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 Peairs, Frank B./Management of spider mi



Quick Facts

An outbreak of spider mites is commonly due to hot, dry conditions, particularly in drought-stressed corn.
 Two common species of spider mites in Colorado are the Banks grass mite (BGM) and the two-spotted spider mite (TSM).
 Spider mite problems can be managed by preserving beneficial insects and mites and treatment decisions based on mite species present in fields.
 Insecticides directed against other corn pests can cause spider mite outbreaks.

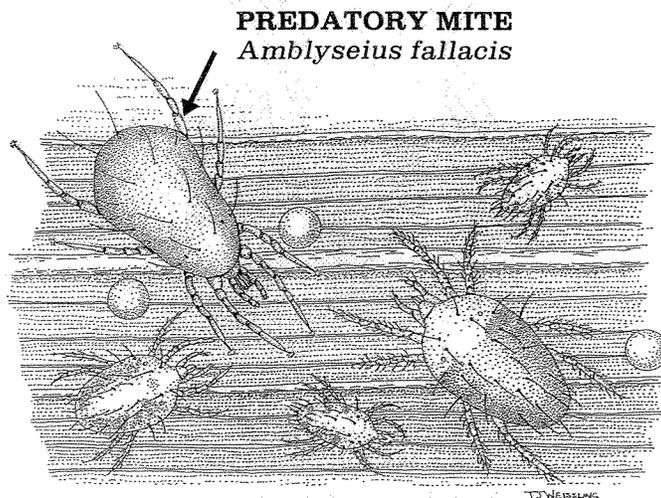


Figure 1: Banks grass mite (*Olygonychus pratensis*).

Spider mites can be serious corn pests in Colorado, especially during hot, dry years. They feed on the undersides of leaves, eventually killing the leaf and leaving it with a scorched or burned appearance. Commercial yield losses as high as 40 percent for silage (dry matter) have been documented in Colorado although normal losses generally are lower. In his mite research at Rocky Ford, Frank Schweissing has observed grain losses ranging from 6 percent to 48 percent, with an 18-year average of 21 percent.

Colorado Species

Two species of spider mites attack corn in Colorado: Banks grass mite (BGM), *Olygonychus pratensis* (Fig. 1); and two-spotted spider mite (TSM), *Tetranychus urticae* (Fig. 2). Banks grass mite traditionally has been a corn pest in Colorado, while TSM recently has become a problem in certain corn-growing areas of the state. North central Colorado, especially Weld and Larimer counties, and the Platte River Basin currently have the most serious mixed-species infestations. Other corn-growing areas currently are affected by BGM alone.

Most BGM problems occur in the drier growing areas of the state and always are associated with grasses. For example, many problems in corn start when adjacent wheat starts to dry down.

The problems with TSM seem to predominate in more humid growing areas such as along river bottoms. This mite is found in many crops, but it is common for corn infestations to occur in fields with nearby alfalfa.

Types of Control

There are two major considerations in managing spider mite problems in corn:

- preservation of beneficial insects and mites;
- treatment decisions based on the mite species present in the field.

Preservation of beneficial species is critical to proper management of spider mite problems in corn. Many fields go untreated each year because the mites are held in check by various predatory mites, lady beetles, minute pirate bugs, lacewing larvae and thrips. The most important of these are a predatory mite, *Amblyseius fallacis* (Fig. 1); and a small black lady beetle called *Stethorus* (Fig. 3).

¹Frank B. Peairs, CSU assistant professor, entomology; Thomas J. Weissling, illustrations (3/86)

A common cause of mite outbreaks is hot, dry conditions under which beneficial species cannot keep up with the increasing mite population. This is particularly a problem in drought-stressed corn. Adequate irrigation and other practices to avoid drought stress can help minimize mite build-ups. Frequent overhead irrigation can reduce the rate of mite population increase, but it will not reduce mite populations that already have reached economic levels.

Another common cause of spider mite outbreaks is insecticide applications directed against other corn pests. These kill beneficial insects and mites that, in many cases, would have kept the pest mite species under control. In Colorado, treatments for western bean cutworm, southwestern corn borer and second generation European corn borer most often are responsible for insecticide-triggered outbreaks.

Of particular concern are some of the new pyrethroid insecticides that have recently been registered on corn. These not only eliminate beneficial species but, in some cases, seem to stimulate the mites to spread over the plant more quickly than if another insecticide had been used. In mite-prone corn growing areas, the best strategy is to avoid insecticide use. If it is necessary to use an insecticide, avoid the currently registered pyrethroids.

Under certain conditions, however, it will be necessary or desirable to control spider mites with a miticide treatment. If a TSM or TSM/BGM infestation is expected, on the basis of past experience or the presence of early season mites, then the only chemical control option is a late-whorl application of propargite (Comite). No registered miticides will control an established TSM infestation. In a mixed infestation, a miticide treatment may well control the BGM, which can result in even faster TSM build-up due to the decreased competition from BGM.

Characteristics in table 1 will help identify the early season mites. Base your identification on as many features as possible; no one character is foolproof. For the characteristics that require a magnifying glass (at least 10X), look at 20 of the largest, most active mites (the adult females) before deciding which species makes up the colony. Both species may occur in the same field, on the same plant and on the same leaf, so check plants throughout the field before deciding which mites make up the infestation.

When checking a field for mites it is best to start with drought-stressed areas. If several fields have to be scouted, start with the shorter-season varieties and/or the earliest-planted fields as these often will have more mite problems than later plantings or longer-season varieties.

Propargite (Comite) applications are expensive and must be applied before it is certain that the mites will reach economically important levels. Also, because the treatment is made fairly early in the season, little residual chemical will be left to control late-season mite buildups.

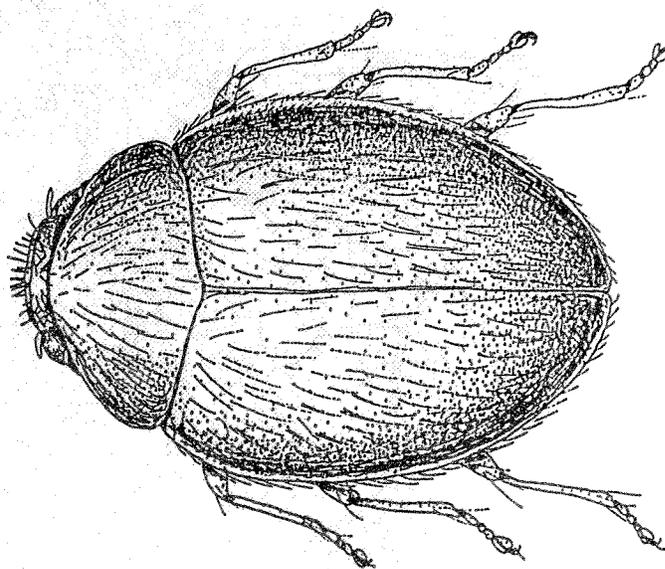
Propargite is, however, less detrimental to beneficial insects than are the other available miticides. Because of this beneficial species often

begin to control the spider mites as the propargite breaks down. Propargite applications also are relatively reliable in controlling both species of mites.

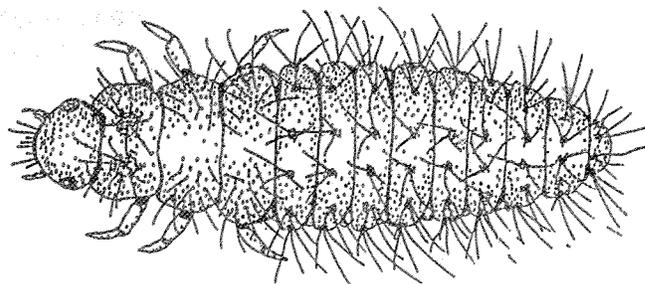
Two decisions must be made in the case of mite infestations that occur after tasseling. The first is whether the infestation is BGM, TSM or a mixture. Use table 1 as a guide in this decision. No registered miticides will reliably control the infestation if it is TSM or a mixture.

If the infestation is all BGM, then a second decision must be made as to whether it would be cost effective to make a treatment. If visible damage exists in the lower third of the plant, and BGM colonies are present in the middle third, then a miticide treatment should be worthwhile. Once the crop has reached the hard-dough stage, no economic benefit will result from the treatment.

Several products are registered for post-tassel mite control, but their effectiveness is variable. In areas where miticide use is common, such as the Arkansas Valley, achieving good post-tassel control is unlikely. The local Colorado State University Cooperative Extension office can provide information as to which products are effective in a particular area.



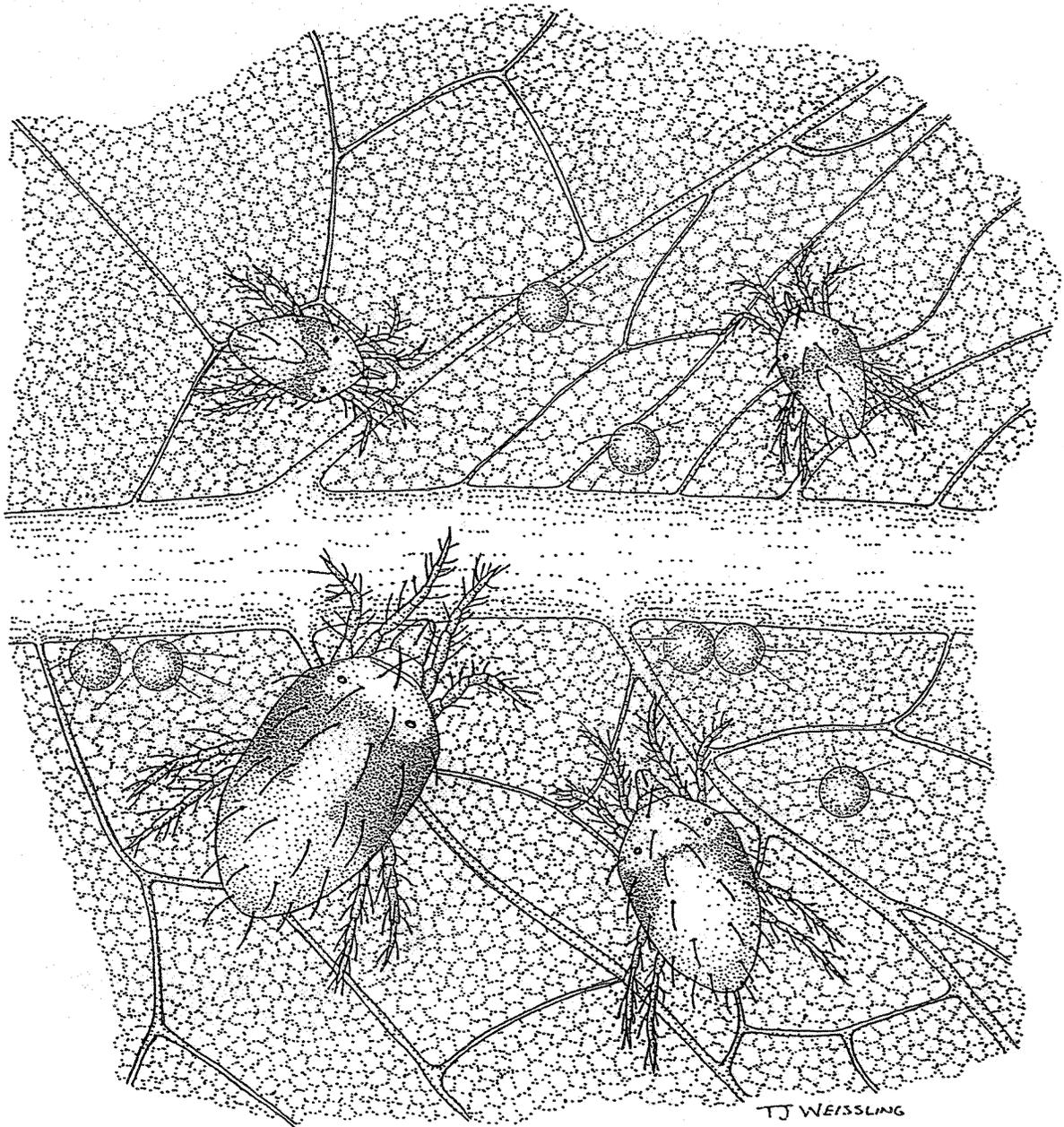
Adult



Larvae

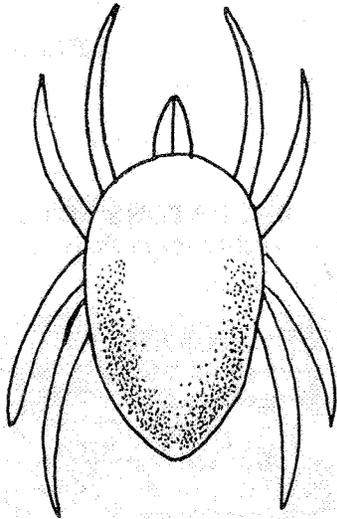
Figure 3: Stethorus lady beetle (spider mite destroyer).

Figure 2: Two spotted spider mite (*Tetranychus urticae*).



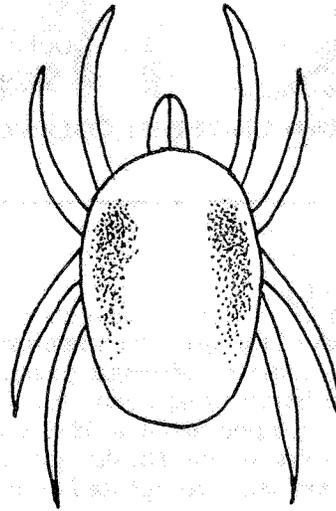
TWO SPOTTED SPIDER MITE
Tetranychus urticae

Table 1: A comparison of banks grass mites and two-spotted spider mites.*



**Banks grass mite
(generalized pigmentation)**

- burn leaves of plant from bottom up
- opposite of leaf from colony; usually yellow
- less webbing
- less robust, smaller
- pointed rear
- more susceptible to miticides



**Two spotted spider mite
(concentrated pigmentation)**

- may occur in high numbers without burning leaves
- opposite side of leaf from colony; usually yellow
- more webbing
- more robust, larger
- rounded rear
- less susceptible to miticides

*The drawings and some information in this table courtesy of T. Holtzer and J. Kalish, University of Nebraska.