

# GROWING INSECT AND MITE-FREE INTERIOR PLANTS

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Plants grown in interior plantscapes such as interiorscapes, conservatories, and atriums are susceptible to a wide-variety of insect and mite pests. Many of these pests can cause aesthetic injury to plants when they occur at high enough numbers. The major insect and mite pests in interior plantscapes are mealybugs, scales, aphids, thrips, whiteflies, fungus gnats, and spider mites.

In this section we will cover the damage, and biology of the major insect and mite pests in interiorscapes and suggest general management guidelines.

## Mealybugs

Mealybugs are one of the primary insect pests of interior plantscapes. They are problems in interior plantscape environments because the plants are generally present for a long period of time. In addition, many of these plants are of tropical origin, where mealybugs are serious pests. Mealybugs may enter interior plantscapes on holiday or specialty crops, or they may be present on plants as crawlers when they are shipped to the end user. In addition, technicians may inadvertently move the insects at the crawler stage when performing plant maintenance.

The common mealybug species found in interior plantscapes are the citrus mealybug and the long-tailed mealybug. Mealybugs can be very persistent and difficult to manage because the crawlers, which are the most susceptible life stage to many pest control materials, are very small and often go unnoticed. When the crawlers reach adulthood most control materials do not penetrate their waxy coating. In addition, mealybugs are generally located underneath leaves, in leaf junctures, underneath leaf sheaths, roots, and the base of plants that are difficult to reach with sprays. Plants generally preferred by mealybugs include Zebra Plant, cactus, Grape Ivy, Croton, Coleus, False Aralia, West Indian Holly, Prayer Plant, and China Doll.

Mealybugs damage plants by feeding and removing plant fluids. This can distort and yellow leaves, stunt plants, and cause plants to wilt. High populations can cause leaf drop. They also produce large amounts of honeydew, a clear, sticky liquid that serves as a medium for black sooty mold fungi.

## Scales

Many types of scales infest plants growing in interior plantscapes. The way they enter the interiorscape environment is similar to that of mealybugs.

There are two types of scales that feed on plants in interior plantscapes: soft and hard scales. The common soft scales encountered in interior plantscapes are the brown soft scale, hemispherical scale, black scale and nigra scale. Soft scales produce honeydew, which was discussed under mealybugs. Hard scales found in interior plantscapes include boisduval scale, Florida red scale, California red scale, and fern scale. Hard scales do not produce honeydew. They cover themselves with wax that hardens to form an impenetrable shell. As with mealybugs, the crawler stage is the most susceptible to many pest control materials.

Scales may be located underneath leaves, in leaf junctures, underneath leaf sheaths, and along stems. Interiorscape plants that are highly susceptible to scale are cactus, Spider Plant, Croton, ferns, English Ivy, Prayer Plant and *Schefflera* spp.

Scales use their piercing-sucking mouthparts to remove plant fluids causing plant stunting, discoloration, and branch dieback. Heavy populations can cause leaf drop.

Most scales are generally 1/16 to 1/8 inch in diameter and vary in shape depending on whether it is a soft or hard scale. Soft scales are round and dome-shaped whereas hard scales are circular or elongated. In addition, hard scales appear more flattened on plants than soft scales. Most scales appear as a bump on leaves, stems, and branch.

## Aphids

Several types of aphids feed on plants grown in interior plantscapes. However, the two most common aphids encountered are the green peach aphid and the cotton/melon aphid. Aphids can enter interior plantscapes on shipped plants, on greenhouse-grown crops such as chrysanthemum,

Aphids feed by inserting their mouthparts into the vascular tissues of plants and withdrawing plant fluids. Aphids are usually found in groups feeding on new growth and leaf undersides. Their feeding can cause plant stunting, leaf distortion (curling), and leaf yellowing. Aphids also excrete honeydew. When aphids molt they leave white cast skins. Interiorscape plants that are hosts of aphids include Zebra Plant, Umbrella Tree, *Dieffenbachia* spp., False Aralia, Velvet Plant, and *Hoya carnosa*.

Aphids are small, soft-bodied, pear-shaped insects approximately 1/16 to 1/8 inches long. Aphids vary in color from green to black depending on the food source. Adult aphids may be winged or wingless. In interior plantscapes aphids are normally wingless.

## Thrips

Thrips generally enter interior plantscapes on flowering plants or specialty crops such as orchids that are used to decorate interiorscapes or conservatories. They may also enter from weeds or plants growing outdoors. Thrips species that may be encountered in interiorscapes include flower thrips, greenhouse thrips, western flower thrips, Cuban laurel thrips, onion thrips, and dracaena thrips. Thrips prefer to inhabit dark, confined areas and they are highly attracted to plants in flower. Interiorscape plants that are susceptible to thrips include Croton, Grape Ivy, orchids, palms,

*Ficus* spp., Umbrella Tree, Pothos, Aralia, *Philodendron* spp., *Dra- caena* spp., Devil's Tongue, and Arrowhead.

Thrips feeding can cause leaf distortion and yellowing. They generally feed on new growth. Evidence of thrips feeding on leaves may appear as a silvery appearance and brown spots. Small black specks, which are the excrement from thrips, may also be found on the underside of leaves.

Thrips are very slender, small insects approximately 1/16 to 1/8 inches long with fringed wings. They vary in color from light brown to black.

### Whiteflies

Whiteflies can enter interior plantscapes on crops such as poinset- tia that are used to decorate interiorscapes or conservatories. White- flies may also enter interior plantscapes from weeds or ornamental plants grown outdoors. They are more of a problem in conservato- ries than interiorscapes. This is due to environmental conditions and lack of suitable hosts in interiorscapes. The whitefly species generally found in interiorscape environments are the greenhouse whitefly, and the silverleaf whitefly.

Whiteflies can cause plant stunting and leaf yellowing. Heavily infested leaves may drop off plants. In addition, whiteflies, like aphids, produce honeydew, which attracts ants and serves as a grow- ing medium for black sooty mold fungi.

Adult whiteflies are small, approximately 1/16 to 1/8 inches long, white insects that fly around when disturbed. They are generally located on the undersides of leaves, especially near the tops of plants.

### Fungus Gnats

Fungus gnats, are primarily a nuisance pest in interior plantscapes as the adults fly around moist areas and may disturb personnel in office buildings, hotels, and restaurants. They are more of a prob- lem in new installations or where new growing medium has been incorporated. The larvae, which are located in the soil, are not usu- ally harmful to large established plants found in interior plantscapes unless they are present in high numbers. Small plants with high fungus gnat populations may be subject to injury and show symp- toms such as stunting and wilting. Although the larvae are capable of vectoring soil-borne pathogens, this is generally not a problem in interior plantscapes.

### Spider Mites

Many plants grown in interior plantscapes are susceptible to a va- riety of spider mites. However, the primary spider mite pest of interior plantscapes is the two-spotted spider mite. Two-spotted spider mite is differentiated from other spider mites by the pres- ence of two dark spots on both sides of the abdomen.

The two-spotted spider mite may be found on all areas of a plant; however, they are often located on older leaves. They primarily feed on leaf undersides within plant cells and remove chlorophyll (green pigment) with their stylet-like mouthparts. Spider mites

generally feed near the midrib and veins of plants. The leaves ap- pear stippled with small silvery-gray to yellowish speckles. Heavily infested leaves turn brown and eventually fall off. Spider mites may also spin irregular webbing to protect themselves and move about plants (from plant to plant). Spider mites feed on a wide assortment of plants grown in interior plantscapes.. This includes Norfolk Island Pine, Umbrella Tree, Croton, *Dieffenbachia* spp., *Ficus* spp., and English Ivy. They are severe pests on palms.

Spider mites prefer warm, dry conditions with low relative hu- midity. They are oval-shaped and can be yellow-orange, green, or red in color.

### General Management Guidelines for Interior Plant Insect and Mite Pests.

1. Inspect all incoming plant material for insect, mites and imma- ture pests before installing into an interior plantscape setting. Iso- late any plants harboring mealybug populations. To detect thrips in interior plantscapes, shake plant parts such as leaves, branches, or flowers over a white sheet of paper. Thrips will land on the paper and move around.

2. Inspect plants during routine maintenance practices, especially those that are highly susceptible to the pests. Educate technicians to recognize insect and mite pests and symptoms of their damage so infestations can be detected early. Wrap double-sided sticky tape around branches to help detect the presence of crawlers. Place yellow sticky cards among plants in interior plantscapes. Adult whiteflies are attracted to yellow.

3. Remove old leaf sheaths, dead or dying branches, and old leaves. Prune plants to allow light to filter through the plant canopy, which will make it easier to detect insect and mites. Remove flowers from plants that are heavily infested with thrips or from plants in which the flower does not contribute to a plant's aesthetic appear- ance.

4. Control ants, because they can move honeydew-producing in- sects from one plant to another. Ants also protect some insects from parasitic wasps and predators.

5. Spray plants with a strong water spray to dislodge insects, mites and their eggs and help increase humidity. This works best in con- servatories. In other situations, plants should be taken outdoors or to a room with a drain to be sprayed.

6. Minimize plant stress through proper watering, fertilizing, and plant placement. Stressed plants are more susceptible to insects and mites. Avoid overfertilizing plants with nitrogen, as this tends to increase growth and reproduction of some insects and mites. Locate susceptible plants away from heating or cooling vents or ducts. These areas are generally low in relative humidity, which is conducive for spider mite development.

7. Spray plants occasionally with an insecticidal soap or horticul- tural oil. This will prevent insect and mite populations from build- ing up.