

2007 SUPPLEMENT

Growing Greenhouse Vegetables

Publication 371S

This supplement contains updates to pesticides registered up until 2007. For complete information, please refer to the full edition of Publication 371, *Growing Greenhouse Vegetables*, released in 2005.

REPLACE Table 15-1, Table 15-2, Table 15-3, Table 15-4, Table 15-5, Table 15-6, Table 15-7 and Table 15-8 on pages 125 to 132 with the new tables below.

TABLE 15-1. Tomato Pests

Pesticide	Rate	Pest	Pre-harvest Interval (days)	Remarks
Ambush 50 EC or Pounce EC	200 mL/1,000 L	whiteflies	1	Apply to achieve thorough coverage. Repeat as necessary.
Avid	30 mL/100 L	two-spotted spider mite leafminer	3	No more than 5 applications per crop cycle.
Bioprotec	1.8 L/1,000 L water.	cabbage loopers	0	Use diluted spray within 12 hr. Use product within 6 months of manufacture date. Addition of a wetting agent is recommended to improve distribution on foliage.
	0.9–1.8 L/1,000 L water.	tomato hornworm		
Confirm 240F	0.6 L/ha	cabbage loopers	2	Re-entry period is 12 hr. Application interval at least 10 days. Do not exceed 4 applications/yr.
DDVP 20%EC	6 mL/L	aphids, whiteflies	7	Use cautiously as crop damage can occur, particularly under hot, humid conditions. Thoroughly ventilate before re-entering on the day following treatment.
Dibrom	10 mL/100 m ³ Apply undiluted to cold pipes, then heat to 41°C and close greenhouse for at least 4 hr.	aphids, two-spotted spider mites, whiteflies	1	May cause injury to flowers. Ventilate greenhouse properly before re-entering.
Dipel 2X DF	75–150 g/250 L/4,000 m ²	cabbage loopers		Apply to upper and lower leaf surfaces to runoff. Repeat applications needed with new hatch.
Distance	45 mL/100 L	whiteflies	3	Maximum number of applications per crop cycle is 2. Make 1 st application when adults begin to appear. Restricted entry interval = 12 hr.
DynoMite	284 g/ha using 1,000 L water/ha	two-spotted spider mites	2	Maximum number of applications per crop cycle is 2. Apply at intervals of at least 28 days.
Endeavor 50 WG	100–200 g product/ha in a minimum of 1,000 L water/ha	Green peach aphid, melon aphid	3	No more than 2 applications per crop cycle/year/greenhouse. Do not repeat applications for at least 7 days.
Floramite SC	133 mL/400 L	two-spotted spider mites	0	Only 2 applications per crop cycle Restricted entry interval = 12 hr.
Foray 48B	80–200 mL/1,000 m ²	cabbage loopers	0	
Forbid 240 SC	30–50 mL/100 L	two-spotted spider mites, whiteflies	3	Maximum number of applications per crop cycle is 2. Restricted entry interval = 12 hr.

TABLE 15–1. Tomato Pests

Pesticide	Rate	Pest	Pre-harvest Interval (days)	Remarks
Intercept	16 g/80 L water/1,000 mature plants	whiteflies, aphids	1	Do not apply more than once per season. There may be repellent effects on bumble bees and negative effects on some beneficials.
Insecticidal Soap	1–2 L/100 L	aphids, two-spotted spider mites, whiteflies, earwigs, psyllids		May cause damage to flowers under high temperature conditions.
Nicotine Smoke	1 can/300 m ³	aphids, thrips	3	Ventilate greenhouse properly before re-entering.
Sluggo	25–50 kg/ha (2.5–5 g/m ²)	slugs and snails		Re-apply bait as needed or at least every 2 weeks if slugs and snails continue to be a problem.
Thiodan 4 EC Thiodan 50 WP	1.25–1.5 L/1,000 L 1–1.5 kg/ha	aphids, whiteflies	2	
3M Sprayable Tomato Pinworm Pheromone	200 mL/ha	tomato pinworm		Repeat applications are dependent on pest pressure and should, in general, be done 3–4 weeks apart.
Vectobac	2–8 L/1,000 L	fungus gnats	0	Do not mix and apply with fertilizers or fungicides containing copper or chlorine as this may neutralize the active ingredients.
Vendex 50W	50 g/100 L	two-spotted spider mites	5	

TABLE 15–2. Tomato Diseases

Pesticide	Rate	Disease	Pre-harvest Interval (days)	Remarks
Botran 75WP	1.75 kg/1,000 L	Botrytis grey mould	1	Seedlings may be injured by drenching.
Decree	1.5 kg/ha	Botrytis grey mould	1	Do not make more than 3 applications per crop cycle
Fixed Copper 50W	3 kg/1,000 L/ha	Bacterial canker		7–10 day interval
Maestro 80DF	1.25 kg/1,000 L apply 50–85 L/100 m ²	damping-off in seedlings		
Manzate DF	2.4 kg/ha	early and late blight, septoria leaf spot	7	
MilStop	5.6 kg/ha	powdery mildew		Do not mix with with other soluble fertilizers or pesticides; not compatible with mild alkaline solutions. Addition of surfactant or wetting agent is not required. Restricted entry interval = 4 hr.
Mycostop	Immediately after transplanting: 10–50 mg/plant or 20–100 mL/plant of 0.05% suspension	fusarium; root diseases; stem rot	0	Treatments to be repeated at intervals of 3–6 weeks depending on disease pressure.
Nova	340 g/ha (1,000 L water/ha)	powdery mildew	3	Apply no more than 2 applications/yr.
RootShield Drench	60–90 g/100 L	<i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i>		Effective when root zone more than 10°C
RootShield Granules	600 g/m ³ planting mix or soil	<i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i>		Effective when root zone more than 10°C
Rovral 50WP	1 kg/1,000 L	Botrytis grey mould	2	
Sulphur (Bartlett's Microscopic Sulphur 92 %)	750 g/1,000 L/ha	powdery mildew	1	Maximum of 10 applications per crop cycle. May cause slight foliage damage.
Supra Captan 80W	63–107 g/100 sq.m as a soil treatment	damping off, fungus root rot diseases		Use 1.25 kg per 1,000 L water and apply at rates of 50–85 L /100 m ² . Work into the upper 7.5–10 cm of soil before planting.

TABLE 15–3. Cucumber Pests

Pesticide	Rate	Pest	Pre-harvest Interval (days)	Remarks
Ambush 50 EC or Pounce EC	200 mL/1,000 L 260 mL/1,000 L	whiteflies	1	Apply to achieve thorough coverage. Repeat as necessary.
Avid	30 mL/100 L	two-spotted spider mite leafminer	3	No more than 5 applications per crop cycle.
Bioprotec	1.8 L/1,000 L water	cabbage loopers	0	Use diluted spray within 12 hr. Use product within 6 months of manufacture date. Addition of a wetting agent is recommended to improve distribution on foliage.
DDVP 20%EC	6 mL/L	aphids, whiteflies	7	Use cautiously as crop damage can occur, particularly under hot, humid conditions. Thoroughly ventilate before re-entering on the day following treatment.
Dibrom	10 mL/100 m ³ Apply undiluted to cold pipes, then heat to 41°C & close greenhouse for at least 4 hr	aphids, spider mites, whiteflies, mealy bugs, leafrollers	1	May cause injury to flowers. Ventilate greenhouse properly before re-entering.
Distance	45 mL/100 L	whiteflies	3	Maximum number of applications per crop cycle is 2. Make 1 st application when adults begin to appear. Restricted entry interval = 12 hr.
DynoMite	284 g/ha 1,000 L water/ha	two-spotted spider mites	2	Maximum number of applications per crop cycle is 2. Apply at intervals of at least 28 days.
Floramite SC	133 mL/400 L	two-spotted spider mites	1	Only 2 applications per crop cycle Restricted entry interval = 12 hr.
Foray 48B	80–200 mL/1,000 m ²	cabbage loopers	0	
Forbid 240 SC	30–50 mL/100 L	two-spotted spider mites, whiteflies	3	Maximum number of applications per crop cycle is 2. Restricted entry interval = 12 hr.
Intercept	16 g/80 L water/1,000 mature plants	whiteflies, aphids	1	Do not apply more than once per season. There may be negative effects on some beneficials.
Insecticidal Soap	1–2 L/100 L	aphids, two-spotted spider mites, whiteflies, earwigs, psyllids		May cause damage to plant under high temperature conditions.
Nicotine Smoke	1 can/300 m ³	aphids, thrips	3	Ventilate greenhouse properly before re-entering.
Sluggo	25–50 kg/ha (2.5–5g/m ²)	slugs and snails		Re-apply bait as needed or at least every 2 weeks if slugs and snails continue to be a problem.
Thiodan or Thionex 4 EC	1.25–1.5 L/1,000 L	aphids, whiteflies	2	Spray when insects are first observed.
Thiodan or Thionex 50 WP	1–1.5 kg/ha			
Vectobac	2–8 L/1,000 L	fungus gnats	0	Do not mix and apply with fertilizers or fungicides containing copper or chlorine as this may neutralize the active ingredients.
Vendex 50W	50 g/100 L	two-spotted spider mites	3	

TABLE 15–4. Cucumber Diseases

Pesticide	Rate	Disease	Pre-harvest Interval (days)	Remarks
Microscopic sulphur	105 g/100 L	powdery mildew	1	Apply at weekly intervals. Can cause damage if applied under hot, humid conditions.
MilStop	5.6 kg/ha	powdery mildew		Do not mix with with other soluble fertilizers or pesticides; not compatible with mild alkaline solutions. Addition of surfactant or wetting agent is not required. Restricted entry interval = 4 hr.
Mycostop	Immediately after transplanting: 10–50 mg/ plant or 20–100 mL/plant of 0.05% suspension	fusarium; root diseases; stem rot	0	Treatments to be repeated at intervals of 3–6 weeks depending on disease pressure.
Nova	340 g/ha	powdery mildew, gummy stem blight	2	Do not apply more than 6 times per year.
Previcur	10 mL/10 L of water and apply this solution at rate of 100–200 mL/ plant. Use higher rate for 2nd and 3rd applications.	pythium root rot	14	Maximum of 3 applications per season. Occasional slight damage may occur following overhead drenching of recently planted seedlings.
Ridomil Gold	Apply 250 mL of solution (0.75–1.25 mL/10 L) at base of plant after transplanting.	pythium root rot	21	1 application per crop cycle; not for cucumbers grown in soil.
RootShield Drench	60–90 g/100 L	<i>Pythium, Rhizoctonia, Fusarium</i>		Effective when root zone more than 10°C
RootShield Granules	600 g/m ³ planting mix or soil	<i>Pythium, Rhizoctonia, Fusarium</i>		Effective when root zone more than 10°C
Sporodex	7.5 L/ha	powdery mildew	0	Begin weekly applications at first sign of mildew. Re-entry period is 4 hr.
Rovral	1 kg/1,000 L	Botrytis grey mould, gummy stem blight	2	
Microfine Sulphur 92 (Zeneca)	150 g per 100 L	powdery mildew	1	Can cause damage if applied under hot, humid conditions.
Supra Captan 80W	63–107 g/100 sq.m as a soil treatment	damping off, fungus root rot diseases		Use 1.25 kg per 1,000 L water and apply at rates of 50–85 L /100 m ² . Work into the upper 7.5–10 cm of soil before planting.

TABLE 15–5. Pepper Pests

Pesticide	Rate	Pest	Pre-harvest Interval (days)	Remarks
Avid	30 mL/100 L	two-spotted spider mite	3	
Basudin 500 EC or Diazinon 500	230 mL/250 L/4,000 m ² 0.575 L/625 L water	aphids	5	
Bioprotec	1.8 L/1,000 L water	cabbage loopers	0	Use diluted spray within 12 hr. Use product within 6 months of manufacture date. Addition of a wetting agent is recommended to improve distribution on foliage.
Confirm	0.5 L/ha; apply in 4,000 L water/ha	European corn borer	3	Ensure good coverage and apply at intervals of approximately 7 days. Do not exceed 4 applications per year. Re-entry interval is 12 hr.
Dipel 2X DF	75–150 g/250 L/ 4,000 m ²	cabbage loopers		Apply to upper and lower leaf surfaces to runoff. Repeat applications needed with new hatch.

TABLE 15–5. Pepper Pests

Pesticide	Rate	Pest	Pre-harvest	
			Interval (days)	Remarks
Distance	45 mL/100 L	whiteflies	3	Maximum number of applications per crop cycle is 2. Make 1 st application when adults begin to appear. Restricted entry interval = 12 hr.
DynoMite	284 g/ha	two-spotted spider mite	3	Maximum number of applications per year is 2.
Endeavor 50 WG	100–200 g product/ha in a minimum of 1,000 L water/ha	green peach aphid, melon aphid	3	No more than 2 applications per crop cycle/year/greenhouse. Do not repeat applications for at least 7 days.
Floramite SC	133 mL/400 L	two-spotted spider mites	1	Only 2 applications per crop cycle Restricted entry interval = 12 hr.
Foray 48B	80–200 mL/1,000 m ²	cabbage loopers	0	
Forbid 240 SC	30–50 mL/100 L	two-spotted spider mites, whiteflies	3	Maximum number of applications per crop cycle is 2. Restricted entry interval = 12 hr.
Insecticidal Soap	1–2 L/100 L	aphids, spider mites, whiteflies, earwigs, psyllids	5	May cause damage to plant under high temperature conditions
Intercept	4.1 g/1,000 seedlings in a solution application rate of 8 L/100 m ² of seedling trays	aphids, whiteflies	3	Apply to 2-3 week old seedlings in flats. One application per growing season
Nicotine Smoke	1 can/300 m ³	aphids, thrips	5	Ventilate greenhouse properly before re-entering.
Sluggo	25–50 kg/ha (2.5–5 g/m ²)	slugs and snails		Re-apply bait as needed or at least every 2 weeks if slugs and snails continue to be a problem.
Thiodan 4 EC	1.25–1.5 L/1,000 L	lygus bug or tarnished plant bug, aphids	2	Do not apply more than twice per season.
Vectobac	2–8 L/1,000 L	fungus gnats	0	Do not mix and apply with fertilizers or fungicides containing copper or chlorine as this may neutralize the active ingredients.

TABLE 15–6. Pepper Diseases

Pesticide	Rate	Disease	Pre-harvest	
			Interval (days)	Remarks
Maestro 80DF	1.25 kg/1,000 L – apply 50–85 L/100 m ²	damping-off in seedlings		
Microscopic Sulphur 92%	543–760 g/1000L/ha	powdery mildew		Apply as required on a minimum of 14-day interval for up to 10 applications per crop cycle.
MilStop	5.6 kg/ha	powdery mildew		Do not mix with with other soluble fertilizers or pesticides; not compatible with mild alkaline solutions. Addition of surfactant or wetting agent is not required. Restricted entry interval = 4 hr.
Mycostop	Immediately after transplanting: 10–50 mg/plant or 20–100 mL/plant of 0.05% suspension	fusarium; root diseases; stem rot	0	Treatments to be repeated at intervals of 3–6 weeks depending on disease pressure
Nova	340 g/ha using 1,500–3,000 L water/ha	powdery mildew	3	Apply as soon as possible after initial infection and again 12 days later when disease pressure warrants control. Maximum number of applications per crop cycle is 3. Re-entry interval is 12 hr.
Supra Captan 80W	63–107 g/100 m ² as a soil treatment	Damping off, fungus root rot diseases		Use 1.25 kg per 1,000 L water and apply at rates of 50–85 L /100 m ² . Work into the upper 7.5–10 cm of soil before planting.

TABLE 15–7. Lettuce Pests

Pesticide	Rate	Pest	Pre-harvest Interval (days)	Remarks
Bioprotec	1.8 L/1,000 L water	cabbage loopers	0	Use diluted spray within 12 hr. Use product within 6 months of manufacture date. Addition of a wetting agent is recommended to improve distribution on foliage.
Confirm 240F	0.6 L/ha	cabbage loopers	14	Re-entry period is 12 hr. Application interval 10–14 days. Do not exceed 2 applications/year.
Foray 48B	80–200 mL/1,000 m ²	cabbage loopers	0	
Insecticidal Soap	1–2 L/100 L	aphids, spider mites, whiteflies, earwigs, psyllids		May cause damage to plant under high temperature conditions.
Intercept 60WP		aphids	21	
Malathion 25W	2.75–5.5 kg/ha	aphids, caterpillars, spider mites, thrips, whiteflies	Leaf = 21 Head = 7	Do not apply more than twice per season.
Nicotine Smoke	1 can/300 m ³	aphids, thrips	7	Ventilate greenhouse properly before re-entering.
Thiodan 4 EC	1.25–1.5 L/1,000 L	aphids	14	Only one application per crop; low volume mist or high volume spray.
Vectobac	2–8 L/1,000 L	fungus gnats	0	Do not mix and apply with fertilizers or fungicides containing copper or chlorine as this may neutralize the active ingredients.

TABLE 15–8. Lettuce Diseases

Pesticide	Rate	Disease	Pre-harvest Interval (days)	Remarks
Decree	1.5 kg/ha	Botrytis grey mould	3	Do not make more than 2 applications per crop cycle
Rovral	1 kg/1,000 L	grey mould	14	

REPLACE Appendix F with the new version below.

Appendix F. Ontario Ministry of the Environment Pesticide Control Offices		
REGION County	Address	Telephone
Central Region Toronto, Halton, Peel York, Durham	5775 Yonge St., 8th Floor Toronto, Ontario M2M 4J1	416-326-3671 Toll Free 1-800-810-8048 Fax 416-325-6345
West-Central Region Haldimand-Norfolk, Niagara, Hamilton-Wentworth, Dufferin, Wellington, Waterloo, Brant	Ontario Government Building 119 King St. W., 12th Floor Hamilton, Ontario L8P 4Y7	905-521-7667 Fax 905-521-7820
Eastern Region Frontenac, Hastings, Lennox & Addington, Prince Edward, Leeds & Grenville, Prescott & Russell, Stormont/Dundas & Glengarry, Haliburton, Peterborough, Victoria, Northumberland, Renfrew, Ottawa-Carleton, Lanark, District of Nipissing (Twsp of Airy, Murchison, Dickens, Lyell and Sabine)	133 Dalton Ave. P.O. Box 820 Kingston, Ontario K7L 4X6	613-549-5047 Toll Free 1-800-267-0974 Fax 613-548-6908
Southwestern Region Elgin, Middlesex, Oxford, Essex, Kent, Lambton, Bruce, Grey, Huron, Perth, Simcoe	733 Exeter Rd. London, Ontario N6E 1L3	519-873-5041 519-873-5048 Fax 519-873-5020
Northern Region Manitoulin, Nipissing, Parry Sound, Sudbury, Algoma East, Cochrane East, Muskoka,	199 Larch St., Ste. 1101 Sudbury, Ontario P3E 5P9	705-564-3237 Fax 705-564-4180
Kenora, Rainy River, Thunder Bay, Algoma West, Cochrane West, Timmins	435 James St. S., Ste. 331 Thunder Bay, Ontario P7E 6S7	807-475-1205 Fax 807-475-1745
Standards Development Branch	Pesticides Section 40 St. Clair Ave. W., 7 th Floor Toronto, Ontario M4V 1M2	416-327-5519 Fax 416-327-2936
Approvals Branch	Pesticides Licensing 2 St. Clair Ave. W., 12A Floor Toronto, Ontario M4V 1L5	416-314-8001 Fax 416-314-8452

This supplement provides updates to information in Publication 371. Each year the appropriate sub-committee of the Ontario Pest Management Research and Services Committee reviews the pesticides listed in this publication. To the best knowledge of the committee, at the time of printing, the pesticide products listed in this publication were:

- federally registered
- classified by the Ministry of the Environment.
- **The information in this publication is general information only.** The Ministry of Agriculture, Food and Rural Affairs does not offer any warranty or guarantee, nor does it assume any liability for any crop loss, animal loss, health, safety or environmental hazard caused by the use of a pesticide mentioned in this publication.

This publication lists a number of brand names of pesticides. It is neither an endorsement of the product nor a suggestion that similar products are ineffective.

The Pesticide Label

Consult each product label before you use a pesticide. The label provides specific information on how to use the product safely, hazards, restrictions on use, compatibility with other products, the effect of environmental conditions, etc.

The pesticide product label is a legal document. It is against the law to use the product in any other way.

Federal Registration of Pesticide Products

The Pest Management Regulatory Agency (PMRA) of Health Canada registers pesticide products for use in Canada based on following an evaluation of scientific data to ensure that the product has merit and value; and the human health and environmental risks associated with its proposed use are acceptable.

1. Full Registration

Pesticide registrations are normally granted for a period of five years, subject to renewal.

2. Temporary Registration

Temporary registration may be granted for a period not to exceed one year, where the registrant agrees to produce additional scientific or technical information, or the pesticide is used for emergency control of a serious pest outbreak.

Maximum Residue Limits

Health Canada has established maximum residue limits (MRLs) for pesticides. Processors or retailers may demand more restrictive limits. Growers should seek advice of their intended market to determine if more restrictive limitations apply. Keep accurate and up-to-date records on pesticide use in each crop.

Supplemental Labels

You **MUST** obtain a supplemental label and follow all the label directions when PMRA approves new uses for a registered pesticide that do not appear on the current label.

Examples of when you must use a supplemental label include:

- **Temporary Registrations for Emergency Use**
- **Minor Use Label Expansion**

You can obtain a copy of a supplemental label from the pesticide manufacturer or pesticide vendor, the grower association that sponsored the emergency registration or minor use, from OMAFRA or PMRA's Pest Management Information Service.

For more information on the federal registration status check the PMRA website at www.hc-sc.gc.ca/pmra-arla or call 1-800-267-6315.

Regulation of Pesticides in Ontario

The Ministry of the Environment is responsible for regulating pesticide sale, use, transportation, storage and disposal in Ontario. Ontario regulates pesticides by placing appropriate education, licensing and/or permit requirements on their use, under the Pesticides Act and Regulation 914.

All Pesticides must be used in accordance with requirements under the Pesticides Act and Regulation 914. The act and Regulation are available on the e-laws website at www.e-laws.gov.on.ca or call Publications Ontario Toll-Free number: 1-800-668-9938 or 416-326-5300.

Classification of Pesticides

The Ontario Pesticides Advisory Committee (OPAC) is responsible for reviewing and recommending to the Ministry of the Environment, the placement of pesticide products into one of six schedules used to control sale and use. Once approved by the Ministry of the Environment, classified products are posted on the OPAC website: www.opac.gov.on.ca. For more information call OPAC at 416-314-9230.

Certification and Licensing Growers and their Assistants

For information about certification for growers and training for assistants check the Ontario Pesticide Education Program website: www.ridgetownc.uoguelph.ca/oep/ or call 1-800-652-8573.

Commercial Applicators and their Assistants

For more information about exterminator certification and licensing and technician training check the Ontario Pesticide Training & Certification website at www.ridgetownc.uoguelph.ca/optc/ or call 1-888-620-9999.

Cette publication est aussi disponible en français

