

EXTENSION AND ADVISORY TEAM

# GUIDE TO PEST MANAGEMENT IN PARSNIP

Nova Scotia Vegetable Crop Guide to Pest Management 2021  
[PAR1-21]



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Updated March 18, 2020, by  
Caitlin Congdon, Acting Vegetable Specialist, Perennia  
Jonathan Bent, Research Associate, Perennia

## 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.** 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 container.

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		<b>Roundup WeatherMAX</b>	1.67-4.67 L/ha	12 hours	-	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.
			<b>Touchdown Total</b>	1.8-5.0 L/ha	12 hours	7	
	14	carfentrazone-ethyl	<b>Aim EC</b>	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.
<b>Pre-emergence Treatment</b> Grasses and broadleaves	7	linuron	<b>Afolan F</b>	1.4-2.7 L/ha	-	-	Use lower rate on sandy soils. Heavy rain at emergence can cause injury. Plant seed at least 1.3 cm deep.
			<b>Lorox L</b>	1.3-1.9 L/ha	-	60	Apply as a band or broadcast application after planting
	15	S-metolachlor	<b>Dual II Magnum or Komodo</b>	1.2-1.5 L/ha	12 hours	60	Make only one application per year. Do not follow a pre-emergent application with a post-emergent spray later in the season. Use the higher rate for heavier weed problems. Apply in 150-300 L water/ha. Ground application only. Reduced levels of weed control may be observed when weed densities are high.

Pre-emergence followed by Postemergence	7	linuron	Afolan F  Followed by Afolan F	1.4-2.0 L/ha  2.0-2.7 L/ha	-	-	These treatments need to be at least 2 weeks apart. <b>Do not apply more than 2.7 L on sandy soils. Nozzle pressure must not exceed 275 kPa as crop injury may result.</b> Applications at high temperatures can cause injury. Rate dependent on soil type and organic matter content.
			Lorox L  Followed by Lorox L	1.3-1.9 L/ha  1.9-2.5 L/ha		60	Treatments need to be at least 2 weeks apart. Never apply more than two applications per season.
Postemergence <i>Inter-row shielded</i>	22	paraquat	Gramoxone 200 SL	2.75-5.5 L/ha	24 hours	-	Do not spray solution on the crop plant since it could be injured or killed. Use gramoxone for best control of grasses.
	22	diquat	Reglone 240, Dessicash	2.3-4.6 L/ha	24 hours	-	If grasses are present, use Gramoxone in place of REGLONE Desiccant.
	26	Pelargonic acid	Beloukha <i>NEW 2021</i>	12 – 20 L/ha	Until dry	1	Use the minimum effective rate for weed control. For harder-to-control weeds, higher rates or repeat applications may be required. Use shielded / directed spray to avoid spraying desired vegetation.
	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.
Emerged Weeds	7	linuron	Afolan F	2.0-5.0 L/ha	-	-	Apply when parsnips are 8-15 cm high. <b>Do not apply more than 2.7 L on sandy soils. Nozzle pressure must not exceed 275 kPa as crop injury may result.</b> Applications at high temperatures can cause injury.

Emerged Weeds			<b>Lorox L</b>	1.9-4.7 L/ha	-	60	Apply in 220-440 L water/ha. Apply before broadleaf weeds reach 15 cm and when crop has 2 or more fully established leaves. Do not spray in hot dry weather or injury may result.
	15	S-metolachlor	<b>Dual II Magnum or Komodo</b>	1.2-1.5 L/ha	12 hours	60	<i>Post emergent (crop at 3 – 5 leaf stage and weeds prior to the 2-leaf stage. Make only one application per year. Do not follow a pre-emergent application with a postemergent spray later in the season.</i>
	1	Clethodim	<b>Centurion</b>  <b>+ Amigo (adjuvant)</b>	0.19-0.38 L/ha  Quackgrass: 0.38 L/ha  0.5% v/v  Quackgrass: 1.0% v/v	12 hours	30	<b><i>To be used only with the adjuvant AMIGO. Annual grasses:</i></b> 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. <b><i>Quackgrass:</i></b> 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. <i>* Refer to section “MINOR USES” in the label for additional use instructions.</i>

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
<b>INSECTS:</b>							
<b>Aphids</b>	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. Maximum of 3 applications per season, allow 7 days between applications. <b>Avoid overnight storage of spray mixtures; do not use liquid fertilizer as a carrier and do not use adjuvants.</b>
	1	Malathion	<b>Malathion 85E</b>	535-1345 mL/ha	24 hours	7	Max. 1 application per year in enough spray to achieve thorough coverage. Do not apply to wet foliage.
	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 retreat if populations rebuild to potentially damaging levels. Max 2 applications/season. Application interval 7 days. Apply in sufficient water volume to ensure adequate coverage.
	4C	Sulfoxaflor	<b>Closer SC</b>	50-150 ml/ha	12 hours	7	Maximum 2 applications/growing season. Do not apply during crop flowering period or when flowering weeds are present in treatment area. Minimum treatment interval = 7 days. Minimum 100 L/ha spray volume for ground application.
	4D	Flupyradifurone	<b>BYI 02960 200SL</b>	500 – 750 mL/ha	12 hours	7	Tops or greens from these crops may not be fed to livestock as feed or used

<b>Aphids</b>			<i><b>NEW 2021</b></i>				for human consumption. Minimum interval between applications: 10 days. Minimum application volume of 100 L/ha for ground application. Maximum amount allowed per crop season: 2000 mL/ha.
<b>Carrot weevil</b>	15	Novaluron	<b>Rimon 10 EC</b> <i><b>NEW 2021</b></i>	410 – 820 mL/ha	12 hours	3	<b>Reduces damage.</b> Apply in sufficient water volume to ensure thorough coverage. Recommended water volume is 500 litres of water per hectare. Apply when insect populations reach locally determined economic thresholds. Apply at 7-day intervals. Maximum 3 applications per crop per season
	28	Cyantraniliprole	<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>							
Root Canker	M	Chlorothalonil	Bravo ZN	2.8 L/ha	12 hours (Hand harvesting- 21 days, Scouting- 5 days)	7	Start applications around mid-August and repeat at 7–10-day intervals. Max 7 applications/season.
			Echo 90DF	1.5 kg/ha			
			Echo 720	1.9 L/ha			
White mould ( <i>Sclerotinia sclerotiorum</i> )	7, 3	Pydiflumetofen, Difenconazole	A20259 Fungicide <i>NEW 2021</i>	1.0 L/ha	12 hours	7	<b>Suppression only.</b> Apply on a 7-14-day interval, starting prior to disease establishment. If disease pressure is high, use the shortest interval. Apply as a broadcast spray in sufficient water (minimum of 150 L/ha) for thorough coverage. Switch to a non-group 7 and 3 fungicide after 2 consecutive applications.
	44	<i>Bacillus subtilis</i>	Serenade Opti	1.1-2.2 Kg/ha	-	0	<b>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.
	9, 12	Cyprodinil, fludioxonil	Switch 62.5 WDG	775-975 g/ha	12 hours	7	Begin applications prior to or at the onset of disease and repeat applications on a 7–10-day interval if conditions remain favorable for disease development. Do not make more than 2 applications of SWITCH 62.5WG fungicide per season.



Gray Mold	7	Penthiopyrad	Fontelis	1.0-1.75 L/ha	12 hours	0	Begin applications prior to disease development, continue on a 7–14-day interval. 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.
	9, 12	Cyprodinil, fludioxonil	Switch 62.5 WDG	775-975 g/ha	12 hours	7	Begin applications prior to or at the onset of disease and repeat applications on a 7–10-day interval if conditions remain favorable for disease development. Do not make more than 2 applications of SWITCH 62.5WG fungicide per season.
Leaf blight ( <i>Alternaria spp.</i> )	11	Trifloxystrobin	Flint	140-210 g/ha	12 hours	7	Begin applications preventatively and continue as needed on a 14-day interval. Use higher rate and shorter spray interval when disease pressure is severe. Use sufficient water for thorough coverage. DO NOT apply more than 840 g per hectare per season.
	7, 3	Pydiflumetofen, Difenoconazole	A20259 Fungicide <i>NEW 2021</i>	1.0 L/ha	12 hours	7	Apply on a 7-14-day interval, starting prior to disease establishment. If disease pressure is high, use the shortest interval. Apply as a broadcast spray in sufficient water (minimum of 150 L/ha) for thorough coverage. Switch to a non-group 7 and 3 fungicide after 2 consecutive applications.
	7,11	Fluopyram, trifloxystrobin	Luna Sensation	300-500 mL/ha	12 hours	7	Begin fungicide applications preventatively. Continue as needed on a 7-14-day interval. When disease pressure is severe, use the higher rates.

Leaf blight ( <i>Alternaria spp.</i> )	7,11	Pyraclostrobin, Fluxapyroxad	<b>Merivon</b> <i>NEW 2021</i>	0.3 – 0.4 L/ha	12 hours, 7 days (hand harvesting, mechanical harvesting)	7	Begin applications prior to onset of disease development. Apply subsequent applications on a 7–14-day interval if disease persists or weather conditions are favourable for disease development.
	7	Fluxapyroxad	<b>Sercadis</b>	250-333 mL/ha	12 hours	7	Begin applications prior to disease development and continue on a 7–14- day interval if conditions are conducive for disease development. Use the 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
EC, E	Emulsifiable concentrate	kPa	kilopascal
L	Liquid	kg	kilogram
Sn / Su	Suspension	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 Conversions <sup>1</sup>	
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!