
SIXSPOTTED SPIDER MITE ON PLUMERIA

Integrated Pest Management for Home Gardeners and Landscape Professionals

Plumeria, a plant native to the American tropics and also known as frangipani or the Lei flower, has become an increasingly popular cultivated plant in California homes and gardens. Sold in many nurseries and garden centers, it can be grown outdoors during mild growing seasons but must be moved indoors when temperatures are cold in the winter.

One of the major pests associated with plumeria is the sixspotted spider mite, *Eotetranychus sexmaculatus*. Sixspotted mite is also occasionally a pest on avocado, citrus, and other tropical plants. Management can be achieved with cultural practices and application of insecticidal soaps or oils.

SYMPTOMS

Suspect the possible presence of sixspotted web-spinning spider mites if early season plumeria growth shows deformed leaves, abnormally forming bloom clusters, blistered tissue, necrotic spots on leaves, leaf drop, or shoot tip dieback.

Other symptoms suggesting a mite problem are fully developed leaves with a yellow stripe down the midrib or bronzing on the upper leaf surface, webbing between the midrib and upper leaf surface, or webbing between the base of the leaf petiole and the plant stem.

Other Web-spinning Mites. The twospotted spider mite, *Tetranychus urticae*, and the Pacific spider mite, *Tetranychus pacificus*, both damage plumeria by deforming and bronzing leaf tissue. No direct necrosis or blistering of plumeria tissue has been noted as a result of these mites. Leaves on plants hosting more than one species of

web-spinning mite will turn entirely yellow in color and then drop. The management practices discussed below will control these mites as well.

IDENTIFICATION

The yellow-orange adult sixspotted mite is very small, approximately the size of the period at the end of this sentence. Magnification is needed to identify the mites. Mites hatch from eggs and develop through two immature stages before becoming adults (Fig. 1).

Adult males can be differentiated from the females by their smaller size and more pointed abdomen. Unlike the adult females, males are not abundantly spotted. Initial studies indicate females are more abundant than males within the population.

The females overwinter in the duff (leaf litter/potting soil) and in cracks and rough areas on the plant stem. The first generation occurs in spring. Emerging females climb the stem, feed, and lay eggs. Eggs hatch in 5 days to 3 weeks, depending on temperature (Fig. 2). Generation time decreases as temperatures increase, so populations multiply rapidly as the spring season progresses. In summer in the Central Valley mites reach maturity in 5 to 6 days, while in coastal Southern California mites reach maturity in 8 to 12 days.

Mites are dispersed by wind or transported via birds and mammals. The webs are strong and sticky enough that if snagged, they can carry male and female mites to another part of the plant or to other plants. Other hosts include citrus, particularly grapefruit, and avocado.

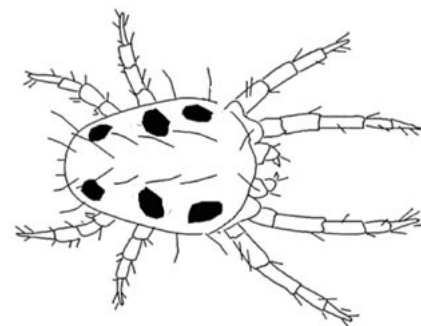


Figure 1. sixspotted spider mite, *Eotetranychus sexmaculatus*.

Damage

The mite feeds on plant juices and causes leaf yellowing as well as blistering and deformation of tissue. These symptoms have been noted in other plant species as well. On avocado leaf discoloration is brown to purple.

Early season feeding may be first noted on the underside of leaves along the midrib, at the base of the leaf petiole, or along the midrib of newly forming leaves. Mite feeding damages developing bloom clusters, causes premature leaf-drop, and decreases plant vigor. If these mites attack during first signs of new growth, they may cause abscission (separation) of developing shoot tips from the rest of the plant.

Later generations move to the upper surface of expanded leaves, causing a slight blistering near the midrib, and creating webs that bridge between the midrib and leaf surface. Webs are initially close to the tissue and hard to observe, but if populations are high enough, the mites will spin webs between the stem and petioles. Later in the season, if populations are abundant, mites will collect at leaf tips

and may be found suspended on silk threads from the edges of the uppermost leaves.

Mite feeding prevents the leaf petiole glands from producing secretions and affected leaf tissues may exude latex. While the mite prefers tender leaf growth, it will also attack tender stem tissue, even after shoot tips have abscised.

MANAGEMENT

If mites are controlled early in the season, plumeria will produce new leaves and recover during the course of the season. As summer progresses, regularly observe plants to detect the presence of webbing along the midrib on the upper leaf surface and particularly toward the leaf petiole. A good hand lens or magnifier (20X) will be required to see the mites and their eggs. Treat if sixspotted mites are present—leaving any population results in leaf and shoot tip abscission eliminating bloom production. If webbing and mites are present in the fall, treat plants prior to moving them indoors for the winter to reduce the risk of continued damage.

Spray Treatments

A light horticultural oil spray (1% solution) can effectively control mites if care is taken to cover all plant surfaces. Insecticidal soaps can be utilized as an alternative to oil but it's more likely that repeat applications may be necessary. When using soaps or oils, plants should be well-watered to avoid stress, and caution must be taken not to expose the plants to excessive heat and/or direct sunlight prior to or after treatment.

Biological Control

Predatory mites may reduce populations naturally; however the threshold for sixspotted mite on plumeria is very low. *Metaseiulus occidentalis*, the western predatory mite, will feed on all pest mite life stages. Other predatory phytoseiid mites include *Amblyseius* (= *Typhlodromalus*) *limonicus* and *Galendromus helveolus*. The shiny pear-shaped predator *Euseius hibisci* is important in part because it can

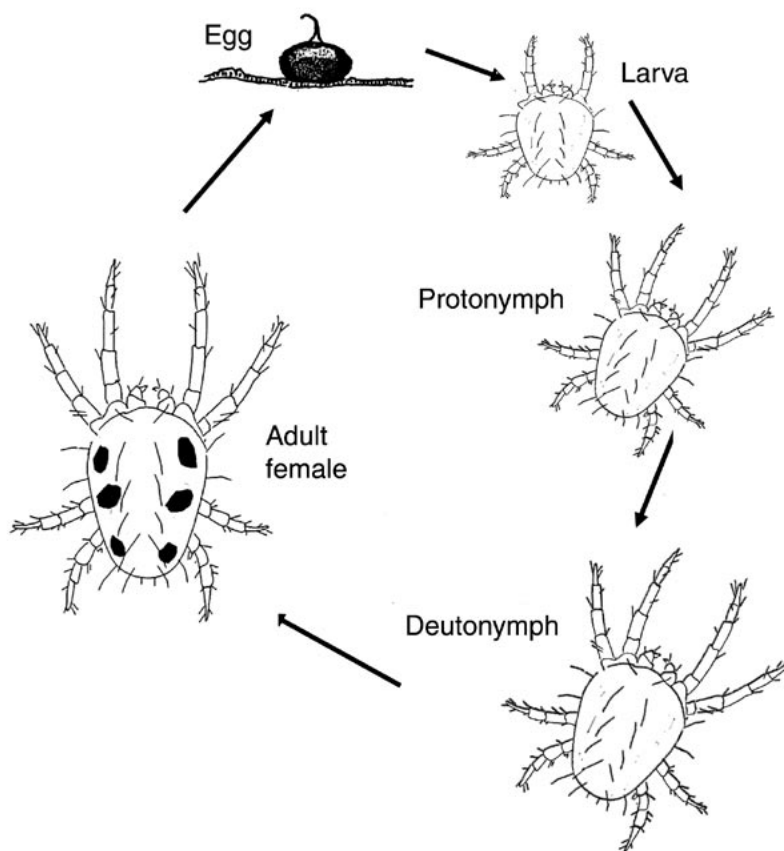


Figure 2. Sixspotted mites develop through five life stages. Eggs hatch, producing six-legged larvae. The two nymphal stages and adults have eight legs.

maintain and increase its populations on pollen when pest mites are scarce. *Typhlodromus rickeri* also preys on sixspotted mite in coastal Southern California. The spider mite destroyer lady beetle (*Stethorus picipes*), lacewings, and sixspotted thrips (*Scolothrips sexmaculatus*) are other natural enemies.

Cultural Control

Close monitoring of the plants during late fall, winter, and early spring is important to ensure timely treatment of the plants before severe damage occurs. Double-sided sticky tape wrapped around the plant stem may help prevent overwintering mites from crawling up the stem. Since plumeria is normally a container plant in most of California, dusty conditions that can aggravate mites are not usually an issue. Avoiding water stress is

always an important practice to minimize mites and this is true for plants in containers as well.

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