# An Integrated Approach to Enhance Durability of SCN Resistance for Long-term, Strategic SCN Management (Phase III)

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## Overview of Project Objectives

Scientists continue to search within the soybean cyst nematode genome for traits that can help fight this problematic pathogen. The project enables scientists to develop more efficient SCN management practices. The main challenge is identifying SCN virulence genes to understand how the nematode adapts to reproduce on resistant soybean varieties. The team also is testing new soybean germplasm and management strategies to provide farmers with additional tools for SCN resistance beyond PI 88788- and Peking-type varieties.

## Key Results

The research team has made tremendous progress in accomplishing project goals. The Baum lab has generated large amounts of DNA sequencing across seven life stages of SCN to improve the gene annotations or find locations of individual genes on DNA sequences. The Mitchum group initiated cloning and characterization studies for several virulence genes and analysis is ongoing to determine gene structure and organization in the new SCN genomes.

The field trial portion of the project has progressed as well. Soybean plants were harvested for seed to plant the following crop year and soil samples were collected from each plot to determine SCN egg population densities and virulence on several different SCN-resistant soybean genotypes. The breeding group at Illinois is coordinating the HG testing, with 140 lines used for HG screening. The group is compiling the data for all the regional trials. The Scaboo group has completed successful soybean backcrossing for three major genes associated with resistance to virulent nematode populations. They are identifying new QTLs for introgression into the breeding program for cultivar development, including the new resistance gene GmSNAP02.

## Benefit to Farmers

The genetic resources developed and knowledge gained from this project will provide immediate and long-term benefits to soybean producers and researchers in both the private and public sector. New lines developed with resistance to novel SCN virulence genes and gene products will protect growing soybean plants and help reduce SCN populations in soybean fields.

## Links

[An Integrated Approach to Enhance Durability of SCN Resistance for Long-term, Strategic SCN Management (Phase III)](#)
*USB National Soybean Checkoff Research Database*

[Researchers Continue to Strengthen and Refine Soybean SCN Resistance](#)
*SRIN article*