

# 10. Pest and Disease Control Products

This chapter consists of two tables, both of which list pesticides registered for use in greenhouse flower crops. Table 10-1. *Pesticide Registrations by Pesticide* on page 130, summarizes the registered pesticides and the pests and crops on which they can be used. The products in this table appear alphabetically by product name. However, when there is more than one product with the same active ingredient, they are grouped together, and listed alphabetically.

Table 10-2. *Pesticide Registrations by Pest* on page 133 is a detailed listing of pesticides registered for each pest or disease. For each pest, a list is provided of all registered control products and their rates. **Note that the rates often include ranges and may be different depending on the crop. Always confirm uses and rates on the label before using.** In this table, the order of products does not intend to imply or convey any preference, although more recently registered products are usually listed nearer to the top. Also note that the Insecticide and Fungicide Group Numbers are provided in the column next to the pesticide name. The relevance of these numbers is more fully explained in Chapter 8, *Pesticide Application, Toxicity and Activity* on page 101. Repeating them in this table provides a quick reference for growers wishing to develop a pesticide rotation program.

All pesticides are evaluated by the Pest Management Regulatory Agency for efficacy and are now divided into three categories:

- Products rated for “control” have efficacy between 85-100%.
- Products rated for “suppression” have efficacy between 65-85%.
- Products rated for “partial suppression” or “reduction in damage” have efficacy of less than 65%.

In the comments column of Table 10-2. *Pesticide Registrations by Pest* on page 133, those products registered for suppression or reduction in numbers are noted. If the level of control is not mentioned, it can be assumed as “control” although it is important to remember that individual pest populations may show variations in the level of control achieved. Resistance, for example, may reduce efficacy of a particular product considerably.

Many pesticides can cause phytotoxic reactions under certain conditions. Read the label carefully and refer to the section in Chapter 8, *Pesticide Injury (Phytotoxicity) to Flower Crops* on page 111.

**Table 10-1.** Pesticide Registrations by Pesticide

Insecticides		
Trade Name (active ingredient)	Pests	Crops
Avid (abamectin)	Spider mites, leafminers	Greenhouse ornamentals
Beleaf 50SG (flonicamid)	Thrips, aphids, whiteflies	Greenhouse ornamentals
Botanigard 22 WP, BotaniGard ES ( <i>Beauveria bassiana</i> Strain GHA) Bio-Ceres G WB, Bio-Ceres G WP ( <i>Beauveria bassiana</i> Strain ANT-03)	Aphids, whiteflies, thrips	Greenhouse ornamentals
Citation (cyromazine)	Leafminer, fungus gnats, shoreflies	Greenhouse ornamentals
Confirm (tebufenozide)	Armyworms, cutworms, cabbage loopers, tobacco budworm, leafrollers	Greenhouse ornamentals
Dibrom (naled)	Whiteflies, aphids, spider mites, leafrollers, mealybugs	Rose, cut flowers
Dimilin (diflubenzuron)	Fungus gnats, shoreflies	Greenhouse ornamentals
Dipel 2X DF, BioProtec 3P, Dipel WP, BioProtec CAF, Thuricide HPC ( <i>Bacillus thuringiensis</i> var <i>kurstaki</i> )	Leafrollers, cabbage looper, <i>Duponchelia</i> Leafrollers, cabbage looper	Greenhouse ornamentals as indicated on label
Distance (pyriproxifen)	Whiteflies	Greenhouse ornamentals
DDVP smoke fumigator (dichlorvos)	Aphids, spider mites, western flower thrips, whiteflies, mealybugs	Greenhouse ornamentals
DDVP 20% EC (dichlorvos)	Aphids, whiteflies	Greenhouse ornamentals
DeltaGard (deltamethrin)	Western flower thrips	Greenhouse floriculture crops (chrysanthemum, cineraria, Easter lily, geranium)
Dursban WSP, Dursban T, Pro Dursban Turf, Lorsban 4E, Pyrate 480 (chlorpyrifos)	Thrips, whiteflies, scale, mealybugs, leafhoppers, Japanese beetle	Greenhouse ornamentals
Dyno-Mite (pyridaben)	Whiteflies, spider mites	Greenhouse ornamentals
Endeavor (pymetrozine)	Aphid control, whitefly suppression	Greenhouse ornamentals
Enstar EW (kinoprene)	Whiteflies, aphids	Greenhouse ornamentals
Floramite SC (bifenazate)	Two-spotted spider mite, Lewis mite	Greenhouse ornamentals
Forbid 240 SC (spiromesifen)	Mites, whiteflies	Greenhouse ornamentals
Insecticidal soaps	Aphids, whiteflies, spider mites, mealybugs, soft brown scale	Greenhouse ornamentals
Intercept 60 WP (imidacloprid)	Aphids, whiteflies	Greenhouse ornamentals
Kontos (spirotetramat)	Whitefly, western flower thrips, green peach aphid, citrus mealybug, <i>Euonymus</i> scale, spider mites	Greenhouse ornamentals
Malathion 25W, Malathion 85E, Malathion 500 E (malathion)	Aphids, whiteflies, thrips, mealybugs, spider mites	Chrysanthemum, carnation, rose, geranium, snapdragon
Met52 ( <i>Metarhizium anisopliae</i> Strain F52)	Black vine weevil, thrips	Container grown greenhouse ornamentals
NoFly ( <i>Paecilomyces fumosoroseus</i> )	Whiteflies, thrips	Greenhouse ornamentals
Orthene 75 SP (acephate)	Aphids, thrips, whitefly, rose midge, leafroller, scale	Greenhouse ornamentals as indicated on the label
Pounce 384 EC, Ambush 50 EC (permethrin)	<i>Duponchelia</i> (Pounce 384 only), whitefly, chrysanthemum leafminer	Greenhouse ornamentals as indicated on label

Pylon (chlorfenapyr)	Two-spotted spider mite, cabbage looper, foliar nematodes, western flower thrips	Greenhouse ornamentals
Shuttle 15 SC (acequinocyl)	Spider mites	Greenhouse ornamentals (other than cut flowers)
Success 480 SC (spinosad)	Western flower thrips	Greenhouse ornamentals
*Thiodan 50WP, Thiodan 4EC; Thionex 50W, Thionex EC (endosulfan)	Aphids, whitefly, cyclamen mite	Greenhouse ornamentals
Tristar 70 WSP (acetamiprid)	Aphids, leafhoppers, whiteflies	Greenhouse ornamentals
Vectobac 600L ( <i>Bacillus thuringiensis israelensis</i> )	Fungus gnats	Greenhouse ornamentals
Vendex 50W	Spider mites	Greenhouse ornamentals

\* Endosulfan registration is being phased out. Registrants must cease production and sale of endosulfan pesticide products by Dec 31, 2014. Sale of endosulfan products by others is not permitted after Dec 31, 2015, and use by growers is not permitted after Dec 31, 2016.

Fungicides		
Trade Name (active ingredient)	Diseases	Crops
Acrobat 50 WP (dimethomorph)	Downy mildew	Greenhouse ornamentals
Actinovate SP ( <i>Streptomyces lydicus</i> )	Powdery mildew, <i>Fusarium</i> , <i>Pythium</i> , <i>Rhizoctonia</i>	Gerbera, verbena, cyclamen, petunia, geranium
Aliette T&O (fosetyl-Al)	<i>Pythium</i> , <i>Phytophthora</i>	Greenhouse ornamentals
BioTak ( <i>Bacillus subtilis</i> Strain MBI 600)	<i>Fusarium</i> , <i>Rhizoctonia</i> and <i>Pythium</i>	Greenhouse ornamentals
Botran 75W (dicloran)	<i>Botrytis</i>	Rose, geranium, chrysanthemum
Compass 50 WG (trifloxystrobin)	<i>Rhizoctonia</i> , powdery mildew	Greenhouse ornamentals as indicated on label
Contans	<i>Sclerotinia</i>	Greenhouse ornamentals as indicated on label
Cyclone (Citric acid/Lactic acid, as fermentation products of <i>Lactobacillus casei</i> Strain LPT-111)	Powdery mildew	Roses
Daconil 2787, Daconil Ultrex (chlorothalonil)	Various foliar diseases (see label)	Various bulb, flowering and foliage plants (see label)
Decree 50 WDG (fenhexamid)	<i>Botrytis</i>	Greenhouse ornamentals
Folpan 50 WP, 80 WDG (folpet)	<i>Pythium</i> root rot	Poinsettia
Maestro 80 DF, SupraCaptan 80 WDG (captan)	Damping-off, root rots, leaf spots (see label)	Greenhouse rose, other flowers
*Meltatox 40 EC (dodemorph acetate)	Powdery mildew	Rose
Micora, Revus (mandipropamid)	Late blight (tomatoes), downy mildew, blue mould (lettuce), downy mildew (basil)	Vegetable and herb bedding plants as listed
Milstop (potassium bicarbonate)	Powdery mildew	Various greenhouse ornamentals (see label)
Mycostop ( <i>Streptomyces griseoviridis</i> )	<i>Fusarium</i> , <i>Pythium</i> , <i>Phytophthora</i>	Greenhouse ornamentals
Nova 40 W (myclobutanil)	Rusts, powdery mildew	Geranium, poinsettia, rose, gerbera, aster, chrysanthemum
Phostrol (mono- and dibasic sodium, potassium and ammonium phosphites)	<i>Phytophthora</i>	Bedding plants, potted plants and cut flowers
Phyton 27 (elemental copper)	Various fungal and bacterial foliar diseases (see label)	Various crops as foliar spray, cutting dip and postharvest application (see label)

Fungicides		
Trade Name (active ingredient)	Diseases	Crops
PreStop ( <i>Gliocladium catenulatum</i> )	<i>Pythium</i> , <i>Phytophthora</i> , <i>Rhizoctonia</i> , <i>Botrytis</i>	Greenhouse ornamentals as indicated on label
Previcur N (propamocarb hydrochloride)	<i>Pythium</i> , <i>Phytophthora</i>	Various greenhouse ornamentals (see label)
Pristine WG (boscalid/pyraclostrobin)	Powdery mildew	Bedding plants
Quintozene 75 WP (quintozene)	<i>Sclerotinia</i>	Various ornamental and bulb crops (see label)
Regalia Maxx (extract of <i>Reynoutria sachalinensis</i> )	Powdery mildew	Greenhouse and outdoor ornamentals
Rhapsody ASO, Cease Biological Fungicide ( <i>Bacillus subtilis</i> Strain QST 713)	Powdery mildew, <i>Botrytis</i> , leaf spots	Various greenhouse ornamentals (see label)
Rootshield Drench, RootShield Granules ( <i>Trichoderma harzianum</i> )	Root diseases caused by <i>Rhizoctonia</i> , <i>Pythium</i> and <i>Fusarium</i>	Greenhouse ornamentals
Rovral 50 WP, Rovral WDG (iprodione)	<i>Botrytis</i> , damping-off ( <i>Rhizoctonia</i> )	Ornamentals
Senator 70 WP (thiophanate-methyl)	<i>Rhizoctonia</i> , <i>Fusarium</i> , powdery mildew, <i>Botrytis</i> , leaf spots	Greenhouse potted ornamentals
Subdue Maxx, (metalaxyl)	<i>Pythium</i> , <i>Phytophthora</i>	Greenhouse ornamentals
Sulphur - GroTek Ascend Vaporized (sulphur)	Powdery mildew	Greenhouse ornamentals
Taegro ( <i>Bacillus subtilis</i> var. <i>amyloliquefaciens</i> Strain FZB24)	<i>Fusarium</i>	Greenhouse cyclamen
Torrent 400SC (cyazofamid)	<i>Pythium</i> , <i>Phytophthora</i> , Downy mildew ( <i>Peronospora</i> spp.)	Greenhouse ornamentals
Truban 30 WP, Truban 25 EC (etridiazole)	<i>Pythium</i> , <i>Phytophthora</i>	Various bedding, foliage, container and bed-grown ornamentals (see label)
ZeroTol (hydrogen peroxide)	For control/suppression of labelled diseases and algae	Greenhouse ornamental crops, greenhouse surfaces, equipment and irrigation systems

\* Meltatox registration has been voluntarily withdrawn by the registrant. Sale of Meltatox by retailers is not permitted after Dec 31, 2015, and use by growers is not permitted after Dec 31, 2016.

Other Pesticides		
Trade Name (active ingredient)	Pest	Crops
Deadline M-Ps (metaldehyde)	Slugs	Ornamentals
Sluggo (ferric phosphate)	Slugs	Outdoor and greenhouse ornamentals, nurseries

**Table 10-2.** Pesticide Registrations by Pest

Insects and Mites				
Pest	Pesticide	IRAC Insecticide Group Number*	Rate/1,000 L (exceptions noted)	Crops/Comments
Aphid (including tulip bulb aphid)	Beleaf 50SG	9C	30 g/100 L	This product is for use on greenhouse ornamentals (including cut flowers) as a foliar spray. Do not apply more than 1 application per crop cycle for aphids.
	Intercept	4A	Read label carefully	This product is for application as a drench on greenhouse ornamentals. Coconut growing medium may bind the active ingredient, making it unavailable to the plants.
	Kontos	23	2.5 mL /100 L growing media (drench)	This product is for use as a drench on greenhouse ornamentals. Use a maximum of 1 application per crop cycle for cut flowers and 2 applications per crop cycle for other ornamental crops. Read label carefully for crop safety information.
	Tristar	4A	48 g (3 water soluble packs)	This product is for use on greenhouse ornamentals as a foliar spray.
	Endeavor	9B	10–20 g/100 L	This product is for use as a foliar spray on greenhouse ornamentals. Do not apply more than twice per crop cycle. Endeavor is compatible with many biocontrol agents.
	Enstar EW	7A	80-240 mL/100 L	Use lower rate to prevent populations from reaching damaging levels and and higher rates against heavy populations.
	BotaniGard 22 WP BotaniGard ES  Bio-Ceres G WP, Bio-Ceres G WB	Biological	2–4 g/L	These products are biological insecticides for use on greenhouse ornamentals. BotaniGard is compatible with biocontrol programs. Bio-Ceres reduces numbers of aphids in greenhouse ornamentals and is compatible with biocontrol programs.
	Insecticidal Soaps		20 L	These products are for use on greenhouse ornamentals.
	Thiodan 4 EC Thiodan 50 WP Thionex EC Thionex 50 W	2A	1.25–1.75 L 1.0–1.5 kg 1.25–1.75 L 1.0 kg	These products are for use on greenhouse ornamentals. See footnote in Table 10-1 on page 131 on the registration of these products.
	DDVP Smoke Fumigator DDVP 20% EC	1B	1/300 m <sup>3</sup>  6 L	These products are for use on greenhouse ornamentals. When using the Smoke Fumigator, foliage must be dry.
	Malathion 25 W Malathion 85E  Malathion 500 E	1B	2.5–5.0 kg 7.5 mL of product in sufficient water to cover 100 m <sup>2</sup> (750 mL product/ha) 1.5 L	These products are for use on greenhouse ornamentals.
	Dibrom	1B	10 mL/100 m <sup>3</sup> (vapour treatment) 7–14 mL/100 m <sup>2</sup> (fog)	This product is for use on roses and cut flowers.
	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on greenhouse ornamentals as listed on the label. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.

**Table 10-2.** Pesticide Registrations by Pest

Insects and Mites				
Pest	Pesticide	IRAC Insecticide Group Number*	Rate/1,000 L (exceptions noted)	Crops/Comments
Caterpillars (incl. leafrollers, cabbage looper, cutworm, armyworm, <i>Duponchelia</i> )	Confirm 240 F	18	1.0 L	This product is for use on greenhouse ornamentals against armyworms, cutworms, corn earworm, grapevine moth, cabbage loopers, tobacco budworm and leafrollers.
	Dipel 2X DF	11	250 g/400 L	This product is for use on roses against leafroller, chrysanthemum against cabbage looper and greenhouse ornamentals against <i>Duponchelia</i> larvae.
	Dipel WP		1.25 kg	This product is for use on roses against leafroller and chrysanthemum against cabbage looper.
	Thuricide HPC		5 L	This product is for use on roses against leafroller and chrysanthemum against cabbage looper.
	BioProtec CAF		1.8 L	This product is for use on roses against leafroller and chrysanthemum against cabbage looper.
	BioProtec 3P		0.92 kg	This product is for use on roses against leafroller, chrysanthemum against cabbage looper and greenhouse ornamentals against <i>Duponchelia</i> larvae.
	Pylon	13	30–50 mL/100 L	This product is for use on potted greenhouse ornamentals. Do not use on cut flowers. Read label carefully for crop safety information.
	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on roses against leafroller and other labelled ornamental crops against armyworm and tobacco budworm. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.
	Dibrom	1B	10 mL/100 m <sup>3</sup> (vapour treatment) 7–14 mL/100 m <sup>2</sup> (fog)	This product is for use on roses and cut flower crops.
Pounce 384 EC	3A	26 mL/100L	This product is for use on labelled greenhouse ornamental crops against <i>Duponchelia</i> adults.	
Cyclamen mite	Thiodan 4 EC	2A	1.25–1.75 L	These products are for use on greenhouse ornamentals. See footnote in Table 10-1 on page 131 on the registration of these products.
	Thiodan 50 WP		1.0–1.5 kg	
	Thionex EC		1.25–1.75 L	
	Thionex 50 W		1.0 kg	
Fungus gnat	Citation 75 WP	17	133 g	Apply as a drench to greenhouse ornamentals for larval control.
	Dimilin 25 WP	15	18–150 g	This product is for use on greenhouse ornamentals except for Rieger begonia, hibiscus and poinsettia. Apply as a drench for larval control.
	Vectobac 600L	11	4–8 L	Apply to greenhouse ornamentals as a drench for larval control.
Japanese beetle	Intercept 60 WP	4A	Read label carefully	This product is for use on container-grown ornamentals requiring treatment prior to shipping as per CFIA Directive D-96-15.
	Lorsban 4E Dursban T Dursban Turf	1B	4.5 L	These products are for use on ornamentals requiring treatment prior to shipping as per CFIA Directive D-96-15. Read label carefully.

**Table 10-2. Pesticide Registrations by Pest**

<b>Insects and Mites</b>				
<b>Pest</b>	<b>Pesticide</b>	<b>IRAC Insecticide Group Number*</b>	<b>Rate/1,000 L (exceptions noted)</b>	<b>Crops/Comments</b>
Leafhopper	Tristar 70 WSP	4A	80 g (5 water soluble packs)	This product is for use on greenhouse ornamentals.
	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on labelled greenhouse ornamentals. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.
	Dursban WSP Dursban T Pyrate 480 SC Pro Dursban Turf Lorsban 4E	1B	0.896 kg (8 water soluble packs) 1.0 L 1.0 L 1.0 L 1.0 L	These products are for use on greenhouse ornamentals.
Leafminer	Avid 1.9 EC	6	600 mL	This product is for use on greenhouse ornamentals against leafminer larvae.
	Citation 75 WP	17	188 g	This product is for use on greenhouse ornamentals against leafminer larvae.
	Pounce 384 EC Ambush 50 EC	3A	26 mL/100 L 20 mL/100 L	These products are for use on labelled greenhouse ornamental crops.
Mealybug	DDVP Smoke Fumigator	1B	1/300 m <sup>3</sup>	This product is for use on greenhouse ornamentals. Foliage must be dry.
	Kontos	23	13–26 mL/100 L (foliar application) 3.0 mL /100 L growing media (drench)	This product is for use as a foliar spray or drench against citrus mealybugs on greenhouse ornamentals. Use a maximum of 1 application per crop cycle for cut flowers and 2 applications per crop cycle for other ornamental crops. Read label carefully for crop safety information.
	Malathion 25 W Malathion 85 E  Malathion 50 EC	1B	2.5–5.0 kg 7.5 mL of product in sufficient water to cover 100 m <sup>2</sup> (750 mL product/ha) 1.5 L	These products are for use on greenhouse ornamentals.
	Dibrom	1B	10 mL/100 m <sup>3</sup> (vapour treatment) 7–14 mL/100 m <sup>2</sup> (fog)	This product is for use on roses and cut flowers.
	Dursban WSP Dursban T Pyrate 480 SC Pro Dursban Turf Lorsban 4E	1B	224 g (2 water soluble packs) 200 mL 200 mL 200 mL 200 mL	These products are for use on greenhouse ornamentals.
	Enstar EW	7A	80-240 mL/100 L	For suppression of mealybug. Use lower rate to prevent populations from reaching damaging levels and and higher rates against heavy populations.
	Nematodes (foliar)	Pylon	13	41–78 mL/100 L

**Table 10-2.** Pesticide Registrations by Pest

Insects and Mites				
Pest	Pesticide	IRAC Insecticide Group Number*	Rate/1,000 L (exceptions noted)	Crops/Comments
Scale	Dursban WSP Dursban T Pyrate 480 SC Pro Dursban Turf Lorsban 4E	1B	1.792 kg (16 water soluble packs) 2.0 L 2.0 L 2.0 L 2.0 L	These products are for use on greenhouse ornamentals.
	Insecticidal soaps		20 L	These products are for use on greenhouse ornamentals.
	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on labelled greenhouse ornamentals. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.
Shorefly	Citation 75 WP	17	133 g	Apply this product as a drench to greenhouse ornamentals for larval control.
	Dimilin 25 WP	15	18–150 g	This product is for use on greenhouse ornamentals except for Rieger begonia, hibiscus and poinsettia. Apply as a drench for larval control.
Thrips	Beleaf 50 SG	9C	30 g/100 L	This product is for use on greenhouse ornamentals (including cut flowers) as a foliar spray. Do not apply more than 1 application per crop cycle for thrips.
	BotaniGard 22 WP BotaniGard ES	Biological	250–500 g/400 L 0.5–1.0 L/400L	These products are biological insecticides for use on greenhouse ornamentals. They are compatible with biocontrol programs. Bio-Ceres reduces numbers of thrips in greenhouse ornamentals and is compatible with biocontrol programs.
	Bio-Ceres G WP; Bio-Ceres G WB		2–4 g/L	
	No Fly	Biological	2–3 g/L	Apply as a foliar spray on greenhouse ornamentals.
	Kontos	23	13–26 mL/100 L (foliar spray) 5–10 mL/100 L growing medium (drench)	Foliar spray is registered for <b>suppression</b> only of western flowers thrips. The drench application is registered for <b>control</b> . Use a maximum of 1 application per crop cycle for cut flowers and 2 applications per crop cycle for other ornamental crops. Read label carefully for crop safety information.
	DDVP Smoke Fumigator	1B	1/300 m <sup>3</sup>	This product is for use on greenhouse ornamentals. Foliage must be dry.
	Pylon	13	78–156 mL/100 L	This product is for use on potted greenhouse ornamentals against western flower thrips. Do not use on cut flowers. Read label carefully for crop safety information.
	Success 480 SC	5	50 mL	This product is for use on greenhouse ornamentals. Note that resistance to this product has been documented for western flower thrips.
	Met52	Biological	1.5 kg/m <sup>3</sup> growing medium	This product is for use in container-grown greenhouse ornamentals. Apply granules and mix thoroughly to moist growing medium prior to or during planting
Malathion 25 W Malathion 85E	1B	2.5–5.0 kg 7.5 mL of product in sufficient water to cover 100 m <sup>2</sup> (750 mL product/ha)	1.5 L	These products are for use on greenhouse ornamentals.



**Table 10-2.** Pesticide Registrations by Pest

Insects and Mites				
Pest	Pesticide	IRAC Insecticide Group Number*	Rate/1,000 L (exceptions noted)	Crops/Comments
Thrips	Dursban WSP	1B	448 g (4 water soluble packs)	These products are for use on greenhouse ornamentals.
	Dursban T		500 mL	
	Pyrate 480 SC		500 mL	
	Pro Dursban Turf		500 mL	
	Lorsban 4E		500 mL	
	DeltaGard SC	3A	0.35–0.5 L	This product is for use on chrysanthemum, cineraria, Easter lily and geranium.
	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on greenhouse ornamentals as indicated on the label. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.
Two-spotted spider mite	Shuttle 15 SC	20B	0.21–0.46 L/500 L	This product is for use on greenhouse crops other than cut flowers.
	Floramite SC	25	133 mL/400 L	This product is for use on greenhouse ornamentals, for control of spider mite including Lewis mite.
	Dyno-Mite 75 W	21A	142–284 g (5–10 PVA bags)	This product is for use on greenhouse ornamentals.
	Vendex 50 W	12B	50–100 g/100 L	Do not spray when plants are under stress (e.g., new transplants) or when temperature is >32°C.
	Avid 1.9 EC	6	300 mL	This product is for use on greenhouse ornamentals.
	Forbid 240 SC	23	30 mL/100 L	This product is for use on greenhouse ornamentals. Read label carefully for crop safety information.
	Kontos	23	13 mL/100 L (foliar spray) 5–10 mL/100 L growing medium (drench)	This product is registered for control of spider mites in greenhouse ornamentals using either a foliar spray or a drench. Use a maximum of 1 application per crop cycle for cut flowers and 2 applications per crop cycle for other ornamental crops. Read label carefully for crop safety information.
	Pylon	13	20–41 mL/100 L	This product is for use on potted greenhouse ornamentals against twospotted spider mite. Do not use on cut flowers. Read label carefully for crop safety information.
	DDVP Smoke Fumigator	1B	1/300 m <sup>3</sup>	This product is for use on greenhouse ornamentals. Foliage must be dry.
	Insecticidal soaps		20 L	These products are for use on greenhouse ornamentals.
	Malathion 25 W	1B	2.5–5.0 kg 7.5 mL of product in sufficient water to cover 100 m <sup>2</sup> (750 mL product/ha)	These products are for use on greenhouse ornamentals.
	Malathion 85E			
Malathion 50 EC		1.5 L		
	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on greenhouse ornamentals as indicated on the label. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.
	Dibrom	1B	10 mL/100 m <sup>3</sup> (vapour treatment) 7–14 mL/100 m <sup>2</sup> (fog)	This product is for use on roses and cut flowers.

**Table 10-2.** Pesticide Registrations by Pest

Insects and Mites				
Pest	Pesticide	IRAC Insecticide Group Number*	Rate/1,000 L (exceptions noted)	Crops/Comments
Whitefly	Beleaf	9C	20 g/100 L	This product is for use on greenhouse ornamentals (including cut flowers) as a foliar spray. Do not apply more than 2 applications per crop cycle for whitefly.
	Distance	7C	45 mL/100 L	This product is for use on greenhouse ornamentals.
	Kontos	23	13–26 mL/100 L (foliar) 2.5–5.0 mL/100 L growing medium (drench)	This product is registered for control of whiteflies in greenhouse ornamentals using either a foliar spray or a drench. Use a maximum of 1 application per crop cycle for cut flowers and 2 applications per crop cycle for other ornamental crops. Read label carefully for crop safety information.
	Forbid	23	30 mL/100 L	This product is for use on greenhouse ornamentals. Read label carefully for crop safety information.
	Intercept	4A	Read label carefully	This product is for application as a drench on greenhouse ornamentals. Coconut growing medium may bind the active ingredient, making it unavailable to the plants.
	Tristar	4A	80–160 g (5–10 water soluble packs)	This product is for use on greenhouse ornamentals.
	Dyno-Mite 75 W	21A	284–425 g (10–15 PVA bags)	This product is for use on greenhouse ornamentals.
	Enstar EW	7A	80–240 mL/100 L	Use lower rate to prevent populations from reaching damaging levels and higher rates against larger populations.
	BotaniGard 22 WP BotaniGard ES	Biological	250–500 g/400 L 0.5–1.0 L/400 L	These products are biological insecticides for use on greenhouse ornamentals. They are compatible with biocontrol programs. Bio-Ceres reduces numbers of whiteflies in greenhouse ornamentals and is compatible with biocontrol programs.
	Bio-Ceres G WP Bio-Ceres G WB		2–4 g/L	
	NoFly	Biological	2–3 g/L	For control of whiteflies. Apply under conditions of high humidity and when temperature is <30°C. Compatible with Encarsia. Do not tank mix with fungicides.
	Insecticidal Soaps		20 L	These products are for use on greenhouse ornamentals.
	Endeavor	9B	10–20 g/ 100 L	This product is for use on greenhouse ornamentals. It provides suppression of whitefly.
	Thiodan 4 EC Thiodan 50 WP Thionex EC Thionex 50 W	2A	1.25–1.75 L 1.0–1.5 kg 1.25–1.75 L 1.0 kg	These products are for use on greenhouse ornamentals.
	DDVP Smoke Fumigator DDVP 20% EC	1B	1/300 m <sup>3</sup> 6 L	These products are for use on greenhouse ornamentals. When using the Smoke Fumigator, foliage must be dry.
	Dibrom	1B	10 mL/100 m <sup>3</sup> (vapour treatment) 7–14 mL/100 m <sup>2</sup> (fog)	This product is for use on roses and cut flowers.
	Dursban WSP Dursban T Pyrate 480 SC Pro Dursban Turf Lorsban 4E	1B	448 g (4 water soluble packs) 500 mL 500 mL 500 mL 500 mL	These products are for use on greenhouse ornamentals.
Malathion 25 W Malathion 85E	1B	2.5–5.0 kg 7.5 mL of product in sufficient water to cover 100 m <sup>2</sup> (750 mL product/ha)	These products are for use on greenhouse ornamentals.	
Malathion 50 EC		1.5 L		

**Table 10-2. Pesticide Registrations by Pest**

Insects and Mites				
Pest	Pesticide	IRAC Insecticide Group Number*	Rate/1,000 L (exceptions noted)	Crops/Comments
Whitefly	Orthene 75 SP	1B	637 g AI (850 g product)	This product is for use on greenhouse ornamentals as indicated on the label. Note that the label gives the rate based on Active Ingredient. The product rate equivalent is given in the previous column.
	Pounce 384 EC Ambush 50 EC	3A	26 mL/100 L 20 mL/100 L	These products are for use on labelled greenhouse ornamental crops.

\* See Table 8-5. *Insecticide Groups Based on Sites of Action* on page 109.

Diseases				
Disease	Pesticide	FRAC Fungicide Group Number*	Rate/1,000 L (exceptions noted)	Crops Comments
Bacterial leaf spots	Phyton 27	M1	10 mL/L	To be used as a foliar spray for <b>suppression</b> of <i>Pseudomonas</i> leaf spot on greenhouse ornamentals and <b>suppression</b> of <i>Xanthomonas</i> leaf spot on bedding plants including English ivy.
<i>Botrytis</i>	Decree 50 WDG	17	1.12 kg	This product is for use on greenhouse ornamentals using high volume or low volume equipment at 1.12 kg/ha.
	Daconil 2787 Daconil Ultrex	M5	2.5 L 1.5 kg	This product is for use on various bulb, flowering and foliage plants as listed on the label.
	Rovral 50 WP	2	1.0 kg	This product is for use on greenhouse ornamentals.
	Botran 75 WP	14	925 g 1.75 kg	Apply this rate as a foliar spray to rose, geranium, and chrysanthemum. This rate is for use on rose and hydrangea. Apply prior to lifting for shipment or storage; spray or dip stored plants.
	Compass 50 WG	11	7.5–30 g/100 L	This product is for <b>suppression</b> of <i>Botrytis</i> on greenhouse ornamentals including geranium, hosta and poinsettia.
	Senator 70 WP	1	650–850 g	This product is for use on greenhouse potted ornamentals.
	Maestro 80 DF Supra-Captan 80 WDG	M4	1.2–1.5 kg 1.2–1.5 kg	These products are for use on ornamental crops as listed on the label. Read the label carefully.
Microbial, biorational products	Phyton 27	M1	100–250 mL/100 L (foliar spray) 0.2–1.0 mL/L (cut flower dip)	This rate is for use on greenhouse ornamentals as listed on the label. This rate is for use as a post-harvest cut flower dip (see label).
	PreStop	NC	100–200 g/20 L	Mix and apply according to the label for use on greenhouse ornamental plants. This product provides disease <b>suppression</b> .
	Rhapsody ASO, Cease Biological Fungicide	44	1–2 L/100 L	These products are for disease <b>suppression</b> on greenhouse ornamentals as listed on the label.

**Table 10-2.** Pesticide Registrations by Pest

Diseases				
Disease	Pesticide	FRAC Fungicide Group Number*	Rate/1,000 L (exceptions noted)	Crops Comments
Downy mildew	Acrobat 50 WP	40	48 g/100 L	This product is for use on greenhouse ornamentals. Do not use on greenhouse cut flowers.
	Torrent 400SC	21	164–273 mL	This product is to be used as a foliar spray for control of downy mildews caused by <i>Peronospora</i> spp. in greenhouse ornamentals
	Micora, Revus	40	400–600 mL/ha	For use in vegetable bedding plants to control downy mildew ( <i>Bremia lactucae</i> ) and blue mould ( <i>Peronospora effusa</i> ) in lettuce.
	Revus		583 mL/ha	For use on greenhouse basil to control downy mildew
Erwinia	Phyton 27	M1	150–250 mL/100 L	This product is for use as a cutting dip on poinsettia.
Fusarium	Senator 70 WP	1	650–850 g	This product is for use on greenhouse potted ornamentals.
Microbial, biorational products	ZeroTol	NC	10 mL/L	Controls Fusarium leaf spot on Dracaena.
	Mycostop	NC	Read label carefully for rates	This product is for <b>suppression</b> of <i>Fusarium</i> on greenhouse ornamentals as a seed treatment, drench or spray. Follow label instructions carefully.
	RootShield Drench	NC	30–45 g/100 L	Apply to potting mix or as a drench to greenhouse ornamentals for disease <b>suppression</b> .
	RootShield Granules		600–750 g/m <sup>3</sup>	Incorporate this rate with the growing medium, for <b>suppression</b> of <i>Fusarium</i> in greenhouse ornamentals. Read the label carefully.
	Actinovate SP	NC	500 g	For <b>suppression</b> of <i>Fusarium</i> in cyclamen. Apply as a drench beginning early in the crop and repeat every 4-12 weeks.
	BioTak	44	400 g in 100 L applied to 175 m <sup>3</sup> of growing media	Apply to potting mix for disease <b>suppression</b> .
Leaf spots (including Alternaria, Athracnose, Ascochyta ray blight, Cercospora, Septoria, black spot of rose)	Taegro		Drench at a rate of 20 g/L	For partial <b>suppression</b> , apply to seedlings or newly rooted cuttings, making sure the root system is thoroughly soaked.
	Maestro 80 DF Supra Captan 80 WDG	M4	1.2–1.5 kg 1.2–1.5 kg	Read label carefully for listed crops and diseases.
	Daconil 2787 Daconil Ultrex	M5	2.5 L 1.5 kg	Read label carefully for listed crops and diseases.
	Senator 70 WP	1	500–850 g	Read label carefully for rates on different crops.
	ZeroTol	NC	10 mL/L	For <b>suppression</b> of Alternaria leaf spot on bedding plants and Schefflera
	Folpan 80 WDG	M4	1.25 kg	This product is for listed leaf spots on carnation, marigold, zinnia, chrysanthemum, iris and snapdragon.
Microbial, biorational products	Rhapsody ASO Cease Biological Fungicide	44	1.0–2.0 L	This product is for <b>suppression</b> of listed diseases on listed crops. Read label carefully.

**Table 10-2.** Pesticide Registrations by Pest

Diseases				
Disease	Pesticide	FRAC Fungicide Group Number*	Rate/1,000 L (exceptions noted)	Crops Comments
Powdery mildew	Nova 40 W	3	340 g	Apply to greenhouse ornamentals as listed on the label. Note that use of Nova may result in some growth regulation to treated plants.
	Pristine WG	7/11	73.5–120 g/100 L	Greenhouse grown bedding plants. Do not use on cut flowers.
	Compass 50 WG	11	7.5–20 g/100 L	This product is for control or <b>suppression</b> of powdery mildew on a number of greenhouse crops as listed on the label.
	GroTek Ascend Vaporized Sulphur (sulphur)	M2	0.4–32 g sulphur per application. (1 vaporizer per 100–1000 m <sup>2</sup> , 1–8 h/night, 2–7 nights/week; depending on crop and other conditions. See label.)	This product is for use in greenhouse ornamentals. Note that sulphur can be harmful to biocontrol programs.
	Phyton 27	M1	125–250 mL/100 L	This product is for use on greenhouse ornamentals as listed on the label.
	Senator	1	500–850 g	Read label carefully for rates on different crops.
	Meltatox 40 EC	5	2.5 L	This product is for use on container grown roses only. It is not for use on roses grown for cut flowers. See footnote in Table 10-1 page 132 on the registration of this product.
Microbial. biorational products	Actinovate SP	NC	500 g/1100 L 500 g/1000 L	Apply at transplant for <b>suppression</b> of powdery mildew in gerbera daisy. Read the label carefully. Use this product as a foliar spray for <b>suppression</b> of powdery mildew in verbena. Apply when conditions are conducive to disease development and repeat every 7-14 days.
	Miistop	NC	2.8–5.6 kg/ha	Use this product for control/ <b>suppression</b> of powdery mildew in greenhouse grown ornamentals and for suppression in bedding plants grown outdoors.
	Rhapsody ASO, Cease Biological Fungicide	44	1–2 L/100L	This product is for <b>suppression</b> of powdery mildew on greenhouse ornamentals as listed on the label.
	Cyclone	NC	1.5–2.5% dilution in water (1.5–2.5 L/100 L)	This product is for <b>suppression</b> of powdery mildew on greenhouse roses.
	Regalia Maxx	P	500–1,000 mL/400 L	For <b>suppression</b> of powdery mildew on greenhouse and outdoor grown ornamental plants.

**Table 10-2.** Pesticide Registrations by Pest

Diseases				
Disease	Pesticide	FRAC Fungicide Group Number*	Rate/1,000 L (exceptions noted)	Crops Comments
Root and crown rots Pythium/Phytophthora	Torrent 400SC	21	117–234 mL 234–468 mL 234–468 mL	This rate is for use as a drench to control <i>Pythium</i> in greenhouse ornamentals. See label for application volumes in containers. This rate is for drench applications to control <i>Phytophthora</i> crown and root rots in greenhouse ornamentals. See label for application volumes in containers. This rate is for foliar applications to control <i>Phytophthora</i> foliar blights in greenhouse ornamentals.
	Previcur N	28	1.5 mL/L	For <i>Pythium</i> , apply as a drench to greenhouse ornamentals at a rate of 100 mL/10 cm pot. For <i>Phytophthora</i> , apply 4.9 L mixed solution/m <sup>2</sup> . Apply so that the foliage does not get wet.
	Subdue Maxx	4	5 mL/m <sup>3</sup> 24–40 mL	Incorporate this rate with growing medium at seeding and transplanting. Apply this rate as a drench to bedding plants as listed on the label. The high rate is for use on gloxinia, but may cause phytotoxicity.
	Truban 25 EC	14	90–115 mL/380 L 115–240 mL	This rate is for use as a drench on bedding plants at 380 L/75 m <sup>2</sup> . Apply this rate as a drench to foliage plants and potted plants as listed on the label.
	Truban 30 WP		150–225 g/600 L 225–900 g/1200L 55–110 g/m <sup>3</sup>	Apply this rate as a drench to bedding plants. Apply this rate as a drench to foliage plants and potted plants as listed on the label. Incorporate this rate with dry growing medium.
	Aliette T&O	33	2.8 kg 360 g/380 L	This rate is for foliar application on greenhouse ornamentals. This rate is for drench applications on bedding plants. Has excellent activity against <i>Phytophthora</i> .
	Micora, Revus	40	400–600 mL/ha	For use in vegetable bedding plants to control late blight ( <i>Phytophthora infestans</i> ) in tomato
	ZeroTol	NC	10 mL/L	Use as a drench for <b>suppression</b> of <i>Phytophthora</i> root and stem rot on greenhouse ornamentals
	Folpan 50 WP Folpan 80 WDG	M4	2.0–2.25 kg 1.25–1.4 kg	Apply at planting for control of <i>Pythium</i> in poinsettias.
	Microbial, biorational products	RootShield Drench	NC	30–45 g/100 L
RootShield Granules		600–750 g/m <sup>3</sup>		
PreStop		NC	100–200 g/20 L	For <b>suppression</b> of <i>Pythium</i> , apply according to instructions as a growing medium mix or as a drench. Follow label instructions carefully.
Mycostop Biofungicide		NC	Read label carefully for rates	This product is for <b>suppression</b> of <i>Pythium</i> and <i>Phytophthora</i> on greenhouse ornamentals as a seed treatment, drench or spray. Follow label instructions carefully.
Rhapsody AS0, Cease Biological Fungicide		44	1–2 L/100 L	Apply as a drench for <b>suppression</b> of <i>Pythium</i> and <i>Phytophthora</i> in greenhouse ornamentals.
BioTak		44	400 g in 100L applied to 175 m <sup>3</sup> of growing media	Apply to potting mix for <b>suppression</b> of <i>Pythium</i> .
Phostrol		33	2.9–5.8 L 1.2–5.6 L	Use this rate as a foliar spray for <b>suppression</b> of <i>Phytophthora</i> on greenhouse ornamentals. Use this rate as a drench, applying 10 L of solution per m <sup>2</sup> for <b>suppression</b> of <i>Phytophthora</i> on greenhouse ornamentals.
Actinovate SP	NC		500 g	This product is for <b>suppression</b> of <i>Pythium</i> In petunia

Table 10-2. Pesticide Registrations by Pest

Diseases				
Disease	Pesticide	FRAC Fungicide Group Number*	Rate/1,000 L (exceptions noted)	Crops Comments
Root and stem rot Rhizoctonia	Compass 50 WG	11	3.8 g/100 L	Apply this product as a drench to greenhouse ornamentals at seeding, rooting or transplanting for control of <i>Rhizoctonia</i> .
	Rovral Wettable Powder, Rovral WDG	2	2 g in 5 L per m <sup>2</sup> applied as a drench	Apply this product for control of damping-off caused by <i>Rhizoctonia</i> .
Microbial, biorational products	Senator 70 WP	1	650–850 g	Apply this product to greenhouse potted ornamentals as a drench or directed spray to the growing medium.
	Maestro 80 DF, Supra-Captan 80 WDG	M4	3–6 g/L 1.25 kg 3.75–9.5 kg	Apply this rate as a cutting dip to labelled crops. Apply this rate as a drench to soil beds. Apply this rate as a bulb dip to labelled crops.
	ZeroTol	NC	10 mL/L	Controls <i>Rhizoctonia</i> aerial blight on bedding plants and Boston fern.
	PreStop	NC	100–200 g/20 L	Apply this product according to instructions as a growing medium mix or as a drench. For <b>suppression</b> of <i>Rhizoctonia</i> . Follow label instructions carefully.
	RootShield Drench  RootShield Granules	NC	30–45 g/100 L  60 g/L (bulb dip) 600–750 g/m <sup>3</sup>	Apply this rate to potting mix or as a drench to greenhouse ornamentals for <b>suppression</b> of <i>Rhizoctonia</i> . Use this rate as a bulb dip. Incorporate this rate with the growing medium for suppression of <i>Rhizoctonia</i> in greenhouse ornamentals. Read the label carefully.
	Rhapsody ASO, Cease Biological Fungicide	44	1–2 L/100 L	Apply as a drench for <b>suppression</b> of <i>Rhizoctonia</i> in greenhouse ornamentals.
	BioTak	44	400 g in 100 L applied to 175 m <sup>3</sup> of growing media	Apply to potting mix for disease <b>suppression</b> .
	Actinovate SP	NC	500 g	This product is for use as a drench for <b>suppression</b> of <i>Rhizoctonia</i> root and crown rot in geranium. Apply to the crop as early as possible and repeat every 4-12 weeks depending on disease pressure.
	Rust	Nova 40 W	3	250–540 g
Daconil 2787 Daconil Ultrex		M5	2.5 kg 1.5 kg	These products are for use on listed ornamental crops.
Sclerotinia	Quintozene 75%	14	1kg in enough water to make 10 L of solution	Use this product as a bulb dip for Sclerotinia bulb rot on bulbous iris, hyacinth, narcissus, tulip, crocus and mayflower. Dip bulbs in solution for 5 minutes.
	Contans WG	NC	4 kg/ha	This product is for control of Sclerotinia in cut flowers grown in single span greenhouse soil beds including chrysanthemum, salvia, snapdragons, dahlia, delphinium, zinnia, lily, celosia and lisianthus. Follow the label carefully.

\*See Table 8-6. Fungicide Groups Based on Sites of Action on page 110.

NC – Not classified

