

Controlling Cool Season Mites

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Every summer samples come into the plant clinic that exhibit the characteristic stippling and browning of spider mite feeding but mites are nowhere to be found. Nursery and landscape plants with these symptoms are often treated with pesticides even though the culprit is long gone. The culprit in these cases is frequently cool season mites. As their name implies, cool season mites are active in spring and fall when they suck fluid from cells on plant leaves and needles. In hot summer months these mites are dormant. However, it is summer when their damage becomes apparent as chlorophyll bearing cells die. Thus, by the time plants exhibit aesthetic damage the mites are gone and treatment is wasted.

In North Carolina, the most important cool season mites are the spruce spider mite (*Oligonychus ununguis*) and southern red mite (*Oligonychus litcis*). These are among the earliest and most damaging pests in nurseries and landscapes. Despite this, cool season mites are often not managed effectively if at all. Two main factors contribute to problems managing cool season mites. First, there is a lack of research on spruce spider mite and southern red mite biology and management. Therefore, we do not have accurate degree-day models, economic thresholds, and other tools that help to predict and manage pest outbreaks. Second, they are frequently overlooked or misidentified by growers and landscape managers. However, although we do not have all the tools we would like, we can manage cool season mites effectively by (you guessed it) scouting to locate infestations and treating them appropriately.

Similarities in the lifecycle and

biology of these two species simplify scouting. Southern red mite feeds on broadleaf evergreens such as azalea, camellia, holly, and rhododendron. Spruce spider mite feeds on coniferous evergreens such as spruce, juniper, hemlock, and arborvitae. Thus, when you start scouting for cool season mites in late winter just remember to include all the plants in your nursery or landscape that still have foliage.

Yes, you can start scouting for cool season mites in winter or even late fall because both species overwinter as eggs. Southern red mite eggs are found on the underside of leaves whereas spruce spider mite eggs are found at the base of needles and in the nooks and crannies of bark. Eggs of both species are reddish-brown and can be found by inspecting plants with a 10X hand lens. Pay particular attention to plants that had mites or mite damage the previous year. If eggs are found, you can spray plants with horticultural oil to kill the eggs and reduce outbreaks in the spring.

Cool season mites reproduce very quickly so it is important to identify populations early before they reach eruptive levels and cause severe damage. Therefore, even if you are proactive enough to scout (and possibly treat) plants in the winter it is important to scout again in early spring. Throughout spring you will find egg, juvenile, and adult mites due to their rapid, overlapping generations. In addition, you may find silk webbing and shed skins. On broadleaf evergreens, look on the underside of leaves for the southern red mite. Look for spruce spider mite on conifers by inspecting last year's needles.

The most efficient method of scouting for cool season mites (and

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other mites) is to hold a piece of white paper or a paper plate below a branch and strike it with a pencil or stick to dislodge arthropods. Spider mites will appear as tiny moving specks about the size of the period at the end of this sentence. When scouting, also look for insect predators such as minute pirate bugs and predatory Phytoseiid mites. Phytoseiid mites are light in color and have football shaped bodies. Unfortunately, research has not been conducted to determine the density at which natural enemies reduce spider mite populations to acceptable levels. In fact, we do not know the density at which southern red or spruce spider

mites cause aesthetic damage irrespective of natural enemies. Therefore, even a few mites may be too many and warrant treatment on valuable plants.

Severe spider mite damage will result in premature leaf drop in broadleaf plants although these leaves are often replaced the following year. Conifers damaged by spruce spider mites will develop areas of brown, dead needles some of which will begin to drop from the plant. However, damaged needles are generally not replaced on conifers so aesthetic injury will be permanent. Thus, it is important to scout for and treat mite infestations before damage occurs.

Recommendations for the use of chemicals are included in this publication as a convenience to the reader. The use of brand names and any mention or listing of commercial products does not imply endorsement by the North Carolina Cooperative Extension Service nor discrimination against similar products not mentioned. Individuals who use chemicals are responsible for ensuring that the intended use complies with current regulations and conforms to the product label.

Table 1.

Active Ingredient	Trade name	Mite stages affected	Labeled location ¹	Soft on beneficials
abamectin	Avid	immature, adult	N, L, G	Yes
acequinocyl	Shuttle	egg, immature, adult	N, L, G	Yes
bifenazate	Floramite	egg, immature, adult	N, L, G, I	Yes
etoxazole	TetraSan	egg, immature, adult	N, L, G, I	Yes
hexythiazox	Hexygon	egg, immature,	N, L, G, I	Yes
spiromesifen	Forbid	egg, immature, adult	L, I	Yes
spiromesifen	Judo	egg, immature, adult	G, N	Yes

¹ L = Landscape, N = Nursery, G = Greenhouse, I = Interiorscape

Effective spider mite control relies on several factors that are common to pesticide applications in general. First, select a product that will target spider mites but without killing all the natural enemies that will help clean up mites and eggs that were missed (there will always be some that are missed). Second, make applications early in the season when populations are small, and mites are young and thus most susceptible to pesticides. Finally, thorough coverage is essential. Think about where these mites live: on the undersides of leaves and on old needles that are deep in conifer foliage. Be sure to cover these areas when spraying.

Again, consider natural enemies when selecting a product because mites are notorious for resurgence after pesticide applications. A number of products are available for managing spider mites that are considered "soft" on beneficial arthropods (table 1). For other options consult the North Carolina Agricultural Chemicals Manual (<http://ipm.ncsu.edu/agchem/agchem.html>).

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Figure 1. Spruce spider mite on Norway spruce. Notice stippling of needles and shed skins of mites. Photograph Petr Kapitola

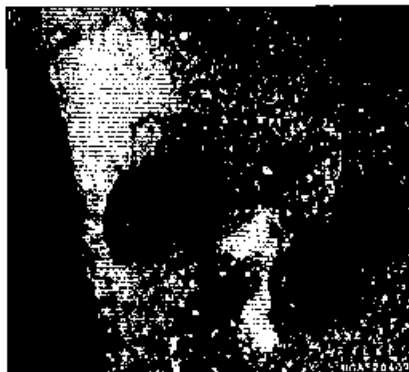


Figure 2. Southern red mite eggs, nymphs, and adult. Photograph Jim Baker.

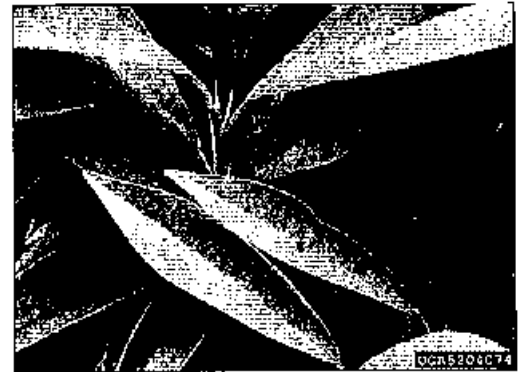


Figure 3. Southern red mite damage on Cherry Laurel 'Otto Luyken'. Notice stippling on leaves. Photograph Frank Hale.