

GUIDE TO PEST MANAGEMENT IN ASPARAGUS

Nova Scotia Vegetable Crop Guide to Pest Management 2011
[ASP1-11]

Revised April 15, 2011 by
Peter Burgess, Horticulture Specialist, AgraPoint International Inc.
Sarah Wood, Ag Info Specialist, AgraPoint International Inc.
Mélanie Leclerc, Research Assistant, AgraPoint International Inc.

IMPORTANT

This publication was compiled by representatives from AgraPoint using information from the Pest Management Regulatory Agency of Health Canada, specific pesticide labels, previous Atlantic Provinces Vegetable Pest Guides and manufacturer's information. **This information is continuously changing and therefore it can cease to be current and accurate. Pesticide labels are the best source of information and should always be consulted prior to using a product.**

By printing this publication, AgraPoint does not offer any warranty or guarantee, nor do they assume any liability for any crop loss, animal loss, health, safety or environmental hazard caused by the use of a pesticide mentioned in this publication.

WARNINGS

This publication is meant to be used as a reference for possible pest control options. Where there are multiple brand names of a specific active ingredient registered in Canada, AgraPoint has only listed a couple for reference purposes and as such does not endorse one brand over another. If you have purchased a generic product not specifically in this guide but has your crop and pest on the label, always follow that product label.

If any information in this or any other publication conflicts with the information on the label, always use the label recommendation. You are legally responsible for the safe use of pesticides you purchase. This means the safe transport and storage of these materials, the label rates used on crops, and the safe disposal of containers.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
WEEDS:							
Preplant <i>Perennial weeds including quackgrass</i>	9	Glyphosate	Roundup Original	2.5-7.0 L/ha	12 hours	7	Apply in the fall or spring prior to planting. Annual weed control programs will be necessary to control weeds germinating after planting. For quackgrass control, apply to actively growing quackgrass when at least 4 new leaves are present. The low rate (2.5 L/ha) will provide a minimum of one season control, while higher rates (4.75 to 7 L/ha) will provide longer term control. The low rate of Roundup should be applied in 50 to 100 L/ha water. If higher water volumes are used, add a suitable surfactant. Allow 3 or more days after treatment before tillage. Best control of quackgrass is obtained when these herbicides are applied in the fall.
			Roundup WeatherMAX	1.67-8.0 L/ha	12 hours	7	
			Touchdown® 480	2.5-7.0 L/ha	12 hours	7	
Before Emergence of Direct-Seeded Asparagus <i>Germinating annuals</i>	22	Diquat	Reglone® Desiccant	2.3-4.6 L/ha	-	-	Use “stale seedbed technique”. Apply in 300 to 1100 L water/ha to foliage of emerged weeds but before crop emergence.
	10	Glufosinate ammonium	Ignite® 15 Sn	2.7-5.0 L/ha	-	-	Use “stale seedbed technique”. Ignite should be applied in 110 to 330 L of water/ha.
	15	Napropamide	Devrinol® 50-DF	4.5-9 Kg/ha	12 hours	6	Devrinol does not control established weeds and should not be used more than once per year.
	22	Paraquat	Gramoxone®	2.75-5.5 L/ha	24 hours	-	Use “stale seedbed technique”. Apply in 300 to 1100 L water/ha to foliage of emerged weeds but before crop emergence.
	5	Terbacil	Sinbar®	0.375 Kg/ha	12 hours	5	Apply within 2 days of planting. Do not use on gravelly soils. Do not tank mix with Venture or injury will occur. Use a min of 200 L water/ha.
Postemergence <i>Inter-row shielded</i>	22	Diquat	Reglone® Desiccant	2.3-4.6 L/ha	-	-	Do not spray solution on the crop plant since it could be injured or killed. Use Gramoxone for best control of grasses. *Do not spray on asparagus fern.
		Paraquat	Gramoxone®	2.75-5.5 L/ha	24 hours	-	
Postemergence	1	Fluazifop-P-	Venture® L	2.0 L/ha	-	-	Apply when grasses are at the 2 to 5 leaf stage.

<i>Grasses</i>		butyl					Apply to quackgrass at the 3 to 5 leaf stage. Direct seeded and seedling only. One broadcast application only.
		Sethoxydim	Poast® Ultra Plus Merge® (adjuvant)	1.1 L/ha 1-2 L/ha	12 hours	40	For quackgrass at the 3 leaf stage.
1st Year Crown Establishment <i>Soil applied</i>	14	Flumioxazin	Chateau® WDG	280 – 420 g/ha	12 hours	-	Apply only to dormant asparagus and before weed emergence. Apply only once per year. Do not apply to fine textured soils. Do not apply to soils with >5% organic matter. Use high rate on medium textured soils, use low rate on coarse textured soils.
	15	Napropamide	Devrinol® 50-DF	9-13.4 Kg/ha	12 hours	6	Tank mix with PRINCEP® NINE-T® (simazine): apply a tank mix of 9 to 13.4 kg of Devrinol 50-DF plus 1.5 to 2.75 kg of PrinceP® Nine-T® in 150 to 300 L water per hectare. Apply preemergent.
2nd Year & Established Asparagus <i>Soil applied</i>	7	Diuron	Diurex 80WDG	1.1-2.25 Kg/ha (sandy soils) 2.25-4.5 Kg/ha (high clay or organic matter soils)	-	-	2 applications per year may be used and 1 st should be made no more than 4 weeks before spear emergence. 2 nd application can be made after harvest as long as rain is expected. When 2 applications are made, do not exceed 3.25 Kg per application.
	14	Flumioxazin	Chateau® WDG	280 – 420 g/ha	12 hours	-	Apply only to dormant asparagus and before weed emergence. Apply only once per year. Do not apply to fine textured soils. Do not apply to soils with >5% organic matter. Use high rate on medium textured soils, use low rate on coarse textured soils.
	7	Linuron	Lorox® DF	3.3-4.3 Kg/ha	-	-	Apply immediately after first disking, before asparagus emerges; can be repeated after last cutting.
			Lorox® L	3.4-4.5 L/ha			
	5	Metribuzin	Sencor 480 F	2.25 L/ha	12 hours	14	Apply after disking but before crop emerges.
Sencor 75 DF			1.5 Kg/ha				
	Simazine	Princep®-Nine-	2.5-3.75	-	7	Apply after disking and prior to weed and spear	

			T®	Kg/ha		7	emergence or after harvest completion if established weeds are removed (on sandy soils, use low rate).
			Simadex	4.5-6.7 L/ha			
			Princep-Nine-T plus Devrinol® 50-DF	1.5-2.75 Kg/ha 9-13.4 Kg/ha			
	15	S-Metolachlor	Dual II Magnum	1.55-1.75 L/ha	12 hours	16	Make only one application per year. Can be applied in the spring to dormant asparagus or post harvest. <i>Application of these products may result in injury to the asparagus crop, which may include potential stand loss, delayed maturity or even loss of yield.</i>
			Dual Magnum				
5	Terbacil	Sinbar® (Herbicide Wettable Powder)	0.375 Kg/ha	12 hours	5	Do not apply to soils of less than 1% organic matter or areas where subsoil or roots are exposed. Crop injury may occur if Sinbar is used on plants that are weak or diseased. Applied prior to spear emergence or immediately after clean cutting. 1 application per year. Use a min of 200 L water/ha.	
3	Trifluralin	Treflan* E.C.	2.0-4.2 L/ha	12 hours	-	Apply after the last cutting of spears (post harvest disking) and incorporate as indicated on the label. Use only on established plantings of 3 years or more. Use low rate on sandy soils and high rates on heavier soils.	
		Rival E.C.	2.0-4.0 L/ha				
		Bonanza 400	2.5-5.0 L/ha				
Emergence or after last cutting <i>Annual weeds</i>	22	Paraquat	Gramoxone®	2.75-5.5 L/ha	24 hours	-	Apply in 300 to 1100 L water/ha to emerged weeds, but before crop emerges or after the last cutting. Use high volume on heavy weed infestations. Does not give residual control and is not effective on perennial weeds. *Do not spray on asparagus fern.
Postemergence <i>Emerged annual grasses – After last cutting</i>	1	Fenoxaprop-p-ethyl	Excel Super	0.67 L/ha	-	-	Apply to asparagus only after the spears have been harvested. Apply when the annual grasses are in the 1 to 6 leaf stage. Grasses emerging after application will not be controlled.
		Fluazifop-p-butyl	Venture L	2.0 L/ha	-	-	Apply when annual grasses are at the 2 to 5 leaf stage. Apply to quackgrass at the 3 to 5 leaf stage.

Immediately After Harvest is Complete <i>Annual and some perennial broadleaf weeds</i>	4	2,4-D	2,4-D Amine 500	3.5 L/ha	12 hours	-	Treat asparagus with 2,4-D Amine 500 Liquid Farm Weed Killer following a cultivation just before the first spears appear. <i>Treatment may be repeated at end of cutting season.</i>
	10	Glufosinate ammonium	Ignite® 15 Sn	2.7-5.0 L/ha	-	-	Ignite may be applied after spears have been harvested. It should be applied in 110 to 330 L of water/ha.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
INSECTS:							
Asparagus aphid	1B	Dimethoate	Cygon® 480 EC	2.3 L in 675 L of water/ha	-	-	Apply only as necessary in 3 to 4 week intervals after crop has been harvested. Max 6 applications per season.
			Lagon® 480 E				
	3	Lambda-cyhalothrin	Matador® 120 EC	83 ml/ha in 100 to 200 L of water/ha	24 hours	180	Apply post-harvest to fern only. Reapply after 7-10 days if monitoring indicates further applications are required. Max 3 applications per season.
Asparagus beetle	1A	Carbaryl	Sevin® XLR	2.5-6.4 L/ha	24 hours	2	Apply as a spray in sufficient water for full coverage. Apply when insects or their damage appear. Use the lower rate on young plants. Repeat at intervals of 7 to 10 days or as necessary. Do not treat more often than once every 3 days.
	3	Cypermethrin	Ripcord™ 400 EC	86 m/ha	24 hours	1	Apply to spears and ferns when insects are first observed. Repeat as required.
			UP-Cyde® 2.5 EC	140 ml/ha	12 hours	1	
		Deltamethrin	Decis® (flowable insecticide)	200 ml/ha in 200-500 L of water	24 hours	-	First application should be in spring prior to egg laying. Application must take place after the spears have been cut. Repeat as needed.
	Decis® 5 EC						
	1B	Malathion	Malathion 500 E	2.5 L/ha	12-24 hours	1	Spray thoroughly. Repeat as necessary.
			Malathion 25 W	5.5 Kg/ha			
5	Spinetoram	Delegate™ WG	140-280 g/ha	12 hours	60	Make applications to the ferns only. Apply at egg hatch or to the small larvae. Use higher rate for high infestations or larger larvae. Maximum of 3 applications per year with a minimum re-treatment interval of 5 days.	

		Spinosad	Entrust* 80 W	88 g/ha	-	60	Apply on the ferns only (post harvest to the spears). Apply in sufficient water to ensure thorough coverage with a maximum of 3 applications per year. Apply just after egg hatch and reapply at 7-10 day intervals. Entrust is an OMRI listed product.
			Success* 480 SC	145 ml/ha			

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
DISEASES:							
Purple Spot (<i>Stemphylium vesicarium</i>)	11	Azoxystrobin	Quadris® (250 g/L) (<i>Flowable Fungicide</i>)	453-1124 ml/ha in min 100 L of water/ha	-	180	Apply on 7-14 day intervals. Use the lower rate and longer application interval under low disease pressure. Begin applications following the final harvest of asparagus spears, prior to disease development. Maximum 3 applications per crop season.
	M	Chlorothalonil	Bravo 500	3.4 L/ha	-	190	Apply with 100-200 L/ha of spray volume. Apply following final harvest of spears on 14 day intervals. Do not apply more than 3 applications per crop season.
Rust (<i>Puccinia asparagi</i>)	M	Chlorothalonil	Bravo 500	3.4 L/ha	-	190	Apply with 100-200 L/ha of spray volume. Apply following final harvest of spears on 14 day intervals. Do not apply more than 3 applications per crop season.
	M ²	Metiram	Polyram® DF	2.25-3.25 Kg/ha		-	Apply after harvest when first rust noticed. Make 4 applications at 7-10 day intervals. Do not apply to spears to be cut.
	3	Myclobutanil	Nova* 40 W	340 g/ha in 370L water/ha		-	Maximum 5 applications per year at 7 day intervals. Post harvest treatment of ferns only
Botrytis Blight (<i>Botrytis cinerea</i>)	-	<i>Bacillus subtilis</i>	Serenade® MAX™	3.0-6.0 Kg/ha	-	0	Serenade Max and Serenade ASO are biopesticides that will only suppress the indicated diseases. Begin applications at the first sign of disease, or when conditions become conducive for disease development. Repeat as necessary on a 7-10 day interval.
			Serenade® ASO™	4.0-15.0 l/ha			

Use the following web link to search for any pesticide label mentioned in this guide, or any other pesticide registered in Canada:

<http://pr-rp.hc-sc.gc.ca/ls-re/index-eng.php>

PESTICIDE EMERGENCY CONTACT INFORMATION

Poison Control Centres		
Nova Scotia	800.565.8161 or 902.428.8161	IWK, Halifax, NS
New Brunswick	911	Ask for Poison Information
Prince Edward Island	800.565.8161 or 902.428.8161	IWK, Halifax, NS
Newfoundland	709.722.1110	Dr. Charles A. Janeway Child Health Care Centre, St. John's, NF

Environmental Emergencies (Pesticide Spills)	
Transport Canada Regional Operations Centre (24 hours)	
Nova Scotia	800.565.1633
New Brunswick	800.565.1633
Prince Edward Island	800.565.1633
Newfoundland	800.563.9089

ABBREVIATIONS & CONVERSIONS

Formulation and Measurement Abbreviations			
FORMULATIONS		MEASUREMENTS	
DF	Dry flowable	mL	millilitre
EC, E	Emulsifiable concentrate	kPa	kilopascal
L	Liquid	kg	kilogram
Sn / Su	Suspension	g	gram
WP/W	Wettable powder	L	litre
		BIU	Billions of International Units
		ppm	parts per million (1000 ppb)
		ppb	parts per billion (1/1000 ppm)

Helpful Conversions¹	
kPa X 0.14 = pounds per square inch (psi)	millilitres X 0.035 = fluid ounces
hectares X 2.47 = acres	litres X 35 = fluid ounces
kilograms X 2.2 = pounds	litres X 0.22 = imperial gallons
kilograms per hectare X 0.89 = pounds per acre	litres per hectare X 14.17 = fluid ounces per acre
kilograms per hectare X 0.40 = kilograms per acre	litres per hectare X 0.40 = litres per acre
	degree-days C X 1.8 = degree-days F

¹ **Pesticide Units of Measurement**

It is not recommended to convert label rates to imperial units because there is a high probability of mathematical and rounding errors. Present day pesticides are formulated to be more effective in smaller amounts. Therefore, even small conversion errors can lead to the use of incorrect rates (either too high or too low). Use metric – you will be glad you did!