Houseplants can develop many problems, but most have environmental or cultural causes. Diseases are not common on most houseplants grown indoors because environmental conditions are not favorable for plant pathogens to grow and infect the plants. Control of diseases begins with prevention. Always buy disease-free plants. Use pasteurized soil when repotting. Before reusing any pots, they should be scrubbed clean and rinsed in a solution of one part bleach to nine parts water to kill any disease organisms present. Take good care of your plants (proper fertilizing, watering and spacing) and check them periodically for disease symptoms.

### Diseases

#### Anthracnose:
This disease is caused by the fungi *Colletotrichum* and *Gloeosporium*. The leaf tips turn yellow, then tan, then dark brown. The browning may extend completely around the leaf. The leaves eventually die. Wounding enhances penetration by these fungi.

**Prevention & Treatment:** Pick off and destroy infected leaves. Do not mist leaves. Sprays of copper soap, chlorothalonil, myclobutanil, or tebuconazole can be used after removing infected plant parts in order to reduce the incidence of future disease. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

#### Fungal Leaf Spots:
Several fungi can cause leaf spots. Symptoms include small, brown spots with yellowish margins on the leaves. Spots may have a concentric ring or target pattern. Small black dots (fruiting bodies of the fungi) may be visible in dead tissue. Sometimes the lesions run together and the entire leaf dies. The fungi survive on dead and decaying plant matter in the soil.

**Prevention & Treatment:** Pick off and destroy infected plant material. Provide good air circulation around the plants. Avoid splashing water on the foliage since this spreads the fungi. Sprays of copper soap, chlorothalonil, myclobutanil, or tebuconazole can be used after removing infected plant parts in order to reduce the incidence of future disease. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

#### Bacterial Leaf Spots:
Plants infected with bacteria have water soaked spots, sometimes with a yellow halo, usually uniform in size and sometimes with a sticky ooze. The spots enlarge and will run together under wet conditions. Under drier conditions the spots do not enlarge but dry out and turn reddish brown, giving a speckled appearance.

**Prevention & Treatment:** Remove all diseased plant material. Avoid low temperatures, crowding plants, and spraying or splashing water onto the foliage. Sprays of copper soap can be used after removing infected plant parts in order to reduce the incidence of future disease. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

#### Root Rot & Stem Rot:
The fungi *Rhizoctonia*, *Pythium*, *Botrytis*, *Phytophthora*, *Alternaria*, and *Sclerotinia* cause these diseases. With root or stem rot, leaves and stems show a noticeable wilt. Stems may be girdled at or near soil level by a ring of brown or black tissue. Infected roots are brown to black and may be soft. The fungi survive in the soil or on infected plant debris in the soil. Their spores can be spread by wind, splashing water or the moving of infested soil.
**Prevention & Treatment:** Use sterilized soil and pots. Do not overwater the plants, since too much water increases the occurrence of root rot. If only a few roots are infected, cut out these roots and repot the plant in sterile soil. Fungicides are available, however most indoor gardeners will find that these chemicals probably cost more than a new plant.

**Powdery Mildew:** The fungus *Oidium* species causes the formation of a white, powdery growth or dry, brown, papery leaf spots. Initial infections usually come from fungi surviving in dead and decaying plant materials or from airborne spores from wild or cultivated hosts out-of-doors.

**Prevention & Treatment:** Since the disease develops most rapidly under humid conditions, proper ventilation and not overwatering will help control this disease. Remove severely infected leaves. Sprays of sulfur, chlorothalonil, or myclobutanil can be used after removing infected plant parts in order to reduce the incidence of future disease. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

**Cultural/Environmental Problems**
Several common problems fall under the category of cultural or environmental problems. There is no control for these problems other than manipulating the plant environment and care program. Over- or under-watering is a major contributor to houseplant decline. Overwatering decreases the amount of oxygen available for root growth and favors development of root diseases. Chronic under-watering results in wilting, leaf curling and death.

**Oedema:** Oedema is a physiological condition in which rough corky swellings form on the petioles and lower leaf surfaces. Excessive soil moisture and poor lighting with low temperatures predispose plants to oedema. It occurs most often on succulent plants and during the winter. If injury continues, the leaves turn yellow, droop and fall from the plants. Leaves showing symptoms of oedema will not recover, but you can halt the decline of a plant by improving light and watering less often. Repotting to improve soil drainage may also help.

**Leaf Drop:** Either over- or under-watering can cause leaf drop. Plants in pots that are too small will drop leaves. Some leaf drop occurs when plants are subjected to a significant change in environment, but this leaf drop should only last about three weeks. Chilling the plant can also cause leaf drop. Insects and diseases occasionally cause leaf drop.

**Brown Leaf Tips & Edges:** Brown leaf tips and margins can be caused by exposure to hot dry air, improper watering, insect feeding, and salt accumulation. White to grey crusty deposits on the soil surface or rim of pots is a sign of salt buildup. (Do not confuse this with the white or yellow mold-like growth of saprophytic soil fungi.) Several steps can be taken to decrease salt buildup and injury:
- Use rain water when possible to water plants.
- Drench plants with water periodically to leach some of the salts from the potting soil.
- Empty water from the saucer under the plant.
- Do not over fertilize.
- Remove salt crusts from soil surface and add fresh soil to the pot.
- Repot plants periodically in new potting soil.

**Wilting:** Some common causes of wilting are a lack of water, excess water, root rot, too much fertilizer and/or a salt buildup. Overwatering will cause the roots to die from lack of oxygen. Provide drainage, and reduce watering. A pot-bound plant has filled its pot with roots. There is not enough soil to hold the water for all those roots, so the plant wilts. Correct this problem by repotting in a larger pot. Fertilizer and minerals from hard water will accumulate in soil and cause root damage and wilting. Repot in fresh soil.

**Yellowing of the Entire Plant:** Foliage may become yellow because of too little light, too little fertilizer, insect pests, or mites. Most often yellowing is a symptom caused by overwatering. Check for drainage in the pot, examine the roots and if most are dark, soft and dead, it is better to discard the plant.

**Yellowing, Browning & Death of Lower Leaves:** This is generally caused by nitrogen or iron deficiency. Pot-bound plants are especially susceptible. Regular application of fertilizer and
repotting periodically in fresh soil avoids this problem.

**Bud Drop:** The premature dropping of flower buds may be caused by lack of fertilization, excessive nitrogen, excessively dry soil, overwatering or spraying with cold water.

**Cold Water Spots:** Watering with cold water or splashing water on the leaves sometimes causes white or straw-colored spots or patches on the leaves of some plants.

**Table 1. Fungicides to Control Diseases on Houseplants.**

<table>
<thead>
<tr>
<th>Fungicide Active Ingredient</th>
<th>Examples of Brands &amp; Products</th>
<th>% Active Ingredients</th>
<th>Pests Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Natural, Less Toxic Fungicides</strong></td>
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</tbody>
</table>
| Copper Soaps | Bonide Liquid Copper Fungicide RTU  
Natural Guard Copper Soap Liquid Fungicide RTU  
Espoma Earth-tone Garden Fungicide Copper Soap RTU | 0.08% copper octanoate | Fungal leaf spots, anthracnose |
| Sulfur | Bayer Advanced Insect, Disease & Mite Control RTU  
Espoma Earth-tone 3-in-1 Disease Control – Kills Fungus, Insects & Mites RTU  
Ortho Insect, Mite & Disease 3-in-1 RTU | 0.20% Sulfur  
0.01% Pyrethrins | Powdery mildew |
| **Contact & Systemic Fungicides** |
| Chlorothalonil | Bonide Fung-onil Multi-Purpose Fungicide RTU  
Ferti-lome Broad Spectrum Landscape & Garden Fungicide RTU | 0.087% Chlorothalonil | Fungal leaf spots, powdery mildew, anthracnose |
| Myclobutanil | Spectracide Immunox 3-in-1 Insect & Disease Control for Gardens RTU | 0.012% Myclobutanil  
0.02% Permethrin | Fungal leaf spots, powdery mildew, anthracnose |
| Tebuconazole | Bayer Advanced 3-in-1 Insect, Disease & Mite Control RTU | 0.015% Tebuconazole  
0.012% Imidacloprid  
0.014% Tau-Fluvalinate | Fungal leaf spots, anthracnose |

RTU = Ready to Use (a pre-mixed spray bottle)

Note: Spraying of houseplants is most safely done outdoors during mild temperatures. Once plants are dry, they may be brought back indoors. The other active ingredients: pyrethrins, permethrin and imidacloprid are insecticides; tau-fluvalinate is a miticide.


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