



Spider Mites: Hot, dry, dusty conditions favor spider mite outbreaks, and we have certainly had these conditions over much of the state so far this season. There are several reasons that spider mites thrive under these conditions.

Hot—Spider mites develop and reproduce faster at higher temperatures. Actually, temperatures in the 90 degree plus range are too hot even for mites, but keep in mind that spider mites live on the undersides of leaves, in a ‘micro-climate’ where temperatures are cooler.

Dry—Spider mites are susceptible to outbreaks of certain fungal diseases that help keep their populations in check. Epizootics of fungal disease often cause dramatic reductions in spider mite numbers during rainy periods when humidity is high. Dry conditions interfere with the development of these fungi and allow spider mite populations to increase.

Dusty—Many scientists think that dusty conditions favor mite outbreaks because the dust that accumulates on plant leaves interferes with the searching ability of predatory mites and insects that prey on spider mites and help keep their numbers in check.

Spider Mite Biology and Damage: There are many different species of spider mites, but two spotted spider mites are the most common. These critters are small—about the size of the period at the end of this sentence. Spider mites have a very fast life cycle and, under optimum conditions, can complete a generation in as little as six or seven days. This means that they can complete many generations in a year, and explains why they quickly develop resistance when repeatedly treated with the same miticide. Eggs are laid on the undersides of the leaves, where they hatch into 6-legged larvae. These larvae molt into 8-legged nymphs, which quickly develop into adults that are able to mate and reproduce.

Both immatures and adults feed by sucking the sap from plant cells, creating pin-prick sized areas of dead plant cells. Damage caused by a single mite is inconsequential, but leaves damaged by large numbers of mites develop a ‘stippled’ appearance. Heavy infestations also produce spider web-like webbing. Severely damaged leaves may dry up completely, and/or drop from the plant prematurely. Thus heavy spider mite infestations drain nutrients from the plant, interfere with the plants ability to grow and produce photosynthate, and cause excessive moisture loss.

Some Insecticides ‘Flare’ Spider Mites: One of the most important points to keep in mind about spider mites is that some insecticides will actually ‘flare’ spider mites (cause a population explosion). This can occur in two ways. Some insecticides are more toxic to predatory mites and other insects that feed on spider mites than they are to the spider mites. Kill the predators and spider mite numbers increase rapidly. The other reason is a phenomona known as hormoligosis, the insecticide actually causes the spider mites to reproduce faster.

Many of the insecticides commonly used to control insect pests tend to flare spider mites. Foliar sprays of acephate (Orthene) or carbaryl (Sevin) are especially likely to flare mites. Sometimes it seems as if there must have been spider mite eggs in the insecticide bottle. Most of the pyrethroid insecticides (permethrin, cyfluthrin, lambda-cyhalothrin, etc) also flare mites. Ornamental plants growing near the mosquito truck spray route are more prone to spider mite outbreaks because the mist from the mosquito truck kills predatory mites and insects--this can also contribute to scale outbreaks. Trees, shrubs, and other plants that have been treated with the systemic insecticide imidacloprid (Bayer Advanced Tree & Shrub Insect Control or Merit) are more likely to suffer mite outbreaks.

Always consider the potential for flaring mites before you make any insecticide application. Don’t spray unless you really need to, and only spray the plants that need spraying. For example, don’t spray the eggplant with permethrin just because you happen to be spraying the tomatoes for fruitworms and stink bugs, and don’t spray the Leyland Cypress with acephate, just because you have some left over from treating the azaleas for lace bugs. When you do have to spray, try to choose an insecticide that will work on the target pests, but won’t flare spider mites, especially if the plants you are treating are prone to spider mite infestations. For example, if you have to spray a needle-bearing shrub for bagworms, use a product that won’t flare mites, like spinosad (Fertilome Bore, Bagworm, Leafminer, and Tent Caterpillar Spray, or Monterey Garden Insect Spray), rather than Sevin (carbaryl) or one of the pyrethroids (permethrin, cyfluthrin, lambda-cyhalothrin, etc).

Spider Mite Control Options for Homeowners: Whether you are concerned about ornamentals, lawns, or vegetables, there just aren't many good spider mite control options for homeowners! The old standard, Kelthane, is no longer available because the manufacturer has stopped producing the active ingredient. There are many good, specific miticides available for commercial use, but so far, none of these are being labeled and packaged for homeowner use.

Water is one of the most useful spider mite management tools available to homeowners. Plants that are well watered, healthy, and vigorous are less likely to sustain heavy mite infestations and better able to tolerate any mite infestations that do occur.

Spraying the undersides of leaves with a fine spray of water several times per week during dry periods will help control spider mites. The spray will physically dislodge some mites, but the greater benefits come from washing dust from the leaves and creating a more humid environment that is more favorable to the fungal diseases that affect mites. Of course there is a trade-off here, because increased humidity also favors plant-infesting fungi. Apply water mist sprays in the morning or early afternoon to give the plants time to dry before night.

Other mite control options available to homeowners are listed in the tables below. Because most of these products do not control eggs, and eggs can develop into reproducing adults in seven days or less, it is usually best to retreat in four to five days, or on as close an interval as the label allows. The purpose of this second treatment is to kill newly hatched adult mites before they have a chance to lay more eggs. Be sure to read and follow label directions when using oils and insecticidal soaps; they can cause plant injury under certain conditions. Do not apply products to vegetables that are not specifically labeled for the vegetable crop being treated and observe pre-harvest intervals.

Miticides for Home Vegetable Gardens	
Active Ingredient	Brand Name (one example)
<i>Neem Oil</i>	<i>Garden Safe 3 in 1 Fungicide</i>
<i>Horticultural oil</i>	<i>SunSpray Ultra-fine pesticidal Oil</i>
<i>Potassium salts of fatty acids</i>	<i>Bon-Neem Insecticidal Soap</i>
<i>Malathion *</i>	<i>Malathion</i>

* If you use malathion to control spider mites be sure to make at least 2 successive applications, four to five days apart. Strive for good coverage of undersides of leaves. Control may be erratic.

Miticides for Ornamental Plants in Home Landscapes	
Active Ingredient	Brand Name (one example)
Neem Oil	Monterey 70% Neem Oil
Horticultural oil	Volck Oil
Potassium salts of fatty acids	Safer's Insecticidal Soap
Acephate + fenbutatin oxide **	Ortho Systemic Insect Killer

** Acephate alone often flares spider mites. Fenbutatin oxide is a specific miticide that provides spider mite control. Apply a second application in seven days.

Blake Layton, Extension Entomologist

This information is for educational and preliminary planning purposes only. Brand names mentioned in this publication are used as examples only. No endorsement of these products is intended. Other appropriately labeled products containing similar active ingredients should provide similar levels of control. Always read and follow the insecticide label.