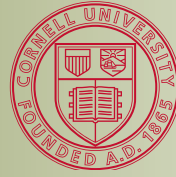


Apple IPM for Beginners



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Mites

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Time of Concern

Half-inch green through August



half-inch green

Damage



Figure 5. Leaf bronzing is shown on the leaves on the left, and healthy leaves are on the right.

Pest Cycle

European red mites (ERM) overwinter as red eggs around growth rings on bud spurs (Fig. 1). Eggs hatch in spring, starting at tight cluster. Figures 2 and 3 show the different appearance of female and male European red mites.

Two-spotted spider mite adults (Fig. 4) or nymphs overwinter under bark scales and on weeds under trees. When foliage under trees is no longer a good food source, they move into the trees and feed on apple leaves. Mites reproduce in multiple generations throughout the summer, building up to amazing levels during hot, dry weather. They feed on older leaves and continue to feed on newer leaves as they develop. Mite feeding results in bronze discoloration of leaves reducing leaf function (Fig. 5). This damage increases the potential fruit drop and can decrease flower bud set for the next year.



Figure 1. Red overwintering ERM eggs. Photo: J. Ogradnick, NYSAES Photo.



Figure 2. ERM female adult. Photo: J. Ogradnick, NYSAES Photo.



Figure 3. ERM male adult. Photo: J. Ogradnick, NYSAES Photo.

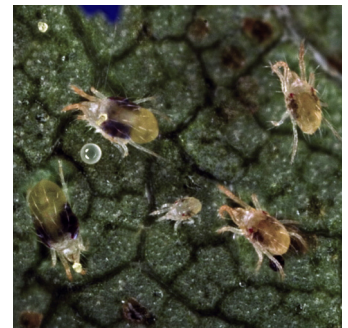


Figure 4. Two-spotted spider mite adults and eggs. Photo: J. Ogradnick, NYSAES Photo.

IPM Steps for Beginners

One control option for ERM is to use a dormant oil spray early while the trees are still dormant or up to the time when buds are at tight cluster. Dormant oil spray smothers ERM eggs on the bark and helps to prevent early build-up of mites in the orchard, but generally does not harm beneficial insects. Some tree varieties are particularly susceptible to mite damage (Red and Golden Delicious, Braeburn, Northern Spys, and Romes). Examine leaves for mites starting in June, especially if weather is hot and dry.

Precautions for using oil: ⚠

1. Avoid freezing temperatures within 2 days before or after the oil application.
2. Do not spray captan or sulfur within 10 days before or after an oil application—it can burn the leaves and fruitlets.
3. Oil applied pre-bloom may not provide full season mite control. Other options include several miticides that can be applied to kill eggs at pink, or applied when scouting has reached treatment threshold.
4. Horticultural oil or Stylet oil (mineral oil) can be used during the summer growing season at a 1% solution mixed with water but only if the fungicides used for disease management do not include captan or sulfur.
5. If using mancozeb (up to 77 days before harvest) in combination with alternative fungicides listed for scab and mildew, this low rate of oil applied on a 2-week interval can be effective. Refer to the *Cornell Tree Fruit Guidelines* for options or *Choosing Sprays* to kill mites.

To be effective, miticides require good spray coverage of leaves during the growing season to thoroughly contact the mites.

Ready for More Precision?

Scout for mites using a 3X optivisor or 10X hand lens. Pick middle-aged spur leaves around the fruit cluster; 4 leaves per tree for 15 trees. Examine the upper and lower surfaces of the leaves for live mites and count infested leaves, not mites. If less than 15 of 60 leaves are infested, no action is needed in June, but if more than 15 and less than 28, sample again in 1-2 weeks. If more than 41 infested leaves, treat! As vegetative shoots develop, switch to middle-aged leaves from shoots. In July, if less than 24 of 60 leaves have mites, scout again in 2 weeks; but if 51 of 60 leaves have mites, treat. If the number of infested leaves is between this range, sample again in a week. In August, if less than 31 of 60 leaves are infested, scout again in 2 weeks; if more than 56 of 60 leaves are infested, treat. Numbers between that range indicate the need to scout again in a week. Miticides are not typically needed after August 15.

See the *Cornell Tree Fruit Guidelines* sampling procedures in Insect and Mite Management, Chapter 7.

In advanced IPM programs, you can identify any predator mites present that will help control the pest mites. They can be easily seen with 3X or 10X lenses, but they move much faster than pest mites. Low numbers will do a very effective job of controlling pest mites. Predator mites are shown in Figure 6. If feeding on red mites, they will have reddish streaks running through them. Growers can establish predator mites by releasing them during bloom. They can be purchased from a supplier of biological control products. One source in New York is IPM Laboratories, Inc., ipmlabs.com.



Figure 6. Predator mites feeding on red mites. Photo: J. Ogdornick, NYSAES Photo.