



It's Really Going Places.

Best Management Practices

Spider Mites

Introduction: Spider mites, (Family *Tetranychidae*, Order *Acari*), are not insects; they are very small arachnids closely related to spiders and ticks. Among plant pests, mites are among the most difficult to control, and are responsible for a significant portion of all pesticides used on ornamentals. Individual spider mites are almost microscopic, yet when they occur in large numbers, they can cause serious plant damage. Many different species attack shade trees, shrubs and herbaceous plants. Once present, spider mites are seldom eradicated, but their numbers can be reduced and managed at levels that are almost undetectable even by the best of scouts.

Spider mites that commonly cause damage on ornamental plants include the twospotted spider mite, *Tetranychus urticae* Koch; the tumid spider mite, *Tetranychus tumidus* Banks; the Pacific spider mite, *Tetranychus pacificus* MacGregor; spruce spider mite, *Oligonychus ununguius* Jacobi; southern red mite, *Oligonychus ilicis* MacGregor. In addition, other spider mites such as the European red mite, the boxwood mite, the fourspotted spider mite, and many summer-feeding, tree-specific spider mites may cause damage to ornamentals.

Description and Life History: The life cycle of the twospotted spider mite is typical of warm weather spider mites, including the tumid spider mite. At 85 - 90 degrees F, complete development from egg to adult can occur in as little as 7 - 8 days, and all life stages may be present throughout the year, depending on the weather. When temperatures are cooler, development may proceed more slowly, requiring up to four weeks for completion. Host plant species, plant nutrition, leaf age, and moisture stress also influence development. In temperate climates, twospotted spider mites overwinter as adult mites in the soil, while most other common spider mites on trees and shrubs overwinter as tiny round eggs on leaves or bark. Many generations occur each year, depending on the species of spider mite. Spider mites on conifers and broad-leaved evergreens are cool weather pests, as are the southern red mite and the European red mite. These spider mites feed heavily and reproduce quickly in spring and fall.

Adult female twospotted spider mites are about 0.5 mm long, light green with two brownish black spots on either side of the abdomen. Color will vary according to diet and environmental conditions. Males have pointed abdomens and are more slender than the rounded and plump females. Females lay between 90 and 110 eggs during their lifetime. Eggs hatch into six-legged larvae, which then develop into protonymphs, followed by the deutonymph stage prior to adulthood. Under hot, dry conditions, twospotted spider mites thrive: more eggs are laid, development is at a higher rate, and survival of adults is extended. Conditions of high moisture are known to slow the dispersal of mites.

Damage: Spider mites lack chewing or piercing-sucking mouthparts. They use a pair of needle-like stylets to rupture leaf cells and then push their mouth into the torn tissue to drink the cell sap. Small groups of cells are killed, which results in a stippling or speckling on the upper leaf surface. On plants which are heavily infested, the foliage will often become gray, yellow, bleached, dry, or bronzed, with leaf drop, loss of vigor and eventual death if untreated. With a magnifying hand lens, cast skins, eggshells, and individual mites as well as mite colonies are visible on the undersides of leaves. Webbing can cover terminal growth in advanced infestations. Shaking infested leaves over a piece of white paper permits detection of live mites, which are no bigger than the period at the end of this sentence.

Management: Early detection is the key to optimizing spider mite control. Scouting is essential in order to reduce or prevent erratic fluctuations in mite densities, to detect poor spray coverage or lack of control, and to reduce the chances of resistance development. When conditions are favorable for mite populations to build, scouting should be performed frequently so that spray application can be scheduled at proper intervals before mite population density builds to excessive levels. TalstarOne™ multi-insecticide, Talstar® Nursery flowable insecticide and Talstar® Flowable (greenhouse) insecticide provide excellent spider mite control and are the only pyrethroid products that provide true miticidal activity with virtually no odor.

TalstarOne™ multi-insecticide, Talstar® Flowable insecticide (greenhouse) and Talstar® Nursery flowable insecticide: Apply in spring to mid-summer at the labeled rate of 0.25 to 1.0 fluid ounces per 1,000 square feet, or 10.8 to the label maximum of 43.4 fluid ounces per 100 gallons. Complete and timely coverage of the undersides of leaves is extremely important for optimum mite control. The higher application rates and/or more frequent treatments may be needed for acceptable twospotted spider mite control during mid to late summer when mite population levels are higher. The addition of a surfactant or horticultural oil may increase the effectiveness of Talstar, and combinations with other registered miticides are also effective. Talstar applications may be rotated with those of other products having different modes of action in resistance management programs for twospotted spider mites.

Selected References:

Lindquist, R.K. 1991. Identification of Insects and Related Pests of Horticultural Plants. OFA Services, Inc. Columbus, Ohio.

Virginia Cooperative Extension Publication 444-221. 1991. Spider Mites.

Stamps, R.H. and L. S. Osborne 1991. Managing Mites, in Southern Nursery Digest, August 1991 .

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