



SOUTHERN RED MITE

Oligonychus ilicis (McGregor)

University of Massachusetts/Amherst, Cranberry Experiment Station
Martha M. Sylvia and Anne L. Averill

This species is not an insect. Mites are more closely related to spiders and ticks than to insects. Southern red mites pierce the upper surfaces of the cranberry leaves and suck out the sap, leaving minute brownish scars. For more than 50 years, the southern red mite has been recognized as a sporadic pest of cranberry in Massachusetts. It is only a problem in MA; it has been speculated that the more humid conditions in NJ beds do not favor populations there.

Host Plants and Distribution

This mite is a pest in southern and eastern United States on ericaceous and aquifoliaceous ornamentals such as holly and azalea. In Massachusetts, it often severely damages sweet pepperbush, causing the leaves to curl and turn brown. Sometimes mites appear in large numbers on sheep laurel, chokeberry, winterberry, and leatherleaf where these occur as weeds on thickly infested cranberry bogs. It has also been found on rose and camellia.

The mite feeds and reproduces on the two most popular cranberry varieties in Massachusetts, 'Early Black' and 'Howes'. It probably does equally well on most other varieties and native types. Its occurrence has not been reported in other cranberry growing regions.

Nature of Injury

Both immature and mature mites pierce the upper surfaces of cranberry leaves and suck out plant sap (containing the green pigment chlorophyll). Older injury from this feeding activity appears as minute brown scars on the upper leaf surface. Stippling, or tiny spots where the mites have fed,

is a classic sign of southern red mite damage. They do not feed extensively on the lower leaf surface.

A severe infestation gives the foliage a dingy green or "bronzed" appearance and has been reported to cause considerable leaf drop in late fall. Injury is almost always patchy. Just before harvest, if an infestation is severe, circular patches of discoloration develop that are somewhat yellow in appearance rather than dingy green. It is unknown what level of impact the injury has on the growth of the berries.

Seasonal History

Southern red mites overwinter in the egg stage mostly on the cranberry bark and foliage. Eggs are spherical, usually deep red, shiny, and measure less than 0.7 mm (3/100") in diameter. Overwintering eggs are deposited in late summer through the fall on the underside of leaves and on the bark of uprights.

Eggs begins hatching in mid-April and early May. They hatch into minute, 6-legged, orange-colored larvae. These resemble adults except they are smaller and lack a pair of legs. After the larval stage, the mites pass through 2 active nymphal stages during which they look like miniature adults, having 4 pairs of legs. Each of these feeding stages is followed by a period of inactivity and subsequent molt. White exoskeletons are left on the underside of cranberry leaves. These are much more noticeable than the mites themselves and may aid in diagnosis.

1) Southern red mite egg 2) Southern red mite 3) Southern red mite white exoskeletons, which are shed with each molt 4) Southern red mite damage called stippling



Adult mites have 8 legs and are dark reddish brown in color. They measure about 0.7 mm (3/100") in length and look like minute spiders. These mites complete development of the first generation on old foliage. The female mites lay eggs freely in June and July on the new growth, from which a second generation hatches by mid-July. As the season continues, mites in all stages of their development and their eggs, hatched and unhatched, are found on the cranberry leaves. Peak populations are seen during hot, dry summers. As many as 6 to 8 overlapping generations are produced each season on Massachusetts cranberry bogs. A precipitous decline in numbers is observed in the fall, with numbers crashing in mid to late September.

Management

A southern red mite population may be controlled by applying a miticide or by holding late water. A management decision should be based on the presence of mite eggs, immatures, and adults rather than on the sighting of injured leaf tissue. It is quite common, especially in springtime, to observe injured leaf tissue from the previous fall, long after the mite population has declined to a non-damaging level.

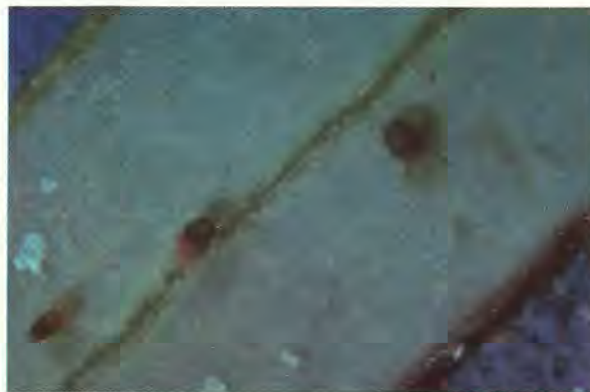
The number of mites per upright needed to diminish plant growth, fruit set, and yield has not been determined. However, one indication of a severe infestation is the obvious coating of the inside of a standard sweep net with red smears from mite immatures and adults. When mites are active, red streaks should appear if a white card or one's hand is swept over the vines. Monitoring mite populations may be done with a stereoscope or a 10X hand-held lens. Uprights should be collected from suspicious areas and inspected for eggs and motile mites. An average of 3 or 4 eggs and motile mites per infested upright dictates continued surveillance and possible treatment of the bog.

Care must be taken not to mistake other species' eggs or other species of mites when scouting for southern red mite.

Environmental factors seem to exert a marked influence on mite population levels. Population increases apparently are promoted by warm, dry conditions. Cool, wet conditions and high relative humidity levels hinder population growth and sometimes lead to population decreases. Cool, wet weather in the spring retards the hatch of overwintered eggs and the development of first-generation nymphs. Irrigation water and showers on hot summer days lower bog temperatures while raising relative humidity levels. Throughout most of the season, lush foliage on well-managed bogs maintains high relative humidity levels within the vine canopy. Irrigation water and showers dislodge mites of all stages (except the egg) from stems and the upper surface of leaves.

Late water (reflowing a bog from mid-April to mid-May) is an excellent management approach for southern red mite. We found that populations of mites remained low in the year following the late water flood, but began to climb to high numbers by the second year following the flood.

From mid-September to the beginning of October, a harvest flood or trash flow may reduce the number of motile mites and, therefore, the number of overwintering eggs.



Active mite infestation on underside of leaf



Published by
Cranberry Experiment Station, University of MA
P.O. Box 569, E. Wareham, MA 02538. (508) 295-2212

Issued by UMass Extension, Robert G. Helgesen, Dean & Director, in furtherance of Acts of May 8 and June 30, 1914; University of Massachusetts, United States Department of Agriculture, and County Extension cooperating.

May 1999. UMass Extension Agroecology Program. Martha M. Sylvia is the technician in the Entomology Lab at the Cranberry Experiment Station in East Wareham, MA. Anne L. Averill is Associate Professor in the Entomology Department at the University of Massachusetts in Amherst, MA. Many of the photos were taken by James E. O'Donnell.

For more information, refer to A.L. Averill and M.M. Sylvia. 1998. **Cranberry Insects of the Northeast**, which is also available at the Cranberry Experiment Station.