

## Pansy Diseases & Insect Pests

Pansies are among the most popular garden flowers grown today. They are most commonly grown as annuals, producing the best flowers and growth when temperatures are mild in the fall and spring. Although they are relatively trouble-free, there are several problems that can affect them.

### Diseases

**Anthracnose:** Anthracnose is caused by the fungus *Colletotrichum* species and causes a browning and blotching of the leaves. Initially, the infected leaves have pale yellow spots with distinct black margins. As the disease progresses, the center of the spots becomes dry and tan and may have a concentric ring pattern. Flower petals of infected plants may be spotted and develop abnormally. Seriously infected plants may die.

**Prevention & Treatment:** Combat anthracnose by digging up and destroying severely infected plants. Pick off infected leaves as soon as they appear. Reduce disease development by avoiding overhead watering. Apply a thin layer of mulch around plants to help prevent fungal spores from splashing onto leaves from the soil. For serious infections of anthracnose, fungicide sprays containing either chlorothalonil or mancozeb are available for homeowner use. Apply at 7- to 14-day intervals until conditions no longer favor disease development. See Table 1 for examples of products containing these fungicides. As with all pesticides, read and follow all label instructions and precautions.

**Other Leaf Spots:** There are many fungi (*Alternaria* species, *Cercospora* species, *Myrothecium* species and *Ramularia* species) that can cause unsightly spots on pansy foliage. Leaves may have transparent tan, brown or black spots.

Often these spots may grow together to form larger patches of dead tissue. Reduce leaf spot development by picking off and destroying infected leaves as soon as they appear. Avoid overhead irrigation. Moist leaf surfaces are ideal locations for these fungi to thrive. A layer of mulch will help to prevent the fungi from splashing from the soil onto plants.

Cercospora leaf spot commonly occurs in fall landscape beds. It appears as a dry, brown blotch or an irregular purple lesion, especially during cool weather. For serious infections of Cercospora leaf spot, fungicide sprays containing thiophanate-methyl can be used. Apply at 7- to 14-day intervals until conditions no longer favor disease development. See Table 1 for examples of products containing these fungicides. As with all pesticides, read and follow all label instructions and precautions.

**Black Root Rot:** This disease is caused by the fungal organism, *Thielaviopsis basicola*, which can affect a wide range of ornamental plants. Older plants affected by the disease turn yellow and have small crinkled leaves. Close observation reveals a black discoloration moving up from the tips of the roots. Diagnosis may be difficult without professional help.

**Prevention & Treatment:** Remove and discard any infected plants. Provide good drainage to plants and avoid overwatering. The disease can be suppressed, but not cured, with regular applications of fungicides containing thiophanate-methyl. See Table 1 for examples of products containing these fungicides. As with all pesticides, read and follow all label instructions and precautions.

**Root & Crown Rot:** Many fungi (*Phytophthora* species, *Pythium* species, *Rhizoctonia* species and *Fusarium* species) live in the soil, which can infect the roots or the base of the plant (crown) at the soil line. Plants may wilt and suddenly die or the leaves may simply turn yellow. A dark sunken area may be seen on the stem at or near the soil line. Roots may appear rotted. Some plants may survive but remain weak and stunted.

**Prevention & Treatment:** The fungus thrives in areas with poor drainage and warm soils. Always choose locations that have good drainage for planting. The drainage of existing areas can be improved by using raised beds. Avoid applying too much water since many of these fungi thrive in moist conditions. Always allow the soil to dry between each watering. Promote drying of the soil by not setting plants too close or applying too much mulch around plants. Prevent future infection by always removing and destroying diseased plants.

Fungicides can be effective on a preventative basis only, and repeat applications are required. Fungicides containing potassium salts of phosphorous acid (such as Monterey Agri-Fos, Fosphite, Agri-Fos 400) or mefenoxam (Subdue Maxx) can be applied as a drench in the home landscape, and will suppress, but not cure infected plants. Due to product cost and for accurate application, homeowners may want to hire a licensed landscaper to apply products containing these fungicides. Apply all chemicals according to directions on the label.

**Gray Mold (Botrytis Blight):** This disease is caused by a fungus, *Botrytis* species, which produces a fuzzy, gray coating on the flowers and stems of many plants. When infected flowers are picked, a puff of gray spores can usually be seen. Infected areas of the plant will eventually be soft, slimy and decayed.

**Prevention & Treatment:** Reduce disease development by keeping plant surfaces dry, removing aging flower blossoms and providing good air circulation. Do not overcrowd plants. Fungicide sprays containing chlorothalonil, mancozeb or copper fungicides are available for serious infections. Repeat every 7- to 14-days when conditions favor disease development. See Table 1 for examples of products containing these

fungicides. As with all pesticides, read and follow all label instructions and precautions.

## Insects & Other Pests

**Aphids:** Various aphid species are pests of pansies. Aphids are soft-bodied insects that range in color from tan to pink to green to almost black and in size from  $\frac{1}{16}$  to  $\frac{3}{8}$ -inch. They feed by piercing plant tissue and sucking plant sap. On pansies, they feed mainly on new leaves and stems. As they feed, they excrete honeydew (a sugary material). The sooty mold fungus feeds on the honeydew, resulting in unsightly, dark fungal growth.

**Control:** Several natural enemies, such as ladybird beetles (ladybugs) and lacewings feed on aphids. As much as possible, these predators should be allowed to reduce aphid populations. Planting small-flowered nectar plants, such as Queen Anne's lace (*Daucus carota*) will help attract these beneficial predators.

As a result of their phenomenal ability to reproduce, aphids are very difficult to control with insecticides. Leaving one aphid alive can result in the production of a new colony very quickly. In addition, the use of insecticides kills the beneficial insects that normally keep aphid populations under control. However, if natural predators do not reduce aphid populations sufficiently, the following insecticides are recommended: insecticidal soap, cyfluthrin, permethrin, bifenthrin, lambda cyhalothrin, malathion or acephate. See Table 2 for examples of products containing these insecticides. As with all pesticides, read and follow all label instructions and precautions.

**Spider Mites:** Two-spotted spider mites (*Tetranychus urticae*) are also pests of pansies. Mites are not insects, but are more closely related to spiders. They tend to be more of a problem during hot, dry periods. Mites are extremely small and can barely be seen without a magnifying lens. They have piercing mouthparts with which they puncture plant tissue and suck plant sap. Early symptoms on pansies are pinprick holes in leaves. These symptoms can be easily overlooked. Over time, tiny tan spots can be seen. Seriously infested leaves turn tan and die. A fine webbing is visible on some leaves.

**Prevention & Control:** Infestations are less likely to occur when pansies are grown during spring or fall when weather is cool. When infestations do occur, begin spraying plants with insecticidal soap weekly as needed. Other pesticides labeled for homeowner use against spider mites include tau fluvalinate or bifenthrin. See Table 2 for examples of products containing these miticides. As with all pesticides, read and follow all label instructions and precautions.

**Slugs & Snails:** These pests feed on pansy leaves and blooms at night. In a single night, their feeding can result in large, irregular holes in leaves and flowers. A sign of their presence is the slimy trail of mucus that they leave behind as they move. During the day, they hide under leaf litter, mulch and flower pots where it is moist. Snails and slugs are mollusks and thus related to clams and oysters. Like all mollusks, they must stay moist all the time to survive.

**Control:** The first step in discouraging slugs and snails is to remove mulch and leaf litter near plants to reduce the moist conditions necessary for their survival. Slugs and snails can be removed by handpicking. The best time to look for them is a few hours after dark using a flashlight. Slug and snail traps can be made by filling shallow containers with beer and placing in a hole in the soil so that the rims are level with the soil. These pests are attracted by the yeasty smell and will fall in and drown. Before putting down the traps, water the area to encourage slug and snail activity that night. Placing a board on the ground, raised about one-inch, is another trap option. It provides a daytime hiding place for these pests that you can then lift to locate and dispose of them.

Protect plants by sprinkling diatomaceous earth around the plants. Diatomaceous earth is very sharp and scratches the skin of these soft-bodied critters, resulting in dehydration and death. It must be reapplied after a rain or watering.

Products containing metaldehyde (3 percent) bait can be used to control snails and slugs in the home garden. However, newer products are available that contain iron phosphate. Iron phosphate will stop feeding by the snails and slugs quickly, and is much less harmful to pets, birds, and non-target insects than metaldehyde. Any unconsumed iron phosphate bait adds nutrients (iron and phosphorus) to the soil. Consult the label for information on the rate. See Table 3 for examples of products containing these slug and snail baits. As with all pesticides, read and follow all label instructions and precautions.

### **Other Problems**

**Short Blooming Period:** Pansies grow and flower best in cool conditions when temperatures are below 75 °F. Weather that is too hot will cause pansies to fade and die out. Plant pansies in the cool conditions of fall or early spring, and prolong blooming by pinching off the older flowers (deadheading). This prevents the plant from making seeds and encourages more flowers to form. Cutting back the plants by one third will also stimulate new growth and extend the blooming period.

**Spindly Growth:** Pansies will produce lanky growth when light levels are too low. They require strong filtered light, and flower best in full sun during cool weather.

**Warty Growths on Stems:** Pansy stems and flower stalks may be covered with small, wart-like bumps. This condition is caused by too much water inside of the plant and not by an insect or disease. When a plant gets too much water, the pressure inside the plant builds up, and water ruptures from the stems and leaves. This condition is called oedema. Wet soil combined with cool, cloudy conditions are ideal for this to occur. Prevent this problem by allowing the soil to dry between each watering, and always plant in well-drained soil. Promote drying of the soil by not applying too much mulch around plants, and not setting plants to close together.

**Table 1. Control of Pansy Diseases.**

<b>Active Ingredient</b>	<b>Examples of Brands &amp; Products</b>
<b>Chlorothalonil</b>	Bonide Fung-onil Concentrate Ferti-lome Broad Spectrum Landscape & Garden Fungicide Concentrate GardenTech Daconil Fungicide Concentrate Hi-Yield Vegetable, Flower, Fruit & Ornamental Fungicide Concentrate Monterey Fruit Tree, Vegetable & Ornamental Fungicide Ortho MAX Garden Disease Control Concentrate Southern Ag Liquid Ornamental & Vegetable Fungicide Concentrate Tiger Brand Daconil Concentrate
<b>Copper Fungicides</b>	Bonide Liquid Copper Concentrate (a copper soap; 1.8% copper) Camelot Fungicide/ Bactericide Concentrate (a copper soap; 1.8% copper) Natural Guard Copper Soap Liquid Fungicide Concentrate (1.8% copper) Bonide Copper Fungicide Spray or Dust (copper sulfate; 7% copper) Monterey Liqui-Cop Copper Fungicidal Garden Spray Concentrate (copper ammonium complex; 8% copper) Southern Ag Liquid Copper Fungicide (copper ammonium complex; 8% copper)
<b>Mancozeb</b>	Bonide Mancozeb Flowable with Zinc Concentrate Southern Ag Dithane M-45
<b>Thiophanate Methyl</b>	Cleary's 3336-WP Turf & Ornamental Fungicide Southern Ag Thiomyl Systemic Fungicide
<b>With all pesticides, read and follow all label instructions and precautions.</b>	

**Table 2. Control of Pansy Insect Pests & Spider Mites.**

<b>Active Ingredient</b>	<b>Examples of Brands &amp; Products</b>
<b>Acephate</b>	Bonide Systemic Insect Control Concentrate
<b>Bifenthrin</b>	Bifen I/T Concentrate Ferti-lome Broad Spectrum Insecticide Concentrate Hi-Yield Bug Blaster Bifenthrin 2.4 Concentrate Ortho Bug-B-Gon Insect Killer for Lawns & Gardens Concentrate; & RTS <sup>1</sup> Talstar P Concentrate Up-Star Gold Insecticide Concentrate Ortho Bug B Gon Insect Killer for Lawns & Gardens Concentrate; & RTS <sup>1</sup> (also with zeta-cypermethrin)
<b>Cyfluthrin</b>	Bayer Advanced Vegetable & Garden Insect Spray Concentrate; & RTS <sup>1</sup>
<b>Insecticidal Soap<sup>2</sup></b>	Bonide Insecticidal Soap Concentrate Espoma Earth-tone Insecticidal Soap Concentrate Natural Guard Insecticidal Soap Concentrate Safer Brand Insect Killing Soap Concentrate Garden Safe Insecticidal Soap Insect Killer Concentrate
<b>Malathion</b>	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
<b>Lambda Cyhalothrin</b>	Spectracide Triazicide Insect Killer for Lawns & Landscapes Conc.; & RTS <sup>1</sup> Bonide Caterpillar Killer RTS <sup>1</sup> Bonide Beetle Killer RTS <sup>1</sup>

<b>Permethrin</b>	Bonide Eight Insect Control Vegetable, Fruit & Flower Concentrate Bonide Total Pest Control Outdoor Concentrate Hi-Yield Indoor/Outdoor Broad Use Insecticide Concentrate Bonide Eight Yard & Garden RTS <sup>1</sup>
<b>Tau-Fluvalinate</b>	Bayer Advanced 3-in-1 Insect, Disease & Mite Control Conc.; & RTS <sup>1</sup>
<sup>1</sup> RTS = Ready to Spray (a hose-end sprayer) <sup>2</sup> Do not apply insecticidal soaps when the temperature is above 90 °F or to drought-stressed plants. Spray late in the day for best control. <b>With all pesticides, read and follow all label instructions and precautions.</b>	

**Table 3. Control of Slugs & Snails.**

<b>Active Ingredient</b>	<b>Examples of Brands &amp; Products</b>
<b>Iron Phosphate Baits</b>	Bayer Advanced Dual Action Snail & Slug Killer Bait Monterey Sluggo - Kills Slugs & Snails Gardens Alive Escar-Go Slug & Snail Control Garden Safe Slug and Snail Bait Garden Safe Slug & Snail Bait Bonide Slug Magic Pellets Whitney Farms Slug & Snail Bait Bonide Bug & Slug Killer Bait (also contains spinosad) Earth-tone Bug & Slug Control (also contains spinosad) Brandt Sluggo Plus T & O (also contains spinosad)

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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Pesticides updated by Joey Williamson, HGIC Horticulture Extension Agent, 10/16. Revised by Joey Williamson, HGIC Horticulture Extension Agent, Clemson University, 12/06. Originally prepared by Nancy Doubrava HGIC Horticulture Information Specialist; J. McLeod Scott, HGIC Horticulture Extension Agent; James H. Blake, Extension Plant Pathologist; and Clyde S. Gorsuch, Extension Entomologist, Clemson University. New 05/99.

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