

Spider Mites in Corn

KEY POINTS

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

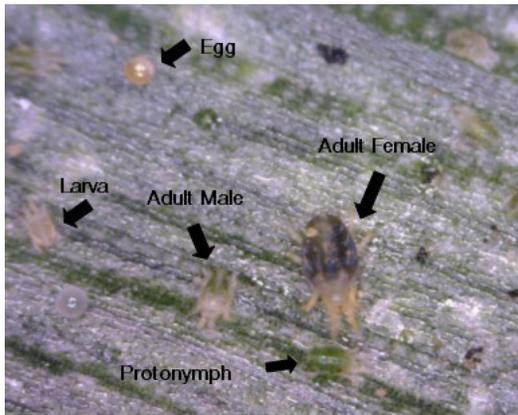


Figure 2. Banks grass mite egg, larva, protonymph, an adult female, and an adult male. Photo courtesy of Dr. Ed Bynum, Texas A&M AgriLife Extension.



Figure 3. Two-spotted spider mite adults. Photo courtesy of David Cappaert, Michigan State University. Bugwood.org.

Description and Biology

Spider mites feed on plant sap on the undersides of leaves which results in yellowish or whitish spots across the upper leaf surface. The appearance of the leaf is referred to as stippling (Figure 1). Fine silken webs, which can be easily seen with the use of a hand lens, are produced by the mites.

Banks grass mite (BGM) (Figure 2) and two-spotted spider mite (TSM) (Figure 3) are the common spider mites found on corn plants with the TSM having a broader host range, while the BGM is associated with only grasses.

Banks grass mite:

- Adult males are dark green with a pointed abdomen; females are larger with a more rounded abdomen.
- Commonly found near field edges adjacent to other 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.
- May be present in corn from mid-whorl through the grain-filling growth stages.

Two-spotted spider mite:

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

Spider mites pass through three immature stages (one larval and two nymph) prior to adulthood. Future generations are dependent on optimum conditions of high temperature and low humidity, and generational interval is approximately 19 days.^{1,2,3} Under ideal conditions, populations can increase 70-fold in one generation.² Determining which species is present is important because miticides are labeled for specific species control.



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

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Spider Mite Impact on the Crop. Because mite injury is more common under drought conditions. The injury by the mites, in conjunction with drought stress, increases the stress on the plant and negatively impact photosynthesis. Premature plant death can result in yield loss and poor grain quality.

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 their potential for population increase.
- **Beneficial insects** - Lady beetles, minute pirate bugs, lacewing larvae, thrips, and predatory mites feed upon BMGs and TMGs and in doing so, help reduce their threat.
- **Fungal diseases** - Fungal diseases can have a large impact on mite populations, but 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 reevaluation 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.
- **Treatment** - is usually 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 there is a good probability of continued drought/heat stress.
 - Table 1 provides economic thresholds for treatment based upon the percentage of infested leaves, the market value of the crop, and the associated treatment cost.

Other guidelines for potential chemical control include:

- 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 to 20% of the leaf is covered with mites and their damage.

A pre-tassel preventative treatment may be warranted if the field has a spider mite history:

- 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:

- ¹Cullen, E. and Schramm, S. 2009. Two-spotted spider mite management in soybean and corn. University of Wisconsin Extension. A3890. <http://corn.agronomy.wisc.edu/>.
- ²Peairs, F. B. 2010. Spider mites in corn. Colorado State University Extension. 5.555. <http://www.ext.colostate.edu/>.
- ³Bynum, E., Porter, P., and Vandiver, M. 2012. Insights from 2012 spider mite problems for future management decisions. Institute of Ag Professionals. Proceedings of the 2012 Crop Pest Management Shortcourse & Minnesota Crop Production Retailers Association Trade Show. www.extension.umn.edu/AgProfessionals. Texas A&M AgriLife Extension. Texas A&M University. <https://www.extension.umn.edu/agriculture/ag-professionals/cpm/2012/docs/UMN-Ext-CPM12-Bynum.pdf>
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Table 1. Economic thresholds for mites on corn, based on percentage of infested leaves per plant.³

Control cost per acre	Market value per acre								
	\$400	\$600	\$800	\$1000	\$1200	\$1400	\$1600	\$1800	\$2000
	Percentage of infested leaves per plant								
\$10	15	10	8	6	5	4	4	3	3
\$20	29	20	15	12	10	9	8	7	6
\$30	44	30	23	18	15	13	11	10	9

Performance may vary from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. 120513121009 052318RDH