

Insecticides and Miticides for the Treatment of Orchid Pests

by Sue Bottom, sbottom15@gmail.com

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Chemical Name Active Ingredient	Application Rate (tsp/gal)	Spray or Drench?	Mobility	Product Cost	IRAC MoA Group	Scale	Mealybugs	Thrips	Whiteflies	Aphids	Mites	Cater- pillars
Commonly Available Pesticides												
Bayer Products Imidacloprid varies	6 @ 1.47% 12 @ 0.74%	Spray Drench	Xylem Mobile		4A	x	x	suppression	x	x	if fluvalinate present	
Cygon 2E Dimethoate 23%	1 - 2	Spray	Xylem Mobile		1B	x	x	x	x	x	x	
Malathion 50% EC Malathion 50% EC	1 - 4	Spray	Contact		1	x	x	x	x	x		
Orthene Powder Acephate 97%	1	Spray Drench	Locally Systemic		1	x	x	x	x	x		
Orthenex Acephate, Fenbutatin oxide	6	Spray	Locally Systemic		1	x	x	x	x	x	suppression	
Permetrol Permethrin 10%	1.3	Spray	Contact		3	x	x	x	x	x	x	
Ultra Pure Oil Paraffinic Oil	6 - 7.5	Spray	Contact		16	x	x	x	x		x	
Thuricide Bacillus Thuringensis 1	7.5	Spray Drench	Contact		11							x
Specialty Pesticides												
Akari 5 SC Fenpyroximate 5%	0.96 - 1.4	Spray	Contact	\$145 / quart	21A		suppression		suppression		all mites but Tenuipalpidae	
Aria Flonicamid 50%		Spray	Locally Systemic	\$150 / 160 g	9C	x	x	x	x	x		
Avid 0.15 EC Abamectin 2.0%	0.24-mites 0.48-thrips	Spray	Locally Systemic	\$93 / cup	6			suppression	suppression	suppression	all 4 groups of mites	
Conserve Spinosad 11.6%	0.6-thrips 1.2-mites	Spray	Locally Systemic	\$144 / quart	5			x				x
Decathlon 20 WP Cyfluthrin 20%	0.18-0.27	Spray	Contact	\$90 / cup	3	crawler stage	x	x	x	x		x
Flagship 25 WG Thiamethoxam 25%	0.5 - 1	Spray Drench	Xylem Mobile	\$145 / 8 wt oz	4A	x	x	x	x	x		x
Floramite SC Bifenazate 22.6%	0.24 - 0.48	Spray	Contact	\$97 / quart	25						spider mites	
Kontos spirotetramat 22.4%	.1 - 0.2	Spray Drench	Amphi- mobile	\$170 / 250 ml	23	crawler stage	x	suppression	x	x	all mites but Tenuipalpidae	
Marathon II Imidacloprid 21.4%	0.10	Spray Drench	Xylem Mobile	\$110 / 250 ml	4A	x	x	suppression	x	x		

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Specialty Pesticides (continued)												
Marathon 60 WP Imidacloprid 60%	0.16	Spray Drench	Xylem Mobile	\$53 / 100 gm	4A	x	x	suppression	x	x		
Mavrik Aqua Flow Fluvalinate 22.3%	0.24 - 0.6	Spray	Contact	\$115 / quart	3		x	x	x	x	suppression	x
Merit 75 WP Imidacloprid 75%	0.06	Spray Drench	Xylem Mobile	\$35 / 2 wt oz	4A	x	x		x	x		
Overture 35 WP Pyridalyl 35%	2.1	Spray	Locally Systemic	\$107 / 1 lb	Unknown			x				x
Safari 20 SG Dinotefuran 20%	0.5 - 1 1.5 - 3.0	Spray Drench	Xylem Mobile	\$115 / 1.5 cups	4A	x	x	suppression	x	suppression		
Sanmite 75 WP Pyridaben 75%	1 - 1.5	Spray	Contact	\$110 / 4 wt oz	21A				x		all mites but Eriophyid	
Shuttle Acequinocyl 15.8%	0.38 - 0.77	Spray	Contact	\$140 / quart	20B						all mites but Tarsonemid	
Sirocco Bifenazate 43.2%, Aba	0.18 - 0.36	Spray	Locally Systemic	\$190 / cup	6, unclassified			suppression	suppression	suppression	all mites but Tenuipalpidae	
Sultan Cyflumetofen 18.7%	0.82	Spray	Contact	\$162 / quart	25						spider mites	
Talstar P Bifenthrin 7.9%	0.65 - 1.3	Spray	Contact	\$45 / 3 quarts	3	crawler stage	x	x	x	x	spider mites, broad mites	
Tristar 8.5 SL Acetamiprid 8.5%	0.5-0.8 scale 0.75-1.5 thrip	Spray	Locally Systemic	\$45 / 4 fl oz	4A	x	x	x	x	x		
Insect Growth Regulators												
AzaGuard, Azatin Azadirachtin 3%	0.5 - 2	Spray	Contact	\$151 / quart	unclassified	x	x	x	x	x		x
Distance Pyriproxygen 11.23%	0.48 - 0.72	Spray	Locally Systemic	\$260 / quart	7C	x	suppression		x	suppression		
Enstar AQ Kinoprene 18.4%	1 - 2	Spray	Contact	\$135 / quart	7C	x	x	x	x	x		
TetraSan 5 WDG Etoazole 5%	0.84 - 1.7	Spray	Locally Systemic	\$130/lb	8						spider mites, Tenuipalpidae	

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Chemical Name Active Ingredient	Application Rate (tsp/gal)	Spray or Drench?	Mobility	Product Cost	IRAC MoA Group	Fungus Ghats
Commonly Available Pesticides						
Bayer Products Imidacloprid varies	6 @ 1.47% 12 @ 0.74%	Spray Drench	Xylem Mobile		4A	
Cygon 2E Dimethoate 23%	1 - 2	Spray	Xylem Mobile		1B	
Malathion 50% EC Malathion 50% EC	1 - 4	Spray	Contact		1	
Orthene Powder Acephate 97%	1	Spray Drench	Locally Systemic		1	
Orthenex Acephate, Fenbutatin oxide	6	Spray	Locally Systemic		1	
Permetrol Permethrin 10%	1.3	Spray	Contact		3	
Ultra Pure Oil Paraffinic Oil	6 - 7.5	Spray	Contact		16	
Thuricide Bacillus Thuringensis 1	7.5	Spray Drench	Contact		11	x
Specialty Pesticides						
Akari 5 SC Fenpyroximate 5%	0.96 - 1.4	Spray	Contact	\$145 / quart	21A	
Aria Flonicamid 50%		Spray	Locally Systemic	\$150 / 160 g	9C	
Avid 0.15 EC Abamectin 2.0%	0.24-mites 0.48-thrips	Spray	Locally Systemic	\$93 / cup	6	
Conserve Spinosad 11.6%	0.6-thrips 1.2-mites	Spray	Locally Systemic	\$144 / quart	5	
Decathlon 20 WP Cyfluthrin 20%	0.18-0.27	Spray	Contact	\$90 / cup	3	x
Flagship 25 WG Thiamethoxam 25%	0.5 - 1	Spray Drench	Xylem Mobile	\$145 / 8 wt oz	4A	x
Floramite SC Bifenazate 22.6%	0.24 - 0.48	Spray	Contact	\$97 / quart	25	
Kontos spirotetramat 22.4%	.1 - 0.2	Spray Drench	Amphi- mobile	\$170 / 250 ml	23	
Marathon II Imidacloprid 21.4%	0.10	Spray Drench	Xylem Mobile	\$110 / 250 ml	4A	

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Specialty Pesticides (continued)						
Marathon 60 WP Imidacloprid 60%	0.16	Spray Drench	Xylem Mobile	\$53 / 100 gm	4A	
Mavrik Aqua Flow Fluvalinate 22.3%	0.24 - 0.6	Spray	Contact	\$115 / quart	3	
Merit 75 WP Imidacloprid 75%	0.06	Spray Drench	Xylem Mobile	\$35 / 2 wt oz	4A	
Overture 35 WP Pyridalyl 35%	2.1	Spray	Locally Systemic	\$107 / 1 lb	Unknown	
Safari 20 SG Dinotefuran 20%	0.5 - 1 1.5 - 3.0	Spray Drench	Xylem Mobile	\$115 / 1.5 cups	4A	
Sanmite 75 WP Pyridaben 75%	1 - 1.5	Spray	Contact	\$110 / 4 wt oz	21A	
Shuttle Acequinocyl 15.8%	0.38 - 0.77	Spray	Contact	\$140 / quart	20B	
Sirocco Bifenazate 43.2%, Aba	0.18 - 0.36	Spray	Locally Systemic	\$190 / cup	6, unclassified	
Sultan Cyflumetofen 18.7%	0.82	Spray	Contact	\$162 / quart	25	
Talstar P Bifenthrin 7.9%	0.65 - 1.3	Spray	Contact	\$45 / 3 quarts	3	x
Tristar 8.5 SL Acetamiprid 8.5%	0.5-0.8 scale 0.75-1.5 thrip	Spray	Locally Systemic	\$45 / 4 fl oz	4A	x
Insect Growth Regulators						
AzaGuard, Azatin) Azadirachtin 3%	0.5 - 2	Spray	Contact	\$151 / quart	unclassified	use as drench
Distance Pyriproxygen 11.23%	0.48 - 0.72	Spray	Locally Systemic	\$260 / quart	7C	use as drench
Enstar AQ Kinoprene 18.4%	1 - 2	Spray	Contact	\$135 / quart	7C	use as drench
TetraSan 5 WDG Etoxazole 5%	0.84 - 1.7	Spray	Locally Systemic	\$130/lb	8	

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Commonly Available Pesticides						
Bayer Products Imidacloprid varies	6 @ 1.47% 12 @ 0.74%	Spray Drench	Xylem Mobile		4A	Many products of differing imidacloprid strengths, some contain fluvinate. Do not use with summer oil. Use with weak fertilizer to enhance uptake.
Cygon 2E Dimethoate 23%	1 - 2	Spray	Xylem Mobile		1B	Not labeled for use on orchids, some growers have reported severe phytotoxicity after use. Use in cool weather only. Not for use on toolumnias.
Malathion 50% EC Malathion 50% EC	1 - 4	Spray	Contact		1	Harms some ferns.
Orthene Powder Acephate 97%	1	Spray Drench	Locally Systemic		1	Repeat at 2 week intervals if crawlers continuously appearing. Apply no more than 3 times consecutively. Can be mixed with fungicide.
Orthenex Acephate, Fenbutatin oxide	6	Spray	Locally Systemic		1	Fenbutatin oxide is a miticide, Acephate is an insecticide. Same additional comments as for Orthene above.
Permetrol Permethrin 10%	1.3	Spray	Contact		3	
Ultra Pure Oil Paraffinic Oil	6 - 7.5	Spray	Contact		16	Use only if temperatures below 90°F. Don't apply within 30 days of using sulfur or mix with fungicide, copper or Captan. Don't apply to ferns or palms.
Thuricide Bacillus Thuringensis 1	7.5	Spray Drench	Contact		11	
Specialty Pesticides						
Akari 5 SC Fenpyroximate 5%	0.96 - 1.4	Spray	Contact	\$145 / quart	21A	Primarily active on larval stages, no translaminar activity.
Aria Flonicamid 50%		Spray	Locally Systemic	\$150 / 160 g	9C	
Avid 0.15 EC Abamectin 2.0%	0.24-mites 0.48-thrips	Spray	Locally Systemic	\$93 / cup	6	Harms some ferns and shasta daisies. Use weekly for 3 weeks when thrips immature then alternate. Residual control may be enhanced by adding summer oil.
Conserve Spinosad 11.6%	0.6-thrips 1.2-mites	Spray	Locally Systemic	\$144 / quart	5	Can be used 3 times consecutively on one generation of thrips then alternate. Can spray flowers for thrips without damage.
Decathlon 20 WP Cyfluthrin 20%	0.18-0.27	Spray	Contact	\$90 / cup	3	
Flagship 25 WG Thiamethoxam 25%	0.5 - 1	Spray Drench	Xylem Mobile	\$145 / 8 wt oz	4A	Effective for armored scale, not soft scale.
Floramite SC Bifenazate 22.6%	0.24 - 0.48	Spray	Contact	\$97 / quart	25	Alternate use with other miticides, does not control broad mites or flat mites. Spray should have a pH below 7.
Kontos spirotetramat 22.4%	.1 - 0.2	Spray Drench	Amphi- mobile	\$170 / 250 ml	23	Label says it is not recommended for use on orchids, among other crops.
Marathon II Imidacloprid 21.4%	0.10	Spray Drench	Xylem Mobile	\$110 / 250 ml	4A	Apply to cattleyas only, no dendrobiums and no thin leafed orchids. Do not use with summer oil. Use with weak fertilizer to enhance uptake.

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Specialty Pesticides (continued)						
Marathon 60 WP Imidacloprid 60%	0.16	Spray	Xylem Mobile	\$53 / 100 gm	4A	Apply to cattleyas only, no dendrobiums and no thin leafed orchids. Do not use with summer oil. Use with weak fertilizer to enhance uptake.
		Drench				
Mavrik Aqua Flow Fluvalinate 22.3%	0.24 - 0.6	Spray	Contact	\$115 / quart	3	At low to medium use rates, controls aphids, thrips, whiteflies, leaf-feeding caterpillars; at higher rates, mites will also be suppressed or controlled.
Merit 75 WP Imidacloprid 75%	0.06	Spray	Xylem Mobile	\$35 / 2 wt oz	4A	See Marathon comments; Merit is 3 times stronger and the same application rate is listed, my results suggest it is phytotoxic at this application rate.
		Drench				
Overture 35 WP Pyridalyl 35%	2.1	Spray	Locally Systemic	\$107 / 1 lb	Unknown	Translaminar, controls insects by both contact and ingestion activity, although contact activity is dominant and faster than ingested activity
Safari 20 SG Dinotefuran 20%	0.5 - 1	Spray	Xylem Mobile	\$115 / 1.5 cups	4A	Use spreader sticker to increase effectiveness.
	1.5 - 3.0	Drench				
Sanmite 75 WP Pyridaben 75%	1 - 1.5	Spray	Contact	\$110 / 4 wt oz	21A	Alternate use with other miticides.
Shuttle Acequinocyl 15.8%	0.38 - 0.77	Spray	Contact	\$140 / quart	20B	Do not tank mix with Aliette or surfactant
Sirocco Bifenazate 43.2%, Aba	0.18 - 0.36	Spray	Locally Systemic	\$190 / cup	6, unclassified	Not compatible with many products in tank mixes, check label.
Sultan Cyflumetofen 18.7%	0.82	Spray	Contact	\$162 / quart	25	
Talstar P Bifenthrin 7.9%	0.65 - 1.3	Spray	Contact	\$45 / 3 quarts	3	Mite control most effective in spring to early summer. Treat late in day. Thorough coverage necessary.
Tristar 8.5 SL Acetamiprid 8.5%	0.5-0.8 scale	Spray	Locally Systemic	\$45 / 4 fl oz	4A	Use higher rate when insect populations high. Do not apply more than 5 times per year. Systemi with translaminar, not labeled for drench applications.
	0.75-1.5 thrip					
Insect Growth Regulators						
AzaGuard, Azatin Azadirachtin 3%	0.5 - 2	Spray	Contact	\$151 / quart	unclassified	Controls insects in the larval, pupal, and nymphal stages, tank mix with chemicals for adult control. Keep solution pH between 5.5 and 6.5.
Distance Pyriproxygen 11.23%	0.48 - 0.72	Spray	Locally Systemic	\$260 / quart	7C	Harms some ferns.
Enstar AQ Kinoprene 18.4%	1 - 2	Spray	Contact	\$135 / quart	7C	
TetraSan 5 WDG Etoxazole 5%	0.84 - 1.7	Spray	Locally Systemic	\$130/lb	8	Kills mite eggs and nymphs but not adult, apply with adulticide if infested, treated adult mites will not produce viable eggs. Translaminar.