Research and Extension on Emerging Soybean Insect Pests in the North Central Region

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Overview of Project Objectives

This project continues a holistic and programmatic approach to integrated insect pest management and involves collaborative work on soybean gall midge, stink bugs, and aphid-resistant soybean varieties. The team will expand the soybean gall midge emergence monitoring program and screen germplasm for midge resistance traits to help with breeding midge-resistant soybean varieties. They will explore mowing and tillage as cultural controls and conduct surveys in new areas to determine the midges' range. The team will also review sticky traps and pheromone lures for stink bugs for better scouting, and test new insecticide chemistries and resistant soybean varieties for aphid management.

Key Results

The team monitored 20 sites for soybean gall midge and found the timespan of adults averaged 24-30 days. Some growers reported successful insecticide applications after receiving alerts from the Soybean Gall Midge Blackboard Connect system. This system grew to 613 subscribers in 2024 and the www.soybeangallmidge.org website had more than 14,000 visitors from all U.S. states and 72 countries. The team identified a significant number of soybean accessions with low levels of gall midge damage, although no varieties eliminated gall midge larvae entirely. Tillage and mowing research was conducted with variable results. Gall midge was detected on an additional 3.9 million acres at the county level, bringing the total to 19.2 million acres in the U.S.

Stink bug pheromone lures and sticky trap tests for easier scouting were conducted across 12 states. There was a strong correlation between brown marmorated stink bugs caught on cards and through sweeps, indicating that cards with lures at field edges are an appropriate monitoring tool.

Three soybean aphid populations were tested for resistance to Transform, Sefina, and Sivanto insecticides as some aphids are becoming resistant to the pyrethroids. Funding this year allowed work to pivot to the soybean tentiform leafminer, an insect new to soybeans. Field experiments were performed to measure its abundance and to quantify soybean injury from this pest. Results will be presented at a later date.

In aphid-resistant soybean variety tests, none of the sites showed a significant difference in yield between aphid resistant varieties that were sprayed vs. unsprayed across the three years. This suggests that insecticide is not needed to augment the effectiveness of aphid resistant varieties.

The aphid suction trap network has been operating since 2005 across 10 states and 30 locations, with support from NCSRP and others. This project made it possible to study soybean aphid populations and monitoring of soybean thrips and viruses they carry. Results will be presented at a later date.

Benefit to Farmers

The research team worked with farmers to identify their top priorities for insect pest management, which included the emerging threat of soybean gall midge; the need for improved scouting methods to increase the use of thresholds for pest management; soybean aphid insecticide resistance and effectiveness of aphid-resistant soybeans; the need for pest monitoring and alerts; and the importance of communicating unbiased, research-based pest management information to farmers and their consultants. Addressing these objectives will help farmers to be better informed about the pest problems in their fields and the best ways to monitor and manage them most profitably.

Links

Research and Extension on Emerging Soybean Pests in the North Central Region
USB National Soybean Checkoff Research Database

Nebraska Research is Gathering Data on Newest Soybean Pest
SRIN article

A North American Moth is Expanding its Turf to Soybeans
SRIN article

Soybean Gall Midge Alert Network website