GUIDE TO OMRI LISTED AND BIOPESTICIDE PEST CONTROL PRODUCTS 2010

Nova Scotia OMRI Listed and Bio-Pesticide Pest Control Products Guide 2010 [BIO1-10]

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IMPORTANT

This publication was compiled by representatives from AgraPoint using information from the Pest Management Regulatory Agency of Health Canada and specific pesticide labels. It only includes OMRI listed, bio-pesticides and allowable organic products that are registered for use as pest control product in Canada. **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.** The label is the best source of information on: registered crop uses, rates, days to harvest, compatibility with other pesticides, toxicity and other special information on its effective and safe use

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. **Many of the products listed provide only suppression of the target pest and should be used in the context of a robust pest management plan.**

This guide lists all registered active ingredients, the targeted pests and the crops for which it has a registered use.

WARNINGS

If any information in this or any other publication conflicts with the information on the label, always use the label recommendation. If you have an old label, your pesticide supplier should be able to give you the newest label. You are legally responsible for the safe use of any pesticide you purchase.

Pest	Pesticide Common Name	Pesticide Product Name	Rate	Days to Harvest	Registered Crops and Application Instructions
WEEDS:					
Non-selective broadleaf and grass weeds	Acetic acid	**Ecoclear**	1L in 3L water (early season) 1L in 2.25 L water (Larger weeds)	-	**Non crop areas** Spray unwanted vegetation to the point of wetness. For a broadcast use a spray volume of 750-1000 L/ha
Grass, white clover and dandelion seed germination inhibition	Corn gluten meal	**Nutrite Pre-emergent Weed Seed Germination Inhibitor**	9.8 kg/100 m2	-	**Turf and sod** Apply to established turf twice a year; once in the early spring and once in the late summer/early fall. The inhibitory effect of the product to weed seeds generally dissipates in five weeks following application.

Pest	Pesticide Common Name	Pesticide Product Name	Rate	Days to Harvest	Registered Crops and Application Instructions
Insects:					
Aphids	Potassium salts of fatty acids	**Safer's Insecticidal Soap (OMRI)**	1 part to 50 parts water	5	**Vegetables, Fruits, Treefruits** Apply as required and ensure adequate leaf coverage of the spray solution.
Apple Maggot	kaolin	**Surround WP (OMRI)**	25-50 kg/ha	0	**Pome Fruits** Apply 2 sprays 7 days apart before expected oviposition or at first detection of infestation. Continue applications every 7-14 days to keep fruit completely covered during egg laying period.
Blueberry Maggot	spinosad	**GF 120 NF (OMRI)**	Strip spray 1-1.5 L/ha	0	**Blueberry** Apply with large spray droplets. This product resists wash off but will lose effectiveness if exposed to rain. Begin applications before fruit ripens. Repeat applications every 7 days, shorten during rainy periods. Max 5 per season
Cabbage Looper (CL), Imported Cabbage Worm (ICW), Diamondback Moth (DBM)	spinosad	**Entrust 80W (OMRI)**	109 g/ha	3	**Root and Tuber Vegetables, Leafy Vegetables, Fruiting vegetables, Brassica Leafy Vegetables** Apply a maximum of 3 times per year. Allow 7-10 days between applications. Apply when thresholds are reached.
	Bacillus thuringiensis K.	**Dipel 2X DF**	**For Cole crops** **CL** 275-550 g/ha **DBM** 55-140 g/ha **ICW** 55-140 g/ha	0	**Cole Crops, Herbs and Spices, Lettuce, Kale, Mustard Greens, Parsley, Potatoes, Spinach, Tomatoes** Maximum of five (5) applications. Ground application only. Apply in 400L water/ha. Treat when larvae are young and actively feeding. **Refer to label for crop specific recommendations.**

Cherry Fruit fly	spinosad	**Entrust 80W (OMRI)**	109 g/ha	7	**Sweet Cherry, Tart Cherry** Apply as a foliar spray within 6 days of first fly emergence. Apply a maximum of 4 applications per season with a 5-7 day interval.
	spinosad	**GF 120 NF (OMRI)**	Strip spray 1-1.5 L/ha Spot trees 30-90 ml/tree	0	**Cherries** Apply with large spray droplets. This product resists wash off but will lose effectiveness if exposed to rain. Begin applications before fruit ripens. Repeat applications every 7 days, shorten interval during rainy periods. Max 10 applications per season
Codling Moth	spinosad	**Entrust 80W (OMRI)**	109 g/ha	7	**Pome Fruits** Apply in a minimum of 1000 L of water/ha. Apply a maximum of 3 times per year. Allow 7-10 days between applications. Apply when larvae emerge and begin feeding. Avoid use when bees are foraging.
	kaolin	**Surround WP (OMRI)**	25-50 kg/ha	0	**Pome Fruits** Also for Plum Curculio. Apply at first detection. Continue applications every 7 days to keep fruit completely covered during egg laying period.
Colorado Potato Beetle	spinosad	**Entrust 80W (OMRI)**	50-100 g/ha	7 (potato) 1 (Fruiting vegetables)	**Potatoes, Fruiting vegetables** <u>Potato:</u> apply a maximum of 2 applications per year and do not exceed 150 g/ha per season. Target eggs at hatch or small larvae. <u>Fruiting veg</u>: apply a maximum of 3 applications per year and do not exceed 150 g/ha per season. Target eggs at hatch or small larvae. Allow 7-10 days between applications.

Cranberry Fruitworm	spinosad	**Entrust 80W (OMRI)**	218 g/ha	21	**Cranberry** Apply 1-3 applications per year at 7-10 day intervals. Begin at 50% fruit set.
	Bacillus thuringiensis K.	**Dipel 2X DF**	1680 g/ha	0	**Highbush Blueberry** Apply at egg hatch of the target pest, from petal fall through to green fruit stage in a minimum of 300 L/ha of water using an air blast orchard sprayer or suitable alternative ground application equipment. Best results are obtained if applications are made in the evening or on a cloudy day. Max 4 applications per season.
Cucumber Beetle	kaolin	**Surround WP (OMRI)**	12.5-25 kg/ha	0	**Cucurbits** Apply at 5-7 day intervals with the first two applications 3 days apart starting prior to infestation of adult beetles. Use the higher concentration for the first application and the lower rate for all subsequent applications. Maximum of 5 applications per year.
Erineum Mite	Sulphur	**Microscopic Sulphur**	3.5-6.5 kg/ha	21 (Wine grapes) 1 (Table Grapes)	**Grape** Apply MICROSCOPIC SULPHUR FUNGICIDE for grapes in water volumes of up to 3000 L/ha. Water volume will vary according to size of crop and foliage cover required. Use sufficient water volume to thoroughly cover all foilage. Follow provincial recommendations for proper timing and water volumes. Apply 3 kg/ha at pre bloom immediately after the first evidence of erinea development on the leaves and again at mid-season. Do not use on Concord, Foch, de Chaunac and Van Buren varieties.

European Corn Borer	spinosad	**Entrust 80W (OMRI)**	50-87.5 g/ha	7 (potato) 3 (Snap beans) 1 (Fruiting vegetables)	**Potatoes, Fruiting vegetables, Snap Beans** Potato: apply a maximum of 1 application per year. Target eggs at hatch or small larvae. (87.5 g/ha max) Fruiting veg & snap beans: apply a maximum of 2 applications per year. (Max application rate is 50 g/ha). Target eggs at hatch or small larvae. Allow 7-10 days between applications.
Flea Beetle	spinosad	**Entrust 80W (OMRI)**	100-132 g/ha	3	**Lowbush Blueberry, Brassica Leafy Vegetables (Suppression only)** Lowbush blueberry (100-132 g/ha): Apply a maximum 3 times per year, re-apply on 7-10 day intervals. Brassica Leafy Vegetables (109 g/ha): Apply a maximum 3 times per year, re-apply on 7-10 day intervals.
Grape Berry Moth	*Bacillus thuringiensis K.*	**Dipel 2X DF**	1125 g/ha	0	**Grape** Applications should be timed to target the first generation, particularly where there is a history of a problem. Use a high water volume to ensure complete coverage. Monitor moth activity. The application may be repeated if needed every 7-10 days up to 6 applications per year.
Leafhopper	kaolin	**Surround WP (OMRI)**	6.25-50 kg/ha	0	**Pome Fruits, Grapes, Dry Beans, Potatoes, Carrots, Leafy Vegetables, Strawberry, Raspberry** Read label for rates and application volumes that match the crop and leafhopper species that you are targeting.
Mealybug	Potassium salts of fatty acids	**Safer's Insecticidal Soap (OMRI)**	1 part to 50 parts water	5	**Vegetables, Fruits, Treefruits** Apply as required and ensure adequate leaf coverage of the spray solution.

Oblique banded leafroller larvae	spinosad	**Entrust 80W (OMRI)**	109 g/ha	7	**Pome Fruits** Apply in a minimum of 1000 L of water/ha. Apply a maximum of 3 times per year. Allow 7-10 days between applications. Apply when larvae emerge and begin feeding. Avoid use when bees are foraging.
	kaolin	**Surround WP (OMRI)**	25-50 kg/ha	0	**Pome Fruits** Apply first 2 sprays 7 days apart starting just prior to green tip stage of host development or at initial emergence of leafroller larvae, as determined by monitoring. Make initial application before larvae roll up into leaves. For subsequent generations apply at 7-14 day intervals as larvae emerge.
	Bacillus thuringiensis K.	**Dipel 2X DF**	1125-1675 g/ha	0	**Apples, Pears, Stone Fruits, Ginseng, Grape, Raspberry** Apply in 600-800 L/ha at pink stage and, if populations are heavy, at petal fall using an air-blast orchard sprayer. Weekly applications may be necessary if egg hatch is asynchronous. Best results are obtained if applications are made in the evening or on a cloudy day. **Read label for Grape, Raspberry and Ginseng instructions.**
Pear Psylla	kaolin	**Surround WP (OMRI)**	50 kg/ha	0	**Pome Fruits** Monitor populations to ensure that applications are needed, and apply prior to oviposition in the spring. **Prebloom:** Apply up to 3 prebloom applications every 7-10 days. Make first application as early as the delayed dormant stage or pear development, but no later than green cluster bud. **Petal Fall:** Apply 3 applications every 7-14 days starting at

					first petal fall.
	Potassium salts of fatty acids	**Safer's Insecticidal Soap (OMRI)**	25 L / 2475 L of water/ha	5	**Pears** Apply when insect occur and repeat as needed
Spanworm	*Bacillus thuringiensis K.*	**Dipel 2X DF**	Blueberry 550-1125 g/ha Cranberry 275-550 g/ha	0	**Lowbush blueberry, cranberry** Maximum of four applications per year. Apply in a minimum of 300L/ha. Apply when larvae are in the first or second instar are present at or above the economic threshold.
Spider Mites	Potassium salts of fatty acids	**Safer's Insecticidal Soap (OMRI)**	1 part to 50 parts water	5	**Vegetables, Fruits, Treefruits** Apply once weekly for 2-3 weeks. Ensure adequate leaf coverage of the spray solution.
Tarnished Plant Bug	kaolin	**Surround WP (OMRI)**	25-50 kg/ha	0	**Pome Fruits** Start application before infestation begins and continue at 7-14 day intervals. Lengthening respray interval past 14 days is not recommended.

Pest	Pesticide Common Name	Pesticide Product Name	Rate	Days to Harvest	Registered Crops and Application Instructions
Diseases:					
Angular Leaf Spot	copper hydroxide	**Kocide 101**	2.25-3.25 kg/ha	1	**Cucumber** Apply weekly once the plants begin to vine.
Bacterial soft rot, Fusarium tuber rot and Silver Scurf	Hydrogen peroxide	**Storox**	100 ml in 10 L water		**Potatoes, Sweet Potatoes** Spray diluted solution on tuber to runoff to achieve full and even coverage. Use 4.15-8.30 L water per tonne of potatoes. Or concentrate into makeup water in humidification of post-harvest potatoes or sweet potatoes in storage.
Bacterial Spot	copper hydroxide	**Kocide 101**	2.25-3.25 kg/ha	1	**Beans, Peppers and Tomatoes** When disease threatens, apply KOCIDE 101 at 2.25-3.25 kg/ha at 7 to 14 day intervals depending on disease severity
Bacterial Spot (Prior to Transplant)	copper hydroxide	**Kocide 101**	2.25 kg/ha	1	**Peppers and Tomatoes** Apply every 5 days when warranted to a maximum of 5 applications over a 4 week period prior to transplant. Following transplantation to the field, when disease threatens, apply KOCIDE 101 at 2.25 kg/ha at 7 to 10 day intervals depending upon disease severity.
Botrytis (including neck rot, pod rot and leaf blight)	*Bacillus subtilis*	**Serenade Max (OMRI)**	3.0-6.0 kg/ha	0	**Asparagus, Bushberries, Caneberries, Beans, Peas, Lentils, Bulb vegetables, Fruiting vegetables, Grapes and Strawberry.** Start applications at first sign of disease and repeat applications at 7-14 day intervals (depends on crop). **Suppression only**
		Serenade ASO (OMRI)	4-15 L/ha	0	

	Streptomyces lydicus strain WYEC 108	**Actinovate SP**	425 g/ha	0	**Strawberry** Apply in 1100 L of water/ha. Begin when conditions favour disease development. Repeat on 7-10 day intervals. **Suppression only**
	Trichoderma harzianum Rifai strain KRL-AG2	**Rootshield HC (OMRI)**	3.75-10 g/L of water	0	**Strawberry, Lettuce and Tomato (field and Greenhouse).** Repeat every 7-14 days depending on disease pressure. Apply in enough water volume to ensure adequate coverage of leaves and flowers. This organism does not work well when soil temperatures are below 10 degrees C.
Brown Rot	Sulphur	**Microscopic Sulphur**	3.5-6.5 kg/ha	1	**Peach, Plum, Sweet Cherry, Sour Cherry** Apply 6.5 kg/1000 L at the Bloom stage. If Powdery Mildew is a problem, apply 3.5 kg in the First, Second and Third Cover sprays.
Downy Mildew (*Peronosora* spp and *Bremia* spp.)	*Bacillus subtilis*	**Serenade Max (OMRI)**	3.0-6.0 kg/ha	0	**Bulb vegetables, Lettuce.** Start applications at first sign of disease and repeat applications at 7-10 day intervals. **Suppression only**
		Serenade ASO (OMRI)	10 L/ha	0	**Brassica Vegetables, Lettuce, Radish, Turnip and Rutabaga.** Start applications at first sign of disease and repeat applications at 7-10 day intervals. **Suppression only**
Early Blight *(Alternaria solani)*	*Bacillus subtilis*	**Serenade Max (OMRI)**	4.5 kg/ha	0	**Fruiting vegetables** Make the first application when plants are 6-10 cm high, or when conditions are conducive for disease development. Repeat applications on an interval of 5-7 days.
Early and Late Blight	copper hydroxide	**Kocide 101**	1.1-2.25 kg/ha	1	**Potatoes** Apply at 7 to 10 day intervals starting when plants are 15 cm

					high until harvest. Use KOCIDE 101 at 1.1-2.25 kg/ha, depending on density of foliage
Fireblight (*Erwinia amylovora*)	*Bacillus subtilis*	**Serenade Max (OMRI)**	2.5-6.0 kg/ha	0	**Pome Fruits** Begin at 1-5% bloom and repeat on intervals of 7-10 days. During periods of rapid bloom development and frequent infection periods, spray at 4-7 day intervals. **Suppression only**
		Serenade ASO (OMRI)	5-15 L/ha	0	**Pome Fruits.** Begin at 1-5% bloom and repeat on intervals of 7-10 days. During periods of rapid bloom development and frequent infection periods, spray at 4-7 day intervals. After petal fall continue on 7-10 day intervals when conditions are conducive for disease development. **Suppression only**
	Pantoea agglomerans strain E325	**Bloomtime Biological FD**	375-500 g/ha	0	**Apples and Pears, Caneberries, Saskatoon Berries and Non-bearing Pome Fruit.** Apply in 1000-2000 L of water/ha. Maximum of 2 applications per year. 1st application at 15-20% bloom, 2nd at full bloom to petal fall. **Suppression only.**
	Pantoea agglomerans strain C9-1	**Blightban C9-1**	370-500 g/ha	0	**Apples and Pears, Caneberries, Saskatoon Berries and Non-bearing Pome Fruit.** Apply in 1000-2000 L of water/ha. Maximum of 3 applications per year. 1st application at 15-20% bloom, 2nd at full bloom and a 3rd immediately at post bloom. **Suppression only.**
Mummy berry *(Monilinia vaccinii-corymbosi)*	*Bacillus subtilis*	**Serenade Max (OMRI)**	6.0 kg/ha	0	**Highbush and lowbush blueberry.** Apply preventatively on a 7-14 day interval from bud break until infection risk has past (3-4 weeks). Adequate

					control of disease, may cause some yield reduction through energy re-allocation in the plant.
Powdery Mildew (Various species)	Potassium bicarbonate	**Milstop**	2.8-5.6 kg/ha	0	**Field Pepper, Pumpkin, Bedding plants, Grapes, Cucurbits, Stone fruits.** Start applications at first sign of disease and repeat applications at 7-14 day intervals (depends on crop). Apply with a spray volume of 1000 Léha. Effectiveness ranges from control to suppression depending on crop and pest species. Re-entry interval is 4 hrs. **Suppression only**
	Bacillus subtilis	**Serenade Max (OMRI)**	3.0-6.0 kg/ha	0	**Cucurbits, Tomatoes, Peppers, Grapes, Lettuce, Apples.** Start applications at first sign of disease and repeat applications at 7-14 day intervals (depends on crop). **Suppression only**
		Serenade ASO (OMRI)	5-15 L/ha	0	**Cucurbits, Tomatoes, Peppers, Grapes, Apples.** Start applications at first sign of disease and repeat applications at 7-14 day intervals (rates and intervals depends on crop and PM species). **Suppression only**
	Streptomyces lydicus strain WYEC 108	**Actinovate SP**	425 g/ha	0	**Strawberry and Field pepper** Apply in 1100 L of water/ha. Begin when conditions favour disease development. Repeat on 7-10 day intervals. (7 day intervals for pepper) **Suppression only**
	Sulphur	**Microscopic Sulphur**	3.5-6.5 kg/ha	1 21 (wine grapes)	**Apple, Pear, Sour Cherry, Cuurents, Gooseberry, Rutabagas** Read label for specific application instructions for each crop. Apply in 1000

					L of water /ha
Root diseases (*Pythium, Rhyzoctonia* and *Fusarium* etc.)	*Trichoderma harzianum* Rifai strain KRL-AG2	**Rootshield HC (OMRI)**	60-125 g/50 kg of seed	-	**Pea, Lima bean, Bean, Lentil and Soybean.** Apply in sufficient water to coat seeds.
Scab (*Venturia* spp.)	*Bacillus subtilis*	**Serenade Max (OMRI)**	3.0-6.0 kg/ha	0	**Pome fruits** Begin at green tip or when conditions become favorable for disease development. Repeat on 7-10 day intervals. **Suppression only**
	Sulphur	**Microscopic Sulphur**	3.5-6.5 kg/ha	1	**Apple, Pear, Peach** Apply 6.5 kg/1000 L in the Pre-Bloom, Calyx and First Cover sprays. In the later Cover sprays use 3.5 - 4.5 kg depending on mildew conditions and temperatures.
White Mould (sclerotinia)	*Bacillus subtilis*	**Serenade Max (OMRI)**	3.0-6.0 kg/ha	0	**Cole crops, Legume vegetables, Lettuce, Celery.** Make first application at planting. Make follow-up applications at 7-14 day intervals (depending upon crop). For Celery make first application 8 weeks before harvest and repeat on a 14 day interval. **Suppression only**
		Serenade ASO (OMRI)	5-15 L/ha	0	**Legume vegetables, Lettuce, Celery** Make first application at planting. Make follow-up applications at 7-14 day intervals (depending upon crop). For Celery make first application 8 weeks before harvest and repeat on a 14 day interval. **Suppression only**
	*Coniothyrium minitans*strain	**Contans WG**	2-4 kg/ha (Lettuce, Snap	0	**Lettuce, Snap Beans, Carrots, Cabbage, Tomato, Celery,**

	CON/M/91-08		Beans, Carrots, Cabbage, Tomato, Celery) 1-2 kg/ha (Winter/Spring Canola, Sunflower, Dry edible beans, Safflower and Soybeans		**Winter/Spring Canola, Sunflower, Dry edible beans, Safflower and Soybeans.** Apply to soil at or prior to planting. It may also be applied to plant debris after harvest, prior to replant of a susceptible crop. If incorporation will displace the soil more than 5 cm, increase rates to 3-6 kg/ha and 2-4 kg/ha respectively.

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.pmra-arla.gc.ca/portal/page?_pageid=34,17551&_dad=portal&_schema=PORTAL

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	Oil-based emulsifiable concentrate	kPa	kilopascal
EG	Water dispersible granule	kg	kilogram
F	Flowable	g	gram
G	Granule	L	litre
L	Liquid	BIU	Billions of International Units
WDG	Wettable dry granule	ppm	parts per million (1000 ppb)
WP, W	Wettable powder	ppb	parts per billion (1/1000 ppm)
WG	Wettable granule		
SC	Suspension concentrate		
Sn	Solution		

Helpful Conversions[1]	
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!