

2022



EXTENSION AND ADVISORY TEAM

GUIDE TO WEED MANAGEMENT IN Highbush BLUEBERRY

Nova Scotia Guide to Pest Management in Highbush Blueberry 2022
[HBBlue1-22]



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Updated February 24, 2022 by

Sonny Murray, Berry Specialist, Perennia Food and Agriculture

Jill MacDonald, Research Associate, Perennia Food and Agriculture

LIABILITY STATEMENT

Recommendations in this guide are given for general information only and do not give the user the right to use a product in a manner not in accordance with the pesticide label or Pest Control Products Act. Perennia, by funding and printing this publication, and the editors/authors, do not offer any warranty or guarantee and do not assume any liability for crop loss, animal loss, health, safety, or environmental hazard caused by the use of any pesticide, advice, or recommendation in this schedule. Pesticides used in this schedule are products labeled for the target and crop. This information was retrieved from the Pest Management Regulatory online of Registered Products Database. The list of products presented in this schedule is intended to be complete, based on products known to be available in the region, but in no way is guaranteed to be complete. Some of the products listed may not be available. Trade names are given as a convenience to producers and are neither an endorsement of the product nor a suggestion that similar products are not available or effective.

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PESTICIDE EMERGENCY CONTACT INFORMATION

Poison Control Centres		
Nova Scotia	800.565.8161 or 902.470.8161	IWK, Halifax, NS
New Brunswick	911	Ask for Poison Information
Prince Edward Island	800.565.8161 or 902.470.8161	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 AND 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 Conversions¹	
kPa X 0.14 = pounds per square inch (psi)	millilitres X 0.035 = fluid ounces
hectares X 2.47 = acres	litres X 35 = fluid ounces
kilograms X 2.2 = pounds	litres X 0.22 = imperial gallons
kilograms per hectare X 0.89 = pounds per acre	litres per hectare X 14.17 = fluid ounces per acre
kilograms per hectare X 0.40 = kilograms per acre	litres per hectare X 0.40 = litres per acre
	degree-days C X 1.8 = degree-days F

¹ Pesticide Units of Measurement

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

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
PLANTING YEAR							
Soil Applied: <i>Broadleaf and grass weeds</i>	5	metribuzin	Sencor 75 DF	1 kg/ha	12 hours	730 (2 years)	Apply as a directed application in a band under the bushes. Apply to weed free soil after planting. Apply in spray volume of 150-300 L water/ha. Do not apply if heavy rainfall is expected after application. Do not harvest blueberries for 2 years.
	15	napropamide	Devrinol 50-DF or Devrinol DF-XT (50 DF-XT)	9 kg/ha	12 hours	70	Apply once per season in the fall through early spring before weeds emerge. Incorporation by rainfall, irrigation or cultivation is essential. Do not apply to frozen ground.
	15	s-Metolachlor	Dual II Magnum or Komodo or Dual Magnum	1.25-1.75 L/ha	12 hours	30	Make one application per year in 150-300 L water/ha. Apply to soil as a banded application, directed to the base of the plants. Avoid contact with trunk and foliage.
	27	mesotrione	Callisto 480 SC or Mester plus Agral 90	0.3 L/ha plus 200 ml/ 100 L water (0.2% v/v)	12 hours		Apply once per year. Apply either pre or post emergent to weeds. Apply in 100-200 L water/ha. Apply broadcast ground application, directed to base of blueberries. Apply up to 8 leaf stage of weeds and pre-bloom to crop.
Post Emergence: <i>Grasses</i>	1	fluazifop-p-butyl	Venture L	0.6-2.0 L/ha	12 hours	15	Use one application per season. Apply to actively growing grasses before tillering. Apply in 100-300 L water/ha. Apply at 2-6 leaf stage of annual grasses or 3-5 leaf stage of Quackgrass.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Post Emergence: <i>Grasses</i> (cont.)	1	sethoxydim	Poast Ultra plus Merge	0.32-1.1 L/ha plus 0.5-2 L/ha	12 hours	1	Apply to actively growing grasses before tillering. Apply up to 2 applications per year not exceeding 1.1 L/ ha per season. Allow at least 14 days between applications. Apply in 50-200 L water/ha.
		clethodim	Centurion plus Amigo	0.19-0.38 L/ha plus 0.5-1.0% v/v	12 hours	14	Apply Centurion to actively growing grasses prior to tillering. Apply a maximum of one application per year, post emergent by ground equipment. Apply as broadcast spray directed to the ground. Apply in minimum volume of 100 L water/ha.
Post Emergence: <i>Broadleaf weeds</i>	4	clopyralid	Lontrel 360	0.42-0.83 L/ha	12 hours	45	Apply once per year directed under bushes on emerged weeds. Use lower rate on vetch, higher rate on clovers. Apply 100-200 L solution/ha.
		Clopyralid	Pyralid	0.504 L/ha for vetch. 0.996 L/ha for red and white clover	12 hours	45	Make one application per year, post emergent for the control of vetch and red and white clover . Apply as a broadcast treatment.
	14	oxyfluorfen	Goal 2XL	1 L/ha (broadcast rate)	12 hours	50	For control of field pansy and wood sorrel. Apply as a band on either side of the row when weeds are 2-4 leaf stage and actively growing. Do not spray the crop directly. Apply once per year in the equivalent of 500 L water/ha. Heavy rainfall or irrigation immediately following application may reduce effectiveness.
	27	mesotrione	Callisto 480 SC or Mester plus Agral 90	0.3 L/ha plus 200 ml/ 100 L water	12 hours	60	Apply once per year. Apply either pre or post emergent to weeds. Apply in 100-200 L water/ha. Apply broadcast ground application, directed to base of blueberries. Apply up to 8 leaf stage of weeds and pre-bloom to crop.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Post Emergence: <i>Non-selective</i>	9	glyphosate	Roundup	2.8-5.6 L/ha (based on the 360 formulation)	12 hours	30	Apply as a directed spray under the bushes. Avoid new shoots. One application per season. Avoid contact with fruit, foliage and canes. Maximum 1 application per year.
	14	carfentrazone-ethyl	Aim plus Agral 90	37-117 ml/ha plus 0.25% v/v	12 hours	1	Must be applied with a hooded sprayer to control weeds between rows. Apply only once per season. Apply in a minimum of 100 L water/ha. Avoid contact with fruit, foliage and canes.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
ESTABLISHED PLANTINGS:							
Soil Applied: <i>Broadleaf weeds</i>	2	halosulfuron	Sandea plus Non-ionic surfactant (CITOWETT PLUS, AGRAL 90, or AG-SURF)	35-47 g/ha (1-4 year bushes) 35-70 g/ha (>4 year bushes)	12 hours	14	Do not apply Sandea to plants established less than one year. Avoid contact with blueberry bushes to prevent plant injury. Apply uniformly with ground equipment in a minimum of 140L water/ha. Apply as a broadcast to the ground on either side of the row. Sandea can be applied as a singly or sequentially with a minimum of 45 days between applications. Do not apply more than 140g Sandea/ha per year. Do not spray on plastic mulch.
Soil Applied: <i>Broadleaf and grass weeds</i>	2	rimsulfuron	Prism plus Non-ionic surfactant (CITOWETT PLUS, AGRAL 90, or AG-SURF)	60 g/ha plus 0.2% v/v	12 hours	21	Make a single application early post emergent to actively growing weeds with a recommended non-ionic surfactant. Use a directed spray application to provide complete coverage of the weeds and minimize spray contact with blueberry plants. When banded (50% band or less) Prism may be applied twice per year. Do not apply more than 60 g/ha on a broadcast basis per year. Only apply to blueberries that have gone through at least one growing season and are in good health. Apply in a minimum of 100 L water/ha (recommended spray volume of 140-190 L/ha).
	5	simazine	Princep Nine-T	2.5-3.75 kg/ha	12 hours	-	Do not use in first year plantings. Apply as a directed spray in early spring before the weeds emerge. Apply in 300 water/ha. Use lower rate on sandy soils. Maximum one application per year.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Soil Applied: Broadleaf and grass weeds (cont.)	5	terbacil	Sinbar WDG	2.75-4.25 kg/ha	12 hours	80	Make only one application per year. Use only on plantings that have been established for at least one year. Injury may occur on sandy soils, even with low rate. Use high rate on muck or peat soils.
	14	flumioxazin	Chateau EZ	298 mL/ha (coarse-textured soil) 448 mL/ha (medium and fine-textured soils)	12 hours	7	Do not apply to blueberries established less than 2 years. Do not make more than 2 applications in a growing season. Do not make a sequential application within 30 days of the first application. Do not apply after budbreak unless using hooded or shielded application equipment. Do not apply on soils with >5% OM.
	14	flumioxazin	Chateau WDG	280-420 g/ha	12 hours	7	Do not apply to blueberries established less than 2 years. Do not make more than two applications in a growing season. Do not make a sequential application within 30 days of the first. Do not apply after bud break unless using a hooded sprayer. Do not apply to fine textured soils. Use low rate on coarse textured soils. Apply prior to weed emergence. Moisture necessary to activate herbicide.
		Sulfentrazone	Authority	219-292 ml/ha	12 hours	3	Use higher rates for soils with a pH less than 7.0 and organic matter greater than 3%.
	15	napropamide	Devrinol 50-DF or Devrinol DF-XT (50 DF-XT)	9 kg/ha	12 hours	70	Apply once per season before weeds emerge either in the fall or spring. Incorporation by rainfall, irrigation or cultivation is essential. Do not apply to frozen ground and do not apply to fruit or foliage.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Soil Applied: <i>Broadleaf and grass weeds</i> (cont.)	15	s-Metolachlor	Dual II Magnum or Komodo or Dual Magnum	1.25-1.75 L/ha	12 hours	30	Apply once per year in 150-300 L water/ha. Apply to soil as a banded application, directed to the base of the plants. Avoid contact with trunk and foliage.
	20	dichlobenil	Casoron 4G (G-4)	175-225 kg/ha	12 hours	-	Apply to cool moist but unfrozen soil in late fall or spring before weeds emerge. Do not apply if air temperature is above 15 °C. Do not use on light, sandy soil. Use the high rate only every other year.
	27	mesotrione	Callisto 480 SC or Mester plus Agral 90	0.3 L/ha plus 200 ml/ 100 L water	12 hours	-	Apply once per year. Apply pre or post emergent to weeds. Apply in 100-200 L water/ha. Apply broadcast ground application, at base of blueberries. Apply up to 8 leaf stage of weeds and pre-bloom of crop.
	29	Indaziflam	Indaziflam 500 SC	150 ml/ha	12 hours	14	Use on plantings established for at least one year. Do not apply prior to any type of soil disturbance. Apply as a directed spray to the soil. Apply a maximum of one application per season, using ground equipment.
		Indaziflam	Alion	375 ml/ha	12 hours	14	
Post Emergence: <i>Grasses</i>	1	fluazifop-p-butyl	Venture L	0.6-2.0 L/ha	12 hours	15	Use one application per season. Apply to actively growing grasses before tillering. Apply in 100-300 L water/ha at the 2-6 leaf stage of annual grasses and 3-5 leaf stage of Quackgrass.
		sethoxydim	Poast Ultra plus Merge	0.32-1.1 L/ha plus 0.5-2 L/ha	12 hours	1	Apply to actively growing grasses before tillering. Apply up to 2 applications per year not exceeding 1.1 L/ha per season. Allow at least 14 days between applications. Apply in 50-200 L water/ha.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Post Emergence: <i>Grasses</i> (cont.)	1	clethodim	Centurion plus Amigo	0.19-0.38 L/ha plus 0.5-1.0% v/v	12 hours	14	Apply Centurion to actively growing grasses prior to tillering. Apply maximum of once per year, post emergent by ground equipment. Apply as broadcast spray directed to the ground. Apply in minimum volume of 100 L water/ha.
Post Emergence: <i>Broadleaf weeds</i>	2	halosulfuron	Sandea plus Non-ionic surfactant (CITOWETT PLUS, AGRAL 90, or AG-SURF)	35-47 (1-4 year bushes) 35-70 (>4 year bushes)	12 hours	14	Do not apply Sandea to plants established less than one year. Avoid contact with blueberry bushes to prevent plant injury. Apply uniformly with ground equipment in a minimum of 140 L water/ ha. Apply as a broadcast application to ground on either side of the row. Sandea can be applied as a single or sequential application with a minimum of 45 days between applications. Do not apply more than 140g Sandea/ha per year. Do not spray on plastic mulch.
	4	clopyralid	Lontrel 360	0.42-0.83 L/ha	12 hours	45	Apply once per year directed under bushes on emerged weeds. Use lower rate on vetch, higher rate on clovers. Apply 100-200 L solution/ha.
		Clopyralid	Pyralid	0.504 L/ha (vetch), 0.996 L/ha (red/white clover)	12 hours	45	Make one application per year, post emergent for the control of vetch and red and white clover . Apply as a broadcast treatment.
		2,4-D Amine 600	IPCO 2,4-D Amine 600	1.7 L/ha	12 hours	30	Use as a directed spray only (between rows of blueberries). Do not overspray . Do not apply more than once per season. Use 60-240L water/ha in early spring after weeds have emerged and are actively growing.
6	bentazon	Basagran plus Assist	1.75 L/ha Plus 1.0-2.0 L/ha	12 hours	25	For top growth control of yellow nutsedge. Make two applications 7-10 days apart when weeds are small. Do not make more than two applications per year.	

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Post Emergence: <i>Broadleaf weeds</i> (cont.)	14	oxyfluorfen	Goal 2XL	1 L/ha (broadcast rate)	12 hours	50	For control of field pansy and wood sorrel. Apply as a band on either side of the row when weeds are 2-4 leaf stage and actively growing. Do not spray the crop directly. Apply once per year in the equivalent of 500 L water/ha. Heavy rainfall or irrigation immediately following application may reduce effectiveness.
	27	mesotrione	Callisto 480 SC or Mester plus Agral 90	0.3 L/ha plus 200 ml/ 100 L water	12 hours	60	Apply once per year. Apply either pre or post emergent to weeds. Apply in 100-200 L water/ha. Apply broadcast ground application, directed to base of blueberries. Apply up to 8 leaf stage of weeds and pre-bloom to crop.
Post Emergence: <i>Non Selective</i>	9	glyphosate	Roundup	2.8-5.6 L/ha (based on the 360 formulation)	12 hours	30	Apply as a directed spray under the bushes. Avoid new shoots. One application per season. Avoid contact with fruit, foliage and canes.
	10	glufosinate ammonium	Ignite SN	2.7-5 L/ha	12 hours	14	For the control of annual grass and broadleaf weeds. Use as a directed spray around the base of the trees or vines. Do not make more than 2 applications per year.
	14	carfentrazone-ethyl	Aim plus Agral 90	37-117 ml/ha plus 0.25% v/v	12 hours	1	Must be applied with a hooded sprayer to control weeds between rows. Apply only once per season. Apply in a minimum of 100L water/ha. Avoid contact with fruit, foliage and canes.

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
2,4-D	2,4-D Amine 500	low	mod	mod
bentazon	Basagran	low	low	low
carfentrazone-ethyl	Aim EC	low	low	low
clethodim	Centurion	low	mod	low
clopyralid	Lontrel 360	low	low	low
dichlobenil	Casoron	low	low	low
fluazifop-p-butyl	Venture	low	low	low
flumioxazin	Chateau	low	low	low
glyphosate	Roundup, Touchdown, Glyfos	low	low	low
halosulfuron	Sandea	?	mod	low
indaziflam	Indaziflam, Alion	low	low	low
mesotrione	Callisto 480 SC	low	low	low
metribuzine	Sencor 75DF	low	low	low
napropamide	Devrinol DF and DF-XT	low	low	low
oxyfluorfen	Goal	low	low	low
paraquat	Gramoxone	low	high	mod
rimsulfuron	Prism	low	low	low
simazine	Princep Nine-T	low	low	low
sethoxydim	Poast Ultra	low	low	low
s-Metolachlor	Dual II Magnum/Dual Magnum	low	low	low
terbacil	Sinbar	low	low	low

References: EXTOWNET (<http://extownet.orst.edu/pips/ghindex.html>)
and individual product MSDS sheet.