

NORTH CENTRAL SOYBEAN RESEARCH PROGRAM 2021 RESEARCH REPORT



The NCSRP draws its funding from 13 state checkoff boards: North and South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, Ohio and Pennsylvania. Farmer leaders, state staff and funded researchers work together to prioritize, monitor and communicate the basic and applied science efforts on behalf of more than 400,000 soybean farmers in the region, representing more than 85% of the nation's soybean production.

“NCSRP-funded research is the best return on investment for soybean farmer checkoff money spent in that area. Teams collaborate across universities and disciplines to use the money efficiently. When researchers work together, there is a synergy that adds value to the research results available for farmers to enhance their soybean production.”

Suzanne Shirbroun, soybean farmer and NCSRP vice president from Farmersburg, Iowa



LETTER FROM THE PRESIDENT

Ed Cagney, Scotts, Michigan



Lower input costs combined with high soybean prices opened the door to greater profitability for farmers in the North Central region in 2021. Many saw near-record yields and production.

But with that came challenges, including new disease pressure, more herbicide-resistant weed development and the introduction of insects not previously seen in soybeans. At the same time, Mother Nature continued to hurl unprecedented and extreme weather conditions at us that alter the way we address soybean production today and how we will into the future.

Fortunately, despite the pandemic and its roadblocks, the NCSRP board was able to safely meet in person twice this year. Getting together allows us to have robust discussions as we determine where to best invest soybean checkoff dollars in research that leads to improved return on investment. This is my second time to serve as president, and we continue to place a high priority on leveraging dollars with collaborative

partners to make the most of resources entrusted to us.

The NCSRP board funded 10 research projects in FY21. Given previous research success, we continued to focus primarily on those large projects that are multifaceted, multidiscipline, multistate research and outreach programs that encompass several objectives. And while it may be hard to calculate the exact payoff of these projects in dollars and cents, I can say with confidence over time that there has been a return in improving production practices and fine-tuning pest control measures to be the most effective, efficient and sustainable possible.

I encourage you to read through the individual project summaries online at www.NCSRP.com and take a deeper dive into the projects on the National Soybean Checkoff Research Database at soybeanresearchdata.com to understand the work underway, where it has been and where it is going.

As we face another season, I want to thank the farmers involved with the NCSRP. I appreciate the opportunity again to lead the board as your NCSRP president.

FROM THE EXECUTIVE DIRECTOR

Ed Anderson, Ph.D., NCSRP Executive Director eanderson@iasoybeans.com



There's been plenty written about the pandemic and disrupted individual lives, businesses, organizations and global economies. From a soybean research perspective, farmer leaders, state staff and

funded researchers were able to continue in 2021 to prioritize, fund, monitor and communicate important basic and applied science efforts on behalf of more than 400,000 soybean farmers across 13 NCSRP states and for the broader soybean industry.

As challenging as 2021 was, the NCSRP made necessary adjustments to fulfill its mission of bringing value to farmers from meaningful programs that are highly collaborative and uniquely appropriate in addressing soybean farmer needs across the North Central Region. I am honored to work with such dedicated leaders who understand that investing in the most important soybean research with the most competent researchers, teachers and Extension experts brings the greatest return on investment to those who pay into the soybean checkoff.

The North Central Soybean Research Program (NCSRP) has found its recipe for success. Since 1992, NCSRP has championed broader collaborations proven to move more quickly and effectively in providing farmers with a solid return on their checkoff investments. NCSRP has funded \$56 million in soybean research, building the partnerships needed to deliver results.

Some of the current general project areas include:

**Improving soybean
agronomics and
production through
on-farm research**

**Taking multifaceted
approaches to enhancing
genetic gain**

**Increasing yield and
soybean seed quality and
composition**

**Exploring gene editing
and mechanical weed seed
destruction technologies**

**Characterizing and managing significant
soybean diseases, insect pests and weeds**



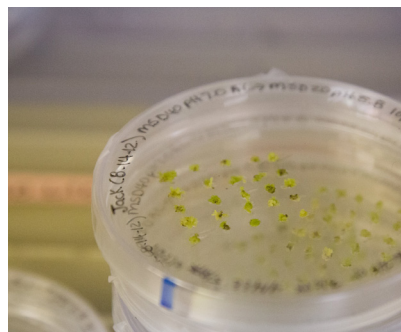
Individual NCSRP research project
summaries can be found online at:

NCSRP.com and SoybeanResearchInfo.com



PROJECTS FUNDED IN FY2021:

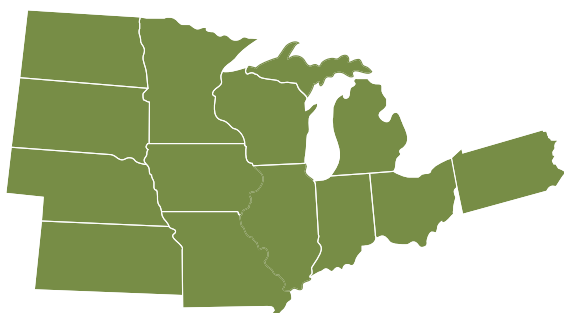
- Boots on the Ground: Validation of Benchmarking Process Through Integrated On-Farm Partnership
- SOYGEN 2: Increasing Genetic Gain for Yield and Seed Composition Developing Tools, Know-How and Community among Public Breeders
- Non-Transgenic Generation of Herbicide Resistance in Soybeans Using CRISPR Base Editing
- Multi-Pronged Strategies for Efficient, Sustainable and Durable Control of Sclerotinia Stem Rot
- Second SCN Coalition: Resistance Management and Awareness Campaign
- Integrated Approach to Enhance Durability of SCN Resistance for Long-Term Strategic Management
- Developing an Integrated Management and Communication Plan for Sudden Death Syndrome
- Soybean Entomology: Management and Outreach for New & Existing Pests in North Central Region
- Soybean Gall Midge: Identifying Management Opportunities for an Emerging Soybean Pest
- Comparison of Non-Chemical Control Methods as Part of an Integrated Weed Management Strategy



“Research supported by NCSRP ensures major soybean producing states are not duplicating projects and makes the entire research industry more resourceful. Farmers can know a portion of their checkoff dollars are streamlined into funding avenues that directly yield crucial seed development, pest management and fertility answers applicable across the entire region.”

Heather Beaner, soybean farmer and NCSRP director from Millette, South Dakota

2021 NCSRP BOARD OF DIRECTORS



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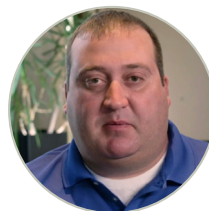
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The North Central Soybean Research Program (NCSRP) is recognized as a leader in multistate collaborative research and outreach efforts to support soybean farmers and drive the soybean industry forward. The focus of NCSRP is soybean production research and Extension outreach. NCSRP's emphasis on enhancing and protecting soybean yield through genetics and agronomic practices contributes to soybean farmer success today and tomorrow.



Mission:

NCSRP will serve as a bridge between state and national soybean organizations and will be the recognized leader in funding and communicating basic and applied soybean research programs that are highly collaborative and uniquely appropriate in addressing soybean production, profitability and environmental sustainability for growers across the North Central region.

Guiding Statements:

- 1.** NCSRP Executive Board will review overall program impact and success and establish specific research priorities of regional importance on a five-year cycle (e.g. key diseases, insects, production practices, etc.).
- 2.** NCSRP-funded programs and projects will not be redundant with current state (QSSB) or nationally (USB) funded programs but may complement and extend state or nationally funded projects when addressing the common interests and needs of North Central region soybean growers.
 - NCSRP will maintain communication and collaborative connectivity with QSSBs and the USB to maintain awareness of state and national soybean research priorities and funding.
 - Regional researchers submitting proposals for NCSRP funding must provide clear statements of research being funded by a QSSB or the USB.
- 3.** Multiyear research project or program proposals will be accepted for funding consideration, but annual renewal will be predicated on successful generation and communication of meaningful annual results.
- 4.** NCSRP emphasizes the collection, compilation and dissemination of research results through appropriate peer-reviewed

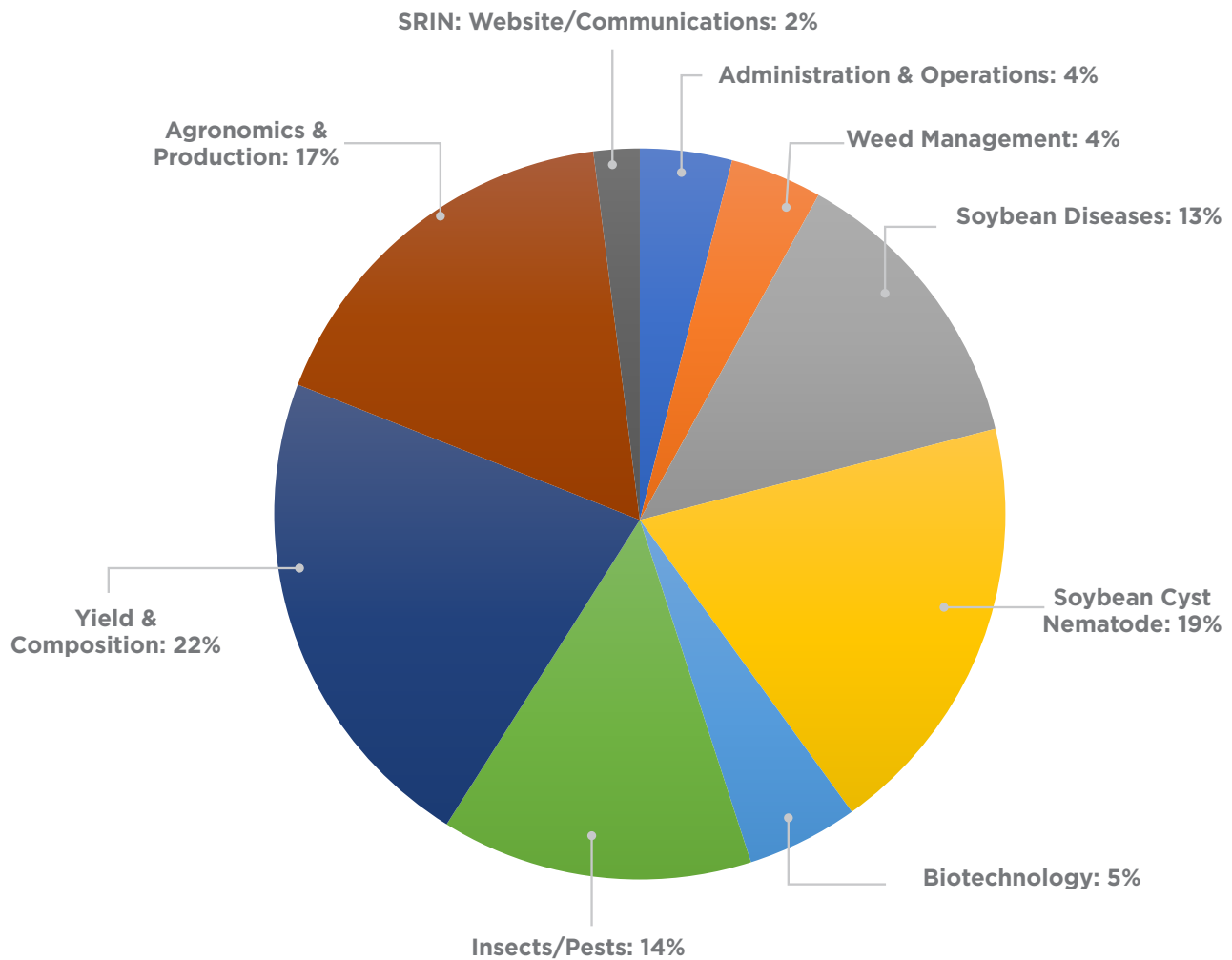
scientific abstracts and journals, Extension publications, farmer-focused bulletins, appropriate websites (Soybean Research & Information Network) and databases (National Soybean Checkoff Research Database).

Collaborative Soybean Research Objectives and Priorities:

- 1.** Soybean yield and quality enhancement through genetic improvement and biotic and abiotic stress mitigation for soybean maturity groups 00-IV.
 - Classical and molecular soybean breeding efforts that will enhance yield potential and yield stability clearly focused to the North Central region.
 - Research that addresses the control of insects and diseases (defensive traits) with consistent or potentially significant economic impacts across the North Central region.
 - Research that addresses weed resistance to herbicides for species of common occurrence and threat across the North Central region.
 - Research that addresses soybean response to water, nutrients, soil and environmental conditions unique to the North Central region.
- 2.** Soybean production practices that will increase yield, profitability and environmental stewardship issues specific to the North Central region.
 - Soybean-corn rotations
 - Plant populations, row spacing and input management
 - Water quality and watershed planning
 - Cover crops and other conservation agronomy
 - Soybean production sustainability and life cycle assessment.

FY2021 BUDGET

State Contributions: \$3,750,000
USB Partial Support for Operations and SRIN) : \$230,000



NORTH CENTRAL SOYBEAN RESEARCH PROGRAM
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funded by the soybean checkoff