



Practical Management of Nematodes on Crops

This project gave crop producers more environmentally sound and effective methods for controlling nematodes and provided plant breeders with detailed information to guide future plant breeding efforts.

Who cares and why?

The North Central Region includes major production areas of corn, soybeans, and small grains. All of these crops are susceptible nematode (worm) parasites, such as the soybean cyst nematode, that are highly invasive. Parasitic nematodes cause billions of dollars in losses to food and fiber crops each year. Management of these serious plant pests is difficult because 95% of them reside in the soil. Developing and growing plants that are resistant to nematode parasites is the most environmentally sound management practice, but it is not available and/or practical for all crops. Chemical control is another option, but is often ineffective and can be hazardous to the environment and farm workers. Thus, there is an urgent need to improve and integrate management tactics for control of widespread, persistent nematode parasites.



The soybean cyst nematode, shown here with its egg at 1000x magnification, is a widespread plant parasite. Photo courtesy of USDA..

What has the project done so far?

NC-1035 scientists have developed a standard testing protocol for soybean cyst nematode (SCN) germplasm evaluation so that data can be optimized and shared across state lines. Scientists have analyzed nematode communities, especially the distribution of SCN populations that are capable of reproducing even on soybean breeds that are supposed to be resistant to the parasite. Researchers have identified fields with different levels of SCN and have collected data to determine the invasiveness of SCN in different areas. The group has also developed a database on long-term nematode community structure and has made it available to researchers. Reaching out to a broader audience, the NC-1035 team has co-sponsored workshops to share the latest research news and information.



Soybean cyst nematode on soybean roots. Photo courtesy of USDA-ARS.

Impact Statements

Brought together scientists from across the region, drawing a more complete picture of soybean cyst nematode variability, invasiveness, and impacts.

Developed management tools that have been used by growers across the region and demonstrated the importance of integrating various management tactics for SCN control.

Provided soybean breeders with objective and independent evaluations of the impact of SCN on commercially available soybean breeds, guiding future breeding strategies.

Determined environmental conditions that favor the build up of SCN in fields, helping farmers make good land and business management decisions that reduce nematode populations or limit their spread. For example, extending soybean production into areas not traditionally used for soybean productions promotes the spread of SCN.

What research is needed?

More information on the complex interactions between nematodes and crop plants is needed, so that agronomists, plant breeders, and farmers can develop and use effective and environmentally sound SCN control tactics. Tactics that make better use of biological control and cultural practices should be explored.

Want to know more?

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Edited and designed by Sara Delheimer



Soybean cyst nematodes cause serious damage to soybean fields. Photo courtesy of Purdue University Extension.