

GUIDE TO PEST MANAGEMENT IN ONION (Dry Bulb and Green)

Nova Scotia Vegetable Crop Guide to Pest Management 2011
[ON2-11]

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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.**

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. 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 Original	2.5-7.0 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.
			Roundup WeatherMAX	1.67-8.0 L/ha			
			Touchdown® 480	2.5-7.0 L/ha			
	14	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.
Pre-emergence <i>Stale Seedbed Technique</i>	22	Diquat	Reglone® Desiccant	2.3-4.6 L/ha	-	-	Apply in 300 – 1100L of water/ha to foliage of emerged weeds but before the crop has emerged.
		Paraquat	Gramoxone®	2.75-5.5 L/ha	24 hours	-	
Germinating annuals	3	Chlorthal dimethyl	Dacthal W-75	9-18 kg/ha	-	-	Apply uniformly over the soil. Dacthal can be sprayed directly over transplants. A layby application can be made on onions up to 14 weeks after planting or transplanting. Max 18 kg/ha per year.
	14	flumioxazin	Chateau WDG	140g/ha	-	45	Dry Bulb only. Do not apply on sands with greater than 90% sand plus gravel.

							Do not apply on fine textured soils. Do not apply in a tank-mix or with an adjuvant. Apply to transplanted onions between the 2 and 6 leaf stage. On direct seeded onions apply between the 3 and 6 leaf stage prior to emergence of weeds.
Postemergence <i>Inter-row shielded</i>	22	Diquat	Reglone® Desiccant	2.3-4.6 L/ha	-	-	Do not spray solution on the crop plant since it could be injured or killed. Use gramoxone for best control of grasses.
		Paraquat	Gramoxone®	2.75-5.5 L/ha	24 hours		
	14	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.
Emerged broadleaf	6	Bromoxynil	Pardner	0.5 L/ha	24 hours	75	Dry bulb onions only. Apply in 200 L of water per ha at a pressure of 170 kPa. Make two applications at an interval of 10-18 days apart. The first application should be made when the onions are at the 2-3 leaf stage, the second application made when the onions are 4-5 leaf stage. Severe leaf burn may occur if the weather has not been conducive to the development of the outer waxy layer of the onion leaf. Redroot pigweed and common groundsel.
	14	Oxyfluorfen	Goal 2XL	0.5 L/ha	48 hours	56	Apply in 500 L/ha of water when onions have 2 fully developed leaves. Use only on dry bulb onions and do not apply when crop is under stress. Do not apply in excess of 2.0 L/ha per year.
Emerged grasses	1	Clethodim	Select	0.38 L/ha	-	45	Apply when crop is at the 1-4 leaf stage and weeds are at the 2-6 leaf stage.
		Diclofop methyl	Hoe-Grass 284	3.5 L/ha	-	60	Dry Bulbs onions only. Apply at the 1-4 weed leaf stage.

		Fenoxaprop-P-ethyl	Excel Super EC	670 ml/ha	-	38	Dry Bulb onions only. Apply to actively growing annual grasses at the 1-6 leaf stage.
		Fluazifop-p-butyl	Venture L	1.0-2.0 L/ha	-	42	Apply at the 2-5 leaf stage of the grass. Use the high rate for quack grass and the lower rate for volunteer cereals.
		Sethoxydim	Poast Ultra plus Merge	0.32-1.1 L/ha 1-2 L/ha	12 hours	50	Dry Bulb onions only. Apply to actively growing annual grasses at the 1-6 leaf stage.
Yellow Nutsedge	15	Dimethenamid-P	Frontier Max	1.29 L/ha	24 hours	60	For Dry Bulb Onions grown on Muck Soils Only. Apply a single application at the loop stage before yellow nutsedge emerges.
Emerged crop (Broadleaves and grasses)	3	Pendimethalin	Prowl 400 EC	2.5-3.75 L/ha	24 hours	-	On mineral soils for dry bulb onions, direct seeded only. Apply at 2-6 leaf stage. Max 2 applications per year.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
INSECTS:							
Thrips	3	Cypermethrin	Ripcord 400EC	175 ml/ha	-	3	Apply at 10-day intervals. Max 3 applications/season.
			UP-Cyde	280 ml/ha	12 hours	3	
	3	Deltamethrin	Decis 5.0 EC	200 ml/ha	-	5	Do not apply more than once per season.
	1B	Diazinon	Diazinon 50 EC	1.1 L/ha	-	10	Apply in sufficient water to ensure coverage. Repeat as necessary.
	5	Spinetoram	Delegate WG <i>Added June 16th</i> <i>Emergency Registration Until October 31st, 2011</i>	200-336 g/ha	12 hours	3	Dry Bulb Onions. Apply in 300-500 litres of water per hectare. Apply when thrips first appear, targeting egg hatch and small nymphs. Max 3 applications per year with 7-10 days between application.
	3	Lambda - cyhalothrin	Matador 120 EC	188 ml/ha	24 hours	14	Max 3 applications/season. Allow 7 days between treatments
	1B	Malathion	Malathion 500 E	2.25 L/ha	-	3	Apply in enough spray volume to ensure thorough spray coverage.
	1B	Naled	Dibrom	550 ml/ha	48 hours	4	Repeat as necessary.
Onion Maggot	1B ¹	Chlorpyrifos	Lorsban 15 G	8-16 kg/ha	24 hours	109	Larvae. Apply in sufficient water as a drench banded over the row at sowing.
	1B	Diazinon	Diazinon 50 EC	20-37.5 ml/100 m of row	-	10	Larvae. Apply in sufficient water as a drench banded over the row at sowing.
	3	Cypermethrin	Ripcord 400 EC	175 ml/ha	-	3	Sprays for onion maggot flies. Apply when flies become numerous and repeat at 7 to 10 day intervals. Max 3 applications/season.
			UP-Cyde	280 ml/ha	12 hours	3	
	1B	Diazinon	Diazinon 50 EC	1.1 L/ha	-	10	
		Naled	Dibrom	550 ml/ha	48 hours	4	
Leek Moth	3	Lambda - cyhalothrin	Matador 120 EC	188 ml/ha	24 hours	14	Max 3 applications/season. Allow 7 days between treatments
	5	Spinosad	Success 480 SC	218 ml/ha	-	3	Green Onion only. Apply in high water

		<i>Added June 16</i>					volume to ensure spray solution penetrates into leaf axils. Reapply at 7-10 day intervals. Do not apply more than 2 sequential applications. Max 3 applications per year. Target eggs at hatch or small larvae.
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Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
DISEASES:							
Pythium	4	Metalaxyl-M and S-isomer	Apron XL LS	20 ml / 100kg of seed	-	-	One application as a seed treatment.
Purple Blotch	7	Boscalid	Lance WDG	475 g/ha	12 hours	7	Apply at 7-14 day intervals. Max 6 applications/yr. Do not apply more than 2 sprays in succession before alternating to another fungicide family.
	7-11	Boscalid and Pyraclostrobin	Pristine WG	1.0-1.3 kg/ha	3 days	7	Max 6 applications/yr. Apply at 7-14 day intervals.
	9-12	Cyprodinil and Fludioxinil	Switch 62.5 WG	775-975 g/ha	12 hours	7	Max 3 applications/yr. Suppression of purple blotch only.
	U	Fosetyl-al	Aliette WDG	2.8 kg	12 hours	7	Max 5 applications/yr.
	M	Mancozeb	Manzate Pro-Stick	2.25-3.25 kg/ha	-	10	Dry onions only. Repeat applications on 7-10 day intervals.
	11	Pyraclostrobin	Cabrio EG	0.56-0.84 kg/ha	12 hours	7	Max 3 applications/yr. Do not apply more than 2 sprays in succession before alternating to another fungicide family. Use on a 7-14 day schedule.
Botrytis leaf blight and Botrytis Neck Rot	-	<i>Bacillus subtilis</i>	Serenade MAX	3.0-4.5 Kg/ha	-	0	Serenade Max and Serenade ASO are biopesticides that will only suppress the indicated diseases. Begin applications at the 1 st sign of disease, or when conditions become conducive for disease development. Repeat as necessary on a 7-10 day interval.
			Serenade ASO	12.0-18.0 L/ha	-	0	
	7	Boscalid	Lance WDG	475 g/ha	12 hours	7	Apply at 7-14 day intervals. Max 6 applications/yr. Do not apply more than 2 sprays in succession before alternating to another fungicide family.

	7-11	Boscalid and Pyraclostrobin	Pristine WG	1.0-1.3 kg/ha	3 days	7	Max 6 applications/yr. Apply at 7-14 day intervals.
	M	Chlorothalonil	Bravo 500	2.4-4.8 L/ha	48 hours	7	Dry Bulb. Max 3 applications/yr.
						14	Green Bunching. Max 5 applications/yr.
	9-12	Cyprodinil and Fludioxinil	Switch 62.5 WG	775-975 g/ha	12 hours	7	Max 3 applications/yr. Begin when conditions are favorable for disease but before infection. Apply at 7-14 day intervals, no more than 2 sequential applications.
	2	Iprodione	Rovral	1.5 kg/ha	12 hours	15	Dry bulb. Max 4 applications/yr. Make first application at first sign of disease or when conditions are favorable for disease. Apply at 7-10 day intervals.
	M	Mancozeb	Manzate Pro-Stick	2.25-3.25 kg/ha	-	10	Dry bulb onions only. Apply at 7-10 day intervals beginning around the first week of July.
			Dithane DG Rainshield	2.25-3.25 kg/ha			
Downy Mildew	-	<i>Bacillus subtilis</i>	Serenade MAX	3.0-6.0 Kg/ha	-	0	Serenade Max and Serenade ASO are biopesticides that will only suppress the indicated diseases. Begin applications at the 1 st sign of disease, or when conditions become conducive for disease development. Repeat as necessary on a 7-10 day interval.
			Serenade ASO	12.0-24.0 L/ha	-	0	
	7-11	Boscalid and Pyraclostrobin	Pristine WG	1.0-1.3 kg/ha	3 days	7	To suppress downy mildew, apply when disease first appears. Follow up 5-7 days later with a fungicide of a different chemistry that is also effective against downy mildew. Do not make sequential applications of Pristine when downy mildew occurs.
	11	Fenamidone	Reason 500 SC	400 ml/ha	-	7	Suppression Only. Begin application as soon as crop and/or environmental conditions become favourable for disease development. Apply in 300-600 L/ha. Applications should be made on a 5-10

							day interval. Maximum 4 applications per year. Plant back interval of 30 days. Do not apply more than 2 sequential applications of Reason 500 SC or any other Group 11 fungicide before alternating with a fungicide from a different Group.
	U	Fosetyl-al	Aliette WDG	2.8 kg	12 hours	7	Max 5 applications/yr.
	M	Mancozeb	Manzate Pro-Stick	2.25-3.25 kg/ha	-	10	Dry onions only. Repeat applications on 7-10 day intervals
	40	Mandipropamid	Revus plus Non-ionic adjuvant	400-600 ml/ha plus 0.25% v/v	12 hours	7	Control of Downy mildew. Applications should begin prior to disease development and continue throughout the season on a 7-10 day schedule of fungicides, following the resistance management guidelines. Maximum four applications per year. REVUS Fungicide may be tank mixed with Bravo 500 Agricultural Fungicide on all dry bulb and green bunching onions. Follow the most restrictive use directions of either label.
	11	Pyraclostrobin	Cabrio EG	0.56-0.84 kg/ha	12 hours	7	Max 3 applications/yr. Do not apply more than 2 sprays in succession before alternating to another fungicide family. Use on a 10 day schedule (suppression only).

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
DG	Dry granule	kPa	kilopascal
EC, E	Oil-based emulsifiable concentrate	kg	kilogram
EW	Water-based concentrate	g	gram
G	Granule	L	litre
L	Liquid	BIU	Billions of International Units
WDG	Wettable dry granule	ppm	parts per million (1000 ppb)
WG	Wettable granule	ppb	parts per billion (1/1000 ppm)
WP, W	Wettable powder		
Sn	Solution		

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!