Gardenia Insects & Related Pests

With their wonderfully fragrant blossoms and lustrous, dark green leaves, gardenias (*Gardenia angusta*, previously known as *G. jasminoides*) are popular shrubs with many southern gardeners. Their positive qualities compensate to a large extent for the fact that gardenias are somewhat high-maintenance plants with fairly specific cultural requirements. To learn more about growing healthy gardenias, see HGIC 1065, *Gardenia*. In addition to problems resulting from improper growing conditions, gardenias are also susceptible to several diseases, insect pests and other problems. For information on diseases and other problems that affect gardenias, see HGIC 2058, *Gardenia Diseases & Other Problems*.

**Insect Pests**

**Whiteflies:** Whiteflies are not true flies, but are more closely related to scale insects, mealybugs and aphids. They are very small – about 1/10 to 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. When plants that are infested with whiteflies are disturbed, the whiteflies flutter around briefly before settling again.

Both adults and immature forms of the citrus whitefly (*Dialeurodes citri*) 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. See Sooty Mold section in HGIC 2058, *Gardenia Diseases & Other Problems* for detailed information.

**Control:** Insecticidal soap or horticultural oil sprays are effective against whiteflies, but the plant must be sprayed thoroughly so that the soap or oil contacts the insects on the underside of leaves. Repeat spray three times at 5-7 day intervals. Foliar injury from soaps and oils may occur on plants under drought stress. Water the plants well the day before spraying. Only apply horticultural oils or insecticidal soaps if temperatures are below 90 °F, and apply very late in the day to prevent foliar injury. If stronger insecticides become necessary, products containing pyrethrin, bifenthrin, cyfluthrin, permethrin, esfenvalerate, acephate, imidaclopid and disulfoton can be used. Acephate is a foliar systemic insecticide and may provide better control than the other contact insecticides. Soil-applied insecticides, such as imidaclopid or dinotefuran, can give season-long control of whiteflies. These are applied as a soil drench or as granules which are watered into the soil. See Table 1 for products that contain these insecticides.
**Scale Insects:** Various scale insects feed on gardenias, including the soft scales – Japanese wax scale (*Ceroplastes japonicus*) and cottony cushion scale (*Icerya purchasi*); and the armored scales – tea (*Fiorinia theae*), greedy (*Hemiberlesia rapax*) and oleander scales (*Aspidiotus nerii*).

Their feeding can weaken or kill branches. Heavily infested gardenias are often stunted with small flowers and leaves. Leaves may yellow and drop early. Like aphids, soft scales excrete honeydew. Armored scales do not excrete honeydew. The growth of the sooty mold fungus on honeydew results in leaves that are covered in dark fungal growth. See the Sooty Mold section in **HGIC 2058, Gardenia Diseases & Other Problems** for detailed information.

Scales are unusual insects in appearance, and as a result are sometimes misidentified by gardeners either as parts of the plant itself or as disease organisms rather than insects. Adult female scales are small and immobile, with no visible legs. They secrete a waxy coat that varies significantly in shape and color depending on the species. Adult males tend to be very small and have wings which allow them to fly so they can locate females.

Control: A combination of various natural enemies, including ladybird beetles (ladybugs) and parasitic wasps, usually keep scale insects under control. With light infestations, scale can be scraped off or infested branches can be removed and destroyed.

Horticultural oil is an excellent, proven product for scale control. It alone will control all stages of soft and armored scales on gardenias and other shrubs. Horticultural oil is safe to use and is an especially good choice for sensitive areas, such as where people are present soon after treatment. Because of the short residual, oil sprays help to conserve beneficial insect species.
Horticultural oil sprays kill by suffocation. Spray in early spring to kill any overwintering adults, crawlers or eggs. Apply these spray applications again when new leaves start to expand in the spring. At least two more spring applications are needed at five- to six-week intervals. Spray the plants thoroughly, so that the oil sprays drip or "run off" from the upper and under sides of leaves, branches, and trunk. It is best to spray horticultural oil when the temperatures are above 45 and below 90 degrees, and to spray during the early evening to slow the drying of the oil spray application.

Follow label directions for mixing rates with water. Typically a 1 or 2% mixture of horticultural oil is applied. On mature foliage, apply a 2% mixture spray (5 tablespoons of oil per gallon of water). During the spring as new tender growth appears, apply 1% mixture spray (2-1/2 tablespoons per gallon of water).

In terms of traditional insecticides, only the crawler stage is susceptible. Recommended insecticides for use against crawlers include the following: acephate, permethrin, lambda cyhalothrin, cyfluthrin, bifenthrin, esfenvalerate, carbaryl and insecticidal soap. Apply these materials only when crawlers are present and repeat after 10 days.

Soil-applied insecticides can give season-long control of scale insects. Imidacloprid can control soft scales, and dinotefuran can control both soft and armored scales. These are applied as a soil drench or as granules which are watered into the soil. See Table 1 for products containing these insecticides. As with all pesticides, read and follow all label instructions and precautions.

**Aphids:** These small (about 1/8 inch long), soft-bodied, pear-shaped insects are sometimes referred to as plant lice. They vary in color according to species and can be shades of green, yellow, pink or black. Both the green peach aphid (*Myzus persicae*) and the melon (or cotton) aphid (*Aphis gossypii*) feed on gardenias. They are usually found in clusters on new growth of buds, leaves and stems. Aphids feed on plant sap with their piercing-sucking mouthparts. A low population of aphids does little damage to a gardenia; however, aphids reproduce very rapidly and can quickly reach numbers that cause damage. Their feeding results in distorted or curled and stunted growth. Heavy infestations can reduce the number and quality of blooms. As they feed, aphids excrete honeydew, a sugary substance that often attracts ants. In addition, honeydew supports the growth of unsightly, dark-colored sooty mold fungi on the leaves. See the Sooty Mold section in HGIC 2058, *Gardenia Diseases & Other Problems* for details.

**Control:** Aphids have several natural enemies, including parasitic wasps, ladybird beetles (ladybugs) and larvae, and green lacewing adults and larvae. Their natural enemies tend to keep aphid populations under control except in cool weather. Ants are sometimes present with aphid infestations and will protect them from their natural enemies. If ants are present, they should be controlled.

Aphids can be hosed off with a strong stream of water directed above and below the leaves. Spraying with water should be repeated frequently as needed, focusing in particular on new growth. Gardenias can also be sprayed with insecticidal soap or horticultural oil to control aphids. Insecticidal soap or horticultural oil must be sprayed onto the aphids to be effective. Repeat spray three times at 5-7 day intervals. Foliar injury
from soaps and oils may occur on plants under drought stress. Water the plants well the day before spraying. Only apply horticultural oils or insecticidal soaps if temperatures are below 90 °F, and apply very late in the day to prevent foliar injury.

While higher toxicity insecticides are available, it is important to note that aphids are very difficult to control because they multiply so rapidly. Leaving even one aphid alive can quickly result in a population explosion. In addition, these insecticides kill the natural enemies of aphids.

If stronger insecticides are deemed necessary, the following are available in homeowner-size packaging. Sprays containing acephate, bifenthrin, cyfluthrin, permethrin, lambda cyhalothrin, esfenvalerate, malathion, neem oil, or pyrethrin will control aphids. Soil drenches or granular applications of imidacloprid, dinotefuran, or disulfoton will control aphids and last longer within the plant to prevent future infestations. See Table 1 for products containing these insecticides.

**Thrips:** Flower thrips (Frankliniella tritici), Western flower thrips (F. occidentalis) and various other thrips species are pests of gardenia flowers. Thrips are slender, dark-colored insects, with fringed wings. Adults are less than 1/16 inch in length. To see these fast-moving pests, you need a magnifying lens. Thrips are typically found on leaves and between flower petals. Both adults and nymphs (immature insect stages that resemble the adult, but are smaller) feed by scraping surface cells to suck plant sap.

When thrips feed on flower buds, the flower may die without opening. With a light infestation, their feeding causes leaves to have silvery speckles or streaks. With severe infestations, flowers are stunted and distorted and may turn brown and die. Thrips feed also on expanding leaves, which creates purplish red spots on the undersurfaces and causes foliage to severely curl or roll, then drop prematurely.

As a result of their small size, thrips are difficult to detect before damage is obvious. To sample for thrips on gardenia flowers, hold a sheet of stiff white paper under injured flowers, and then tap the flower. Examine the paper in bright sunlight. Any thrips present will move around on the paper. In addition, blowing lightly into the blooms causes thrips to move around, making them easier to see.

**Control:** Several naturally-occurring enemies feed on thrips. To avoid killing these beneficial insects which reduce thrips populations, insecticides should be avoided as much as possible. Grass and weeds in the area should be kept mowed or removed when possible.

If it becomes essential to spray an insecticide, the following are available in homeowner-size packaging: bifenthrin, cyfluthrin, lambda cyhalothrin, permethrin, esfenvalerate, or spinosad. Acephate is a foliar, systemic spray insecticide that will better control thrips that are within flower buds than contact insecticides. Spray when thrips are present and again in 7 to 10 days. Soil drenches or granular applications of dinotefuran, disulfoton or imidacloprid will give some thrips suppression. See Table 1 for specific products.

**Related Pests**

**Spider Mites:** Mites are not insects. They are more closely related to spiders, having eight legs as adults rather than six. Spider mites are extremely small (about 1/50-inch long) and are somewhat difficult to see on a plant without a magnifying lens. One way to make them easier to detect is to hold a piece of white paper under a branch and then tap the branch sharply. If still not visible, wipe your hand over the paper. If mites are present, red streaks will be seen.

Two-spotted spider mites (Tetranychus urticae) are pests on gardenias in South Carolina. While these mites may be present throughout the growing season, their populations tend to reach damaging numbers during hot, dry weather.

Mites have piercing-sucking mouthparts. They suck plant sap, typically feeding on the lower surface of a leaf. Early damage is seen as yellow or white speckling on the leaf’s upper surface. The shape of new leaves may be distorted as a result of their feeding. Fine webbing may be seen on the undersides of leaves. With severe infestations, webbing may cover both sides of leaves as well as branches. Webbing can collect dust and debris and makes the plant appear untidy.
Control: Both beneficial insects, such as lacewings and lady beetles, and predatory mites prey on spider mites. Predatory mites are about the same size as spider mites but can be distinguished from spider mites by their long legs and the speed with which they move. Several species of predatory mites, lacewings, and lady beetles are available commercially for use as biological control agents.

A strong spray of water is a non-chemical control option that removes eggs, larvae (six-legged immature stage), nymphs (eight-legged immature stage) and adult mites. Be sure to spray lower surfaces of leaves and repeat as needed. This method is most effective with light infestations as seen with early detection. An important advantage of this control method is that populations of natural pest enemies are not harmed.

Insecticidal soaps and horticultural oils are effective control options for spider mites and are essentially nontoxic to humans, wildlife, and pets, and only minimally toxic to beneficial predators. When using these products, good coverage is critical to ensure contact with the pest, and reapplication may be needed as determined by follow-up monitoring for the pest. Foliar injury from soaps and oils may occur on plants under drought stress. Water the plants well the day before spraying. Spray very late in the day, and do not spray with soaps or oils if the temperature exceeds 90 °F.

When growing gardenias, the use of broad-spectrum insecticides should be avoided as much as possible as these products can kill off natural enemies that help keep spider mite populations in check. Also avoid pesticides that claim to "suppress" mites as they tend to be weak miticides. When stronger chemical control is needed, the following insecticides/miticides are available in homeowner-size packaging: tau-fluvalinate or bifenthrin sprays. See Table 1 for products containing these insecticides.

### Table 1. Insecticides for Gardenia Insect Pest Control.

<table>
<thead>
<tr>
<th>Pesticide Active Ingredient</th>
<th>Brand Names &amp; Products</th>
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<tbody>
<tr>
<td>Acephate</td>
<td>Bonide Systemic Insect Control concentrate</td>
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<tr>
<td>Bifenthrin</td>
<td>Ferti-lome Broad Spectrum Insecticide concentrate; Hi-Yield Bug Blaster Bifenthrin 2.4 Concentrate; Ortho Bug-B-Gon Insect Killer for Lawns &amp; Gardens Conc.; &amp; RTS[^1]</td>
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<tr>
<td>Carbaryl</td>
<td>Garden Tech Sevin Concentrate Bug Killer (also in RTS[^1])</td>
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<tr>
<td>Cyfluthrin</td>
<td>Bayer Advanced Vegetable &amp; Garden Insect Spray concentrate</td>
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<tr>
<td>Dinotefuran</td>
<td>Gordon’s Zylam Liquid Systemic Insecticide (drench[^3]); Gordon’s Zylam 20SG Systemic turf Insecticide (drench[^3]); Ortho Tree &amp; Shrub Insect Control Ready to Use Granules (2%); Valent Brand Safari 2G Insecticide (granules); Valent Safari 20SG Insecticide (drench[^3])</td>
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<tr>
<td>Horticultural oil[^2]</td>
<td>Bonide All Seasons Spray Oil Concentrate; Espoma Earth-tone Horticultural Oil Concentrate; &amp; RTS[^1]; Ferti-lome Horticultural Oil Spray Concentrate; Monterey Horticultural Oil Concentrate; Southern Ag ParaFine Horticultural Oil Concentrate</td>
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</table>
| Insecticide | Bayer Advanced Garden Tree & Shrub Insect Control Landscape Formula Concentrate (drench^3)  
Bonide Annual Tree & Shrub Insect Control w/ Systemaxx (drench^3)  
Ferti-lome Tree & Shrub Systemic Insect Drench^3  
Gordon’s Tree & Shrub Insect Killer (drench^3)  
Hi-Yield Systemic Insect Spray (drench^3)  
Monterey Once A Year Insect Control II (drench^3)  
Ortho Bug B Gon Year Long Tree & Shrub Insect Control (drench^3) |
| --- | --- |
| Insecticidal soap^4 | Bonide Multi-Purpose Insect Control Soap Concentrate  
Espoma Earth-tone Insecticidal Soap Concentrate  
Natural Guard Insecticidal Soap Concentrate  
Safer Brand Insect Killing Soap Concentrate  
Schultz Safe Insecticidal Soap Insect Killer Concentrate |
| Lambda or gamma cyhalothrin | Bonide Beetle Killer RTS^1  
Bonide Caterpillar Killer RTS^1  
Spectracide Triazicide Insect Killer for Lawns & Landscapes Conc.; & RTS^1 |
| Malathion | Bonide Malathion 50% Insect Control  
Gordon’s Malathion 50% Spray  
Hi-Yield 55% Malathion Insect Spray  
Martin’s Malathion 57% Concentrate  
Ortho Max Malathion Insect Spray Concentrate  
Spectracide Malathion Insect Spray Concentrate  
Southern Ag Malathion 50% EC  
Tiger Brand 55% Malathion |
| Neem oil | Ferti-lome Rose, Flower & Vegetable Spray Concentrate  
Garden Safe Fungicide 3 Concentrate  
Garden Safe Neem Oil Extract Concentrate  
Monterey 70% Neem Oil Fungicide/Insecticide/Miticide Concentrate  
Natural Guard Neem Concentrate  
Safer Brand Concern Garden Defense Multi-Purpose Spray Concentrate  
Southern Ag Triple Action Neem Oil Concentrate  
Bonide Neem Oil Concentrate |
| Permethrin | Bonide Eight Insect Control Vegetable, Fruit & Flower Concentrate  
Bonide Total Pest Control Outdoor Concentrate  
Bonide Eight Yard & Garden RTS^1  
Hi-Yield Indoor/Outdoor Broad Use Insecticide Concentrate  
Tiger Brand Super 10 Concentrate  
Martin’s Vegetable Plus Concentrate |
| Pyrethrin | Bonide Garden Insect Spray Concentrate  
Southern Ag Natural Pyrethrin Concentrate |
| Spinosad | Bonide Colorado Potato Beetle Beater Concentrate  
Bonide Captain Jack’s Deadbug Brew Concentrate; & RTS^1  
Ferti-lome Borer, Bagworm & Leafminer Spray Concentrate  
Monterey Garden Insect Spray Concentrate  
Natural Guard Landscape & Garden Insecticide RTS^1  
Southern Ag Conserve Naturalyte Insect Control Concentrate |
| Tau-Fluvalinate | Bayer Advanced 3-in-1 Insect, Disease & Mite Control Conc.; & RTS^1 |

^1 RTS = Ready to Spray (hose-end applicator)  
^2 Never apply a horticultural oil spray within 2 weeks of a sulfur spray, and do not apply oils when the temperature is above 90 °F or to drought-stressed plants. Spray late in the day.  
^3 Drench = Add to water and pour around base of plant.  
^4 Gardenias are sensitive to some insecticidal soaps. Check product label to make sure that it is listed as safe for gardenias. Do not apply soaps when the temperature is above 90 °F or to drought-stressed plants. Spray late in the day.

With all pesticides, read and follow all label instructions and precautions.
Note: 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 employ cultural controls first, then use less toxic alternative sprays 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. If soil applied insecticides are used, make applications immediately after flowering to reduce the amount of insecticide exposure to pollinating insects. For more information, contact the Clemson Home & Garden Information Center.


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