1 application per season.
Pristine (7/11)	boscalid + pyraclostrobin	0.105 kg/100 L dilute spray	8 days (hand set irrigation)  46 days (harvesting)  12 hrs (all other activities)	46 days	<b>Suppression only.</b> Begin applications prior to disease development. Do not re-apply at less than 10-14 day interval. Use 234 to 468 L dilute spray /ha (0.25-0.49 kg/ha) prior to trellising and 935-1524 L dilute spray/ha (0.98-1.6 kg/ha) after. <b>No more than 3 applications of Pristine per season.</b>
Acrobat 50 WP (40)	dimethomorph	450 g/ha	18 days (hand harvest, stripping, training) 12 hrs (all other activities)	7 days	<b>Suppression only.</b> Apply preventatively when conditions are favorable to disease development. Acrobat <b>must be tank mixed</b> with another fungicide active against downy mildew. Do not re-apply in less than 10 day intervals. Do not use less than 200 L water/ha. No more than 3 applications per season.

Revus (40)	mandipropamid	600 mL/ha	12 hrs	7 days	Apply preventatively when conditions are favorable to disease development. Do not re-apply in less than 7-10 day intervals. Label directions suggest use with a non-ionic adjuvant. Do not make more than 2 consecutive applications of Revus before rotating to a fungicide that is not in Group 40. <b>No more than 3 applications (1.8 L product) per year.</b>
Zampro (40/45)	ametoctradin + dimethomorph	0.8-1.0 L/ha	18 days (hand harvest, training, stripping)  12 hrs (all other activities)	7 days	Begin applications prior to disease development. Do not re-apply in less than 10 day intervals. Label directions suggest use with an adjuvant Apply in a minimum of 200 L water/ha. Do not make more than 2 sequential applications of Zampro before rotating to another fungicide that is not in Group 40 or 45. <b>No more than 3 applications per season.</b>
Copper 53W (M)	copper sulphate	4-5 kg/1000L	48 hrs	1 day	Apply when conditions are favorable to disease development. Do not re-apply in less than 7 day intervals. <b>No more than 4 applications per year.</b> May be acceptable for organic production – check with CB before applying.
<b>POWDERY MILDEW</b>					
Pristine (7/11)	boscalid + pyraclostrobin	0.105 kg/100 L dilute spray	8 days (hand set irrigation)  46 days (harvesting)  12 hrs (all other activities)	46 days	Begin applications prior to disease development. Do not re-apply at less than 10-14 day interval. Use 234 to 468 L dilute spray /ha (0.25-0.,49 kg/ha) prior to trellising and 935-1524 L dilute spray/ha (0.98-1.6 kg/ha) after. <b>No more than 3 applications of Pristine per season.</b>
Quintec (13)	quinoxyfen	300-500 mL/ha	12 hrs	21 days	<b>Suppression only.</b> Apply preventatively when conditions are favorable to disease development. <b>No more than 2 applications per year</b> , with a spray interval of 14 days.
MilStop (NC)	potassium bicarbonate	2.8-5.6 kg/ha	4 hrs	0 days	<b>Suppression only.</b> Begin application at the first sign of disease. Repeat at 7-14 day intervals until conditions are no longer favorable for disease development. Apply in 500-1000 L water/ha. May be acceptable for organic production – check with CB before applying. <b>No more than 10 applications per season.</b>
Sirocco (NC)					
<b>CROWN GALL</b>					
Dygall (ns)	<i>Agrobacterium radiobacter</i>	Nursery product only – see label for details	NS <sup>2</sup>	n/s <sup>3</sup>	<b>For use only on nursery plants, by trained nursery personnel.</b>
<b>HERBICIDES</b>					
<b>ANNUAL GRASSES</b>					
Poast Ultra (1)	Sethoxydim	1.1 L/ha	12 hrs	180 days	For post emergence control of annual grasses, wild oats, volunteer cereals and quackgrass. Merge Adjuvant must be applied to all applications of Poast Ultra. For more details on application,

					refer to product label or OMAF and MRA Publication 75, <i>Guide to Weed Control</i> .
<sup>1</sup> Chemical Family refers to the insecticide, fungicide or herbicide family or group. To manage resistance, rotate between chemicals with different group numbers. <sup>2</sup> NS = REI not specified on label. . If the restricted entry interval is not specified on the label for agricultural crops, the REI is 12 hours. <sup>5</sup> n/s = Not specified on the label.					

## Appendix A. Registrants and Ontario Classification for Hops Pesticides

This information is provided as a guideline only. Consult each product label before use for most up-to-date information. Pesticide labels are also available at the Pest Management Regulatory Agency (PMRA) website at [www.pmr-arla.gc.ca](http://www.pmr-arla.gc.ca). Click on "Search Pesticide Labels." Note that users of Ontario Class 2 and 3 pesticides must be certified by the Grower Pesticide Safety Course.

Registration No. <sup>1</sup>	Trade Name	Active Ingredient	Guaranteed Active	Ontario Class <sup>2</sup>	Registrant or Agent's Code <sup>3</sup>
27925	Acramite 50 WS	bifenazate	50%	4	CRE
27700	Acrobat 50 WP	dimethomorph	50%	3	BAZ
24094	Admire 240	imidacloprid	240 g/L	4	BCZ
29796	Beleaf 50SG	flonicamid	50%	4	ISK/UAG
26854	Bioprotec CAF	<i>Bacillus thuringiensis</i> var <i>kurstaki</i> strain EVG113-19	8.12%	3	AEF
9934	Copper 53W	copper sulphate	53.4%	3	LLP
26508	DiPel 2X DF	<i>Bacillus thuringiensis</i> var <i>kurstaki</i> strain ABTS-351	57%	4	VAA/VAJ
21106	Dygal	<i>Agrobacterium radiobacter</i> strain K84	5 x 10 <sup>9</sup> colony forming units/g	3	MOR
28051	Envidor	spirodiclofen	240 g/L	4	BCZ
28095	MilStop Foliar	potassium bicarbonate	85%	4	BWI
28954	Movento 150OD	spirotetramat	150 g/L	4	BCZ
28953	Movento 240 SC	spirotetramat	240 g/L	4	BCZ
27886	Neudosan Commercial	potassium salts of fatty acids	47%	4	WNG/ECT
28146	Opal Insecticidal Soap	potassium salts of fatty acids	47%	4	OMA
24835	Poast Ultra	sethoxydim	450 g/L	4	BAZ
27985	Pristine WG	boscalid pyraclostrobin	25.2% 12.8%	2	BAZ

29755	Quintec	quinoxifen	250 g/L	3	DWE
29074	Revus	mandipropamid	23.3%	3	SYZ
28474	Ridomil Gold 480 SL	metalaxyl-m and s-isomer	480 g/L	3	SYZ
31091	Sirocco	potassium bicarbonate	85%	4	AEF
30321	Zampro	ametoctradin dimethomorph	300 g/L 225 g/L	3	BAZ

<sup>1</sup> See the pesticide label to confirm the current product registration number (PCP#).

<sup>2</sup> The Ontario Pesticides Advisory Committee (OPAC) is responsible for reviewing and recommending to the MOE the classification of pesticide products before they can be sold or used in Ontario. Users of Class 2 and 3 products must be certified through the Grower Pesticide Safety Course.

Class 3 = Restricted or commercial use only; moderately hazardous and/or moderately persistent

Class 4 = Restricted or commercial use only; less or least hazard and/or low persistence

<sup>3</sup> See Appendix D, *Pest Control Companies and Agents* for registrant or agent information.

## Appendix B. Pest Control Product Companies and Agents

Code	Company/Agent	Website	Contact Number
AEF	AEF Global Inc	<a href="http://www.aefglobal.com/en/">www.aefglobal.com/en/</a>	418-838-4441
BAZ	BASF Canada Inc.	<a href="http://www.agsolutions.ca">www.agsolutions.ca</a>	1-877-371-2273
BCZ	Bayer Crop Science	<a href="http://www.bayercropscience.ca">www.bayercropscience.ca</a>	1-888-283-6847
BWI	Bioworks Inc.	<a href="http://www.bioworksinc.com">www.bioworksinc.com</a> (US website)	1-800-877-9443
CRE	Chemtura Canada Co.	<a href="http://www.chemturaagrosolutions.com">www.chemturaagrosolutions.com</a> (US website)	1-800-350-1745
DWE	Dow Agrosciences Canada Inc.	<a href="http://www.dowagro.com/ca">www.dowagro.com/ca</a>	1-800-667-3852
ECT	Eco-Care Technologies Inc.		250-652-5510
ENG	Engage Agro Corp.	<a href="http://www.engageagro.com">www.engageagro.com</a>	1-866-613-3336
ISK	ISK Biosciences Corporation	<a href="http://www.iskbc.com">www.iskbc.com</a> (US website)	1-877-706-4640
LLP	Loveland Products Canada Inc.	<a href="http://www.lovelandproducts.com">www.lovelandproducts.com</a> (U.S. website)	1-800-328-4678
MOR	Mori Nurseries Ltd.		905-468-3217
OMA	Omex Agriculture Inc.	<a href="http://www.omexcanada.com">www.omexcanada.com</a>	866-860-9660
SYZ	Syngenta Canada, Inc.	<a href="http://www.syngenta.ca">www.syngenta.ca</a>	1-877-964-3682
UAG	United Agri-Products Canada Inc.	<a href="http://www.uap.ca">www.uap.ca</a>	1-800-265-4624
VAA	Valent BioSciences Corporation	<a href="http://www.valent.ca">www.valent.ca</a>	1-800-682-5368
VAJ	Valent Canada Inc.	<a href="http://www.valent.ca">www.valent.ca</a>	519-767-9262
WNG	W. Neudorff GmbH KG	<a href="http://www.neudorff.com">www.neudorff.com</a> (US website)	011-49-5155-624-127