

Rhubarb Management Schedule

*A guide to weed, insect and
disease management in
rhubarb in Nova Scotia*



2018



GUIDE TO PEST MANAGEMENT IN RHUBARB



Nova Scotia Vegetable Crop Guide to Pest Management 2018
[RHU1-18]

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IMPORTANT

This publication was compiled by representatives from Perennia using information from the Pest Management Regulatory Agency of Health Canada, specific pesticide labels, previous Atlantic Provinces Vegetable Pest Guides and manufacturer's information. **This information is continuously changing and therefore it can cease to be current and accurate. Pesticide labels are the best source of information and should always be consulted prior to using a product.** 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 couple for reference purposes and as such does not endorse one brand over another. If you have purchased a generic product not specifically in this guide but has your crop and pest on the label, always follow that product label.

If any information in this or any other publication conflicts with the information on the label, always use the label recommendation. 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.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
WEEDS:							
Preplant <i>Perennial weeds including quackgrass</i>	9	glyphosate	Roundup 356 Sn	1.25-2.5 L/ha	-	7	Apply in the fall or spring prior to planting. Annual weed control programs will be necessary to control weeds germinating after planting. For quackgrass control, apply to actively growing quackgrass when at least 4 new leaves are present. The low rate (2.5 L/ha) will provide a minimum of one season control, while higher rates (4.75 to 7 L/ha) will provide longer term control. The low rate of Roundup should be applied in 50 to 100 L/ha water. If higher water volumes are used add a suitable surfactant. Wait 72 hours before plowing under. Best control of quackgrass is obtained when these herbicides are applied in the fall.
			Roundup WeatherMAX	1.67-8.0 L/ha	12 hours	7	
			Touchdown 480	2.5-7.0 L/ha	12 hours	7	
	14	carfentrazone-ethyl	Aim EC	36.5-117 mL/ha	12 hours	1	
Postemergence <i>Inter-row shielded</i>	22	paraquat	Gramoxone 200 Sn	2.75-5.5 L/ha	12 hours	-	Avoid spraying crop as damage may occur.
		diquat	Reglone 240, Dessicash	2.3-4.6 L/ha	24 hours	-	

	14	carfentrazone-ethyl	Aim EC	36.5-117 mL/ha	12 hours	1	Apply in minimum spray volume of 100 L/ha. Refer to label for target weeds, buffer zones and rates. Use high flow rate nozzles to apply the highest spray volume.
	1	fluazifop-p-butyl	Venture L	2.0 L/ha	12 hours	14	Do not make more than two applications per season with a minimum re-treatment interval of 14 days. Apply in sufficient water volume for thorough coverage.
Established <i>Pre-emergent to crop, pre-emergent up to 2-leaf stage of weeds</i>	27	mesotrione	Callisto 480SC	0.3 L/ha	12 hours	42	Make only one application per year. Apply in 200 L/ha water at 206-300 kPa. CAUTION: Apply to dormant (prior to spring greenup) rhubarb. Applications to rhubarb that is not dormant will result in crop injury. Rainfall or irrigation after application may increase the risk of injury to emerging rhubarb. Repeated use of CALLISTO 480SC Herbicide in low pH soils may cause injury to rhubarb plants. Wait at least 18 months after the last CALLISTO 480SC Herbicide application in rhubarb before replanting rhubarb.
Broadcast application to dormant rhubarb <i>Broadleaf weeds & nutsedge</i>	2	Halosulfuron NEW 2018	Sandea WG	35-70 g/ha	12 hours	60	The timing of the application should be just prior to the breaking of rhubarb dormancy. Application may cause significant crop stunting. It is recommended that the user begin with a the lower rate to determine potential sensitivity to its use along with speed and degree of recovery. Use a nonionic surfactant (NIS) if labeled weeds are emerged.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
INSECTS:							
Aphids	4	acetamiprid	Assail 70 WP	56-86 g/ha	12 hours	7	Max 5 applications/yr. 12 hr re-entry
	4	imidacloprid	Admire 240	6 mL/100 m row	12 hours	45	Apply specified dosage in one of the following methods: <ul style="list-style-type: none"> • Apply specified dosage in 2000 L/ha of water as a narrow (5 cm or less) surface band over seed line during planting. Application should be made with sufficient water to ensure incorporation into the root zone. • Subsurface side-dress on both sides of each row of seedlings or established transplants; apply in 200 L/ha of water. Admire must be incorporated into root-zone. • Post-seeding drench, transplant-water drench, or hill drench; use higher water volumes - sufficient to thoroughly wet the soil. Do not apply more than once per season.
	29	Flonicamid	Beleaf 50SG	0.12-0.16 kg/ha	12 hours	0 days	Thorough spray coverage of plant foliage is essential. Minimum of 94 litres of water/ha. Max 3 applications per season, at least 7 days apart. Avoid overnight storage of spray mixtures, do not use liquid fertilizer as a carrier and do not use adjuvants.

	4	thiamethoxam	Actara 25 WP	105 g/ha	12 hours	7	Apply before aphids reach damaging levels. Max 2 applications per year, at least 7 days apart. 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.
	4C	Sulfoxaflor	Closer SC	100-150 ml/ha	12 hours	3 days	Max 2 applications/growing season at least 7 days apart. Do not apply during crop flowering period or when flowering weeds are present.
	28	Cyantraniliprole	Exirel	500-1500 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. For optimum control apply Hasten NT Spray Adjuvant* at an application rate of 0.25% v/v or MSO Concentrate with Leci-Tech* at an application rate of 0.5% v/v. Do not make more than 4 applications per season.
Aphids and Whiteflies	23	spirotetramat	Movento 240 SC	220-365 ml/ha	12 hours	3	Minimum 7-day interval between applications. Max 730 ml/ha of product applied/season. This product is TOXIC to bees through direct contamination of pollen and nectar. DO NOT apply during crop flowering period or when flowering weeds are present in the field.
			Movento 150 OD	347-585 ml/ha	12 hours	3	Minimum 7-day interval between applications. Max 1.17 L/ha of product applied per season. This product is TOXIC to bees through direct contamination of pollen and nectar.

							DO NOT apply during crop flowering period or when flowering weeds are present in the field.
Cabbage looper, Imported cabbage worm, & Diamondback moth	5	spinosad	Success 480 SC	0.182 L/ha	12 hours	1	Max 3 applications/yr. Allow 7-10 days between applications. <i>Also controls potato stem borer. See label.</i>
			Entrust 80 W Entrust SC	109 g/ha 364 ml/ha	12 hours	1	Max 3 applications/yr. Allow 7-10 days between applications
	5	spinetoram	Delegate WG	140-200 g/ha	12 hours	1	Time application for Cabbage Looper with peak egg hatch or small larvae. Repeat applications based on insect monitoring. Use higher rate for higher infestations or advanced growth stages. Max 3 applications per year. Allow at least 5 days between applications.
	28	chlorantraniliprole	Coragen	250 ml/ha	12 hours	1	For Cabbage Looper. Begin applications when treatment thresholds have been reached. Max 4 applications per season. Do not apply more than once every 3 days. Do not exceed 1 L /ha/season. Apply in a finished spray volume of 100L/ha.
	18	Methoxyfenozide	Intrepid 240F	0.3 – 0.6 L/ha	12 hours	1	Cabbage looper: Apply at the first sign of feeding damage or when insect monitoring indicates threshold has been reached. Repeat applications after 7-14 days if required based on further monitoring. Use higher rate for heavy infestations, advanced growth stages of the target pest or larger crop canopies.
	28	Cyantraniliprole	Exirel	250-500 ml/ha	12 hours	1	Cabbage Looper. Begin applications when treatment thresholds have been

							reached. Thorough coverage is important to obtain optimum control. Do not make more than 4 applications per season.
	11	<i>Bacillus thuringiensis</i> , subsp. <i>aizawai</i> , (Strain ABTS-1857 fermentation solids, spores, and insecticidal toxins)	XenTari WG	500-1000 g/ha	-	0	Cabbage Looper . Apply sufficient spray volume to ensure uniform deposition on all plant surfaces.
Tarnished Plant Bug	4	thiamethoxam	Actara 25 WP	210 g/ha	12 hours	7	Apply before aphids reach damaging levels. Maximum one application 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.
Onion thrips	5	Spinetoram	Delegate WG	200-336 g product/ha	12 hours	1	Max 3 applications/year. Apply when onion thrips first appear, targeting egg hatch and small nymphs. Repeat in 7-10 days if needed.
	23	Spirotetramat	Movento 240 SC	365 ml/ha	12 hours	3 days	Minimum 7 day interval between applications. Maximum allowed per crop season: 730 mL/ha. Apply when thrips are first identified. Use during the first half of the season when adult populations are relatively low or building. Reduction in numbers of thrips larvae may take 3-4 days after application.
Armyworm, Beet Armyworm, Fall	28	Cyantraniliprole	Exirel	500 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. For optimal

Armyworm							control, apply to smaller plants or when lower portions of plant can receive adequate coverage. Do not make more than 4 applications per season.
	11	<i>Bacillus thuringiensis</i> , subsp. <i>aizawai</i> , (Strain ABTS-1857 fermentation solids, spores, and insecticidal toxins)	XenTari WG	500-1000 g/ha	-	0	Beet Armyworm. Apply sufficient spray volume to ensure uniform deposition on all plant surfaces.
Cutworms	28	Cyantraniliprole	Exirel	500-750 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. For early season cutworm control, apply to foliage when rain is not expected in the next 24 hours. For optimal control, apply to smaller plants or when lower portions of plant can receive adequate coverage. Do not make more than 4 applications per season.
Corn earworm	28	Cyantraniliprole	Exirel	750 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. For optimal control, apply to smaller plants or when lower portions of plant can receive adequate coverage. Do not make more than 4 applications per season.
Dipteran leafminers (larvae)	28	Cyantraniliprole	Exirel	1000-1500 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. For optimal

							control, apply to smaller plants or when lower portions of plant can receive adequate coverage. Do not make more than 4 applications per season.
Flea Beetles	28	Cyantraniliprole	Exirel	500-1000 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. Re-application interval: 5 days. Max 4 applications/season.

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DISEASES:							
Botrytis leaf rot (in forcing sheds)	M	captan	Captan 80 WDG	1.4-2.0 kg/ha	48 hours	2	Spray at weekly intervals in 1000L of water. 48 hr re-entry.
			Maestro 80 DF	1.25-2.0 kg/ha	48 hours	2	
Gray Mold	7	penthiopyrad	Fontelis	1.25-1.75 L/ha	12 hours	3	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.
Sclerotinia White Mold (<i>Sclerotinia spp.</i>)	7-11	boscalid, pyraclostrobin	Pristine WG	1.0 – 1.3 Kg/ha	24 hours	0	For suppression of white mold. Apply once per season before disease develops. For hand harvesting and thinning in leafy vegetables do not enter for 9 days after application.
	7	penthiopyrad	Fontelis	1.25-1.75 L/ha	12 hours	3	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.
Downy Mildew (<i>Peronospora</i> spp, <i>Bremia Latacae</i>)	U15	Oxathiapiprolin NEW 2018	Zorvec Enicade	0.175-0.35 L/ha	12 hours	0	Begin applications prior to disease development and continue on a 5 to 14 day interval. Use higher rate and shorter interval when disease pressure is high.

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>

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
SC	Suspension concentrate	kPa	kilopascal
Sn	Solution	kg	kilogram
WDG	Wettable dry granule	g	gram
WP, W	Wettable powder	L	litre
		BIU	Billions of International Units
		ppm	parts per million (1000 ppb)
		ppb	parts per billion (1/1000 ppm)

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

¹ **Pesticide Units of Measurement**

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