

EXTENSION AND ADVISORY TEAM

GUIDE TO PEST MANAGEMENT IN CORN (SWEET)

Nova Scotia Vegetable Crop Guide to Pest Management 2021
[COR1-21]



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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. 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
WEEDS:							
Pre-plant <i>Perennial weeds including quackgrass</i>	9	Glyphosate	Roundup Transorb	2.5-12.0 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. The low rate (2.5 L/ha) will provide a minimum of one season control, while higher rates (>2.5 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 Total	1.6-8.6 L/ha			
Pre-plant Incorporated <i>Annual grasses</i>	15	S-Metolachlor	Dual II Magnum or Komodo	1.25-1.75 L/ha	12 hours	45	Can be applied either (i) pre-plant incorporated – immediate incorporation not necessary (ii) pre-emergence – requires rainfall or irrigation within 7 days. Apply high rate on heavy soils or on heavy weed infestations. Can be tank mixed with atrazine for better broadleaf weed control. Refer to label. Corn should be at spike to 2 leaf stage. Annual grasses at maximum of 2 leaf stage. Do not use oil or surfactants.

Preplant Incorporated/Pre or Postemergence <i>Primarily annual broadleaf weeds</i>	5	Atrazine	Aatrex Liquid 480	2.1-3.1 L/ha	-	45	Can be applied (i) pre-plant incorporated, (ii) pre-emergence, or (iii) post emergence with a suitable surfactant. Carryover is more likely to occur on light soils, in dry years and from late or post emergence applications. Aatrex liquid is often used in combination with a grass herbicide. Read label for uses & rates.
	27	Mesotrione	Callisto or Mester 480 SC	0.3 L/ha	12 hours	50	Apply in a spray volume of 200 L/ha.
	27	Topramezone	Impact + Merge or Assist + UAN 28%	37 ml/ha 0.5% v/v 1.25% v/v 1.25% v/v	12 hours	45 (Impact)	Should be tank mixed with atrazine or glyphosate. Corn varieties that are not designated as glyphosate tolerant will be damaged by tankmix with glyphosate. See label
Preemergence <i>Annual and broadleaf weeds</i>	5-15	S-metolachlor & Atrazine	Primextra II Magnum	3-4 L/ha	12 hours	45	Rain is required within 10 days of application or a shallow cultivation is necessary.
	15-27	Bicyclopyrone, Mesotrione, S-metolachlor (and R-enantiomer)	Acuron Flexi NEW 2021	3.7 L/ha	12 hours, 12 days for hand-setting irrigation equipment	45	Controls broadleaf and grass annual weeds. To be used as a pre-emergent treatment only. Apply in a minimum of 150L of carrier (UAN or water) per hectare. Ground application only. Dry conditions post application may reduce pre-emergent activity.
Postemergence <i>Including triazine resistant strains, primarily broadleaf control</i>	6	Bentazon	Basagran plus Assist	1.75-2.25 L/ha 1-2 L/ha	12 hours	-	Post emergence only when corn is at 1 to 5 leaf stage. Reduce Assist to 1 L/ha under hot, humid conditions. Control is best when broadleaf weeds are small and actively growing. A split application will control some broadleaf perennials like Canada thistle. Does not control weeds germinating after application.

Postemergence <i>Including triazine resistant strains, primarily broadleaf control</i>	6	Bromoxynil	Pardner	1.0-1.2 L/ha	24 hours, 20 days hand harvest, 5 days handset irrigation	-	Post emergence only for control of broadleaf weeds, including triazine resistant biotypes. Apply in 200-300 L of water per hectare. Apply when weeds are in 1 to 4 leaf stage and corn is at the 4 to 8 leaf stage. Severe leaf burn may occasionally occur; however, yields have not been affected. Do not add oil or surfactant.
	6-5	Bromoxynil + Atrazine	Pardner + Aatrex 480	1.0 L/ha + 3.1 L/ha	24 hours	-	Apply when the crop is at the 4-8 leaf stage. Make one application per year. Temporary crop injury in the form of scorching may occur in adverse weather conditions (cool and wet or hot and humid). Do not add oil or surfactant or use atrazine formulations containing oil.
	27	Topramezone	Impact plus Merge	37 ml/ha plus 0.5% v/v	12 hours	45	Varieties may vary in their tolerance to Impact. Apply when corn is at the 1-7 leaf stage, broadleaf weeds are at the 1-8 leaf stage and grass weeds are at the 1-4 leaf stage. Broadleaf weeds and suppression of some grasses.
	27	Tolpyralate	Tolpyralate 400 SC Or Shieldex 400SC NEW 2021	75 – 100 mL/ha	12 hours	35	Broadleaf and grass weeds. May applied as a broadcast spray on corn up to 50 cm tall or is exhibiting 6 leaf collars (V6). Best results are obtained when weeds and corn are small. Target applications to corn that is less than 30cm tall for improved coverage.
<i>Grasses</i>	2	Nicosulfuron	Nicosh	33.4 g/ha	12 hours	40	See label for varieties. Apply at the 1-6 leaf stage of target grasses (1-8 corn leaf stage). Make only one application per year.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
INSECTS:							
Seed Corn Maggot Wireworm	3	Tefluthrin	Force 3.0 G	37.5 g/100 m of row	12 hours	56	Apply in furrow at planting.
	28	Tetraniliprole	Reatis 480 FS NEW 2021	42 mL/80,000 Kernels	-	-	For use in commercial seed treatment equipment only. Not for use in hopper box, planter box, slurry box, or other on-farm seed treatment applications. This product contains no colourant. An appropriate colourant must be added when this product is applied. Do not make a subsequent foliar application of any Group 28 insecticide for a minimum of 60 days after planting treated seed.
	30	Broflanilide	Cimegra NEW 2021	250 mL/ha <u>For 76 cm (30") row spacing:</u> 1.9 mL/100m of row	-	-	Wireworm. Apply at planting as an in-furrow or T-band spray by directing spray pattern to uniformly cover seed and surrounding soil. In-furrow: Apply through spray nozzles or microtubes into the open seed furrow, between the planter furrow openers and press wheels. T-band: Apply in a 10 to 20 cm (4 to 8 inch) band over the top of the open seed furrow, between planter furrow openers and press wheels. DO NOT T-band over the top of a closed furrow. See label for calculation on unique row spacing.
Corn Earworm and Fall Armyworm	28	Chlorantraniliprole	Coragen	250-375 ml/ha	12 hours	1	Use the high rate under heavy pest pressure. Do not make more than 4 applications per season. Do not apply more than once every three days. Time applications with peak egg hatch for corn earworm.

Corn Earworm and Fall Armyworm	28	Tetraniliprole	Vayego 200 SC NEW 2021	150 mL/ha	12 hours	1	For corn earworm time the application to coincide with peak egg hatch. Apply as a directed foliar spray to ensure thorough coverage. Do not apply more than 4 times per season. Ensure at least 7 days between applications. Toxic to bees, apply up to V15 or after pollen shed.
	3	Cypermethrin	Mako	175 ml/ha	12 hours	5	Corn earworm. spray directly to ensure good coverage of ears and silks. Use 300-500 L water per hectare. Max. 3 applications/year.
	3	Deltamethrin	Decis 5.0 EC	250-300 ml/ha	12 hours	5	Corn earworm. Apply when insects are present in the silks. Do not apply more than two times per year.
			Poleci 2.5 EC	500-600 ml/ha			
	3	Lambda - cyhalothrin	Matador 120 EC Or Labamba	83-208 ml/ha	24 hours	1	Armyworms. Max. of 3 applications. Spray no later than when first feeding damage is seen on foliage.
			Warrior	83-205 ml/ha			
	1A	Methomyl	Lannate	430-625 g/ha	12 hours	3	Corn earworm. Application to begin when 25% of the ears show silk. Direct sprays to the silks. Do not apply after August 15 th . 1 application per year.
	3	Permethrin	Pounce 384 EC	275-375 ml/ha (Corn Earworm) 180 ml/ha (Fall Armyworm)	When dry	1	For control of corn earworm, direct the spray to ensure coverage of ears and silks. Max. 4 applications per year.
	15	Novaluron	Rimon 10 EC	820 ml/ha	9 days (for detasseling and hand harvesting)	9 (hand harvesting) 1 (machine harvest)	Corn earworm. Apply prior to peak egg laying at silking. Reapply at 7 day intervals as long as monitoring indicates moths and fresh silks are present. Max. 5 applications per season. Apply in 90-570 L of water /ha.
European Corn Borer	11	<i>Bacillus thuringiensis</i>	Dipel 2X DF	0.56-1.12 Kg/ha	4 hours	1	Apply when pinhole feeding is observed on 5% of the plants. Maximum of 6 applications per year.

European Corn Borer			Bioprotec CAF	2.8-4.0 L/ha	-	1	Apply at hatch. Max. 6 applications per year.
	28	Chlorantraniliprole	Coragen	250-375 ml/ha	12 hours	1	Use the high rate under heavy pest pressure. Max. 4 applications/season. Apply no more than once every three days. Time applications with peak egg hatch.
	28	Tetraniliprole	Vayego 200 SC NEW 2021	150 mL/ha	12 hours	1	Time the application to coincide with peak egg hatch. Apply as a directed foliar spray ensuring thorough coverage. Do not apply more than 4 times per season. Ensure at least 7 days between applications. Toxic to bees, apply up to V15 or after pollen shed.
	3	Cypermethrin	Mako	175 mL/ha	12 hour	5	Apply when egg masses begin to hatch but no later than when first feeding is seen on foliage. For second brood borers in late planting, apply before tassels show. Max 3 applications/season.
			UP-Cyde	280 ml/ha	12 hours	5	Apply in 325–450 L of water/ha. Spray no later than when the first feeding is seen on foliage. Repeat on 4-7 day intervals depending on the area and corn borer numbers. When there are 2 generations, late plantings of sweet corn will require sprays from whorl stage until near harvest. Max 3 applications per season.
	3	Lambda - cyhalothrin	Matador 120 EC, Labamba or Warrior	83-187 ml/ha	24 hours	1	Maximum of 3 applications at the low rate. Spray at egg hatch, no later than when first feeding damage is seen on foliage.
	3	Deltamethrin	Poleci 2.5 EC	500-600 ml/ha	12 hours	5	Apply in at least 240 L water/ha. Apply when egg masses begin to hatch, but no later than when the first pinhole feeding is seen on the leaves. Direct spray into the whorl of the plant. For control of second generation, direct spray at ear zone.

European Corn Borer	1A	Methomyl	Lannate	625 g/ha	12 hours	3	Application to begin when egg masses begin to hatch, but no later than when the first feeding damage is seen on leaves. Sprays should be directed into the whorl of the plant. After tassels appear, direct spray at the ear zone. In areas where the second generation borers may be a problem, late plantings should be treated before tassels are visible. Latest timing of application is early silk stage.
	5	Spinosad	Success 480 SC	83 ml/ha	7 days	7	Apply in 1000 L water/ha. Maximum of 2 applications per year. Apply only on small larvae and low populations.
			Entrust 80 W	50 g/ha			
			Entrust SC	167 ml/ha			
	18	Methoxyfenozide	Intrepid	0.3 – 0.6 L/ha	12 hours	3	Apply at the first signs of feeding damage before the insect enters the fruit. Monitoring insect populations is key to controlling this pest. Direct application at the whorl for early season (first generation) infestations. Repeat applications after 5-10 days if required based on population monitoring. Use the higher rate for heavy infestations, or larger crop canopies.
	5	Spinetoram	Delegate	120-210 g/ha	12 hours	1	Applications should be timed at egg hatch or to small larvae. Use the higher rate for heavy infestations and for large larvae. Repeat applications based on monitoring of insect populations. Apply a maximum of 3 applications per year with a minimum of 5 days between applications.
Cutworms	3	Deltamethrin	Decis 5 EC	250-300 ml/ha	12 hours	5	Western Bean Cutworm. Do not apply more than 2 times/year. Application should be based on the presence of vulnerable pest developmental stages and significant populations as determined by local monitoring. Repeat at 5-8 day intervals. Apply in 240 L water/ha.
			Poleci 2.5 EC	500-600 ml/ha			

Cutworms	3	Lambda – cyhalothrin	Matador 120 EC, Labamba Or Warrior	83 ml/ha	24 hours	1	Maximum of 3 applications. Spray no later than when first feeding damage is seen on foliage. Applications should be made under moist conditions in the evening or night when cutworm activity is highest. Do not disturb the soil surface for 5 days after treatment.
	5	Spinetoram	Delegate	120-210 g/ha	12 hours	1	Western Bean Cutworm. Applications should be timed at egg hatch or to small larvae. Use higher rate for heavy infestations and for large larvae. Repeat applications based on monitoring of insect populations. Apply a maximum of 3 applications per year with a minimum of 5 days between applications.
	1B	Chlorpyrifos	Warhawk 480SC FINAL SALE 2022, FINAL USE 2023	1.2-2.4 L/ha	24 hours	70	Black cutworm, darksided cutworm, redbacked cutworm. SOIL TREATMENT (PREPLANTING): Apply 2.4 litres in 200-400 L/ha. Apply once as a soil treatment 3-7 days before planting. Do not incorporate. Also apply to a 15 m strip into adjacent fence rows. SEEDLING TREATMENT: Apply 1.2-2.4 litres in 200-400 L/ha. Apply once as a broadcast spray at the 2- to 5-leaf stage of the crop. Max. one application per season.
	18	Methoxyfenozide	Intrepid NEW 2021	0.6 L/ha	12 hours	3	Western Bean Cutworm. Applications should be timed at egg hatch or to small larvae. Repeat applications based on monitoring of insect populations. Maximum of 3 applications per year.
	28	Cloranthraniliprole	Coragen	250-375 mL/ha	12 hours	1	Thorough coverage is important to obtain optimum control. Max. 4 applications per season.
	28	Tetraniliprole	Vayego 200 SC NEW 2021	150 mL/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray to ensure thorough coverage. Do not apply more than 4 times per season. Ensure at least 7 days between applications. Toxic to bees, apply up to V15 or after pollen shed.

Aphids	4	Acetamiprid	Assail 70 WP Aceta 70 WP	56-86 g/ha	10 days	10	Maximum 2 applications per season. Do not repeat applications more than once every 21 days. Do not detassel treated corn by hand. Adequate spray coverage is required.
	23	spirotetramat	Movento 240 SC	220-365 ml/ha	12 hours	7	Apply after pollen shed. Apply when aphids are first noticed. Minimum interval between applications: 7 days. Apply in a minimum spray volume of 200 L/ha. Maximum allowed per crop season: 1.1 L/ha.
	28	Tetraniliprole	Vayego 200 SC NEW 2021	150 mL/ha	12 hours	1	Suppression. Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray to ensure thorough coverage. Do not apply more than 4 times per season. Ensure at least 7 days between applications. Toxic to bees, apply up to V15 or after pollen shed.
	NC	Potassium salts of fatty acids	Kopa Insecticidal Soap	8L in 40L water, applied at 700-1900 L/ha solution	-	0	Do not spray when plants are under stress. Avoid spraying during full sun. Spray early in morning or evening or when overcast.
Slugs	NC	Ferric phosphate	Sluggo	12-50 Kg/ha	-	0	Use high rates on severe infestations.
Brown Marmorated Stink Bug	1A	Methomyl	Lannate	625 g/ha	12 hours	3	Suppression. Apply when insects first appear. Continue applications at 5-7 day intervals if monitoring indicates the need. Do not apply after August 15 th .

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
DISEASES:							
Rust	11	Azoxystrobin	Quadris Flowable	453 mL/ha in 200 L/ha of water	12 hours	7	Maximum 2 applications per year. Begin application before disease establishment and then at 7-14 day intervals.
			Azoshy 250EC				
	M5	Chlorothalonil	Bravo ZN	3.2 L/ha	1 day (scouting), 18 days (hand harvesting), 14 days (mechanical harvesting)	14	Maximum of 2 applications per year. Apply when symptoms first appear and then again 10 to 14 days later.
			Echo 90DF	1.8 kg/ha			
			Echo 720	2.2 L/ha			
	3	Propiconazole	Tilt 250 E	500 mL/ha	1 day	14	Apply when rust first appears and 14 days later if necessary.
			Propi Super 25EC				
	11	Pyraclostrobin	Headline	0.4-0.6 L/ha	12 hours	7	Max. 2 applications per year on a 7-14-day interval. Apply in a minimum of 100 L/ha.
	11, 3	Azoxystrobin, propiconazole	Quilt	0.75-1 L/ha	12 hours	14	Make first application at the first sign of disease, followed by a second application 14 days after the first, if environmental conditions are favorable for disease development. Good spray coverage and canopy penetration are important for best results.
	3, 7, 11	Pydiflumetofen, azoxystrobin, propiconazole	Miravis Neo	0.75-1 L/ha	12 hours	14	Make the first application at the first sign of disease. A second application can be made 14 days after the first application, when disease pressure is high or when agronomic or weather conditions are conducive to disease development or movement.

Northern and Southern Corn Leaf Blight <i>Helminthosporium</i> Leaf Spot Eye Spot Grey Leaf Spot	3	Propiconazole	Tilt 250 E	250-500 mL/ha	1 day	14	Apply when disease first appears. For Eye Spot and Grey Leaf Spot use the higher rate.
	3	Propiconazole	Propi Super 25EC	250-500 mL/ha	1 day	14	Make first application at the first sign of disease, followed by a second application 14 days after the first, if environmental conditions are favorable for disease development.
	11, 3	Azoxystrobin, propiconazole	Quilt	0.75-1 L/ha	12 hours	14	Make first application at the first sign of disease, followed by a second application 14 days after the first, if environmental conditions are favorable for disease development. Good spray coverage and canopy penetration are important for best results.
	3, 7, 11	Pydiflumetofen, azoxystrobin, propiconazole	Miravis Neo	0.75-1 L/ha	12 hours	14	Make the first application at the first sign of disease. A second application can be made 14 days after the first application, when disease pressure is high or when agronomic or weather conditions are conducive to disease development or movement.

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 ¹	
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!