

GUIDE TO PEST MANAGEMENT IN TURNIP & RUTABAGA

Nova Scotia Vegetable Crop Guide to Pest Management 2011
[TUR1-11]

Revised June 16, 2011 by
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IMPORTANT

This publication was compiled by representatives from AgraPoint 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, AgraPoint 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, AgraPoint 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	Pesticide Common Name	Pesticide Product Name	Rate	Days to Harvest	Remarks
WEEDS:					
Preplant <i>Perennial weeds including quackgrass</i>	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	7	
		Touchdown 480	2.5-7.0 L/ha	7	
	carfentrazone-ethyl	Aim EC	36.5-117 mL/ha	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.
Preplant Incorporated <i>Germinating annual grasses and some broadleaves</i>	trifluralin	Treflan EC	1.7-2.3 L/ha	-	Incorporate within 24 hours of application. Ragweed and mustards are not controlled. This product has a carry over effect on corn and cereal the following year.
		Rival	1.6-2.2 kg/ha	-	
	napropamide	Devrinol 50 DF	2.2-4.4 kg/ha	60	Incorporate within 24 hours of application. Do not apply to soils with over 10% organic matter.

	s-metholachlor / benoxacor	Dual II Magnum	1.25-1.75 L/ha	-	Apply PPI or PRE
Preemergence <i>Stale Seedbed Technique</i>	paraquat	Gramoxone 200 Sn	2.75-5.5 L/ha	-	Apply in 300 – 1100 L of water/ha to foliage of emerged weeds but before the crop has emerged
	diquat	Reglone 240	2.3-4.6 L/ha	-	
Postemergence <i>Grasses</i>	fluazifop-p-butyl	Venture L	2.0 L/ha	45	Apply to actively growing grasses at the 1-6 leaf stage. One application per season.
	sethoxydim	Poast Ultra plus Merge	0.32-1.1 L/ha 1-2 L/ha	77	Apply to actively growing grasses at the 1-6 leaf stage.
<i>Broadleaf Weeds</i>	clopyralid	Lontrel 360	0.56 L/ha	83	Max 1 application/yr. Apply when ragweed is 5-10 cm tall.
<i>Inter-row shielded</i>	paraquat	Gramoxone 200 Sn	2.75-5.5 L/ha	-	Do not spray solution on the crop plant since it could be injured or killed. Use gramoxone for best control of grasses.
	diquat	Reglone 240	2.3-4.6 L/ha	-	
	carfentrazone- ethyl	Aim EC	36.5-117 mL/ha	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.
INSECTS:					
Cabbage Root Maggot <i>Treatment at Planting</i>	chlorpyrifos	Lorsban 15 G	0.6-1 kg/ 1000 m of row	30	24 hr re-entry

<i>Treatment after Planting</i>	chlorpyrifos	Lorsban 4 E	210 ml/ 1000m of row (in 125 L of water)	28	Apply on soil, 10 cm on either side of the plant, 10, 28, 49 and 70 days after seeding. Max 4 applications/yr. 24 hr re-entry.
Cutworms	chlorpyrifos	Lorsban 4E	1.2-2.4 L/ha	30	Apply once at seedling stage when damage first appears. 24hr re-entry. Apply a 15 m strip into adjacent fence rows.
Leaf Feeding Caterpillars	endosulfan	Thiodan 4 EC	2.0 L/ha	45	Max 2 applications/yr.
		Thionex 50 WP	1.75 kg/ha	45	
	spinosad	Success 480 SC	182 ml/ha	3	Max 3 applications/yr. Allow 7-10 days between applications
		Entrust 80 W	109 g/ha	1	Max 3 applications/yr. Allow 7-10 days between applications. Works best on small larvae.
	spinetoram	Delegate WG	140-200 g/ha	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. Maximum of 3 applications per year with a minimum re-treatment interval of 7 days. Diamondback Moth, Cabbage Looper, Imported Cabbageworm
Flea Beetle	endosulfan	Thiodan 4 EC	2.0 L/ha	45	Also control aphids. Max 2 applications/ yr.
		Thionex 50 WP	1.75 kg/ha	45	
	carbaryl	Sevin XLR Plus	1.25-2.5 L/ha	7	Repeat on 7-10 day intervals or as necessary.
	permethrin	Pounce 384 EC	180 ml/ha	-	Apply between the 2-8 leaf stage, but no later than the 8 leaf stage.
	cypermethrin	Ripcord 400 EC	123 ml/ha	21	Apply as insects appear, repeat as necessary.
		UP-Cyde	200 ml/ha	21	Apply as insects appear, repeat as necessary. Roots and tops may be fed

					to lactating dairy animals after PHI.
Aphids	Flonicamid <i>Added June 16th</i>	Beleaf 50SG	0.12-0.16 kg/ha	3	Thorough spray coverage of plant foliage is essential. Minimum of 94 litres of water/ha. Maximum of 3 applications per season, allow 7 days between applications. Avoid overnight storage of spray mixtures, do not use liquid fertilizer as a carrier and do not use adjuvants.
DISEASES:					
Rhizoctonia root rot, Crown rot and Stem canker	azoxystrobin	Quadris	4-6 ml/ 100m of row in 50-100 L water/ha	40	Max 1 application/yr. Apply either in-furrow at seeding or as a banded application over the row soon after emergence, or within 30 days of emergence.
Powdery Mildew	propiconazole	Topas 250 E	400 ml/ha	21	Apply in a minimum of 200L/ha. A second application may be made 20 days after the first.
		Mission 418 EC	240 ml/ha	21	Apply in a minimum of 200L/ha. Make 2 applications per season with the first at 50 days after planting and the second 20 days later.
	pyraclostrobin	Cabrio EG	560-840 g/ha	3	Max 3 applications/yr. Do not make more than 2 applications in a row before rotating to another chemical. 3 day re-entry.
	sulfur	Microscopic Sulfur	6.8 kg/ha	0	Max 5 applications/yr. Apply in 675-1125 L of water/ha.
Downy Mildew	fosetyl AL	Aliette	2.25-3.125 kg/ha	7	Maximum of 5 applications per year, repeated at 7 day intervals as needed. 12 hour REI.
	<i>Bacillus subtilis</i>	Serenade MAX	2.5 Kg/ha	0	Serenade Max and Serenade ASO are biopesticides that will only suppress

		Serenade ASO	10 L/ha	0	the indicated diseases. Downy Mildew: Begin application when environmental conditions are conducive to disease development. Repeat on 7-10 day intervals.
	fluopicolide	Presidio	220-292 ml/ha	7	Apply in 200-1000 L/ha. For resistance management, Presidio Fungicide must be tank-mixed with a labelled rate of another fungicide registered for the target pathogen, but with a different mode of action. Apply Presidio Fungicide in a tank mix with Bravo 500. Follow the most restrictive use directions of either label. Make foliar applications on a 7 to 10 day schedule beginning with initial flowering, or when disease conditions are favourable, but prior to disease development. Use the lower rate and longer interval as preventive applications. Use the higher rate and shorter interval if disease is present.
White mould	<i>Bacillus subtilis</i>	Serenade MAX	2.0-4.0 Kg/ha	0	Serenade Max and Serenade ASO are biopesticides that will only suppress the indicated diseases. Begin applications soon after emergence and when conditions become conducive for disease development. Repeat as necessary on a 7-10 day interval.
		Serenade ASO	8.0-15.0 L/ha	0	

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.pmra-arla.gc.ca/portal/page?_pageid=34,17551&_dad=portal&_schema=PORTAL

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	Oil-based emulsifiable concentrate	kPa	kilopascal
EG	Water dispersible granule	kg	kilogram
G	Granular	g	gram
L	Liquid	L	litre
SC	Suspension concentrate	BIU	Billions of International Units
Sn	Solution	ppm	parts per million (1000 ppb)
WP, W	Wettable powder	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!