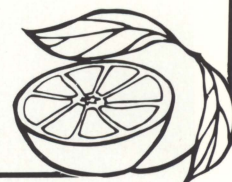


# Texas Agricultural Extension Service

## Texas Citrus Mites: Description and Biology

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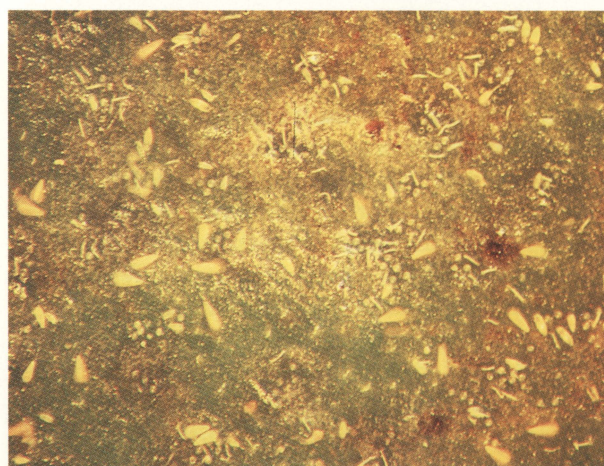
Mites represent the single most economically important group of Texas citrus pests. The citrus rust mite together with the spider mite complex, including citrus red mite and Texas citrus mite, are responsible for a major portion of pest losses and require the bulk of pesticides used on citrus in Texas. Mites feed on fruit and foliage by piercing individual plant cells and sucking out the contents, thus, destroying the cell. Their pest potential lies in their ability to develop rapidly and their tremendously great reproductive potential, allowing for enormous populations to develop in a short period of time.

### Citrus Rust Mite

**Eriophyidae: *Phyllocoptruta oleivora* (Ashmead)**

The citrus rust mite (CRM) is considered the most important pest of Texas citrus. Rust mites are long, wedge-shaped and light yellow, measuring about 0.1 to 0.2 mm long, generally not visible to the unaided eye. The citrus rust mite feeds on the exposed surfaces of fruit, destroying the rind cells leading to the characteristic russetting of fruit. This damage may result in reduced grade and size, thereby drastically reducing the marketability and value of the crop. Rust mites feed and develop year-round on citrus foliage and, when available, will develop on fruit. Rust mites may complete a generation in 7 to 10 days during the summer while development is drastically slowed or may halt during cool periods.

Early rust mite damage to fruit in late spring or early summer is evidenced by bronzing of the rind, a condition commonly called "buckskin" fruit. Severely affected fruits do not expand normally and frequently exhibit rind cracking. Damage



**Citrus rust mites (magnified).**

occurring later in fruit development is evidenced by a darkening of the peel where heavy feeding took place, generally dark brown to black on green fruit and rust-brown on mature fruit. Similar symptoms of melanose disease on fruit, particularly grapefruit, may be confused with mite-induced russetting, but usually can be differentiated by noting peel texture and checking for presence of melanose pustules. Grapefruit generally are more susceptible than oranges to fruit damage by citrus rust mites.

High populations of CRM may reduce tree vigor. Affected leaves develop a dull green color and show reduced turgidity. Rust mites pose a threat to the fruit crop from April to October, particularly during periods of warm, humid weather with frequent, light showers. If the latter conditions extend into early winter, fruit russetting may occur as late as December.

A reliable sign of impending rust mite damage to fruit is the dull, cloudy appearance of heavily infested fruit caused by thousands of mite skins

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**Citrus rust mite damage on grapefruit.**

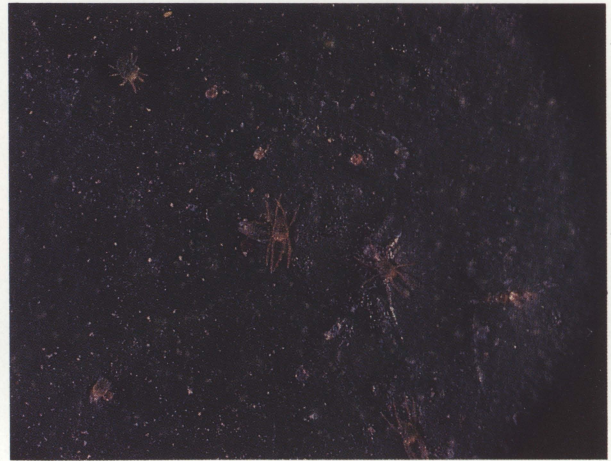
cast off during the molting process. The distribution of citrus rust mites within trees varies during the year and is generally determined by environmental conditions. Rust mites tend to seek out high humidity areas away from direct sunlight but also avoid areas where dew forms. Rust mites overwinter on foliage and in bark crevasses. On foliage, mites are most likely to be found on undersides of dry, inner canopy leaves. Mites appear to prefer fruit on the west or northwest quadrant of trees during May to June when cloudy conditions prevail. As summer temperatures increase, mites move inward and toward the north quadrant, away from the direct sunlight. After harvest during winter months, highest mite populations have been observed on east or north-east quadrants.

### **Texas Citrus Mite**

**Tetranychidae: *Eutetranychus banksi* (Banks)**

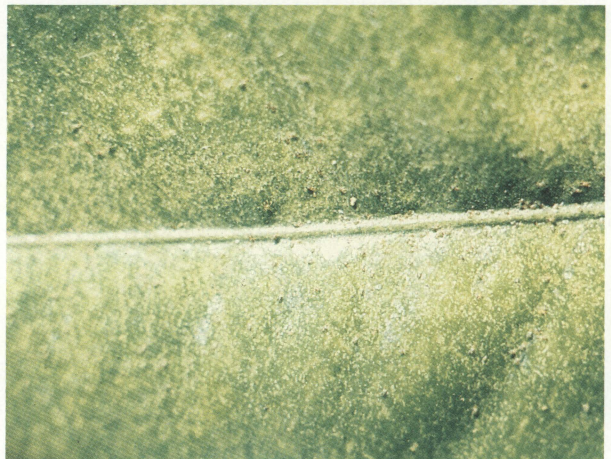
Texas citrus mites (TCM) are 0.3 to 0.4 mm long and the eight-legged adults vary in color from yellow to dark green, with characteristic dark internal food spots on each side down the back. Female mites are broadly oval and somewhat flattened. Males are more slender with longer legs and are triangular in shape. Larvae have six legs and are light yellow. Eggs are disc shaped and usually are laid near the midrib or branching veins. The life cycle can be very short under high temperatures, leading to very rapid population explosions. Unlike the citrus rust mite, the Texas citrus mite prefers low humidity conditions.

Most of the time, greater numbers are found on leaves on the south side of the tree, and in the top



**Texas citrus mites (magnified).**

of the tree. They usually prefer to attack upper surfaces of leaves. Leaves damaged by TCM appear gray, show mesophyll collapse and may drop during periods of drying winds or when trees are stressed by lack of water or other factors. Mites also appear on fruit but to a lesser degree than on leaves, and rarely cause noticeable feeding damage on fruit. Texas citrus mites usually are more prevalent in the May to July period, although they may increase rapidly at other times when conditions are favorable.



**Leaf damage from Texas citrus mites.**

### **Citrus Red Mite**

**Tetranychidae: *Panonychus citri* (McGregor)**

While the injury caused by citrus red mite is nearly the same as that caused by Texas citrus mites, differences in appearance between the two mite species are obvious. Adult female red mites are oval, globular shaped and are characteristically red in color.





**Citrus red mite (magnified).**

Long red hairs attached to raised bumps are present on the surface of the body. Red mites are slightly larger than Texas citrus mites, about 0.3 to 0.5 mm in length. Males are smaller and more triangular than females. The red eggs are round and have a tiny vertical stalk projecting upward which is used to anchor the egg to the leaf. Female red mites lay two to three eggs/day (20 to 50 eggs/female) along the midribs and petioles of leaves or on succulent twigs. Six-legged larvae range in color from light green to red. The life cycle from egg to adult requires 8 to 12 days, depending on temperature, resulting in the potential for large population increases very rapidly. Citrus red mites prefer the upper leaf surface of mature leaves.

Trees may undergo sudden leaf death (firing) when citrus red mite populations build rapidly. Heavy mite populations under hot dry conditions may result in heavy leaf drop and twig die-back. However, no reduction in fruit quality in Texas has been documented. In general, grapefruit are more heavily attacked by citrus red mite than are oranges.

#### **False Spider Mites**

**Tenuipalpidae: *Brevipalpus phoenicis* (Geijskes)**

**Tenuipalpidae: *Brevipalpus californicus* (Banks)**

Adult mites are 0.2 to 0.3 mm long, flattened and slow-moving. The legs and edges of the body are whitish, while the body color varies from red to deep purple. Population increases usually occur on leaves and fruit toward the inside of the tree



**Grapefruit damaged by false spider mites.**

before larger numbers are noticed on outside leaves and fruit. Population increases occur in June and build into the summer months. Characteristic damage on fruit occurs from injection of toxins into rind cells, resulting in localized necrosis. This damage is known as leprosis. False spider mites more commonly become pests when phosphate pesticides are used for other pests.

#### **Natural Enemies of Mite Pests**

In addition to climatic influences on mite populations, natural enemies play a role in regulating population levels. The fungus *Hirsutella thompsonii* occurs in Texas orchards and during periods of cool, moist weather may cause dramatic decreases in citrus rust mite numbers. The mites are attacked and killed by the fungus, and dead infected mites serve as inoculum to further spread the disease. Spider mites (Texas citrus mite and citrus red mite) are not attacked by *H. thompsonii* but are attacked by other fungi. Population fluctuations resulting from disease cycles of *H. thompsonii* are often observed but are not dependable for rust mite control because they rely mostly on cool weather conditions.

Other natural enemies which feed on rust mites and spider mites include predaceous mites in the family *Phytoseiidae*, small beetles and other small insect predators. These organisms attack mites on foliage and fruit, but generally are not effective in keeping populations below damaging levels.



### Citrus Mite Occurrence Profile

Pests	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Citrus rust mite			●	X ●	XX ●	XX ●	XX ●	XX ●	X ●	●	●	●
Texas citrus mite			●	X ●	XX ●	XX ●	XX ●	X ●	●	●	●	●
Citrus red mite			●	XX ●	●	●	●	●	XX ●	X ●		
False spider mites				●	●	●	XX ●	XX ●	●	●		

- Period of normal occurrence
- X Damage possible
- XX Damage most likely

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