

Twospotted Spider Mite on Soybean

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Adult twospotted spider mites (TSSM) are very small (ca. 1/60 inch in length), eight-legged arthropods (nymphs have 6 legs) with a black spot on each side of their bodies (fig. 1). Color of the mites is variable ranging from white to light red. The eggs of the mites appear like small, clear or pale marbles when viewed through a good hand lens. The twospotted spider mite is widely distributed and a common pest of orchards and nursery plants. When environmental conditions are hot and dry, spider mites multiply rapidly and can become a major pest of soybeans. Problems on soybean have been increasing over the past 10 years.

Dispersal over a wide area occurs when spider mites are carried on a balloon of their webbing by the wind. If weather conditions are favorable for mite development and population increase in late spring during the growing season, TSSM are often found causing problems throughout the field. However, when environmental conditions do not become favorable for the mite until midsummer to late summer, we usually see infestations only along field perimeters and corners (fig. 2). However, these are only general rules, and growers should monitor the entire field for identification of infestations.

Symptoms

TSSM feed on the underside of the foliage with sucking moth parts and may be very destructive when abundant.

Under hot and dry field conditions favorable to mites, the TSSM thrives on plants that are under stress. The juices that the mites obtain from stressed plants are rich in nutrients and the mites multiply rapidly.

Soybean foliage infested with spider mites initially exhibits a speckled appearance (fig. 3). As plants become heavily infested, foliage turns yellow (fig. 4), then bronze (fig. 5), and finally the leaves drop off the plants as the effect of heavy feeding leads to dehydration and death of the plant.

In a year of a spider mite outbreak, when mite populations are widespread and rapidly multiplying, a field warranting rescue treatment may appear relatively green and healthy. Severely infested fields appear discolored and a potential yield loss may have already occurred due to a loss in vigor of plant growth. Heavily infested stands will exhibit a loss in plant stand.

Scouting

Economic thresholds based on the number of mites per plant have not been established for spider mites on soybeans. However, a scheme for evaluating an infested field based on observations of the presence of mite and feeding injury has been developed. In making an assessment of a spider mite infested field, it is important that one recognize the early signs of mite feeding, which is the stippling or speckled effect that initially appears on

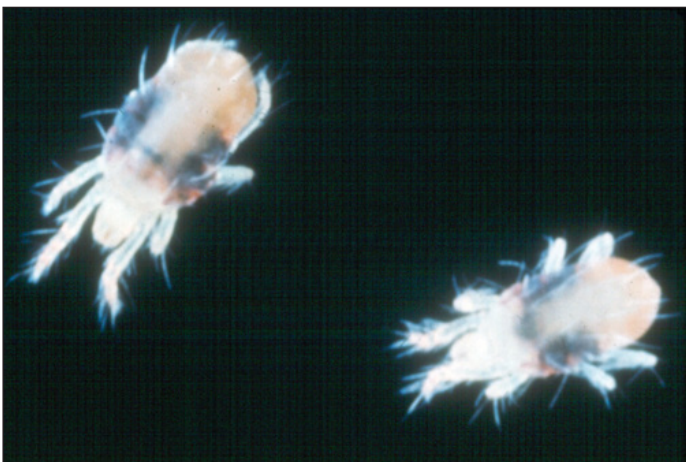


Figure 1. Twospotted spider mites



Figure 2. Mite injury on soybean field edge



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the foliage when foliage is still green. In addition, it is essential that one use a good hand lens to view relative abundance of mites in egg, nymph, and adult stages (fig. 6). The following is a system that can be used to assess a field and determine the need for taking action.

1. Mites are barely detected on underside of leaves in dry locations or on edges of fields. Injury is barely detected. Non-economic population; do nothing.
2. Easily detected on underside of leaves along edges of fields or perhaps on leaves in dry areas throughout field. Most foliage is still green, but yellow stippling caused by mite feeding is becoming detectable on upper side of leaves with the underside showing mite feeding. Still non-economic; warrants close monitoring.
3. Many plants are infested when examined closely, with plants showing varying degrees of stippling. Possibly some speckling and discoloration of some of the leaves. These plants may be limited to field edges, but also might be found throughout field. Field edges might be showing signs of injury. Economic population developing; rescue treatment warranted. Consider entire field spray if mites are common throughout field.
4. All plants in area, whether along field edge or within field, are heavily infested. Plants are discolored with wilted leaves, usually obvious from a distance. Severe injury occurring. Economic population; rescue treatment will save field.
5. Extremely high TSSM densities, with much of the field discolored, stunted, with many plants dying down or already dead. Economic population; rescue treatment will only be beneficial if new growth occurs following late summer rain.

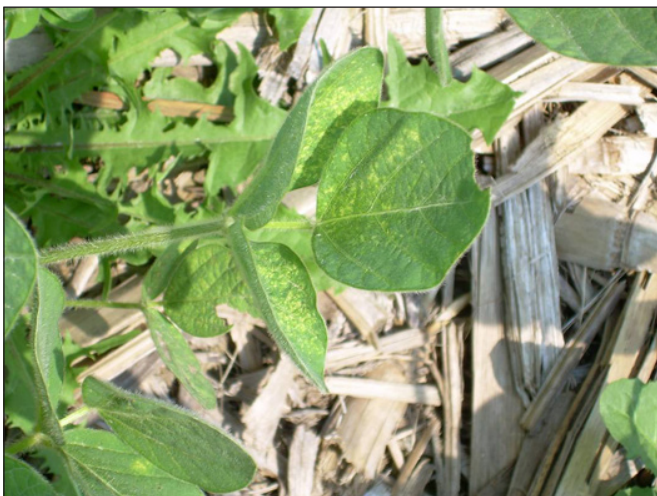


Figure 3. Soybean leaves showing speckling

Management

When conditions are optimal for spider mite outbreaks, that is, hot and dry conditions, early detection facilitates timely and effective rescue treatment. If an infestation is detected early and is only along the field edge, growers can often obtain effective management of TSSM by making a field edge miticide treatment, spraying along the edge one or two passes with the spray boom into the field beyond noticeable mite infestation. If a grower determines that the mite infestation is throughout the field, the best course of action is a whole field miticide application. When rescue treatment is required for control of spider mites, the efficacy of a control treatment is improved significantly if the treatment is applied by ground rigs with sufficient carrier applied at high pressure in a manner to penetrate the foliage.

Since mite development is linked to host plant stress, cultural practices and varieties that limit plant stress in times of drought will also minimize the development of spider mites. Spider mite activity may be adversely affected by the onset of rains depending on the level of mite infestation established. Rains may have a negative effect on a minor infestation. However, well-established mite populations may tolerate significant rains, especially if host plants are already in a condition of stress.

Currently, there are only a few insecticides that are also miticides that are able to effectively control mites—two that are familiar, with a third being relatively new to soybean. The more common ones are dimethoate and chlorpyrifos; the latter being sold under different trade names, the most well known being Lorsban. Another miticide recently labeled on soybean is bifenthrin, which is available alone or in combination with other insecticides. Although a few of the pyrethroids are labeled for TSSM,



Figure 4. Soybean leaves showing yellowing



Figure 5. Soybean leaves showing bronzing and dying

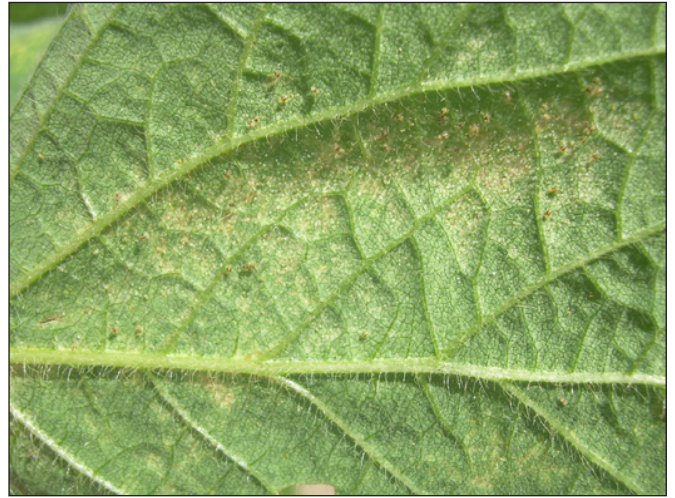


Figure 6. Underside of soybean leaf showing mites

they are listed as “suppression only”; because of this, we do not recommend them. When using a chlorpyrifos formulation, the label states that when large numbers of eggs are present, fields should be scouting again within 3 to 5 days. If newly hatched nymphs are present, a grower should make a follow-up application of a non-chlorpyrifos product that is effective against mite. The primary reason for using a non-chlorpyrifos product

is that the label also states a specific use restriction of not making a second application of chlorpyrifos within 10 days of the first application.

See Ohio State University Extension Bulletin 545, *Control of Insect Pests of Field Crops*, for those miticides labeled for twospotted spider mites, or for all materials labeled on soybean. Bulletin 545 can be accessed at <http://entomology.osu.edu/ag/>.

This publication refers to pesticide recommendations in Bulletin 545 that are subject to change at any time. These recommendations are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Due to constantly changing labels and product registration, some of the recommendations given in this writing may no longer be legal by the time you read them. If any information in these recommendations disagrees with the label, the recommendation must be disregarded. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The authors, Ohio State University Extension, and the Ohio Agricultural Research and Development Center assume no liability resulting from the use of these recommendations.

Additional information is available from your local OSU Extension office or The Ohio State University Entomology Agronomic Crops Insects web site (<http://entomology.osu.edu/ag/>).

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