

Common Houseplant Insects & Related Pests

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When a houseplant looks less than healthy, most often it is the result of improper care. Factors such as too much or too little water, light, heat or fertilizer can cause many plant problems. However, in some cases the problem results from a pest infestation. Several insects and other pests feed on houseplants. These pests most often come into the home on newly purchased plants or on those that have been outside for the summer.

Prevention

The best way to control insects and related pests on houseplants is through prevention, as it is almost always easier to prevent a pest infestation than to eliminate one. There are several precautions that you can take which will decrease the chances of having to deal with a pest infestation of your houseplants.

- Provide a plant with the growing conditions that it needs so that it is more likely to grow vigorously. Stressed plants tend to be more susceptible to pests.
- Before buying or bringing a plant indoors, always check it and its container for signs of pests.
- A plant that has been outside for the summer, especially one sitting on the ground, may have pests that have crawled in through the drainage holes. Take the plant out of the pot to examine the soil.
- Isolate new plants from plants already in the home for six weeks to ensure that any pest brought in will be less likely to spread.
- While plants are isolated, carefully examine them for signs of pests or damage on a regular basis of about once a week. Pay particular attention to the undersides of leaves where pests are most often found. Using a 10X magnifying lens will make it easier to see small pests and also immature pest stages. Infestations are often much easier to control if caught early.
- When repotting a plant, use commercially prepared potting soil rather than soil from outdoors, which can be a source of pests.
- Washing smooth-leaved plants every two to three weeks discourages pest infestations and also improves the appearance of foliage. Small plants can be inverted and swished in a bucket of tepid (lukewarm) water. To prevent loss of soil, cover it with aluminum foil or plastic wrap. Large plants can be hosed down gently, or upper and lower surfaces of leaves can be wiped with a soft, wet cloth. Large plants can also be rinsed in a tepid shower.
- Since cut flowers from the garden can be a source of pests, keep them separate from houseplants.

- Pests of houseplants can enter homes from outdoors, so make sure that screens and doors fit well.

Non-Chemical Control

The first step in control is to isolate any plant suspected of being infested with a pest. Keep the plant separate from other houseplants until the pest is completely controlled. This process may take several weeks or more.

Before looking for a chemical solution to a pest problem on houseplants, there are several effective control alternatives that should be considered. However, do not expect the problem to be solved with one application. Some of these alternatives require persistence on the part of the indoor gardener, but they can give good control.

- If only an isolated portion of the plant is infested, as occurs with leafminers, remove and destroy the infested parts. If the roots are infested, take a cutting and start a new plant. Be sure to start with a clean pot and sterile potting soil.
- Early infestations can often be removed by handpicking.
- Use a cotton swab dipped in rubbing alcohol to wipe off insects such as aphids and mealybugs. Scale insects may need to be scraped off with a fingernail.
- Spraying a sturdy plant with water will remove many pests. Be sure to spray all plant surfaces. Repeated water sprays help control spider mites.
- Spraying the plant with an insecticidal soap can often eliminate a pest infestation in its early stages. Insecticidal soaps are contact insecticides and are only effective when they make direct contact with insects. Once the soap solution dries, it has no effect

against pests. Insecticidal soaps are most effective against soft bodied insects and related pests, such as aphids, mealybugs, immature scales (crawlers), thrips, whiteflies and spider mites. Since pests may be hidden or in the egg stage, it often takes more than one treatment to eliminate them. See Table 1 for examples of products and additional comments about insecticidal soap sprays.

- If the plant is severely damaged and is not a valuable one, the best and simplest solution may be to discard the plant and its soil and start with a new plant.

Chemical Control

If non-chemical control methods have failed, and the plant is valuable, a stronger pesticide may be necessary. Before choosing a pesticide, it is important to identify the pest accurately. In general, a single pesticide will not kill all kinds of pests. Some pesticides are only effective against certain pests or certain life stages of particular pests. In addition, it is important to understand that more than one application of a pesticide is often necessary for control. When possible, alternate the pesticide used from one application to the next as some pests develop resistance quickly.

Houseplant insect sprays can be obtained at garden centers and farm supply stores. Only a few pesticides are labeled for use indoors on houseplants. Before using a pesticide indoors, be sure that the label specifies that use. You may want to treat your plant outdoors and then bring it inside after the pesticide has dried completely. If you take plants outdoors to treat, make sure that weather conditions are mild. Spraying insecticides outdoors prevents overspray from contacting furniture, drapes or carpet.

Typically, a pesticide label will include both a list of plants for which the pesticide is recommended as well as a list of plants that are known to be sensitive to the pesticide. Symptoms of pesticide injury on plants include distortion of leaves and buds, yellowing of leaves, spotting of leaves or flowers, and burn along the leaf edges as well as total burn. When damage occurs, it often becomes visible within 5 to 10 days, sometimes sooner. In general, the damage does not kill the plant.

As always, before purchasing and using any pesticide, be sure to read all label directions and precautions, and then follow them carefully.

Major Pests

Aphids: Aphids are small, soft-bodied, pear-shaped insects about $\frac{1}{16}$ - to $\frac{1}{8}$ -inch long. They are usually green but may be pink, brown, black or yellow. Some aphids have a woolly or powdery appearance because of a waxy coat. Adults may or may not have wings.



Aphid adults (winged adult in center) and immatures.
Alton N. Sparks, Jr., University of Georgia,
www.insectimages.org

Aphids are usually found feeding on new growth or the undersides of leaves. Some feed on roots. They suck plant sap, resulting in yellowing and misshapen leaves. In addition, growth may be stunted, and new buds deformed. As

aphids feed, they excrete a sugary material, called honeydew, which makes leaves shiny and sticky. Sooty mold fungi may grow on the honeydew, producing unsightly dark splotches on the plant's surfaces.

Control: With minor infestations, handpicking, spraying with water or wiping the insects with a cotton swab dipped in rubbing alcohol may be practical. Insecticidal soap spray may also be used. In most cases the treatment will have to be repeated multiple times. For houseplants that are taken outdoors, spray with insecticidal soap, neem oil extract, pyrethrins, acetamiprid, imidacloprid, cyfluthrin, or permethrin to control aphids. See Table 1 for examples of brands and products. Imidacloprid plant spikes put into the soil will also control aphids. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Mealybugs: Mealybugs are small, pale insects, related to scales. They are about $\frac{1}{8}$ to $\frac{1}{4}$ inch long and move very sluggishly. The adult females cover themselves and their eggs with a white, waxy material, making them look cottony. Some have waxy filaments that extend beyond their bodies.



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Mealybug nymph.
US National Collection of Scale Insects Photographs
Archive, USDA ARS, www.insectimages.org

Nymphs (immature forms) hatch from the eggs. Once they begin to feed, the waxy coating starts to form. Nymphs look like adults only smaller. The wax on mealybugs helps repel pesticides and makes them somewhat difficult to control. Mealybugs are most commonly found on the lower surfaces of leaves and in leaf axils (where the leaf attaches to the stem). One species feeds on the roots. They suck plant sap, causing stunted and distorted growth and sometimes plant death. Like aphids, mealybugs excrete honeydew, providing the opportunity for growth of sooty mold fungi.

Control: Light infestations can be controlled by removing individual mealybugs by hand or by wiping each

insect with a cotton swab dipped in rubbing alcohol. An insecticidal soap spray may also be used. With a heavy infestation, it may be necessary to discard the plant. For houseplants that are outdoors, spray with neem oil extract, pyrethrins, acetamiprid, imidacloprid, cyfluthrin or permethrin to control mealybugs. Imidacloprid plant spikes put into the soil will also control mealybugs. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Spider Mites: Mites are not insects but are more closely related to spiders. Since they are extremely small, plant damage is typically the first sign of their presence. A silky web is often seen with heavier infestations.



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Spider mites with webbing.
David Cappaert, Michigan State University,
Bugwood.org

Both spider mite adults and their immature forms damage plants by sucking plant sap. Damage includes light-colored speckling on the upper surface of leaves, and results in a plant with an overall faded look. If the mites are left unchecked, leaves become bronzed or yellowed, and the plant dies. Spider mites are usually more of a problem on house plants that remain indoors year round.

Control: Spray sturdy plants forcefully with water, including the undersides of leaves, to dislodge mites and break up their webs. Plants also can be sprayed with an insecticidal soap. For houseplants that are outdoors, spray with insecticidal soap, neem oil extract or an insecticide containing sulfur. It is often necessary to spray once a week for several weeks to control mites. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Plants placed outdoors during summer may have a reduced problem with spider mites. Be sure to place all houseplants initially in mostly shade, as even plants that grow well in more sun might be burned until they have adapted to the higher light levels.



Two-spotted spider mite adult.
David Cappaert, Michigan State University,
Bugwood.org

Fungus Gnats: Adult fungus gnats are delicate in appearance and about 1/8-inch long. Often they can be seen running across or flying near the soil surface under a houseplant. They are weak flyers and are attracted to light.

The adults do not feed on houseplants but can be a nuisance to people. In severe infestations they are often seen in large numbers on nearby windows.



Fungus gnat adult.
Johnny N. Dell, Retired, www.insectimages.org

The whitish larvae (immature forms) of fungus gnats have shiny black heads and can grow as large as ¼-inch. The larvae generally feed on decaying organic material or fungi growing in the soil. The larvae of some species will also feed on roots. This feeding is especially damaging to very young plants. With older, established plants, the initial sign of an infestation is that the plant loses its normal healthy appearance. A heavily infested plant may lose leaves as a result of the feeding of larvae on its roots.

Indoors, fungus gnats are most often a problem when potting soil that is rich in organic matter, such as peat moss, is used to grow plants. It is especially a problem when overwatering occurs.

Control: For plants that can tolerate it (i.e. most houseplants, especially during winter), allow soil to dry between watering. Dry conditions will kill the larvae. Do not allow water to stand in the saucer beneath houseplant containers, and invert saucers beneath plants outside, so as to not collect rainwater. Products that contain strains of the biological control agent *Bacillus thuringiensis* subsp. *israelensis* can be applied to the soil of houseplants and watered into the soil for control. See Table 1 for examples of brands and products. Follow label directions for safe use.

Root Ball Pests: Houseplants taken outdoors during the summer may have their root balls infested with pillbugs, millipedes and slugs. These houseplant pests may cause minor feeding damage to root systems. They are generally found along the exterior of the root ball in small cavities carved from the potting mix. Ants may also make nests within the potting soil of houseplants while outside.



Pill bug (*Armadillidium vulgare*).
Joseph Berger, USDA, ARS, Bugwood.org

Control: The plant container can be gently removed to inspect for pillbugs, millipedes and slugs, which simply can be scraped away. Ant colonies in the container may be killed by soil drenches of products containing cyfluthrin or permethrin. Mix insecticide at the same rate as for spraying, and pour solution through soil in container. Allow pots to thoroughly drain and dry before bringing indoors. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Scales: Several species of scales are pests on houseplants. Scale insects can be divided into two groups: armored scales and soft scales. An armored scale secretes a waxy covering that is not an integral part of its body. The covering can be scraped off to locate the insect living beneath it. In contrast, the waxy

covering that a soft scale secretes is an integral part of its body.



Example of an armored scale adult.
US National Collection of Scale Insects Photographs
Archive, USDA ARS, Bugwood.org

Scales are unusual insects in appearance. Adults are small and immobile with no visible legs. Scales vary in appearance depending on age, sex and species. Some are flat and appear like fish scales stuck to a plant. Others look like waxy, colored masses. They range in size from $\frac{1}{16}$ to $\frac{1}{2}$ -inch in diameter. They are usually found on stems and the undersides of leaves, but may be found on upper surfaces as well. Scales feed by sucking plant sap.

Their immature forms, called crawlers, are mobile and also feed by sucking plant sap. Like mealybugs, the soft scale insects excrete honeydew (which results in black sooty mold problems on foliage and stems). Armored scales do not excrete honeydew.



Example of a soft scale.
US National Collection of Scale Insects Photographs
Archive, USDA ARS, Bugwood.org

Control: Early infestations of scales can be removed by scraping with a fingernail. Adult scales are relatively protected from insecticides by their waxy covering. However, for houseplants outdoors, sprays with products containing neem oil extract or canola oil help control adult scale insects by smothering. Their crawlers are susceptible to many insecticides, such as insecticidal soap, neem oil extract, canola oil, pyrethrins, acetamiprid, imidacloprid, cyfluthrin or permethrin. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Whiteflies: Whiteflies are not true flies, but are more closely related to scales, mealybugs and aphids. They are very

small about $\frac{1}{10}$ to $\frac{1}{16}$ -inch long. They have a powdery white appearance and resemble tiny moths. When at rest, the wings are held at an angle, roof-like over the body. The immature stage is scale-like and does not move.

Both the adults and their immature forms feed by sucking plant sap. The damage that they cause is similar to that caused by aphids. The infested plant may be stunted. Leaves turn yellow and die. Like aphids, whiteflies excrete honeydew, which makes leaves shiny and sticky and encourages the growth of sooty mold fungi. When plants that are infested with whiteflies are disturbed, the whiteflies flutter around for a while before settling again.

Control: Wash the plant. Spray the plant thoroughly with insecticidal soap, especially the lower leaf surfaces. Imidacloprid plant spikes put into the soil will also control whiteflies. For houseplants that are taken outdoors, spray with insecticidal soap, neem oil extract, acetamiprid, imidacloprid, cyfluthrin or permethrin to control whiteflies. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.



Sweetpotato whitefly.
Central Science Laboratory, Harpenden Archive, British
Crown, www.insectimages.org

Less Common Pests

Thrips: Thrips are tiny, slender, yellowish to blackish insects with fringed wings. They are typically found on leaves and between flower petals. At less than 1/16 inch in length, the adults are very difficult to see without a magnifying lens. Blowing lightly into blooms and leaves causes thrips to move around quickly, making them easier to see.

Both adults and nymphs (immature stage) feed by scraping surface cells to suck plant sap. Leaves fed on by thrips will often take on a silvery or speckled appearance similar to damage caused by mites.

Leaves may drop early. When thrips feed on flower buds, the flower may die without opening. Flowers may be streaked or distorted as a result of feeding.

Control: Rinse leaves with water. Spray plants with an insecticidal soap. For houseplants that are outdoors, spray foliage with spinosad, acetamiprid, imidacloprid, cyfluthrin or permethrin to control thrips. For plants with flower buds infested with thrips, the insecticide must have systemic activity, such as spinosad, acetamiprid or imidacloprid, in order to control the hidden thrips.



Thrips.
Andrew Derksen, University of Florida, Bugwood.org

Imidacloprid plant spikes put into the soil are also effective. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Springtails: Springtails are tiny insects about 1/5- inch long that inhabit the soil. They vary in color but are usually white or black. They are wingless, but can jump. Their presence is usually a sign of overwatering.

While springtails normally feed on decaying organic matter, they will chew on seedlings or tender plant parts. Damage is usually minimal. In large numbers, they can be a nuisance.



Springtail.
Susan Ellis, www.insectimages.org

Control: For plants that can tolerate it (most plants), let the soil dry between watering.

Leafminers: Leafminers are the larvae (immature worm-like stage) of a large number of different insects. The larvae feed between the upper and lower leaf surfaces. Leafminer damage appears as a winding, discolored trail or an irregular blotch within the leaf. Although damage from these pests is unsightly, it is rarely serious.

Control: Remove and destroy any leaves showing leafminer damage. For houseplants that are outdoors, insecticidal sprays that have foliar systemic activity (the ability to move into the leaves), such as acetamiprid, imidacloprid, or spinosad will control leafminers. Imidacloprid plant spikes put into the soil are also effective. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.



Leafminer damage.
John A. Weidhass, Virginia Tech,
www.insectimages.org

Beetles: Various kinds of beetles and their larvae feed on houseplants. They may enter the home when houseplants are brought inside at the end of summer, or they may enter through some opening. They have chewing mouthparts.

Control: Remove and destroy the beetles. If houseplants are outside and beetles return and feed on foliage, spray with neem oil extract, acetamiprid, imidacloprid, cyfluthrin or permethrin to control them for one to two weeks. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

Caterpillars: Caterpillars are the larvae of butterflies and moths. They range in

size from about 1/8 inch to 2 or more inches long. Their color varies according to species with gray, brown, and green being common, as are mottled and striped colors. They may be smooth or have spines, hairs or bumps along their bodies.

Butterflies and moths lay their eggs on the undersides of leaves of plants that have been outdoors. Stray moths that have gotten into the home can also lay eggs on houseplants. When the eggs hatch, the caterpillars can be quite small, but grow with each molt (process of shedding the skin).

Caterpillars have chewing mouthparts. Some feed openly on leaves, buds and flowers and can eat large portions of the plant in a relatively short period of time. Others bore into stems to feed.

A good indication that caterpillars are causing the damage is the presence of frass (fecal pellets) on leaves and under the plant.

Control: Remove and destroy caterpillars and eggs. If the houseplants are outside and additional caterpillar feeding occurs, spray with neem oil extract, spinosad, cyfluthrin or permethrin to control them for one to two weeks. See Table 1 for examples of brands and products. See footnote on Table 1 about spraying houseplants outdoors. Follow label directions for safe use.

General Caution for Outdoor Spraying Pollinating insects, such as honey bees and bumblebees, can be adversely affected by the use of pesticides. Avoid the use of spray pesticides (both insecticides and fungicides), as well as soil-applied, systemic insecticides unless absolutely necessary. If spraying is required, always

spray late in the evening to reduce the direct impact on pollinating insects. Always try less toxic alternative sprays first for the control of insect pests and diseases. For example, sprays with insecticidal soap, horticultural oil, neem oil extract, spinosad, *Bacillus thuringiensis* (B.t.), or botanical oils can help control many small insect pests and mites that affect garden and landscape plants. Neem oil extract or botanical oil sprays may also reduce plant damage by repelling many insect pests. Practice cultural techniques to prevent or reduce the incidence of plant diseases, including

pre-plant soil improvement, proper plant spacing, crop rotation, applying mulch, applying lime and fertilizer based on soil test results, and avoiding over-head irrigation and frequent watering of established plants. Additionally, there are less toxic spray fungicides that contain sulfur or copper soap, and biological control sprays for plant diseases that contain *Bacillus subtilis*. However, it is very important to always read and follow the label directions on each product. For more information, contact the Clemson Extension Home & Garden Information Center.

Table 1. Pesticides to Control Insects & Spider Mites on Houseplants.

Insecticide/Miticide Active Ingredient	Pests Controlled	Examples of Brands & Products
Natural, Less Toxic Insecticides		
<i>Bacillus thuringiensis</i> subsp. <i>israelensis</i> H-14	Fungus gnat larvae in potting soil	Gardens Alive Knock-out Gnats Granules
Insecticidal Soap ¹	Aphids, spider mites, mealybugs, scale crawlers, whiteflies	Bonide Insecticidal Soap RTU Garden Safe Insecticidal Soap Insect Killer RTU Safer Brand Insect Killing Soap RTU Espoma Earth-tone Insecticidal Soap RTU Whitney Farms Insecticidal Soap RTU
Sulfur & Pyrethrins	Spider mites, scale crawlers	Espoma Earth-tone 3-in-1 Disease Control RTU Bonide Eight Insect Control Home & Garden RTU Whitney Farms 3-in-1 Rose & Flower Care
Neem Oil Extract	Aphids, spider mites, mealybugs, scale (adults & crawlers), whiteflies	Natural Guard Neem RTU Garden Safe Fungicide 3 RTU Monterey Neem Oil RTU Safer Brand Neem Oil RTU Bonide Neem Oil RTU
Canola Oil & Pyrethrins	Aphids, spider mites, mealybugs, scale (adults & crawlers), whiteflies	Espoma Insect Control RTU Monterey Take Down Garden Spray RTU
Cottonseed Oil, Clove Oil, & Garlic Oil	Mites, Thrips, Aphids	Bonide Mite-X RTU
Rosemary Oil, Clove Oil, & Cottonseed Oil	Mites, whiteflies, aphids, scale crawlers, mealybugs,	Monterey All Natural Mite & Insect Control RTU

Spinosad	Thrips, caterpillars, leafminers	Bonide Captain Jack's Dead Bug Brew RTU
Spinosad & Insecticidal Soap	Aphids, leafminers, mealybugs, spider mites, thrips, whiteflies, scale crawlers	Natural Guard Spinosad Soap RTU
Pyrethrins	Aphids, whiteflies	Bonide Japanese Beetle Killer RTU Garden Safe House Plant & Garden Insect Killer RTU
Pyrethrin & Neem oil	Aphids, mites, whiteflies	Ferti-Lome Triple Action Plus RTU
Hot Pepper Wax	Aphids, mealybugs	Hot Pepper Wax Insect Repellent RTU
Rubbing Alcohol	Mealybugs, aphids, whiteflies, scale crawlers	Multiple brands (applied with cotton swabs, such as Q-Tips)
Contact & Systemic Insecticides (spray outdoors)		
Acetamiprid	Scale crawlers & soft scale adults, aphids, mealybugs, thrips, leaf miners, whiteflies, beetles	Ortho Rose & Flower Insect Killer RTU
Imidacloprid	Scale crawlers & soft scale adults, aphids, mealybugs, thrips, leaf miners, whiteflies, beetles, (will <u>not</u> control armored scales or caterpillars)	Bayer Advanced 3-in-1 Insect Disease & Mite Control RTU (w/TAU-Fluvalinate & Tebuconazole)
Imidacloprid & Cyfluthrin	Scale crawlers & soft scale adults, aphids, mealybugs, thrips, leaf miners, whiteflies, beetles, caterpillars	Bayer Advanced Dual Action Rose & Flower Insect Killer RTU
Delamethrin	Aphids, Beetles, Lace Bugs, Leafminers, mealybugs, spidermites	Ortho Insect Killer Rose & Flower RTU
<p>¹ Notes on insecticidal soap: Some houseplants, including ornamental ivy, maidenhair fern, dieffenbachia, schefflera, crown of thorns, chrysanthemum, Easter lilies (during bud formation), Asiatic or oriental lilies, jade plant, begonia, fuchsia, zebra plant, impatiens and certain palms, are sensitive to insecticidal soap, and it should not be applied to them. In addition, insecticidal soap should never be applied to houseplants outdoors in direct sunlight or to plants under drought stress. For other plants, test insecticidal soap, or any other insecticide, first on a small part of the plant before treating the entire plant. Symptoms of injury may take at least 48 hours to appear.</p> <p>General Note: Spraying of houseplants is most safely done outdoors during mild temperatures. Once plant foliage is completely dry, they may be brought back indoors.</p> <p>RTU = Ready to use product in small pre-mixed spray bottle.</p>		

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