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Houseplants Common Insects & Diseases
Michigan State University Cooperative Extension Service
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HOUSEPLANTS:

Common Insects & Diseases

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Many people who care for houseplants do not recognize problems until one or more plants have been severely damaged. Most of the common insects and diseases of houseplants are inconspicuous at first and easy to overlook until the infestation or infection is severe. Learning to recognize early damage symptoms is the easiest way to tell if you have a problem so you can prevent serious damage and restore the plant to good health.

Often a 10X hand lens will be necessary to identify a suspected pest problem. Of course, you need to know what symptoms to look for and where they are likely to be on the plant. Keep in mind that most houseplant problems caused by insects and diseases occur because the plants have been stressed by improper care: too much or too little water, light, heat or fertilizer, or improper soil type and pH. Check these routinely when caring for and examining your houseplants (see Extension Bulletin E-1077, *Houseplant Problems*, free).

INSECT PESTS

Two general types of insects occur on houseplants: soil-related pests and leaf- and stem-related pests. The first group contains the springtails and fungus gnats. These pests are easily controlled

and are usually not a serious problem. The second group consists of several species of insects that feed on leaves and stems. Spider mites are one type. A second group, the sucking insects, contains four members of the insect group called the Homoptera: aphids, mealybugs, scales and whiteflies. A third type of sap feeder is the thrips. These tiny insects rasp the plant tissue and suck up the sap that seeps from the damaged plant cells.

DISEASES

Disease problems associated with houseplants can also be divided into two groups: leaf and stem diseases and root disorders. A number of fungi and bacteria can cause disease in either category. Disease-causing fungi include species of *Alternaria*, *Botrytis*, *Erysiphe*, *Sphaerotheca* and *Septoria*. Disease-causing bacteria include *Erwinia*, *Pseudomonas* and *Xanthomonas*. Disease agents considered to cause root disorders include *Phytophthora*, *Pythium* and *Rhizoctonia*.

Several conspicuous fungi, algae and mosses also grow on the soil surface in pots when moisture is adequate. These organisms do not pose a problem to plants unless their growth

becomes so dense that it keeps water from penetrating the soil.

INSECT AND DISEASE MANAGEMENT

Plants subjected to environmental stress are usually more susceptible to invasion by insects and disease organisms. Stressed plants may also show more severe damage symptoms than unstressed plants subjected to identical insects and diseases. Therefore, it is important for the interior plantscaper to provide optimum growing conditions for plants, including proper light, temperature, humidity, soil moisture and pH.

Sometimes, however, even plants growing under ideal environmental conditions will develop serious insect and/or disease problems. These plants may need to be treated with an appropriate pesticide to reduce the pest population. After applying pesticide, you will need to make every effort to optimize the environmental conditions so the treated plant can recover.

Use a pesticide to control an insect or disease problem only after you have properly identified the infesting organism. Correct identification of the organism and an understanding of its life cycle

will help you choose the proper pesticide and apply it properly and at the best time to achieve the most effective control.

You also need knowledge of the horticultural characteristics of the plant, especially its sensitivity to environmental stress and pesticides to choose and use the right pesticide. Some pesticides are harmful (phytotoxic) to houseplants because of the plants' sensitivity to environmental stresses or because of improper pesticide application. Some chemicals recommended in this bulletin—malathion, for example—are known to be phytotoxic to some species of houseplants.

The following chart describes common plant pests and problems and suggests various control measures. Remember: before you purchase any pesticide, know exactly what **pest** you are trying to control on what **species of ornamental plant**. Use the selected pesticide only on the plants listed on the label of the product and on the pamphlet (labeling) that usually accompanies the pesticide container. Do not treat any plants that the label lists as sensitive to the pesticide.

SAFE USE OF PESTICIDES

For all pesticides, follow ALL the instructions and limitations that appear on the product label and in any pamphlets that accompany the product. Pay close attention to the precautions and emergency procedures in case an accident occurs. Wear protective clothing when using any pesticide: long-sleeved shirt, long pants, rubber boots, gloves (no leather items) and goggles. Always apply the exact amount of diluted pesticide material specified by the label. Do not misuse or mishandle any pesticide.

Some pesticides that can be used on ornamental plants are formulated for use in a home or office—an example is ORTHO House Plant Insect Control. But the majority of pesticides labeled for ornamentals may not be used indoors. Always move an infested plant outside to a shady spot to treat it with a pesticide. If the weather is cold, treat the infested plant in a garage, remembering to avoid using the pesticide near any air intakes for heating units or near any open flame, including pilot lights on gas hot water heaters and furnaces.

After applying any pesticide to an infected plant, allow the surface of a plant treated with a spray to dry before taking it back into any living areas, or move a plant treated with a dust to an area inaccessible to children and animals. Allow 24 hours for the pesticide dust to work, and then wash it off with large amounts of water before taking the treated plant back into the living quarters.

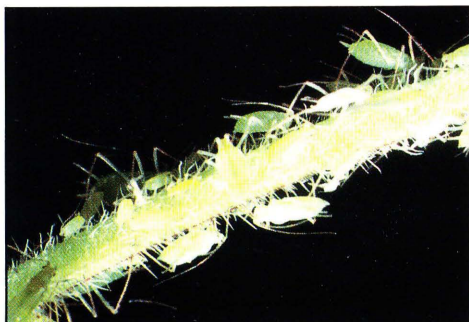
Pesticides must be registered with the U.S. Environmental Protection Agency and the Michigan Department of Agriculture before they can legally be sold and used in Michigan. Purchase only pesticide products that are labeled for the ornamental plant you wish to treat and the pest you wish to control on that plant. Remember that the pesticide label is the legal document on pesticide use. Read the label carefully and follow all instructions and limitations. Using a pesticide in a manner not consistent with the label can lead to the injury of plants, humans, animals and the environment. Pesticides are useful management tools for the control of pests only when they are used in an effective, economical and environmentally sound manner.

INSECT

DESCRIPTION AND DAMAGE

CONTROL MEASURES

APHIDS



Aphids are soft-bodied insects about 3 mm ($\frac{1}{8}$ inch) long that cluster on undersides of leaves, buds and other tender plant parts. They feed by sucking plant juices and cause poor growth and distorted leaves. Aphids excrete honeydew, which can build up on leaves and promote growth of sooty mold.

Apply a pesticide spray containing diazinon, malathion, Orthene, resmethrin, or an insecticidal soap. Repeat weekly until aphids disappear.

SCALES



Scales are soft and oval with a flat upper surface, yellowish brown and about 3 mm ($\frac{1}{8}$ inch) long. Other species have different shapes. All have immobile feeding stages and mobile (crawler) stages. Crawlers are the life stage easiest to control. Heavy scale infestations weaken and stunt plants.

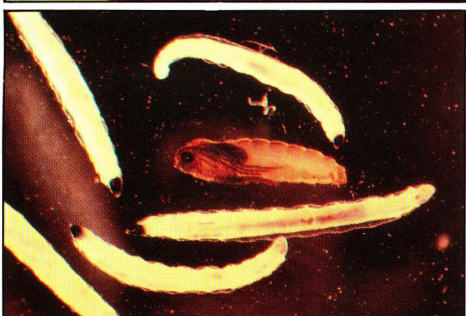
Apply a pesticide spray containing diazinon, Orthene, resmethrin, pyrethrum (pyrethrin) or rotenone, or an insecticidal soap. Repeat every 2 weeks until scale insects cannot be found.

FUNGUS GNATS



Larvae are thin, whitish, wormlike maggots about 6 mm ($\frac{1}{4}$ inch) long. They are most likely to occur in soils high in organic matter. Larvae feed on roots and crowns of plants, stunting growth and ultimately causing leaf drop. Adults are dark, flylike insects about 3 mm ($\frac{1}{8}$ inch) long. They are attracted to light. They cause no damage but are a nuisance.

Apply a spray containing diazinon to foliage and the soil surface. Repeat weekly until no adult fungus gnats are found.



MEALYBUGS



Mealybugs are soft-bodied, wingless insects. Most types have waxy filaments extending from the edges of the body. Young and adults look similar, with adults about 5 mm ($\frac{3}{16}$ inch) long. Eggs are laid in a cottony mass on the plant. Adults can be found at rest or slowly crawling on stems and on the undersides of leaves. They damage plants by sucking plant sap, which causes stunted growth or kills the plant. These insects secrete honeydew, and sooty mold may develop. One kind of mealybug feeds on the underground parts of plants. If no other cause of plant decline is found, examine the roots for mealybugs.

Apply a pesticide spray containing diazinon, Orthene, resmethrin or an insecticidal soap. Add a small amount of mild dish soap ($\frac{1}{2}$ tsp per gallon of water) to increase the activity of the insecticide. Repeat every 2 weeks until mealybugs disappear.

INSECT

DESCRIPTION AND DAMAGE

CONTROL MEASURES

SPIDER MITES



Minute spiderlike mites may be greenish, yellowish or reddish. They are found most often within fine, silky webbing on the undersides of leaves. If the infestation is heavy, they may be found over the entire plant. Damage is caused by mite feeding on epidermal plant cells. Injury shows up first as yellowish blotching on leaves. Progressive feeding results in bronzed leaves, leaf drop and possible plant death.

Apply a foliar spray of malathion or insecticidal soap. Repeat applications weekly until spider mites disappear. Syringing foliage with a mild soap solution (1 tsp dish soap per gallon of water) will also help reduce mite populations. (Some plants may be injured by soap solutions.)

CYCLAMEN MITES



Cyclamen mites are so small ($1/100$ inch) that they cannot be seen without a microscope. They must be diagnosed by the damage they cause. Examine the new growth of cyclamens, African violets and other susceptible plants. If the new growth is distorted or brown, the plant may be infested with cyclamen mites.

Apply a pesticide spray containing malathion to infested plants. Repeat application in 10 days. Use caution because malathion sprays may injure delicate plants such as African violets.

THRIPS



Thrips are very small (1 mm), cream to dark brown, cigar-shaped insects. Adults have two pair of feathery wings; immature forms are wingless. They are active if disturbed, and adults fly readily. Leaf surfaces become whitened and may appear flecked. Leaf tips wither, curl up and die. Buds fail to open normally.

Apply a pesticide spray containing Orthene or resmethrin. Treat one plant first to test for possible phytotoxicity problems. Repeat application every 2 weeks until thrips are no longer found.



INSECT**DESCRIPTION AND DAMAGE****CONTROL MEASURES****WHITEFLIES**

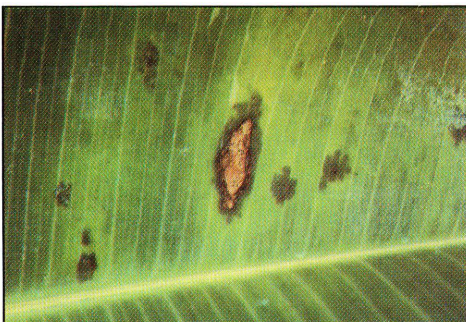
Adults are white, with wedge-shaped wings, and are about 2 mm ($1/16$ inch) long. When infested plants are moved, whitefly adults take flight and look like pieces of ash floating in the air. Larvae are scalelike, oval and flat on top. They are immobile and attach themselves to leaves. Both adults and larvae suck plant juices. Infested leaves turn yellow and may drop off. Whiteflies secrete honeydew, and sooty mold may develop.

Apply a pesticide spray containing Orthene or diazinon. Repeat applications weekly until whiteflies disappear.

DISEASES**DESCRIPTION AND DAMAGE****CONTROL MEASURES****SAPROPHYTIC FUNGI, ALGAE & MOSSES** *on soil surface*

If a pink, white, light orange or tan growth appears on the soil surface, suspect saprophytic (non-pathogenic) fungi. If a green to near-black, sometimes slimy growth appears, suspect algae; and if a green, velvetlike mat develops, suspect a moss to be the cause of your problem. These organisms may form such a dense mat over the soil that it excludes water and/or water penetration is very slow. Plant symptoms include poor growth or wilting even when adequate water has been provided.

Excessive growth of algae and mosses indicates high air and soil moisture conditions. Let the soil surface dry between waterings. Also cultivate the soil surface to break up the matted growth. Incorporate fresh peat or vermiculite with the soil to improve drainage.

BACTERIAL LEAF AND STEM ROTTS (*Xanthomonas* or *Erwinia* spp.)

Irregular to circular, brownish spots surrounded by water-soaked margins and/or yellow halos occur on leaves or stems. As the spots enlarge, centers dry out, crack and become brown to near black. Under high humidity, small droplets of milky or amber-colored ooze can be found in the spots.

Remove and destroy affected plant tissues. Disinfect tools between cuts and remove tissues only when plants are dry. Do not mist or spray leaves with water, as this tends to spread the bacteria. Avoid handling plants.

DISEASES

DESCRIPTION AND DAMAGE

CONTROL MEASURES

POWDERY MILDEWS (*Erysiphe and Sphaerotheca* spp.)



White to grayish, fuzzy or powdery, circular spots appear on leaves, petioles, stems or flowers. The tissue in spots may become crusty or scablike.

Wash leaves with mild detergent water to help reduce disease, or dust or spray with fungicides such as sulfur, benomyl or triforine.

FUNGAL LEAF SPOTS (*Alternaria or Septoria* spp.)



Small, circular, brown spots develop on leaves. With some pathogens (e.g., anthracnose), spots enlarge and a concentric ring pattern develops as the fungus grows in the tissues.

Remove and destroy affected leaves or portions of leaves. Spray plants with chlorothalonil, benomyl or captan to prevent further infection.

OEDEMA (*Physiological*)



Small, blisterlike eruptions appear on the undersides of leaves. Affected tissues appear water-soaked and soon develop tan to brown, corky centers. As spots become numerous, the leaf yellows and falls. Once affected, leaves do not recover. Oedema usually develops when the soil is moist and warm, the air is moist and cool, and available light is much reduced. (For more detailed information, consult Extension bulletin E-1581, "How to Recognize and Control Oedema in Ornamental Plants.")

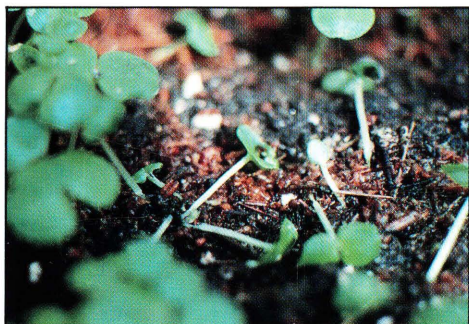
Reduce watering. Improve soil drainage, increase light and increase air circulation. Increased humidity and low light conditions occur frequently during the cloudy winter months.

DISEASES

DESCRIPTION AND DAMAGE

CONTROL MEASURES

DAMPING-OFF (*Pythium and Rhizoctonia spp.*)



In pre-emergence damping-off, the seed rots either before germination or before the seedling has emerged from the soil. It is attacked at the soil line by the pathogens. A constriction develops at the point of fungal contact and the resulting stem rot causes the seedling to topple over.

Pot plants in porous, well drained soil, and do not overwater. Spray soil and roots with captan. Benomyl may be used to control *Rhizoctonia* root and stem rot.

ROOT ROT (*Rhizoctonia, Pythium and Phytophthora spp.*)



Plants grow poorly and leaves may yellow and drop prematurely. The basal stem and roots show brown to black lesions, and sections of root may be collapsed. In advanced stages, severe wilt accompanies other symptoms. Poorly drained soil, high soil moisture and poor aeration favor development of root rot fungi.

See above.

RUST (*Puccinia spp.*)



Leaves develop small, blisterlike eruptions, usually on the undersides. The pustules burst to expose a yellowish or brownish orange mass of powdery spores.

Remove and destroy infected leaves. Apply chlorothalonil or triforine to prevent infection of healthy leaves.

BOTRYTIS BLIGHT (*Botrytis* spp.)

Flowers or leaves develop brown, mushy spots, usually where healthy tissues are in contact with dead petals or leaves. Under humid, moist conditions, a gray to brownish gray, fuzzy growth develops on the dead plant tissues.

Reduce humidity, keep foliage dry. Remove dead foliage and flowers. Captan, benomyl or chlorothalonil, used as a spray or dust, will help control Botrytis blight.

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