

Snap Beans Management Schedule

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



2018





GUIDE TO PEST MANAGEMENT IN BEANS (SNAP)

Nova Scotia Vegetable Crop Guide to Pest Management 2018
[SNAP1-18]

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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.**

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 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 of 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.
			Touchdown® 480	2.5-7.0 L/ha			
	14	Carfentrazone-ethyl	Aim EC	36.5-117 ml/ha	-	1	
Preplant Incorporated Treatments <i>Germinating annual grasses and some broadleaf weeds</i>	8	EPTC	EPTAM 8-E	4.25-5.5 L/ha	24 hours	-	Must be applied to a dry clod-free soil surface and incorporated within 10 minutes. Use in conjunction with other herbicide applications for control of broadleaf weeds.
	15	S-Metolachlor	Dual II Magnum	1.15-1.75 L/ha	12 hours	-	Do not use on very sandy soils or those high in organic matter. Use in conjunction with pre- & postemergence herbicide applications for broadleaf weed control.
	3	Trifluralin	Treflan EC	1.2-2.4 L/ha	12 hours	-	Incorporate within 8 hours of application following label instructions. Ragweed and mustards are not controlled. Corn or cereal grains may be injured when planted in fields treated with trifluralin the previous year. Use in conjunction with preemergence or postemergence herbicides applications for control of broadleaf weeds.
			Rival EC	1.6-2.3 L/ha	12 hours	-	

Pre-emergence	3	Pendimethalin	Prowl H2O	2.37 L/ha	24 hours	-	Apply in 200L water/ha. Do not apply after planting snap beans as injury may occur. Adequate soil moisture is required for optimum activity. See label for plant back restrictions.
Post-emergence Treatments <i>Broadleaf weeds</i>	6	Bentazon	Basagran plus Assist Oil Conc.	1.75- 2.25 L/ha 1-2 L/ha	12 hours	-	Apply in 200 to 400 L water per hectare when beans are in the first true leaf to 4 th trifoliolate leaf stage and weeds are growing actively. Split applications may be necessary for Canada thistle control.
Grasses	1	Sethoxydim	Poast Ultra plus Merge	0.32- 0.65 L/ha 1-2 L/ha	12 hours	15	Treat at 1 to 6 leaf stage of annual grasses. Use higher rate on volunteer cereals and quackgrass.
Direct-seeded, pre or post-emergence <i>Broadleaf weeds & nutsedge</i>	2	Halosulfuron <i>NEW 2018</i>	Sandea WG	35-70 g/ha	12 hours	30	<u><i>See label for application instructions and timing.</i></u>

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
INSECTS:							
Aphids	3	Lambda-cyhalothrin	Matador 120 EC	83-233 ml/ha	24 hours	7 edible pod beans 14 succulent shelled beans	Do not use more than 3 applications per season. Apply when the presence of vulnerable pest developmental stages and significant populations occur. Apply in 100-200 L of water / ha.
	1B	Malathion	Malathion 500 E	1.4-3 L/ha	24 hours	7	Apply in sufficient amount of spray volume to ensure adequate coverage.
	29	Flonicamid	Beleaf 50SG	0.12-0.16 kg/ha	12 hours	7	Apply before aphid populations reach economic thresholds or as populations begin to increase but before damaging populations become established. Scout fields and reapply if necessary. Use higher rates for greater pest populations and/or dense foliage. Maximum 3 applications/season.
European Corn Borer	11	<i>Bacillus thuringiensis</i>	Bioprotec CAF	2.8-4.0 L/ha	-	1	Maximum 4 applications per season. Allow 5-10 days between applications.
	3	Lambda-cyhalothrin	Matador 120 EC	83 ml/ha	24 hours	7 edible pod beans 14 succulent shelled beans	Apply with 100-200 L/ha of spray volume. The need and timing of application should be based on the presence of vulnerable pest development stages. For corn borer, apply before the larvae bores into the plant stock.
			Warrior				
	1A	Methomyl	Lannate	550 g/ha	12 hours	7	Spray at 3-7 day intervals or as needed.
15	Novaluron	Rimon 10 EC	410-820 ml/ha	12 hours	2	The first application should be made just prior to egg hatch. Scout for European Corn Borer to monitor egg-laying and egg hatch to determine application timing. Use higher application rates and spray volumes for higher pest pressure, when larvae are large, or when the foliage canopy is tall or dense. Re-application on a 7-10 day interval may be required to protect new growth or when monitoring indicates the need. For the most	

							effective control, fields should be scouted and sprays applied in a timely manner. Do not apply more than 3 applications per crop per season. Do not apply more than 2.46 litres per hectare per season.
	5	Spinosad	Success 480 SC	83 ml/ha	-	3	Use only for small larvae and low infestations.
			Entrust 80 W	50 g/ha	12 hours	3	Maximum of 2 applications per year. A 2 nd application may be made at 7-10 days.
			Entrust SC	167 ml/ha	12 hours	3	
	18	Methoxyfenozide	Intrepid 240F	0.3 – 0.6 L/ha	12 hours	7	Apply at the first signs of feeding damage before the insect enters the pods. Repeat application 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. (Also for Cabbage looper).
	5	Spinetoram	Delegate	120-210 g/ha	12 hours	3	Scout for European corn borer to monitor egg laying and egg hatch. In order to achieve effective control, applications of Delegate Insecticide must be timed to coincide with peak egg hatch. A second application 7 to 10 days after the initial application may be necessary to achieve effective control. Apply up to a maximum of two applications per year.
European Corn Borer and White Mold <i>(Product tank mix)</i>	3	Lambda-cyhalothrin plus boscalid	Matador 120 EC or Warrior plus Lance WDG	83 ml/ha plus 420 g/ha	24 hours	14	Apply with 100-200 L/ha of spray volume. The need and timing of application should be based on the presence of vulnerable pest development stages. For corn borer, apply before the larvae bores into the plant stalk. Apply on 7-14 day schedule. Maximum two applications per season.
Tarnished Plant Bug	29	Flonicamid	Beleaf 50SG	0.20 kg/ha	12 hours	7	Apply when lygus bugs first appear in the field and before populations reach high levels. Beleaf™ 50SG will stop lygus bug feeding rapidly; it may take several days to see a reduction in lygus bug numbers. Reapply when new insects are detected.
Cutworms & Armyworms	3	Lambda-cyhalothrin	Matador 120 EC	83 ml/ha	24 hours	14	Apply with 100-200 L/ha of spray volume. The need and timing of application should be based on

			Warrior				the presence of vulnerable pest development stages. Applications should be made as close to cutworm feeding as possible (ie. night).
	15	Novaluron	Rimon 10 EC	410-820 ml/ha	12 hours	2	Fall and True Armyworm: Application should be made when the larvae first start feeding. Use higher application rates and spray volumes for higher pest pressure, when larvae are large, or when the foliage canopy is tall or dense. Re-application on a 7-10 day interval may be required to protect new growth or when monitoring indicates the need. For the most effective control, fields should be scouted and sprays applied in a timely manner. Do not apply more than 3 applications per crop per season. Do not apply more than 2.46 litres per hectare 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, Corn Earworm. Use sufficient spray volume to ensure thorough coverage but not to the point of run off.
Western Bean Cutworm	3	Lambda-cyhalothrin	Matador 120 EC	83-187 ml/ha	24 hours	14	Repeat sprays at 4-7 day intervals. Do not use more than 3 applications per season.
			Warrior				
Brown Marmorated Stink Bug	1A	Methomyl	Lannate	550 g/ha	12 hours	7	Apply when insects first appear. Continue at 5-7 day intervals if monitoring indicates the need.
	1B	Malathion	Malathion 85E	1345 mL/ha	-	3	Use a minimum of 500 L of water per hectare. Apply prior to harvest when treatment thresholds have been reached, as determined by local monitoring.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
DISEASES:							
<i>Pythium</i> and <i>Phytophthora</i> Root Rot	4	Metalaxyl-M & S-isomer	Ridomil Gold 480 EC	300 ml/ha	12 hours	At planting	Apply at the rate of 2.3 mL of product per 100 m of row based on 20 cm spray band and 76 cm row spacing. This is equivalent to 300 mL per treated hectare. See label for further details.
	21	Cyazofamid	Torrent 400 SC + Sylgard 309	0.2 L/ha	12 hours	0	For suppression of Phytophthora blight on lima beans and snap beans. Make the first application at 100% bloom-pin pod development and a second application at late pin-small pod development and repeat every 7 days as needed to maintain disease control. Max 6 applications per season. A plant back interval of 30 days is required.
	40	Mandipropamid	Revus	600 ml/ha	12 hours	1	For control of Phytophthora blight (<i>Phytophthora capsici</i>) on Edible-Podded Beans. Apply prior to disease development & continue on a 7-10 day interval. Max 4 applications/year. Do not make more than 2 sequential applications/season. The use of non-ionic adjuvant (0.25% v/v) is recommended.
	11	Fenamidone	Reason 500SC	600 ml/ha	12 hours	3	Edible-Podded Beans. Begin applications as soon as crop and/or environmental conditions become favourable for disease development. Apply in spray volume of 280-560 L/ha. Repeat applications should be at 7-day intervals. Max 3 applications per season.
<i>Sclerotinia</i> White Mold and <i>Botrytis</i> Pod Rot	44	<i>Bacillus subtilis</i>	Serenade Opti	1.7-3.3 Kg/ha	-	0	Biopesticide that will only suppress the indicated diseases. For white mold, make the first application at planting and prior to crop emergence. Make second application as a directed spray with multiple nozzles per seed line in sufficient water to ensure thorough coverage of lower plant leaves and surrounding soil surface within 7 days of thinning. Repeat applications in 7-14 day intervals if conditions for disease development persist. For Botrytis Pod Rot, begin applications at the first sign of disease, or when conditions become conducive for disease development. Repeat as necessary on a 7-10 day interval.

	7	Boscalid	Lance WDG	560-770 g/ha	12 hours	7	For white mold: Apply at 20-50% flowering. Use only two times per season. For Botrytis: Apply Lance at 420 g/ha, apply a 2 nd application 7-10 days later.
	9-12	Cyprodinil and Fludioxonil	Switch 62.5 WG	775-975 g/ha	12 hours	7	Begin applications prior to or at the onset of disease and repeat applications at 7 day intervals if conditions remain favourable for disease development. For white mold control, make the first application at 10-20% bloom. In some locations, a single application at this timing will provide adequate disease control. Apply the higher application rate under conditions of high disease pressure. Apply in sufficient water to ensure thorough coverage: Ground: 175 – 225 L of water /ha Do not apply more than 2.9 kg/ha/crop.
	2	Iprodione	Rovral WDG	1.5 Kg/ha	-	Do not apply after bloom	Effective control can only be achieved by using drop nozzles and high pressure so that spray contacts blossoms. Apply Rovral when 50% of the blooms have opened. When conditions are dry before and during bloom no fungicide is required.
	7	penthiopyrad	Fontelis	1.0-2.25 L/ha	12 hours	0	Botrytis Only Begin application 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 5.25 L/ha. Do not make more than 2 sequential applications before switching to another mode of action.
White Mold (<i>Sclerotinia sclerotiorum</i>)	29	Fluazinam	Allegro 500 F	0.6-1.0 L/ha	24 hours	14	Apply in 300-1000 L of water/ha. Max 2 applications per year. Repeat application on a 7-10 day interval. Begin applications at 10% bloom, the second application should not be later than when 50% of the plants have at least one open bloom.
Bacterial Blights	M1	Copper hydroxide	Parasol F	2.3-3.12 L/ha	48 hours	2	Apply at the first sign of disease and at 7 day intervals.
	M		Kocide 2000	1.6-2.3 kg/ha	48 hours	2	For protective sprays, apply first application when plants are 15 cm high. Apply on a 7 - 14 day schedule depending on local conditions. Use high rate under high disease pressure and low rate under low disease pressure.

	M1	Copper	Cueva	0.5% to 2% solution, applied at 470-940 L/ha.	4 hours	1	Re-apply using 5-10 day intervals.
<i>Seed treatment</i>	M	Copper hydroxide	Kocide 2000	113g in 200ml water for 100kg of seed	-	-	For every 100 kg seed to be treated, add 113 g Kocide® 2000 to 200 ml of warm water and stir until dissolved. Additional warm water can be added as required to create a slurry of suitable consistency for use with commercial seed treatment equipment. Add this mixture to the bean seed as it is being gently tumbled to ensure even coverage. Allow treated seed to dry before planting. Label Seed: “This seed has been treated with Kocide® 2000; do not use treated seed for food, feed or oil processing” . <i>Kocide 2000 used as a seed treatment may cause some delay in seed germination. Treat a small quantity of seed using equipment similar to that planned for treating the total seed lot. Conduct germination tests on a small portion of seed before committing the total seed lot to a selected seed treatment. See label for further precautions.</i>
Angular Leaf Spot	11	Pyraclostrobin	Headline EC	0.4 L/ha	12 hours	7	Max 2 applications/year. First at the beginning of flowering or at the onset of symptoms. 2 nd application can be made at 10-14 days if disease persists.
Alternaria	7	penthiopyrad	Fontelis	1.0-2.25 L/ha	12 hours	0	Begin applications prior to disease development, continue on a 7-14 day interval. Use higher rate & shorter interval when disease pressure is high. Maximum seasonal rate is 5.25 L/ha. Make no more than 2 sequential applications before switching to another mode of action.
Asian Soybean Rust	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 5.25 L/ha. Do not make more than 2 sequential applications before switching to another mode of action.
	3	Propiconazole	Tilt 250E	500-756 ml/ha	12 hours	15	Apply at first sign and at 14 to 21 days later. Two applications per season. Also controls <i>Powdery Mildew</i> (500 ml/ha): Make first application at the R2 to R3 developmental stage, or when there is 5% disease level in the field, followed by a second

							application 14 days after the first, if environmental conditions are favourable for disease development.
	3	Propiconazole	Propi Super 25EC	500-756 ml/ha	12 hours	15	Apply at first sign and at 14 to 21 days later. Two applications per season. <i>Also controls Powdery Mildew (500 ml/ha): Make first application at the R2 to R3 developmental stage, or when there is 5% disease level in the field, followed by a second application 14 days after the first, if environmental conditions are favourable for disease development.</i>
	M1	Copper	Cueva	0.5% to 2% solution, applied at 470-940 L/ha.	4 hours	1	Re-apply using 5-10 day intervals. <i>Also controls Brown spot and Powdery Mildew.</i>
	11	Azoxystrobin	Azoshy 250SC	500 ml/ha	12 hours	15	Make first application at the R1 to R3 developmental stage, or when there is 5% disease level in the field, followed by a second application 14 days after the first, if environmental conditions are favourable for disease development.

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	Oil-based emulsifiable concentrate	kPa	kilopascal
EW	Water-based concentrate	kg	kilogram
DP	Dry powder	g	gram
L	Liquid	L	litre
WDG	Wettable dry granule	BIU	Billions of International Units
WP, W	Wettable powder	ppm	parts per million (1000 ppb)
SC	Suspension concentrate	ppb	parts per billion (1/1000 ppm)
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!