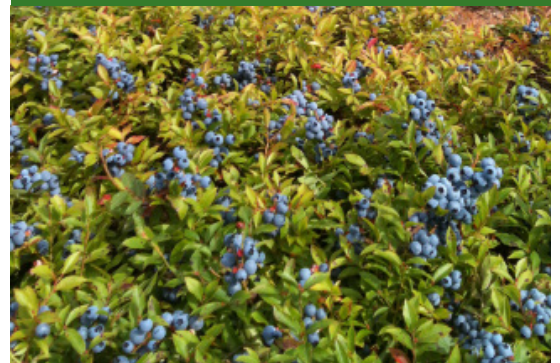


Wild Blueberry Management Schedule

A guide to insect, weed and
disease management in wild
blueberries in Nova Scotia



2015



GUIDE TO WEED, INSECT AND DISEASE MANAGEMENT IN WILD BLUEBERRY

Nova Scotia Guide to Pest Management in Wild Blueberry 2015
[WBLUE1-15]

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IMPORTANT

This publication was compiled by representatives from Perennia using information from the Pest Management Regulatory Agency of Health Canada, and specific pesticide labels. **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, Perennia 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, Perennia has only listed a few 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. 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 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.

Always check with your Processor or Buyer to see what products are allowable for their markets

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
WEEDS:							
Pre Emergence <i>Broadleaf and Grass weeds</i> <i>(Some tolerance issues have occurred in some fields)</i>	5	hexazinone	Velpar 75 DF (Sprout year)	1.92-2.56 kg/ha	48 hours	-	Should be applied in 200 L of water per ha. Apply high rate on heavy and fine textured soils. Apply low rate on sandy and gravelly soils. Apply before the crop emerges from the ground or crop damage may occur.
			Pronone 10G	14-20 kg/ha			Must be applied evenly over an area with a properly calibrated granular applicator. Applications can be made until late June as long as foliage is not wet during application. Water is required to activate the herbicide. Long periods of no rain following treatment can lead to crop damage. Also heavy rains after application can lead to pooling and crop damage.
			Velpar 75 DF (Crop year)	1.3 kg/ha			Apply in early spring of fruiting year. Do not apply after buds have begun to break or crop damage may occur. Generally not recommended unless severe weed pressure may limit harvest ability.

	2	nicosulfuron / rimsulfuron New 2015	Ultim 75 DF plus Agral 90	33.7 g/ha Plus 0.2% v/v	12 hours	14 months	For control of quackgrass, annual grasses and redroot pigweed, plus suppression of poverty oatgrass, ticklegrass and black bulrush, Apply within a minimum of 140 L water per hectare. Apply when annual grasses have 1-6 leaves (up to early tillering) and perennial grasses have 3-6 leaves. Application must be made in the spring of the sprout year. Stunting and yield losses may occur if blueberry plants are contacted by the spray. Applications made before lowbush blueberry emergence have increased crop safety when tank mixed with Velpar or Sinbar.
	20	dichlobenil	Casoron G-4	110-175 kg/ha	12 hours	100	Use the high rate (175 kg/ha) in the first year of use or to control grasses and tough perennial weeds. The low rate (110 kg/ha) can be used the following year for annual weed control. Apply by ground only.
<i>Broadleaf weeds and Suppression of Moss</i>	14	flumioxazin	Chateau WDG	140-210 g/ha (labeled broadleaf weeds) 280-420 g/ha (moss)	12 hours	-	Only apply Chateau as a dormant post-harvest application (fall). Unacceptable crop injury and yield loss may occur if product comes into contact with non-dormant structures. Make sure spray tank is cleaned according to label recommendations before applying a foliar pesticide. Do not make more than two applications in a growing season. Use low rate in

							coarse textured soils, high rate in medium textured soils.
<i>Mainly Grasses</i>	5	terbacil	Sinbar WDG	1.5-2.5 kg/ha	12 hours	-	This product controls mainly grasses and a few broadleaf species. This product needs to be applied in 200 L of water /ha and before the blueberry plant emerges.
	15	propyzamide	Kerb SC	4.1-5.6 L/ha	24 hours	-	Apply in late fall of the crop or sprout year when plants are dormant. Controls mainly grasses and a few broadleaf weeds including sheep sorrel. This product is temperature and moisture dependant, and needs to be applied before the ground is frozen, but when daytime air temps are low. (late November). Apply in 300-500 L of water/ha.
	5	simazine	Simazine 80 WP Princep-Nine-T	1.7-2.5 kg/ha 1.5-2.0 kg/ha	12 hours	60	Apply in 300 L/ha. Controls a few grasses and some broadleaf weeds.
Post Emergence <i>Grasses</i>	1	fluazifop-p-butyl	Venture L	1.0-2.0 L/ha	12 hours	60	Can be applied in the cropping or sprouting years. Apply post emergently on actively growing grasses. Maximum of 1 application per year. This herbicide will not control fescue grasses. Although the low rate will control some species it is recommended to use the high rate in most cases.
	1	sethoxydim	Poast Ultra plus	1.1 L/ha plus	-	15	Can be applied in the cropping or sprouting years. Apply post emergently on actively growing

			Assist or Merge	1% v/v			grasses. Maximum of 1 application per year. This product is ideal for the control of late emerging grasses like Witchgrass due to the shorter PHI.
	2	foramsulfuron	Option 2.25 OD plus 28% UAN	1.56 L/ha plus 2.5 L/ha	Wait for residues to dry	Sprout year only	For suppression of Fine-leaf sheep fescue, sheep fescue, red fescue and tall fescue. Apply at the 1-6 leaf stage in a minimum of 150 L/ha of water. <u>Use only once per year.</u> Read label for specific application instructions. This is mainly a contact herbicide with limited soil activity.
<i>Broadleaf weeds</i>	27	mesotrione	Callisto 480 SC plus Agral 90	0.3 L/ha plus 200 ml/100 L of water	12 hours	60	Make only one application per year. Apply either pre-emergent or post emergent to weeds. Apply in 100-200 L of water/ha. Apply up to the 8 leaf stage of weeds and pre-bloom to crop.
	2	tribenuron-methyl	Spartan 75 DF plus Agral 90	0.04 kg/ha plus 200 ml/100 L of water	12 hours	-	To control Bunchberry. Apply in 150-250 L of water/ha. -Can be applied in early spring of sprout year when bunchberry leaves emerge from ground. -Can also be applied as soon after harvest as possible (within 3-4 weeks) in the cropping year.
Selective Herbicide Treatments <i>Broadleaf weeds – Spot treatments</i>	4	clopyralid	Lontrel 360 EC	Spot: 42 ml in 200 L/1000m ² Small Sections: 420 ml/ha	12 hours	-	Apply in June of sprout year. Later applications may cause damage. Do not treat whole fields with this product as it is registered for spot and small section applications. For small sections apply in a spray volume of 200 L/ha. Will control Vetch spp.

	2	nicosulfuron / rimsulfuron	Ultim 75 DF plus Agral 90	4.2 g/100 L of water plus 200 ml/100 L of water	12 hours	14 months	Apply in early summer of sprout year (June-early July). Avoid spraying large areas as some stunting will occur. This product is currently registered for <u>spot treatments of black bulrush.</u>	
	2	tribenuron-methyl	Spartan 75 DF plus Agral 90	2.5g in 10 L of water plus 20 ml/10 L of water	12 hours	-	Apply as spot treatments in summer and early fall of sprout year. Will control bunchberry, yellow loosestrife, bracken fern, wild rose and others. Some stunting will occur to blueberry plants that were contacted with Spartan.	
Non-Selective Herbicide Treatments	4	dicamba	Banvel II / Oracle	2.1 L/1000 L water	12 hours	-	Mainly used for site preparation. Do not spray blueberry foliage as it will kill the blueberry plant.	
Spot and wiper treatments	9	glyphosate	Roundup Original, Roundup Transorb, Glyfos, Touchdown etc.	Spot: 1-2% solution	12 hours	-	To be used in developing fields, in sprouting year, or in the fall after harvest. Do not spray or touch blueberry foliage as it will kill the blueberry plant.	
				Wick wiping: 33% solution				
	4	2,4-D	Various products	Consult labels	12 hours	-		Use in developing fields, in sprouting year, or in the fall after harvest. Do not spray or touch blueberry foliage as it will kill the blueberry plant.
	4	triclopyr	Garlon 4	Bark treatment: 1-5 % in oil	12 hours	-		Can be applied at any time of year and should only be used in developing fields. Do not spray or touch blueberry foliage as it will kill the blueberry plant.
Stump treatment: 20-30% in oil								

Late fall broadcast	9	Glyphosate	Roundup Weathermax	1.67 L/ha	12 hours	550 days	For suppression of Lambkill (Sheep Laurel, <i>Kalmia angustifolia</i>) in newly cleared lowbush blueberry, apply Roundup WeatherMAX in the fall after 95 % blueberry leaf drop, typically late October or November. Do not apply Roundup WeatherMAX before one or two heavy, damaging fall frosts have occurred. Lambkill plants should have at least 50 % green leaf colour at the time of application. Do not add adjuvant to the spray mixture. Treat only areas of the field which have lambkill present. Apply Roundup WeatherMAX before pruning lowbush blueberry plants and do not prune for at least 14 days after application. All fields treated with Roudup WeatherMAX must be pruned post treatment in the fall or the following spring before mid-May
	4	dicamba	Banvel II / Oracle	4.6-7.1 L/ha	12 hours	-	For control of sweet fern and Lambkill. Apply in 550 L/ha of water. Apply in the fall after harvest when sweet fern leaves are still green and <u>90% of the blueberry leaves have dropped.</u> Fall pruning should be carried out 4-5 weeks after spraying.

For more detailed information on weed management refer to the “Wild Lowbush Blueberry IPM Weed Management Guide” from the New Brunswick Department of Agriculture, Fisheries and Aquaculture:

<http://www2.gnb.ca/content/dam/gnb/Departments/10/pdf/Agriculture/WildBlueberries-BleuetsSauvages/C420-E.pdf>

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
INSECTS:							
Blueberry leaf-tier (<i>Croesia curvalana</i>)	3	deltamethrin	Decis 5 EC	150 mL/ha	12 hours	14	Apply at F1 stage, in 100-200 litres of water per hectare.
Blueberry spanworm (<i>Itame argillacearia</i>)	1B	phosmet	Imidan 70WP Instapak	1.6 kg/ha	3 days	15	First application to be made when insects reach damaging levels. Max 2 applications per year, apply in 1000 litres of water/ha.
	5	spinetoram	Delegate WG	100-200 g/ha	12 hours	3	Suppression only. Apply at egg hatch to small larvae. Use high rate for higher populations and/or larger larvae. Max 3 applications per year, with a minimum re-treatment interval of 6 days. Avoid when pollinators are active.
	5	spinosad	Success 480 SC	145-182 ml/ha	Once product is dry	3	Apply at egg hatch to small larvae. Apply in 300-500 litres of water per hectare. Use high rate under high insect pressure or large larvae. Max. 3 applications per year. Repeat applications at 7-10 days.
	4	acetamiprid	Assail 70 WP	136-160 g/ha	12 hours	7	Suppression only. Apply in a minimum spray volume of 187 L/ha.
	11	<i>Bacillus thuringiensis</i>	Dipel 2X DF	550-1125 g/L	-	0	Apply to larvae at 1st or 2nd instar. Apply in a minimum of 300 L/ha. Controls Chainspotted Geometer and various leafroller species.

	3	deltamethrin	Decis 5 EC	125 mL/ha	12 hours	14	For control of Bruce Spanworm. Apply in 100-200 litres of water per hectare. Avoid spraying during flowering.
	28	chlorantraniliprole	Altacor	215-285 g/ha	12 hours	1	Do not make more than 3 applications per season. Do not apply more often than once every 7 days. Do not exceed 645g/ha per season.
	18	methoxyfenozide	Intrepid 240F	0.5 L/ha	12 hours	7	Apply when feeding damage is detected or when infestations reach thresholds as determined by local monitoring standards. Repeat applications after 7-14 days if required based on population monitoring.
Blueberry flea beetle <i>(Altica sylvia)</i>	5	spinosad	Success 480 SC	165-220 ml/ha	Once product is dry	3	Suppression of Flea Beetle larvae. Apply mid-May to early June. Maximum of 3 applications per season. Apply high rate when populations are high. Best results when applied to early larval stages. Allow 7-10 day intervals between applications if monitoring indicates a need to re-treat.
			Entrust 80W	100-132 g/ha			
	4	acetamiprid	Assail 70 WP	160 g/ha	12 hours	7	
	5	spinetoram	Delegate WG	200 g/ha	12 hours	3	

Blueberry fruit fly (<i>Rhagoletis mendax</i>)	4	acetamiprid	Assail 70 WP	136-160 g/ha	12 hours	7	Apply in a finished spray volume of 187 L/ha (75 L/acre). Use high rate under heavy insect pressure or dense vegetation. Do not apply more than 4 applications per season. Do not apply more than once every 12 days.
	1B	phosmet	Imidan 70WP Instapak	1.6 kg/ha	3 days	15	Apply early to late July. Maximum 2 applications per year, apply in 1000 litres of water/ha.
	5	spinosad	GF-120 NF Naturalyte Fruit Fly Bait	1.0-1.5 L	Once product is dry	0	Apply early to late July. Apply with a large spray droplet size (4-6 mm). Begin applications as soon as traps indicate flies are present. Repeat on 7 day intervals, use a shorter interval during rainy periods. Max 5 applications per season.
	1B	dimethoate	Cygon 480 EC	580-825 mL/ha	-	15	Apply early to late July. If using an air-blast orchard sprayer, weather conditions should be checked frequently (every 15 minutes). Wind speed should be from 2 to 10 km/h. Relative humidity should not be less than 50%. Air temperature should not exceed 25°C. Maximum of 2 applications per season.
			Lagon 480 E	600-825 mL/ha			
	1B	malathion	Malathion 25W	2.25 kg/1000 L	-	1	
	1A	carbaryl	Sevin XLR PLUS	4.0 L/ha	-	2	
	23	spirotetramat	Movento 240 SC	365-435 ml/ha	12 hours	7	

	28	cyantraniliprole	Exirel	1000-1500 ml/ha	12 hours	3	Suppression only. Restricted MRLs contact buyer before use. Begin applications when treatment thresholds have been reached. Thorough coverage is essential for optimum control. For blueberry maggot, begin applications when populations are low. If blueberry maggot populations are high, use a registered insecticide with a different of mode of action to reduce the pest populations before applying Exirel™ insecticide. Do not make more than 4 applications per season. Reapplication interval is 5 days.
White-marked tussock moth (<i>Orgyia leucostigma</i>)	11	<i>Bacillus thuringiensis kurstaki</i>	Bioprotec CAF	4.0 L/ha	-	-	Make 2 applications. Apply at peak 2 nd instar larval development. Apply second application 2 – 5 days later.
			Foray 48 BA				
Blueberry thrips (<i>Frankliniella vaccinii</i> , <i>Catinathrips kainos</i>)	3	permethrin	Pounce 384 EC	180 mL/ha	-	-	<i>Vegetative year only.</i> Make one application between mid-May and early June when plants are 1-2 cm.
	4	acetamiprid	Assail 70 WP	160 g/ha	12 hours	7	Apply when new shoots are 0.5 – 1.5 cm tall. Repeat applications may be made at least 12 days later if required. Apply in a minimum spray volume of 187 L/ha.
	1B	malathion	Malathion 25W	2.25 kg/1000 L	-	1	
Redstriped Fireworm	28	chlorantraniliprole	Altacor	215-285 g/ha	12 hours	1	Begin applications when a treatment threshold has been reached. Do not make more than 3 applications per season. Do not apply more often that once every 7 days. Do not exceed 645g/ha per season.

Weevils	4	thiamethoxam	Actara 25WG	210-280 g/ha	12 hours	3	Apply before pests reach damaging levels. Maximum two applications per year. This product is highly toxic to bees, do not apply to blooming crops and wait at least 5 days before placing beehives in a treated field.
	28	cyantraniliprole	Exirel	1000-1500 ml/ha	12 hours	3	Restricted MRLs contact buyer before use. Apply when most adults have emerged, but before they start laying eggs.
Brown marmorated stink bug	1B	malathion	Malathion 85E	1000 mL/ha	-	1	Apply prior to harvest when treatment thresholds have been reached, as determined by local monitoring. Max 3 applications.
	4	thiamethoxam	Actara 25WG	280 g/ha	12 hours	3	Apply before pests reach damaging levels. Scout fields and treat again if populations rebuild to potentially damaging levels. Application interval: 7 days. Max 2 applications.
Blueberry Gall Midge	23	spirotetramat	Movento 240 SC	365-435 ml/ha	12 hours	7	Apply at egg hatch when buds are tightly closed. Apply in 200-3000 L/ha. Allow for 7 days between applications.
	28	cyantraniliprole	Exirel	750-1000 ml/ha	12 hours	3	Suppression only. Restricted MRLs contact buyer before use. Begin applications when treatment thresholds have been reached. Thorough coverage is essential for optimum control. Do not make more than 4 applications per season. Do not apply more than once every 5 days.

Spotted wing Drosophila (SWD)	28	cyantraniliprole	Exirel	1000- 1500 ml/ha	12 hours	3	Suppression only. Restricted MRLs contact buyer before use. Begin applications when treatment thresholds have been reached. Thorough coverage is essential for optimum control. For SWD, begin applications when populations are low. Exirel™ insecticide targets the adult life stage of SWD. If SWD populations are high, use a registered insecticide with a different mode of action to reduce the pest populations. Apply a subsequent application of Exirel™ insecticide if required. Do not make more than 4 applications per season. Do not apply more than once every 5 days.
	1B	phosmet <i>NEW 2015</i>	Imidan 70WP Instapak	1.6 kg/ha	3 days	15	A 2 nd application may be made when indicated by insect infestations and local or provincial spray programs.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
DISEASES:							
Monilinia Blight (<i>Monilinia vaccinii-corymbosi</i>) Fruiting Year Only	3	propiconazole	Topas 250 / Tilt 250	500 ml/ha	12 hours	60	Apply late April to mid to late May 40-50% F2 stage. Maximum of 2 applications per year.
			Mission 418 EC / Bumper	300 ml/ha			
			Jade	500 ml/ha			
	3	triforine	Funginex 190 EC	1.7 to 3 L/ha	48 hours	60	Apply late April to mid to late May 40-50% F2 stage. Max 3 applications per year.
3	metconazole	Quash	180 g/ha	3 days	12	Apply pre infection. Apply at the green tip stage for mummy berry, at bloom for anthracnose, and at pre-bloom for Phomopsis. Make repeat applications on 7 day intervals. A maximum of 3 applications are permitted. Do not make more than 2 sequential applications.	
29	fluazinam	Allegro 500F	2.24 L	24 hours	30	Apply pre infection. SUPPRESSION ONLY. Apply as a foliar spray in 300-1000 L/ha. Max 4 applications per year. Begin applications at bud break and repeat applications every 7-10 days until petal fall.	

	7	penthiopyrad	Fontelis	1.75 L/ha	12 hours	0	Begin applications prior to disease development, continue on a 7-10 day interval. Use higher rate and shorter interval when disease pressure is high. Max seasonal rate is 5.25 L/ha. Do not make more than 2 sequential applications before switching to another mode of action.
	-	<i>Bacillus subtilis</i>	Serenade MAX	3.5-6.0 kg/ha	-	0	Apply pre infection. Biopesticides that may only suppress the indicated diseases. Repeat as necessary on a 7-14 day interval.
			Serenade ASO	24 L/ha			
	3	prothioconazole	Proline 480SC	315-420 ml/ha	24 hours	7	Apply early bloom for fruit rot. Make a second application of Proline 480 SC or another approved fungicide 5-10 days later. Maximum 2 applications per year. Applications may be made by ground application equipment only. Apply with a non-ionic surfactant, AgSurf or Agral 90 at 0.125% v/v.
	3-11	azoxystrobin, propiconazole <i>NEW 2015</i>	Quilt	1 L/ha	12 hours	30	In the fruiting year apply the first application when flower bud scales first appear and make a second application 10 days later. Make no more than two applications per year. Use a minimum of 200 L of water per hectare.

Botrytis blight (<i>Botrytis cinerea</i>) Crop Year Only	M	captan	Captan Supra 80 WDG	2.25 kg/ha	72 hours	2	Apply mid bloom to early fruit set. Do not apply more than twice consecutively.
			Maestro 80 DF	2.25 kg/ha			
	7	boscalid	Cantus 70 WDG	0.56 kg/ha	12 hours	0	
	9-12	cyprodinil, fludioxonil	Switch 62.5 WG	775 to 975 g/ha	12 hours	1	Make the first application during early bloom. A second application may be made 7-10 days later. One of the actives in this product is persistent and may carryover. It is recommended that any products containing fludioxonil not be used in areas treated with this product during the previous season. Will also control anthracnose
	7-11	pyraclostrobin, boscalid	Pristine WG	1.3-1.6 kg/ha	24 hours	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Use a shorter interval and/or higher rates when disease pressure is high. Maximum of 4 applications per season. Will suppress Valdensinia leaf spot.
	-	<i>Bacillus subtilis</i>	Serenade MAX	3.0-6.0 kg/ha	-	0	Biopesticides that may only suppress the indicated diseases. Begin application prior to disease development and repeat on 7-10 day intervals.
			Serenade ASO	4.0-15.0 L/ha			
	17	fenhexamid	Elevate 50 WDG	1.7 kg/ha	4 hours	1	Apply mid bloom to early fruit set. Do not apply more than twice consecutively.

	1	thiophanate-methyl	Senator 70WP	1.1 kg in 1000 L of water	-	60	Apply at bud break. Make 3-4 applications at 10-14-day intervals. Exact interval used depends on weather conditions and disease development. Contact local extension officials.
Septoria leaf spot (<i>Septoria spp.</i>)	M	chlorothalonil	Bravo 500 / Bravo ZN	7.2 L/ha	48 hours	54	Application should be based on level of disease pressure the previous year. Do not exceed 2 applications per year. One application can be made early to mid-June of the sprout year (depending on location) for Septoria. This application will also be of some benefit for Valdensinia leaf spot and Phomopsis canker. Apply Bravo ZN in 200-950 L/ha of water. Important: Read Product Label Liability Statement
	7-11	pyraclostrobin, boscalid	Pristine WG	1.6 kg/ha	24 hours	0	Suppression of Septoria only. Maximum number of applications in sprout year is 4; maximum number in crop year is 2. Begin applications prior to disease development.
	3	prothioconazole	Proline 480 SC	315 ml/ha	24 hours	7	Suppression of Septoria only. Apply at first sign of disease; a second application may be made 10-14 days later. Max 2 applications per year. The lowest labeled rate of a non-ionic

							surfactant may be tank mixed with Proline. Look at label for buffer zones and airblast restrictions.
	3-11	azoxystrobin, propiconazole	Quilt	1 L/ha	12 hours	30	Suppression of Septoria only. Apply at the first sign of disease in the spout year. After the initial application, one additional application may be made 10-14 days afterwards if conditions remain favourable for continued or increased disease development making no more than two applications per year. Use a minimum of 200 L per hectare of water or an appropriate water volume to provide full coverage.
		<i>NEW 2015</i>					
Valdensinia leaf spot (<i>Valdensinia heterodoxa</i>)	7-11	pyraclostrobin, boscalid	Pristine WG	1.3-1.6 kg/ha	24 hours	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Use shorter interval and/or higher rates when disease pressure is high. Max 4 applications per season.
	29	fluazinam	Allegro 500F	0.4-0.8 L/ha in 300-1000 L water/ha	24 hours	30	Suppression only. Apply at early bloom or at first symptoms in fruiting fields and at an equivalent time in sprout fields. Application interval is 7-14 days. Use shorter interval and higher rate when disease pressure is high. Good spray coverage into the canopy is essential for good disease management. Max 4 applications per season.

	3	prothioconazole	Proline 480SC	400 mL/ha	24 hours	7	Apply at first sign of disease. After the initial application, one additional application may be made 10-14 days afterwards if conditions remain favourable for continued or increased disease development. Apply up to two (2) applications of Proline 480 SC/year. Applications may be made by ground application equipment only. Apply with a non-ionic surfactant, AgSurf or Agral 90 at 0.125% v/v.
	3-11	azoxystrobin, propiconazole <i>NEW 2015</i>	Quilt	1 L/ha	12 hours	30	Suppression only. Apply at the first sign of disease in the sprout year. After the initial application, one additional application may be made 10-14 days afterwards if conditions remain favourable for continued or increased disease development making no more than two applications per year. Use a minimum of 200 L per hectare of water or an appropriate water volume to provide full coverage.
Leaf Rust	M	chlorothalonil	Bravo 500 / Bravo ZN	7.2 L/ha	48 hours	54	Application should be based on level of disease pressure the previous year. Make an application in late July to early August of the sprout year (depending on location) for Rust. These applications will also be of some benefit for Valdensinia leaf spot and Phomopsis canker. Apply

							Bravo ZN in 200-950 L/ha of water. Do not exceed 2 applications per year.
	3	prothioconazole	Proline 480 SC	400 ml/ha	24 hours	7	Suppression of Blueberry Leaf Rust only. Apply at first sign of disease and an initial application may be made 10-14 days later. Do not apply more than two applications per year. The lowest labeled rate of a non-ionic surfactant may be tank mixed with Proline. Look at label for buffer zones and airblast restrictions.
	3-11	azoxystrobin, propiconazole <i>NEW 2015</i>	Quilt	1 L/ha	12 hours	30	Apply at the first sign of disease in the spout year. After the initial application, one additional application may be made 10-14 days afterwards if conditions remain favourable for continued or increased disease development making no more than two applications per year. Use a minimum of 200 L per hectare of water or an appropriate water volume to provide full coverage.
Powdery Mildew	3	myclobutanil	Nova 40W	340 g/ha	12 hours to 8 days (<i>See label</i>)	4 (hand harvest) 1 (mechanical harvest)	Apply at the first sign of disease development and repeat in 7-14 days. Do not apply more than 340 g/ha. Use a maximum of 3 applications per growing season.
	-	mineral oil	Purespray Green Spray Oil	10 L in 1000 L water (1% solution)	-	-	Use sufficient spray volume (up to 1000 L/ha) to ensure thorough crop coverage. Begin when conditions

		<i>NEW 2015</i>	13E	otherwise phytotoxicity may result.			are favourable for disease development and/or when 1st symptoms appear. Apply at 7 – 14 day intervals. Do not apply more than 8 summer spray applications per growing season. <i>*Also: Suppression of spider mites; deter feeding by aphids.</i>
Anthracnose fruit rot, Alternaria fruit rot, Phomopsis canker	M	chlorothalonil	Echo 90DF	4.0 kg/ha	48 hours	54	Contact processors to see if these products are allowable in crop year for their markets for these uses. Make 3 applications; one at green tip, another at pink bud and another at petal fall. After petal fall, a protective schedule using a different registered product may be necessary to ensure continued control of fruit rot.
			Echo 720	5.0 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/lr-re/index-eng.php>

Product Toxicity

COMMON NAME	TRADE NAMES	TOXICITY		
		TO BEES	TO APPLICATOR	
			ORAL	DERMAL
Herbicides				
2,4-D	2,4-D Amine 500	low	mod	mod
clopyralid	Lontrel	low	low	low
dicamba	Banvell II	low	low	low
dichlobenil	Casoron	low	low	low
fluazifop-p-butyl	Venture	low	low	low
flumioxazin	Chateau	low	low	low
formasulfuron	Option	low	low	low
glyphosate	Roundup, various	low	low	low
hexazinone	Velpar, Pronone	low	low	low
mesotrione	Callisto	low	low	low
nicosulfuron/rimsulfuron	Ultim	low	low	low
propyzamide	Kerb	low	low	low
sethoxydim	Poast Ultra	low	low	low
simazine	Simazine/Prince-Nine-T	low	low	low
terbacil	Sinbar	low	low	low
tribenuron-methyl	Spartan	low	low	low
triclopyr	Garlon	low	mod	mod
Insecticides and Fungicides				
acetamiprid	Assail	high	mod	low
<i>Bacillus subtilis</i>	Serenade Max/ASO	low	low	low
<i>Bacillus thuringiensis</i>	various	low	low	low
boscalid	Cantus	low	low	low
boscalid, pyraclostrobin	Pristine	low	low	low
captan	Captan, Maestro	low	low	low
carbaryl	Sevin XLR Plus	high	mod	mod
chlorantraniliprole	Altacor	mod	low	low
chlorothalonil	Bravo	low	low	low
cyantraniliprole	Exirel	high	low	low
cyprodinil, fludioxonil	Switch	low	low	low
deltamethrin	Decis	high	low	low
dimethoate	Cygon, Lagon	high	mod	mod
fenhexamid	Elevate	low	low	low
fluazinam	Allegro	low	low	low
malathion	Malathion	high	mod	mod
metconazole	Quash	low	low	low
methoxyfenozide	Intrepid	low	low	low
myclobutanil	Nova	low	mod	mod
penthiopyrad	Fontelis	low	low	low
propiconazole	Topas, Mission,	low	low	low

	Jade			
prothioconazole	Proline 480 SC	low	low	low
permethrin	Pounce	high	mod	low
phosmet	Imidan	high	mod	low
spinetoram	Delegate	mod	low	low
spinosad	GF-120 NF Naturalyte Fruit Fly Bait,	mod	low	low
spinosad	Success 480 SC/Entrust 80W	mod	low	low
spirotetramat	Movento 240 SC	high	mod	mod
thiamethoxam	Actara 25 WG	high	mod	mod
thiophanate-methyl	Senator	low	low	low
triforine	Funginex	low	low	low

References: EXTTOXNET (<http://exttoxnet.orst.edu/pips/ghindex.html>) and Individual Product MSDS sheet.

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
F	Flowable	kg	kilogram
G	Granular	g	gram
L	Liquid	L	litre
WDG	Wettable dry granule	BIU	Billions of International Units
WP,W	Wettable powder	ppm	parts per million
SC	Suspension concentrate		
Sn	Solution		
SP	Soluble powder		

Helpful Conversions*	
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

* 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 have greater toxic effects in smaller amounts. Therefore, even small conversion errors can lead to the use of incorrect dosages (either too high or too low). Use metric – you will be glad you did!