Spider Mites in Corn and Their Management

KEY POINTS

- Spider mites often occur in hot, dry conditions, especially in drought-stressed corn.
- The removal of plant sap from the underside of leaves results in a symptomatic scorched or burnt appearance.
- Yellowish or whitish spotting (stippling) on upper leaf surfaces is evidence of mite feeding.
- Timely rainfall, irrigation, natural enemies, and miticides can help control infestations.

Common Mite Species in Corn

Banks grass mite (BGM) (Oligonychus pratensis (Banks)) (Figure 2) and the two-spotted spider mite (TSM) (Tetranychus urticae Koch) (Figure 3) are the common agricultural mite pests found on corn (Zea mays L.) plants. Banks grass mites are more predominant earlier in the growing season while TSMs extend later in the growing season.

**Banks grass mite**

Adult males are dark green with a pointed abdomen and females are larger with a more rounded abdomen (Figure 2). They are commonly found near field edges adjacent to grasses. As the grasses become dry, the mites climb to the tip of the grass plant and disperse into the wind on a silken strand; therefore, they are transported with the wind and go quite long distances. When landing in neighboring corn fields, they start feeding on the undersides of the lower leaves and migrate to the upper leaves as the lower leaves die. They may be present in corn from mid-whorl through the grain-filling growth stages and appear more often in the Western Corn Belt and parts of the arid West.

**Two-spotted spider mite**

Adults are yellow-green with two irregularly shaped dark spots on the abdomen (Figure 3). TSMs move from host plants along field margins into the edge of the field and continue deeper into the field when environmental conditions favor their spread and development. While TSMs are more common in the humid Central and Eastern Corn Belt, dry conditions allow for populations to increase. Infestations are generally more sporadic within corn fields and rarely seen on corn plants before flowering (VT growth stage).

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Figure 1. Spider mite feeding damage (stippling). Photo courtesy of Dr. Pat Porter, Texas A&M AgriLife Extension.

Figure 2. Banks grass mite egg, larva, protonymph, and adult female, and adult male. Photo courtesy of Dr. Ed Bynum, Texas A&M AgriLife Extension.

Figure 3. Two-spotted spider mite adults. Photo courtesy of David Cappaert, Michigan State University. Bugwood.org.
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Life Cycle
Spider mites have 4 life stages: egg, larva, nymph, and adult. Mites may occasionally overwinter in crop residue; however, BGMs overwinter in the crowns of winter wheat (*Triticum aestivum* L.) and grasses, while TSMs in alfalfa and broadleaf weeds. A typical life cycle takes 5-20 days depending on optimum conditions of high temperature and low humidity.\(^1,2,3\) Under ideal conditions, BGM populations can increase 70-fold in one generation.\(^4\) Determining which species is present is important because miticides are labeled for specific species control.

Crop Damage
Spider mites feed on the plant sap on the undersides of leaves resulting in yellowish or whitish spots (stippling) across the upper leaf surface (Figure 1, page 1). Fine silken webs produced by mites can easily be seen with the use of a hand lens. Photosynthesis depends upon living leaf tissue; therefore, without energy being produced because of dead or damaged leaves, the plants can die. Premature plant death can result in yield loss and poor grain quality. Spider mite populations can explode under drought conditions.

Management

**Water.** Proper irrigation and timely rainfall can help reduce the potential for drought-stressed plants and the environment in which the mites thrive. The removal of alternate grass hosts can reduce the potential for populations to increase.

**Beneficial insects.** Predatory beneficial insects such as lady beetles, minute pirate bugs, lacewing larvae, thrips, and predatory mites help keep the mite populations below economic injury level and help reduce their threat.

**Fungus.** Fungal diseases can have a large impact on mite populations; however, the fungal pathogens are severely limited during drought conditions.

**Miticides.** Consider using a miticide with other insecticides if mites are present and other insects warrant control. If other insects are controlled and a miticide is not used, the mite population has the potential to increase rapidly. Prior to any treatment, closely examine and mark 25 infested leaves. After treatment and when a re-evaluation can be safely made, examine the leaves again to determine treatment efficacy. If treatment was effective, adult mites should have been killed; however, eggs may continue to hatch and repopulate the field.

**Chemical treatment may be justified when:**
- The crop is in the early reproductive stages (R1-R4).
- Extensive colonies of live mites are present throughout the field.
- There is visible leaf damage near the ears and a good probability of continued drought/heat stress.
- Table 1 provides economic thresholds for treatment based upon % of infested leaves, the market value of the crop, and the associated treatment cost.

**Guidelines to determine need for potential chemical control:**
- Treat if damage is visible in the lower 1/3 of the plant and mite colonies are present in the middle 1/3 of the plant.
- Treat if active mite colonies are found on 1/3 of the leaves of 50% of the plants.
- Treat if 15-20% of the leaf is covered with mites and their damage.

**A pre-tassel preventative treatment may be warranted only if the field has a spider mite history and:**
- Temperatures are expected to exceed 95 °F.
- Plants are drought-stressed.
- Field was previously treated and natural predators were reduced.
- Mites were found on the majority of the plants early in the growing season.

**Sources:**

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**Table 1. Economic thresholds for mites on corn, based on percentage of infested leaves per plant.**

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