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Keep your cool

Features - Insect Control

Don't let cool-season spider mites get the upper hand.

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Southern red mite
stippling damage on
cherry laurel.

Photo by S.D. Frank

Summer is winding down, but a couple key nursery pests are gearing up. Spider mites are often thought of as summer pests that thrive in hot dry weather. However, the spider mites you battle all summer have cousins who only come out when the weather is cool. Now is the time to plan for cool season mites and the damage they can cause.

The first part of the plan is to figure out which plants in the nursery you manage may be damaged by cool-season mites. There is an easy way to figure this out. Spider mites feed on leaves in fall and spring. Many plants lose their leaves in fall, so they are safe. So, focus on conifers and broadleaf evergreen plants that keep leaves or needles all year. Conifers and broadleaf evergreens have different cool-season mite species, but they have many similarities that simplify scouting and management.

The two most important cool-season mite species are the spruce spider mite and southern red mite. Spruce spider

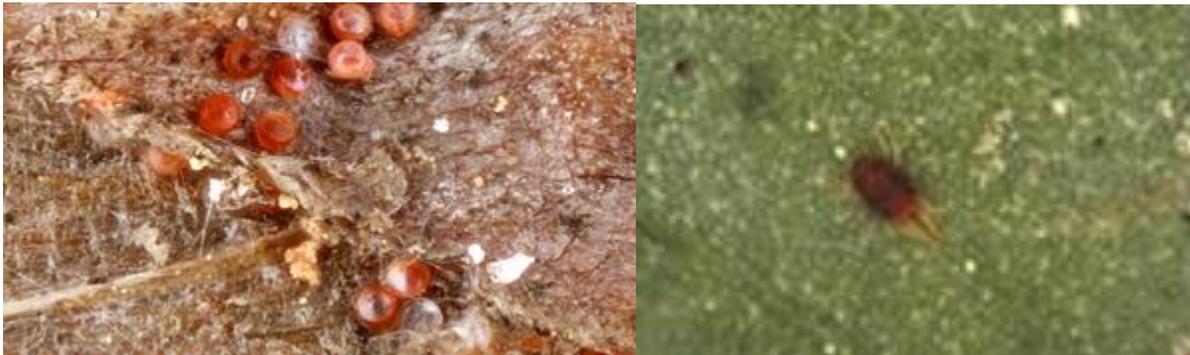
mites (*Oligonychus ununguis*) feed on nearly all conifers to some extent. This includes many of the most popular plants in nurseries such as spruce, arborvitae, juniper, pine and hemlock. Spruce spider mites are distributed throughout North America wherever conifers grow. Chances are if you are reading this (or even if you aren't) your conifers have at least a few spruce spider mites and could have many.

The culprits

Southern red mites (*Oligonychus ilicis*), despite their name, are also widely distributed in North America. They feed on many broadleaf evergreen species. Some of their favorites include Japanese and American hollies, cherry laurel, azalea, camellia, cotoneaster, and many others. They are even a pest of coffee in Central and South America.

Spider mites use their mouthparts to pierce individual plant cells and suck out the cell fluids including the chlorophyll that makes plants green. Every damaged cell creates a tiny brown or yellow speck on the leaf. When lots of mites are damaging lots of cells the leaves become covered in tiny specks. This type of damage is called stippling. Heavily stippled leaves look dull grey, yellow, or brown. Stippling becomes more apparent over time as leaves age and cells die. The same things happens on conifers but the individual stipples are harder to see. Needles gradually fade from green to yellow to brown.

Plants with too much stippling damage are not very appealing to consumers. Damaged nursery stock may be hard to sell, and landscape customers may demand some sort of management to restore their plants. Unfortunately, all the plants damaged by these mites are evergreen and hold their leaves or needles for many years, so the damage is not going to go away even if the mites do. This makes it critical to stay ahead of cool season mite populations and damage.



LEFT: Spruce spider mite RIGHT: Southern red mite

Photo left by Matt Bertone, NCSU; photo right by S.D. Frank

Mite management

Spruce spider mites have dark green oval bodies and pale legs. Eggs are spherical and range in color from yellow or tan during their active seasons to dark red or brown when dormant in summer and winter. Spruce spider mites spend the winter as eggs fixed to twigs at the base of needles and around buds. Southern red mites look similar but with dark red bodies and light legs and head. They spend the winter as eggs attached to the undersides of leaves or attached to twigs.

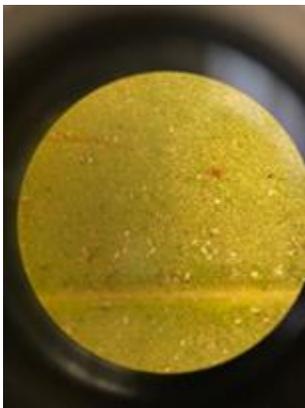
You can scout for eggs of either mite species anytime during winter to identify infested plants. Mites cannot move very far so they overwinter on plants they were living on in fall. Start scouting plants that show stippling damage from previous mite infestations. That's where you will likely find eggs. Continue scouting nearby plants also.

Plants with eggs can be sprayed with horticultural oil which may reduce the number of live eggs but not eliminate them. It is best to flag an infested plant and monitor the eggs in spring to determine when they hatch. Put the plant near your office or somewhere you will remember to look at it. Once eggs start hatching monitor plants in different areas of your nursery to determine if mite populations are increasing. Spider mites have many predators, particularly predatory mites, that can keep populations low.

Throughout spring monitor susceptible plants by tapping foliage against a paper plate or white paper on a clipboard. This will dislodge the mites so you can see them crawling on the paper. They will look like grains of black pepper moving about. Slow dark mites are spider mites. Light colored fast mites are predators. Unfortunately, there is no set threshold to help determine when an application of oil or miticide is necessary. With repeated monitoring you can assess if the populations are stable, declining, or increasing and whether an application is necessary.

Once summer temperatures reach into the high 80s, spruce spider mites and southern red mites will begin to go dormant again. They spend the hot summer as eggs just like the winter. Unfortunately, some feeding damage will become more apparent in summer even though the mites are no longer feeding. This happens as leaves and needles expand and damaged cells die and become brown. Therefore, check for active mites before making a miticide application based solely on damage. If mites are dormant, the application may be better saved for fall once they become active again.

Spider mites of all types are notoriously difficult to manage. They are tiny and can evade miticides and oils by hunkering down in nooks and crannies of leaves and bark. In addition, spruce spider mites and southern red mites prefer not to feed on new foliage. That means they are living deep in the plants where coverage with oil and miticides is more difficult, especially on dense tightly pruned plants. This also means you need to sample old foliage when scouting.



Southern red mite, eggs and stippling damage.

Photo by S.D. Frank

There are several key factors to remember about spider mite management. First is to catch infestations early which requires scouting. Spider mite populations grow very quickly and on evergreen plants cause damage that can last for years. Second to reduce plant stress and avoid over fertilizing plants. Many spider mite species thrive on plants stressed by drought or heat. Drought makes it harder for plants to defend themselves and heat reduces mite development time, so populations grow faster. Fertilizer makes plants more nutritious for spider mites and increases their reproduction. Thus, use only the amount of fertilizer recommended to optimize growth. Extra fertilizer is expensive and could do more harm than good.

If spider mites need to be managed with pesticides keep these key points in mind. Avoid spraying susceptible plants with broad-spectrum contact insecticides. Most insecticides do not kill spider mites but do kill their predators which can lead to mite outbreaks. Systemic neonicotinoids, like imidacloprid, also do not kill spider mites but make the spider mites toxic for predators to eat. Imidacloprid can also increase spider mite reproduction. Thus, another key to spider mite management is to use miticides in addition to products like horticultural oils and soaps. The number of miticides available has increased a lot in the last several years. Some kill only active life stages while some also kill eggs. Check labels and work with local extension resources to find miticides labeled for your situation.

All spider mites are tough pests to manage. This time of year, spruce spider mites and southern red mites are likely the biggest foes you have to deal with as other pests taper off. So, keep your cool, get your clipboard, and focus on the evergreen plants in your nursery.

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