



ENTOMOLOGICAL NEWS



Plant Protection and
Weed Control

Insect Highlight

Soybean Gall Midge (*Resseliella maxima*)

Soybean gall midge (*Resseliella maxima*; SGM) was discovered in Kansas for the first time last week. Nebraska researchers found the midge in Marshall and Nemaha County, close to the Kansas-Nebraska border. Presumably native to the midwestern United States, sweet clover was a known host for the midge. Over time, the midge assumedly acquired another, more economically significant, host—soybean.

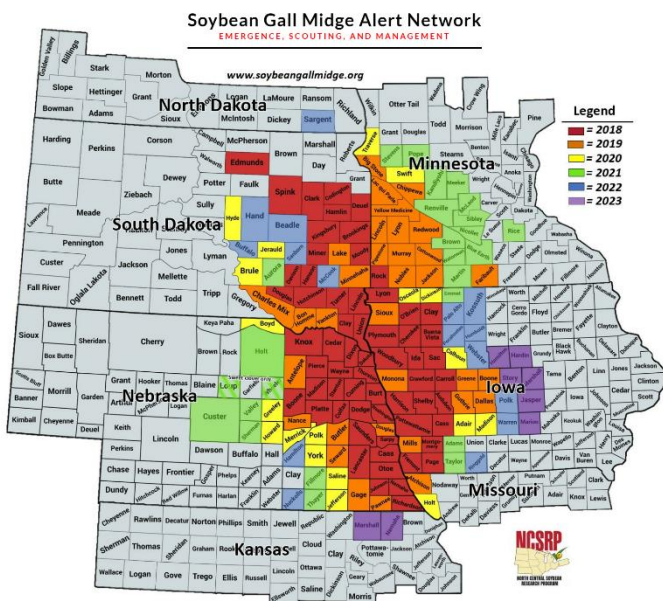
Once considered a secondary, opportunistic pest, the insect was first identified in 2011 feeding on damaged and diseased soybean in Nebraska. In 2016, SGM larvae were found on healthy soybean, and in 2018, widespread infestations coupled with plant injury were observed in soybean fields across 65 counties and three states. The pest is now present in 164 counties among seven states (North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Missouri, and Kansas).



Adult soybean gall midge with signature dark and light-banded legs (left). Older, orange SGM larvae infesting a soybean stem (right).

Lifecycle. Adult soybean gall midges are small, about ¼ inch long. They have orange abdomens and distinct dark and light-banded legs. Adults emerge from the soil in early June. Because they are not good fliers, the adult midges look for the nearest soybean plant after emergence. Once there, female midges lay their eggs inside the soybean stem near the base of the plant, close to the ground. V2 plants and older are susceptible to midge egg-laying, likely due to the natural fissures that occur along the soybean stem that allow females ease of access for egg-laying. The young larvae, or maggots, are white with few defining features. Older larvae turn orange in color. After hatching, the larvae go through three instars, or growth stages, before dropping out of the stem and onto the ground. SGM overwinters in the soil as mature larvae or pupae. In Nebraska, researchers recorded adult activity from June through August, thus, there are likely two generations per year.

Damage. Larvae are the life stage that cause plant injury. The larvae feed on the tissues within the soybean stem and disrupt the flow of nutrients and



Current map of SGM-infested counties in the Midwest.

water through the plant. Infested stems will darken and begin to form lesions. Gall formation along the stem is sometimes observed, but not always. The stem itself will feel spongy and the skin of the stem in this area can be easily peeled away. Infested soybean plants wilt and die or break off at the site of larval feeding, typically at ground-level.

Monitoring. Infestations of soybean gall midge are found along the edges of soybean fields and are typically confined to these areas. To scout for SGM, look for blackening and lesions at the base of the stem. Symptoms of infestation may be mistaken for different types of fungal pathogens. Peel away the initial layer of the damaged stems where the lesions are present, this will reveal orange and/or white SGM larvae. Adult SGM are rarely seen in the soybean fields.



A mix of white and orange colored SGM larvae infesting a stem.

Future Directions. The soybean gall midge is a relatively new agricultural pest, as such, there is little known about the insect. Effective control strategies for the pest are unknown. Some management tactics under investigation include hilling around the base of the soybean and delaying planting time. Current research is also studying insecticide application methods and soybean genetics to suppress larval populations. This year, a parasitic wasp of SGM larvae was the center of an exciting new discovery that may be another tactic for SGM control. For now, existing management strategies emphasize scouting for damaged soybean and SGM larvae.

To receive the latest distribution updates for soybean gall midge and scouting tips, go to soybeangallmidge.org



Ashley Dean, Iowa State

Soybean with lesions on stem due to SGM larval feeding (top). Infested soybean stems will often break off at the base (bottom).

References

1. Dean, A. and E. Hodgson. Soybean gall midge. Extension and Outreach: Integrated Crop Management, Iowa State University. Accessed 2023-6-23.
2. Koch, R., G. Melotto, and A. Lindsey. 2023. A new species of parasitic wasp found attacking soybean gall midge. University of Minnesota Extension: Minnesota Crop News, University of Minnesota.
3. McMechan, A.J., E.W. Hodgson, A.J. Varenhorst, T. Hunt, R. Wright, and B. Potter. 2021. Soybean gall midge (Diptera: Cecidomyiidae), a new species causing injury to soybean in the United States. *Journal of Integrated Pest Management*, 12(1): 8; 1–4.
4. McMechan, J. and T. Hunt. 2021. Soybean gall midge identified in eight additional Nebraska counties. Institute of Agriculture and Natural Resources: CropWatch, University of Nebraska-Lincoln.



Locally...

What Are Those? These are Argus tortoise beetles! Native to North America, both adults and larvae of this beneficial species feed on bindweed, an invasive, vine-like weed that is difficult to control. The beetles pictured here were found in Riley County at the Kansas State University Gardens. While the beetles munch on the occasional sweet potato or morning glory leaf, they are overall a neat insect to have around.

For more information on pests, surveys, and current quarantine regulations, please visit agriculture.ks.gov/insects

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