

# Radish Management Schedule

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



2019



# GUIDE TO PEST MANAGEMENT IN RADISH



**Nova Scotia Vegetable Crop Guide to Pest Management 2019**  
[RAD1-19]

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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
<b>WEEDS:</b>							
<b>Preplant</b>  <i>Perennial weeds including quackgrass</i>	9	glyphosate	<b>Roundup WeatherMAX</b>	1.67-8.0 L/ha	12 hours	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.
			<b>Touchdown 480</b>	2.5-7.0 L/ha	12 hours	7	
	14	carfentrazone-ethyl	<b>Aim EC</b>	36.5-117 mL/ha	12 hours	1	
<b>Preemergence</b>  <i>Stale Seedbed technique</i>	22	paraquat	<b>Gramoxone 200 Sn</b>	2.75-5.5 L/ha	12 hours	-	Apply in 300 – 1100 L of water/ha to foliage of emerged weeds but before the crop has emerged.
	22	diquat	<b>Reglone 240, Dessicash</b>	2.3-4.6 L/ha	24 hours	-	

Postemergence	1	Clethodim	<b>Centurion</b>  <b>+ Amigo (adjuvant)</b>	0.125-0.19 L/ha Quackgrass: 0.38 L/ha  0.5% v/v  Quackgrass: 1.0% v/v	12 hours	30	<i>To be used only with the adjuvant AMIGO. Annual grasses:</i> Apply Centurion when the annual grasses and volunteer cereals are in the 2 to 6 leaf stage. Most effective control is achieved when application is made prior to tillering when grasses are small and actively growing. <i>Quackgrass:</i> Apply Centurion when the quackgrass is in the 2 to 6 leaf stage and 6 to 15 cm in height. Most effective results are achieved when application is made at the 3 to 5 leaf stage, when the canopy is uniform and actively growing. Apply a maximum of two applications per year. If repeat application is required, allow at least 14 days between first and second application. * Refer to section “MINOR USES” in the label for additional use instructions.
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Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
<b>INSECTS:</b>							
Root Maggots	1B	chlorpyrifos	Pyrinex 480 EC	85ml / 1000 m of row	24 hours	21	Drench with seed in 380 L water / 1000m of row. Apply once per season.
			Warhawk 480 EC				
Cabbage looper, Imported cabbage worm & Diamondback moth	5	spinosad	Success 480 SC	0.182 L/ha	12 hours	3	Max 3 applications/yr. Allow 7-10 days in between applications.
			Entrust 80 W	109 g/ha	12 hours	3	Max 3 applications/yr. Allow 7-10 days between applications.
			Entrust SC	364 ml/ha			
	5	spinetoram	Delegate WG	140-200 g/ha	4 hours	3	Time application with peak egg hatch or small larvae. Repeat applications based on population monitoring. Use higher rate for higher infestations or advanced growth stages. Max 3 applications per year with a minimum re-treatment interval of 5 days.
18	Methoxyfenozide	Intrepid 240F	0.3 – 0.6 L/ha	12 hours	14	<b>Cabbage looper:</b> Apply at the first sign of feeding damage or when infestations reach threshold levels as determined by insect monitoring. Repeat applications after 7-14 days if required based on population monitoring. Use the higher rate for heavy infestations or advanced growth stages of the target pest.	

	11	<i>Bacillus thuringiensis</i> , subsp. <i>aizawai</i> , (Strain ABTS-1857 fermentation solids, spores, and insecticidal toxins)	<b>XenTari WG</b>	500-1000 g/ha	-	0	<b>Cabbage looper, Cross-striped cabbageworm, Diamondback moth, Imported cabbageworm.</b> Apply sufficient spray volume to ensure uniform deposition on all plant surfaces; recommend 500 L per ha.
<b>Aphids</b>	1B	malathion	<b>Malathion 500 E</b>	1.4-3.0 L/ha	12 hours	7	Maximum 1 application per year.
	29	Flonicamid	<b>Beleaf 50SG</b>	0.12-0.16 kg/ha	12 hours	3	Thorough spray coverage of plant foliage is essential. Minimum of 94 L water/ha. Max 3 applications/season, at least 7 days apart. <b>Avoid overnight storage of spray mixtures, do not use liquid fertilizer as a carrier; do not use adjuvants.</b>
	4	Thiamethoxam	<b>Actara 25 WG</b>	105 g/ha	12 hours	7	<b>Also controls Aster leafhopper.</b> Apply before pests reach damaging levels. Scout fields and treat again if populations rebuild to potentially damaging levels. Max 2 applications per season, at least 7 days apart. Thorough and uniform coverage is essential. Use no less than 100 L/ha.
	4C	Sulfoxaflor	<b>Closer SC</b>	50-150 ml/ha	12 hours	7	Max 2 applications/growing season at least 7 days apart. Do not apply during crop flowering period or when flowering weeds are present. Minimum spray volume 100 L/ha for ground application.
<b>Flea beetles</b>	1A	carbaryl	<b>Sevin XLR Plus</b>	1.25-2.5 L/ha	5 days (hand harvest, irrigation), 12 hours (scouting,	7	Apply when insect or insect damage appears. Repeat on 7-10 day intervals.

					hand weeding, thinning).		
	3	permethrin	<b>Pounce 384 EC</b>	180 ml/ha	12 hours	2	Apply when insect or insect damage appears
	1B	malathion	<b>Malathion 500 E</b>	1.1-2.75 L/ha	12 hours	7	Repeat applications as necessary
	5	Spinetoram	<b>Delegate WG</b>	200 g/ha	12 hours	3	Apply when pests appear. Maximum of three applications per year with a minimum re-treatment interval of 5 days.
	5	Spinosad	<b>Entrust</b>	364 ml/ha	12 hours	3	For the suppression of flea beetle, apply at the emergence of adults and reapply in 7-10 day intervals as necessary.
			<b>Success</b>	182 ml/ha			
<b>Carrot weevil</b>	28	Cyantraniliprole  <i>NEW 2019</i>	<b>Exirel</b>	1000-1500 ml/ha	12 hours	1	Begin applications at the 2-3 leaf stage or when scouting indicates the presence of weevils. Consult local agricultural authorities to determine appropriate threshold levels for carrot weevil in your area. Do not make more than 4 applications per season. Do not apply more than once every 7 days.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
<b>DISEASES:</b>							
<b>Alternaria, Cercospora, Powdery Mildew and Downy Mildew</b>	11	pyraclostrobin	<b>Cabrio EG</b>	0.56-1.1 kg/ha	12 hours	3	Max 3 applications/yr. Do not make more than 1 application before rotating to a different fungicide group. <i>**Can be used on <b>radish tops</b> to control Alternaria, Cercospora leaf spot and powdery mildew. Begin applications prior to disease development at 0.56-1.1 kg per hectare at 7-14 day intervals for Alternaria and 0.56-0.84 kg per hectare at 7-14 day intervals for Cercospora and at 7 day interval for powdery mildew. Use the higher rate and shorter interval when disease pressure is high. Do not apply more than one (1) application**</i>
	-	<i>Bacillus subtilis</i>	<b>Serenade Opti</b>	1.4 Kg/ha	-	0	<b>Biopesticide that will only suppress the indicated diseases. Downy Mildew:</b> Begin application when environmental conditions are conducive to disease development; repeat on 7-10 day intervals.
	4	metalaxyl-M and S-isomer	<b>Ridomil Gold 480 SL</b>	1.2-2.4 L/ha	48 hours	21	<b>Downy mildew suppression.</b> Use the higher rate in areas with a history of high disease pressure. Max 1 application per season. Apply in sufficient water to provide uniform coverage of soil. Preplant Incorporated (Broadcast or Banded): Apply and mechanically incorporate in the top 5 cm of soil. Soil Spray (Broadcast or Banded):



							Apply at planting. For banded applications, use an 18 cm band. DO NOT apply beyond the at-planting stage.
	43	fluopicolide	<b>Presidio</b>	220-292 ml/ha	12 hours	7	<b>Downy Mildew.</b> Apply in 200-1000 L/ha. For resistance management, Presidio must be tank-mixed with a labelled rate of another fungicide registered for the target pathogen, but with a different mode of action. Apply in a tank mix with Bravo 500. Follow the most restrictive use directions of either label. Make foliar applications on a 7-10 day schedule beginning with initial flowering, or when disease conditions are favourable, but prior to disease development. Use lower rate and longer interval as preventive applications. Use higher rate and shorter interval if disease is present.
	11	Trifloxystrobin	<b>Flint</b>	280 g/ha	12 hours	7	<b>Alternaria leaf spot.</b> Begin applications preventatively and continue as needed on a 7-day interval. Use sufficient water to obtain thorough coverage. DO NOT apply more than 560 g/hectare per season.
<b>Rhizoctonia root rot and stem canker</b>	11	azoxystrobin	<b>Quadris</b>	4-6 ml/100m of row	12 hours	15	Max 1 application/yr. Apply either in-furrow at seeding or as a banded application over the row soon after emergence. Apply in 50-100 L of water/ha.
			<b>Azoshy 250 SC</b>				
<b>White mould (<i>Sclerotinia sclerotiorum</i>)</b>	-	<i>Bacillus subtilis</i>	<b>Serenade Opti</b>	1.1-2.2 Kg/ha	-	0	<b>Serenade Opti is a biopesticide that will only suppress the indicated diseases.</b> Begin application soon after emergence and when conditions are conducive to disease development. Repeat as necessary on a 7-10 day interval.

<i>Gray Mold</i>	7	Penthiopyrad	<b>Fontelis</b>	1.0- 1.75 L/ha	12 hours	0	<b>Begin applications prior to disease development, continue on a 7-14 day interval.</b> Use higher rate and shorter interval when disease pressure is high. Max seasonal rate is 4.5 L/ha. Do not make more than 2 sequential applications before switching to another mode of action.
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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

<b>Poison Control Centres</b>		
Nova Scotia	800.565.8161 <b>or</b> 902.428.8161	IWK, Halifax, NS
New Brunswick	911	Ask for Poison Information
Prince Edward Island	800.565.8161 <b>or</b> 902.428.8161	IWK, Halifax, NS
Newfoundland	709.722.1110	Dr. Charles A. Janeway Child Health Care Centre, St. John's, NF

<b>Environmental Emergencies (Pesticide Spills)</b>	
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

<b>Formulation and Measurement Abbreviations</b>			
FORMULATIONS		MEASUREMENTS	
EC, E	Oil-based emulsifiable concentrate	mL	millilitre
EW	Water-based concentrate	kPa	kilopascal
EG	Water dispersible granule	kg	kilogram
G	Granule	g	gram
SC	Suspension concentrate	L	litre
Sn	Solution	BIU	Billions of International Units
WP, W	Wettable powder	ppm	parts per million (1000 ppb)
		ppb	parts per billion (1/1000 ppm)

<b>Helpful Conversions<sup>1</sup></b>	
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

<sup>1</sup> **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!