

Rose Pests and Diseases in Florida¹

Gary W. Knox, Mathews Paret, and Russell F. Mizell, III²

Roses are one of the most popular flowering shrubs in Florida and the United States. Valued for their beautiful and often fragrant blooms, roses have been cultivated in gardens for centuries as vines, shrubs, specimen plants, groundcovers, and container plants. Roses can grow and flower 9 months of the year in North Florida and year-round in the rest of Florida.

Roses have become especially popular in recent years with the introduction of Knock Out® and other shrub roses. Unfortunately, increased use and misuse of roses have resulted in more reports of pest problems. Rose pests can be minimized by following basic guidelines for rose selection and care:

- **Select pest-resistant varieties.** Many old garden roses and some new roses are disease resistant. Check the Solutions for Your Life website (<http://www.solutionsforyourlife.com/>), your county's Extension office, or your local rose society for more information about selecting roses.
- **Buy healthy plants.** Avoid plants that have
 - spotted, discolored, or distorted leaves;
 - discolored canes (stems);
 - discolored roots; or
 - swollen areas on stems or roots.
- **Plant roses in well-drained soil amended with organic matter, such as compost, manure, peat, or other organic materials.** Roses grown in improved soils have vigorous root systems that improve growth and pest resistance. For best performance, roses require at least 6 hours of direct sunlight each day.
- **Keep leaves dry to reduce diseases.** Avoid overhead or sprinkler irrigation and use drip or micro-irrigation when watering roses. Plant roses far enough apart to allow air circulation. If possible, plant roses in areas that receive morning sun so as to help evaporate overnight moisture from dew or rain.
- **Maintain good sanitation.** Remove all old leaves on the ground and any mulch that has been contaminated with infected leaves. Cut out any canes showing cankers, discolorations, or sunken areas. Destroy all infected stems, leaves, and faded blooms. Add fresh mulch regularly to create a barrier between the rose and disease organisms that may be on the ground.

Following these basic guidelines will result in healthy plants that are more resistant to pests and other problems. More detailed information about rose culture can be found in *Growing Roses in Florida* (Park Brown 2007) and at the American Rose Society's website (<http://www.ars.org>).

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2. Gary W. Knox, Extension specialist and professor, Environmental Horticulture Department; Mathews Paret, Extension specialist and assistant professor, Plant Pathology Department; and Russell F. Mizell, III, Extension specialist and professor, Entomology and Nematology Department; North Florida Research and Education Center, Quincy, FL, 32351.

Major Pests

The most severe rose pests in Florida are the leaf diseases, black spot and Cercospora leaf spot, and nematodes, which are worm-like creatures that damage roots. A recently introduced insect pest, chilli thrips, damages leaves and buds and is emerging as a major threat in some areas.

Black spot

Black spot is caused by the fungus *Marssonina rosae* (*Diplocarpon rosae*; sexual stage) and is the most serious rose disease in Florida. Various genotypes of *M. rosae* (i.e., isolates that infect a specific cultivar or group of cultivars) are currently known.

Black spot symptoms start as small, black spots on the upper surface of leaves (Figure 1). Lesions can vary in size and have unique, feathery borders (Figure 2). The leaves subsequently turn yellow around the black spot lesions (Figure 3), finally leading to severe defoliation. The defoliation usually starts on the lower parts of stems and gradually moves up. Spots can also be found on peduncles, fruits, and sepals if the infection is severe (Figure 4). The disease significantly reduces plant vigor and flowering.



Figure 1. Initial black spot lesions on the upper surface of leaves
Credits: Mathews Paret, University of Florida



Figure 2. Unique, feathery borders of black spot lesions
Credits: Hank Dankers, University of Florida



Figure 3. Yellowing of leaves around black spot lesions
Credits: Mathews Paret, University of Florida



Figure 4. Black spots can also be found on peduncles or receptacles when the infection is severe.
Credits: Hank Dankers, University of Florida

The spores of the pathogen are easily spread by splashing rain or overhead irrigation water. Spores must be wet for several hours to infect plant tissues. Black spot is promoted by warm, wet weather and is common in summer. However, the disease can continue to develop across a wide range of temperatures from 59°F to 81°F as long as moisture is adequate during the season.

The disease can be managed by cultural practices. Planting resistant cultivars and following strict sanitation practices, including removing infected and fallen leaves and pruning canes late in the winter, are very important. These practices help to reduce the inoculum load. Plants should be irrigated early in the morning to allow sufficient time for the leaves to dry. Fungicide applications should start with the use of protective fungicides at bud break, followed by bimonthly applications until the leaves are fully expanded. The application duration can be shortened during summer conditions.

It is important to rotate fungicide chemistries to reduce the chances of fungicide resistance. Please refer to the *Fungicide Resistance Action Committee's (FRAC) Classification Scheme of Fungicides According to Mode of Action* (<http://edis.ifas.ufl.edu/pi131>) for more information.

Additional information about black spot and its management can be found at *Black Spot of Rose* (Mangandi and Peres 2009a).

Cercospora leaf spot

Cercospora leaf spot is caused by the fungus *Cercospora rosicola* (*Mycosphaerella rosicola*; sexual stage). *C. rosicola* is distributed worldwide and is one of the major production issues for roses in Florida. Cercospora leaf spot is a disease often confused with black spot because of the similarities in disease symptoms.

Symptoms of Cercospora leaf spot are circular spots, usually 2–10 mm in diameter (Figure 5). The initial symptom usually is a small purplish area. As the disease progresses, the older lesions develop small necrotic areas. Subsequently, the centers of the spots turn tan. Cercospora leaf spot causes severe defoliation in heavily infected plants. The infection starts from the bottom of the canopy and progresses toward the tips, where new growth is present. Lesions are primarily found in leaves but also in pedicels, stems, fruits, and bracts.



Figure 5. Symptoms of Cercospora leaf spot on rose leaves
Credits: Mathews Paret, University of Florida

The disease can occur throughout the year in Florida and can be managed by integrating good cultural practices and sanitation as described for management of black spot. A fungicide management program is also necessary for effective control of the disease.

Additional information on Cercospora leaf spot can be found at *Cercospora Leaf Spot of Rose* (Mangandi and Peres 2009b).

Nematodes

Nematodes or roundworms are microscopic, worm-like creatures (Figure 6). Most soil-dwelling nematodes are harmless, but some are serious rose pests. The most common and serious nematode rose pest is the root knot nematode (*Meloidogyne hapla*). This nematode damages small rose roots by penetrating them and sucking juices. Roots respond to this feeding damage by forming knots or small galls that limit further development of the root system. Damaged roots cannot absorb water and nutrients, and severely affected plants become stunted or weak, resembling plants suffering from low fertility or poor soil conditions. Root knot nematodes also can result in fewer flowers and a shorter plant lifespan. Inspection of root systems may reveal galls about ¼ inch in diameter. Nematode problems can be diagnosed by submitting a soil sample to a nematode assay laboratory (Crow and Woods 2007). Similarly, prior to planting, soil samples can be submitted to estimate the risk of nematode damage to roses or other plants. Larger populations of nematodes are often found in warm, moist, sandy soils. If nematodes are expected to be a problem, purchase roses grafted onto the nematode-resistant rootstock, *Rosa* 'Fortuniana'.

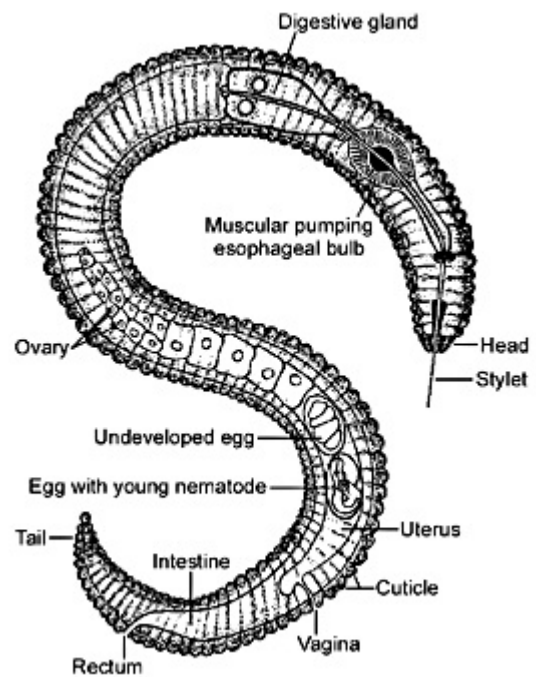


Figure 6. Some nematodes are major pests of rose.
Credits: Crow and Dunn 2005

Chilli thrips

Chilli thrips (*Scirtothrips dorsalis*) is a recently introduced, invasive thrips whose feeding damage can destroy roses very rapidly (Figure 7). Most reports of severe damage to

roses are from Central Florida and nearby coastal areas. Chilli thrips feeds on leaves and small buds and causes the leaves to discolor and curl upward on new canes. This pest also feeds on many other plant species. If untreated, symptoms will become more severe until plants are defoliated. Repeated defoliations may kill the plant. Control methods and photos of damage can be found at <http://www.mrec.ifas.ufl.edu/lso/thripslinks.htm>.



Figure 7. Chilli thrips (*Scirtothrips dorsalis*) is a newly introduced, invasive thrips whose feeding damage can destroy roses very rapidly. Credits: Juanita Popenoe, UF/IFAS Lake County Extension Service

Other Diseases

Powdery mildew

Powdery mildew is caused by the fungus *Podosphaera pannosa*. It appears as small patches of white “powder” on leaves, shoots, buds, and flowers. In addition to the white, powdery patches, infections on new growth cause leaves to curl up. Symptoms of powdery mildew can overtake an entire plant and defoliate it. However, leaf drop due to powdery mildew is not as severe as with black spot.

Powdery mildew usually appears during fall and spring, when humid periods accompany cool nights and warm days. Powdery mildew can be suppressed by planting roses in open, sunny areas and spacing plants to allow

air movement. Do not irrigate plants at night and do not overfertilize. Remove infected leaves and other plant parts.

Downy mildew

Downy mildew (*Peronospora sparsa*) is a fungus that produces lesions on leaves, stems, and flowers. Leaf lesions are often angular in shape. They start as yellow spots (Figure 8) and then turn purple to brown (Figure 9); surrounding leaf tissue may turn yellow. At the advanced stage of the infection, the leaves turn yellow, and brown, dead areas form within the purplish blotches (Figure 10). In severe cases, purplish patches can be seen on the branches. Under favorable conditions, spore masses can be seen on the lower surface of the leaves and on canes. All cultivated roses are susceptible to downy mildew, including Knock Out®.



Figure 8. Initial yellowing symptoms of downy mildew on rose leaves Credits: Mathews Paret, University of Florida



Figure 9. Purplish downy mildew symptoms on rose leaves Credits: Hank Dankers, University of Florida



Figure 10. Dead areas within the purplish blotches on rose leaves infected with downy mildew
Credits: Hank Dankers, University of Florida

To manage the disease, use resistant varieties whenever possible. Allow sufficient air circulation and plant in areas with full sunlight. Avoid overhead irrigation during conditions conducive to the spread of the disease. Remove all the dead leaves and branches from the plants. Sterilize pruning knives to prevent disease spread.

Various fungicides are available for disease management. Check <http://premier.cdms.net/webapls/formsloginRef.asp?/webapls> for current labels.

Botrytis blight

Botrytis blight is caused by the fungus *Botrytis cinerea*. Symptoms are light-colored spots on rose petals; these spots quickly turn to brown blotches (Figure 11). Infected buds fail to open, and discoloration may extend down the stem. Development of a slimy, gray-brown mold follows, concluding with rotting buds. Canes may develop dark brown, sunken cankers. This disease can occur throughout the year but often develops on blooming plants during cool weather with high humidity levels.

Planting conditions that allow air circulation help suppress this disease. All infected buds, flowers, and canes should be destroyed at the first sign of symptoms. Fungicide sprays should be initiated if necessary, and different chemistries must be alternated to reduce the chances of fungicide resistance. Please refer to the *Fungicide Resistance Action Committee's (FRAC) Classification Scheme of Fungicides According to Mode of Action* (<http://edis.ifas.ufl.edu/pi131>) for more information.



Figure 11. Symptoms of botrytis blight
Credits: Hank Dankers, University of Florida

Stem canker

Stem canker may also be caused by other fungi. Symptoms are yellow to purple spots (depending on the fungus) that eventually form dark brown, sunken cankers on stems. These cankers can enlarge and girdle stems, killing all growth above the canker. This disease is spread by rain or irrigation water that splashes spores into wounds caused by pruning or other stem damage. Stem canker can occur throughout the year but prefers humid, wet weather. Weak or stressed plants are often more susceptible. Good cultural conditions that promote healthy plants and the removal of diseased plant parts will limit disease spread.

Crown gall

Crown gall is caused by the bacterium *Agrobacterium tumefaciens*, which enters the plant through wounds made during grafting, planting, pruning, or insect feeding. Often, plants are infected in the nursery and the disease develops later, after planting in the garden. Symptoms are a gradual decline in plant health, often associated with the presence of spherical, woody growths at the crown or on stems (Figure 12). Galls have rough surfaces and may grow up to 6 inches in diameter. Diseased plants should be removed and destroyed.



Figure 12. Crown gall on rose
Credits: Mathews Paret, University of Florida

Rose mosaic

Rose mosaic is a complex of several viruses that cause similar symptoms in rose plants. The most important of these in the United States is Prunus necrotic ringspot virus (PNRSV). Single or mixed infections of PNRSV and apple mosaic virus (ApMV) have been reported in the past. Virus infection reduces flower production and plant growth and shortens plant lifespan. The symptoms of rose mosaic are highly variable and include chlorotic line patterns, ring spots, and mottling of leaves (Figure 13). These symptoms may appear only occasionally, depending on weather and plant growing conditions.

The use of virus-indexed plants is recommended to avoid this disease.



Figure 13. Foliar symptoms of rose mosaic
Credits: Hank Dankers, University of Florida

Other Insects, Mites, and Arthropods

Yellow rose aphid

The yellow rose aphid (*Acythosiphon rosae*) is a widespread rose pest (Figure 14). It is more common during the cool weather of fall and spring but may occur year-round. Several other species of aphid also infest roses. Aphid feeding on leaves may cause leaf drop. Honeydew excreted by the aphids serves as a food source for sooty mold, which turns the leaves black and unsightly. Aphids attract many natural enemies that feed on them or their sugar-rich honeydew. Common natural enemies of rose aphids and other rose pests include lady beetles, lacewings, syrphid flies, predatory mites, and thrips.



Figure 14. Yellow rose aphid (*Acythosiphon rosae*) is a widespread pest of roses.
Credits: Jim Castner, University of Florida

Fuller rose beetle

Fuller rose beetle (*Pantomorus cervinus*) is an introduced weevil that feeds on the edges of leaves and notches them in an irregular fashion (Figure 15; Gyeltshen and Hodges 2006). The whitefringed beetle complex, *Naupactus* spp., also feeds on leaves and notches them irregularly (Figure 16). Adults are most active at night and can be found hiding on secluded plant parts during the day. Larvae feed in the soil on plant roots. A flower beetle, *Euphoria sepulcralis*, is another beetle pest (Thomas 2007).



Figure 15. Fuller rose beetle (*Pantomorus cervinus*) feeds on the edges of leaves and notches them in an irregular fashion.
Credits: Clemson University, www.Insectimages.org



Figure 17. The large leaf-footed bug, *Euthochtha galeator*, commonly feeds on rosebuds and expanding blossoms.
Credits: Lyle J. Buss, University of Florida



Figure 16. Members of the whitefringed beetle complex, *Naupactus* spp., also feed on the edges of leaves and notch them in an irregular fashion.
Credits: Jim Castner, University of Florida

Large leaf-footed bug

Nymphs and adults of the large leaf-footed bug (*Euthochtha galeator*) are commonly found feeding on rosebuds and expanding blossoms (Figure 17; Mead 2008). The shiny golden eggs are also found in clumps on the undersides of leaves. Although leaf-footed bugs are often found on roses during mid to late summer, their damage is probably limited to some malformed flowers with a few blooms not opening properly. When in large numbers, they can be removed by hand from roses.

Leafcutting bees

A number of bee species are known as “leafcutting bees” because of their habit of cutting circular sections of leaves to replenish the food cells for their larvae (Figure 18). Leafcutting bee damage on roses is obvious: Circular pieces of leaves about a ½ inch wide are removed from the edges of leaflets (Figure 19). Often more than one circle is cut from each leaflet.



Figure 18. A number of bee species are known as “leafcutting bees” because of their habit of cutting circular sections of leaves to replenish the food cells for their larvae.
Credits: David Almquist and David Serrano, University of Florida



Figure 19. Leafcutting bee damage on roses is obvious: Circular pieces of leaves about a ½ inch wide are removed from the edges of leaflets. Credits: L.J. Buss, University of Florida

Leafhoppers

Leafhoppers are tiny insects with piercing-sucking mouthparts that suck plant juices, usually from the undersides of leaves (Figure 20). Immature leafhoppers are often found in large numbers, are usually pale white to yellow to green in color, and move very quickly from side to side when disturbed. Damage from feeding shows up as “hopperburn,” where the leaves appear splotched, bronzed, or off color. Note that damage from thrips, leafhoppers, and mites is generally very similar in appearance.



Figure 20. Leafhoppers are tiny insects with piercing-sucking mouthparts that suck plant juices, usually from the undersides of leaves. Credits: Bugwood Network, University of Georgia, <http://www.bugwood.org/index.cfm>

Rose scale

Rose scale (*Aulacaspis rosae*) is common on roses but is not considered of economic importance in Florida (Figure 21). Females can be found on the bark protected underneath the case or armor that they build around their bodies. The armor is flat, oval, or irregular and dirty white in color. Eggs are laid under the armor, and the crawlers hatch and move to new places on the plant to settle. A female produces only one batch of eggs before it dies. Female scales are only capable of moving in the crawler stage. Males resemble small flies and can fly to find females.



Figure 21. Rose scale (*Aulacaspis rosae*) is common on roses. Credits: Bugwood Network, University of Georgia, <http://www.bugwood.org/index.cfm>

Thrips

Thrips is a tiny, fast-moving, rasping-sucking insect. Several species of thrips feed on rose leaves, buds, and flowers (Figure 22). Two common flower feeders are the Florida flower thrips (*Frankliniella tritici*) and the introduced western flower thrips (*F. occidentalis*). When feeding, thrips often leaves fecal matter appearing as dark spots on the plant material. Flower thrips can also be a nuisance when cut roses are brought indoors.



Figure 22. Several species of thrips feed on the leaves, buds, and flowers of roses.

Credits: Jim Castner, University of Florida

Twospotted spider mite

Twospotted spider mite (*Tetranychus urticae*) is a very common year-round rose pest that can build up to large numbers very quickly (Figure 23). It feeds primarily on the undersides of leaves and usually protects itself by spinning thick webbing. Mites suck chlorophyll and juices from the outer cells of leaves. This causes the leaves to appear bleached or stippled and then drop. Hot, dry weather promotes mite reproduction and buildup. Many natural enemies, including predatory mites, feed on twospotted spider mites on roses, but predators are often inhibited by the leaf spines and don't effectively control twospotted spider mites.



Figure 23. Twospotted spider mite (*Tetranychus urticae*) is a very common year-round rose pest that can build up to large numbers very quickly.

Credits: Jim Castner, University of Florida

Other Animals

Deer are general browsers of plants but seem to prefer roses, despite the thorns. Deer are of greater importance as pests during drought conditions when other food plants are not readily available. Rabbits also may feed on tender plant parts. Dogs are not routinely considered plant pests. However, their territorial behavior of repeated scent marking with their urine may lead to dead leaves and brown, unsightly plants. Fencing is the best option for preventing damage from these animals as they are not easily controlled. Repellents may work for short periods of time, but products must be changed often and reapplied frequently.

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