



Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry¹

James F. Price, Curtis Nagle and Elzie McCord, Jr.²

Farm sales of floriculture crops in Florida were \$800 million in 2006, nationally second only to California³. These products are valued for their aesthetic qualities and consumers do not tolerate detectable insect and mite damage. As a result, growers practice intensive pest management to assure high quality and maximum value. While their management programs utilize biological, physical, regulatory, and cultural control components, growers most often rely on chemical remediation when damaging arthropods are present on floricultural crops.

Florida floricultural producers have more than 178 commercial pesticide products available to manage arthropod and gastropod pests (slugs and snails) derived from 86 chemical and biological active ingredients. The Ornamentals and Turf sections of the Florida Insect Management Guide offers assistance to growers in selecting products to

include in pest management programs for various floricultural commodities. This publication adds information not available in the crop-specific guides.

Currently available commercial products registered for arthropod and gastropod management in Florida's commercial production sites are presented in Table 1. The list includes active ingredients and their IRAC⁴ mode of action codes, product trade names, registrants, restricted re-entry periods (REI), precautionary signal words, and an indication of restricted use status for each product to enhance the appropriate selection and safe use of the pesticides. Other products containing the active ingredients presented in Table 1 may also be available. For more detailed information about the products, electronic versions of specimen labels are usually available at the Websites of CDMS (<http://www.cdms.net/manuf/default.asp>), C&P Press (<http://www.greenbook.net/>) or the affiliated manufacturer.

1. This document is ENY-679 (IN472), one of a series of the Entomology & Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Published: December 2003. Revised: November 2007. For more publications related to horticulture/agriculture, please visit the EDIS Website at <http://edis.ifas.ufl.edu>.

2. James F. Price, associate professor, Curtis Nagle, biologist, University of Florida, Entomology and Nematology Department, Gulf Coast Research and Education Center, Cooperative Extension Service, Institute of Food and Agricultural Sciences, Wimauma, FL 33598; and Elzie McCord, Jr. associate professor of biology, Division of Natural Sciences, New College of Florida, Sarasota, FL 34232.

3. Floriculture Crops 2006 Summary, U.S.D.A., National Agricultural Statistics Service, <http://www.nass.usda.gov>, Sp Cr 6-01(07), July 2007.

4. Insecticide Resistance Action Committee (IRAC) mode of action codes are from the IRAC Mode of Action Classification version 5.3 available at <http://www.irac-online.org/>.

The use of trade names in this publication is solely for the purpose of providing specific information. UF/IFAS does not guarantee or warranty the products named, and references to them in this publication does not signify our approval to the exclusion of other products of suitable composition. All chemicals should be used in accordance with directions on the manufacturer's label. Use pesticides safely. Read and follow directions on the manufacturer's label.

The pesticide's label communicates the lawful use of the product and must be read, understood and followed. The label contains important limitations that are not presented in Table 1, such as dosages and restrictions on the numbers of applications. When using a pesticide for the first time, it is important to test the product first on a small portion of the crop and check for any possible detrimental effects over time, such as leaf distortion and plant stunting. This information is provided in order to increase profitability of floriculture and enhance the safe and environmentally sound use of the pesticides now available.

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
1,3-dichloropropene (no code)	Telone II	Dow AgroSciences	5 days	Warning	X
1,3-dichloropropene (no code) & chloropicrin (8B)	Telone C-17 Telone C-35	Dow AgroSciences	5 days	Danger	X
Abamectin (6)	Avid 0.15 EC	Syngenta Crop Protection	12	Warning	
	Lucid	Rotam USA	12	Warning	
Acephate (1B)	1300 Orthene TR	Whitmire Micro-Gen	24	Caution	
	Acephate 97UP	United Phosphorus	24	Caution	
	Acephate Pro 75	Micro-Flo	24	Caution	
	Orthene Turf, Tree & Ornamental Spray Orthene Turf, Tree & Ornamental Spray 97	Valent USA	24	Caution	
	Precise	Pursell Technologies	12	Caution	
Acephate (1B) & fenpropathrin (3)	Tame/Orthene TR	Whitmire Micro-Gen	24	Warning	
Acequinocyl (20B)	Shuttle 15 SC	Arysta LifeScience	12	Caution	
Acetamiprid (4A)	TriStar 30 SG TriStar 70 WSP	Cleary Chemical	12	Caution	
Azadirachtin (18B)	Azatin XL	OHP	4	Caution	
	Azatrol EC	PBI Gordon	4	Caution	
	Ornazin 3% EC	AMVAC Chemical	12	Warning	
<i>Bacillus thuringiensis</i> <i>aizawai</i> strain ABTS-1857 (11B1)	XenTari DF	Valent BioSciences	4	Caution	
<i>Bacillus thuringiensis</i> <i>aizawai</i> strain GC-91 (11B1)	Jackpot WP	Certis USA	4	Caution	

Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry

3

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
<i>Bacillus thuringiensis israelensis</i> strain 65-52 (11A1)	Gnatrol	Valent BioSciences	4	Caution	
<i>Bacillus thuringiensis kurstaki</i> (11B2)	Deliver Javelin WG	Certis USA	4	Caution	
<i>Bacillus thuringiensis kurstaki</i> ABTS-351 (11B2)	Biobit HP Dipel Pro DF Foray 76B	Valent BioSciences	4	Caution	
<i>Bacillus thuringiensis kurstaki</i> EG2348 (11B2)	Condor	Certis USA	4	Caution	
<i>Bacillus thuringiensis kurstaki</i> EG7826 (11B2)	Lepinox WDG	Certis USA	12	Warning	
<i>Bacillus thuringiensis kurstaki</i> EG7841 (11B2)	Crymax	Certis USA	4	Caution	
<i>Beauveria bassiana</i> ATCC 74040 (no code)	Naturalis L	Troy Biosciences	4	Caution	
<i>Beauveria bassiana</i> Strain GHA (no code)	Botanigard 22WP Botanigard ES Mycotrol O	Emerald Bio Agriculture	4	Caution	
Bifenazate (25)	Floramite	Chemtura	4	Caution	
	Floramite SC	Chemtura	12	Caution	
Bifenthrin (3)	Attain TR	Whitmire Micro-Gen	12	Danger	
	Attain TR Micro	Whitmire Micro-Gen	12	Warning	
	BifenthrinPro Multi-Insecticide Golf Course/Nursery	Micro-Flo	12	Caution	X
	OnyxPro	FMC	12	Warning	X
	Talstar Flowable EPA Reg. No. 279-3105	FMC	12	Caution	
	Talstar Nursery Flowable	FMC	12	Caution	X
	Talstar Nursery Granular	FMC	12	Caution	
	TalstarOne Multi-Insecticide	FMC	12	Caution	
Buprofezin (16)	Talus Insect Growth Regulator	SePRO	12	Caution	
	Talus 40SC	SePRO	12	Warning	
Capsaicin & other capsaicinoids (no code)	Hot Pepper Wax	Hot Pepper Wax	0	Caution	

Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry

4

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
Carbaryl (1A)	AllPro 10% Carbaryl Dust AllPro Carbaryl 50 WP	Value Garden Supply	12	Caution	
	Carbaryl 4L	Drexel Chemical	12	Caution	
	Carbaryl 80S	Drexel Chemical	12	Warning	
	Cutworm & Cricket Bait	Southern Agricultural Insecticides	12	Caution	
	Sevin 80 WSP	Bayer	12	Warning	
	Sevin SL	Bayer	12	Caution	
Carbofuran (1A)	Furadan 4F	FMC	48	Danger	X
Chlorfenapyr (13)	Pylon	OHP	12	Caution	
Chlorpyrifos (1B)	Chlorpyrifos G-Pro2	Etigra	24	Warning	X
	Chlorpyrifos Pro 2	Micro-Flo	24	Warning	X
	Duraguard ME	Whitmire Micro-Gen	24	Caution	X
	Dursban 50W	Dow AgroSciences	24	Danger	X
	QUALI-PRO Chlorpyrifos 4E	FarmSaver	24	Warning	X
Chlorpyrifos (1B) & Cyfluthrin (3)	Duraplex TR	Whitmire Micro-Gen	24	Warning	X
Clofentezine (10A)	Ovation SC	Scotts-Sierra Crop Protection	12	Caution	
Clothianidin (4A)	Celero 16 WSG	Arysta LifeScience	12	Caution	
Cryolite (9A)	Kryocide	Cerexagri	12	Caution	
	Prokil Cryolite 96	Gowan	12	Caution	
Cyfluthrin (3)	Decathlon 20WP	OHP	12	Caution	
Cyfluthrin (3) & imidacloprid (4A)	Discus	OHP	12	Caution	
Cyromazine (17)	Citation	Syngenta Crop Protection	12	Caution	
Deltamethrin (3)	Deltagard GC 5 SC	Bayer Environmental Science	12	Caution	X
Diazinon (1B)	Diazinon 50W	Makhteshim Agan North America	7 or 2 days (see label)	Caution	X
	Diazinon AG500 EPA Reg. No. 66222-9	Makhteshim Agan North America	12	Caution	X
	Diazinon AG500 EPA Reg. No. 5905-248	Helena Holding	12	Caution	X
	Diazinon AG600 WBC	Loveland Products	7 or 2 days (see label)	Caution	X
Dicofol (unknown)	Kelthane 50 WSP	Dow ArgoSciences	48	Danger	
Diflubenzuron (15)	Adept Insect Growth Regulator Dimilin SC Flowable	Chemtura	12	Caution	
	Dimilin 25W Insect Growth Regulator	Chemtura	12	Caution	X

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
Dimethoate (1B)	5 Lb. Dimethoate	Helena Holding	48	Danger	
	AllPro Cygon 2E	Value Garden Supply	48	Warning	
	Dimate 4E	Agrilience	48	Warning	
	Dimethoate 4 E	Cheminova	48	Warning	
	Dimethoate 267	Micro-Flo	48	Warning	
	Dimethoate 400	Loveland Products	48	Warning	
Dinotefuran (4A)	Safari 20SG	Valent USA	12	Caution	
Endosulfan (2A)	Endosulfan 3 EC	Drexel Chemical	24	Danger	
	Thionex 3EC Thionex 50W	Makhteshim-Agan North America	24	Danger	
Ethoprop (1B)	Mocap EC	Bayer CropScience	48 (See label)	Danger	X
Etoxazole (10B)	TetraSan 5 WDG	Valent USA	12	Caution	
Fenbutatin-oxide (12B)	ProMite 50WP	SePRO	48	Danger	X
Fenoxycarb (7B)	Award Fire Ant Bait	Syngenta Crop Protection	12	Caution	
	Preclude TR	Whitmire Micro-Gen	12	Caution	
Fenpropathrin (3)	Tame 2.4EC	Valent USA	24	Warning	X
Fenpyroximate (21)	Akari 5SC	SePRO	12	Warning	
Fonicamid (9C)	Aria	FMC	12	Caution	
<i>Heterorhabditis indica</i> (no code)	Symbion-South	Integrated BioControl Systems	0	Caution	
<i>Heterorhabditis megidis</i> (no code)	Nemasys H	Becker Underwood	0	None	
Hexythiazox (10A)	Hexygon DF	Gowan	12	Caution	
Hydramethylnon (20A)	Amdro Pro Fire Ant Bait	BASF	12	Caution	
Imidacloprid (4A)	Marathon 1% Granular Marathon 60 WP Marathon II	OHP	12	Caution	
	Provado 1.6 Flowable	Bayer CropScience	12	Caution	
Iron phosphate (no code)	Monterey Sluggo-Ag	Lawn & Garden Products	0	Caution	
Kaolin (no code)	Surround WP	Engelhard	4	Caution	
Lambda-cyhalothrin (3)	Lambda-Cy EC	United Phosphorous	24	Warning	
	Scimitar GC	Syngenta Crop Protection	24	Caution	X
Malathion (1B)	Gowan Malathion 8 F	Gowan	12	Caution	
	Malathion 5	Agrilience	12	Warning	
	Malathion 5 EC	Micro-Flo	12	Warning	

Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry

6

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
Metaldehyde (no code)	Deadline Bullets Deadline M-Ps Mini Pellets Durham Granules 3.5 Durham Granules 7.5 Trails End 3.5 Trails End LG	AMVAC Chemical	12	Caution	
	OR-CAL Snail & Slug Bait	OR-CAL	12	Caution	
	Slug-Fest All Weather Formula	OR-CAL	24	Warning	
Metam-sodium (no code)	Vapam HL	AMVAC Chemical	48	Danger	
	Metam CLR 42%	UCB Chemicals	48	Danger	
Methidathion (1B)	Supracide 2E	Gowan	48 hrs or 14 days (see label)	Danger	X
	Supracide 25-W	Gowan	48 hrs or 14 days (see label)	Warning	X
Methiocarb (1A)	Mesuroil 75-W	Gowan	24	Danger	X
	Mesuroil Pro	Gowan	24	Caution	X
Methyl Bromide (8A) & Chloropicrin (8B)	98-2 Contains 2% Chloropicrin 67-33 Preplant Soil Fumigant 75-25 Preplant Soil Fumigant	Hy Yield-Bromine	48 See label	Danger	X
Naled (1B)	Dibrom 8 Emulsive	AMVAC Chemical	Variable (See label)	Danger	
Neem Oil (no code)	Triact 70	OHP	4	Caution	
Novaluron (15)	Pedestal	Chemtura	12	Caution	
Oxydemeton-methyl (1B)	MSR Spray Concentrate	Gowan	48 or 72 See label	Warning	X
Permethrin (3)	Ambush 25W	AMVAC Chemical	12	Warning	X
	Astro	FMC	12	Caution	
	Perm-Up 25WP	United Phosphorus	12	Warning	X
	Perm-Up 3.2EC	United Phosphorus	12	Caution	X
	Permethrin 3.2 EC	Loveland Products	12	Caution	X
	Permethrin E-Pro	Etigra	12	Caution	
	Pounce 25 WP	FMC	12	Warning	X
Pheromone (no code)	Stirrup M	Troy Biosciences	12	Caution	
Phosmet (1B)	Imidan 70-W	Gowan	24	Warning	

Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry

7

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
Polyhedral Occlusion Bodies (POBs) of the nuclear polyhedrosis virus of <i>Spodoptera exigua</i> (no code)	Spod-X LC	Certis USA	4	Caution	
Potassium Salts of Fatty Acids (no code)	AllPro Insecticidal Soap	Value Garden Supply	12	Caution	
	M-Pede	Dow AgroSciences	12	Warning	
Propargite (12C)	Ornamite	Chemtura	7 days (See label)	Danger	
Pymetrozine (9B)	Endeavor	Syngenta Crop Protection	12	Caution	
Pyrethrins (3)	PyGanic Crop Protection EC 1.4	McLaughlin Gormley King	12	Caution	
	PyGanic EC 5.0	McLaughlin Gormley King	12	Warning	
Pyrethrins (3) & Piperonyl Butoxide (27A)	1100 Pyrethrum TR	Whitmire Micro-Gen	12	Warning	
	EverGreen EC 60-6	McLaughlin Gormley King	12	Caution	
	Pyrenone Crop Spray	Bayer Environmental Science	12	Caution	
	Pyreth-It Pyrethrum TR Micro	Whitmire Micro-Gen	12	Caution	
Pyrethrins (3), Piperonyl Butoxide (27A) & Silicon Dioxide (no code)	Diatect II Multipurpose	Diatect International	12	Caution	
Pyrethrins (3), Rotenone (21) & associated resins	Pyrellin E.C.	Webb Wright	12	Caution	
Pyridaben (21)	Sanmite	Gowan	12 See label	Warning	
Pyriproxyfen (7C)	Distance Fire Ant Bait Distance Insect Growth Regulator	Valent USA	12	Caution	
Refined Petroleum Distillate (no code)	JMS Stylet-Oil	JMS Flower Farms	4	Caution	
	Saf-T-Side Spray Oil	Brandt Consolidated	4	Caution	
	Ultra-Fine Oil	Whitmire Micro-Gen	4	Caution	
S-Kinoprene (7A)	Enstar II	Wellmark International	4	Warning	
S-Methoprene (7A)	Extinguish Professional Fire Ant Bait	Wellmark International	4	Caution	
Spinosad (5)	Conserve SC Entrust GF-120 NF Naturalyte Fruit Fly Bait Justice Fire Ant Bait	Dow AgroSciences	4	Caution	
Spiromesifen (23)	Judo	OHP	12	Caution	
<i>Steinernema carpocapsae</i> (no code)	Millenium	Becker Underwood	Not stated	Caution	

Table 1. Insecticides, Miticides and Molluscicides Available to Florida's Floricultural Industry.

Active Ingredient (Mode of Action Code) ^a	Trade Name ^b	Registrant	REI (Hrs) ^c	Signal Word	RUP ^d
<i>Steinernema feltiae</i> (no code)	Nemasys	Becker Underwood	Not stated	None	
<i>Steinernema kraussei</i> (no code)	Nemasys L	Becker Underwood	Not stated	None	
<i>Steinernema riobrave</i> (no code)	BioVector	Becker Underwood	Not stated	None	
Sulfur (no code)	Microthiol DISPERSS Micronized Wettable Sulfur	Cerexagri	24	Caution	
	Suffa	Drexel Chemical	24	Caution	
Tau-Fluvalinate (3)	Mavrik Aquaflow	Wellmark International	12	Caution	
Thiamethoxam (4A)	Flagship 25WG	Syngenta Crop Protection	12	Caution	

^a Insecticide Resistance Action Committee (IRAC) mode of action classification codes version 5.3.

^b Usually only one example of each formulation is given. There may be other products available that are as effective as those listed.

^c REI = Re-entry Interval or period between application and earliest normal entry into treated area.

^d RUP indicates Restricted Use Pesticide for which an applicator's license is required.