

5 HOUSEPLANT PEST MANAGEMENT

Various methods are available for managing pests of houseplants. The pest, number of plants infested, size of the planting, and inclination of the owner will determine what methods are best. Table 5 lists appropriate cultural pest management practices for houseplants.

When new plants are brought home, isolate them from other houseplants. It is also a good idea to inspect plants carefully and isolate those that are brought inside after vacationing outdoors for the summer. This quarantine period should last about one month. Monitor the newcomer for signs of insect populations or diseases that are not initially apparent. This avoids the spread of pests to healthy, established plants. Established plants that develop pest problems in the home should be isolated from others during treatment and until they regain health.

Always use sterilized soil potting mix to grow houseplants. Do not reuse potting media. Soil pests such as springtails, millipedes, nematodes,

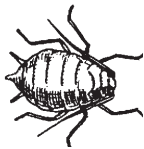

and disease organisms can be present in garden soil. See Soil Sterilization in Chapter 2.

Houseplants are resistant to most fungal diseases of foliage as long as the leaves are kept dry. Powdery mildew is the notable exception; it can prosper in the home environment even if leaves are not splashed with water.

It is wise to throw out any plants with root and crown rots or other soil pests. It may be more economical to replace an infested plant or to make a cutting as soon as you spot the problem, rather than investing time and energy in fighting the pest. Soil fungi and insects are very difficult to manage. They spread from plant to plant by handling and in drainage water. Fungus gnats can vector diseases as they feed on roots and fungi, moving pathogens to healthy plants.

A general description of some common insects and diseases on houseplants and information on management follows. Although biological control agents may not be practical for one or two houseplants, they offer a practical alternative to those with home greenhouses. Remember that some pests will have to be maintained to keep a good biological control system working. Much exciting research is being done in biological control, and researchers and greenhouse

Table 3. Common insects on houseplants

Insect	Description/Biology
Aphids	 <p>Small, often pear-shaped, soft-bodied insects that use their long, slender mouthparts to pierce stem, leaves, and other tender plant parts to suck out plant fluids. Sticky appearance caused by honeydew, a sweet, sticky liquid that aphids and other sucking insects excrete. Sooty mold, a black fungus, may grow on honeydew. Available aphid predators include ladybugs and lacewings as well as the cecidomyid fly <i>Aphidoletes aphidimyza</i>.</p>
Cyclamen mite	<p>Very tiny, not readily visible to human eye. Feed on new growth, causing curling and distortion. Particularly difficult to control. Discarding infested plants is often best choice.</p>
Fungus gnats	 <p>Recently have become more of a pest problem with increasing use of soilless potting mixes. Adult flies are attracted to damp locations where fungi are likely to flourish. Larvae feed primarily on fungi but occasionally attack roots of growing plants and are especially destructive to young plants. Adult flies may also become a nuisance. Removing and discarding growing media and repotting in sterile media can help reduce pest numbers. Avoid keeping mixes too wet and prevent accumulations of stagnant water in pot saucers or other containers. To check for presence of fungus gnat larvae in potting mix, cut a small potato in half, place cut side down, and lightly press into mix. Leave for three to</p>

continued



BACTERIAL LEAF SPOT-FPO

Bacterial leaf spot of *syngonium*. Symptoms are similar on *philodendron*, *pothos*, and *dieffenbachia*

managers are developing strategies for handling beneficial insects.

See Part II, Table 6, for pesticide guidelines.

Table 3. Common insects on houseplants (continued)

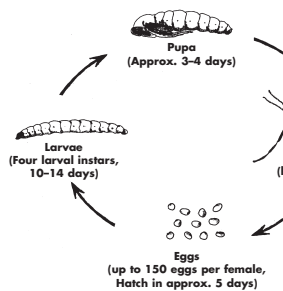





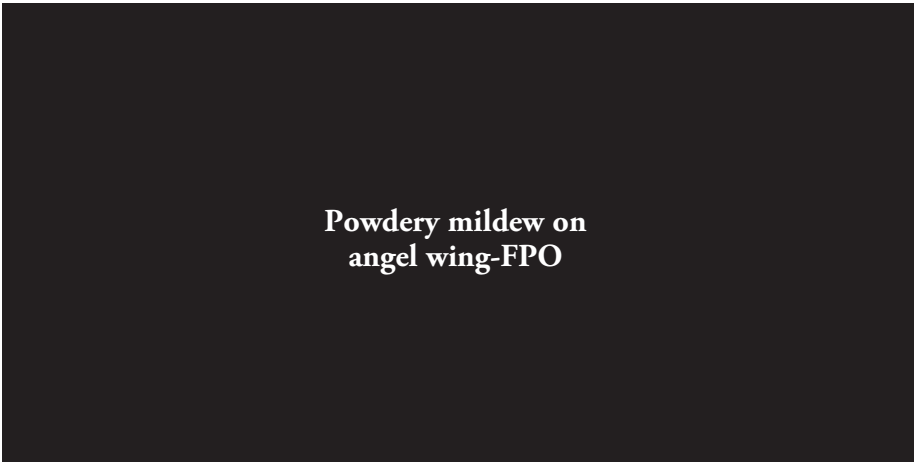
Insect	Description/Biology
<p>Fungus gnats (continued) Fungus Gnat Life Cycle Fungus Gnat Bradysia corophila</p> 	<p>four days, then lift up and look for shiny white larvae with black heads. Larvae are attracted to moist potato. For adult monitoring and capture, yellow sticky cards can be used. Place card on rim of pot. Biological control of larvae can be achieved with a soil drench of the microbial pesticide <i>Bacillus thuringiensis</i> var. <i>israelensis</i> (Gnatrol) but since this product is only sold in gallon containers, you may find this costly. Commercial growers may also use predatory nematodes (<i>Steinernema</i> spp.) or the predatory mite <i>Hypoaspis miles</i>.</p>
<p>Mealybugs</p> 	<p>White, waxy, slow-moving, sucking insects often found on undersides of leaves or where branching occurs on plant. Mealybugs suck sap from plant parts and may exude honeydew. The predator ladybeetle, known as the mealybug destroyer (a tropical species), is available for biological control. It feeds on mealybugs and soft scales in greenhouses. Predator larvae mimic mealybugs so they are also covered with white, waxy filaments. Because the destroyer is a tropical species, it does not thrive at low temperatures.</p>
<p>Scales</p> 	<p>Scale insects are so unlike insects that many people do not recognize them as such. Insects are hidden under waxy or hard scale cover. Brown soft scale is common in greenhouses and on houseplants. Long, piercing mouthparts allow scales to suck juices from leaves, stems, twigs, branches, and trunks. Plant may decline and die. Honeydew (see Aphids) may be abundant. Crawlers are young insects that emerge from eggs and “crawl” to a feeding site; they are more sensitive to insecticidal treatment than other stages. Once crawler finds an acceptable site it settles down and begins to feed. Thereafter it molts to next stage and begins to secrete waxy or hard scalelike covering.</p>
<p>Spider mites</p> 	<p>Tiny eight-legged arthropods that are not insects but related to them. Visible with a hand lens on undersurface of leaves. Feed by inserting mouthparts into plant and sucking liquid contents, causing yellowish stippling at feeding sites and general plant decline. Webbing often seen when held up to sunlight. Mites may appear as tiny moving dots on webbing. Several predacious mites feed on spider mites. At least three are available commercially. It may be important to know what species of spider mite you have so as to choose the proper predator.</p>
<p>Thrips</p> 	<p>Tiny (less than 1/20 in.), often yellowish insects. Adults have long fringe of hair around wings. Cause damage by rasping leaf surface and drinking fluid that collects in injured areas. Leaves appear silvered or dried out. Brown or black scars (fecal matter and feeding scars) often seen on plant tissue. Two species of mites prey on thrips and are available commercially.</p>
<p>Whiteflies</p> 	<p>Adults are small, yellowish insects with dull, white wings. Immature whiteflies are oval and flattened, yellowish scalelike insects. Heavily infested plants send up a cloud of adults when disturbed. Some whiteflies transmit viruses that are devastating to some crop plants. Eggs are very tiny, laid on undersides of leaves. Crawlers hatch from eggs, move to feeding site, then become more sedentary. Honeydew may be present. The small wasp parasite, <i>Encarsia formosa</i>, is available for biological control. The combined use of sticky traps and <i>Encarsia</i> looks very promising.</p>

Table 4. Common diseases of houseplants

<i>Disease</i>	<i>Description</i>
Anthracnose	Fungi that cause this disease produce necrotic spots with raised borders on stems, foliage, and fruit. Disease affects many different plants and can be caused by many different fungi. Dieback often occurs.
Botrytis blight (Gray mold)	Buds, flowers, fruit, twigs, leaves, and other plant parts may be affected. A gray felt envelops plant parts. Most common under wet, humid conditions. Stunting, dieback, and distortion may result.
Powdery mildew	Symptoms include a delicate web of white felt (mycelium) and colorless spores, which give a powdery effect. Mildew is usually present on upper sides of leaves but may also be seen on undersides. Dwarfing and stunting often occur.



Powdery mildew on angel wing begonia

Table 5. Houseplant pest management*

<i>Plant</i>	<i>Pest/Disease</i> [†]	<i>Cultural pest management practices</i>
African violet	Botrytis blight (Gray mold)	Use sterile potting mix. Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting flowers. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.
	Crown rot	Use sterile potting mix. Avoid overwatering or planting too deeply. Avoid wetting foliage if possible; water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Rogue plants: remove and destroy or discard entire infected plant and potting soil. Propagate by starting a cutting taken above affected area.
	Powdery mildew	See Table 4 for description. Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.
	Ring spot	Do not splash cold water on leaves.
	Cyclamen mites	Discard infested plants.
	Mealybug	See Table 3 for description. Remove by hand. Wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish

***Note:** The use of alcohol and washing with soapy water are home remedies. **Home remedies** are *not* endorsements by Cornell University of any product or procedure, and they are not recommendations for use, either express or implied. Neither Cornell University nor its employees or agents is responsible for any injury or damage to person or property arising from the use of this information.

†See Tables 3 and 4 for a description of common pests and diseases.

continued

Table 5. Houseplant pest management (continued)





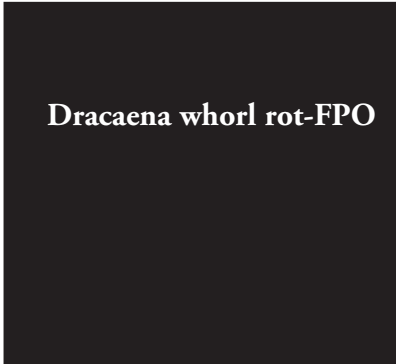

<i>Plant</i>	<i>Pest/Disease†</i>	<i>Cultural pest management practices</i>
African violet <i>(continued)</i>  Mealybug	Mealybug <i>(continued)</i>	detergent in 1 gal. water. Thoroughly wash undersides of leaves where pests may also reside. Remove mealybugs with tweezers or toothpick. Rubbing alcohol on a swab can also be used to remove insects. Make a swab by attaching a tuft of cotton to tip of a thin stick. Dip cotton end in rubbing alcohol, then touch insect and gently remove it. Do not spread alcohol on plant tissue because injury can occur.
	Root mealybug	No cultural controls available. Discard plant to avoid spreading.
Asparagus fern	Aphids  Aphid or plant louse	See Table 3 for description. Wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside.
	Begonia Bacterial leaf spot <i>(Xanthomonas sp.)</i> Botrytis blight (Gray mold) Powdery mildew Aphids Mealybug Whitefly	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Rogue severely infested plants: remove and destroy or discard entire infected plant and potting soil. See Table 4 for description. Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting flowers. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. See African violet. See Asparagus fern. See African violet.
 Whitefly	See Table 3 for description. Wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside.	
Christmas cactus	Fusarium crown rot	Avoid wetting foliage if possible. Water early in the day so the aboveground plant parts will dry as quickly as possible. Avoid overwatering. Propagate by starting a cutting taken above affected area. Use sterile potting mix.
Citrus  Spider mite	Scales	See Table 3 for description. Remove by hand. Wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish detergent in 1 gal water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside. Rubbing alcohol on a swab can be used to remove insects. Make swab by attaching a tuft of cotton to tip of a thin stick. Dip cotton end in rubbing alcohol, then touch insect and gently remove it. Do not spread alcohol on plant tissue because injury can occur.
	Spider mites	See Table 3 for description. Wash plants with soapy water and soft brush or cloth to remove mites. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside.
	Whitefly	Wash plant.

Table 5. Houseplant pest management (*continued*)

<i>Plant</i>	<i>Pest/Disease†</i>	<i>Cultural pest management practices</i>
Coleus	Mealybug	See African violet.
	Whitefly	See Begonia.
Croton	Mealybug	See African violet.
Cyclamen	Bacterial soft rot of corm	Use sterile potting mix. Plant corm shallowly. Rogue plants: remove and destroy or discard entire infected plant and potting soil.
	Wilt	Rogue plants: remove and destroy or discard entire infected plant and potting soil.
	Cyclamen mites	Discard infested plants.
Dieffenbachia	Bacterial leaf and stem rot (<i>Erwinia</i> sp.)	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Propagate by starting a cutting taken above affected area. Rogue plants: remove and destroy or discard entire infested plant and potting soil.
	Spider mites	See Citrus.
Dracaena	Leaf spots, whorl rot	Keep soil pH at 6–6.5; avoid fluoride (in fluoridated water, superphosphate, or perlite). Avoid wetting foliage and crowding plants. Never put water into whorl of plant.
	Mealybug	See African violet.
	Spider mites	See Citrus.
		
		<p>Dracaena whorl rot caused by the fungus <i>Fusarium</i></p>
False aralia	Scales	See Citrus.
	Spider mites	See Citrus.
		
	Spider mite	
Ferns	Anthrachnose	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.
	Scales	See Citrus.

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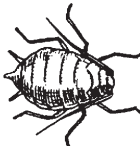
Table 5. Houseplant pest management *(continued)*

<i>Plant</i>	<i>Pest/Disease†</i>	<i>Cultural pest management practices</i>
Fuchsia	Botrytis blight	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.
	Thielaviopsis root rot	Use growing medium with pH between 4.5 and 5.5.
	Mealybug	See African violet.
	Whitefly	Rogue plant: remove and destroy or discard entire infected plant and potting soil. Or wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside.
Gardenia	Fungal leaf spot	Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Practice plant sanitation; when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof.
	Bud drop	Prevent water stress. Avoid high night temperature.
	Mealybug	See African violet.
	Scales	See Citrus.
	Spider mites	See Citrus.
	Whitefly	See Citrus.
Geranium	Bacterial blight <i>(Xanthomonas)</i>	Rogue.
	Bacterial leaf spot <i>(Acidovorax or Pseudomonas spp.)</i>	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Rogue severely infected plants: remove and destroy or discard entire infested plant and potting soil.
	Black leg <i>(Pythium spp.)</i>	Use well-drained, sterile potting mix; avoid overwatering. Do not fertilize.
	Botrytis blight (Gray mold)	Use sterile potting mix. Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting flowers. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.



Black leg, a root and stem rot disease of geranium

Table 5. Houseplant pest management *(continued)*

<i>Plant</i>	<i>Pest/Disease†</i>	<i>Cultural pest management practices</i>
Geranium <i>(continued)</i>	Oedema	Avoid overwatering.
 Caterpillar	Caterpillars	Remove caterpillars by hand and dispose of them; some are night feeders, so use a flashlight to locate pests at night.
	Spider mites	See Citrus.
	Whitefly	See Begonia.
Gloxinia	Leaf and stem rot	Use well-drained, sterile potting mix; avoid overwatering.
 Aphid	Aphids	Wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside. Remove by hand. Remove aphids with tweezers or toothpick, or use rubbing alcohol on a swab to remove insects. Make a swab by attaching a tuft of cotton to tip of a thin stick. Dip cotton end in rubbing alcohol, then touch insect and gently remove it. Do not spread alcohol on plant tissue because injury can occur.
	Cyclamen mite	Discard infested plants.
	Mealybug	See African violet.
Grape ivy (<i>Cissus</i>)	Powdery mildew	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants in plantings.
Ivy (English)	Fungal leaf spot	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Verify diagnosis.
	Spider mites	See Citrus.
Jade plant	Powdery mildew	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.
	Root rot	Use well-drained, sterile potting mix; avoid overwatering; increase lighting. Propagate by starting a cutting taken above affected area.
	Mealybug	Remove by hand. Wash plants with soapy water and soft brush or cloth to remove insects. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside. Remove mealybugs with tweezers or toothpick. Rubbing alcohol on a swab can also be used to remove insects. Make a swab by attaching a tuft of cotton to tip of a thin stick. Dip cotton end in rubbing alcohol, then touch insect and gently remove it. Do not spread alcohol on plant tissue because injury can occur.

continued

Table 5. Houseplant pest management (continued)



<i>Plant</i>	<i>Pest/Disease</i> [†]	<i>Cultural pest management practices</i>
Palms  Mealybug	Leafspot or tipburn	May indicate low relative humidity, overfertilization, or other root injury. Check roots. Verify diagnosis. Accurate diagnosis is required before more specific treatment.
	Mealybug	See Jade plant.
	Scales	See Citrus.
	Spider mites	See Citrus.
Philodendron	Bacterial leaf spot (<i>Erwinia</i> sp.)	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Rogue severely infested plants: remove and destroy or discard entire infested plant and potting soil.
	Scale	Remove by hand. Wash plants with soapy water and soft brush or cloth to remove insects and spider mites. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside. Rubbing alcohol on a swab can also be used to remove insects. Make swab by attaching a tuft of cotton to tip of a thin stick. Dip cotton end in rubbing alcohol, then touch insect and gently remove it. Do not spread alcohol on plant tissue because injury can occur. Treat crawler stage (young insect that emerges from egg and “crawls” to a feeding site). Crawlers are more sensitive to insecticidal treatment than other stages are. Once crawler finds an acceptable site it settles down and begins to feed. Thereafter it molts to next stage and begins to secrete a waxy or hard scalelike covering.
Pittosporum	Spider mites	See Citrus.
Podocarpus	Spider mites	See Citrus.
Poinsettia  Whitefly	Root rot	Avoid overwatering or overfertilization. Use sterile potting mix. Rogue plants: remove and destroy or discard entire infested plant and potting soil.
	Whitefly	Wash plants with soapy water and soft brush or cloth to remove insects and spider mites. Use 2 tsp. of mild dish detergent in 1 gal. water. A jet of clean water can also be used to knock insects off. Thoroughly wash undersides of leaves where pests may also reside. Or rogue plant: remove and destroy or discard entire infested plant and potting soil to avoid spread to other houseplants.
Pothos	Bacterial leaf spot	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so the aboveground plant parts will dry as quickly as possible. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings. Rogue severely infested plants: remove and destroy or discard entire infested plant and potting soil.

Table 5. Houseplant pest management (continued)

<i>Plant</i>	<i>Pest/Disease</i> [†]	<i>Cultural pest management practices</i>
Roses (miniature)	Botrytis blight (Gray mold)	Use sterile potting mix. Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting flowers. Avoid crowding plants; space plants apart to allow air circulation; prune to thin plants or plantings.
	Powdery mildew	Often terminal for a mini-rose. Discard plant.
	Spider mites	See Citrus.
Rubber plant	Anthracnose	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wetting foliage if possible. Water early in the day so aboveground plant parts will dry as quickly as possible. Avoid wounding leaves.
	Oedema	Avoid overwatering.
	Mealybug	See Jade plant.
	Scales	See Citrus.
Schefflera	Anthracnose	See Rubber plant.
	Scales	See Philodendron.
	Spider mites	See Citrus.
Weeping fig	Phomopsis canker and dieback	Practice plant sanitation: when plants are not wet, carefully remove and destroy or discard affected plant parts or portions thereof. Avoid wounding. Increase lighting.
	Scales	See Citrus.

FURTHER READING

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