

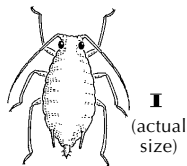
ROSES IN THE GARDEN AND LANDSCAPE: INSECT AND MITE PESTS AND BENEFICIALS

Integrated Pest Management for Home Gardeners and Landscape Professionals

Roses are among the most intensively managed plants in many home landscapes. Part of this intensive management is the frequent application of pesticides. However, while insects and mites may attack roses from time to time, many rose enthusiasts are able to maintain vigorous plants and produce high quality blooms with little or no use of insecticides, especially in California's dry interior valleys. The key is careful selection of varieties, which vary significantly in susceptibility to insect and disease problems, good attention to appropriate cultural practices, and occasional handpicking or using water to spray away pests. Keep an eye out for rising populations of natural enemies that often rapidly reduce the numbers of aphids, mites, and other pests. For management of diseases see *UC IPM Pest Notes* Publication 7463, *Roses in the Garden and Landscape: Diseases and Abiotic Disorders*, and for general tips on cultural practices and weed control, see *UC IPM Pest Notes* Publication 7465, *Roses in the Garden and Landscape: Cultural Practices and Weed Control*.

COMMON INSECT AND MITE PESTS

Aphids are the most common insect pests on roses. The actual species involved depends on where the roses are grown in the state and includes the rose aphid, *Macrosiphum rosae*, the potato aphid, *M. euphorbiae*, and the cotton aphid, *Aphis gossypii* among others. Aphids favor rapidly growing tissue such as



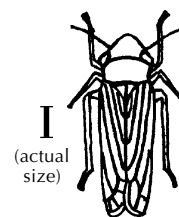
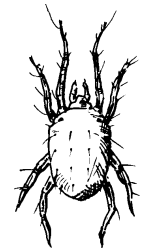
buds and shoots. Low to moderate levels of aphids do little damage to plants, although many gardeners are concerned with their very presence. Moderate to high populations can secrete copious amounts of honeydew, resulting in the growth of sooty mold, which blackens leaves. Very high numbers may kill buds or reduce flower size. Aphids have many natural enemies including lady beetles, soldier beetles, and syrphid flies (see the section on Common Natural Enemies) that may rapidly reduce increasing populations. Keep ants out of bushes with sticky barriers or traps to improve biological control. Lady beetles often increase in number when aphid populations are high. The convergent lady beetle is sold at nurseries for release against aphids and may reduce numbers when properly released. Releasing green lacewings against the rose aphid has not been shown to offer significant control in research trials.

A naturally occurring fungal pathogen may control aphids when conditions are wet or humid. In most areas aphids are normally a problem for only about 4 to 6 weeks in spring and early summer before high summer temperatures reduce their numbers. In many landscape situations, knocking aphids off with a forceful spray of water early in the day is all that is needed to supplement natural control. Insecticidal soaps or neem oil can also be used to increase mortality of aphids with only moderate impact on natural enemies. Aphids are easy to control with insecticides such as the foliar systemic acephate (Orthene) or malathion, but such applications are seldom necessary. Soil-applied sys-

temic insecticides may be effective but are not usually necessary.

Insects and Mites That Cause Leaves to Stipple or Yellow

Spider mites, *Tetranychus* spp., cause leaves to be stippled or bleached, often with webbing, or they may cause leaves to dry up and fall. They are tiny (about the size of the period at the end of this sentence) and are best seen with the use of a hand lens. High numbers are usually associated with dry, dusty conditions. Spider mite numbers may greatly increase if their many natural enemies are killed by broad-spectrum insecticides applied for other pests. For instance, applications of carbaryl (Sevin) applied to control other pests are frequently followed by an increase in mite populations. Conserving natural enemies, providing sufficient irrigation, and reducing dust may all help control mites. Overhead irrigation or periodic washing of leaves with water can be very effective in reducing mite numbers. If treatment is necessary, spider mites can be controlled with insecticidal soap, horticultural oil, or neem oil. Releases of predator mites have been used in some situations.



Rose leafhopper, *Edwardsianna rosae*, causes stippling larger than mite stippling but tends to be a problem only in certain

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localities. Cast skins and the absence of webbing on the underside of leaves is a good indication that these pests are present. Plants can tolerate moderate stippling. Use an insecticidal soap if an infestation is severe.

Insects That Distort or Discolor Blossoms

Thrips. Western flower thrips, *Frankliniella occidentalis*, and Madrone thrips, *Thrips madroni*, cause injury primarily to rose flowers, causing blossom petals to streak with brown or become distorted. The tiny yellow or black thrips insects can be found within the blossoms. Thrips problems are more likely to be severe where many rose bushes located close together provide a continuously blooming habitat. Fragrant, light-colored or white roses are most often attacked and can be severely damaged. Cultivars with sepals that remain tightly wrapped around the bud until blooms open have fewer problems. In most home garden and landscape situations, thrips can be tolerated. Frequent clipping and disposal of spent blooms may reduce thrips problems. Control with insecticides is difficult because materials are mostly effective on early developmental stages, which are commonly found within buds or flowers where most pesticide applications cannot penetrate. It should be noted that western flower thrips can have a beneficial role as a predator of spider mites.



sides of leaves; feeding takes place at night. The larvae are root feeders but do not seriously damage roses. Low numbers can be ignored; otherwise, handpick the beetles off the plant, use sticky material on stems, and trim branches that create bridges to walls and other plants. The adults are difficult to control with insecticides because they have a long emergence period that goes from June to November. Parasitic nematodes may be helpful if applied to the soil in early to midsummer.

Hoplia beetle, *Hoplia callipyge*, is about 1/4 inch long and chews holes mostly in the petals of open flowers. It is primarily a problem in the Central Valley from Sacramento south to Bakersfield. The hoplia beetle prefers feeding on light-colored roses (white, pink, apricot, and yellow) but does not damage leaves. Larvae are root feeders but do not feed on the roots

of rose plants. There is only one generation a year and damage is usually confined to a 2- to 4-week period in late spring. Adult hoplia beetles can be handpicked or infested rose blooms clipped off plants. Sprays are not very effective and should not be necessary in a garden situation.

Leafcutter bees, *Megachile* spp., cut semicircular holes in the margins of leaves and carry leaf material back to use in lining their nests. Bees are important pollinators and should not be killed. Tolerate this pest as there are no effective controls.

Rose curculio, *Merhynchites* spp., is a red to black snout weevil about 1/4 inch long that prefers yellow and white roses. It punches holes in flowers and buds and may create ragged holes in blossoms or kill the developing bud. If weevils

are numerous, terminal shoots may be killed as well. Larvae feed within buds, often killing them before they open. Handpick adults off plants and destroy infested buds. A broad-spectrum insecticide can be applied to kill adults if the infestation is severe.

Caterpillars such as orange tortrix, tussock moth, fruittree leafroller, tent caterpillar, and omnivorous looper may feed on rose leaves; some of these caterpillars may also tie leaves with silk. Damage is usually not severe and treatment not usually necessary. Handpick or clip out rolled leaves. Small leaf-feeding caterpillars can be killed with an application of the microbial insecticide *Bacillus thuringiensis*. Some caterpillars, like the tobacco budworm, may occasionally bore into flower buds. Look for the caterpillar or its frass inside. Prune and destroy damaged buds.

Rose slug, *Endelomyia aethiops*, is the black to pale green, sluglike larva of a sawfly. Unlike pear slug, this species has apparent legs and looks like a caterpillar. Young larvae skeletonize the lower leaf surface while mature larvae chew large holes in leaves. These pests have many natural enemies. They may be washed off with a strong stream of water or killed with an application of insecticidal soap. (*Bacillus thuringiensis* will not work because these are wasp larvae and not the larvae of butterflies or moths.)

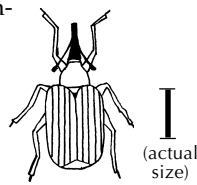


Insects That May Chew Blossoms and/or Leaves

Fuller rose beetle. Adults of Fuller rose beetle, *Asynonychus godmani*, chew flowers and foliage leaving notched or ragged edges. Adult beetles are pale brown weevils that are about 3/8 inch long. They are flightless and hide during the day, often on the under-

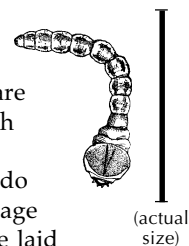


side of leaves. Adults are flightless and hide during the day, often on the under-



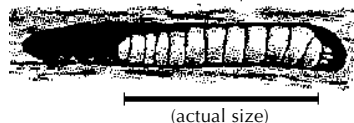
Insects That Cause Canes to Die Back

Flatheaded borers, *Chrysobothris* spp., may kill canes or an entire plant. Larvae are white and up to 1 inch long with enlarged heads. Adult beetles do not significantly damage roses. Eggs tend to be laid on stressed rose plants, especially in bark wounds caused by sunburn or

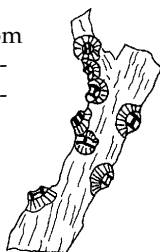


disease. Remove and destroy infested material and keep plants healthy by providing sufficient irrigation and avoiding excessive summer pruning.

Raspberry horntail, *Hartigia cressoni*, larvae are white, segmented caterpillars up to 1 inch long that can cause tips of canes to wilt and die in spring, reducing second cycle blooms. Adults are wasplike, black or black and yellow, and about 1/2 inch long. Inspect canes in spring (mid-April to mid-June) for egg laying incisions or swellings caused by larvae and cut them off below the infestation. Prune off infested canes until healthy pith is found.



Scale insects including rose scale, *Aulacaspis rosae*, and San Jose scale, *Quadraspidiotus perniciosus*, are occasionally the cause of cane decline or dieback when numbers are high. These armored scales can be observed on canes as small, grayish, round to oval encrustations, ranging in size from 1/8 to 1/4 inch. These insects have no legs or antennae for most of their lives and are immobile. In winter, cut back and destroy infested canes and apply insecticidal oil to remaining infested canes if necessary. Scales are attacked by many natural enemies. Look for exit holes in mature scale covers, which indicate parasitization.



An Insect Rarely Found in California

Rose midge, *Dasineura rhodophaga*, was reported infesting roses in a nursery in Petaluma, California in August 1996. Rose midges are tiny flies that lay their eggs inside the sepals of flower buds or on plant terminals. Hatching larvae move into flower buds to feed, leaving the injured buds to wither, blacken, and die. Pupation occurs

in the soil and two to four generations can occur annually. When first reported in 1996, there was widespread fear that this pest would move rapidly through the state, causing severe damage to roses in gardens and commercial nurseries. However, few midges were found in 1997.

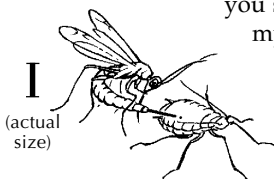


The pest has been present in central Oregon and Washington for many years and is not known to be a major pest there. Hopefully it will not become a problem in California. Take any suspected infested material to your county Agricultural Commissioner for identification. Don't confuse the rose midge with the similar looking beneficial midge, *Aphidoletes aphidimyza*, which feeds on aphids. *Aphidoletes* larvae are found on stem, bud, or leaf surfaces feeding within aphid colonies, whereas *Dasineura* larvae are out of view at the base of developing buds in terminals.

COMMON NATURAL ENEMIES OF INSECT AND MITE PESTS IN ROSES

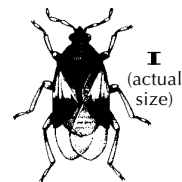
Aphid parasites. Tiny parasitic wasps are very important in the control of aphids in roses. Adults lay their eggs within the aphid and developing larvae, rapidly immobilizing them. Eventually, the parasite kills them and turns them into bronze or black crusty, bloated mummies. The parasite pupates within the mummy and then cuts a neat round hole and emerges as a full grown wasp.

Once you see one mummy in the aphid colony, you are likely to see more. Parasitic wasps are also important in the control of scale insects, caterpillars, and many other insect pests.



Minute pirate bug. Minute pirate bugs, *Orius tristicolor*, are tiny true bugs with black and white markings as adults. They are often among the

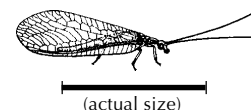
first predators to appear in spring, and they feed on mites, insect and mite eggs, immature scales, and thrips.



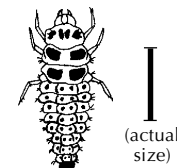
Lacewings. Green lacewings in the genera *Chrysopa* and *Chrysoperla* are common natural enemies of aphids



and other soft-bodied insects. The gray-green to brown alligator-shaped larvae are the predatory stage of the *Chrysoperla* species. The green lacy-winged adults feed on honeydew.



Lady beetles. Many different red and black lady beetle species are predators of aphids; the most common is the convergent lady beetle, *Hippodamia convergens* (see drawing). Another common species in the garden is the multi-colored Asian lady beetle, *Harmoinia axyridis*. These lady beetles have the advantage of feeding primarily on aphids and are predators in both the adult and larval stages. Look for the black, alligator-shaped larva with orange dots and the oblong, yellow eggs that are laid on end in groups. Releases of commercially available convergent lady beetles can reduce aphid numbers. However, large numbers must be released on each individual rose plant.

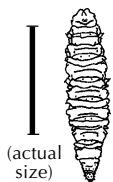


Mist lady beetles with a water spray before release. Make releases in the evening at dusk by placing beetles on canes at the base of plants. Wet plants first with a fine spray of water. Expect 90% of the lady beetles to fly away in the first 24 hours. All released lady beetles are unlikely to lay eggs and will fly away once aphid populations have been substantially reduced.

Leatherwings or soldier beetles.

These moderate to large-sized beetles in the Cantharid family have leather-like dark wings and orange or red heads and thoraxes. They feed on aphids and are very common on roses. Many people mistake them for pests, but they are predaceous both as adults and larvae (in the soil). Sometimes they leave dark splotches of excrement on leaves.

Syrphid flies. Syrphids, sometimes called flower flies or hover flies, are important predators of aphids and very common on roses. Adults, which superficially resemble wasps, feed on nectar and pollen before reproducing and are often seen hovering above flowers. Larvae, often found within aphid colonies, are legless and maggot shaped. There



are many species in California and they vary in color from dull brown or yellow to bright green, but most have a yellow longitudinal stripe on the back. Don't mistake them for moth or butterfly larvae!

Predaceous mites. A number of predatory mites feed on spider mites, frequently keeping them at tolerable levels. Predatory mites can be distinguished from the plant-feeding spider mites by the absence of the two spots on either side of the body, their pear shape, and their more active habits. Compared to the plant-feeding species of mites that remain in one location feeding, predatory mites move rapidly around the leaf looking for prey. Because they are so small, a hand lens is helpful in viewing them.

Spiders. All spiders are predators and many contribute significantly to biological control. Many types of spiders including crab spiders, jumping spiders, cobweb spiders, and the orb-weavers occur in landscapes.

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UC IPM Pest Notes: various pests of gardens and landscape. World Wide Web (<http://www.ipm.ucdavis.edu>) and Univ. Calif. Div. Agric. Nat. Res.

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

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ILLUSTRATIONS:

Child, Ashley: **Fuller rose beetle; Hoplia beetle; Lacewing larva; Lady beetle adult; Lady beetle larva; Leafcutter bee; Rose curculio; Rose leafhopper; Scale insects; Syrphid fly larva**

Flint, M. L., and S. H. Dreistadt. 1998. *Natural Enemies Handbook*. Oakland: Univ. Calif. Div. Agric. Nat. Res., Publ. 3386: **Aphid parasite** (Table 7-1.A); **Lacewing adult** (Fig. 8-13); **Minute pirate bug** (Table 8-2.A); **Syrphid adult** (Table 8-3.I)

Packard, A. S. 1876. *Guide to the Study of Insects*. New York: Henry Holt & Co.: **Rose slug** (Fig. 148)

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WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked.

Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse the containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. Never burn pesticide containers.

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