

2023



EXTENSION AND ADVISORY TEAM

SPRAY GUIDE FOR FIELD TOMATO

Nova Scotia Vegetable Crop Spray Guide 2023
[TOM1-23]



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LIABILITY STATEMENT

Recommendations in this guide are given for general information only and do not give the user the right to use a product in a manner not in accordance with the pesticide label or Pest Control Products Act. Perennia, by funding and printing this publication, and the editors/authors, do not offer any warranty or guarantee and do not assume any liability for crop loss, animal loss, health, safety, or environmental hazard caused by the use of any pesticide, advice, or recommendation in this schedule. Pesticides used in this schedule are products labeled for the target and crop. This information was retrieved from the Pest Management Regulatory online of Registered Products Database. The list of products presented in this schedule is intended to be complete, based on products known to be available in the region, but in no way is guaranteed to be complete. Some of the products listed may not be available. Trade names are given as a convenience to producers and are neither an endorsement of the product nor a suggestion that similar products are not available or effective.

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PESTICIDE EMERGENCY CONTACT INFORMATION

Poison Control Centres		
Nova Scotia	800.565.8161 or 902.470.8161	IWK, Halifax, NS
New Brunswick	911	Ask for Poison Information
Prince Edward Island	800.565.8161 or 902.470.8161	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 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!

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 WeatherMAX	1.67-4.67 L/ha	12 hours	7	Apply in fall or spring prior to planting. Annual weed control programs will be necessary to control weeds germinating after planting. For quackgrass control, apply it to actively growing quackgrass when at least 4 new leaves are present. The low rate (1.67 L/ha) will provide a minimum of one season control, while higher rates (>1.67 L/ha) will provide longer term control. The low rate of Roundup should be applied in 50-100 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.
			Touchdown Total	1.6-5.0 L/ha	12 hours	7	
	14	carfentrazone-ethyl	Aim EC	36.5-117 ml/ha	12 hours	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>	3	trifluralin	Treflan liquid EC	1.7-2.3 L/ha	12 hours	-	Incorporate within 24 hours of application. Ragweed and mustard are not controlled. This product has a carry-over effect on corn and cereal the following year.
			Rival	1.6-2.2 kg/ha	12 hours	-	
	15	napropamide	Devrinol 50-DF	2.25-4.5 kg/ha	12 hours	-	Incorporate to a depth of 2.5-5 cm within 24 hours of application. Do not apply to soils with over 10% organic matter. Use the lower rate on light soils (coarse textured-sandy and sandy-loam)

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Preplant Incorporated <i>Germinating annual grasses and some broadleaves (cont.)</i>	15	s-metholachlor / R-enantiomer	Dual II Magnum or Komodo	0.87 L (pre-plant incorporation) + 0.44 – 0.87 L (post-transplant)	12 hours	30	Transplanted field tomatoes (for fresh market or processing). Make the post-transplant application within 7 to 14 days after transplanting. The interval between pre-plant incorporation and post-transplant applications should be no longer than 14 days. Do not apply Dual II Magnum within 7 days of transplanting. Do not exceed 1.75 L on tomatoes per year. Do not apply on direct-seeded tomatoes.
		s-metholachlor / R-enantiomer	Dual II Magnum or Komodo	1.25-1.75 L/ha	12 hours	60	Use with transplanted tomatoes grown for processing.
	15 5	s-metholachlor / R-enantiomer plus metribuzin	Dual II Magnum or Komodo plus Sencor 480 F	1.25-1.75 L/ha Plus 0.5-1.4 L/ha	12 hours	60	Field tomato grown for fresh market. Dual Magnum and Dual II Magnum can be used 1.25-1.75 L/ha, in 150-300 L water/ha. Max 1 application, PHI = 60 days. * <i>Tomato varieties differ in tolerance to Dual and Dual II magnum herbicide.</i>
Post-emergence <i>Grasses</i>	1	fenoxyprop-ethyl	Excel Super	0.67 L/ha	-	55	Use only with transplant tomatoes grown for processing. Allow 4 days before or after application of Excel Super before applying any other pesticide or chemical. Do not apply more than once a year.
		Sethoxydim	Poast Ultra plus Merge	0.32-1.1 L/ha 0.5-2 L/ha	12 hours	60	Apply to actively growing grasses at the 1-6 leaf stage.
		fluazifop-p-butyl	Venture L	0.6-2.0 L/ha	12 hours	60	Apply to actively growing grasses at the 1-6 leaf stage. Use high rate for quackgrass.
<i>Broadleaf weeds</i>	2	thifensulfuron methyl	Pinnacle SG Toss-N-Go plus Agral 90	8.25-12.0 g/ha 2 L surfactant /1000 L water	12 hours	45	On Field Tomatoes Only: Apply 3 weeks after transplanting to weeds less than 10 cm tall. Max 1 application/yr. Do not apply to tomatoes that are stressed.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Post-emergence <i>Broadleaf and Grass weeds</i>	2	Rimsulfuron	Prism Plus Agral 90	60 g/ha (Transplanted Processing) 60-140 g/ha (Field Tomatoes) 2 L surfactant /1000 L water	12 hours	30	Field Tomatoes only. Max 1 application/yr; at least 21 days after transplanting the crop. Weeds that emerge after application will not be controlled. Apply in 200 L of water/ha.
	5	Metribuzin	Sencor 480F	300 ml/ha	12 hours	30	Transplanted tomatoes grown for fresh market. Apply in 150-300 L water/ha. Apply after plants have recovered from transplant shock. Allow 14 days between applications. Max. 4 applications per season. Avoid applications when tomatoes are under stress. Varieties differ in tolerance to Sencor. Do not apply on soils with less than 2% organic matter.
			Sencor 75 DF	Single application: 375-1100 g/ha Multiple Application 200 g/ha	12 hours	60 30	Transplanted tomatoes grown for fresh market. Apply in 150-300 L water/ha. Apply after plants have recovered from transplant shock. Allow 14 days between applications (maximum of 4 applications/season). Avoid applications when tomatoes are under stress. Varieties differ in tolerance to Sencor. Do not apply on soils with less than 2% organic matter.
	-	Acetic Acid	Serene NEW 2023	179L/ha – 717.5L/ha (See label - small annual vs established perennial)	When residue is dry	-	Greenhouse or field use. Apply as a uniform band or spot application directed at weeds on the ground between the crops. Use hooded or shielded application equipment. Do not spray the crop directly. Do not apply it when plants are under stress. Retreatment is required for regrowth of weeds.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Post-emergence <i>Inter-row shielded</i>	14	carfentrazone-ethyl	Aim EC	36.5-117 ml/ha	12 hours	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.
	26	Pelargonic acid	Beloukha	16 – 27 L/ha	Until dry	1	Apply an application volume of 200-300L/ha. Use the minimum effective rate for weed control, and higher posted rate for harder-to-control weeds. Avoid spraying crops as damage may occur. Do not make more than 4 applications per season. Make subsequent applications on a 7–14-day interval, when weed pressure warrants re-application.
Crop: preplant Weeds: preemergence	3	Pendimethalin	Prowl H₂O	2.2 L/ha	24 hours	21	Transplanted field tomatoes on mineral soils. Do not apply prior to direct-seeded tomatoes. Do not apply postemergence over the top of or to foliage of tomatoes because severe injury may occur. Avoid root contact with treated soil when placing transplants into furrow or hole or injury may occur. Will not control emerged weeds. Destroy existing weeds before applying Prowl H ₂ O herbicide. Treatments are most effective in controlling weeds when adequate rainfall or overhead irrigation is received within seven (7) days after application.
Direct-seeded and Transplant <i>Broadleaf weeds & nutsedge</i>	2	Halosulfuron	Sandea WG	35-70 g/ha	12 hours	30	<u>See label for application instructions and timing.</u>
Post-harvest burndown	14	Carfentrazone-ethyl	Aim®EC NEW 2023	37-117 mL/ha	12 hours	-	Hooded sprayer, Maximum two applications per year (including pre-plant treatment). A minimum of 100 liters per hectare of spray solution.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
INSECTS:							
Aphids	1B	malathion	Malathion 500 E	1.4-2.0 L/ha	12 hours	3	Max. 4 applications/year. Works best at temperatures above 20°C.
		dimethoate	Lagon 480 EC	0.55-1.0 L/ha ml/ha	12 hours	7	Max. 2 applications per season.
	4	thiamethoxam	Actara 25 WG	105 g/ha	12 hours	1	Apply before aphids reach damaging levels. Max two applications/year. Highly toxic to bees, do not apply to blooming crops and wait at least 5 days before placing beehives in a treated field. Allow at least 7 days between applications.
	28	Cyantraniliprole	Exirel	500-1500 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. For optimum control of aphids, apply Hasten NT Spray Adjuvant* at an application rate of 0.25% v/v or MSO Concentrate with Leci-Tech* at an application rate of 0.5% v/v. Max. 4 applications per season. Also controls <u>Pepper Maggot</u> .
		Tetraniliprole	Vayego 200 SC	150 ml/ha	12 hours	1	Suppression. Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray ensuring thorough coverage. Ground application only. Apply a maximum of 4 applications per season, with a minimum re-application interval of 5 days. Toxic to bees. DO NOT apply less than 12 days prior to bloom or while blooming.
	29	Flonicamid	Beleaf 50SG	0.12-0.16 kg/ha	12 hours	0	Thorough spray coverage of plant foliage is essential, be sure to use a minimum of 94 L water/ha. Max. 3 applications/season with 7 days between applications. Avoid overnight storage of spray mixtures, do not use liquid fertilizer as a carrier and do not use adjuvants.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Aphids (cont.)	NC	Pyrethrins	Pyganic	2.32-4.65 L/ha	12 hours	-	Apply in sufficient spray volume for thorough coverage. Max. 8 applications per season with a minimum interval of 7 days. Toxic to bees.
Aphids, Psyllids and Whitefly	23	spirotetramat	Movento 240 SC	220-365 ml/ha	12 hours	1	The minimum interval between applications is 7 days, with a maximum volume of 730 mL/ha allowed per season. TOXIC to bees through direct contamination of pollen and nectar. DO NOT apply this product during crop flowering period or when flowering weeds are present in the field.
			Movento 150 OD	347-585 ml/ha	12 hours	1	The minimum interval between applications is 7 days, with a maximum volume of 1.17 L/hallowed per season. TOXIC to bees through direct contamination of pollen and nectar. DO NOT apply this product during crop flowering period or when flowering weeds are present in the field.
	NC	Potassium salts of fatty acids	Kopa Insecticidal Soap	8 L/400 L water	-	0	Apply at a volume of 700-1900 L solution/ha. Apply at first signs of pest pressure, avoiding run-off. Max 3 consecutive applications. Do not spray when plants are under stress. Avoid spraying during full sun. Spray early in morning or evening or when overcast.
Aphids, Whiteflies	4	Acetamiprid	Assail 70 WP Aceta 70 WP	56-86 g/ha (aphids)	12 hours	7	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. Max. 2 applications per season, with minimum application interval of 7 days. For whitefly, begin applications when adults appear prior to development of nymphs. Tendency for resistance
				120 g/ha (whiteflies)			

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Aphids, Whiteflies (cont.)	9D	Afidopyropen	Versys	Aphids: 0.1 L/ha Whitefly: 0.35-0.5 L/ha	12 hours	0	Field use only. Green peach aphid (<i>Myzus persicae</i>), potato aphid (<i>Macrosiphum euphoribae</i>). Sweet potato whitefly (<i>Bemisia tabaci</i>) & silverleaf whitefly (<i>Bemisia argentifolii</i>). Monitor pest population and reapply if necessary once thresholds are reached. Application during the crop blooming period may be made only in the evening when most bees are not foraging. Max. 4 applications per year, with a minimum of 7 days between applications.
			Sefina NEW 2023	Aphids: 0.2L/ha Whiteflies: 0.7-1.0 L/ha			
	-	Beauveria bassiana strain ANT-03	Bioceres EC	2-4 mL/L water	4 hours	0	Greenhouse Tomato. Apply when pest is first noticed. Most effective early before high insect populations develop. Control can be observed 5-7 days after application. Spray volume 500-1000 L/ha. Reapply within a 7-day interval. In case of pest outbreak, can be applied every 3-5 days.
Whitefly		Lecanicillium muscarium, contains minimum 1x 10 ¹⁰ spores/g dry weight	Mycotal Biological Insecticide	Low Crops: 1 kg in 1000 L/ha High Crops: 2 kg in 2000 L/ha	4 hours	1	Greenhouse tomato. Suppression . Apply when pest numbers are low. Only effective on nymphs and larvae. Repeat applications can be made on 7-day intervals if pest persists. Use high volume spraying equipment and apply in late afternoon/early evening.
	-	Beauveria bassiana strain R444	BASSIDOR NEW 2023	0.5-1.0g in 1L of water	4 hours	0	For greenhouse crop plants and plants grown for transplanting. Control . Apply every 3-7 days depending on pest pressure, as a full cover spray without excess runoff. Ensure to use enough water to sufficiently cover the crop. Use within 6 hours of mixing, preferably applied when humidity is high, UV is low (late afternoon).

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Aphids, Leafhoppers, Whiteflies	4D	Flupyradifurone	BYI 02960 200SL	Aphids: <u>Foliar</u> - 500 – 750 ml/ha <u>Soil</u> – 750 – 1000 ml/10000 plants Whitefly: <u>Foliar</u> - 500-750 ml/ha Whiteflies: <u>Soil + Foliar</u> 750 – 1000 ml/ha	12 hours	Foliar: 1 Soil: 45	Foliar application: Apply as a directed foliar spray ensuring thorough coverage. Minimum interval of 7 days between applications. The maximum amount allowed per crop season is 2000 ml/ha. Soil application: Application should be made with sufficient water to ensure incorporation into the root zone. The maximum allowed per crop season is 2000 ml/ha. Soil application can be made by: 1. Chemigation into the root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. 2. Injection below the eventual seed-line prior to planting See label for further instructions on soil application.
Cutworms	1A	carbaryl	Sevin XLR	45 ml/100 m row	12 hours 6 days (high contact activities)	2	Apply for full coverage once insect/damage appears. Spray in 25-30cm band over the row. Max. 2 applications per year, with 7-day intervals between applications.
	3	permethrin	Pounce 384 EC	180-260 ml/ha	When dry	1	Do not make more than 5 applications per season, w a minimum 7-day interval between sprays.
		cyhalothrin-lambda	Matador 120 EC or Labamba	83 ml/ha	24 hours	7	Do not disturb the soil for 5 days after application, apply under moist conditions.
	5	spinosad	Scorpio Ant and Insect Bait	25-50 kg/ha	-	3	Reduces damage. Black cutworm . Max. 3 applications per year. Scatter on the soil surface near the plants.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Cutworms (cont.)	6, 28	Abamectin, cyantraniliprole	Minecto Pro	370-566 ml/ha	12 hours	7	Apply with a non-ionic surfactant. For early season cutworm control, apply it to foliage when rain is not expected in the next 24 hours. For optimal control, apply to smaller plants or when lower portions of plant can receive adequate coverage.
	28	Cyantraniliprole	Exirel	500-750 ml/ha	12 hours	1	Begin applications when treatment thresholds are reached. Thorough coverage is important to obtain optimum control. For early season cutworm control, apply to foliage when rain is not expected in the next 24 hours. For optimal control, apply to smaller plants or when lower portions of plant can receive adequate coverage. Max. 4 applications/season, with a minimum 5-day interval.
		Tetraniliprole	Vayego 200 SC	150 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray ensuring thorough coverage. Apply a maximum of 4 applications per season, with a minimum interval between applications of 5 days. Toxic to bees. DO NOT apply less than 12 days prior to bloom or while blooming.
Loopers and European Corn Borer	1A	carbaryl	Sevin XLR	2.5-5.25 L/ha	12 hours, 6 days (high contact activities)	2	European Corn Borer. Apply for full coverage when insects or damage appear. Spray in 25-to-30-centimetre band over the row. Maximum 2 applications per year, with a 7-day interval.
	3, 28	Lambda-cyhalothrin, chlorantraniliprole	Voliam Xpress	500 ml/ha	24 hours	7	The timing of applications should be based on the presence of vulnerable pest developmental stages and significant populations as determined by local monitoring. Max. 2 applications per year.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Loopers and European Corn Borer (cont.)	5	spinosad	Entrust 80	50-109 g/ha	12 hours	1	Use high rate for cabbage looper, with 3 applications per year. Use low rate for ECB, with maximum 2 applications per year. Allow 7-10 days between applications. Works best on small larvae. Success to be used in field or in the greenhouse (see label for greenhouse rates)
			Entrust	167-364 ml/ha			
			Success	83-182 ml/ha			
		spinetoram	Delegate WG	Field: 140-200 g/ha Greenhouse: 92-132 g/ha	12 hours	1(field) 2(greenhouse)	Field or greenhouse. Cabbage looper . Time application with peak egg hatch. Repeat applications based on population monitoring. Use higher rate for higher infestations or advanced growth stages. Max. 3 applications per year with a minimum of 5 days(field) or 7 days (greenhouse) between treatments.
	6, 28	Abamectin, cyantraniliprole	Minecto Pro	370 ml/ha (Looper) 370-566 ml/ha (E.C.B.)	12 hours	7	Tank-mix with non-ionic surfactant. Thorough coverage is important to obtain optimum control. Max. 2.223 L/ha product/season. For European corn borer control, time the application coincides with peak egg hatch.
	11	<i>Bacillus thuringiensis</i>	Dipel 2X DF	275-550 g/ha	4 hours	1	Cabbage looper . Apply at egg hatch to target young larvae. For best control through spray coverage is required. Ensure uniform deposits at sites of feeding and include treatment to both sides of foliage.
			Thuricide HPC	2.0-4.25 L/ha	-	1	
		<i>Bacillus thuringiensis</i> , subsp. <i>aizawai</i> ,	XenTari WG	500-1000 g/ha	4 hours	0	Cabbage looper . Apply every 5 to 7 days. Apply using 500–1000 L water per ha to ensure full coverage but not to the point of run off.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Loopers and European Corn Borer <i>(cont.)</i>	18	Methoxyfenozide	Intrepid	0.3 – 0.6 L/ha	12 hours	1	Apply at the first signs of feeding damage before the insect enters the fruit or when infestations reach threshold levels as determined by monitoring. Monitoring of insect populations is key to controlling this pest. Repeat applications after 7-14 days if required based on population monitoring. Use the higher rate for heavy infestations or larger crop canopies.
	28	Cyantraniliprole	Exirel	<i>Cabbage looper:</i> 250-500 ml/ha <i>European corn borer:</i> 500-750 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. Do not make more than 4 applications per season (7-day minimum interval for cabbage looper, 5 days for European corn borer)
		Tetraniliprole	Vayego 200 SC	150 ml/ha	12 hours	1	Time applications to coincide with peak egg hatch. Apply as a directed foliar spray ensuring thorough coverage. Apply a max. of 4 applications per season. Minimum interval between applications is 5 days. Toxic to bees. DO NOT apply less than 12 days prior to bloom or while blooming.
	NC	Pyrethrins	Pyganic	2.32-4.65 L/ha	12 hours	-	Cabbage looper. Ensure thorough coverage. Max. 8 applications per season, with a minimum of 7 days between applications. Toxic to bees.
Colorado Potato Beetle	3	cyhalothrin-lambda	Matador 120 EC or Labamba	83-125 ml/ha	24 hours	7	Use higher rates for larger instars. Maximum rate per season must not exceed 250 mL/ha.
		cypermethrin	Mako	85 ml/ha	12 hours	3	Use sufficient water volume to provide adequate plant coverage. Apply when the first sign of damage is observed. 3 applications/season, with a 7-day interval. Toxic to bees. Not for greenhouse use.
			UP-Cyde	140 ml/ha	12 hours	3	

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Colorado Potato Beetle (cont.)	3	delatmethrin	Poleci 2.5 EC	200-300 ml/ha	12 hours	3	Apply when insects are present or signs of feeding damage evident. Maximum 3 applications per year. Apply in 200-500 L of water/ha.
		permethrin	Pounce 384 EC	180-260 ml/ha	When dry	1	Use sufficient water volume to provide adequate plant coverage. Maximum 5 applications/year.
	3, 4	imidacloprid, deltamethrin	Concept	650 ml/ha	24 hours	7	Apply once populations reach threshold. Max. 3 applications/year; allow a minimum of 5 days between applications. Recommended for use on CPB and tomato hornworm at the same time.
	4	imidacloprid	Admire 240	200 ml/ha	24 hours	7	Maximum 1 foliar spray per season – do not apply pre-bloom or during bloom when bees are foraging
		acetamiprid	Assail 70 WP Aceta 70 WP	40-80 g/ha	12 hours	7	Thorough coverage is important to obtain optimum control. Max. 2 applications per year, with 7 days between applications. Alternate with other insecticides.
	4D	Flupyradifurone	BYI 02960 200SL	750 – 1000 ml/ha	12 hours	1	Apply as a directed foliar spray ensuring thorough coverage. Minimum interval of 7 days between applications. Maximum amount allowed per crop season is 2000 ml/ha.
	5	spinosad	Success	83 ml/ha	12 hours	1	Monitor larval population and apply it when treatment thresholds are exceeded. Max. 3 applications/year with 7-10 days between applications.
			Entrust 80	50 g/ha	12 hours	1	
			Entrust	167 ml/ha			
		Spinetoram	Delegate WG	160-240 g/ha	12 hours	1	Time the application for egg hatch or small larvae. Use the higher rate for the higher pest pressure or for larger larvae. A repeat application in 7 to 14 days may be necessary depending on the pest pressure. Max. 3 applications/year.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Colorado Potato Beetle (cont.)	28	chlorantraniliprole	Coragen	250-375 ml/ha	12 hours	1	Begin applications when treatment thresholds are reached. Use high rate under heavy insect pressure. Max 4 applications/season. Do not apply more than once every 5 days. Do not exceed 1.125 L/ ha/season.
		Cyantraniliprole	Exirel	750-1000 ml/ha	12 hours	1	Begin applications when treatment thresholds are reached. Thorough coverage is important to obtain optimum control. Max. 4 applications per season. Do not apply if any Group 28 insecticide was used at planting as an infurrow, soil or seed treatment.
			Verimark NEW 2023	7- 10 mL/ 100 m of row	12 hours	-	Do not make more than 1 soil application per year. Do not exceed a total of 1.7 litres product/ha per year. Do not make a subsequent foliar application of any Group 28 insecticide for a minimum of 60 days
		Tetraniliprole	Vayego 200 SC	150 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray ensuring thorough coverage. Ground application only. Apply a maximum of 4 applications per season, with a minimum re-application interval of 5 days. Toxic to bees. DO NOT apply less than 12 days prior to bloom or while blooming.
	-	Beauveria bassiana strain ANT-03	BioTitan WP	4 – 8 g/L water	4 hours	0	Begin treatment when beetles first appear. Reapply, if necessary, on 7-day intervals, or every 3-5 days in an outbreak. 500 – 1000 L of spray volume per hectare will be required
Flea Beetle	1A	carbaryl	Sevin XLR	2.5 L/ha	12 hours 6 days (high contact activities)	2	Start applications when pests/damage appears. Repeat as necessary on 7–10-day intervals. Spray in 25-to-30-centimetre band over the row.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Flea Beetle (cont.)	3	permethrin	Pounce 384 EC	180-260 ml/ha	When dry	1	Use sufficient water volume to provide adequate plant coverage. Max. 5 applications per year.
		cyhalothrin-lambda	Matador 120 EC or Labamba	83 ml/ha	24 hours	7	Apply when insects or damage appear. The timing of applications should be based on the presence of vulnerable pest developmental stages and significant populations as determined by local monitoring. Max. 3 applications per year.
		cypermethrin	Mako	85 ml/ha	12 hours	3	Use sufficient water volume to provide adequate plant coverage. Apply when the first sign of damage is observed. Not for greenhouse use. Toxic to bees.
			UP-Cyde	140 ml/ha			
	28	Tetraniliprole	Vayego 200 SC	150 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray ensuring thorough coverage. Ground application only. Apply a maximum of 4 applications per season, with a minimum re-application interval of 5 days. Toxic to bees. DO NOT apply less than 12 days prior to bloom or while blooming.
Tarnished Plant Bug	1A	carbaryl	Sevin XLR	5.25-6.4 L/ha	12 hours 6 days (high contact activities)	2	Apply for full coverage once insects/damage appears. Repeat as necessary on 7-10-day intervals. Spray in 25-to-30-centimetre band over the row.
	1B	dimethoate	Lagon 480 EC	0.55-1.0 L/ha ml/ha	12 hours	7	Maximum 2 applications per season
	3	cyhalothrin-lambda	Matador 120 EC or Labamba	83 ml/ha	24 hours	7	Apply when insects/damage first appear. Maximum 3 applications per year, with a minimum 7-day interval between applications.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Tarnished Plant Bug (cont.)	29	Flonicamid	Beleaf 50SG	0.2 kg/ha (3 applications/season) 0.30 kg/ha (2 applications/season)	12 hours	0	Suppression. Apply when tarnished plant bugs first appear in the field and before populations reach high levels. Beleaf will stop feeding rapidly but it may take several days to see a reduction in tarnished plant bug numbers. Reapply when new insects are detected. Allow a minimum of 7 days between applications. Do not exceed 3 applications per year.
Mites	1B	malathion	Malathion 500 E	1.4-2.0 L/ha	12 hours	3	Maximum 4 applications per year, with a minimum of 7 days between sprays.
	3	Fenpropathrin	Danitol	779 ml/ha	<u>17 days:</u> handset irrigation <u>6 days:</u> Tying and/or training <u>24 hours:</u> all other activities	<u>6 days:</u> hand harvesting <u>3 days:</u> mechanical harvesting	Two-spotted spider mite. Treatment is recommended when mite populations are just beginning to build (less than 5 motiles/leaf). Apply with ground equipment in adequate water for uniform coverage (a minimum of 250 L/ha). Begin applications when the first pest activity is noticed. A total of 4 applications may be used with a minimum application interval of 7 days. DO NOT tank mix with any copper formulations.
	6, 28	Abamectin, cyantraniliprole	Minecto Pro	385-670 ml/ha	12 hours	7	Tank-mix with non-ionic surfactant. Apply when mites first appear. Max. 2.223 L/ha/year.
	20	Bifenazate	Acramite 50WS	851 g/ha	12 hours	3	Minimum of 500 L/ha water. Ensure thorough coverage of all leaf surfaces. Max. 1 application per year.
	23	spiromesifen	Forbid 240 SC	30-50 ml/100 L water.	12 hours	3	Greenhouse tomatoes only. Two-spotted spider mite. Max 2 applications/crop cycle.
		Spiromesifen	Oberon	500-600 ml/ha	12 hours	1	Max. 3 applications per season. Direct control at egg and nymphal stages.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Mites (cont.)	25	Cyflumetofen	Nealta	1 L/ha	12 hours	3	Two-spotted spider mite. Field tomatoes only. Maximum of 2 applications per growing season. Allow a minimum of 14 days between applications. Monitor pest population and reapply if necessary. Minimum spray volume of 500L/ha recommended.
	NC	mineral oil	Purespray Green Spray Oil 13E	10 L in 1000 L water (1% solution) otherwise phytotoxicity may result.	12 hours	-	Use sufficient spray volume (up to 1000 L/ha) to ensure thorough crop coverage. Spider mites: begin when mites appear. Apply at 7 – 14-day intervals. Do not apply more than 8 summer spray applications per growing season.
	-	<i>Beauveria bassiana</i> strain ANT-03	Bioceres EC	2-4 mL/L water	4 hours	0	Greenhouse Tomato. Two-spotted spider mite. Apply when pest is first noticed. Most effective early before high insect populations develop. Control can be observed 5-7 days after application. Spray volume 500-1000 L/ha. Reapply within a 7-day interval. In case of pest outbreak, can be applied every 3-5 days.
		Silicon dioxide	DX13 Dust		4 hours	Wash treated vegetables after harvesting	Greenhouse Only. Apply at first sign of infestation. Apply an even coating on all plant surfaces to be protected. Use sufficient product to obtain good coverage. Dust areas where pests may hide. Re-apply after 7-14 days. Make 3-7 applications per crop cycle.
Stink Bugs, Tarnished Plant Bug	4	Thiamethoxam	Actara 25WG	210 g/ha	12 hours	1	Reduction in damage. Apply before pests reach damaging levels. Scout fields and treat again if populations rebuild to potentially damaging levels. Maximum of 2 applications (each application use 105 g/ha) per growing season. Do not apply pre-bloom or during bloom (Do not apply until petal fall). Do not apply when bees are present.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Armyworms	3	Fenpropathrin	Danitol	779 mL/ha	<u>17 days:</u> handset irrigation <u>6 days:</u> Tying and training <u>24 hours:</u> all other activities	<u>6 days:</u> Harvesting, both mechanically assisted, and by hand <u>3 days:</u> mechanical harvesting	Apply with ground equipment in adequate water for uniform coverage (a minimum of 250 L/ha). Begin applications when the first pest activity is noticed. A total of 4 applications may be used with a minimum application interval of 7 days. DO NOT tank mix with any copper formulations.
	11	<i>Bacillus thuringiensis</i> , subsp. <i>aizawai</i> ,	XenTari WG	500-1000 g/ha	4 hours	0	Beet armyworm. Apply every 5 to 7 days. Apply using 500–1000 L water per ha to ensure full coverage but not to the point of run off.
	28	Cyantraniliprole	Exirel	500 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. Max. 4 applications per season, minimum 7 day. interval
		Tetraniliprole	Vayego 200 SC	150 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Apply as a directed foliar spray ensuring thorough coverage. Ground application only. Apply a maximum of 4 applications per season, with a minimum re-application interval of 5 days. Toxic to bees. DO NOT apply less than 12 days prior to bloom or while blooming.
	-	Pyrethrins	Pyganic	2.32-4.65 L/ha	12 hours	-	Beet armyworm. Max. 8 applications per season, with a minimum of 7 days between applications. Toxic to bees. *Also registered for Leafhoppers, Spotted cucumber beetle, striped cucumber beetle.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Tomato Fruitworm, Tobacco hornworm, Tomato hornworm	1A	carbaryl	Sevin XLR	2.5-5.25 L/ha	12 hours 6 days (high contact activities)	2	Apply for full coverage when insects or damage appear. Max. 2 applications per year with a minimum 7-day interval. Spray in 25-to-30-centimetre band over the row.
	3	Fenprothrin	Danitol	779 ml/ha	<u>17 days:</u> handset irrigation <u>6 days:</u> Tying and training <u>24 hours:</u> all other activities	<u>6 days:</u> Harvesting, both mechanically assisted and by hand <u>3 days:</u> mechanical harvesting	Apply with ground equipment in adequate water for uniform coverage (a minimum of 250 L/ha). Begin applications when the first pest activity is noticed. A total of 4 applications may be used with a minimum application interval of 7 days. DO NOT tank mix with any copper formulations.
	6, 28	Abamectin, cyantraniliprole	Minecto Pro	556 ml/ha	12 hours	7	Control tomato fruit worm. Suppress hornworms. Tank-mix with non-ionic surfactant. Apply when mites first appear. Max. 2.223 L /ha/year.
	11	<i>Bacillus thuringiensis</i> , subsp. <i>kurstaki</i>	Dipel 2X DF	Tomato hornworm: 140- 275 g/ha Tomato fruitworm: 550 g/ha	4 hours	1	Treat when larvae are young (early instars) before the crop is damaged. Larvae must be actively feeding on treated, exposed plant surfaces.
		<i>Bacillus thuringiensis</i> , subsp. <i>aizawai</i> ,	XenTari WG	500-1000 g/ha	4 hours	0	Tobacco budworm, Tomato fruitworm. Apply every 5 to 7 days. Apply using 500–1000 L water per ha to ensure full coverage but not to the point of run off.
	28	Cyantraniliprole	Exirel	750 ml/ha	12 hours	1	Begin applications when treatment thresholds have been reached. Thorough coverage is important to obtain optimum control. Do not make more than 4 applications per season.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Spotted wing drosophila	3	Fenpropathrin	Danitol	779 m/ha	17 days: handset irrigation, 6 days: hand harvesting, mechanically assisted harvesting, tying/training, 3 days: mechanical harvesting, 24 hours: all other activities	6 days (hand harvesting) 3 days (mechanical harvesting)	Apply with ground equipment in adequate water for uniform coverage (a minimum of 250 L/ha). Begin applications when the first pest activity is noticed. A total of 4 applications may be used with a minimum application interval of 7 days. DO NOT tank mix with any copper formulations.
	5	Spinetoram	Delegate	280 g/ha	12 hours	1	Timing of applications should be based on the presence of adult pests (flies) as determined by local monitoring. Consult provincial guidelines and local extension specialists for monitoring protocols and treatment thresholds. A repeat application in 7 to 14 days depending on the pest pressure. Max 3 applications/year.
		Spinosad	Entrust	364 ml/ha	12 hours	1	Maximum of 2 applications per year with 7 -10 days between applications. Application should be based on the presence of adult pests (flies) as determined by local monitoring.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
DISEASES:							
Bacterial Leaf spot	24	Kasugamycin as hydrochloride hydrate	Kasumin 2L	1.2 L/ha in 240 L/ha of water	12 hours	1 day	Greenhouse or field use. Begin applications when conditions favour disease development, repeating when conditions favour disease development. Min interval of 7 days between applications. Max 3 applications/season.
	M	Copper hydroxide	Kocide 2000	2.52 kg/ha	48 hours	2	Apply at 7–10-day intervals. Apply more frequently when disease is severe. Applications may continue until early bloom. Max 10 applications per year. Can also be applied to greenhouse seedlings for transplant, see label for instructions.
	M1	Copper	Cueva	0.5% to 2% solution	4 hours	1	Field or greenhouse use. Apply at a rate of 470-940 L/ha. Maintain 5–10-day intervals between applications.
	P5	Extract of <i>Reynoutria sachalinensis</i>	Regalia Maxx	0.125-0.25% v/v	When dry	0	Field or greenhouse use. Apply preventatively soon after transplant. Repeat applications in 7–10-day intervals depending upon crop growth and disease pressure. When conditions and plant stage are conducive to disease development, use in a rotational program.
	BM02	<i>Bacillus subtilis</i>	Serenade Opti	0.6-1.7 kg/ha	4 hours	0	Begin application soon after emergence or transplant when conditions are conducive to disease development. Repeat as necessary on 7–10-day intervals. When environmental conditions and plant stage are conducive to rapid disease development, use in a rotational program with other registered bactericides.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Bacterial canker (<i>Clavibacter michiganensis</i>)	24	Kasugamycin as hydrochloride hydrate	Kasumin 2L	1.2 L/ha in 240 L/ha of water	12 hours	1	Field or greenhouse use. Begin applications when conditions favour disease development, repeating when conditions favour disease development. Min interval of 7 days between applications. Max 3 applications/season.
	M	Copper hydroxide	Kocide 2000	2.25 kg/ha	48 hours	2	Control. Apply at 7-10-day intervals.
	M1	Copper	Cueva	0.5% to 2% solution	4 hours	1	For field or greenhouse use. Apply at 470-940 L/ha. Maintain 5-10-day intervals between applications.
	NC	Citric acid, Lactic acid	Tivano	12 L/ha	4 hours	0	Begin applications when conditions are conducive to disease development. Apply at 5-10-day intervals. Apply using 500 L/ha spray volume
Damping Off	M4	Captan	Maestro 80 WSP	50-85 L/100m ²	10 days (handset/hand line irrigation related activities involving foliage contact) 7 days (training/tying) 12 hours (other)	-	Soil and greenhouse bench treatment. Use 1.5 kg per 1000L of water. Work into upper 7.5-10 cm of soil before planting. Limited to one application per year.
	BM02	<i>Trichoderma harzianum</i> Rifai strain T22	Trianium P	After Sowing: 1.5 g/m ² of cultivated area in 2.5-5 L of water. After transplanting: 6 g/1L water	-	-	Suppression only. Starting drench application immediately after sowing seeds or transplanting. Use half rate after transplanting if treatment was applied at sowing. Repeat half-rate booster every 10 weeks. For first applications after transplant, apply the 500L/ha of suspension.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Damping Off (cont.)	BM02	<i>Trichoderma asperellum</i> strain T34	Asperello T34	Incorporation in the growing media: 10 g/m ³ of growing media Spray/drench: 0.5 g/m ² in sufficient water (5 L/ m ²) Chemigation after planting: 5 – 10 g/(50 – 100 L of water per m ³ of growing media)	4 hours	0	Greenhouse use/for indoor transplants. Suppression only. See label for instructions specific to each application type.
Fusarium Root and Crown Rot	12	Fludioxonil	Medallion	1.5-4.5L product/ha based on planting density for GH tomato of 20000-30000 plants/ha	12 hours	1	Greenhouse Tomato. Suppression of fusarium wilt, including yellow stem, crown, and root rot (<i>Fusarium oxysporum f. sp. radicis-lycopersici</i>, and <i>F. solani</i>). Drench application: 250 mL solution/plant Apply at transplant or thereafter prior to or at onset of disease when conditions are favourable in the production greenhouse. Completely drench growing media at planting and repeat 21 – 28 days later if needed. Do not apply to the foliage, do not use in the propagation house. Do not exceed 2 applications per crop cycle.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Fusarium Root and Crown Rot (cont.)	BM02	<i>Trichoderma harzianum</i> Rifai strain T22	Trianum P	High Crop Density: 3 g/m ² of cultivated area in 2 -5 L of water. Low Crop Density/In rows: 30 g/1000 plants.	-	-	Greenhouse. Suppression only. Starting drench application immediately after sowing seeds or transplanting. Use a water volume equivalent to 10% the volume of substrate, or 2-5L/m ² . Use half rate (1.5 g/m ²) after transplanting if treatment was applied at sowing. Repeat half-rate booster every 10 weeks. For first application after transplant, apply
		<i>Trichoderma asperellum</i> strain T34	Asperello T34	Incorporation in the growing media: 10g/m ³ of growing media Spray/drench: 0.5 g/m ² in sufficient water (5 L/ m ²) Chemigation after planting: 5 – 10 g/(50 – 100 L of water per m ³ of growing media)	4 hours	0	Greenhouse use/for indoor transplants. Crown rot suppression only. See label for instructions specific to each application type.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Anthracnose, Early Blight, Late Blight and/or <i>Septoria</i>	7	Boscalid	Cantus WDG	175-315 g/ha	12 hours	0	Early blight only. Max. 5 applications/ year with a 7–10-day interval between applications. Do not apply via pivot or sprinkler irrigation.
		Fluopyram	Velum Prime	500 ml/ha	12 hours	0	Early Blight. Apply specified dosage in the following methods: Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler, or equivalent equipment. Regardless of application method, do not make more than 2 sequential applications of any group 7 fungicide.
		penthiopyrad	Fontelis	1.25-1.75 L/ha	12 hours	0	For field and greenhouse use. Suppression of early blight. Begin applications prior to disease development; continue a 7–10-day interval. Use higher rate and shorter intervals when disease pressure is high. Max. seasonal rate is 5.25 L/ha. Do not make more than 2 sequential applications before switching mode of action.
		Benzovindiflupyr	Aprovia	500-750 ml/ha	12 hours	1	Early blight, Anthracnose, Septoria leaf spot. Begin applications prior to disease development and continue throughout the season on a 7-day interval, starting at first fruit set for all diseases except Early blight. For Early blight apply on a 7–14-day interval starting prior to disease establishment. If disease pressure is high, use the highest rate. Broadcast foliar spray in a minimum 150L/ha.
	7, 3	Benzovindiflupyr & Difenconazole	Aprovia Top	643-967 ml/ha	12 hours	1	
		Pydiflumetofen, difenconazole	Miravis Duo	1 L/ha	12 hours	0	

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Anthracnose, Early Blight, Late Blight and/or Septoria (cont.)	7, 9	Fluopyram Pyrimethanil	Luna Tranquility	800 ml/ha	12 hours	1	Early Blight & Septoria leaf spot. Begin fungicide applications preventatively. Continue as needed, on a 7 - 12-day interval.
	11	azoxystrobin	Quadris	300-500 ml/ha	12 hours	1	Anthracnose: Apply on a 7-to-10-day interval, starting at first fruit set. Early blight: Apply on a 7-to-14-day interval, starting prior to disease establishment. Max 3 applications/year. Do not apply for 21 days after transplanting or 35 days after seeding.
			Azoshy 250 SC				
		Fenamidone	Reason 500 SC	200 ml/ha	12 hours	14	Early Blight and Late Blight. Tank-mix with mancozeb or chlorothalonil. Begin applications when plants are 15-20 cm high or when disease threatens. Max. 6 applications per year.
	11, 27	pyraclostrobin	Cabrio EG	560-840 g/ha	12 hours	0	Use up to 1 kg/ha at 7-day intervals for late blight. 7–14-day intervals for early blight and anthracnose control. Max 6 applications/year. Do not make more than 2 applications in a row before rotating to another chemical.
		famoxadone + cymoxanil	Tanos	Early Blight: 560-840 g/ha Late Blight: 560 g/ha	12 hours	3	Early blight and late blight of field tomatoes only. Plan for 12-day application interval between first and second spray, and 24-day window between second and third. Do not apply sequential applications.
	19	Polyoxin D Zinc Salt	Diplomat 5SC	537-926 ml/ha	When dry	0	Field and greenhouse use. Early blight suppression. Apply as a foliar spray in sufficient water to provide thorough coverage. Begin as a preventative application when conditions favour disease development and continue a 7–14-day interval as needed to maintain suppression

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Anthracnose, Early Blight, Late Blight and/or Septoria <i>(cont.)</i>	21	Cyazofamid	Torrent 400 SC + Sylgard 309	0.1 - 0.2 L in 200 -600 L of water/hectare	12 hours	1	Late Blight. Apply on a 7-10-day schedule beginning when warning systems forecast disease infection periods, generally at flower initiation or when conditions are favorable for disease development. Max 5 applications/season. A plant back interval of 30 days is required. Apply via foliar broadcast.
		mandipropamid	Revus +Non-ionic adjuvant	400-600 ml/ha plus 0.125% v/v	12 hours	1	Field or greenhouse use. For control of late blight. Applications should begin prior to disease development, continuing throughout the season on a 7–10-day schedule following resistance management guidelines. Maximum 4 applications per year. Not for transplants going into field.
	40,45	Ametoctradin, dimethomorph	Zampro	1.0 L/ha	12 hours	4	To reduce the risk of fungicide resistance, must be used in rotation with other fungicides (w a different mode of action). Begin applications prior to disease development and continue a 5-7-day interval. Max 3 applications.
	43	fluopicolide	Presidio	292 ml/ha	12 hours	2	Late Blight. For resistance management, must be tank-mixed with a labelled rate of another fungicide registered for the target pathogen, but with a different mode of action. Apply with Bravo 500 for late blight. Follow the most restrictive use directions of either label. Phytophthora blight (suppression): Apply as a soil or foliar application on a 7–10-day schedule beginning when conditions are favourable for disease development and prior to disease onset. For the best results, application should begin at planting or transplanting.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Anthracnose, Early Blight, Late Blight and/or Septoria <i>(cont.)</i>	49, 40	Oxathiapiprolin, Mandipropamid	Orondis Ultra	0.6 L/ha	12 hours	1	Field and greenhouse use. Late blight. Applications prior to disease development and continue a 7–14-day interval. Use shorter intervals when disease pressure is high. Switch to a non-group 49 and 40 fungicides after 2 consecutive sprays. Maximum 4 applications per year.
	M	copper hydroxide	Kocide 2000	2.24-2.52 kg/ha	48 hours	2	Early blight, late blight, septoria. Apply at 7–10-day intervals. Use lower rate for Septoria.
	M1	Copper	Cueva	0.5% to 2% solution	4 hours	1	Early blight, late blight, Septoria. For field or greenhouse use. Apply at 470-940 L/ha. Maintain 5-10-day intervals between applications.
	M3	mancozeb	Dithane Rainshield	3.25 kg/ha	12 hours	30	Early blight, late blight, and anthracnose only. Use sufficient water to provide adequate coverage. Limit of 2 applications per year, with 7–10-day spray interval. Use lower rate on small plants.
			Manzate Pro-Stick	1.75-3.25 kg/ha			
	M4	captan	Supra Captan 80 WSP	2.75-4.25 kg/ha	10 days (handset/ hand line irrigation related activities involving foliage contact)	2	Anthracnose, Septoria. Apply preventatively, when conditions are favourable to disease development. Apply at a minimum of a 7-day interval. Do not make more than 3 applications per year. Do not use on greenhouse tomato.
			Maestro 80 WSP		7 days (training/ tying) 12 hours (other)		

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Anthracnose, Early Blight, Late Blight and/or <i>Septoria</i> (cont.)	M5	Chlorothalonil	Bravo ZN	2.4-4.0 L/ha	12 hours (general), 7 days (scouting in processing tomatoes)	2 30 (processing)	Apply at 8–10-day intervals at the lower rate; apply at 14-day intervals using the higher rate. <u>Max. number of applications:</u> Tomatoes for processing: 2 at higher rate, 7 at lower rate. All other tomatoes: 2
			Echo 90WSP	1.3-2.2 kg/ha	12 hours (general), 7 days (scouting in processing tomatoes)	1 30 (processing)	Max 2 app/season. Processing tomatoes: Max 9 applications per season (2 applications at 3.3 L, and 7 applications at 1.7 L). Not for use in greenhouse.
			Echo 720	1.7-2.8 L/ha			Processing tomatoes – Echo can be tank mixed with Lexone® herbicide. Follow the Echo label directions for disease control and use Lexone at 150 g active ingredient/ha for weed control. (Refer to the Lexone label for proper rates and use.) When using this tank mix combination, DO NOT apply within 30 days before harvest.
	U15	Oxathiapiprolin	Zorvec Enicade	0.175-0.35 L/ha	12 hours	0	For field and greenhouse use. Late blight. Begin applications prior to disease development and continue a 5–14-day interval. Use higher rate and shorter interval when disease pressure is high.
	P5	<i>Reynoutria sachalinensis</i>	Regalia Maxx	0.125 – 0.25 % v/v	When dry	0	Suppression of late blight. Field: Apply preventatively soon after transplanting. Repeat at 7-10-day intervals. GH: Begin applications at first sign of disease or when conditions become conducive for disease. Repeat at 7-10-day intervals.
	P07	Mono and dibasic sodium and potassium and ammonium phosphites	Phostrol	2.9-5.8 L/ha	12 hours	0	Suppression of late blight. Begin foliar applications when conditions favouring disease development exist and continue a 7-14-day interval if needed. Max. 4 applications.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Anthracnose, Early Blight, Late Blight and/or <i>Septoria</i> (cont.)	BM02	<i>Bacillus subtilis</i>	Serenade Opti	2.5 kg/ha	4 hours	0	Early blight: Make first application when plants are 6-10 cm high, or when conditions are conducive for disease development. Repeat at 5–7-day intervals.
		<i>Bacillus amyloliquefaciens</i> strain D747	Double Nickel LC	2.5-10 L/ha	-	0	For field or greenhouse production. Early blight. Growth stage: From flowering to fruiting. Repeat application every 3 to 10 days for as long as conditions favor disease development.
			Double Nickel 55	0.5-2.0 kg/ha			
		<i>Bacillus amyloliquefaciens</i> strain MBI 600	Serifel	0.25 – 0.5 kg/ha	4 hours	0	Greenhouse and Field use. Early blight suppression. Begin application shortly after emergence or transplanting and continue a 7-10-day interval if conditions are favourable for disease development. Use the highest rate and the shortest interval when conditions favour high disease pressure.
Phytophthora Blight, pythium damping off, and crown rot	49, 4	Oxathiapiprolin + Metalaxyl-M and S-isomer	Orondis®Gold NEW 2023	2 L/ha	12 hours	7	Apply a minimum water volume of 400 L/ha. The maximum number of applications is 1 for Pythium damping-off; 3 for phytophthora blight and crown rot. Re-treatment interval is every 30 days.
Post-emergence damping off, Verticillium wilt	BM02	<i>Trichoderma asperellum</i> and <i>Trichoderma gamsii</i>	Foretryx™ NEW 2023	2.8 Kg/ha	4 hours	0	Suppression. Apply a minimum water volume of 100 L/ha. Apply once at sowing via broadcast spray to the soil. If rainfall is not expected, follow the treatment with light irrigation of 1.5 - 3.2 mm of water per hectare.
Botrytis Gray Mold	7	penthiopyrad	Fontelis	1.25-1.75 L/ha	12 hours	0	For field and greenhouse use. Begin applications prior to disease development, continue a 7–10-day interval. Use higher rate and shorter intervals when disease pressure is high. The maximum seasonal rate is 5.25 L/ha. Do not make more than 2 sequential applications before switching to another mode of action.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Botrytis Gray Mold (cont.)	9, 12	Cyprodinil and fludioxonil	Switch 62.5 WG	775-975 g/ha	12 hours	0	Begin applications prior to or at the onset of disease and repeat at 7–10-day intervals if conditions remain favourable for disease development. Apply higher rate under conditions of high disease pressure. Apply in sufficient water to ensure thorough coverage: 200L water /ha. After 2 applications, alternate with another fungicide (different mode of action). Maximum 3 applications/year.
	19	Polyoxin D zinc salt	Diplomat 5SC	463 – 926 ml/ha	When dry	0	Field and greenhouse use. Botrytis blight & Grey mold . Apply as a foliar spray in sufficient water to provide thorough coverage. Begin as preventative application when conditions favour disease development, continue a 7–10-day interval to maintain suppression. Do not apply more than 150 g a.i./ha/season or 12 months.
	BM02	<i>Bacillus subtilis</i>	Serenade Opti	1.7-3.3 kg/ha	4 hours	0	Make the first application when plants are 6-10 cm high, or when conditions are conducive for disease development. Repeat applications on an interval of 5-7 days.
		<i>Bacillus amyloliquefaciens</i> strain D747	Double Nickel LC	6.25-18 L/ha Low disease pressure: 4.5-5 L/ha	When dry	0	For field or greenhouse use. Growth stage: From flowering to fruit maturity. Repeat application every 3 to 10 days for as long as conditions favor disease development. Increase application rate and frequency (every 3-7 days) under high disease pressure.
			Double Nickel 55	1.25-3.6 kg/ha Low disease pressure: 0.9-1 kg/ha			

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Botrytis Gray Mold (cont.)	BM02	Bacillus amyloliquefaciens strain MBI 600	Serifel	0.25 – 1.0 kg/ha	4 hours	0	Greenhouse and field use. Suppression. Begin application shortly after emergence or transplanting and continue 7- to 10-day intervals if conditions are favourable for disease development. Use the highest rate and the shortest interval when conditions favour high disease pressure.
	M5	Chlorothalonil	Echo 90WSP	2.7 kg/ha	0.5 days	1 (30 for processing tomato)	Apply on a 14-day schedule. Max. 2 applications per year. Do not hand harvest processing tomatoes.
			Echo 720	3.3 L/ha	7 days – scouting in processing tomatoes	2 (30 for processing tomato)	
			Bravo ZN	4.8 L/ha			
	P5	Reynoutria sachalinensis	Regalia Maxx	0.25 % v/v	When dry	0	Field: Apply preventatively soon after transplanting. Repeat at 7–10-day intervals. GH: Begin applications at first sign of disease or when conditions become conducive for disease. Repeat at 7–10-day intervals.
	-	BLAD polypeptide	Fracture	1.5-3.3 L/ha	-	0	Field and greenhouse use. Control. Begin applications prior to disease onset, continue a 7 to 10-day interval to maintain control. Under conditions of moderate to severe disease pressure, use the higher labeled rate and shorter interval. Apply in a minimum of 200 litres water/ha for thorough coverage. Requires 2-4 hours drying time on plant foliage for the active ingredient to absorb. If during the next 12 hours it rains significantly, a new application will be needed during the next 4 days. Max 5 foliar applications per cycle.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Powdery Mildew	7	Benzovindiflupyr	Aprovia	500-750 ml/ha	12 hours	1	Begin applications prior to disease development and continue throughout the season on a 7-day interval, starting at first fruit set. If disease pressure is high, use the highest rate. Do not use in greenhouse.
		penthiopyrad	Fontelis	1.0-1.75 L/ha	12 hours	0	For field and greenhouse use. Begin applications prior to disease development, continue a 7–10-day interval. Use higher rate and shorter intervals when disease pressure is high. The maximum seasonal rate is 5.25 L/ha. Do not make more than 2 sequential applications before switching to another mode of action.
	7, 3	Benzovindiflupyr & Difenconazole	Aprovia Top	643-967 ml/ha	12 hours	1	Begin applications prior to disease development and continue throughout the season on a 7-day interval, starting at first fruit set. If disease pressure is high, use the highest rate. Apply as a broadcast foliar spray in a minimum of 150 L/ha of water for thorough coverage.
		Pydiflumetofen, difenconazole	Miravis Duo	1 L/ha	12 hours	0	Apply on a 7 - to 14-day interval, starting prior to disease establishment. If disease pressure is high, use the shortest interval. Apply as a broadcast spray in sufficient water (minimum of 150 L/ha) for thorough coverage. Max. 2 applications per year.
	19	Polyoxin D zinc salt	Diplomat 55C	278 – 926 ml/ha	When dry	0	Field and greenhouse use. Apply as a foliar spray in sufficient water to provide thorough coverage. Begin as a preventative application when conditions favour disease development, continue a 7–14-day interval as needed. Do not apply >150 g a.i./ha/season or 12 months.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Powdery Mildew (cont.)	-	Potassium bicarbonate	MilStop	5.6 kg/ha	4 hours	0	Greenhouse uses only. Start application at first sign of disease. Maximum 10 applications, repeat at 7-day intervals as needed. Use a spray volume of 2000 L/ha.
	NC	<i>Streptomyces lydicus</i>	Actinovate SP	425-840 g/700 L water	1 hour/when dry	0	Field and greenhouse use. Spray to wet but avoid run-off. Apply as a foliar spray to leaves and blossom. Make the first application at transplant and repeat every 7-14 days.
	NC	mineral oil	Purespray Green Spray Oil 13E	10 L in 1000 L water (1% solution) otherwise phytotoxicity may result.	12 hours	-	Suppression. Use sufficient spray volume (up to 1000 L/ha) to ensure thorough crop coverage. Begin when conditions are favourable for disease development and/or when 1st symptoms appear. Apply at 7 – 14-day intervals. Do not apply more than 8 summer spray applications per growing season.
	P05	<i>Reynoutria sachalinensis</i>	Regalia® Rx NEW 2023	0.5-1.0% v/v	When dry	0	Field and greenhouse use. Suppression. Begin applications when conditions become conducive for disease development. Repeat as necessary on a 7–10-day interval. Do not apply a spray volume of more than 1500 L/HA.
Phytophthora Blight (<i>Phytophthora capsici</i>)	U15	Oxathiapiprolin	Orondis 200SC	0.35-1.4 L/ha	12 hours	0	Apply at plant, in furrow, drip or in transplant water. Maximum 4 applications per season, with a minimum of 7 days between soil applications. Use the higher rates for heavier soils, for longer application intervals, or for susceptible varieties

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Phytophthora Blight (<i>Phytophthora capsici</i>) (cont.)	U15	Oxathiapiprolin	Zorvec Enicade	Foliar phase: 0.175-0.35 L/ha Soil phase: 0.7-2.8 L/ha	12 hours	0	Field or greenhouse use. Foliar phase: Begin applications prior to disease development and continue a 5 to 14-day interval. Use higher rate and shorter intervals when disease pressure is high. Soil phase: Apply at plant, in furrow, drip or in transplant water. See specific soil application directions on label.
			Zorvec Epicaltrin	0.35-1.4 L/ha	12 hours	0	Soil phase: Apply at plant, in furrow, drip or in transplant water. Use the higher rates for heavier soils, for longer application intervals, or for susceptible varieties. <i>*Do not follow soil applications of Epicaltrin with foliar applications of Zorvec Enicade or other oxathiapiprolin-containing fungicides. Use either soil applications or foliar applications but not both to control the relevant disease.</i>
	49, 40	Oxathiapiprolin, Mandipropamid	Orondis Ultra	0.6 L/ha	12 hours	1	Foliar phase: Begin applications prior to disease development and continue a 7-to-14-day interval. Use shorter intervals when disease pressure is high. Soil phase: Ensure product adequately saturates the root zone of the transplant plug. Use either soil applications or foliar applications, but not both, for disease control. Switch to a non-group 49 and 40 fungicides after 2 consecutive sprays. Max. 4 applications per year.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Phytophthora Blight (<i>Phytophthora capsici</i>) (cont.)	BM02	<i>Bacillus amyloliquefaciens</i> strain D747	Double Nickel LC	0.5-2.5 L/ha	-	0	Partial suppression of soil level Phytophthora blight infection. Growth stage: From planting/transplanting until maturity. For transplanted crops: Make preventative applications to transplants in the greenhouse or nursery before transplanting. See "Soil application" instructions on label. For crops grown from seed: Apply at planting, following the instructions below for "Banded/in furrow application." See "Soil application" instructions on label. Follow up applications can be made at 2–4-week intervals after planting or transplanting.
			Double Nickel 55	0.1-0.5 kg/ha			
Nematodes	-	Fluazaindolizine	Salibro	<u>Pre-plant incorporated or pre-plant/at-plant chemigation:</u> 2.24 – 4.48 L/ha <u>Post-plant chemigation:</u> 1.12 – 2.24 L/ha	12 hours	1	Root-knot nematode. Do not apply more than 4.48L/ha per year, maintaining a minimum retreatment interval of 14 days. Mode of action has not yet been classified for this product; rotation is recommended. <u>Pre-plant incorporated:</u> Broadcast with a minimum of 140 L/ha of water and thoroughly incorporate 10-15 cm into the soil. For maximum residual efficacy, pre-plant incorporates within 7 days prior to planting. <u>Post-plant incorporation:</u> Supplement in-season chemigation following a pre-plant or at plant application. See label for more detailed instructions.

Pest	Group	Active Ingredient	Pesticide Product Name	Rate	Restricted Entry Interval (REI)	Pre-harvest Interval (days)	Remarks
Nematodes (cont.)		Fluensulfone	Nimitz 480EC	4 – 8 L/ha	12 hours	-	Root-knot and Root lesion nematodes. Applications can be broadcast incorporated, banded, and incorporated, or applied by drip (trickle) chemigation. Apply a minimum of 7 days before transplanting. Do not make more than one application per crop, and no more than 8L of product per ha/year. Do not plant any crops not on label into treated land for 365 days following application.

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>