

## IPM Fact Sheet Series

**UMass Extension Fruit Team**  
Fact Sheet #AI-004

### **Apple – Mites: European red mite (*Panonychus ulmi*) and two-spotted spider mite (*Tetranychus urticae*)**

#### **Overview (from NETFMG)**

European red mites (ERM) and Two-spotted spider mites (TSSM) are the two most common mite pests in New England orchards. Spider mites suck leaf fluids and chlorophyll, resulting in "bronzed" foliage. Slightly damaged leaves cause little or no adverse effect to crop. Extensive leaf bronzing results in decreased photosynthesis, often causing reduced fruit size, premature drop and reduction in fruit set the following year.

#### **ID/Life Cycle:**

The adult female European red mite (ERM) is brick red with white spots at the base of its back. The male ERM is more slender and lighter in color than the female, with a more pointed abdomen. Eggs are red, globular and somewhat flattened with a slender stalk on the upper side. ERM overwinter as eggs on smaller branches, twigs, and roughened bark of apple trees. Egg hatch begins at tight cluster, is about half-complete by pink, and is complete by petal fall. Young mites move to newly opened leaves where they feed, mature, and reproduce.



**Figure 1)** European red mite (ERM) (left) and two-spotted spider mite (TSSM) (right). **Photo credit:** Scott Justis (ERM), Frank Peairs, Colorado State

Two-spotted spider mite (TSSM) adult males are pale yellow, pale to dark green. Females are oval, about 3/100 inch long and about 2/100 inch wide. Feeding mites have a dark spot on either side of the body that may enlarge to cover most of the body. Overwintering females are orange and hibernate under bark scales on the tree and in trash on the ground. Eggs are spherical clear, becoming milky-white over time. TSM overwinter as adult females primarily in orchard ground cover, where they feed on weeds and grasses. In mid-late summer, TSM migrate into fruit trees and feed on leaf undersides.

For both ERM and TSSM, there may be 8-10 generations per season.



**Figure 2)** Masses of European red mite eggs may be laid together. Eggs are slightly flattened, red, and have a small stalk. The stalk is approximately the length of the diameter of the egg, arising from the top, and can be seen with a hand lens. **Photo credit:** University of Georgia Plant Pathology, University of Georgia,

### Damage:

Mites feeding on leaves cause injury to the tree by removing photosynthetic tissue. The most serious injury occurs in early summer when trees are producing fruit buds for the following season. Severe mite infestations can cause bronzing of leaves, eventually leading to premature leaf abscission. TSSM are associated with characteristic webbing on the under surface of the leaf.



### Management Strategies

**Monitoring:** The action threshold for mites varies with time of year. ERM should be monitored and managed in much the same way as TSM. Counts of the two species should be combined to determine whether thresholds are exceeded. Monitoring of ERM eggs can be done by visually inspecting the bases of twigs and spurs on 5 to 10 selected trees with a hand lens.

Mite injury during the weeks following petal fall can damage fruit crop. Monitor mite populations by examining underside of fruit cluster leaves through May and June. Threshold is 1-2 motile (not eggs) mites per leaf or 30% of leaves with one or more mites. Starting in July, examine middle-aged leaves for motile mites. Threshold for July is 5 mites per leaf. August 1-15 threshold is 7.5 mites per leaf.

Mites tend to build up during periods of hot, dry weather. Mite populations tend to build up in "hot spots" rather than uniformly throughout a block. Hot spots tend to form on trees adjacent to dusty, dirt roads and in certain cultivars such as Red Delicious and Empire.

### Cultural/Biological

- Many beneficial insect and mite species prey on pest mites and provide some level of biological control. A predator/prey ratio of 1:10 may provide adequate biological control.

- A selective miticide program that is based on thresholds may allow biological control by predator mites.

### **Chemical**

- Refer to the [New England Tree Fruit Management Guide](#) for specific materials and rates recommended for managing European Red Mite and Two-spotted Spider Mites.
- Oil is recommended at a rate of 2-3 gal./acre during the dormant period. Use 2 gal./acre until tight cluster. Reduce to 1 gal./acre from tight cluster to pink. Oils can be safely applied up to the pink stage.
- Since fruit tree architecture includes many cracks and crevices as well limbs and twigs that exponentially increase surface area, coverage to the point of drip is key.
- Do not use oil within 24-48 hours before freezing temperatures, or if temperature is below 35F following a freeze. Do not apply within 10-14 days of sprays containing captan or sulfur.
- Several miticides are limited to one application per season to delay pesticide resistance.
- **ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR SAFE USE OF ANY PESTICIDE**

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