Houseplants have become one of the country’s most popular hobbies. They provide great pleasure to people who keep them, but when they harbor insects and other pests they no longer provide such pleasure.

MAJOR PESTS

Aphids. These are small insects about $\frac{1}{16}$ to $\frac{1}{8}$ inch long. They are six-legged, variously colored, and some look powdery or woolly. Both wingless and winged forms can be found on plants. Under the right conditions, aphids multiply rapidly and can spread quickly to other plants in the house. Heavy infestations may damage or actually kill plants. Aphids have sucking mouth parts that pierce the tissue and suck plant juices. Damaged leaves lose their green color and look stunted, distorted, or curled. The excreta or honeydew given off by aphids is another problem associated with this pest. This material is sticky, gives the leaf surface a shiny look, and provides food for the development of sooty mold.

Whiteflies. Whiteflies are tiny insects about $\frac{1}{10}$ to $\frac{1}{16}$ inch long that resemble tiny moths. The body and wings are covered with a white powdery substance. When at rest, their wings are held roof-like over the body. Both the immature stages and the adults have
sucking mouth parts. There are five distinct stages in the whitefly's development: (1) the small egg which is laid on the underside of leaves and is often covered with a powdery material; (2) the newly hatched or "crawler" nymph which is flat, nearly transparent, and can move; (3) an intermediate nymph which has no antennae or legs and therefore cannot move; (4) a dark nymphal stage which is somewhat segmented; and (5) the adult. Up to 400 eggs can be laid by a single female, and whiteflies continuously breed in homes and in greenhouses. Damage by whiteflies is very similar to that of aphids. In addition, the adults are active fliers and become a household nuisance.

**Scales.** Several different scales infest houseplants. The adults are generally quite small, ranging from $\frac{1}{16}$ to $\frac{1}{6}$ inch in diameter, and may be colored white, black, brown, gray, or tan. Many are shaped somewhat like a ball and have no distinctive features other than that they are flattened or bulge slightly and are rigidly attached to plants. Others have distinctive shapes, like oystershells (i.e., oystershell scale), while others may look like turtle shells. The scale is actually a hard or soft covering which protects the insects.

Chemical control in this stage is often impossible. The female often lays eggs under the scale. When the eggs hatch, tiny "crawlers" emerge and begin to move about in search of a place to feed. The crawler stage is the most easily killed with chemical sprays. The adult male is the only winged member of the scale group. Damage by scales is similar to that of aphids and whiteflies. Honeydew and sooty molds are often present. Severe injury, including death of the plants, may be the final result of poor control.

**Mealybugs.** Several different mealybugs attack houseplants and are among the most serious pests. Most appear powdery. They are about $\frac{3}{16}$ inch long, flattened, slender, and some have waxy filaments extending from their bodies. Most species move freely but slowly on the plant. Females are wingless, while males have a single pair of wings. Mealybugs attack all parts of the plant. One species feeds on the roots. Eggs are laid in clusters and are covered by waxy or fuzzy material. Damage is similar to that of aphid feeding. Also, honeydew and sooty molds caused by mealybugs are frequently a problem.

**Spider mites.** Mites are frequently referred to as insects. They are not insects since they have eight legs, only two body regions, and are always wingless. They are, in fact, closely related to spiders. Spider mites are extremely small and a hand lens of at least 10X magnification is often needed to see them. Usually mite damage is seen long before the mites themselves are noticed. Webbing is characteristic of spider mites. The web helps them spread to other plants, often on air currents. There are three stages in the mite's development: egg, a series of nymphal stages, and the adult. All stages except the egg damage plants. Mite damage is characterized...
by general lack of vigor, loss of color, and a speckled appearance on the leaves.

**Cyclamen mite.** Although named for cyclamens, these mites also damage many other plants. Adults are too small to be seen with the naked eye. Under a magnifying glass, they are seen as oval, amber, or tan colored, semi-transparent, and glistening. The young are even smaller and milky white. These mites are found mostly in protected places on young, tender leaves, young stem ends, buds, and flowers. They crawl from plant to plant where leaves touch. They can also spread to other plants by transfer on hands or clothing. Damage consists of twisted, curled, and brittle leaves, deformed buds, and flowers that are often streaked with darker color. Blackening of leaves is also common.

**MINOR OR LESS COMMON PESTS**

**Leafminers.** A large number of different insects are commonly called leafminers. Members of the fly, sawfly, and moth-butterfly group are the most common. The larval stage is responsible for the leafmining damage which appears as a winding, discolored trail or an irregular blotch within the leaf tissue. Damage from these insects is rarely serious. It is usually a case of unsightliness. Simply remove and destroy the infested leaves to solve the problem.

**Fungus gnats.** These small black flies are first noticed around windows. The larvae feed on decaying matter, and therefore are most often found in highly organic soils. Most species rarely damage plant roots unless there are a great many of them. Generally, they only annoy people.

**Caterpillars.** The larvae of many moths and some butterflies sometimes feed on houseplants. They range from very tiny, 1/6 inch or so, in length up to 1 1/2 inches in length. Coloring of adults and caterpillars varies, although gray, whitish, or brownish is most common. Caterpillars may have stripes, spines, or bumps in any combination according to species. They have three pairs of true legs, and may also have a series of false legs along the tail end. Their presence is usually the result of an uninvited, fertile female moth who has slipped past the screen door and laid eggs on whatever was available. Caterpillars, as well as other pests, can also develop on plants that have been placed outdoors during the summer. Remove and destroy the eggs or caterpillars when they are noticed.

**Beetles.** Many beetles, including flea beetles and other leaf feeding beetles, are potential houseplant pests. These beetles have chewing mouth parts, and often the adults and larvae feed on plant tissue. Beetles have four life stages: egg, larva, pupa, and adult. In most species the adults can fly, which in some cases may explain their presence in homes. Again, the likelihood of beetle infestation increases when plants are placed outdoors. Removal of the insects is probably the most convenient and effective control.

**Thrips.** Thrips are small, slender insects about 1/16 inch long. Many have two pairs of fringed wings which are folded flat over the back when at rest. Some are predators, some scavengers, but the majority are serious plant pests. Their mouth parts are used for rasping leaf surfaces. Damage appears as a whitening or speckling of the leaf. Little black droplets may also be noticeable on some plants. Some plants may have a silvery appearance. Flowers are also damaged.

**Leafhoppers.** Leafhoppers are small to moderate sized sucking pests 1/16 to 1/4 inch long. They are related to aphids. They are only occasionally pests of houseplants. They vary in color and are wedge shaped. Leafhopper damage usually appears as mottling or speckling of the leaves and may be confused with mite injury.

**Springtails.** Springtails are very tiny, 1/6 inch or less, and vary in color. They are wingless and, as the name implies, many are capable of jumping.
While they may chew on little seedlings or tender plant parts, they mostly prefer to feed on decaying matter. They can become a nuisance when numerous.

**Slugs and snails.** These are soft-bodied, fleshy, legless creatures related to clams. They can be very destructive to a wide variety of plants. They usually require a moist environment. Slugs and snails are voracious feeders and frequently devour whole plants or whole plant parts. Their presence can also be detected from the slime trails they leave behind. These animals lay small, round, milky white eggs in the soil. Some commercial slow release fertilizer pellets closely resemble slug eggs and are often identified as such even by professionals. Hand removal of slugs is usually all that is necessary. Look for them hiding under mulch, under pots, and under pot rims. Placing shallow dishes of beer near the plants is helpful as they are attracted to beer and will crawl in and drown. Houseplants may become infested when the plants are placed outdoors.

**Millipedes.** These can build up in potted plants. They feed on plant parts, but more frequently, on decaying organic material. They become a nuisance when present in large numbers. Many species can occur on plants. They vary in color and can be tiny or up to 1 1/2 inches or more in length. They are easily identified by the presence of many legs, by the rounded shape, and by being slow moving.

**Centipedes.** These animals are not plant pests. They feed on many insects and insect relatives, and thus are beneficial. While they resemble millipedes by having many legs, they are very flat and very fast moving. They vary in size (¼ to 2 inches) as well as in color. Some of the larger ones often bite when disturbed. So, if their presence is annoying, remove them carefully and place them outdoors where they can continue to be useful in nature’s scheme of things.

**PREVENTION OF PESTS**

There are a number of things you should do, and do routinely, that will help you avoid unhappy encounters with houseplant pests. When you buy plants, inspect the leaves and stems carefully. Even those that are seemingly clean can have pests that are easily overlooked. Put new plants in isolation for a week or two in a separate room or garage. Many pests can fly, so isolation is necessary. Keep close watch on the plants to see if a pest population is building up. Putting houseplants outdoors on patios, etc., can invite a whole series of pest problems. If
you wish to do this, treat the plants as newly pur­
chased when you bring them back indoors.

Sometimes pests come indoors from outside. Good
screens on windows will keep out most flying insects
such as moths, beetles, etc.

Using soil from outdoors is another source of infesta­
tion. When you use it, you may also bring in uninvited
members of the soil fauna such as mites, slug eggs,
 etc. Commercially prepared potting soil might be a
better choice. If outside soil is used, sterilization is
an option; however, this kills desirable organisms in
the soil and may make the plants more susceptible
to disease.

Pests are transferred from plant to plant in a variety
of ways. Some have already been discussed. Some
of the more subtle ways are through human activi­
ty. Consider the times you have handled garden
store plants or admired a friend's collection. In do­
ing so, you could pick up scale crawlers, mites, etc.,
and bring them home to your own plants. It would
be wise to be on the lookout for plant pest infesta­
tions before you handle strange plants. Such aware­
ness will pay off.

Many pests maintain themselves because they have
suitable hiding places or suitable protective sites.
Avoid buildup of dead leaf material that might pro­
vide such sites.

NON-CHEMICAL CONTROL

Several techniques can be used as alternatives to
chemical controls. Some require more work than us­
ing chemical sprays, but they often give equally good
control.

Removal of infested parts. If only a few leaves
are infested, as with leafminers, it is quite effective
to simply remove and destroy that portion of the
plant. If roots are being damaged by mealybugs or
grubs of one kind or another, it is advisable to take
a cutting and start over again. Discard infested soil
and thoroughly clean the pot or container.

Disposal. Some plants may be so badly damaged
that they are too far gone to save. Getting rid of them
is the simplest answer.

Hand removal. This method is fairly effective for
a number of pests and usually needs no supple­
mental chemical control. Slugs, caterpillars, many
beetles, and larger insects in general can be
eliminated in this manner. Many of these pests are
night feeders. Thus, this method will be more effec­
tive if done at night using a flashlight. Where scales
or mealybugs are few in number, a thumbnail or
toothpick can be used in removal. Watch the plants
closely for a few weeks afterwards in case some
smaller individuals were overlooked.

Swabs. Cotton swabs dipped in rubbing alcohol
are effective in controlling aphids or mealybugs. This
is practical for light infestations but is extremely
tedious for heavy infestations, particularly on large
plants.

Soapy water. Using soapy water will give good
control if done correctly. There is no complete list
of plants which might be harmed by this technique.
The decision is yours. The authors have used soapy
water with good results on several different kinds of
plants.

There is at least one insecticidal soap registered for
use on houseplants. Read the label carefully, not
only for instructions on use but also for information
concerning possible plant damage.

This treatment will not be totally effective against in­
sects whose adults have wings (e.g., whiteflies),
since they will leave the plant during treatment only
to return after awhile. Thus, it is necessary to spray
the adults with a registered insecticide to get com­
plete control of all stages of the pest.

CHEMICAL CONTROL

There are not many pesticides registered for indoor
use on houseplants. Read labels carefully for where
and how to use a pesticide. If indoor use is not
designated, take the plant to be treated outdoors
away from child and pet traffic areas. Do not bring
it back indoors until sprays have dried. It may be well
to leave the plant in the garage a day or two for a
measure of extra safety. Spraying houseplants in­
doors, even according to label directions, should
probably be avoided as many sprays have objection­
able odors and can cause allergic reactions in some
people. Do not use where the spray can drift onto
cooking utensils or food.

The accompanying table shows the materials that
are registered for controlling pests on flowers and
other ornamental plants. Not all of them can be used
indiscriminately on any ornamental plant, and not
## CHEMICAL CONTROL OF HOUSEPLANT PESTS

<table>
<thead>
<tr>
<th>Chemical trade and common name</th>
<th>Pests controlled</th>
<th>Remarks</th>
<th>May damage these plants</th>
<th>Scientific name</th>
</tr>
</thead>
<tbody>
<tr>
<td>kelthane (dicofol)*</td>
<td>Mites</td>
<td>May be available as an indoor houseplant spray. Check with a supplier. In some areas, mites have shown resistance to this material</td>
<td>Anthurium spp., Asparagus plumosus, Begonia spp., Beloperone spp., Brassica actinophylla (Schefflera), Brunfelsia spp., Chamaedorea elegans (Neante Bella Palm), Chrysanthemum, Cissus spp., Codiaeum sp. (Croton), Collinia elegans, Cordyline sp. (T plant), Cyclamen spp., Dianthus spp., Epiphyllum spp., Euphorbia, Gardenia jasminoides, Gloxinia, Hedera spp., Hibiscus spp., Kalanchoe sp. cv. “Koral”, Peperomia spp., Poinsettia, Rhoicissus rhomboidea, Rose, Saintpaulia spp., Schlumbergera gaertneri, Scindapsus sp. (Pothos), Seedlings, Sinningia spp., Stephanotis spp., Streptocarpus, Sweet Pea</td>
<td>1,1-Bis(chlorophenyl)-2,2,2-trichloroethanol</td>
</tr>
<tr>
<td>pyrethrins (and synthetic pyrethroid compounds such as tetramethrin or resmethrin)</td>
<td>Aphids, spider mites, whiteflies</td>
<td>Available as indoor houseplant sprays alone or in combination with other materials</td>
<td>Pyrecone: Poinsettia; Resmethrin: Chrysanthemum, Poinsettia, Red Calceolaria</td>
<td>tubotoxine</td>
</tr>
<tr>
<td>cube or derris root (rotenone)</td>
<td>Aphids, spider mites, whiteflies</td>
<td>Available as an indoor houseplant spray. May be available only in combination with pyrethrin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sevin (carbaryl)</td>
<td>Aphids, flea beetles, leafhoppers, scale insects (crawlers), thrips, mealybugs, caterpillars</td>
<td>Do not use as an indoor plant spray. Do not use where mites are a severe problem, as this spray kills natural mite predators</td>
<td>Adiantum sp. (Maidenhair fern), Parthenocissus sp. (Boston ivy), Brassia actinophylla (Schefflera), Hedera helix (English ivy), Nephrolepis exaltata (Florida Ruffle fern), Peperomia spp., Pilea cadierei (Aluminum Plant), Syngonium sp. (Nephthytis), Virginia creeper</td>
<td>1-Naphthyl N-methyl carbamate</td>
</tr>
</tbody>
</table>

*Dicofol products have been cancelled. Existing stocks can continue to be used.
## CHEMICAL CONTROL OF HOUSEPLANT PESTS

<table>
<thead>
<tr>
<th>Chemical trade and common name</th>
<th>Pests controlled</th>
<th>Remarks&lt;sup&gt;1&lt;/sup&gt;</th>
<th>May damage these plants&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Scientific name&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthene (acephate)&lt;sup&gt;4,6&lt;/sup&gt;</td>
<td>Aphids, flower thrips, scale crawlers, spider mites, mealybugs, whiteflies&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Available as an indoor house spray</td>
<td>Brassia actinophylla (Schlefflera), Carnation, Chamaedorea elegans, Chrysanthemeum, Ficus triangularis (Triangle fig), Fittonia verschaffeltii argyreneura, Maranta spp., Nephelepsis exaltata (Florida Ruffle fern), Saintpaulia spp., Geranium, Poinsettia, Tolmiea menziesii</td>
<td>O,S-Dimethyl acetyl-phosphoramido-thioclate</td>
</tr>
</tbody>
</table>

<sup>1</sup> Repeat applications may be needed. Be sure to carry out the same spray precautions during every additional treatment.

<sup>2</sup> Condensed from S.M. Richman and A.G. Gentile, “Florogram,” 9:3 (1976), Massachusetts Cooperative Extension Service. Also check the product label for other plants that may be damaged.

<sup>3</sup> If common or trade names do not identify a material for you, you will have to use the chemical name. Read it carefully, syllable by syllable, comparing it with this list to be sure what you have is what you want.

<sup>4</sup> Control of whiteflies may require several sprays at 5–7 day intervals. Direct spray toward underside of leaves.

<sup>5</sup> Systemics translocate to aerial plant parts. Pets and children sometimes chew on leaves, creating a potential hazard, even though the concentration of this material is low in houseplant formulations.

<sup>6</sup> Flower thrips are not on the label. Follow label directions for aphid control.
all of them are registered for indoor use. Be certain to check labels for use on specific plants for control of specific pests and for specific directions for use. If the label does not indicate indoor use, then use the material out of doors. Take plants out of doors only when conditions are mild (severe changes in temperature and humidity can cause considerable stress to sensitive houseplants). Also, be aware that plants grown indoors are more sensitive to chemical injury than plants grown outdoors.

Products in the table are sold under many trade names that are not listed. Look closely at the active ingredients list on the label for the common or chemical name, or seek professional assistance.

**Spray preparation.** Most labels give general directions for use based on teaspoons or tablespoons of material per gallon of water. It is unlikely that you will ever use this much at any one time, and saving made-up sprays is inadvisable since they usually break down rapidly and present a safety hazard. It is more likely that you will need only a small amount, so remember these equivalents:

- 1 tablespoon = 3 teaspoons
- 1 gallon = 4 quarts = 8 pints
- 1 cup = ½ pint

**EXAMPLE:** The label calls for 2 teaspoons per gallon of water and you want only a pint of mixed spray. Remember, 1 pint is ½ gallon, so you will need ½ of 2 teaspoons, or ¼ teaspoon of material per pint.

**Plant damage.** Injury to plant material from pesticide applications has several common symptoms: total burn, marginal burn, or spotting of leaves or flowers; cupping, curling, and yellowing of leaves; and distortion of leaf and flower buds. Usually, these injuries will not kill the plant. Leaves may drop but new leaves will form and the plant usually recovers. Soil applications may also produce these symptoms as well as stunting of growth because of injury to the root system. Severe root injury will cause sudden wilting and death of the aerial parts of the plant. As a rule, flowers and flower buds in advanced stages of development are most susceptible to pesticide injury.

You can reduce the possibility of damage by applying the pesticide during the cooler hours of the day and by drying the plants in a well ventilated place. Powders and dusts are generally less injurious to plants than are spray concentrates, although they may leave an unsightly residue.

To avoid plant damage, carefully read the pesticide label. In many cases, it will indicate specifically which plants are sensitive to the pesticide and those for which it is specifically recommended.

None of the chemicals presently marketed have been evaluated for plant injury on all available ornamentals. Moreover, variations in growing conditions may produce different damage from use of the same chemical. When you use a new pesticide or a well-known one on new plants, evaluate it on a trial basis on a small number of plants—preferably those that are expendable. Any toxic effects should become evident within 5 to 10 days, and may be apparent in 48 hours.

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

The law requires that pesticides be used as the label directs. Uses against pests not named on the label and low application rates are permissible exceptions. If there is any apparent conflict between label directions and the pesticide uses suggested in this publication, consult your county Extension agent.

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