



Ornamentals & Turf

Department of Entomology

SPIDER MITES ON ORNAMENTALS

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Spider mites are tiny 8 legged animals closely related to spiders. Several kinds are important pests of ornamental trees, shrubs and bedding plants. Under favorable conditions spider mites can build up rapidly and seriously threaten plant health.

All of these spider mites feed on plant leaves by piercing leaf tissues and sucking the green liquid that oozes out. Leaves appear bronzed after the green color is lost from many tiny feeding spots. Heavily infested leaves and branches can become covered with an almost invisible webbing.

The best way to confirm a spider mite infestation is to hold a sheet of white paper under a branch and then to tap the branch sharply. If present, they will fall off and be seen as tiny specks crawling over the paper. Crawling is the characteristic that most clearly distinguishes mites from the grit that can also be knocked off a plant.

WARM SEASON MITES

These mites thrive in the warm summer months. When the daily high-low is 95°/75°F, the number of spider mites on a plant can double in half the time it takes when the high-low is 75°/55°F. Mites can build to large numbers when plants are sheltered and have a southern exposure. Controls are more likely to be needed when infestations are found at the beginning of the hot season than during the early spring or fall.

Twospotted spider mite *Tetranychus urticae* (Koch)

Plants attacked: Over 150 plants including bedding plants, weeds, trees, and shrubs.

This mite is only 1/60 inch long. During the warm months these mites are a whitish green with a dark colored area on each side. In the spring and fall they tend to become rusty-orange. The eggs are round and pale white. This spider mite is common in greenhouses. These mites prefer to feed on young and tender leaves. The twospotted spider mite spends the winter in protected areas, such as weeds. They do *not* winter on tree bark.

European red mite, *Panonychus ulmi* (Koch)

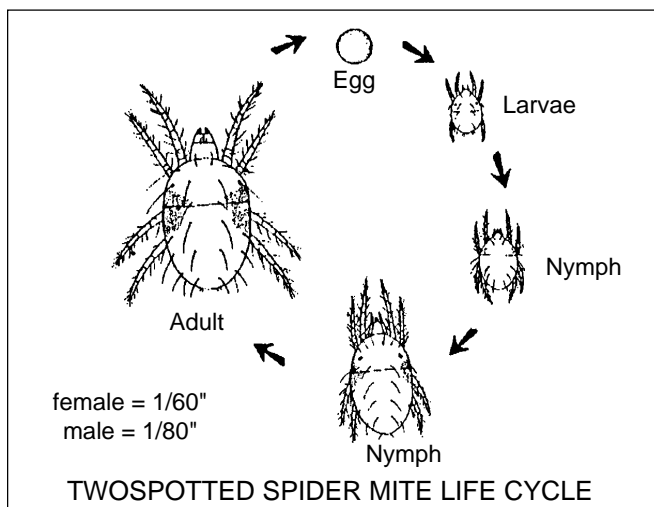
Plants attacked: Flowering fruit trees and deciduous trees and shrubs in the rose family.

This brownish-red elliptical-shaped mite has four rows of spines that run down its back. The eggs are bright red to orange and have a stalk so that they resemble a miniature onion set with the sprout attached. In the summer, most of the eggs are laid on plant leaves. In the fall, eggs are laid in a cluster on twigs and branches of small trees, often in such great numbers that twig crevices and scars seem to be covered with red dust. The European red mite spends the winter in the egg stage.

Honeylocust spider mite *Platytechtranychus multidigali* (Ewing)

Plants attacked: Only honeylocust.

This small, round mite feeds on leaf surfaces causing them to turn bronze by July. Eggs are laid on leaf undersides at the base of the central leaf vein. Adults are greenish in summer and then turn reddish in fall. These mites spend their winter as adults in leaf bud scales and bark crevices. They are a common problem on street tree plantings.



Oak red mite *Oligonychus bicolor* (Banks)

Plants attacked: Oak, birch, beech, chestnut, elm, maple and hickory.

This small, red mite infests the upper leaf surfaces of oak trees and is most predominant on the lower branches. Feeding damage is usually concentrated around the leaf midrib. In the summer, red barrel shaped eggs are laid on the tops of leaves. In the fall eggs are laid in the crevices and around axils of small twigs where they remain dormant until spring.

COOL SEASON MITES

These spider mites are most troublesome during spring and fall when daytime temperatures are below 85°F. Controls are less likely to be needed in hot summer months.

Spruce spider mite, *Oligonychus ununguis* (Jacobi).

Plants attacked: spruce, arborvitae, hemlock, juniper, yew and some pines.

This oval shaped mite is light grayish-green as a young nymph and black and tan as an adult. Damaged needles appear speckled or bronzed. The round and brownish eggs of this spider mite are often found at the base of needles. These eggs remain on the plant in the winter and hatch early in spring, with outbreaks occurring in April and May. Adults become inactive during the warm summer months until the temperature cools in late August. Severe damage can occur during a dry spring or fall.

Southern red mite *Oligonychus ilicis* (McGregor)

Plants attacked: Broad leaved evergreen plants, especially Japanese hollies and azalia in the southern part of the state.

This small red mite feeds almost exclusively on the tops of leaves. Feeding on mature leaves causes a bronze color. In April and May leaves can become distorted when mites feed on them as they unfold. Red eggs are laid mostly on lower surfaces. When temperatures rise, adults become inactive until temperatures cool in late August. The southern red mite spends the winter as red eggs on the undersides of leaves.

MANAGING SPIDER MITES

Spider mites can threaten the health or appearance of your plants. Therefore, it is important to balance cultural, biological and chemical control methods all season.

Detection

Inspect your plants once every two weeks for spider mites. This means placing a sheet of paper under a branch and hitting the plant sharply. Use an index card to sample bedding plants. Be sure to sample deciduous trees and bedding plants in the hot summer months. Conifers and broad leaf evergreens should be inspected for cool season mites in spring and fall. Learn to recognize the early feeding symptoms of leaf stippling and bronzing.

Decision Making

If you are monitoring every 2 weeks you should consider applying a pesticide when an average of 2 dozen mites fall from a branch each time you strike it over an 8 x 11 inch sheet of paper. Drop this action threshold to six if you are monitoring bedding plants with a 4 x 5 inch card. Keep in mind that spider mites must migrate to stems of deciduous woody plants before leaves drop in the fall. This can reduce the need for fall treatment.

Cultural control

Spider mites thrive on plants that are under stress. Be sure to keep plants watered and give them adequate light. Do not over or under fertilize.

Mechanical control

Spider mites can be dislodged from plants during heavy rains. Homeowners can reduce mite problems by spraying affected plants with a steady stream of water twice a week during periods of peak mite activity. This has a minimal impact on natural enemies of spidermites.

Biological control

There are many natural enemies in Indiana landscapes that feed on spider mites. These include small black lady beetles, lacewing larvae, minute pirate bugs and predatory mites. Try to increase the numbers of these friendly "bugs" in your yard. Generally, this means to refrain from pesticide use until spider mites threaten the health or appearance of your plant. Also, when you choose to use a pesticide for mites or other pests, you should try to use a biorational material. Examples of these are microbial insecticides for caterpillars (e.g., *Bacillus thuringiensis*, Bt), insect growth regulators, or insecticidal soaps and horticultural oils.

Natural enemies can be purchased and released for the control of spider mites. Success depends on many factors including the initial numbers of mites present, weather, handling of natural enemies, and time of year. Introducing natural enemies should be part of an overall management program that includes regular monitoring of plants for mites and released natural enemies. Often, releases must be repeated once each week for several weeks before beneficial organisms become established. (See publication E-92, *Common Natural Enemies*, for tips on biological control).

When the weather is wet, or the relative humidity is >50%, many kinds of spider mites are attacked by a fungus. In some cases, this fungus will keep mites from becoming a problem.

CHEMICAL CONTROL

Dormant Season Treatment

Horticultural oil at the 3-4% rate can help reduce problems caused by spider mites that spend the winter on

woody plants. Thorough coverage is essential to smother and kill these mites. Injury to plants can be avoided by following label guidelines when plants are dormant. Remember, twospotted spider mites do not winter on woody plants and cannot be controlled with dormant applications of oil.

reduce your mite problem by hosing down your plants with a steady stream of water every 3 days for 9 days. If after 12 days you still find large numbers of mites on your plants, then choose one of the materials labeled for homeowners.

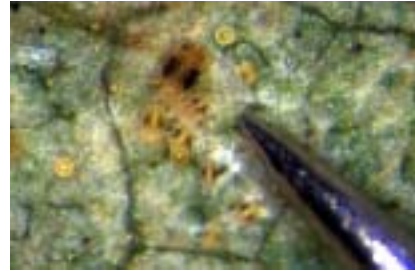
Growing Season Treatments

For best results apply miticide where mites are feeding on the plant. This is especially important for biorational miticides like horticultural oil and insecticidal soap which work by smothering mites. Check the biology of the spider mite of concern to determine if it feeds on upper or lower leaf surfaces and then direct your spray accordingly. Inspect the plants for live mites 7-10 days after the last spray to determine if an additional application is needed. Change the class of pesticide you use once every 3 weeks when not using biorational materials. This can help reduce the development of resistance to pesticides.

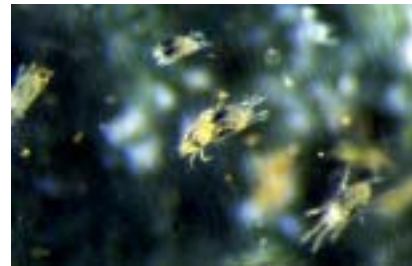
Please refer to the Table of Common Miticides on page 4 when selecting a growing season treatment.

Special Tips for Homeowners

The natural enemies in your home garden are your most important weapons against spider mites. Reduce spider mite problems and conserve natural enemies in the home garden by using the least toxic materials available. Before selecting one of the materials on page 4, try to



Twospotted Spider Mites



Twospotted Spider Mites Crawling in Their Webs

READ AND FOLLOW ALL LABEL INSTRUCTIONS. THIS INCLUDES DIRECTIONS FOR USE, PRECAUTIONARY STATEMENTS (HAZARDS TO HUMANS, DOMESTIC ANIMALS, AND ENDANGERED SPECIES), ENVIRONMENTAL HAZARDS, RATES OF APPLICATION, NUMBER OF APPLICATIONS, REENTRY INTERVALS, HARVEST RESTRICTIONS, STORAGE AND DISPOSAL, AND ANY SPECIFIC WARNING AND/OR PRECAUTIONS FOR SAFE HANDLING OF THE PESTICIDE.

TABLE OF COMMON MITICIDES AND THEIR EFFECTS ON PEST NATURAL ENEMIES

	User /Site	Amount in 1 gal. water	Amount in 100 gal. water	Pesticide Class	Toxicity to Natural Enemies*
Avid 0.15 EC (abamectin) (not for ferns, or shasta daisy)	2,3,4,5	2/3-1 1/3 tsp.	8-16 fl. oz.	microbial	high
Cinnamite (cinnamaldehyde)	1,2,3,4	5 tsp.	85 fl. oz.	other	low
Floramite (bifenazate)	2,3,4,5	—	2-4 oz.	other	low
Hexygon (hexythiazox)	2,3,4	—	1-2 oz.	other	low
Horticultural Oil (Sunspray 6E Plus, Rockland and others)	1,2,3,4,5	5 Tbsp.	2 gal.	oil	low
Insecticidal Soap (M-Pede, and others)	1,2,3,4,5	5 Tbsp.	2 gal.	fatty acid	low
Isotox IV (acephate+fenbutatin-oxide)	1,2,3,5	2 Tbsp.	4.7	mix	high
Joust (oxythioquinox)	3	1/3-2/3 tsp.	4-8 fl. oz.	dithiocarbonate	moderate
Mavrik Aquaflow (fluvalinate)	2,3,4,5	1/3-2/3 tsp.	5-10 fl. oz.	pyrethroid	high
Ovation (clofentazine)	3,4	—	2 fl. oz.	other	low
Sanmite 75 WP (pyridaben)	2,3,4,5	—	2-4 oz.	pyradizone	high
Savey (hexythiazox)	5	—	3-6 oz.	other	low
Scimitar WP or Battle WP (lambda-cyhalothrin)	2,3,4	—	2.4-4.8 oz.	pyrethroid	high
Talstar Lawn and Tree (bifenthrin) Talstar Nursery	2 3,4,5	1 tsp. 1-2 tsp.	10.9-21.8 oz. 12-20 oz.	pyrethroid pyrethroid	high high
Tame 2.4 EC (fenpropathrin)	4	2/3-1 1/3 tsp.	8-16 fl. oz.	pyrethroid	high
Vendex 50 WP (fenbutatin-oxide)	2,3,4,5	—	8-16 fl. oz.	organotin	moderate

User /Site Restrictions

- 1 = homeowners / homes
- 2 = commercial / outdoor landscape
- 3 = commercial / nursery
- 4 = commercial / greenhouse
- 5 = Christmas tree producer

***Toxicity to Natural Enemies**

For a more complete chart of information on toxicity of pesticides to natural enemies contact:
 Koppert Biological Systems USA,
 2856 South Main St., Ann Arbor, MI 48103
 PH: 313-998-5589

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