

EXTENSION AND ADVISORY TEAM

GUIDE TO WEED, INSECT AND DISEASE MANAGEMENT IN WILD BLUEBERRY

Nova Scotia Guide to Pest Management in Wild Blueberry 2021
[WBLUE1-21]



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Updated February 17, 2021 by
Jill MacDonald, Research Associate, Perennia
Hugh Lyu, Wild Blueberry Specialist, Perennia

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>	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.
			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.
	2	nicosulfuron / rimsulfuron	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/ha Apply when annual grasses have 1-6 leaves and perennial grasses have 3-6 leaves. Apply in the spring of the sprout year. Stunting and yield losses may occur if plants are contacted.

	20	dichlobenil	Casoron G-4	110-175 kg/ha	12 hours	100	To be used in the late winter or Fall when plants are dormant. 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.
	10	Glufosinate ammonium	Ignite SN	2.7-5 L/ha	12 hours	-	Application must be made in the non-crop year in dormant wild blueberry. Application must be made to a field entering into the prune year in the following season, but after blueberry leaf drop, or mowing in the late fall, but before sprout emergence in the spring. Apply in a minimum of 110 l/ha and no more than 6.7 l/ha of product per season. Will control actively growing weeds. Avoid contact to green bark, stems or foliage.
	14	Sulfentrazone	Authority 480	219-292 ml/ha	12 hours	3	Needs to be applied when plants are dormant and prior to emergence of weeds. Apply in a minimum spray volume of 100L/ha. Use spray booms only. For broadcast applications a single application of Authority can be made every other year.

<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. Use only on established plantings (1 year). This product needs to be applied in 200 L of water /ha and before the blueberry plant emerges. Max. one application per year.

<i>Mainly Grasses</i>	3	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 (Fescue) and a few broadleaf weeds including sheep sorrel. This product is temperature and moisture dependent, and needs to be applied before the ground is frozen, but when daytime air temps are low. (Nov.) Apply in 300-500 L of water/ha. Do not apply Kerb to the above crops until all the fruits have been harvested.
	5	simazine	Princep-Nine-T	1.5-2.0 kg/ha	12 hours	60	Apply in 300 L/ha. Apply in late fall to early spring when blueberries are dormant. Controls a few grasses and some broadleaf weeds. Maximum one application per year. Use low rate on course textured soil.
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. Max. 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.

Post Emergence <i>Grasses</i>	1	sethoxydim	Poast Ultra plus Assist or Merge	1.1 L/ha plus 0.5-2.0 L/ha or 0.5-2.0 L/ha	12 hours	15	Can be applied in the cropping or sprouting years. Apply post emergently on actively growing grasses, most effective when grass is at the 2 to 5 leaf stage. Maximum of 1 application per year. Ideal for the control of late emerging grasses (Witchgrass) due to the short 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 <u>suppression</u> 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.
<i>Broadleaf weeds</i>	27	mesotrione	Callisto 480 SC / Mester 480 SC 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 plus Agral 90	0.04 kg/ha plus 200 ml/100 L of water	12 hours	-	To control Bunchberry and sheep sorrel. Apply in 150-250 L of water/ha. -Applied in early spring of sprout year when bunchberry leaves emerge. Applications after blueberry emergence will cause stunting. -Also applied soon after harvest (within 1-4 weeks) in the cropping year. To control yellow loosestrife, speckled alder, wild rose and bracken fern mix

							0.25 g per liter of water and apply as a spot treatment in the mid-summer.
Selective Herbicide Treatments <i>Broadleaf weeds – Spot treatments</i>	4	clopyralid	Lontrel 360 EC	Backpack: 42 ml in 200 L/1000m ² Small Sections: 420 ml/ha	12 hours	10 months	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.
	4	Clopyralid	Pyralid	Backpack: 50 ml in 200 L/1000m ² Boom sprayer: 504 ml/ha	12 hours	10 months	For spot application only. Apply in June of sprout year. Later applications may cause damage. Make one application per year. Will control Vetch spp. For boom application apply in 150-200 L/ha.
	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 spot treatments of black bulrush.
	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 Spot and wiper treatments	4	dicamba	Banvel	4.6 -7.1 L/ha (fern, sweet lambkill) 2.3 L/ha (additional broadleaf control) + 5.7 L (600 g/L formulation)	12 hours	-	Mainly used for site preparation. Do not spray blueberry foliage as it will kill the blueberry plant. Apply in 550 L of water per hectare. Apply in the fall while the sweet-fern is still moderately green after 90% of the blueberries have dropped their leaves. Use low rate with tank mix for additional broadleaf control.
	9	glyphosate	Various products	Consult labels	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.
	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.

<p>Non-Selective Herbicide Treatments</p> <p>Spot and wiper treatments</p>	4	triclopyr	Garlon XRT	See remarks	12 hours	-	<p>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. Make one application per year. Apply as a directed ground spray.</p> <p>Woody plant control: mix 2.5 to 5 L of product in a minimum of 200 L of water per hectare; Broadleaved weed control: mix 0.6 to 2.5 L of product in a minimum of 200 L of water per hectare to ensure uniform coverage.</p> <p>Read product label for detailed information.</p>
Late fall broadcast	9	Glyphosate	Roundup Weathermax	1.67 L/ha	12 hours	550 days	<p>For suppression of Lambkill (Sheep Laurel, <i>Kalmia angustifolia</i>) in newly cleared lowbush blueberry, apply in late fall after 95 % blueberry leaf drop. Apply after one or two heavy, 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 before pruning and wait at least 14 days after application to prune. All fields treated with must be</p>

							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.

Refer to the “Wild Lowbush Blueberry IPM Weed Management Guide” from NBDAAF

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

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INSECTS:							
Blueberry leaftier (<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. Do not apply more than three times per year.
			Poleci 2.5 EC	300 ml/ha			
Blueberry spanworm (<i>Itame argillacearia</i>)	1B	phosmet	Imidan WP	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	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.
			Entrust 80 W	80-109 g/ha	12 hours	3	Also controls oblique banded leafroller, winter moth and cabbage looper.
			Entrust	267-374 ml/ha			
	4	acetamiprid	Assail 70 WP Aceta 70 WP	160 g/ha	12 hours	7	Suppression only. Apply in a minimum spray volume of 187L/ha. Both crop and sprout years

Blueberry spanworm (<i>Itame argillacearia</i>)	11	<i>Bacillus thuringiensis</i>	Bioprotec PLUS	0.9 – 1.8 L/ha	-	0	Apply to larvae at 1st or 2nd instar. Apply in a minimum of 300 L/ha. Max. 4 applications per year. Controls various leafroller species.
			Bioprotec CAF	0.7-1.4 L/ha	1	0	
	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. Do not apply more than 3 times per year
			Poleci 2.5 EC	300 ml/ha			
	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 monitoring.
	18	tebufenozide	Confirm 240 F	1.0 L/ha	12 hours	14	Begin applications when first signs of feeding damage appears or when threshold is reached.
4, 15	novaluron acetamiprid	Cormoran	1400 ml/ha	12 hr	8	Apply at 200 L/ha, max three applications per season, do not apply more than once every 10-14 days. Do not apply when temperatures are high or phytotoxic effect may occur.	

Blueberry flea beetle <i>(Altica sylvia)</i>	5	spinosad	Success	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 applied to early larval stages. Allow 7-10 day intervals.
			Entrust 80W	100-132 g/ha			
			Entrust	334-440 ml/ha			
	4	acetamiprid	Assail 70 WP Aceta 70 WP	160 g/ha	12 hours	7	
	5	spinetoram	Delegate WG	200 g/ha	12 hours	3	
28	Cyantranilprole	Exirel	500-1000 ml/ha	12 hours	3	Begin applications when treatment thresholds have been reached. Thorough coverage is essential for optimum control.	
4, 15	novaluron acetamiprid	Cormoran New 2020	1400 ml/ha	12 hr	8	Apply at 200 L/ha, max three applications per season, do not apply more than once every 10-14 days. Do not apply when temperatures are high or phytotoxic effect may occur.	

Blueberry fruit fly <i>(Rhagoletis mendax)</i>	4	acetamiprid	Assail 70 WP Aceta 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. Apply within 7 days of first adult capture. Do not apply more than 4 applications per season. Do not apply more than once every 12 days.
	1B	phosmet	Imidan WP	1.6 kg/ha	3 days	15	Apply early to late July. Max. 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	12 hours	21	Consult your buyer before using this product to see if it is allowable for their markets. Max. 2 applications per year. Apply early to late July.
			Lagon 480 E	580-830 mL/ha			
	1B	malathion	Malathion 85E	550 ml in 1000 L/ha	2 days	1	
	1A	carbaryl	Sevin XLR	4.0 L/ha	5-9 days	2	
	23	spirotetramat	Movento 240 SC	365-435 ml/ha	12 hours	7	

Blueberry fruit fly (<i>Rhagoletis mendax</i>)	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 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.
	4D	flupyradifurone	Sivanto Prime	750-1000 ml/ha	12 hours	3	Minimum intervals between applications is 7 days. Apply in a minimum volume of 100 l/ha
	4, 15	novaluron acetamiprid	Cormoran New 2020	1200-1400 ml/ha	12 hr	8	Apply at 200 L/ha, max three applications per season, do not apply more than once every 10-14 days. Do not apply when temperatures are high or phytotoxic effect may occur.
White-marked tussock moth (<i>Orgyia leucostigma</i>)	11	<i>Bacillus thuringiensis kurstaki</i>	Bioprotec 3P	2.0 kg/ha	-	-	Make 2 applications. Apply at peak 2 nd instar larval development. Apply second application 2 – 5-7 days later.

Blueberry thrips (<i>Frankliniella vaccinii</i> , <i>Catantopids 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 Aceta 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 85E	1000 ml in 1000 L/ha	2 days	1	
	4, 15	novaluron acetamiprid	Cormoran New 2020	1400 ml/ha	12 hours	8	Apply at 200 L/ha, max three applications per season, do not apply more than once every 10-14 days. Do not apply when temperatures are high or phytotoxic effect may occur.
Redstripped Fireworm	28	chlorantraniliprole	Altacor	215-285 g/ha	12 hours	1	Do not make more than 3 applications per season, on 7 day intervals. Max 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	2 days	1	Apply prior to harvest when treatment thresholds have been reached. Max 3 applications.

Brown marmorated stink bug	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.
	4, 15	novaluron acetamiprid	Cormoran New 2020	750 ml/ha	12 hours	8	Apply at 200 L/ha, max three applications per season, do not apply more than once every 10-14 days. Do not apply when temperatures are high or phytotoxic effect may occur.
Spotted wing Drosophila (SWD)	28	cyantraniliprole	Exirel	1000-1500 ml/ha	12 hours	3	Suppression only. Begin applications when treatment thresholds have been reached. Thorough coverage is essential for optimum control. For SWD, begin applications when populations are low. Exirel™ targets the adult life stage of SWD. Apply a subsequent application of Exirel™ if required. Max 4 applications

							per season. Do not apply more than once every 5 days.
28	Cyclaniliprole	Harvanta 50 SL	1.2-1.6 L/ha	12 hours	7		Use degree day models to determine application timing. Repeat applications at 5 day intervals if required. Make no more than 3 applications per year and no more than 4.8L Harvanta per hectare per year.
1B	phosmet	Imidan WP	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.
5	spintoram	Delegate WG	315-420 g/ha	12 hours	1		Apply as necessary at least 12 days apart. Maximum 3 applications per year.
5	spinosad	Entrust	334-440 ml/ha	Once product is dry	3		Maximum 3 applications with a minimum re-treatment interval of 5 days.
		Success	165-220 ml/ha		3		
1B	malathion	Malathion 85E	1000 ml	2 days	1		Use a maximum of 1000 L of water per hectare. Application Interval: 7-10 days for all crops (if applicable). Timing of applications should be based on the presence of adult flies of the pest, as determined by local monitoring.
3	cypermethrin	Up-Cyde 2.5 EC	245-285 ml/ha	12 hrs	2		Application based on presence of adult flies. & days between treatments and a maximum of 2 treatments. Avoid temperatures are above 27 Degrees C.

Lygus bugs (including tarnished plant bug)	29	Flonicamid	Beleaf 50SG	200 g/ha	12 hours	0	Suppression of Lygus bugs. Apply when lygus bugs first appear in the field and before populations reach high levels. Lygus will stop feeding rapidly but it may take several days to see a reduction in lygus bug numbers. Reapply on 7 day interval when new insects appear. Max 3 applications per year.
	4C	Sulfoxaflor	Closer	300mL/ha	12 hours	1	Max. 2 applications. Do not apply more than 190g ai/ha per growing season. Use in sufficient water to ensure thorough coverage usually 200 to 1000 litres of water per hectare.

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DISEASES:							
Monilinia Blight <i>(Monilinia vaccinii-corymbosi)</i> Crop Year Only	3	propiconazole	Topas/Tilt 250	500 ml/ha	12 hours	60	Apply late April to mid to late May 40-50% F2 stage. Max. of 2 applications per year. Check with your buyer for allowable use of this product for their markets.
			Mission 418 EC / Pivot / Bumper	300 ml/ha			
			Jade	500 ml/ha			
			Propi Super 25EC	500 ml/ha	12 hours	60	
	3	triforine	Funginex DC	1.7 to 3 L/ha	12 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	Hand set irrigation - 3 days All other activities – 12 hrs	7	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. Do not make more than 2 sequential applications.

Monilinia Blight <i>(Monilinia vaccinii-corymbosi)</i> Crop Year Only	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 Opti	2.0-3.3 kg/ha	-	0	Apply pre infection. Biopesticide that may only suppress the indicated diseases . Repeat as necessary on a 7-14 day interval.
	3	prothioconazole	Proline 480SC Agral 90 0.125% v/v	315-420 ml/ha	24 hours	7	Apply prior to infection at >50% F2, if conditions favour disease. Maximum 2 applications per year. Applications may be made by ground application equipment only.
	3, 11	azoxystrobin, propiconazole	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 water/ha.

	19	Polyoxin D Zinc Salt	Diplomat 5SC	463-926 ml/ha	-	0	Apply as a foliar spray in sufficient water to provide thorough coverage of foliage (and fruit when present). Begin as a preventative application when conditions favour disease development and continue on a 7-21 day interval if disease pressures persist.
	3, 9	difenoconazole, cyprodinil	Inspire Super New 2020	558-836 ml/ha	12 hrs	1	Do not apply more than 5.9 L/ha per season. Apply in a minimum of 200 L/ha. Apply at first bud crack and then 7-10 days later.
	7, 3	fluopyram, prothioconazole	Propulse New 2020	750 ml/ha	24 hrs	7	Apply at 40% F2 and a second application 7-10 days later. Max 2 applications per year.
Botrytis blight (<i>Botrytis cinerea</i>)	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	Apply mid bloom, max 4 applications per season
Crop Year Only	7, 11	Pyraclostrobin, fluxapyroxad	Merivon	0.6-0.8 L/ha	12 hours	0	Suppression only. Begin applications prior to the onset of disease development. Apply on a spray interval of 7-14 days with a maximum of 3 applications per year.

Botrytis blight <i>(Botrytis cinerea)</i> Crop Year Only	7, 12	Pydiflumetofen, fludioxonil	Miravis Prime	0.8-1.0 L/ha	24 hours	1	Make first application during bloom. A second application can be made 7-10 days later. Use a spray volume of 200 L/ha for ground application. Maximum of 2 consecutive group 7, 12 products and 2.0 L/ha per season.
	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 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.
	-	<i>Bacillus subtilis</i>	Serenade Opti	1.7-3.3 kg/ha	-	0	Biopesticide that may only suppress the indicated diseases. Begin application prior to disease development and repeat on 7-10 day intervals.
	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.

Botrytis blight <i>(Botrytis cinerea)</i> Crop Year Only	7	isofetamid	Kenja 400SC	0.987-1.24 L/ha	12 hours	0	Initiate application prior to disease development. Do not make more than 2 sequential applications. Max. 5 applications per year
	9	pyrimethanil	Scala SC	2 l/ha	12 hours	1	Make first application pre-bloom and repeat at 7-10 day intervals. Max 3 applications per growing season. Follow resistance management recommendations
	7,9	Fluopyram, pyrimethanil	Luna Tranquility	1200 ml/ha	12 hours	1	Make first application at early flowering and repeat applications as required at 7-10 day intervals. Max 2 applications per season. Apply in 500 l/ha.
	-	Tea tree oil	Timorex Gold	1.5-2.0 L/ha	4 hours	2 days	Apply in 400-800 L/ha. For preventative treatments, apply at 7-14 day intervals, depending on disease level. Use the shorter application interval under conditions that promote rapid disease development.
	19	Polyoxin D Zinc Salt	Diplomat 5SC	463-926 ml/ha	-	0	Suppression. Apply as a foliar spray in sufficient water to provide thorough coverage of foliage (and fruit when present). Begin when conditions favour disease development and continue on a 7-10 day interval as needed to maintain suppression

Botrytis blight (<i>Botrytis cinerea</i>)	7	fluxapyroxad	Sercadis	0.250-0.666 L/ha	12 hours	0	Suppression. Begin application prior to onset of disease and continue at a 7-14 day interval. Max 3 applications per season with a maximum product rate of 2 L/ha per season.
	-	BLAD polypeptide	Fracture New 2020	1.5-3.3 L/ha	Do not enter until dry	0	Apply at early bloom and continue on a 7 to 10-day interval if conditions continue to favor disease development. Thorough coverage is important. It requires two to four hours drying time. If, during the next 12 hours it rains significantly, a new application will be needed during the next 4 days. Max 5 applications per year - No more than two sequential applications
	3, 9	difenoconazole, cyprodinil	Inspire Super New 2020	1033-1475 ml/ha	12 hours	1	Do not apply more than 5.9 L/ha per season. Apply in a minimum of 200 L/ha. Apply at early bloom then repeat at 10-21 day days later. Use the shorter interval when disease pressure is high.
	BM02	<i>Bacillus amyloliquefaciens</i>	Serifel New 2021	0.25-0.5 kg/ha	4 hours	0	Biological fungicide product. Begin application prior to infection and continue on 2- to 10- day intervals if conditions are favourable for disease development. Use the highest rate and the shortest interval when conditions favour high disease pressure.
	M5	chlorothalonil	Bravo ZN	7.2 L/ha	48 hours	54	

Septoria leaf spot (<i>Septoria spp.</i>)			Echo 90DF	2.8 kg/ha	12 hours		<p>Application should be based on level of disease pressure the previous year. Max 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.</p> <p>Important: Read Product Label Liability Statement</p>
			Echo720	5.0 L/ha			
	7, 11	pyraclostrobin, boscalid	Pristine WG	1.6 kg/ha	24 hours	0	<p>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.</p>
	7, 11	Pyraclostrobin, fluxapyroxad	Merivon	0.4-.8 L/ha	1 day	0	<p>Begin applications prior to the onset of disease. Apply on a spray interval of 7-14 days with a maximum of 3 applications per year.</p>
3, 7, 11	Pydiflumetofen, azoxystrobin, propiconazole	Miravis Neo <i>New 2021</i>	0.75L/ha	12 hours	30	<p>Apply at the first sign of disease, in the sprout year. One additional application can be made after the first, 10-14 days after if disease conditions remain favourable. Maximum 2 applications permitted per season.</p>	

Septoria leaf spot (<i>Septoria spp.</i>)	3	prothioconazole	Proline 480 SC Agral 90 0.125% v/v	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. 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. One additional application may be made 10-14 days after initial application if conditions remain favourable for continued or increased disease development. Make 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.
	33	Mono- and dibasic sodium, potassium, and ammonium phosphites	Phostrol	2.9-5.8 L/ha	12 hours	-	Begin foliar sprays in the spring at approximately the pink bud stage and continue on a 14 day interval. Use sufficient volume of water for good coverage. Max 4 applications per season. Also for suppression of Phytophthora Root Rot (<i>Phytophthora spp.</i>)
	7	fluxapyroxad	Sercadis	0.250-0.666 L/ha	12 hours	0	Begin application prior to onset of disease and continue at a 7-14 day interval. Max 3 applications per season with a maximum product rate of 2 L/ha per season.

Septoria leaf spot (<i>Septoria spp.</i>)	M1	Copper (Copper octanoate 1.8%)	Cueva	0.5% to 2% solution, applied at 470-940 L/ha	4 hours	1	Apply preventively before symptoms appear.
	7, 3	fluopyram, prothioconazole	Propulse New 2020	750 ml/ha	24 hrs	7	Apply at first sign of disease and a second at 10-14 days if conditions remain favorable for disease development. Max 2 applications per year.
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	Allegra 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 Agral 90 0.125% v/v	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.

Valdensinia leaf spot <i>(Valdensinia heterodoxa)</i>			Proline 480SC Agral 90 0.125% v/v				Apply up to two (2) applications of Proline 480 SC/year. Applications may be made by ground application equipment only.
	3, 11	azoxystrobin, propiconazole	Quilt	1 L/ha	12 hours	30	Suppression 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. Make no more than two applications per year. Use a minimum of 200 L/ha of water or an appropriate water volume to provide full coverage.
	7	benzovindiflupyr	Aprovia Agral 90 0.2% v/v	750 ml/ha	12 hr	365 day	Suppression only. Only apply in non-cropping year. Make first application at first sign of disease. A second application can be made 10-14 days later. Max 1.5 L/ha/season.
	M5	chlorothalonil	Bravo ZN Echo 90DF Echo720	7.2 L/ha 2.8 kg/ha 5.0 L/ha	48 hours 12 hrs	54	Application should be based on level of disease pressure the previous year. Max 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.

Valdensinia leaf spot (<i>Valdensinia heterodoxa</i>)	7, 3	fluopyram, prothioconazole	Propulse New 2020	1000 ml/ha	24 hrs	7	Apply at first sign of disease and a second at 10-14 days if conditions remain favorable for disease development. Max 2 applications / year.
Leaf Rust	M5	chlorothalonil	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. Max 2 apps/year.
			Echo 90DF	2.8 kg/ha	12 hrs		
			Echo720	5.0 L/ha			
	3	prothioconazole	Proline 480 SC Agral 90 0.125% v/v	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 make more than 2 applications per year. The lowest labeled rate of a non-ionic surfactant may be tank mixed with Proline.
	3-11	azoxystrobin, propiconazole	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. Make no more than two applications per year. Use a minimum of 200 L per hectare of

			Quilt				water or an appropriate water volume to provide full coverage.
	7	benzovindiflupyr	Aprovia Agral 90 0.2% v/v	500-750 ml/ha	12 hr	365 day	Only apply in non-cropping year. Make first application at first sign of disease. A second application can be made 10-14 days later. Use a non-ionic surfactant at 0.2% v/v. Max 1.5 L/ha/season. Check with your buyer to see if this product can be used for their markets
	3, 9	difenoconazole, cyprodinil	Inspire Super New 2020	836 ml/ha	12 hrs	1	Do not apply more than 5.9 L/ha per season. Apply in a minimum of 200 L/ha. Apply at first at first sign of disease then 7-10 days later.
	7, 3	fluopyram, prothioconazole	Propulse New 2020	1000 ml/ha	24 hrs	7	Apply at first sign of disease and a second at 10-14 days if conditions remain favorable for disease development. Max. 2 applications per year.
	7, 3, 11	Pydiflumetofen, azoxystrobin, propiconazole	Miravis Neo New 2021	0.75 L/ha	12 hours	15	Apply at first sign of disease in the sprout year. A second application may be made 10-14 days afterwards if conditions remain favourable for continued disease development.
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. Max 3 applications / growing season.

Powdery Mildew	-	mineral oil	Purespray Green Spray Oil 13E	10 L in 1000 L water (1% solution) otherwise phytotoxicity may result.	-	-	Use sufficient spray volume (up to 1000 L/ha) to ensure thorough crop coverage. Begin when conditions favour disease development. Apply at 7–14 day intervals. Max 8 summer spray applications per growing season. <i>Also: Suppression of spider mites, deter aphids.</i>
	7, 9	Fluopyram, pyrimethanil	Luna Tranquility	1200 ml/ha	12 hours	1	Make applications preventatively. Continue as needed on a 7-14 day intervals. Only use this product for Powdery mildew control when it coincides with the timing of Botrytis.
Anthraco nose fruit rot, Alternaria fruit rot, Phomopsis canker	M	chlorothalonil	Echo 90DF	4.0 kg/ha	12 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 control of fruit rot.
			Echo 720	5.0 L/ha			
	1	thiophanate-methyl	Senator 50 SC	1.54 L/ha	-	60 days	

Anthracnose fruit rot, Alternaria fruit rot, Phomopsis canker	11	pyraclostrobin	Cabrio EG	1 kg/ha	12 hours	1 day	For the control of anthracnose and Phomopsis. Begin applications prior to disease development continue on a 10-14 day schedule. Use shorter interval when disease pressure is high. Do not make more than one (1) before alternating to an effective fungicide with a different mode of action.
	3	metconazole	Quash	180 g/ha	Hand set irrigation - 3 days All other activities – 12 hrs	7	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 max. of 3 applications. No more than 2 sequential.
	29	fluazinam	Allegro 500F	2.24 L	24 hours	30	Apply pre infection. 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.
	3-11	azoxystrobin, propiconazole	Quilt	1 L/ha	12 hours	30	Make first application in early bloom. A second application can be made 7-10 days later. Make 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.

Anthracnose fruit rot, Alternaria fruit rot, Phomopsis canker	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.
	7,11	Pyraclostrobin, fluxapyroxad	Merivon	0.8 L/ha	12 hours	0	Begin applications prior to the onset of disease. Apply on a spray interval of 7-14 days with a maximum of 3 applications per year.
	9-12	cyprodinil, fludioxonil	Switch 62.5 WG	775 to 975 g/ha	12 hours	1	Anthracnose. 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 products containing fludioxonil not be used in areas treated with this product during the previous season.
	3, 9	difenoconazole, cyprodinil	Inspire Super New 2020	836-1475 ml/ha	12 hrs	1	Do not apply more than 5.9 L/ha per season. Apply in a minimum of 200 L/ha. Apply at early bloom and then 7-10 days later. Check label for specific rates.
	7, 3	fluopyram, prothioconazole	Propulse New 2020	875 ml/ha	24 hrs	7	Apply at early bloom and a second at 7-14 days later. Max 2 applications per year.

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

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

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

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
Glufosinate ammonium	Ignite	low	mod	mod
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
sulfentrazone	Authority	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
Azoxystrobin, propiconazole	Quilt	low	low	low
<i>Bacillus subtilis</i>	Serenade Opti	low	low	low
<i>Bacillus thuringiensis</i>	various	low	low	low
Benzovindiflupyr	Aprovia	low	mod	low
BLAD polypeptid	Fracture	low	low	low
boscalid	Cantus	low	low	low
boscalid, pyraclostrobin	Pristine	low	low	low
captan	Captan, Maestro	low	low	low
carbaryl	Sevin XLR	high	mod	mod
chlorantraniliprole	Altacor	mod	low	low
chlorothalonil	Bravo, Echo	low	low	low
copper	Cueva	low	low	low
cyantraniliprole	Exirel	high	low	low
Cyantraniliprole	Harvanta	High	Low	low
cyprodinil, fludioxonil	Switch	low	low	low

deltamethrin	Decis	high	low	low
difenoconazole, cyprodinil	Inspire Super	low	low	low
dimethoate	Cygon, Lagon	high	mod	mod
fenhexamid	Elevate	low	low	low
Fluopyram	FPY 500	Low	Low	low
flonicamid	Beleaf	mod	low	low
fluazinam	Allegro	low	low	low
fluopyram, prothioconazole	Propulse	low	low	low
Fluopyram, pyrimethanil	Luna Tranquility	low	low	low
Flupyradifurone	Sivanto Prime	low	mod	mod
fluxapyroxad	Sercadis	low	low	low
Isofetamid	Kenja	low	low	low
malathion	Malathion	high	mod	mod
metconazole	Quash	low	low	low
methoxyfenozide	Intrepid	low	low	low
Pydiflumetofen, fludioxonil	Miravis Prime	Low	mod	low
Pyraclostrobin, fluxapyroxad	Merivon	Low	Low	low
Pydiflumetofen, azoxystrobin, propiconazole	Miravis Neo	Low	Mod	low
Mono- and dibasic sodium, potassium, and ammonium phosphites	Phostrol	low	low	low
myclobutanil	Nova	low	mod	mod
Novaluron, acetimprid	Cormoran	high	mod	low
penthiopyrad	Fontelis	low	low	low
propiconazole	Topas, Mission, Jade	low	low	low
prothioconazole	Proline 480 SC	low	low	low
permethrin	Pounce	high	mod	low
phosmet	Imidan	high	mod	low
Polyoxin D Zinc salt	Diplomat	low	low	low
Pyrimethanil	Scala	low	low	low
Sulfoxaflor	Closer	High	Low	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
tebufenozide	Confirm	low	mod	low
thiamethoxam	Actara 25 WG	high	mod	mod
thiophanate-methyl	Senator	low	low	low
triforine	Funginex	low	low	low

References: EXTOXNET (<http://extoxnet.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!