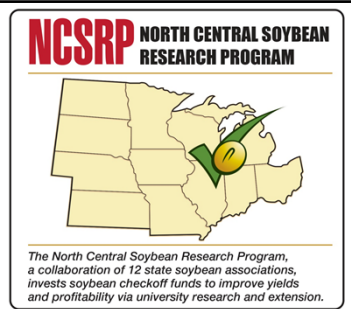




North Central Soybean Research Program



Ed Anderson

Sr. Director of Research – Iowa Soybean Association

Executive Director – North Central

Soybean Research Program



North Central Soybean Research Program



Brief History & Overview:

- **1990 Farm Bill and 1991 National Soybean Check-off**
- **More emphasis and flexibility for soybeans and significantly more dollars available**
- **1992: Small group of farmers came together to increase coordination of regional research efforts across the Midwest**
- **Bylaws**
- **Incorporated as a Research Foundation**
- **Initial administration, leadership and focus were challenging**
- **State QSSB staff leaders and key farmers worked to refine and lead**



North Central Soybean Research Program



Brief History & Overview (Cont):

- The small group of Midwest state QSSBs united to pool financial and farmer oversight resources to accomplish research objectives with regional focus and collaboration
- Eventually, NCSRP membership grew to include all 12 Midwest states
- Twelve farmers, one from each member state, serve equally as the NCSRP Board of Directors
- Iowa provides Administrative and Operations support for the Board
- All twelve member state QSSBs provide staff or contracted research directors or research coordinators to support the Board of Directors in prioritizing, awarding, tracking and communicating research projects and programs



North Central Soybean Research Program



Challenges and Priorities Addressed:

- Research focus is primarily directed at soybean production, and specifically enhancing yield potential and preserving yield through disease, insect and abiotic stress management. Soy quality and sustainability also are important
- Pooled resources of voluntary contributions
- One member from each state with equal “say”
- No politics! Farmer decisions on behalf of the region – for the good of all
- Fund the best multi-state, multi-disciplinary projects with the best researchers – no state institutional loyalties, rivalries or protection
- Staff leadership for dedicated partnerships and ownership – Administration and Accounting also done by Iowa
- Open and frank communication



North Central Soybean Research Program



Vision: Support the accomplishment and communication of soybean research that will enhance grower productivity, profitability and environmental stewardship across the North Central Region.

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 the needs of soybean growers across the North Central Region.

Examples: National leadership in soybean breeding and management for yield gain, and management of SCN, SDS, *Phytophthora*, and other pathogens, soybean insect pests, access to soybean research data and information for all audiences.



North Central Soybean Research Program



Successes:

- **SCN Coalition:** Take the Test, Beat the Pest
- **Biotech Communications:** Roundup Ready® soybeans: program to inform and help farmers to embrace the technology
- **White Mold**
- **Soybean Aphids**
- **Sudden Death Syndrome**
- **Plant Health Initiative / Soybean Research & Information Initiative**
- **RECENT:** Breeding for yield gain, SCN Coalition II, Seedling Diseases, Insect Pest Program, Coordinated Extension & Outreach, Support of Soybean Research Centers



North Central Soybean Research Program



Research Priorities – Clear and Consistent

Soybean Yield Enhancement: Genetic improvement and increased yield potential through discovery and breeding.

Soybean Yield Preservation: Manage abiotic and biotic stressors of soybeans through basic and applied research.

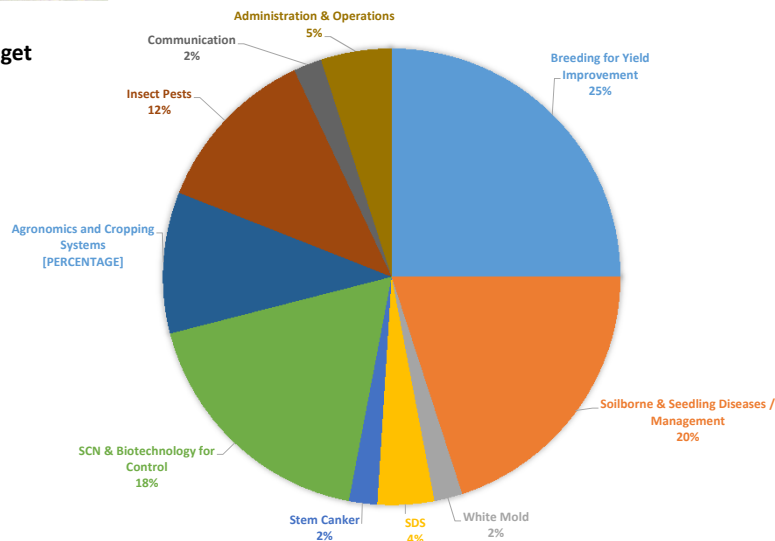
Soybean Productivity: Increase yield and profitability through improved production practices, adaptation to water, nutrients and climate, weed management, seed composition and seed quality.



North Central Soybean Research Program



FY2017 NCSRP Budget Distribution

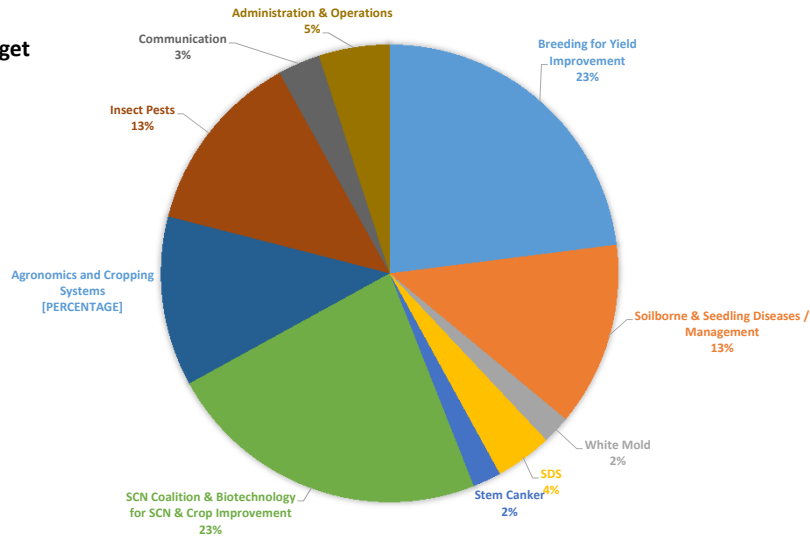




North Central Soybean Research Program



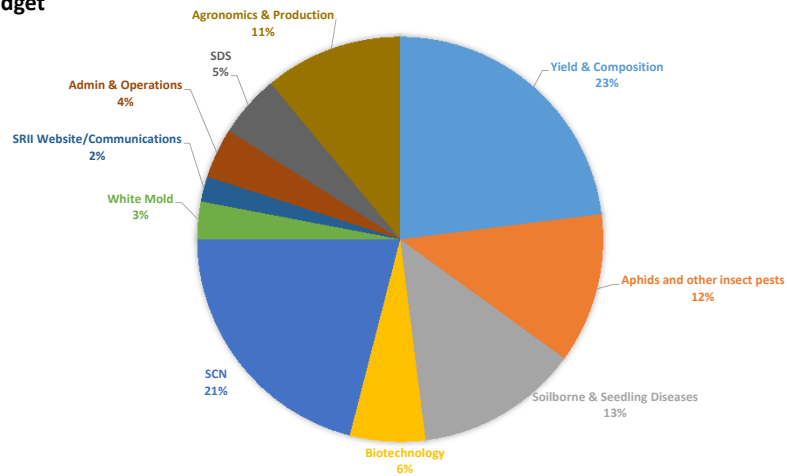
FY2018 NCSRP Budget Distribution



North Central Soybean Research Program



FY2019 NCSRP Budget Distribution





North Central Soybean Research Program



**Communication, Coordination and Partnerships:
Soybean Research & Information Initiative (SRII):**

<http://www.soybeanresearchinfo.com/>

National Soybean Checkoff Research Database:

<http://www.soybeanresearchdata.com/>

Coordination Across State QSSBs: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, Arkansas, Tennessee, Kentucky, Virginia, Kentucky, Pennsylvania

Partnerships With Others: United Soybean Board, Mid-South, South and Mid-Atlantic Soybean Research Programs, American Soybean Association, American Farm Bureau Federation, US Department of Agriculture



WELCOME TO THE NORTH CENTRAL SOYBEAN RESEARCH PROGRAM

The North Central Soybean Research Program (NCSRP) was established in 1982 by state checkoff organizations in the North Central states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin.

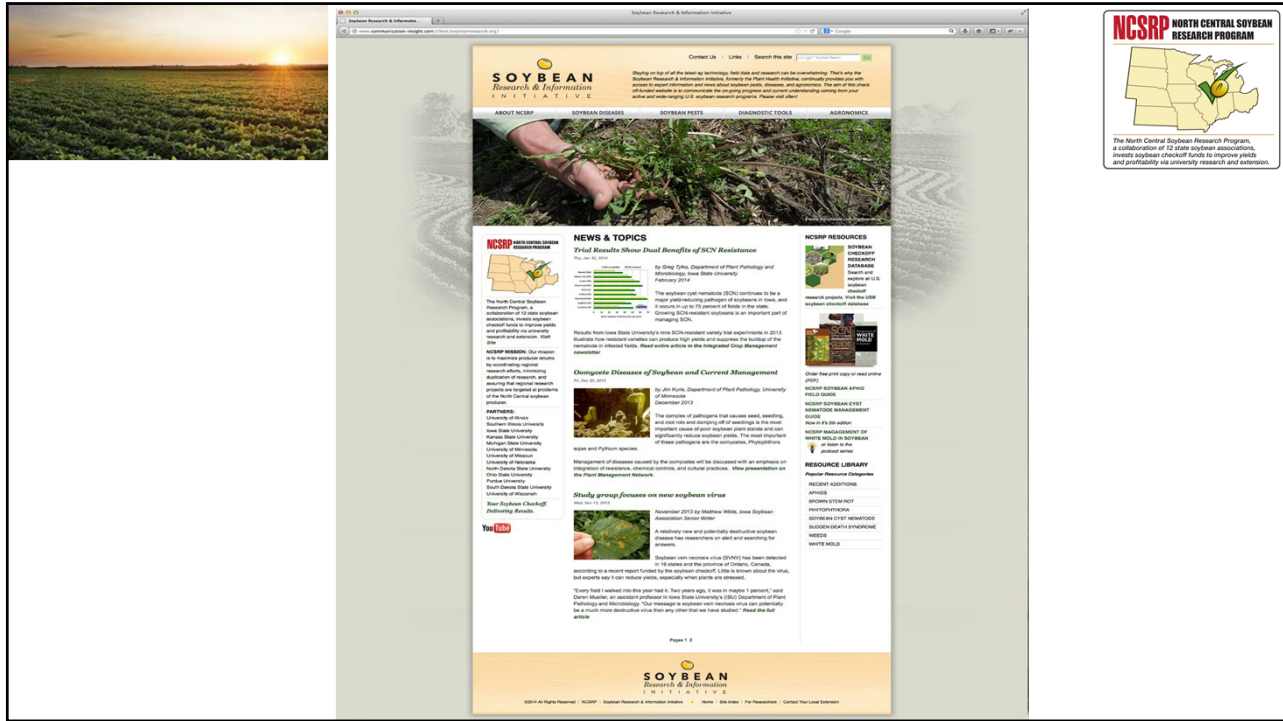
We are a farmer-led organization that invests soybean checkoff funds in university research and Extension programs to better understand and manage plant stresses that reduce soybean yield and farmer profitability.

The mission of the NCSRP is to maximize producer returns by coordinating regional research efforts, minimizing duplication of research, and ensuring that regional research projects are targeted at problems of the North Central soybean producer.

Participating State Soybean Checkoff Associations

- ILLINOIS SOYBEAN ASSOCIATION
- INDIANA SOYBEAN ALLIANCE
- IOWA SOYBEAN ASSOCIATION
- KANSAS SOYBEAN COMMISSION
- MICHIGAN SOYBEAN PROMOTION COMMITTEE
- MINNESOTA SOYBEAN RESEARCH AND PROMOTION COUNCIL
- MISSOURI SOYBEAN MERCHANTISING COUNCIL
- NEBRASKA SOYBEAN BOARD
- NORTH DAKOTA SOYBEAN COUNCIL
- OHIO SOYBEAN COUNCIL
- OHIO SOYBEAN COUNCIL
- SOUTH DAKOTA SOYBEAN RESEARCH & PROMOTION COUNCIL
- WISCONSIN SOYBEAN ASSOCIATION





The screenshot displays the 'Soybean Research & Information' website. The main content area features several news articles under the heading 'NEWS & TOPICS'. The first article is 'Trial Results Show Dual Benefits of SCN Resistance' by Greg Olin, dated February 2014. The second is 'Oomycete Diseases of Soybean and Current Management' by John Kuhl, dated December 2013. The third is 'Study group focuses on new soybean virus' by Matthew Miller, dated November 2013. A sidebar on the right lists 'NCSRP RESOURCES' including 'Soybean Disease Resistance Database', 'Soybean Insect Resistance Database', and 'Soybean Resource Library'. A map of the North Central region is visible in the top right corner of the website interface.



North Central Soybean Research Program



- FY19 Multi-State Projects and Programs at a Glance:
 - Increasing genetic gain for yield (OSU-led (OH)) – also will leverage a USDA-FFAR grant in FY20
 - Extension and Outreach (ISU-led (IA))
 - Phytophthora populations and management (OSU-led (OH))
 - Soilborne and seedling diseases and management (SIU-led (IL))
 - SCN Coalition (NDSU-led (ND))
 - Trait discovery (UM-led (MN))
 - Agronomic benchmarking and on-farm research (UW-led (WI))
 - CRISPR base editing for herbicide resistance (OSU-led (OH))
 - Soybean insect pest management (OSU-led (OH))
 - SDS management (ISU-led (IA))
 - SCN basic research for long-term management (UM-led (MO))
 - White mold management (UW-led (WI))



North Central Soybean Research Program



- Total NCSRP funded programs and projects in FY19
 - 12 programs or projects
 - \$4,001,966 funding support
- NCSRP Annual Report at:
 - http://www.soybeanresearchinfo.com/pdf_docs/NCSRP17_AnnualReport_V4.pdf
- **Bottom Line: NCSRP is a non-political network of farmers and university researchers who partner to bring value to Midwest soybean farmers and to the broader Soybean industry.**
 - **Prioritization, talent, accountability and delivery of results**



North Central Soybean Research Program



- **Accelerated Yield Improvement & Identification of New Sources of SCN Resistance – Programmatic Approaches**
 - Interdisciplinary university research teams to develop focused and aggressive projects and programs to accelerate discovery and development.
 - Direction from farmers and partnerships with industry.
 - Increased competitiveness for funding from industry and from public agencies



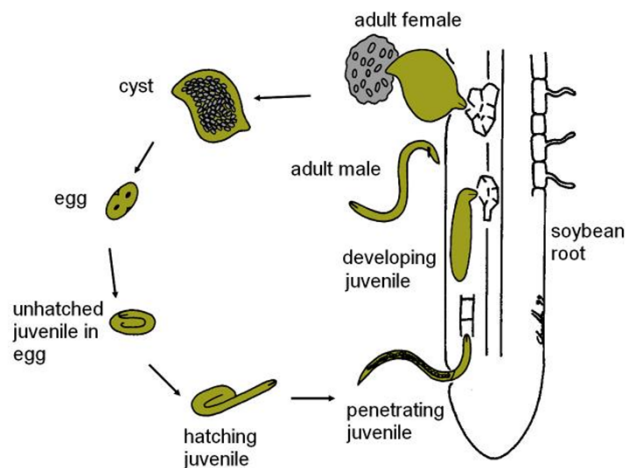
North Central Soybean Research Program



- Identification of New Sources of SCN Resistance
 - Seven collaborators from three universities with connections to several others
 - Discover and develop more cultivars with SCN resistance using new resistance genes, basic discoveries about nematode and plant interactions, stacking resistance genes, identifying possible transgenes or cisgenes for resistance, laboratory and field studies coordinated, partnerships with molecular biologists, breeders, pathologists, agronomists and others
 - See www.soybeanresearchdata.com/Project.aspx?id=52586



North Central Soybean Research Program





North Central Soybean Research Program



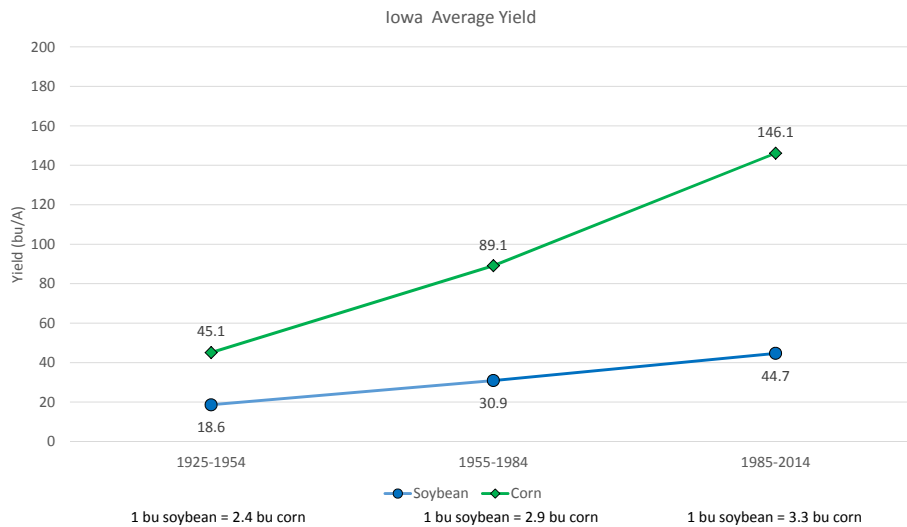
Identification of New Sources of SCN

Resistance

- Complements other basic and applied work
- SCN Coalition II – to raise awareness, inform and provide farmers with best management practices
- Example: PI88788 source of SCN resistance (Rhg genes)
- NCSRP and other checkoff funding have helped researchers understand more about genetic resistance, especially the number of gene copies (1 – 10 copies of Rhg 1) in a plant that provide the best resistance (*Yu et al., Theor Appl Genet 2016, 129(12):2403-2412*)
- This work helps public and private breeders and farmers, and advances science



North Central Soybean Research Program

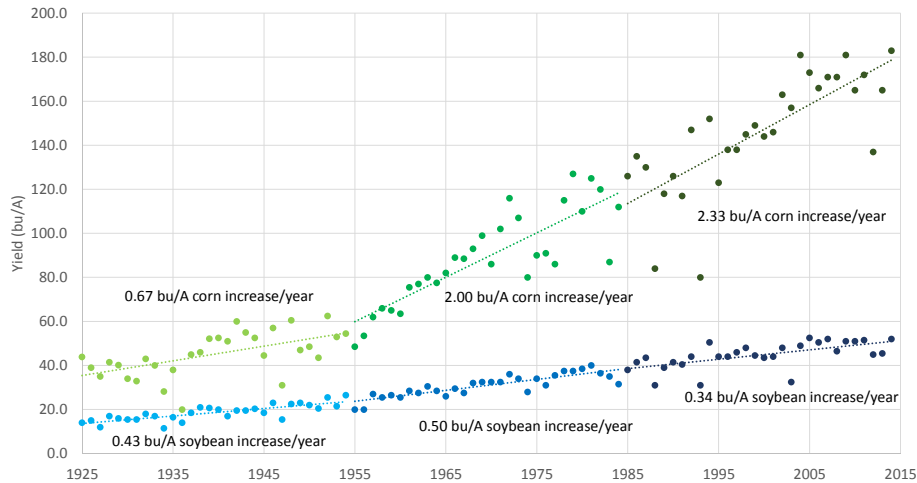




North Central Soybean Research Program



Iowa Trendline Yield



North Central Soybean Research Program



Accelerated Yield Improvement Program

- Seventeen collaborators from nine universities
- Use a multidisciplinary and multifaceted approach to accelerate genetic gain and yield potential, while maintaining or increasing soybean quality
- Increase selection intensity and improve selection of genetic influencers on yield apart from environmental and agronomic
- Improve efficiencies to decrease breeding cycles using genomic selection and more predictive modeling
- Combine phenotyping, genotyping, pedigree and environmental data
- Explore and incorporate more genetic diversity
- Improve tools and metrics to measure and estimate actual genetic gain and yield potential (separate from agronomic practices)



North Central Soybean Research Program



- Multi-State On-Farm Partnerships
 - Agronomic and Cropping Systems Research & Environmental and Conservation practice evaluations with regional significance
 - Aggregated data exchange, analysis and publication on new results and recommendations
 - Information communication for continuous improvement and increased farmer competitiveness
- USB and NCSRP sponsored
- Participation by farmers, state Departments of Ag, universities, commodity groups and industry



North Central Soybean Research Program



• Soybean Gall Midge

- New and emerging pest in NE, SD, ND and IA, with likely presence in MN, KS and MO
- NCSRP member states mobilized 'off-cycle' to fund a multistate project to collect existing data and information, and conduct greenhouse and 2019 field trials
- Full proposal will leverage preliminary data and information for NCSRP consideration during normal FY20 funding cycle





North Central Soybean Research Program



Thank You!



Edwin J. Anderson, Ph.D.

Ed Anderson grew up on a tradition row crop and livestock producing farm near the town of Woolstock, Iowa. He earned his B.S. in Agricultural Biochemistry from Iowa State University, Ames, IA, in 1984, and worked as a research technician at Monsanto Company and at Washington University in St. Louis, MO, prior to earning his PhD in Molecular Plant Virology / Plant Pathology at the University of Missouri, Columbia, MO, in 1991. Ed was then employed as a postdoctoral research scientist in the Plant Pathology Department at the University of Florida, Gainesville, FL, where he gained experience in international agriculture through collaborations with the USDA-ARS and several researchers in Latin America working on citrus viruses. Ed joined the Plant Pathology faculty, as an Assistant Professor, at the University of Arkansas, Fayetteville, AR, in 1992 and established a teaching program and two complementary research programs focused on studying the molecular mechanisms of plant and virus interactions and the transformation and regeneration of novel plant species for transgenic plant research. In late 1997, Ed accepted an opportunity to build and lead the Laboratory Automation, Engineering & Informatics group at Pioneer Hi-Bred Intl., Johnston, IA. In 2011, he joined the DuPont Pioneer Trait Strategy Group and worked with business and research units in order to develop disease resistance product strategies for all crops in all geographies. Ed joined the Iowa Soybean Association (ISA) in February, 2013, and serves as Sr Director of Research. His responsibilities include leadership of the ISA On-Farm Network[®], Environmental Programs & Services and Analytics research teams, as well as participation in leadership of the Iowa Soybean Research Center and in oversight of soybean checkoff funded research from ISA to ISU. Ed also serves as Executive Director of the North Central Soybean Research Program (NCSRP), a 12-state collaboration for checkoff funded regional research and outreach programs aimed at improving Midwest soybean farmer productivity, profitability and sustainability.

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