

EUROPEAN RED MITE

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The European red mite is another introduced pest in the US. It is a pest of nut, pome and stone fruits, and some berries. This pest damages leaves and causes fruit russetting. European red mites can have 6 to 8 generations per year, depending on the temperature. Summer generations may develop in as little as 14 days.

The adult female mites are brick red with white spots at the base of six to eight hairs on their back. The male mite is more slender and lighter in color than the female, with a more pointed abdomen. Eggs are red, globular and somewhat flattened (onion shaped) with a slender stalk on the upper side. European red mites overwinter as eggs laid in roughened bark around the bases of buds and spurs on small branches. During the summer eggs are laid on the underside of leaves. Egg hatch in the spring is closely correlated with bud development and begins close to the tight cluster stage. During the summer, eggs require 7 to 14 days to hatch.

All active stages of the European red mite injure the foliage by feeding with piercing mouthparts and removing cell contents, including chlorophyll. Moderate to high numbers of mites can cause the leaves to initially turn pale and with continued feeding the leaves turn bronze. Heavy mite feeding early in the season can reduce tree growth, yield, and also affect fruit bud formation for the following year. Some apple cultivars, such as 'Red Delicious' and 'Braeburn', are more prone to mite buildup and injury.

European red mites are rarely a problem on backyard apple trees. Predatory mites, ladybird beetles and the six-spotted thrips help to maintain these European red mite at non-damaging levels. This mite is considered a secondary pest, it typically only builds to damaging levels after its natural enemies have been depleted by insecticide applications used to control codling moth or other pests. **Minimizing insecticide usage and selecting insecticides that are least toxic to beneficial organisms will help to minimize problems with this mite.**

Monitoring

To monitor for mites, examine 5 hardened-off leaves from each of four scaffold limbs per tree. Commercial

orchardists should examine at least 5 trees per acre. Certain varieties, such as Red Delicious, are more likely to develop large numbers of mites, so be sure to make samples representative of the varieties in the orchard. Using a hand lens, count all active stages of pest and predatory mites. Predatory mites are more active and are tear-drop shaped. Determine the average number of European red mites per leaf.

The economic threshold for the mites varies with the time of year. A miticide is recommended early in the year (until April 1) if numbers of active mites exceed an average of 5 per leaf, during April and May when mite numbers exceed 10 per leaf, or the rest of the season if mite numbers exceed 15 per leaf. Some insecticide cover sprays are less severe on mite predators, consult *ID-92, Commercial Tree Fruit Spray Guide*, for a list of those sprays and their ratings against mite predators.

Management

Overwintering mite eggs should be controlled through the use of a delayed-dormant oil treatment, anytime between just before bud swell until half inch green. Control with dormant oil improves the closer to egg hatching. For commercial producers, use of one of two early season miticides, Apollo and Savey, can provide near season long mite control when care is taken to protect mite predators throughout the season. Another early season miticide that has a unique mode of action against mites is AgriMek. When applied within 6 weeks of petal fall it can provide season long control. Development of mite resistance to these early season miticides, Apollo, Savey, and AgriMek, needs to be a priority among apple producers. Producers should alternate among these miticides such that a miticide with a different mode of action, such as Pyramite, is used in alternate years.

Management of mites during the growing season is based on scouting and the use of miticides or summer oil treatments as needed. Often when heavy summer infestations exist, a second miticide treatment may be required 10 to 14 days later. Horticultural oils provide an alternative to traditional synthetic miticides, are able to kill all mite life stages, and are less toxic to the

applicator. While effective control can be obtained with summer horticultural oil treatments, caution is advised as these may be incompatible with some other pesticides (particularly sulfur containing products), are phytotoxic at higher temperatures (above 90°F and high humidity), and may affect fruit finish on some varieties.

For more information on reduced insecticide apple management programs, see *ENTFACT-201, Controlling Apple Insect Pests with Reduced Insecticide Usage*.

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