

Two Spotted Spider Mites

Dr. Heather Darby, Agronomic Specialist and Scott Lewins, Entomologist

The two spotted spider mite (TSSM), *Tetranychus urticae* Koch, feeds on a wide variety of host plants including hops, and is one of the most important pests found in northeastern hopyards. These tiny, eight-legged cousins of spiders (Figure 1) also produce webbing, though spi-



Figure 1. Adult female two spotted spider mite with prominent black spots on each side (photo courtesy of D.G. James).

der mites use it to protect themselves (from the elements, natural enemies or pesticides), not to catch prey. Adult TSSM overwinter on debris in our hopyards and start laying eggs as soon as temperatures warm up in the spring. Shortly after their eggs are laid, immature TSSM emerge and begin feeding on the underside of the hop leaves (Figure 2). As they develop, immature TSSM will molt several times before becoming the scourge of hop growers around the world . Depending on how

warm the growing season is, there can be anywhere from four to eight generations of TSSM over the growing season.

TSSM damage occurs when they jam their mouthparts into, and then suck the life out of, your hops. In doing so, they cause the characteristic stippling of leaves (Figure 3) which, at low to moderate levels, doesn't cause economic injury since there is no apparent effect on yield or quality later in the season. However, heavy infestation of two spotted spider mites can lead to reduced photosynthesis or even defoliation. Hot, dry, dusty conditions, those typical of August, tend to favor rapid two spotted spider mite population growth. Unfortunately, August is also when hop cones are maturing. If spider mites make their way into cones there can be a decrease in quality, and severe spider mite infestations can cause



Figure 2. Two spotted spider mites on the underside of a hop leaf.

hop cones to become brittle and shatter. So, monitoring two spotted spider mites in hopyards is crucial to ensure mite infestations don't get out of control. Economic thresholds have been developed in the Pacific Northwest ranging from an average of 5-10 mites per leaf in mid to late July. In other parts of the world, thresholds of up to 60 mites per leaf are used.

Typically, predatory mites and the specialist spider mite destroyer, maintain TSSM levels below economic thresholds. An integrated pest management program of weekly monitoring of the pest and beneficial populations is crucial for decision making. Weekly scouting of the underside of three leaves per hop plant out of every 25-30 plants, and in each variety, is recommended. If TSSM populations approach economic injurious levels, there are a variety of chemical control options. For upto-date information about pesticide registration in your state, consult the National Pesticide Information Retrieval System (http://npirspublic.ceris.purdue.edu/ state/) or the appropriate state run pesticide registration database. Read the label before applying any pesticide, and remember that the pesticide label is the law.

It is important to recognize that pesticide applications, particularly broad-spectrum insecticides and repeated application of sulfur, can actually exacerbate the problem. Following an insecticide application, spider mite populations are generally quick to rebound, much quicker than natural enemies like spider mite destroyers. Without any natural control, spider mites can reinfest your yard, whereas using selective miticides can enhance biological control.

Be sure to check out the updated Field Guide for Integrated Pest Management in Hops (<u>https://</u> <u>www.usahops.org/resources/field-guide.html</u>) for more information about managing two spotted spider mites and other pests found in Northeastern hopyards.



Figure 3. Stippling caused by two spotted spider mite damage.

June 2018

Published by the University of Vermont Extension Northwest Crops and Soils Program. Learn more about the program at: www.uvm.edu/extension/cropsoil.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. University of Vermont Extension, Burlington, Vermont. University of Vermont Extension, and U.S. Department of Agriculture, cooperating, offer education and employment to everyone without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or familial status. Any reference to commercial products, trade names, or brand names is for information only, and no endorsement or approval is intended.