

# NCSRP: Paving the Way for Better Breeding & Genetics

Gone are the days of hoping for the best when creating soybean crosses that deliver specific traits and higher yields. With the tools and technologies available now and support of the soybean checkoff, the North Central Soybean Research Program (NCSRP) has created steppingstones to pave the way for new varieties more quickly, more accurately and with better yield potential and composition.

## CRITICAL PARTNERSHIPS

NCSRP collaborates with USDA's Northern Uniform Soybean Tests (NUST) to evaluate yield, disease resistance and quality traits of public breeding lines found in the northern U.S. and Canadian provinces. Since 1941, the goal of NUST has been to assess for further use the best public research experimental soybean lines across 10 maturity groups.

## SOYBASE

To meet the goal of increasing genetic gain for yield and composition and more, NCSRP researchers also built a breeding database known as SoyBase that is housed within the community-supported USDA repository for soybean genetics and genomic data. As this platform grows, public breeders will be able to access the data for use in their breeding efforts. The database and workflow of software tools will additionally allow breeders to interact and team up.

## SOYGEN

The multi-year, multi-organization Science Optimized Yield Gains across Environments (SOYGEN) project leverages NCSRP partnerships, advancing new and existing checkoff-funded research to increase genetic gain for yield and seed composition. Through the ongoing effort, researchers seek to understand the functions of genes that underlie major traits and will elevate standardized collaborative field trials, create a genomic breeding facilitation suite and maximize use of USDA's Soybean Germplasm Collection as a foundation for success.

## EXPANDING PATHWAYS

A genome-wide analysis for each seed composition trait within the USDA Soybean Germplasm Collection has combined multi-year, multi-location phenotype data with existing genotype data for researchers to now access. Environmental data also is being added to NUST and genotypic data is being channeled into NUST and soybean cyst nematode regional trials to facilitate and expand the yield and quality breeding objectives. Down the road, the genomic breeding facilitation suite will feature both genotyping breeding lines and genomic analyses.

**13 NCSRP MEMBER STATES REPRESENT MORE THAN 355,000 SOYBEAN FARMERS**



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The Soybean Research and Information Network (SRIN) is a joint effort of the North Central Soybean Research Program and United Soybean Board. The online resource contains checkoff-funded soybean production challenge research findings with direct links to the respective underlying scientific studies housed in the National Soybean Checkoff Research Database.

Funded by the soybean checkoff