



Soybean Gall Midge: An Insect We Happily Did Not Find in Illinois During 2020

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It's not here yet, but there's a new soybean pest approaching on the distant western horizon. Illinois entomologists were part of a project to survey for it in Illinois during the 2020 growing season.

Resseliella maxima Gagne' (Diptera: Cecidomyiidae), the soybean gall midge (SGM) is a newly-identified pest capable of causing heavy damage in soybean (Gagne' et al. 2019). Economic damage occurs when the bright orange larvae of the midge (a type of small fly) (Figure 1) feed on the phloem and xylem (vascular tissues) at the base of soybean plants (Figures 2 & 3). Plants that are not killed by an infestation are likely to experience reduced yield. Additional losses are possible due to lodging of weakened plants. Most heavy damage (complete yield loss) is confined to areas within 100 feet of field edges, with 20% yield loss possible within 200-400 feet of the field edges (Figure 4).

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Figure 1. Adult Soybean Gall Midge Collected from Emergence Cages at the Eastern Nebraska Research and Extension Center Near Mead on August 2, 2018. Adults Are Approximately ¼ Inch in Length with An Orange Abdomen (Not Visible Under the Wings). A Key Characteristic Is the Black and White Banding on Its Legs. (Photo by Justin Mcmechan, University of Nebraska – Lincoln)



Figure 2. Large Numbers of Soybean Gall Midge Larvae within an Infested Stalk. (Inset) Less Developed Larvae Appear White Until the 3rd Instar. (Photo by Justin Mcmechan, University of Nebraska – Lincoln)



Figure 3. Darkened Area at the Base of a Soybean Plant with Soybean Gall Midge Larvae. (Photo by Justin McMechan, University of Nebraska – Lincoln)



Figure 4. The Distribution of Damaged or Dead Soybean Plants from the Field Edge. (Photo by Justin McMechan, University of Nebraska – Lincoln)

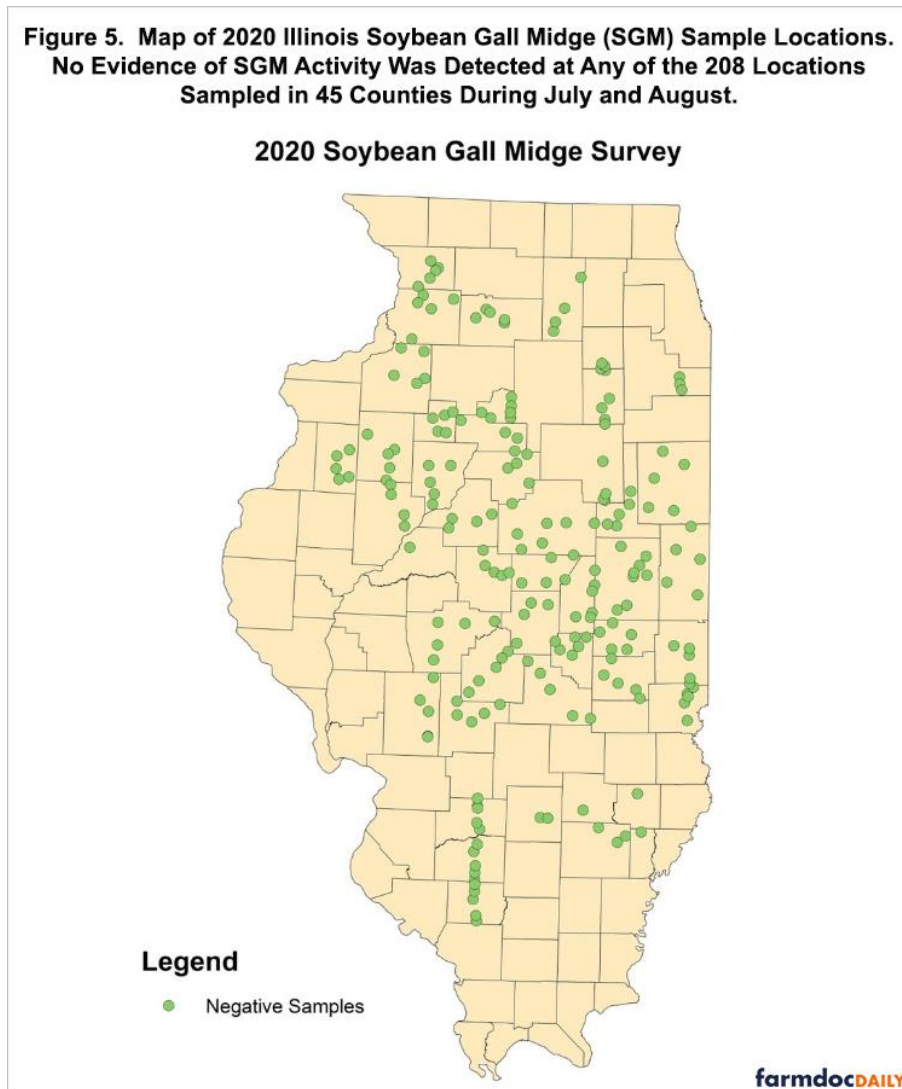


The SGM overwinters as a larva in the soil of the soybean field, they pupate and emerge as adults in June and July. Subsequent infestations are most likely on the edges of soybean fields that are adjacent to soybean fields that were infested during the previous year. Adults are believed to lay eggs at the base of soybean plants. Early indications of an infestation may include discoloration of plant stems near the soil interface, more advanced infestations may manifest as wilting or dead plants. Peeling back the epidermis of an infested stem will reveal the presence of bright orange larvae. There are multiple generations each year. University of Nebraska data suggest that there is no single approach that will manage SGM. University of Nebraska has published some considerations that may help growers manage fields at high risk from SGM (<https://cropwatch.unl.edu/2020/2020-soybean-gall-midge-alert-network>).

Illinois had a surveying role in a large regional SGM sampling project supported by Checkoff funding through the North Central Soybean Research Program (NCSRP). The project, “Soybean Gall Midge: Surveying the North Central Region, Adult Monitoring and Host Plant Resistance”, was focused primarily on regions to our west where SGM was first discovered in 2018 and the expanding area of infested counties. During 2020, infestations in 19 additional counties were documented, bringing the total number of infested counties to 114 across South Dakota, Nebraska, Minnesota, Iowa, and Missouri. The nearest

infestation to an Illinois border is >140 miles away in Central Iowa. The current distribution of infested counties is available at: <https://soybeangallmidge.org/>

Despite travel challenges associated with COVID-19 restrictions, during the summer of 2020, we sampled 208 soybean fields in 45 Illinois counties. No evidence of SGM activity was detected anywhere in Illinois during our July-August survey. The Illinois map of sampled locations is presented below (Figure 5).



Though the 2020 monitoring effort was funded for only one year, we will continue monitoring for SGM in 2021 and beyond.

University of Nebraska is hosting a series of free SGM webinars for midwestern producers on January 5th, 12th, and 15th. The webinars will cover SGM identification, ecology and management; registration is required. For details see: <https://cropwatch.unl.edu/2020/unl-host-free-soybean-gall-midge-webinar-midwestern-producers>

We encourage Illinois producers to photograph and report any suspected SGM damage observed in Illinois soybean fields during 2021.

Reference

Gagne, R., J. Yukawa, A.K. Elsayed, and A. J. McMechan. 2019. A new pest species of *Resseliella* (Diptera: Cecidomyiidae) on soybean (Fabaceae) in North America with a description of the genus. *Proceedings of the Entomological Society of Washington*. 121(2): 168-177.