

# 2015 SUPPLEMENT

## Publication 838, Vegetable Crop Protection Guide 2014–2015

This supplement contains new product registrations and changes from November 2013 to November 2014. This supplement can be downloaded from the OMAFRA website at [www.ontario.ca/crops](http://www.ontario.ca/crops). Printed copies are available from OMAFRA Resource Centres. **For complete information, please see the full edition of Publication 838, Vegetable Crop Protection Guide 2014–2015.**

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that similar products are ineffective. Consult each product label before you use a pesticide.

**The pest control product label is a legal document.** It prescribes how the pest control product can be legally used. Users are responsible for ensuring that they are complying with all directions stipulated on the most current product label. Read the most current pest control product label thoroughly before application.

A crop group is a grouping of plant species based on botany and taxonomy (e.g., plant families), as well as on how the crops are produced. Crop groups are often further divided into smaller and more closely related subgroups. A pest control product may be registered on a subgroup, rather than the entire crop group. Crop groupings are used primarily to set maximum residue limits and establish a common pre-harvest interval (PHI) for a similar set of crops. **It is important to remember that not all products have a crop group registration, and products registered on one crop are not necessarily registered on all members of its crop group.** A complete list of all crops included in both original and revised crop groups can be found at the following link on Health Canada's website: [www.hc-sc.gc.ca/cps-spc/pest/part/protect-proteger/food-nourriture/rccg-gcpcr-eng.php](http://www.hc-sc.gc.ca/cps-spc/pest/part/protect-proteger/food-nourriture/rccg-gcpcr-eng.php).

### Important notice regarding the phase-out of diazinon insecticides

As of 31 December 2013, the Pest Management Regulatory Agency (PMRA) required the implementation of a Diazinon Risk Management Plan.

Implementation by 31 December 2014:

- Use of granular formulations on rutabaga is prohibited. According to the Diazinon 5G label updated as of 11 December 2014, last date of use on carrot, parsnip, onion, radish and turnip is 31 August 2015. Use of liquid formulations that can be applied as a soil drench is permitted on carrot, parsnip and radish during the phase-out period until 31 December 2016. An alternative diazinon soil drench product is already registered for root maggot in onion (applied in-furrow) and turnip/rutabaga (applied to plant and surrounding soil). (Updated January 2015.)

Changes to Current Application Practices Implementation by 31 December 2013:

- Additional new buffer zones are also required for crops listed on the product label.

**Important notice regarding the phase-out of endosulfan insecticides**

Registrants will cease production and sale of endosulfan pesticide products by 31 December 2014. Sale of endosulfan pesticide products by others is not permitted after 31 December 2015. Use of endosulfan products is not permitted after 31 December 2016.

Consult the amended product label for new mitigation measures to protect human health, including:

- additional protective equipment and precautions to protect mixers/loaders/applicators
- longer restricted-entry interval to protect those entering treated sites
- reduced number of applications per season and limits to the amount handled per person per day
- prohibition from allowing livestock to graze or feed on treated crops or crop refuse

# ASPARAGUS

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

**Table 3–2. Asparagus Disease Control (page 28) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>RUST</b>					
DMI (group 3)	propiconazole	Bumper 418 EC	150 mL/ha (61 mL/acre)	240	Apply at 14–21-day intervals. 12-hr re-entry interval.
		Tilt 250E	250 mL/ha (101 mL/acre)		
<b>PHYTOPHTHORA</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only.</b> See label for in-furrow application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.

**Table 3–3. Asparagus Insect Control (page 29) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
neonicotinoid (group 4A)	acetamiprid	Assail 70 WP	56–86 g/ha (23–35 g/acre)	1	Begin applications when treatment thresholds have been reached. Use higher rates when the plants are larger and under heavy pest pressure. Maximum 2 applications/season. 12-hr re-entry interval.
<b>ASPARAGUS BEETLE</b>					
neonicotinoid (group 4A)	acetamiprid	Assail 70 WP	80–160 g/ha (32–65 g/acre)	1	Begin applications when treatment thresholds have been reached. Use higher rates when the plants are larger and under heavy pest pressure. Maximum 2 applications/season. 12-hr re-entry interval.

## BEANS

This information has been provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
beans	Table 3–4, page 31	Remove Agrox B-2 (diazinon/captan). Registration expires 31 December 2014.
		Remove Agrox CD (diazinon/captan). Registration expires 31 December 2014.
beans	Table 3–6, page 33	Remove Ranman 400SC from the phytophthora blight section.
beans	Table 3–8, page 35; Table 3–9, page 36	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–6. Snap and Lima Bean Disease Control (page 33) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>WHITE MOULD (SCLEROTINIA)</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> Make the first application at planting. Repeat applications on 7–14-day intervals if conditions for disease development persist. Re-entry permitted once spray deposit has dried.
<b>ROOT ROTTS, COTTONY LEAK</b>					
Qol (group 11)	fenamidone	Reason 500SC	600 mL/ha (243 mL/acre)	3	<b>Cottony leak.</b> Maximum 3 applications/yr. See label for recropping restrictions. 12-hr re-entry interval.
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rotts caused by <i>Rhizoctonia solani</i>, <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> See label for in-furrow application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.
<b>PHYTOPHTHORA BLIGHT</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	200 mL/ha (81 mL/acre)	0	<b>Suppression only.</b> Use with a surfactant as described on label. See label for recropping restrictions. 12-hr re-entry interval.
Qol (group 11)	fenamidone	Reason 500SC	600 mL/ha (243 mL/acre)	3	<b>Suppression only.</b> Maximum 3 applications/yr. See label for recropping restrictions. 12-hr re-entry interval.
carboxylic acid amide (group 40)	mandipropamid	Revus	600 mL/ha (243 mL/acre)	1	Use with a surfactant as described on label. Maximum 4 applications/yr. See label for recropping restrictions. 12-hr re-entry interval.

**Table 3–8. Snap and Lima Bean Insect Control — Leafhoppers, Bean Beetles, Aphids (page 35) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>LEAFHOPPERS, BEAN BEETLES, APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	0.73–1.34 L/ha (0.3–0.5 L/acre)	3	Less effective below 20°C. Control of aphids with malathion has been inconsistent in many areas. Maximum 2 applications/yr. 1-day restricted-entry interval.

**Table 3–9. Snap and Lima Bean Insect Control — European Corn Borers, Western Bean Cutworms, Cutworms, Slugs, Brown Marmorated Stink Bugs (page 36) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1.345 L/ha (0.544 L/acre)	3	<b>Suppression only.</b> Maximum 2 applications/yr. 1-day restricted-entry interval.

# BEETS, TABLE

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups.

**Table 3-12.** Table Beet Disease Control (page 37) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>RHIZOCTONIA ROOT AND CROWN ROT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only.</b> Soil application. See label for application details. Re-entry permitted once spray deposit has dried.

# BRASSICA CROPS

broccoli, Brussels sprouts, cabbage, cauliflower, kale, kohlrabi and specialty vegetables, including headed Chinese cabbage (napa), leafy Chinese cabbage (bok choy, pak choy, etc.), Chinese mustard, broccoli raab, collards, mizuna, mustard greens, mustard spinach and rape greens

Pest control products listed in these tables are not necessarily registered on all brassica crops. See the most up-to-date pest control product labels to ensure the registration on a specific crop. This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
brassica transplants	Table 3–18, page 44; Table 3–19, page 45	Remove Ranman 400SC.
brassicac	Table 3–19, page 46; Table 3–20, page 47	Change Serenade ASO to Serenade MAX.
broccoli, Brussels sprouts, cabbage, cauliflower, kale, kohlrabi	Table 3–23, page 50–51; Table 3–28, page 56–58	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–18.** Brassica Crop Disease Control for Transplants (page 44) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days); — = not specified on label					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>Greenhouse Transplant Disease Control</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	30 mL/100 L water	60	<b>Brassica transplants. Pythium damping-off and root rot.</b> Make a single application as a soil drench to thoroughly wet the growing medium immediately after seeding. Do not use any surfactant with drench application. 12-hr re-entry interval.
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	<b>Suppression only. Root rots caused by <i>Rhizoctonia</i> spp., <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> Drench application to potting mix, soil or planting beds. See label for complete list of brassica crops, including specialty brassicas. 4-hr re-entry interval.

**Table 3–19.** Brassica Crop Disease Control — Downy Mildew (page 45) — **Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>DOWNY MILDEW</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	200 mL/ha (81 mL/acre)	1	<b>Suppression only.</b> See label for complete list of brassica crops, including specialty brassicas. Begin applications when disease is first seen or when weather conditions are conducive to disease development. Tank-mix with non-ionic or organosilicone surfactant. See label for directions. Maximum 5 applications/crop/yr. 12-hr re-entry interval.
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	2–3 kg/ha (0.8–1.2 kg/acre)	0	<b>Suppression only.</b> See label for complete list of brassica crops, including specialty brassicas. Re-entry permitted once spray deposit has dried.

**Table 3–20.** Brassica Crop Disease Control — Alternaria, Sclerotinia (White Mould, White Rot, Watery Soft Rot) (page 47) — **Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>SCLEROTINIA (WHITE MOULD, WHITE ROT, WATERY SOFT ROT)</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> See label for complete list of brassica crops, including specialty brassicas. Re-entry permitted once spray deposit has dried.

**Table 3–21.** Brassica Crop Disease Control — Powdery Mildew, Botrytis Grey Mould, Root Rots (page 48) — **Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i> and <i>Pythium</i> spp.</b> May be applied at planting and/or post-planting. See label for application instructions. See label for complete list of brassica crops, including specialty brassicas. Re-entry permitted once spray deposit has dried.



**Table 3–23. Brassica Crop Insect Control — Aphids (page 50–51) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
<b>Soil Treatment</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at seeding or transplant depth, or a narrow surface band above seed line during planting. See label for application details. See label for complete list of brassica crops, including specialty brassicas. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>Foliar Treatment</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	<p><b>Broccoli, Brussels sprouts, cabbage and cauliflower only.</b> Control of aphids with malathion has been inconsistent in many areas. Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 2-day restricted-entry interval.</p> <p><b>Kale and kohlrabi only.</b> Control of aphids with malathion has been inconsistent in many areas. Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 1-day restricted-entry interval.</p>

**Table 3–26. Brassica Crop Insect Control — Flea Beetles (page 54) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>FLEA BEETLES</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Early-season suppression only.</b> In-furrow application at seeding or transplant depth, or a narrow surface band above seed line during planting. See label for application details. See label for complete list of brassica crops, including specialty brassicas. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–27. Brassica Crop Insect Control — Thrips (page 55) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>THRIPS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Early-season suppression only.</b> In-furrow application at seeding or transplant depth, or a narrow surface band above seed line during planting. See label for application details. See label for complete list of brassica crops, including specialty brassicas. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–28. Brassica Crop Insect Control — Imported Cabbageworm, Cabbage Looper, Diamondback Moth Caterpillars (page 56–58) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>IMPORTED CABBAGEWORM, CABBAGE LOOPER, DIAMONDBACK MOTH CATERPILLAR</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	<b>Broccoli, Brussels sprouts, cabbage and cauliflower only. Imported cabbageworm and cabbage looper only.</b> Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 2-day restricted-entry interval. <b>Kale and kohlrabi only. Imported cabbageworm and cabbage looper only.</b> Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 1-day restricted-entry interval.
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Early season control only.</b> In-furrow application at seeding or transplant depth, or a narrow surface band above seed line during planting. See label for application details. See label for complete list of brassica crops, including specialty brassicas. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–30. Brassica Crop Insect Control — Leafminers (page 60) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFMINERS</b>					
neonicotinoid/ diamide (group 4A/28)	thiamethoxam/ cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at seeding or transplant depth, or a narrow surface band above seed line during planting. See label for application details. See label for complete list of brassica crops, including specialty brassicas. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

# CARROTS

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
carrots	Table 3–34, page 64	Remove Ranman 400SC.
carrots	Table 3–34, page 64	Replace Serenade ASO with Serenade MAX.
carrots	not applicable	Last date of use of Diazinon 5G (PCP# 12538, granular formulation) is 31 August 2015. From 31 December 2014 to 31 December 2016, soil drench applications with diazinon liquid formulations are permitted as per label instructions. Last date of use of diazinon is 31 December 2016. (Updated January 2015.)

**Table 3–34. Carrot Disease Control — Damping-Off, Cavity Spot, Rhizoctonia Crown Rot and Root Rot, Sclerotinia White Mould, Fusarium Root Rot (page 64) — Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>CAVITY SPOT (PYTHIUM SPP.)</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	0.44 L/ha (0.18 L/acre)	30	<b>Suppression of cavity spot and root dieback/forking caused by <i>Pythium</i> spp.</b> Post-plant, pre-emergent application applied to soil within 3 days after planting OR broadcast or banded application made 14 days after planting directed at base of plant. See label for application instructions. Apply in sufficient water to obtain full coverage and follow with sprinkler irrigation of 1.25–2.5 cm of water. Maximum 1 application/season. 12-hr re-entry interval.
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only.</b> May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.
<b>RHIZOCTONIA ROOT ROT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rot caused by <i>Rhizoctonia solani</i>.</b> May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.
<b>SCLEROTINIA WHITE MOULD</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	2–4 kg/ha (0.8–1.6 kg/acre)	0	<b>Suppression only.</b> Begin application soon after emergence and when conditions are conducive to disease development. Re-entry permitted once spray deposit has dried.
<b>FUSARIUM ROOT ROT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only.</b> May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.

# CELERY

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
celery	Table 3–44, page 74; Table 3–45, page 76	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–38.** Celery Seed Treatments and Transplant Disease Control (page 68) — **Additions**

Group Name (Group #)	Common Name	Trade Name	Rate	Notes
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	<b>Suppression only. Root rots caused by <i>Rhizoctonia</i> spp., <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> Drench application to potting mix, soil or planting beds. 4-hr re-entry interval.

**Table 3–40.** Celery Disease Control — Leaf Blights, Root Rots (page 69) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i> and <i>Pythium</i> spp.</b> May be applied at planting and/or post-planting. See label for application instructions. Re-entry permitted once spray deposit has dried.

**Table 3–43.** Celery Insect Control — Aphids (page 72–73) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
<b>Soil Treatments</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplant depth. See label for application details. Also suppresses early-season flea beetles. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–44. Celery Insect Control — Leafhoppers, Carrot Weevil, Tarnished Plant Bug (page 74) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFHOPPERS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	1,100 mL/ha (445 mL/acre)	7	Aster leafhopper. Maximum 1 application/yr. 1-day restricted-entry interval.
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplant depth. See label for application details. Also suppresses early-season flea beetles. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–45. Celery Insect Control — Cabbage Looper, Cutworms (page 75) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Early-season control of cabbage looper only.</b> In-furrow application at transplant depth. See label for application details. Also suppresses early-season flea beetles. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–46. Celery Insect Control — Leafminers, Brown Marmorated Stink Bug (page 76) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFMINERS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplant depth. See label for application details. Also suppresses early-season flea beetles. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1,100 mL/ha (445 mL/acre)	7	<b>Suppression only.</b> Maximum 1 application/season. 1-day restricted-entry interval.

# CUCURBITS

## cucumber, melons (including cantaloupe, muskmelon, watermelon and bittermelon), pumpkin, squash and gourds

This information is provided as a guideline only. See product labels for complete information. Pest control products listed in these tables are not necessarily registered on all cucurbit crops. See the most up-to-date pest control product labels to ensure the registration on a specific crop. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

### GENERAL CHANGES

Crop	Table Number, Page Number	Change
cucumbers	Table 3–47, page 77	Remove RootShield Granules. Replace with RootShield HC.
cucurbits	Table 3–47, page 77; Table 3–48, page 78	Remove Ranman 400SC.
cucurbits	Table 3–49, page 79	Remove Ranman 400SC from the Downy Mildew–Targeted Preventive Fungicides section.
		Remove Serenade ASO from the Downy Mildew–Targeted Preventive Fungicides section, replace with Serenade MAX.
cucumbers, squash, pumpkins, melons	Table 3–54, page 84	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–47. Cucurbit Seed and Planting Treatments (page 77) — Additions**

LEGEND: C = control S = suppression — = not registered for control of this pest, or activity on this pest has not been documented						
Active Ingredient(s)	Trade Name	Rate	Damping-off and early-season root rots caused by:			Notes
			Fusarium	Rhizoctonia	Pythium	
cyazofamid	Torrent 400SC	30 mL/100 L water	—	—	C	<b>Cucumbers only.</b> Make a single application as a soil drench to thoroughly wet the growing medium immediately after seeding. Do not use any surfactant with drench application. 60-day pre-harvest interval. 12-hr re-entry interval.
<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> (30–45 g/100 L water)	S	S	S	4-hr re-entry interval.

**Table 3–49. Cucurbit Downy Mildew Fungicides (page 79) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>DOWNY MILDEW–TARGETED PREVENTIVE FUNGICIDES</b>					
Begin applications when weather conditions favour downy mildew or if downy mildew is identified anywhere in the Great Lakes region.					
Oil (group 21)	cyazofamid	Torrent 400SC	150–200 mL/ha (61–81 mL/acre)	1	Do not make sequential applications. 30-day plant-back interval. Tank-mix with an NIS or organosilicone surfactant. 12-hr re-entry interval.
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	1–3 kg/ha (0.4–1.2 kg/acre)	0	<b>Suppression only.</b> When environmental conditions and plant stage are conducive to rapid disease development, use in a rotational program with other registered fungicides. Re-entry permitted once spray deposit has dried.

**Table 3–50. Cucurbit Disease Control — Angular Leaf Spot, Powdery Mildew (page 80) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>POWDERY MILDEW</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Powdery mildew. Suppression only.</b> When environmental conditions and plant stage are conducive to rapid disease development, use in a rotational program with other registered fungicides. Re-entry permitted once spray deposit has dried.

**Table 3–51. Cucurbit Disease Control — Alternaria, Anthracnose, Gummy Stem Blight, Scab, Phytophthora Blight, Fusarium Wilt (page 81) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>PHYTOPHTHORA BLIGHT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only.</b> Also controls fusarium, pythium and rhizoctonia root rots. See label for in-furrow application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.



**Table 3–53. Cucurbit Insect Control — Cucumber Beetles, Aphids (page 83) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>CUCUMBER BEETLES, APHIDS</b>					
<b>Planting (Soil) Treatment</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Early-season suppression of cucumber beetles.</b> In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>Foliar Treatment</b>					
neonicotinoid (group 4A)	clothiandin	Clutch 50 WDG	140 g/ha (57 g/acre)	7	<b>Suppression of cucumber beetles.</b> Will also suppress squash bug nymphs. Apply when target pest(s) threshold populations are observed. If necessary, make a repeat application at a minimum interval of 7 days. Do not apply foliar group 4 insecticides (neonicotinoids) in the same season as an in-furrow or soil application. Maximum 2 applications/season. 12-hr re-entry interval.

**Table 3–54. Cucurbit Insect Control — Two-Spotted Spider Mite, Cutworms, Brown Marmorated Stink Bug (page 84) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
neonicotinoid (group 4A)	clothiandin	Clutch 50 WDG	210 g/ha (85 g/acre)	7	<b>Suppression only.</b> Apply when target pest(s) threshold populations are observed. If necessary, make a repeat application at a minimum interval of 7 days. Do not apply foliar group 4 insecticides (neonicotinoids) in the same season as an in-furrow or soil application. Maximum 2 applications/season. 12-hr re-entry interval.
organophosphate (group 1B)	malathion	Malathion 85E	880 mL/ha (356 mL/acre)	3	<b>Suppression only. Cucumbers, squash and pumpkins only.</b> Maximum 1 application/yr. 1-day restricted-entry interval.
			1,345 mL/ha (544 mL/acre)	3	<b>Suppression only. Melons only.</b> Maximum 1 application/yr. 1-day restricted-entry interval.

# EGGPLANT

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
eggplant	Table 3–57, page 87	Remove Serenade ASO, replace with Serenade MAX.
eggplant	Table 3–62, page 92	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–55.** Eggplant Seed Treatment and Transplant Production Disease and Insect Control (page 85) —  
**Additions**

Group Name (Group #)	Common Name	Trade Name	Rate	Notes
<b>SEED AND SEEDLING DISEASE</b>				
<b>Soil Treatments</b>				
carboxylic acid amide (group 40)	mandipropamid	Revus	600 mL/ha (243 mL/acre)	<b>Suppression only. Phytophthora blight.</b> Make one application as a drench, immediately before transplanting. 12-hr re-entry interval.
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–100 g/m <sup>3</sup> of growing media	<b>Suppression only. Root diseases caused by <i>Pythium</i>, <i>Rhizoctonia</i>, <i>Fusarium</i>.</b> Potting mix application or drench. 4-hr re-entry interval for greenhouse applications.
<b>Foliar Treatment</b>				
not classified	<i>Trichoderma harzianum</i>	RootShield HC	10 g/L of water Spray to wet, but avoid runoff. Use quantity of spray solution to thoroughly cover foliage.	<b>Suppression only. Botrytis grey mould.</b> Foliar application. 4-hr re-entry interval for greenhouse applications.

**Table 3–57. Eggplant Disease Control (page 87) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>ANTHRACNOSE, ALTERNARIA (EARLY BLIGHT)</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	4.5 kg/ha (1.82 kg/acre)	0	<b>Alternaria. Suppression only.</b> Re-entry permitted once spray deposit has dried.
<b>PHYTOPHTHORA BLIGHT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Phytophthora blight. Suppression only.</b> Soil application. See label for application instructions. Re-entry permitted once spray deposit has dried.
<b>BOTRYTIS (GREY MOULD)</b>					
not classified	<i>Trichoderma harzianum</i>	RootShield HC	3.75–7.5 g/L Spray to wet, but avoid runoff. Use quantity of spray solution to thoroughly cover foliage.	—	<b>Suppression only.</b> Foliar application.
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–59. Eggplant Insect Control — Aphids (page 89) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
<b>Soil Treatment</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–60. Eggplant Insect Control — Colorado Potato Beetle (page 90) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>COLORADO POTATO BEETLE</b>					
<b>Transplant or Soil Treatments</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–61. Eggplant Insect Control — Cutworms, Flea Beetles, Mites (page 91) — Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>FLEA BEETLES</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Suppression only.</b> In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–62. Eggplant Insect Control — Stink Bug, Brown Marmorated Stink Bug, Tarnished Plant Bug (page 92) — Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1,345 mL/ha (544 mL/acre)	3	<b>Suppression only.</b> Maximum 4 applications/yr. 12-hr restricted-entry interval.

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
garlic	Table 3–67, page 97; Table 3–68, page 98	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–64.** Garlic Disease Control — Allium White Rot, Penicillium, Downy Mildew, Root Rots, Pink Root (page 94) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTS, PINK ROOT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 kg/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i> and <i>Pythium</i> spp.</b> Efficacy of this product has not been assessed in all areas under all conditions; therefore, limit first use of this product to a small area prior to adoption as a general field practice. May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.

**Table 3–67.** Garlic Insect Control — Onion Maggot, Aphids, Leek Moth (page 97) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	Maximum 1 application/yr. 12-hr restricted-entry interval.
<b>LEEK MOTH</b>					
spinosyn (group 5)	spinosad	Entrust	437–527 mL/ha (177–213 mL/acre)	3	<b>Suppression only.</b> Apply 1 week after peak pheromone trap capture. Use higher rates when pressure is high and/or insects are in advanced growth stages. Maintain a spray water pH of 6 or greater. Maximum 3 applications/yr. Re-entry permitted once spray deposit has dried.

**Table 3–68. Garlic Insect Control — Thrips (page 98) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>THRIPS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	Maximum 1 application/yr. 12-hr restricted-entry interval.
spinosyn (group 5)	spinosad	Entrust	437–527 mL/ha (177–213 mL/acre)	3	<b>Suppression only.</b> Apply according to monitoring when onion thrips first appear. Use high rate when pressure is high and/or insects are in advanced growth stages. Maintain a spray water pH of 6 or greater. Maximum 3 applications/yr. Re-entry permitted once spray deposit has dried.

# HERBS

**angelica, basil, cilantro, chervil (dried), chives, dillweed, lavender, lemon balm, marjoram (sweet), oregano, parsley, rosemary, sage, savory (summer and winter), tarragon and thyme**

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
basil	Table 3–70, page 100	Remove Ranman 400SC.

Herbs grown fall into different crop groups for the purpose of registering pest control products, consequently different herbs have different lists of registered products.

## Herb Crop Subgroup 19A

Crop Subgroup 19A, the Herb subgroup of Crop Group 19, *Herbs and Spices*, includes many, but not all, common culinary herbs, including:

- angelica
- balm (lemon balm)
- basil
- cilantro
- chervil (dried)
- dillweed
- lavender
- marjoram (*Origanum* spp., including sweet marjoram and oregano)
- dried parsley
- rosemary
- sage
- savory (summer and winter)
- tarragon
- thyme

This partial list of the crops included in Crop Subgroup 19A is current as of November 2014. Crop Group 19A and other crop groups are currently being reviewed and updated by the Pest Management Regulatory Agency (PMRA), and this list is expected to change in the near future.

In 2014, Crop Group 4, *Leafy Vegetables (except Brassica)* was revised and a new crop group, 4-13, *Leafy Vegetables* and subgroup 4-13A, *Leafy Greens*, were created. Fresh cilantro and dill have been added to this group. As of November 2014, fresh cilantro and fresh dill are in both Crop Subgroup 19A, *Herbs*, and the new Crop Subgroup 4A, *Leafy Greens*, although this may change in the future. These changes will apply to new registrations on the new crop group 4-13 only — products registered on the old Crop Group 4 cannot be applied to fresh dill or cilantro. Dried cilantro, dried dill and the other herbs listed above are still only in Crop Subgroup 19A.

For a current, complete list of crops included in these crop groups, see the PMRA website at [www.hc-sc.gc.ca/cps-spc/pest/part/protect-protoger/food-nourriture/rccg-gcpcr-eng.php](http://www.hc-sc.gc.ca/cps-spc/pest/part/protect-protoger/food-nourriture/rccg-gcpcr-eng.php).

This information is intended as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*. Some insecticides should not be applied to flowering crops when bees are working.

**Table 3–70. Herb Crop Subgroup 19A Disease Control (page 100) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>GREENHOUSE TRANSPLANT DISEASE CONTROL</b>					
not classified	<i>Gliocladium catenulatum</i>	Prestop	100 g/20 L water (0.5% solution)	—	<b>Basil, dill, oregano, thyme only. Greenhouse use only. Suppression only.</b> Suppresses damping-off caused by <i>Pythium</i> spp. and <i>Rhizoctonia solani</i> , pythium crown and root rot and botrytis grey mould, depending on application method and stage. <b>Suppresses Fusarium oxysporum root and stem wilt of basil only.</b> Mix and apply according to product label. 4-hr re-entry for foliar applications.
not classified	potassium bicarbonate	MilStop Sirocco	0.28–0.56 kg/ 1,000 m <sup>2</sup>	0	<b>Suppression of powdery mildew.</b> Not all herbs or herb varieties have been tested for phytotoxicity. Start at first sign of disease. Use higher rate when disease pressure is moderate to high. Maximum 10 applications/season. 4-hr re-entry interval.
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	<b>Suppression of root rot caused by Pythium spp., Rhizoctonia spp. and Fusarium spp. Greenhouse use only.</b> Suspend in sufficient water (e.g., 30–45 g/100 L) to achieve uniform application and apply to potting mix, soil or planting beds. Agitate to maintain suspension. 4-hr re-entry interval.
carboxylic acid amide (group 40)	mandipropamid	Revus	583 mL/ha (236 mL/acre)	1	<b>For control of downy mildew on basil only.</b> Tank-mix with a surfactant. Maximum 4 applications/yr. See label for details. Do not make sequential applications. 12-hr re-entry interval.
Qil (group 21)	cyazofamid	Torrent 400SC	0.2–0.22 L/ha (0.08–0.09 L/acre)	0	<b>For control of downy mildew on basil only.</b> Use higher rate and shorter spray interval when disease pressure is moderate to high. Do not make sequential applications. For information on emergency use registrations of alternative fungicides, contact an OMAFRA specialist or the Agricultural Information Contact Centre (see Appendix A in Publication 838, <i>Vegetable Crop Protection Guide 2014–2015</i> ). Tank-mix with a surfactant. See label for details. Maximum 4 applications/season. 12-hr re-entry interval.
<b>POWDERY MILDEW</b>					
not classified	potassium bicarbonate	MilStop Sirocco	2.8–5.6 kg/ha (1.1–2.3 kg/acre)	0	<b>Suppression of powdery mildew only.</b> Apply as described for greenhouse transplants. 4-hr re-entry interval.
<b>SCLEROTINIA WHITE MOULD, BOTRYTIS GREY MOULD</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> Begin applications at the first sign of disease or when conditions favour disease development. Re-entry permitted once spray deposit has dried.
<b>BASIL DOWNY MILDEW</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	0.2–0.22 L/ha (0.08–0.09 L/acre)	0	<b>Basil only.</b> Use higher rate and shorter spray interval when disease pressure is moderate to high. Tank-mix with a surfactant. See label for details. Do not make sequential applications. Maximum 4 applications/season. 12-hr re-entry interval.
carboxylic acid amide (group 40)	mandipropamid	Revus	583 mL/ha (236 mL/acre)	1	<b>Basil only.</b> Tank-mix with a surfactant. Maximum 4 applications/yr. See label for details. Do not make sequential applications. 12-hr re-entry interval.



**Table 3–71.** Herb Crop Subgroup 19A Insect Control (page 101) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>THRIPS</b>					
spinosyn (group 5)	spinosad	Entrust	364 mL/ha (147 mL/acre)	1	<b>Basil only. Suppression only.</b> Apply to small larvae. Allow 7–10 days between applications. Maximum 3 applications/yr. Re-entry permitted once spray deposit has dried.
<b>CABBAGE LOOPER</b>					
spinosyn (group 5)	spinosad	Entrust	364 mL/ha (147 mL/acre)	1	<b>Basil only.</b> Apply to small larvae. Allow 7–10 days between applications. Maximum 3 applications/yr. Re-entry permitted once spray deposit has dried.
diacylhydrazine (group 18)	methoxyfenozide	Intrepid	0.58–1.16 L/ha (0.2–0.5 L/acre)	1	Apply in 200–500 L water/ha when larvae are small and actively feeding. Also controls armyworm and garden webworm. Maximum 2 L product/ha/yr in a maximum of 3 applications/yr. 12-hr re-entry interval.

## Parsley (fresh)

Fresh parsley falls under the old Crop Group 4, *Leafy Vegetables (Except Brassica)*, and Subgroup 4A, *Leafy Greens* and the new Crop Group 14-13, *Leafy Vegetables*, and Subgroup 4-13A: *Leafy Greens*.

**Table 3–73.** Fresh Parsley Disease Control (page 102) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>GREENHOUSE TRANSPLANT DISEASE CONTROL</b>					
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	<b>Greenhouse use only. Suppression of root rot caused by <i>Pythium</i> spp., <i>Rhizoctonia</i> spp. and <i>Fusarium</i> spp.</b> Suspend in sufficient water (e.g., 30–45 g/100 L) to achieve uniform application and apply to potting mix, soil or planting beds. Agitate to maintain suspension. 4-hr re-entry interval.
<b>DAMPING-OFF</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression of root rot caused by <i>Pythium</i> spp. and <i>Rhizoctonia solani</i>.</b> Apply as an in-furrow spray to seed and surrounding soil before covering the seed, or as a transplant drench in sufficient water to soak the root zone. Re-entry permitted once spray deposit has dried.

**Table 3–74.** Fresh Parsley Insect Control — Aphids (page 103) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
<b>Soil or Transplant Treatments</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Soil application at planting. Also suppresses early-season flea beetles. Use sufficient water volume to ensure coverage at least 5 cm into the soil. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as a soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>Foliar Treatments</b>					
organophosphate (group 1B)	malathion	Malathion 85E	1.1–1.345 L/ha (0.4–0.5 L/acre)	20	Control of aphids with malathion has been inconsistent in many areas. Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/season. 1-day restricted-entry interval.
pymetrozine (group 9B)	pymetrozine	Fulfill 50WG	193 g/ha (78 g/acre)	14	Do not apply through irrigation equipment. See label for recropping restrictions. Apply with an adjuvant for optimum control under drought stress — see label for details. Maximum 2 applications/season. 12-hr re-entry interval.

**Table 3–75.** Fresh Parsley Insect Control — Cutworms, Tarnished Plant Bug, Leafhoppers (page 104) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFHOPPERS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Soil application at planting. Also suppresses early-season flea beetles. Use sufficient water volume to ensure coverage at least 5 cm into the soil. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as a soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–76. Fresh Parsley Insect Control — Dipteran Leafminers, Cabbage Looper (page 105) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>DIPTERAN LEAFMINERS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Soil application at planting. Also suppresses early-season flea beetles. Use sufficient water volume to ensure coverage at least 5 cm into the soil. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as a soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Early-season control only.</b> Soil application at planting. Also suppresses early-season flea beetles. Use sufficient water volume to ensure coverage at least 5 cm into the soil. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as a soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

## Chives

Fresh chives were originally in the Herb Group but have recently been transferred to Crop Group 3-07, *Bulb Vegetables*, and subgroup 3-07B, *Green Onion*. Note that Group 3-07 is a new group and that products registered only on the old Crop Group 3 cannot be applied to chives.

**Table 3–77. Fresh Chive Leaves Disease Control (page 106) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>GREENHOUSE TRANSPLANT DISEASE CONTROL</b>					
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	<b>Greenhouse use only. Suppression of root rot caused by <i>Pythium</i> spp., <i>Rhizoctonia</i> spp. and <i>Fusarium</i> spp.</b> Suspend in sufficient water (e.g., 30–45 g/100 L) to achieve uniform application and apply to potting mix, soil or planting beds. Agitate to maintain suspension. 4-hr re-entry interval.

**Table 3–78. Fresh Chive Leaves Insect Control (page 107) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>THRIPS</b>					
spinosyn (group 5)	spinosad	Success	218–262 mL/ha (88–106 mL/acre)	3	<b>Suppression only.</b> Apply when onion thrips first appear at sufficient pressure and water volume to ensure spray solution penetrates the leaf axils. Use high rate when pressure is high. Maintain a spray water pH of 6 or greater. Maximum 3 applications/yr. Re-entry permitted when residues are dry.
		Entrust	437–527 mL/ha (177–213 mL/acre)		
<b>LEEK MOTH</b>					
spinosyn (group 5)	spinosad	Success	218–262 mL/ha (88–106 mL/acre)	3	<b>Suppression only.</b> Apply 1 week after peak pheromone trap capture. Use higher rates when pressure is high and/or insects are in advanced growth stages. Maintain a spray water pH of 6 or greater. Maximum 3 applications/yr. Re-entry permitted when residues are dry.
		Entrust	437–527 mL/ha (177–213 mL/acre)		

## Mint

Mint is not currently included in any crop group. Only use pest control products registered on mint directly.

**Table 3–79. Mint Disease and Insect Control (page 107) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
flonicamid (group 9C)	flonicamid	Beleaf 50SG	120–160 g/ha (48–65 g/acre)	7	Peppermint and spearmint. Apply early in infestation. Allow at least 14 days between applications. Maximum 3 applications/season. 12-hr re-entry interval.
<b>CABBAGE LOOPER</b>					
diamide (group 28)	chlorantraniliprole	Coragen	250 mL/ha (101 mL/acre)	3	Maximum 4 applications/season. Allow at least 14 days between applications. 12-hr re-entry interval.

# HORSERADISH

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups.

**Table 3–81.** Horseradish Disease Control (page 109) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i>, <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> For in-furrow applications, spray in a narrow band with the spray directed at the seed and surrounding soil before covering the seed piece. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.

# LETTUCE AND ENDIVE

This information is provided as a guideline only. See product labels for complete information. Listed products are not necessarily registered on head lettuce, leaf lettuce and/or endive. See the most up-to-date product label to ensure registration on a specific crop. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
lettuce, head and leaf	Table 3–86, page 114; Table 3–87, page 115	Remove Ranman 400SC.
lettuce, endive	Table 3–86, page 114	Replace Serenade ASO with Serenade MAX.
lettuce, head and leaf	Table 3–91, page 120; Table 3–93, page 121	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–86.** Lettuce and Endive Disease Control — Damping-Off, Root Rots/Diseases, Botrytis Grey Mould, Lettuce Drop (page 114) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days); — = not specified on label					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>DAMPING-OFF, ROOT ROTTS/DISEASES</b>					
<b>Field application</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Lettuce only. Suppression only. Damping-off caused by <i>Rhizoctonia solani</i>. Root rots caused by <i>Rhizoctonia solani</i> and <i>Pythium</i> spp.</b> May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.
<b>Greenhouse application</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	30 mL/100 L water	40	<b>For use on greenhouse lettuce transplants for field production. Damping-off and root rot caused by <i>Pythium</i> spp.</b> Make a single application as a soil drench to thoroughly wet the growing medium immediately after seeding. Do not use any surfactant with drench applications. 12-hr re-entry interval.
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	Head and leaf lettuce and endive. <b>Suppression only. Root diseases caused by <i>Rhizoctonia</i> spp., <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> Drench application to potting mix, soil or planting beds. 4-hr re-entry interval.
<b>BOTRYTIS GREY MOULD</b>					
<b>Field application</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	1–3 kg/ha (0.4–1.2 kg/acre)	0	Lettuce and endive. <b>Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–87. Lettuce and Endive Disease Control — Downy Mildew (page 115) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>DOWNY MILDEW</b>					
Qil (group 21)	cyazofamid	Torrent 400SC	200 mL/ha (81 mL/acre)	0	<b>Head and leaf lettuce only. Suppression only.</b> Make first application after seeding/transplanting and the second application when disease appears or when conditions are conducive for disease development. Tank-mix with non-ionic or organosilicone surfactant. See label for application details. See label for recropping restrictions. Maximum 6 applications/crop/yr. 12-hr re-entry interval.

**Table 3–89. Lettuce and Endive Insect Control — Aphids (page 117) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
<b>At-Planting Treatments</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Head and leaf lettuce and endive (escarole). Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–91. Lettuce and Endive Insect Control — Leafhoppers (page 120) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFHOPPERS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	735–1,345 mL/ha (297–544 mL/acre)	14	<b>Leaf lettuce only.</b> Aster leafhoppers. Maximum 1 application/yr. 1-day restricted-entry interval.
				3	<b>Head lettuce only.</b> Aster leafhoppers. Maximum 1 application/yr. 1-day restricted-entry interval.
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Head and leaf lettuce and endive (escarole). Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–92. Lettuce and Endive Insect Control — Leafminers (page 121) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFMINERS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Head and leaf lettuce and endive (escarole). Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–93. Lettuce and Endive Insect Control — Cabbage Looper, Brown Marmorated Stink Bug (page 122) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Head and leaf lettuce and endive (escarole). Early-season control. Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. 12-hr re-entry interval.
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1,345 mL/ha (544 mL/acre)	14	<b>Suppression only. Leaf lettuce only.</b> Maximum 1 application/season. 1-day restricted-entry interval.
				3	<b>Suppression only. Head lettuce only.</b> Maximum 1 application/season. 1-day restricted-entry interval.



# ONIONS, LEEKS AND SHALLOTS

Pest control products listed in these tables are not necessarily registered on all allium crops. This information is provided as a guideline only. See product labels for complete information. See the most up-to-date product label to ensure registration on a specific crop. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Change
onions	Last date of use of Diazinon 5G (PCP# 12538, granular formulation) is 31 August 2015. Soil drench applications are permissible as per label instructions. (Updated January 2015.)

**Table 3–99.** Onion, Leek and Shallot Disease Control — Stemphylium Leaf Blight, Allium White Rot, Smut, Root Rots/Diseases, Pink Root (page 128) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTTS/DISEASES</b>					
<b>Greenhouse transplants</b>					
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	Bulb onions, green onions, leeks and shallots. <b>Suppression only. Root diseases caused by <i>Rhizoctonia</i> spp., <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> Drench application to potting mix, soil or planting beds. 4-hr re-entry interval.
<b>Field application</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	Onions, leeks and shallots. <b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i> and <i>Pythium</i> spp.</b> Also suppresses damping-off caused by <i>Rhizoctonia solani</i> . May be applied at planting and/or post-planting. See label for application instructions. Re-entry permitted once spray deposit has dried.
<b>PINK ROOT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	Onions, leeks and shallots. <b>Suppression only.</b> May be applied at-planting and/or post-planting. See label for application instructions. Re-entry permitted once spray deposit has dried.

**Table 3-102.** Onion, Leek and Shallot Insect Control — Thrips (page 131) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>THRIPS</b>					
spinosyn (group 5)	spinosad	Entrust	437–527 mL/ha (177–213 mL/acre)	3	Dry bulb onions, green onions, leeks and shallots. <b>Suppression only.</b> Apply according to monitoring (when onion thrips first appear or threshold of 1 thrips/leaf for dry bulb onions) at sufficient pressure and water volume to ensure spray solution penetrates into the leaf axils. Use high rate when pest pressure is high and/or insects are in advanced growth stages. Maintain a spray water pH of 6 or greater. Maximum 3 applications/yr. Re-entry permitted once spray deposit has dried.

**Table 3-103.** Onion, Leek and Shallot Insect Control — Leek Moth, Cutworms (page 133) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>LEEK MOTH</b>					
spinosyn (group 5)	spinosad	Entrust	437–527 mL/ha (177–213 mL/acre)	3	Dry bulb onions, green onions, leeks and shallots. <b>Suppression only.</b> Apply 1 week after peak pheromone trap capture. Use higher rates when pest pressure is high and/or insects are in advanced growth stages. Maintain a spray water pH of 6 or greater. Maximum 3 applications/yr. Re-entry permitted once spray deposit has dried.

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
parsnips	not applicable	Last date of use of Diazinon 5G (PCP# 12538, granular formulation) is 31 August 2015. From 31 December 2014 to 31 December 2016, soil drench applications with diazinon liquid formulations are permitted as per label instructions. Last date of use of diazinon is 31 December 2016. (Updated January 2015.)
parsnips	Table 3–108, page 136	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–106.** Parsnip Disease Control (page 135) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i>, <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.

**Table 3–108.** Parsnip Insect Control — Carrot Rust Fly, Aphids (page 136) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	7	Control of aphids with malathion has been inconsistent in many areas. Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 1-day restricted-entry interval.

## PEAS

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
peas	Table 3–110, page 138	Remove Agrox B-2 (diazinon/captan). Registration expires 31 December 2014.
		Remove Agrox CD (diazinon/captan). Registration expires 31 December 2014.
peas	Table 3–113, page 141	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–112. Pea Disease Control (page 140) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i>, <i>Pythium spp.</i> and <i>Fusarium spp.</i></b> See label for in-furrow application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.
<b>WHITE MOULD (SCLEROTINIA), POWDERY MILDEW</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>White mould. Suppression only.</b> Make the first application at planting. Repeat applications on 7–14-day intervals if conditions for disease development persist. Re-entry permitted once spray deposit has dried.

**Table 3–113. Pea Insect Control (page 141) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1.1 L/ha (0.45 L/acre)	3	<b>Suppression only.</b> Maximum 2 applications/yr. 1-day restricted-entry interval.

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
pepper	Table 3–114, page 143	Remove Ranman 400SC.
pepper	Table 3–116, page 145; Table 3–117, page 146	Remove Serenade ASO, replace with Serenade MAX.
pepper	Table 3–122, page 152	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–114.** Pepper Transplant Production Disease and Insect Control (Greenhouse) (page 143) — **Additions**

Group Name (Group #)	Common Name	Trade Name	Rate	Notes
<b>Soil Treatments</b>				
Qil (group 21)	cyazofamid	Torrent 400SC	30 mL in 100 L of water	<b>Pythium damping-off and root rot.</b> Apply as a soil drench to thoroughly wet the growing medium immediately after seeding. 60-day PHI. 12-hr re-entry interval.

**Table 3–116.** Pepper Disease Control — Bacterial Spot, Alternaria, Anthracnose (page 145) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BACTERIAL SPOT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	1–3 kg/ha (0.4–1.2 kg/acre)	0	<b>Suppression only.</b> Begin applications soon after transplant. Repeat as necessary on a 7–10-day interval. When conditions are conducive to rapid disease development, use in a rotational program with other bactericides. Re-entry permitted once spray deposit has dried.
<b>ALTERNARIA, ANTHRACNOSE</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	4.5 kg/ha (1.8 kg/acre)	0	<b>Alternaria. Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–117. Pepper Disease Control — Botrytis Grey Mould, Phytophthora Blight, Powdery Mildew (page 146) —****Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BOTRYTIS GREY MOULD</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> Re-entry permitted once spray deposit has dried.
not classified	<i>Trichoderma harzianum</i>	RootShield HC	3.75–7.5 g/L water Spray to wet, but avoid runoff.	—	<b>Suppression only.</b>
<b>PHYTOPHTHORA BLIGHT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Phytophthora blight. Suppression only.</b> Soil application. See label for application details. Re-entry permitted once spray deposit has dried.
<b>POWDERY MILDEW</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–119. Pepper Insect Control — Aphids (page 149) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
<b>Soil Treatment</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cytraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–120. Pepper Insect Control — Cutworms, European Corn Borer (page 150) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>CUTWORMS</b>					
organophosphate (group 1B)	chlorpyrifos	Pyrinex 480 EC	1.2–2.4 L/ha (0.5–1 L/acre)	40	<b>Green pepper only.</b> See label for recropping restrictions. 24-hr re-entry interval.
			2.4 L/ha (1 L/acre)		<b>Green pepper only.</b> Apply as a soil treatment 3–7 days before transplanting. See label for recropping restrictions. 24-hr re-entry interval.

**Table 3–122. Pepper Insect Control — Stink Bug, Brown Marmorated Stink Bug, Tarnished Plant Bug (page 152)****— Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1,345 mL/ha (544 mL/acre)	3	<b>Suppression only.</b> Maximum 4 applications/yr. 12-hr restricted-entry interval.

# POTATOES

For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
potato	Table 3–124, page 156	Quadris Flowable: Pre-harvest interval (PHI) changed from 90 days to no PHI because it is an at-planting treatment
potato	Table 3–124, page 157	Serenade ASO name changed to Serenade Soil. Serenade Soil may be acceptable for organic growers. Check with your certification body.
potato	Table 3–127, page 161	Tattoo C labelled also for aerial applications. For aerial applications, apply Tattoo C Suspension Concentrate Fungicide in 45 L of water/ha.
potato	Table 3–130, page 166	Phase-out schedule for Thimet 15-G (phorate): Last date of sale of Thimet 15-G by registrant is <b>31 December 2014</b> . Last date of sale of Thimet 15-G by retailers and distributors is <b>1 May 2015</b> . Last date of use of Thimet 15-G by growers & users is <b>1 August 2015</b> .

**Table 3–123.** Potato Seed Treatments (page 154–155) — **Additions**

Group Name (Group #)	Common Name	Trade Name	Rate	Diseases or Insects Controlled
<b>Fungicides</b>				
QoI (group 11)	fenamidone	Reason 500SC	10 mL/100 kg of seed	Seed-borne late blight.
<b>Insecticide + Fungicide</b>				
neonicotinoid (group 4A) + DMI/phenylpyrroles (group 3/12)	thiamethoxam + difenoconazole/fludioxonil	Cruiser Maxx Potato Extreme	20 mL/100 kg seed	<b>Insects</b> — Colorado potato beetle, aphids, potato leafhopper <b>Diseases</b> — Stem and stolon canker ( <i>Rhizoctonia solani</i> ), fusarium dry rot, silver scurf ( <i>Helminthosporium solani</i> ). Suppression of black scurf.  Do not apply foliar group 4 insecticides (neonicotinoids) in the same season as an in-furrow or soil application.

**Table 3–124.** Potato Disease Control — Pythium Leak, Pink Rot, Rhizoctonia, Silver Scurf, Fusarium Dry Rot (page 156–157) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days); N/A = not applicable					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>PYTHIUM LEAK, PINK ROT, RHIZOCTONIA, SILVER SCURF, FUSARIUM DRY ROT</b>					
<b>In-Furrow</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only of rhizoctonia black scurf and stem canker, pink rot, pythium leak and fusarium dry rot.</b> For in-furrow applications, spray in a narrow band with the spray directed at the seed and surrounding soil before covering the seed or seed piece. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried. Serenade Soil may be acceptable for organic growers. Check with your certification body.
<b>Post-Harvest</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	85–175 mL/tonne of potatoes	N/A	<b>Aids in the control of silver scurf only.</b> See product label for details.

**Table 3–126.** Potato — Early Blight and Late Blight Protectant Fungicides (page 159–160) — **Additions**

Begin applications prior to disease development.

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>EARLY BLIGHT ONLY</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	2–4 kg/ha (0.8–1.6 kg/acre)	0	<b>Suppression only of early blight. At the same rate, it will suppress white mould.</b> Begin applications soon after emergence and when conditions are conducive to disease development. Re-entry permitted once spray deposit has dried.
<b>EARLY AND LATE BLIGHT</b>					
benzamide/dithiocarbamate (group 22/M3)	zoxamide/mancozeb	Gavel 75DF	1.7–2.25 kg/ha (0.7–0.9 kg/acre)	3	Use higher rates under severe disease pressure. Maximum 6 applications/yr. Plant-back restrictions apply, see label for details. 48-hr re-entry interval.

**Table 3–127.** Potato — Late Blight Targeted Protectant Fungicides (page 161–162) — **Additions**

Begin applications when weather conditions favour late blight, or if late blight is identified in the local area.

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
carbamate/chloronitrile (group 28/M5)	propamocarb/chlorothalonil	Tattoo C	2.7 L/ha (1.1 L/acre)	7	Begin applications when conditions are favourable for disease, but before infection, and continue on 7–14-day intervals until the threat of disease is over. Maximum 3 applications/yr. For aerial application, apply Tattoo C in 45 L of water/ha. 48-hr re-entry interval.



**Table 3–128. Potato Insect Control — Colorado Potato Beetle (page 163–164) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>COLORADO POTATO BEETLE</b>					
<b>In-Furrow</b>					
neonicotinoid (group 4A)	imidacloprid	Alias 240 SC	0.85–1.3 L/ha (0.34–0.5 L/acre)	—	<b>Control of Colorado potato beetle.</b> Use 7.5–12 mL/100 m of row. For best results, spray directly on seed piece. Do not apply a foliar neonicotinoid spray in fields where a neonicotinoid was used either in-furrow or as a seed treatment.
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	440–700 g/ha (178–283 g/acre)	—	<b>Control of Colorado potato beetle.</b> In-furrow application at the seeding depth, or a narrow surface band above the seed during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. 12-hr re-entry interval.
<b>Foliar Sprays</b>					
neonicotinoid (group 4A)	imidacloprid	Alias 240 SC	200 mL/ha (81 mL/acre)	7	Do not apply a foliar neonicotinoid spray in fields where a neonicotinoid was used either in-furrow or as a seed treatment. Maximum 2 foliar applications/yr. 24-hr re-entry interval.
sulfoxaflor/spinosyn (group 4C/5)	sulfoxaflor/spinetoram	TwinGuard	200–300 g/ha (81–121 g/acre)	7	<b>Control of small larvae of the Colorado potato beetle.</b> Use a minimum spray volume of 100 L/ha. Do not apply this product during crop flowering period or when flowering weeds are present in the treatment areas. Apply early in the morning or late in the evening when bees are not active. Maximum 2 applications/season. <b>Do not apply by air.</b> 12-hr re-entry interval or re-entry permitted once spray deposit has dried.

**Table 3–129. Potato Insect Control — Potato Leafhopper, Flea Beetle, Tarnished Plant Bug (page 165) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>POTATO LEAFHOPPER, FLEA BEETLE, TARNISHED PLANT BUG</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	440–700 g/ha (178–283 g/acre)	—	<b>Control of potato leafhopper.</b> Early-season suppression of flea beetles. In-furrow application at the seeding depth, or a narrow surface band above the seed during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. 12-hr re-entry interval.

**Table 3–130.** Potato Insect Control — Late-Season Cutworms, Spider Mites, Wireworms, European Chafer Grubs (page 166) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>WIREWORMS</b>					
organophosphate (group 1B)	chlorpyrifos	Pyrinex 480 EC	21.6 mL in 5 L water/100 m of row <b>Or</b> 2.4 L/ha (1 L/acre) <sup>1</sup>	70	Efficacy of wireworm insecticides depends on the wireworm species infesting the soil. The species of wireworms found in Ontario might not be susceptible to Pyrinex. <b>Caution: No Maximum Residue Limits for U.S. exports.</b> In-furrow at planting. 24-hr re-entry interval.

<sup>1</sup> Row spacing: 90-cm (36-in.)

**Table 3–131.** Potato Insect Control — European Corn Borer, Cabbage Looper, Armyworms (page 167) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>EUROPEAN CORN BORER</b>					
sulfoxaflor/spinosyn (group 4C/5)	sulfoxaflor/spinetoram	TwinGuard	200 g/ha (81 g/acre)	7	Control of small larvae of the European Corn Borer (ECB). Use a minimum spray volume of 100 L/ha. Do not apply this product during crop flowering period or when flowering weeds are present in the treatment areas. Apply early in the morning or late in the evening when bees are not active. Maximum 2 applications/season. <b>Do not apply by air.</b> 12-hr re-entry interval or re-entry permitted once spray deposit has dried.

**Table 3-132. Potato Insect Control — Aphids, Potato Psyllids (page 168) — Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days): — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
<b>Soil Application</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	440–700 g/ha (178–283 g/acre)	—	In-furrow application at the seeding depth, or a narrow surface band above the seed during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. 12-hr re-entry interval.
<b>Foliar Application</b>					
sulfoxaflor/spinosyn (group 4C/5)	sulfoxaflor/spinetoram	TwinGuard	200 g/ha (81 g/acre)	7	Use a minimum spray volume of 100 L/ha. Do not apply this product during crop flowering period or when flowering weeds are present in the treatment areas. Apply early in the morning or late in the evening when bees are not active. Maximum 2 applications/season. <b>Do not apply by air.</b> 12-hr re-entry interval or re-entry permitted once spray deposit has dried.
<b>POTATO PSYLLID</b>					
<b>Foliar Application</b>					
avermectin (group 6)	abamectin	Agri-mek 1.9% EC	1 L/ha (0.4 L/acre)	14	Maximum 2 applications/yr.

# RADISHES

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
radish	not applicable	Last date of use of Diazinon 5G (PCP# 12538, granular formulation) is 31 August 2015. From 31 December 2014 to 31 December 2016, soil drench applications with diazinon liquid formulations are permitted as per label instructions. Last date of use of diazinon is 31 December 2016. (Updated January 2015.)
radish	Table 3–138, page 173	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–135. Radish Disease Control (page 170) — Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ROOT ROTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	Radish and Oriental radish. <b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i>, <i>Pythium spp.</i> and <i>Fusarium spp.</i></b> May be applied at planting and/or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.

**Table 3–138. Radish Insect Control — Swede Midge, Aphids, European Chafer Grubs (page 173) — Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	7	<b>Radish only.</b> Control of aphids with these products has been inconsistent in many areas. Maximum 1 application/yr. 12-hr restricted-entry interval.

# RHUBARB

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

**Table 3–140.** Rhubarb Disease and Insect Control (page 175) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>ROOT ROTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i>, <i>Pythium spp.</i> and <i>phytophthora</i>.</b> See label for in-furrow application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr. Re-entry permitted once spray deposit has dried.
<b>APHIDS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>POTATO STEM BORER, CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Cabbage looper, corn earworm, fall armyworm. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

# RUTABAGAS

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
rutabagas	Table 3–143, page N/A	Replace Mission 418 EC with Bumper 418 EC.
rutabagas	Table 3–143, page N/A	Replace Topas with Tilt 250E.
rutabagas	not applicable	Last date of use of Diazinon 5G (PCP# 12538, granular formulation) is 31 December 2014. Soil drench applications are permissible as per label instructions. (Updated January 2015.)
rutabagas	Table 3–145, page 179; Table 3–146, page 180	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–143. Rutabaga Disease Control (page 177) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>POWDERY MILDEW</b>					
DMI (group 3)	propiconazole	Bumper 418 EC	240 mL in minimum 200 L water/ha (97 mL in minimum 18 gal water/acre)	21	Make 2 applications/yr: the first application 50 days after planting and the second application 20 days later. 12-hr re-entry interval.
		Tilt 250E	400 mL in minimum 200 L water/ha (162 mL in minimum 18 gal water/acre)	21	A second application may be made 20 days after the first. Maximum 2 applications/season. 12-hr re-entry interval.

**Table 3–145. Rutabaga Insect Control — Cabbage Root Maggot, Flea Beetles, Leaf-Eating Caterpillars (page 179) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>LEAF-EATING CATERPILLARS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	<b>Imported cabbageworm and cabbage loopers only.</b> Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 12-hr restricted-entry interval.

**Table 3–146. Rutabaga Insect Control — Cutworms, Aphids (page 180) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	Control of aphids with malathion has been inconsistent in many areas. Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 12-hr restricted-entry interval.

# SPINACH AND SWISS CHARD

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
spinach	Table 3–150, page 184	Replace Serenade ASO with Serenade MAX.
spinach	Table 3–150, page 184	Remove Ranman 400SC.
spinach, Swiss chard	Table 3–155, page 190; Table 3–158, page 192; Table 3–159, page 193	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–150. Spinach Disease Control — Downy Mildew, White Rust (page 184) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>WHITE RUST</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	1–2 kg/ha (0.4–0.8 L/acre)	0	<b>Suppression only.</b> Begin applications when conditions become conducive for disease development. Repeat at 7–10-day intervals. Re-entry permitted once spray deposit has dried.

**Table 3–153. Spinach Insect Control — Aphids (page 187) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days); — = not specified on label					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cytraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seedline during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–154. Spinach Insect Control — Leafminers, Cutworms (page 189) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>LEAFMINERS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seedline during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–155. Spinach Insect Control — Cabbage Looper, Brown Marmorated Stink Bug (page 190) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Early-season control. Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seedline during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**BROWN MARMORATED STINK BUG**

See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.

organophosphate (group 1B)	malathion	Malathion 85E	1,345 mL/ha (544 mL/acre)	7	<b>Suppression only.</b> Maximum 1 application/yr. 1-day restricted-entry interval.
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**Table 3–157. Swiss Chard Disease Control — Botrytis Grey Mould, Root Rots (page 191) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BOTRYTIS GREY MOULD</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	1–3 kg/ha (0.4–1.2 L/acre)	0	<b>Suppression only.</b> When environmental conditions and plant stage are conducive to rapid disease development, use in a rotational program with other registered fungicides. Re-entry permitted once spray deposit has dried.
<b>ROOT ROTS</b>					
not classified	<i>Trichoderma harzianum</i>	RootShield HC	55–110 g/m <sup>3</sup> of loose planting mix, soil or planting beds	—	<b>Suppression only. Root rots caused by <i>Rhizoctonia</i> spp., <i>Pythium</i> spp. and <i>Fusarium</i> spp.</b> Drench application to potting mix, soil or planting beds for greenhouse transplants. 4-hr re-entry interval.



**Table 3–158. Swiss Chard Insect Control — Aphids (page 192) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	1,100 mL/ha (445 mL/acre)	7	Ensure thorough coverage, repeat as necessary. Control of aphids with malathion has been inconsistent in many areas. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 1-day restricted-entry interval.
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–159. Swiss Chard Insect Control — Leafminers, Cutworms, Cabbage Looper, Brown Marmorated Stink Bug (page 193) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>LEAFMINERS</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cyantraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	Early-season control. Also suppresses early-season flea beetles. In-furrow application at seeding or transplant depth, or a narrow surface band above the seed line during planting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	1,100 mL/ha (445 mL/acre)	7	<b>Suppression only.</b> Maximum 1 application/yr. 1-day restricted-entry interval.

# SUGARBEETS

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
sugarbeet	Table 3–165, page 198	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–163.** Sugarbeet Disease Control — Powdery Mildew, Rhizoctonia Root and Crown Rot (page 197) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>RHIZOCTONIA ROOT AND CROWN ROT</b>					
<b>Soil Application</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only.</b> Soil application. See label for application details. Re-entry permitted once spray deposit has dried.

**Table 3–165.** Sugarbeet Insect Control (page 198) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days); — = not specified on label

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>FLEA BEETLES, LEAFHOPPERS, SPIDER MITE</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535 mL/ha (217 mL/acre)	—	<b>Flea beetles.</b> Less effective below 20°C. Maximum 1 application/yr. 12-hr restricted-entry interval.

# SWEET CORN

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
sweet corn	Table 3-166, page 200	Remove Agrox B-2 (diazinon/captan). Registration expires 31 December 2014.
		Remove Agrox CD (diazinon/captan). Registration expires 31 December 2014.
		Remove DCT (diazinon/captan/thiophanate-methyl). Registration expires 31 December 2014.

## SWEET POTATOES

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

**Table 3–174.** Sweet Potato Disease Control — Damping-Off, Stem Rot, Scurf, Sclerotinia Rot, Leaf Blights (page 207) — **Additions**

**LEGEND:** PHI = Pre-Harvest Interval (in days);

N/A = not applicable

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>STEM ROT, SCURF</b>					
SDHI (group 7)	penthiopyrad	Vertisan	15.5 mL/100 m of row	7	Stem rots caused by <i>Rhizoctonia solani</i> . <b>Suppression only.</b> Apply in-furrow at planting, using 1.4–1.75 L water/100 m of row. Do not exceed 1.75 L/ha. See label for rotational crop restrictions. 12-hr re-entry interval.
dithiocarbamate (group M3)	thiram	Thiram 75 WP	1.75 kg/1,000 L of water	N/A	Apply to roots to be used for slip production. Not for greenhouse use. Dip roots of sprouts for 30 seconds in suspension, then plant promptly. 24-hr re-entry interval (Granulflo).
		Granulflo-T			
<b>DAMPING-OFF/ROOT ROTTS</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Suppression only. Root rots caused by <i>Rhizoctonia solani</i>, <i>Pythium spp.</i>, and <i>Fusarium spp.</i></b> May be applied at planting or post-planting. See label for application instructions. For broadcast or banded application to the soil surface, irrigate within 24 hr.
<b>LEAF BLIGHTS</b>					
SDHI (group 7)	penthiopyrad	Vertisan	1–1.75 L/ha (0.4–0.7 L/acre)	7	<b>Suppression of leaf blights caused by <i>Alternaria solani</i>.</b> Do not make more than 2 sequential applications before switching to a fungicide with a different mode of action. No more than 5 L/ha of product can be applied per season. See label for rotational crop restrictions. 12-hr re-entry interval.
QoI/DMI (group 11/3)	azoxystrobin/difenoconazole	Quadris Top	566–1,000 mL/ha (229–404 mL/acre)	14	<b>Leaf blights caused by <i>Alternaria solani</i>.</b> Do not apply sequential applications of any QoI fungicide or of any tank mix containing a QoI fungicide. Rotate with fungicides with a different mode of action. See label for recropping restrictions. Maximum 3 applications/season. 12-hr re-entry interval.

**Table 3–176. Sweet Potato Insect Control — Aphids, Variegated Cutworm, Armyworm, Slugs (page 209) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
sulfoxaflor (group 4C)	sulfoxaflor	Closer	50–150 mL/ha (20–61 mL/acre)	7	Rotate applications with other insecticide groups. Allow at least 7 days between applications. Maximum 2 applications/season. See label for rotational crop restrictions. 12-hr re-entry interval or when spray residues have dried.
<b>VARIEGATED CUTWORM, ARMYWORM</b>					
diamide (group 28)	cyantraniliprole	Exirel	500–750 mL/ha (202–303 mL/acre)	7	Do not use higher rate for armyworms. See label for tank-mix directions and crop tolerance. Make no more than 2 applications of Group 28 insecticides (diamides) per generation to the same insect species on a crop. Maximum 4 applications/season. See label for rotational crop restrictions. 12-hr re-entry interval.

**Table 3–177. Sweet Potato Postharvest Disease Control — Bacterial Soft Rot, Fungal Rots (page 210) — Additions**

<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>Notes</b>
<b>BACTERIAL SOFT ROT</b>				
not classified	hydrogen peroxide	StorOx	100 mL/10 L water	Spray diluted solution on newly harvested roots. Additional applications can be made daily as a direct injection into humidification water. See product label for details. Do not enter treated areas or storage bins until residues have dried and hydrogen peroxide air concentrations are below mandated safe exposure levels.
<b>FUNGAL ROTS</b>				
phenylpyrrole/DMI/Qol (group 12/3/11)	fludioxonil/difenoconazole/azoxystrobin	Stadium	32.5 mL/tonne	<b>Rhizopus and fusarium rots only.</b> Dilute in 2 L water/tonne. Apply post-harvest as an in-line aqueous spray application to roots immediately before storage. See product label for detailed application instructions. Do not apply to roots that will be used for slip production. Maximum 1 application.

## TOMATOES

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between fungicides from different chemical groups and rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change
tomato	Table 3–178, page 212; Table 3–181, page 215–216	Remove Ranman 400SC.
tomato	Table 3–180, page 214; Table 3–181, page 215–216; Table 3–183, page 218	Remove Serenade ASO, replace with Serenade MAX.
tomato	Table 3–188, page 225	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–178.** Tomato Transplant Production Disease and Insect Control (Greenhouse) (page 212) — **Additions**

Group Name (Group #)	Common Name	Trade Name	Rate	Notes
<b>SEED AND SEEDLING DISEASE</b>				
<b>Soil Treatments</b>				
Qil (group 21)	cyazofamid	Torrent 400SC	30 mL in 100 L of water	<b>Pythium damping-off and root rot.</b> Apply as a soil drench to thoroughly wet the growing medium immediately after seeding. 60-day pre-harvest interval. 12-hr re-entry interval.

**Table 3–180.** Tomato Bacterial Disease Control (page 214) — **Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	1–3 kg/ha (0.4–1.2 kg/acre)	0	<b>Bacterial spot. Suppression only.</b> Begin applications soon after transplant. Repeat as necessary on a 7–10-day interval. When conditions are conducive to rapid disease development, use in a rotational program with other bactericides. Re-entry permitted once spray deposit has dried.

**Table 3–181.** Tomato Fungal Disease Control — Anthracnose, Early Blight, Late Blight, Septoria Leafspot (page 215–216) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>ANTHRACNOSE, EARLY BLIGHT, LATE BLIGHT, SEPTORIA LEAF SPOT</b>					
Qol/ DMI (group 11/3)	azoxystrobin/ difenoconazole	Quadris Top	375–625 mL/ha (152–253 mL/acre)	1	<b>Anthracnose, early blight, septoria leaf spot.</b> Use high rate for septoria leaf spot. Do not apply until 21 days after transplanting. Do not apply for 6 days before or after metribuzin. See label for recropping restrictions. 12-hr re-entry interval.
Qil (group 21)	cyazofamid	Torrent 400SC	0.1–0.2 L/ha (0.04–0.08 L/acre)	1	<b>Late blight.</b> Tank-mix with non-ionic or organosilicone surfactant; see label for directions. See label for recropping restrictions. 12-hr re-entry interval.
carbamate/ chloronitrile (group 28/M5)	propamocarb/ chlorothalonil	Tattoo C	2.7 L/ha (1.1 L/acre)	5	<b>Late blight.</b> See label for rotational crop restrictions. 48-hr re-entry interval.
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	4.5 kg/ha (1.8 kg/acre)	0	<b>Early blight. Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–182.** Tomato Fungal Disease Control — Botrytis Grey Mould, Sclerotinia White Mould (page 217) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BOTRYTIS GREY MOULD, SCLEROTINIA WHITE MOULD</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Botrytis grey mould. Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–183.** Tomato Fungal Disease Control — Phytophthora Blight, Powdery Mildew (page 218) — **Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)					
Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>PHYTOPHTHORA BLIGHT</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade SOIL	2.7–14 L/ha (1.1–5.7 L/acre)	0	<b>Phytophthora blight. Suppression only.</b> Soil application. See label for application details. Re-entry permitted once spray deposit has dried.
<b>POWDERY MILDEW</b>					
microbial (group 44)	<i>Bacillus subtilis</i>	Serenade MAX	3–6 kg/ha (1.2–2.4 kg/acre)	0	<b>Suppression only.</b> Re-entry permitted once spray deposit has dried.

**Table 3–185. Tomato Insect Control — Aphids, Cutworms (page 220) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>APHIDS</b>					
<b>Soil Treatment</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cytraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–186. Tomato Insect Control — Colorado Potato Beetle (page 222–223) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>COLORADO POTATO BEETLE</b>					
<b>Transplant or Soil Treatments</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cytraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.

**Table 3–187. Tomato Insect Control — Cabbage Looper, Tomato or Tobacco Hornworm (page 224) — Additions**

<b>LEGEND:</b> PHI = Pre-Harvest Interval (in days); — = not specified on label					
<b>Group Name (Group #)</b>	<b>Common Name</b>	<b>Trade Name</b>	<b>Rate</b>	<b>PHI</b>	<b>Notes</b>
<b>CABBAGE LOOPER</b>					
neonicotinoid/diamide (group 4A/28)	thiamethoxam/cytraniliprole	Minecto Duo 40WG	750 g/ha (303 g/acre)	—	<b>Cabbage looper. Early-season control only.</b> In-furrow application at transplanting. See label for application details. Do not apply foliar group 4 (neonicotinoids) or group 28 (diamides) insecticides in the same season as an in-furrow or soil application. See label for rotational crop restrictions. Maximum 1 application/season. 12-hr re-entry interval.



**Table 3–188. Tomato Insect Control — Stink Bug, Brown Marmorated Stink Bug (page 225) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>BROWN MARMORATED STINK BUG</b>					
See the OMAFRA website for the most up-to-date information on registrations and brown marmorated stink bug control measures.					
organophosphate (group 1B)	malathion	Malathion 85E	975 mL/ha (395 mL/acre)	3	<b>Suppression only.</b> Maximum 4 applications/yr. 12-hr restricted-entry interval.

**Table 3–189. Tomato Insect Control — Tarnished Plant Bug, Two-Spotted Spider Mite (page 226) — Additions****LEGEND:** PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>TWO-SPOTTED SPIDER MITE</b>					
beta-ketonitrile derivative (group 25)	cyflumetofen	Nealta	1 L/ha (405 mL/acre)	3	Apply before mites exceed threshold. 12-hr re-entry interval.

## TURNIPS

This information is provided as a guideline only. See product labels for complete information. For resistance management, rotate between insecticides from different chemical groups. For information on insecticides and bee poisoning, see Chapter 1 and Chapter 2 in Publication 838, *Vegetable Crop Protection Guide 2014–2015*.

## GENERAL CHANGES

Crop	Table Number, Page Number	Change/Update
turnips	not applicable	Last date of use of Diazinon 5G (PCP# 12538, granular formulation) is 31 August 2015. Soil drench applications are permissible as per label instructions. (Updated January 2015.)
turnips	Table 3–193, page 230; Table 3–194, page 231	Malathion 85E label was updated 15 April 2014, including updated restricted-entry intervals and maximum number of applications per year as indicated below. Read the label for directions for use.

**Table 3–193. Turnip Insect Control — Flea Beetles, Leaf-Eating Caterpillars, Cutworms (page 230) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>LEAF-EATING CATERPILLARS (IMPORTED CABBAGEWORM, CABBAGE LOOPER, DIAMONDBACK MOTH)</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	<b>Imported cabbageworm and cabbage loopers only.</b> Ensure thorough coverage, repeat as necessary. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 1-day restricted-entry interval.

**Table 3–194. Turnip Insect Control — Aphids, European Chafer Grubs, Swede Midge (page 231) — Additions**

LEGEND: PHI = Pre-Harvest Interval (in days)

Group Name (Group #)	Common Name	Trade Name	Rate	PHI	Notes
<b>APHIDS</b>					
organophosphate (group 1B)	malathion	Malathion 85E	535–1,345 mL/ha (216–544 mL/acre)	3	Control of aphids with malathion has been inconsistent in many areas. Ensure thorough coverage. Apply when temperature is at or above 20°C. Maximum 1 application/yr. 1-day restricted-entry interval.





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