

Survey of Fungicides Available for Homeowners in Lee County, Florida: May, 2010

Fungicides are listed by their active ingredient. This avoids the confusion that result from multiple brands that use the same active ingredient. The active ingredient is the compound that impairs the fungus. A plant specialist often recommends a fungicide by its common name, for example "Chlorothalonil." Knowing the fungicide family is critical when developing a rotation scheme to combat pesticide resistance. The plant diseases controlled is the reason why you use the fungicide. Typically, products with the same active ingredient have similar labeling, but this is not always true. Be sure to carefully read labels to ensure that the product you which to use is labeled for the target disease. Read and follow label directions.

Active Ingredient (Common name)	Fungicide Family	Brand/Trade Name	Plant Diseases (Insects/Mites) Controlled
Azoxystrobin ¹	QoI (Strobilurin)	Maxide (gulfstream), Home and Garden Dual Action Disease Killer	Lawns Diseases: Brown patch; summer patch; Pythium; Anthracnose; rust and snow mold
Captan Insecticide and miticide: Malathion Carbaryl	Phthalimides (Group 3)	Bonide, Fruit Tree Spray Label	Fruit Trees, Flower, Evergreens, Strawberries Diseases: Black spot; downy mildew; brown rot; Coryneum blight Insects and Mites: Mites; flea beetles; aphids; scales; mealybugs
Chlorothalonil	Chloronitrile (Group 5)	Garden Tech, Daconil Label	Flowers, Vegetables, Shrubs, Fruit and Shade Trees Ornamental Diseases: Cercospora; Phytophthora die-back; Anthracnose; scab; rust; powdery mildew; Alternaria leaf spot/branch rot; botrytis; Septoria leaf spots; and other listed diseases. Vegetable Diseases: Rust; Botrytis blight; Alternaria leaf spot; downy mildew; ring spot; Cercospora (early) blight; Alternaria (late) blight; Septoria (late) blight; Helminthosporium leaf blight; Anthracnose; target spot; scab; gummy stem blight (black rot), powdery mildew; fruit rot; Botrytis vine rot, and other listed diseases.
Chlorothalonil	Chloronitrile (Group 5)	Ortho, Max Garden Disease Control Label	Vegetables, Fruit Trees, Roses, Flowers, Shrubs and Shade Trees Papaya Diseases: Alternaria fruit spot; Anthracnose; stem end rot Ornamental Diseases: Phytophthora die-back; Anthracnose; Alternaria leaf spot; Botrytis flower blight (gray mold); rust; Cercospora & Septoria leaf spots; powdery mildew, and other listed diseases Vegetable Diseases: Alternaria leaf spot; downy mildew; early and late blight; Helminthosporium leaf blight; rust; Anthracnose; target spot; Botrytis leaf blight and vine rot and other listed diseases.

Active Ingredient (Common name)	Fungicide Family	Brand/Trade Name	Plant Diseases (Insects/Mites) Controlled
Chlorothalonil	Chloronitrile (Group 5)	Southern AG, Liquid Ornamental and Vegetable Flowable Fungicide Label	Turfs, Ornamentals, Bulbs, Foliage Plants, Vegetables, certain Trees and Orchard Crops Turf Diseases: Dollar spot; brown patch; melting out; gray leaf spot; red thread; Anthracnose; copper spot Ornamental Diseases: Leaf spots; foliar blights; powdery mildew; rust; scab Vegetable Diseases: Rust; Botrytis; Anthracnose; downy mildew; Alternaria; blights; blotches
Copper Insecticide: Rotenone	Inorganic (Group M1)	Bondine, Garden Dust	Vegetables, Fruit Trees and Flowers Diseases: Downy mildew; leaf spot; early and late blights; angular leaf spot; gummy stem blight; Anthrac- nose; scab; Septoria and Stemphylium leaf mold; leaf scorch; bitter rot; black rot; blotch; leaf blister; Botrytis blight; stem canker Insects: aphids; cabbage worms; cabbage loopers; leafhoppers; mealybugs; tomato pin-worms; two- spotted spider mite; whiteflies
Copper ammonium	Inorganic (Group M1)	Southern AG, Liquid Copper Fungicide Label	Many Fruits, Vegetables, Turfgrass (algae control), Live Oak (moss control) and Ornamentals Diseases: Many bacterial and fungal leaf spots; rust; blights. Also controls algae in turfgrass and moss in live oaks
Copper Octanoate Metallic Copper	Inorganic Copper (Group M2)	Ortho, Ecosense, Garden Disease Control Label	Ornamental, Fruits and Vegetables Diseases: Downy mildew; leaf and fruit spot; blight; rust; and fruit rot
Copper Octanoate (Copper Soap)	Inorganic (Group M1)	Natural Guard, Copper Soap Liquid Fungicide Label	Roses, Fruits, and Vegetables Diseases: Downy mildew; gray mold (Botrytis); powdery mildew; Cercospora leaf spot; dollar spot; rust; Anthracnose leaf and fruit spots; bacterial blights; Melanose; greasy spot; citrus scab; red alga; Alternaria blights; white mold (Sclerotinia) and other listed diseases
Copper, Metallic	Inorganic (Group M1)	Lilly Miller, Kop-R-Spray Label	Roses, Ornamentals, Fruit Trees, Vegetables Diseases: Anthracnose; bacterial blight (<i>Pseudomonas</i>); bacterial leaf spot (<i>Pseudomonas</i>); black canker (<i>Physalospora</i>); black spot (<i>Diplocarpon</i>); Botrytis blight; cedar-apple rust (<i>Gymnosporangium</i>); Coryneum blight; dieback (<i>Phytophthora</i>); downy mildew; false smut (<i>Graphiola</i>); leaf blight (Anthracnose); leaf blister (<i>Taphrina</i>); leaf blotch; leaf gall(<i>Exobasidium</i>); leaf scorch (Septoria); leaf spots (<i>Cercospora</i>) (<i>Septoria</i>) (Botrytis); lichens; nectria canker (<i>Volutella</i>); powdery mildew; scab; stem canker (<i>Leptosphaeria</i>); twig blights (Anthracnose) (<i>Venturia</i>)

Active Ingredient (Common name)	Fungicide Family	Brand/Trade Name	Plant Diseases (Insects/Mites) Controlled
Dimethyl benzyl ammonium chloride Dimethyl ethyl benzyl ammonium chloride	General Biocide (not unlike bleach or Lysol)	Southern AG, SA-20 Disinfectant Label	Ornamentals including orchids, Seeds and Bulbs Diseases: Damping off; downy mildew; crown gall; powdery mildew; grey mold leaf spots; Fusarium basal rot; Botrytis; crown rot; black spot; rust; stem gall; gray mold bud rot; Anthracnose and blights.
Dimethyl thioallophanate	Thioallophanate	Ferti-Lome, Halt – Systemic	Rose, Flowers, Lawns, Ornamentals Diseases: Red thread; stem blight; rust
Mancozeb	Ethylenebisdithiocarbamates (EBDC or Group M3)	Southern AG, Dithane M-45 Label	Vegetables, Lawns, Ornamentals Diseases: Cercospora leaf spot; Anthracnose; Botrytis blight; Fusarium leaf spot; Rhizoctonia blight; Gloeosporium leaf spot; Dactylaria leaf spot; Phytophthora leaf spot; Alternaria blight; downy mildew; early blight; late blight; gray leaf spot; leaf mold; Septoria leaf spot; Phytophthora fruit rot
Myclobutanil Insecticide and miticide: Permethrin	Demethylation inhibitors (sterol inhibitors)	Spectracide, Immunox Plus, Insect & Disease Control Label	Roses, Lawns, Flowers, Trees & Ornamental Shrubs Diseases: Black spot; powdery blossom blight, (<i>Monilinia spp.</i>); scab; needle rust; fusiform rust; Mildew; rust; petal blight (<i>Ovulinia spp.</i>); Cercospora leaf spot Insects and Mites: Aphids; bagworms; beetles (elm leaf, pine); budworms; cicadas; elm spanworms; exposed thrips; fall cankerworms; fall webworms; inchworms; leafminers; leafrollers; mealybugs; moths (pine, tussock); needle scales; oakworms; pine needleminers; spider mites; whiteflies
Myclobutanil	Demethylation inhibitors (sterol inhibitors) (Group 3)	Spectracide, Immunox Lawn Disease Control	Lawns Diseases: Black spot; rust; powdery mildew; downey mildew; Anthracnose; Botrytis; scab; twig and tip blight; brown patch; copper spot; dollar spot; leaf spot; crown rot; leaf smut; summer patch.
Myclobutanil	Demethylation inhibitors (sterol inhibitors) (Group 3)	Spectracide, Immunox Lawn Disease Control Granules	Lawns Diseases: Brown patch; dollar spot; Fusarium blight; necrotic ring spot; summer patch; Anthracnose; red thread; Septoria leaf spot; copper spot; zonate leaf spot; crown rot; leaf spot; melting-out; gray leaf spot; leaf smuts; powdery mildew; rusts; Fusarium patch
Neem (Neem is used as a fungicide, insecticide and miticide)	Biological	Ferti-lome, Triple Action Plus RTU	Fruits, Vegetables, Scrubs, Trees, and Flowers Diseases: Anthracnose; flower blight; twig blight; tip blight (<i>Sirococcus</i>); scab; downy mildew; powdery mildew; rust; needle rust (<i>Melampsora farlowii</i>); Botrytis spp., black spot; leaf spot Insects and Mites: Ticks; spider mites; leafrollers; leafminers; earwigs; fleas; thrips; beetle; weevils; Japanese beetle; fungus gnats; squash bug; chinch bug; stink bug; boxelder bug; lace bug; scales; whiteflies; aphids; leafhoppers; mealybugs; ants; cabbageworms; webworms; loopers; tent caterpillars; armyworm; squash vine borer; tomato hornworm; cockroaches; grasshoppers; crickets

Active Ingredient (Common name)	Fungicide Family	Brand/Trade Name	Plant Diseases (Insects/Mites) Controlled
Neem Insecticide: Pyrethrin Miticide: Pipenonyl	Biological	Green Light, Neem II	Fruits, Nuts, Herbs, Spices, Roses, Flowers, and Scrubs Diseases: Black spot; powdery mildew; rust; Anthracnose Insects and Mites: Spider mites; aphids; whiteflies
Neem Oil Insecticides: Pyrethrin + Piperonyl Butoxide	Biological	Green Light, Fruit Tree Spray Label	Fruit Trees Diseases: Powdery mildew; brown spot; downy mildew; Anthracnose; rust; leaf spot; botrytis; scab, and flower, twig, and tip blights. Insects and Mites: Aphids; armyworms; beetles; leaf-miners; leafrollers; loopers; mealybugs; scales; spider mites
Neem Oil, Clarified Hydrophobic Extract of Neem Oil	Biological	Garden Safe, Fungicide 3 Label	Roses, Flowers, Vegetables, Trees, Shrubs, and House plants Diseases: Black spot; powdery mildew; downy mildew; Anthracnose, rust; Botrytis; needle rust; twig and tip blights and other listed diseases Insects and Mites: Whiteflies; aphids; spider mites; red mites
Neem Oil, Clarified Hydrophobic Extract of Neem Oil	Biological	Southern AG, Triple Action Neem Oil Label	Flowering Plants, Trees, Shrubs, Foliage, Vegetables, Fruits, Nuts and Home and Residential Landscapes Diseases: Black spot; mildews; rusts; scab Insects and Mites: Mites; whiteflies; aphids; scales
Petroleum Oil (Petroleum oil is used as a fungicide, insecticide and miticide)	Biological	Ferti-Lome, Horticultural Oil Spray	Fruits, Vegetables, Nuts, Ornamentals, Shrubs & Flowers Diseases: Powdery mildew; rust; sooty mold Insects and Mites: Aphids; scales; mites; whiteflies
Propiconazole	Demetylation inhibitors (sterol inhibitors) (Group 3)	Ferti-Lome, Systemic Fungicide	Roses, Flowers, Lawns, Trees and Scrubs Diseases: Brown patch; dollar spot; powdery mildew; red thread; Anthracnose; stripe smut; black spot; rust; ray blight; leaf spot; needle rust.
QST 713 strain of dried <i>Bacillus subtilis</i>	Biological	Bayer Advanced, Natria, Disease Control Label	Lawns, Roses, Vegetables, Fruits, Flowers, Trees & Shrubs Diseases: Anthracnose; black mold; black spot; Botrytis; brown patch; dollar spot; downy mildew (suppression); late blight (suppression); leaf spots; rust; powdery mildew; scab (suppression)
Rosemary Oil ² Thyme Oil ² Clove Oil ²	Biological	EcoSmart Technologies, Organic Garden Fungicide Label (sort of)	Roses, Flowers & Shrubs Diseases: Anthracnose; black spot; blight; Botrytis; powdery mildew; rust leaf spot; scab

Active Ingredient (Common name)	Fungicide Family	Brand/Trade Name	Plant Diseases (Insects/Mites) Controlled
Sesame Oil ² (Sesame oil is used as a fungicide and miticide)	Biological	Organic Laboratories, Organocide Label	Vegetables, Fruits, Nuts, Vine crops, Herbs, Spices, Ornamentals, Turfgrass, Landscape plants, Interior plants, Bulbs, Flowers (some plants in the Euphorbia family (Crown of Thorns) have shown some sensitivity) Diseases: Black spot; rust; powdery mildew Mites: Eggs, larvae, adult of spider and rust mites
Sulfur (Sulfur is used as a fungicide, insecticide and miticide) Insecticide and miticide: Pyrethrin	Sulfur (Group M2)	Bayer Advanced, Natria, Insect, Disease and Mite Control Label	Roses, Flowers, Fruits and nut Trees, Vegetables, Vines, Ornamentals, Lawns Diseases: Blackspot; powdery mildew; rust; scab; blight; brown rot; leaf spot. Insects and Mites: Aphids; mites; spider mites; leaf-hoppers; caterpillars; rose slugs; whiteflies; spittlebugs; mealybugs; scales; thrips; psyllids; plant bugs; lace bugs; fruit flies; chiggers; earwigs
Sulfur Insecticide and miticide: Pyrethrin	Sulfur (Group M2)	Bonide (Neudorff), Citrus, Fruit and Nut Orchard Spray Label	Citrus, Fruit, Nuts Diseases: Scab; powdery mildew; rust; blight; brown rot Insects and Mites: Aphids; mites; spider mites; leaf-hoppers; caterpillars; whiteflies; spittlebugs; mealybugs; scales; thrips; psyllids; plant bugs; fruit flies; earwigs
Sulfur Insecticide and miticide: Pyrethrins	Sulfur (Group 2)	Espoma (Neudorff), Earth-Tone, 3n1 Disease Control Label	Roses, Flowers, Ornamental Trees, Shrubs, Vegetables, Fruits, Nuts, Houseplants Diseases: Blight; scab; powdery mildew; brown rot; rust; black spot; leaf spot Insects and Mites: Mites; spider mites; chiggers; earwigs; thrips; fruit flies; plant bugs; scales; whiteflies; aphids; spittlebugs; leafhoppers; mealybugs; psyllids; rose slug; caterpillars
Sulfur Insecticide and miticide: Pyrethrins	Sulfur (Group 2)	Ortho, Ecosense, 3-in-1 Rose and Flower Care Label	Roses, Flowers, Houseplants, Ornamental Trees and Shrubs, Fruits, Nuts, Vegetables Diseases: Black spot; powdery mildew; rust; scab; brown rot; leaf spot Insects and Mites: Aphids; mites; caterpillars; leafhoppers, whiteflies; spittlebugs; mealy bugs; scales; thrips; psyllids; lacebugs; fruit flies; earwigs.
Tebuconazole Insecticide: Imidacloprid	Demetylation inhibitors (sterol inhibitors) (Group 3)	Bayer Advanced, All-in-One, Rose & Flower Care Label	Roses, Flowers Diseases: Black spot; rust; powdery mildew; southern blight Insects: Aphids; blackvine weevil larvae; Japanese beetles; lacebugs; leaf beetles; leaf hopper; mealybugs; psyllids; thrips; whiteflies

Active Ingredient (Common name)	Fungicide Family	Brand/Trade Name	Plant Diseases (Insects/Mites) Controlled
Tebuconazole Insecticide and miticide: Imidacloprid Tau-Fluvalinate	Demetylation inhibitors (sterol inhibitors) (Group 3)	Bayer Advanced, 3-in-1, Insect, Disease and Mite Control Label	Roses, Flowers, Houseplants, Ground Cover, Vines, Ornamentals, Shrubs, Trees Diseases: Black-spot; leaf spots; petal blight; powdery mildew; rust; scab Insects and Mites: Aphids; armyworms; bagworms; beetles; boxelder bugs; budworms; cankerworms; caterpillars; chinchbugs; cucumber beetles; cutworms; earwigs; flea beetles; fungus gnats; grasshoppers; Japanese beetles (adult); lace bugs; leaf-feeding beetles; leaf-feeding caterpillars; leafhoppers; leafminers, loopers; mealybugs; midges; mites; pillbugs; plant bugs; psyllids; rose midges; rose slugs; sawflies; scale insects (crawler stages); silverfish; sowbugs; spider mites; spittlebugs; stink bugs; thrips; two-spotted spider mites; viburnum leaf beetles; webworms; weevils (including adult root weevils); whiteflies
Tebuconazole	Demetylation inhibitors (sterol inhibitors) (Group 3)	Bayer Advanced, Disease Control for Roses, Flowers, and Shrubs Label	Roses, Flowers, and Shrubs Diseases: Anthracnose; black-spot; leaf spot; petal blight; powdery mildew; rust; scab
Thiophanate-methyl	Benzimidazole (Group 1)	Scotts, Lawn Fungus Control Label	Lawns Diseases: Brown patch; dollar spot; leaf spot; pink patch; red thread; stripe smut; copper spot; Anthracnose
Thiophanate-methyl	Benzimidazole (Group 1)	Southern AG, Thiomyl Label	Annual and Perennial Flowers, Trees, Shrubs Diseases: Anthracnose; Fusarium blight; black spot; botrytis; dollar spot; large brown patch and other diseases on ornamentals and turf
Thiophanate-, Thioallophanate	Benzimidazoles (Group 1)	Cleary, 3336F Label	Turfs, Ornamentals Diseases: Rusts; powdery mildew; Anthracnose; Botrytis; scab; brown patch; copper spot; dollar spot; summer patch; red tread; southern blight; Fusarium blight; leaf spot; black spot; stripe smut; twig blight; canker
Triadimefon	Demetylation inhibitors (sterol inhibitors) (Group 3)	Bayer Advanced, Fungus Control For Lawns Label	Lawns Diseases: Anthracnose; brown patch; copper spot; dollar spot; powdery mildew; red thread; rust; stripe smut; summer patch
Triforine	Demethylation inhibitor (DMI)	Ortho, Rose Pride Disease Control Label	Roses, Flowers, Shrubs, Shade Trees Diseases: Black spot; powdery mildew; rust; Entomosporium leaf spot; petal blight

¹It is recommended that azoxystrobin be used in rotation with other fungicide families. This is because repeat applications of azoxystrobin will lead to resistance in target fungal populations. Avoid applying azoxystrobin more than twice in a row without switching to another fungicide family.

²These oils have not been shown to be as effective as some other options for foliar disease control. Currently, more research is needed to address volatility/efficacy issues.

Glossary

Blight	A disease characterized by general and rapid killing of leaves, flowers and stems.
Blotch	A disease characterized by large and irregular in shape, spots or blots on leaves, shoots and stems.
Canker	A necrotic, often sunken lesion on a stem, branch or twig of a plant.
Dieback	Progressive death of shoots, branches and roots generally starting at the tip.
Fungicide	A compound toxic to fungi
Leaf Spot	A self-limiting lesion on a leaf. Fungal leaf spots may be round and yellow but generally turn to brown as they age. Bacteria leaf spots may be angular, usually confined by the veins, water-soaked in appearance, and turn gray and tan as they age.
Mildew	A fungal disease of plants in which the mycelium and spores of the fungus are seen as a whitish growth on the host surface.
Mold	Any profuse or woolly fungus growth on damp or decaying matter or on surfaces of plant tissue.
Necrotic	Dead and discolored
Rust	A disease giving a “rusty” appearance to a plant and caused by one of the Uredinales (rust fungi).
Scab	A roughened crustlike diseased area on the surface of a plant organ. A disease in which such areas form.
Smut	A disease caused by the smut fungi (<i>Ustilaginales</i>); it is characterized by masses of dark, powdery and sometimes odorous spores.

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