Managing Spider Mites in Corn

Spider mite infestations can be common under hot, dry conditions, particularly on drought-stressed corn. Yellowish or whitish spotting (stippling) on leaves is evidence of their presence. Timely rainfall, irrigation, natural enemies, and miticides can help control infestations and protect yield potential.

What to Watch For

Spider mites feed on plant sap on the undersides of leaves which results in yellowish or whitish spots across the upper leaf surface. The symptoms are referred to as stippling (Figure 1). Fine silken webs, that can be easily seen under low magnification 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 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 that are 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.
- Common in corn from mid-whorl through grain-filling growth stages.
- Commonly found 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.
- Move into the field from the edge, from host plants along the field margins.
- More common in the humid Central and Eastern Corn belt; however, dry conditions allow for populations to increase.
- Infestations are usually more sporadic within corn fields and are rarely seen on corn plants before flowering.

Spider mites pass through three immature stages (one larval and two nymph) prior to adulthood. Each generation depends on temperature, can range from 4 to 20 days, and under ideal conditions, populations...
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can increase 70-fold in one generation. Determining which species is present is important because of miticide resistance. An Extension entomologist and/or local Channel TA should be consulted to help determine if resistance has developed to any of the commonly used miticides. Since both species may appear in a field at the same time, treating one species could result in increased populations of the other.

Impact on Crop

The injury by the mites, in conjunction with drought stress, increases the stress on the plant and negatively impacts photosynthesis. Early plant death can result in lost yield potential which has been estimated to be 23% for corn harvested as a grain crop and 17% for silage tonnage.

Tips to Manage

- 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 after application, examine the leaves again to determine treatment efficacy. If the treatment was effective, adult mites should have been killed; however, eggs may continue to hatch and repopulation started.
- Treatment in corn is usually justified when 1) the crop is in the early reproductive stages (R1-R4), 2) extensive colonies of live mites are present throughout the field, 3) there is visible leaf damage near the ears, and 4) there is a good probability of continued drought/heat stress. Table 1 provides economic thresholds for treatment based on the percentage of infested leaves, the market value of the crop, and associated treatment cost.

Guidelines for potential chemical control include: 1) 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, 2) treat if active mite colonies are found on 1/3 of the leaves of 50% of the plants, 3) treat if 15 to 20% of the leaf area 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, the field was previously treated and natural predators were reduced, and mites were found on the majority of the plants early in the growing season.

Sources:

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

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<th>Control cost per acre</th>
<th>$400</th>
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<table>
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<th>Market value per acre</th>
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<tbody>
<tr>
<td>Percentage infested leaves per plant</td>
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</table>

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

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