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Insect Controls for the Greenhouse Industry

Michigan State University

Michigan State University Extension

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1 pages

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# Insect Controls for the Greenhouse Industry

Note: An X in the table below indicates insect and mite pests listed on the product label by the company selling the product. It does not guarantee that the insecticide products will provide adequate control of the pests listed on the label. An S indicates suppression only. For more information on how well insecticide products worked in research trials, contact a greenhouse Extension agent in your area.

Trade name	Common name	Formulation	Manufacturer	% Active	Signal word	Vegetables	Herbs & spices	HRG (hrp)	Refrigerated use	Preharvest	Aphids	Fungus gnats	Leafminers	Mealybugs	Scale insects	Spider mites	Thrips	Whiteflies	Class	Notes
Gnatrol	Bacillus thuringiensis israelensis	2.19 BIU/gal liquid	Valent	0.6	Caution	X		4.00			X								biological-bacterial spores	
BotaniGard ES	Beauveria	2.3 x10 <sup>10</sup> spores per gram powder	Whitmire Micro-Gen	11.3	Caution	X	X	4.00		X		X					X		biological-fungal spores	Apply at 5- to 10- day intervals. High insect population may warrant a spray interval of 2 to 5 days. Do not apply to poinsettias after bract formation. Do not apply on water-saturated soil. Do not apply through any type of irrigation system.
1100 Pyrethrum TR	pyrethrins	aerosol	Whitmire Micro-Gen	2.5	Warning	X	X	12.00		X	X		X	X	X	X	X	X	botanical insecticide	
Fulex Nicotine Fumigator	nicotine	smoke	Fuller Systems	14.0	Danger				X	X						X			botanical insecticide	Do not enter treatment area until one of the WPS ventilation criteria is met after the application has ended.
Pyreth-It	pyrethrins & PBO	liquid	Whitmire Micro-Gen	66.0	Caution	X		12.00		X							X	X	botanical insecticide	
Pyrethrum TR	pyrethrins	aerosol	Whitmire Micro-Gen	20.0	Caution	X	X	12.00		X	X		X	X	X	X	X	X	botanical insecticide	
Mesuroil 75-W	methiocarb	75 W (wetable powder)	Gowan	75.0	Danger			24.00	X	X					X	X			carbamate	No more than two applications per year per crop. Applications must be at least 10 days apart.
Precision	fenoxycarb	25 WSP (powder in a water-soluble packet)	Syngenta	25.0	Caution			12.00			X	X		X		X	X		carbamate	For control of soft scales, whiteflies and thrips, repeat applications every 7 to 14 days. Precision affects the larval stages of the pests.
Hexygon DF	hexythiazox	50 DF (dust-free soluble granules)	Gowan	50.0	Caution			12.00							X				carboxamide	Make only one application per cropping cycle or per year. Do not apply to stressed plants.
Cinnamite	cinnamaldehyde	liquid	Whitmire Micro-Gen	30.0	Caution	X	X	4.00			X								cinnamon oil extract	Make no more than two consecutive applications. After two applications, rotate to another chemistry. Do not apply to arbor, begonia, orchids or poinsettia after bract formation. Do not apply to stressed plants.
Floramite	bifenazate	50 WSP (powder in a water-soluble bag)	Crompton/ Uniroyal	50.0	Caution			4.00							X				diphenyl	
Endeavor	pymetrozine	50 WDG (water-dispersible granule)	Syngenta	50.0	Caution			12.00		X								X	feeding inhibitor	Stops the insects from feeding several hours after application. The insects may remain on the plant for 2 to 4 days after application, but damage will have ceased.
Avid 0.15 EC	abamectin	0.15 lb ai/gal liquid	Syngenta	2.0	Warning			12.00				X		X					fermentation product	For suppression of aphids, thrips and whiteflies, make 2 to 3 applications on 7-day intervals. Various strains of mites and insects have developed resistance.
Conserve SC Turf & Ornamental	spinosad	1 lb ai/gal liquid	Dow AgroScience	11.6	Caution			4.00				X		X	X				fermentation product	Regardless of the crop or pest being treated, do not apply Conserve SC more than 10 times in a 12-month period inside a greenhouse or a structure that can be altered to be closed or open.
Adept	diflubenzuron	25 WSP (powder in a water-soluble packet)	Crompton/ Uniroyal	25.0	Caution			12.00			X	X						X	insect growth regulator	Repeat applications can be made at 4- to 8- week intervals. Do not make more than 4 applications per crop. Do not apply to poinsettias, hibiscus or Reiger begonia.
Citation	cyromazine	75 WSP (powder in a water-soluble packet)	Syngenta	75.0	Caution			12.00			X	X							insect growth regulator	Repeat applications at 7-day intervals or as needed. This chemical will not control the adult stage of the insect pest. Make no more than 3 consecutive applications of this product on a crop.
Distance	pyriproxyfen	0.86 lb ai/gal liquid	Valent	11.2	Caution			12.00		S	X		S	X				X	insect growth regulator	In a few instances, malformation of roots and newly expanded leaves has been observed on certain poinsettia varieties (i.e., Freedom Bright, Freedom Bright Red) following a drench application. The malformation of leaves was permanent.
Enstar II	kinoprene	5 lb ai/gal liquid	WellMark	65.1	Warning			4.00		X	X		X	X				X	insect growth regulator	Slight to moderate injury has occasionally been noted on some blooms under certain conditions. Do not use on poinsettia after bract formation.
Pedestal	novaluron	0.83 lb ai/gal liquid	Crompton/ Uniroyal	10.0	Caution			12.00				X						X	insect growth regulator	Do not use Pedestal more than once within each generation cycle. Do not apply to poinsettias.
Preclude TR	fenoxycarb	aerosol	Whitmire Micro-Gen	4.8	Caution			12.00		X	X	X	X	X	X	X	X	X	insect growth regulator	Keep greenhouse closed for 4 hours after treatment. Apply during the early evening for best results.
TetraSan 5 WDG	etoxazole	5 WDG (water-dispersible granules)	Valent	5.0	Caution			12.00							X				miticide-oxazoline	
Akari SSC	fenpyroximate	0.42 lb ai/gal liquid	Sepro	5.0	Warning			12.00							X				miticide-pyrazole	No more than two applications per growing season or per crop cycle. Do not apply at lower than suggested rate.
Sanmite	pyridaben	75 WSP (powder in a water-soluble packet)	Scotts-Sierra	75.0	Warning			12.00							X			X	miticide-pyridazinone	Do not use Sanmite in successive miticide applications. Do not apply this product through any type of irrigation system. Use Sanmite in rotation with other treatments having different modes of action.
Pylon miticide	chlorfenapyr	2 lb ai/gal liquid	Olympic	21.4	Caution			12.00							X				miticide-pyrrol	Do not apply more than 2 times consecutively or 3 times during a growing season.
Ovation SC	clofentezine	4 lb ai/gal liquid	Scotts-Sierra	42.0	Caution			12.00							X				miticide-tetrazine	Use only once per crop cycle.
Azatin XL	azadirachtin	0.27 lb ai/gal liquid	Olympic	3.0	Caution	X	X	4.00		X	X	X					X	X	neem extract	Repeat applications every 7 days or as needed.
Ornazin 3% EC	azadirachtin	0.27 lb ai/gal liquid	Sepro	3.0	Warning	X	X	12.00		X	X	X	X	X	X	X	X	X	neem extract	
Triact 70	neem oil extract	5.46 lb ai/gal liquid	Olympic	70.0	Caution			4.00		X				X	X		X	X	neem extract	Do not apply to impatiens flowers, fuchsia, hibiscus and some rose flowers. Use care on plants with tender tissue. Material also has fungicidal properties.
Marathon 1% G	imidacloprid	1 G (granular)	Olympic	1.0	Caution			12.00		X	X	X	X	X			S	X	nicotinyl	This material is applied to the soil for systemic uptake by the plants. Do not apply to water-saturated soils. To prevent leaching the material out of the pots, do not overwater.
Marathon 60 WP	imidacloprid	60 WSP (powder in a water-soluble packet)	Olympic	60.0	Caution			12.00		X	X	X	X	X			S	X	nicotinyl	This material is applied as a drench to the soil for systemic uptake by the plants. Do not allow the leachate to run out of the pots for the first 10 days.
Marathon II	imidacloprid	2 lb ai/gal liquid	Olympic	21.4	Caution			12.00		X		X	X				S	X	nicotinyl	Do not apply to waterlogged soils. Do not allow leachate to run out of the pots for the first 10 days after application. May be applied foliarly, as a drench, or in ebb and flow watering systems.
Ultra-Fine Oil	paraffinic oil	7.1 lb ai/gal liquid	Whitmire Micro-Gen	98.8	Caution	X	X	4.00		X	X	X	X	X	X	X	X	X	oil	Do not spray plants that are under stress. Do not apply during times of high temperatures. Spray no more than four consecutive sprays. Do not exceed more than two sprays a week. Thorough coverage is necessary for maximum efficacy.
Fulex Thiodan Insecticidal Smoke	endosulfan	smoke	Fuller Systems	15.0	Danger						X							X	organochlorine	Affects only adult whitefly. Can be used on tomatoes or cucumbers as long as the application-to-harvest interval is more than 7 days. Do not enter treatment area until one of the WPS ventilation criteria is met after the application has ended.
1300 Orthene TR	acephate	aerosol	Whitmire Micro-Gen	12.0	Caution			24.00		X	X	X	X	X	X	X	X	X	organophosphate	
DuraGuard ME	chlorpyrifos	1.66 lb ai/gal liquid	Whitmire Micro-Gen	20.0	Caution			24.00	X	X	X	X	X	X	X	X	X	X	organophosphate	
Fulex DDVP	dichlorvos	smoke	Fuller Systems	12.0	Danger				X	X					X			X	organophosphate	Do not enter treatment area until one of the WPS ventilation criteria is met after the application has ended.
Orthene Turf, Tree & Ornamental Spray	acephate	75 WSP (water-soluble packet)	Valent	75.0	Caution			24.00		X				X		X	X	X	organophosphate	Phytotoxicity has occurred in the following foliage plants: <i>Blechnum gibbum</i> , <i>Cissus antarctica</i> , <i>Ficus triangularis</i> , <i>Fittonia verschaffelii</i> , <i>Maranta leuconeura kerchoveana</i> , <i>Pachystachya lutea</i> , <i>Plectranthus australis</i> , <i>Polypodium aureus</i> , <i>Polystichum</i> , <i>Pteris ensiformis</i> , <i>Tolmiea menziesii</i> .
Orthene Turf, Tree & Ornamental Spray 97	acephate	97 PE (water-soluble pellet)	Valent	97.0	Caution			24.00		X				X		X	X	X	organophosphate	Phytotoxicity has occurred in the following foliage plants: <i>Blechnum gibbum</i> , <i>Cissus antarctica</i> , <i>Ficus triangularis</i> , <i>Fittonia verschaffelii</i> , <i>Maranta leuconeura kerchoveana</i> , <i>Pachystachya lutea</i> , <i>Plectranthus australis</i> , <i>Polypodium aureus</i> , <i>Polystichum</i> , <i>Pteris ensiformis</i> , <i>Tolmiea menziesii</i> .
Duraplex TR	chlorpyrifos & cyfluthrin	aerosol	Whitmire Micro-Gen	9.6	Warning			24.00	X	X	X		X	X	X	X	X	X	organophosphate & synthetic pyrethroid	For best results, apply during early evening.
Insecticidal Soap 49.52CF	potassium salts of fatty acids	liquid	Olympic	49.5	Warning	X	X	12.00		X				X	X	X	X	X	soap	Use product up to three times per week. Do not spray when plants are stressed or during the heat of the day. Do not use on bleeding heart, jade plant, lantana, lilies or sweet peas.
Astro	permethrin	3.2 lb ai/gal liquid	FMC	36.8	Caution			12.00		X	X	X	X					X	synthetic pyrethroid	
Attain TR	bifenthrin	aerosol	Whitmire Micro-Gen	4.0	Warning			12.00		X	X	X	X	X	X	X	X	X	synthetic pyrethroid	
Decathlon 20 WP	cyfluthrin	20 WP (wetable powder)	Olympic	20.0	Caution			12.00		X	X			X			X	X	synthetic pyrethroid	
Mavrik Aquaflo	fluvalinate	2 lb ai/gal liquid	WellMark	22.3	Caution			12.00		X					X	X	X	X	synthetic pyrethroid	
Scimitar GC Insecticide	lambda-cyhalothrin	0.88 lb ai/gal liquid	Syngenta	9.7	Caution			24.00	X	X		X		X				X	synthetic pyrethroid	
Talstar Nursery Flowable	bifenthrin	2/3 lb ai/gal liquid	FMC	7.9	Caution			12.00		X	X	X	X		X	X	X	X	synthetic pyrethroid	
Talstar Flowable	bifenthrin	2/3 lb ai/gal liquid	FMC	7.9	Caution			12.00	X	X	X	X	X		X	X	X	X	synthetic pyrethroid	
Tame 2.4 EC Spray	fenproprathrin	2.4 lb ai/gal liquid	Valent	30.9	Warning			24.00	X	X			X		X		X	X	synthetic pyrethroid	Use in rotation with other classes of insecticides. Phytotoxicity has occurred on chrysanthemum and roses with open flowers and on poinsettia after bract formation.

## PESTICIDE EMERGENCY INFORMATION

For any type of an emergency involving a pesticide, immediately contact the following emergency information centers for assistance. Current as of April 2003

### Human Pesticide Poisoning

**POISON CONTROL**  
From anywhere in the United States, call  
**1 - 800 - 222 - 1222**

### Special Pesticide Emergencies

<b>Animal Poisoning</b> Your veterinarian:  Phone No. _____ or National Animal Poison Control Center (\$45 consultation fee per case) <b>*1-800-548-2423</b>	<b>Pesticide Fire</b> Local fire department:  Phone No. _____ and Operations Division, Michigan State Police: <b>*(517) 336-6605</b>	<b>Traffic Accident</b> Local police department or sheriff's department:  Phone No. _____ and MDEQ Pollution Emergency Alerting System (PEAS): <b>*1-800-292-4706</b> also <b>*1-800-405-0101</b> Michigan Department of Agriculture Spill Response	<b>Environmental Pollution</b> District Michigan Department of Agriculture Environmental Quality (MDEQ) Office Phone No.  Phone No. _____ and MDEQ Pollution Emergency Alerting System (PEAS): <b>*1-800-292-4706</b> also <b>*1-800-405-0101</b> Michigan Department of Agriculture Spill Response	<b>Pesticide Disposal Information</b> Michigan Clean Sweep, Michigan Department of Agriculture Environmental Stewardship Division. Monday - Friday: 8 a.m.-5 p.m. <b>(517) 241-0235</b>  <b>National Pesticide Information Center</b> Provides advice on recognizing and managing pesticide poisoning, toxicology, general pesticide information and emergency response assistance. Funded by EPA, based at Oregon State University 7 days a week; excluding holidays 6:30 a.m. - 4:30 p.m. Pacific Time Zone <b>1-800-858-7378</b> <b>FAX: 1-541-737-0761</b>
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Revised by Carolyn J. Randall, Pesticide Education Program, Michigan State University Extension

## Insect Controls for the Greenhouse Industry

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By David R. Smitley and Terrance W. Davis, Department of Entomology, Michigan State University

The Michigan Department of Agriculture (MDA) requires that chemicals used in the greenhouse must have Worker Protection Standards and list "greenhouse" or "glasshouse" on the label in a location other than the "Agricultural Use Requirements" box.

The MDA has also ruled that if the site, host plant and chemical are listed on the label, insects not on the label may be treated. Any other use inconsistent with the label can lead to injury of crops, humans, animals and the environment, and can lead to fines and/or condemnation of the crop.

"Vegetables" include any plants being used as food or that will be transplanted as food crops later.

Always check the label for updated information. Labels change often. Some chemicals listed in this bulletin may be dropped by the manufacturer or distributor sometime after publication. If you have questions about the legality and/or the registration status of pesticides, contact your county Extension office, pesticide dealer or manufacturer.

Do not apply chemicals to plants that are stressed (by high temperature, high humidity or water stress) because this increases the possibility of phytotoxicity. Always treat a small portion of plants of each variety with any new chemical (or combination of chemicals) and check them for damage 7 days later before treating the whole crop. Chemicals that may not cause phytotoxicity when applied by themselves may cause damage when mixed together.

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