

GUIDE TO PEST MANAGEMENT IN CORN (SWEET)

Nova Scotia Vegetable Crop Guide to Pest Management 2011
[COR1-11]

Revised April 15, 2011 by
Peter Burgess, Horticulture Specialist, AgraPoint International Inc.
Sarah Wood, Ag Info Specialist, AgraPoint International Inc.
Mélanie Leclerc, Research Assistant, AgraPoint International Inc.

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			
Preplant Incorporated <i>Annual grasses</i>	15	Dimethenamid	Frontier	1.1-1.4 L/ha	-	-	Apply either as a pre-plant incorporated or pre-emergence. Use the higher rate when pre-emergence application is to be made.
	8	Eptc	Eradicane 8 E	4.25-5.5 L/ha	-	-	Preplant incorporated on mineral soil only. Apply to a dry soil surface and incorporate within 15 minutes. Use low rate on light weed infestations or on light soils. Can be tank mixed with atrazine for better weed control.
	15	S-Metolachlor	Dual II Magnum	1.25-1.75 L/ha	12 hours	80	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	Atrazine	Consult label. Rates vary depending on the method of application or when used in combination with other herbicides.	-	-	Can be applied (i) pre-plant incorporated, (ii) pre-emergence, or (iii) post emergence with a suitable surfactant. Atrazine is generally used in combination with a grass herbicide (see above). Carryover more likely to occur on light soils, in dry years and from late or post emergence applications. Read label for atrazine uses. Other formulations of atrazine are available.
	27	Mesotrione	Callisto	0.3 L/ha	12 hours	50	Apply in a spray volume of 200 L/ha.
Preemergence <i>Annual and broadleaf weeds</i>	5-15	S-metolachlor & Atrazine	Primextra II Magnum	3-4 L/ha	12 hours	-	
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.
	5-6	Bentazon & Atrazine	Laddok plus Assist	3.0-4.0 L/ha 1.0 L/100 L of spray solution	12 hours	45	If Dual II Magnum was applied pre-emergence, reduce Laddok rate to 2.0-2.5 L/ha.
	6	Bromoxynil	Pardner	1.0-1.2 L/ha	24 hours	-	Post emergence only for control of broadleaf weeds, including triazine

							resistant biotypes. 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.
	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.
<i>Grasses</i>	2	Nicosulfuron	Accent 75 DF	33.4 g/ha	-	40	See label for varieties. Apply at the 1-6 leaf stage of target grasses. 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		-	Apply in furrow at planting.
Corn Earworm and Fall Armyworm	28	Chlorantraniliprole	Coragen	250-375 ml/ha	12 hours	1	Corn Earworm. 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.
	3	Cypermethrin	Ripcord 400 EC	175 ml/ha	-	5	Monitor for adult moths using pheromone traps. Apply an insecticide to protect the fresh silks when the first moth is captured. Repeat spray every 3 to 5 days depending on the abundance of moths and weather factors. Alternatively, begin spray program two days after the first silks appear. Stop spraying when silks dry up.
	3	Deltamethrin	Decis 5.0 EC	250-300 ml/ha	-	5	Do not apply more than twice.
	3	Lambda - cyhalothrin	Matador 120 EC	83-187 ml/ha	24 hours	1	Maximum of 3 applications. Spray no later than when first feeding damage is seen on foliage. Spray for armyworm at the low rate.
			Warrior	83-187 ml/ha			
	1A	Methomyl	Lannate	430-625 g/ha	-	3	Monitor for adult moths using pheromone traps. Apply an insecticide to protect the fresh silks when the first moth is captured. Repeat spray every 3 to 5 days depending on the abundance of moths and weather factors. Alternatively, begin spray program two days after the first silks appear. Stop spraying when silks dry up. *Lannate
3	Permethrin	Pounce 384 EC	275-375 ml/ha (Corn Earworm) 180 ml/ha (Fall Armyworm)	-	1		

							is not registered for fall armyworm.
European Corn Borer	1B	Acephate	Orthene 75 SP	0.75-1.1 Kg/ha	5 days	21	Apply when egg mass count indicates economically damaging population. Maximum 4 applications per year.
	-	<i>Bacillus thuringiensis</i>	Dipel 2X DF	0.56-1.12 Kg/ha	-	-	Apply when pinhole feeding is observed on 5% of the plants. Maximum of 6 applications per year.
	11		Bioprotec CAF	2.8-4.0 L/ha	-	-	Maximum of 6 applications per year.
	1A	Carbaryl	Sevin XLR Plus	2.5-4.0 L/ha	-	1	Use pheromone traps placed in weedy margins of fields to detect adult emergence. Watch for pinhole feeding on leaves of corn. Apply one of the insecticides listed or those listed for corn earworm. Repeat every 5 days. Direct sprays into the whorls, use at least 1100 L/ha of water.
		Carbofuran	Furadan 480 F	1.1 L/ha	48 hours	7	
	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.
	3	Cypermethrin	Ripcord 400 EC	175 mL/ha	-	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 the foliage. Repeat on 4-7 day intervals depending on the area and the corn borer numbers. When there are two 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	83-187 ml/ha	24 hours	1	Maximum of 3 applications. Spray no later than when first feeding damage is seen on foliage.
			Warrior	83-187 ml/ha			

	1A	Methomyl	Lannate	625 g/ha	-	3	Use pheromone traps placed in weedy margins of fields to detect adult emergence. Watch for pinhole feeding on leaves of corn. Apply one of the insecticides listed or those listed for corn earworm. Repeat every 5 days. Direct sprays into the whorls, use at least 1100 L/ha of water.
	5	Spinosad	Success 480 SC	83 ml/ha	7 days	7	Apply in 1000 L of water per hectare. Maximum of 2 applications per year. Apply only on small larvae and low populations. Do not apply within 28 days of fodder harvest or within 7 days of forage harvest.
			Entrust 80 W	50 g/ha	7 days	7 (28 if fodder harvest)	Maximum of 2 applications per year. Apply in 1000 L of water per hectare. Application must be made at the same time as egg hatch.
Western Bean Cutworm	3	Deltamethrin	Decis 5 EC	250-300 ml/ha	-	5	Do not apply more than 2 times per 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 of water per ha.
	3	Lambda – cyhalothrin	Matador 120 EC	83-187 ml/ha	24 hours	1	Maximum of 3 applications. Spray no later than when first feeding damage is seen on foliage.
Warrior			83-187 ml/ha				
Aphids	4	Acetamiprid	Assail	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.
Slugs	-	Ferric phosphate	Sluggo	25-50 Kg/ha	-	0	Use high rates on severe infestations.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted-Entry Interval (REI)	Pre-Harvest Interval (days)	Remarks
<i>DISEASES:</i>							
Three-Leaf Dieback	-	-	DCT Seed Treatment	125 g/25 Kg seed	-	-	Follow manufacturer's directions.
Rust	11	Azoxystrobin	Quadris (250 g/l)	453 mL/ha in 200 L/ha of water	-	7	Maximum 2 applications per year. Begin application before disease establishment and then at 7-14 day intervals.
	M	Chlorothalonil	Bravo 500	3.2 L/ha	48 hours	14	Maximum of 2 applications per year. Apply when symptoms first appear and then again 10 to 14 days later.
	3	Propiconazole	Tilt 250 E	500 mL/ha	-	14	Apply when rust first appears and 14 days later if necessary.
	11	Pyraclostrobin	Headline	0.4-0.6 L/ha	48 hours	7	Maximum 2 applications per year on a 7-14 day interval. REI is 48 hrs. Apply in a minimum of 100 L/ha.
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	-	14	Apply when disease first appears. For Eye Spot and Grey Leaf Spot use the higher rate.

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
F	Flowable	kg	kilogram
G	Granule	g	gram
L	Liquid	L	litre
Sn	Solution	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)
SP	Soluble powder		

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!