

## Updates to the Research Portfolio for the North Central Soybean Research Program (NCSRP) 3-15-2024

### Background comments regarding the NCSRP research portfolio:

- There is some concern among NCSRP farmer board members and staff with the sustained commitment to large long-term research programs (several of the programs are 9 years now and have become very large). Farmers and staff see a need to develop tactics for beginning, supporting, sustaining, and sun-setting programs, as appropriate.
- NCSRP's programmatic approach, vs. smaller more independent or individual projects, is still supported by farmers and staff, and the collective successes of the more holistic programs have demonstrated positive ROI through on-going innovation and research progress. However, some of these programs have become very large, expensive, and difficult to manage and financially support with only checkoff funding.
  - The rule of thumb for NCSRP has been to fund projects/programs with at least 4 member states. This should continue.
  - The exception for smaller, more individual- or small group-researcher projects has been in the areas of "discovery or proof-of-concept". This too will likely continue.
- In short, the larger, more holistic, and more integrated programs have delivered great innovation and results. However, some of these have become so large that the scope and budgets, while relevant and justified, threaten to outstrip the NCSRP budget each year. NCSRP farmer board members desire to have better vision and clarity regarding the size, scope, and duration of funded projects and programs.
- NCSRP's focus on "production research" i.e. basic and applied work on genetic gain/yield improvement, yield preservation (from diseases, insects, weeds, and abiotic stressors), agronomic/cropping systems, new technologies/AI/precision ag, and strong communications and outreach (Extension) will continue.
  - There is strong support for integrated programs in breeding, soilborne and foliar pathogens, insect pests, weed management, abiotic stressors, agronomics, SCN, and new technologies.
  - **As part of a recent survey, the farmers suggested approximate percentages of the annual budget to go toward key production research areas. These are approximations, will serve as guides, and will be subject to annual review and modification based on priorities and proposals.**
- Going forward, alignment and complementarity with other states, regions and the USB will continue to be important and an area for ongoing staff focus.
  - Great progress has been made in establishing trust and good working relationships with other checkoff organizations.
  - Staff will continue to communicate and look for opportunities to partner, complement, and extend inter-state, inter-regional, and national efforts in basic and applied research.
  - NCSRP is committed to open and honest communication and dialogue with all researchers. Sharing priorities, goals, and approaches will make NCSRP and the overall soybean checkoff stronger.
  - These efforts must be combined with work to better cooperate with, and leverage public and private funding.
- Getting new faculty researchers engaged on NCSRP research projects and programs is always a positive. Juxtaposed to this, of course, is the reality that funding from any checkoff organization

is limited, and managing large collaborations can be challenging. It is necessary to coordinate carefully for the right teams, right projects/programs, and the right funding sources.

- It may be necessary to limit program sizes and scope – research PIs are not required to include everyone if that makes the program too large and too expensive.
- Staff and researchers should work together to aggressively seek other sources of public and private funding to complement and extend the checkoff investments. These sources are to be shared with the NCSRP on research proposals and as entries into the national soybean checkoff research database. This information helps soybean farmers to see the increased potential ROI on their soybean checkoff investments.
- For the NCSRP FY25 RFP, staff will be working hard to develop and distribute clearer priorities and direction for researchers. Much of that effort is reflected in this document. Along with this, staff will work to communicate more in-person with researchers and offer assistance in developing solid proposals or proposal concepts for NCSRP, USB, other regions, QSSBs, and the public and private sectors wherever appropriate.

**Guidance for FY25 as the RFP is prepared and distributed (please read all bullets for broad insights beyond your area of expertise):**

- Before preparing and submitting a proposal to the NCSRP, researchers are asked to carefully consider the following:
  - The NCSRP will continue to accept up to 3-year research proposal concepts.
  - For all new (first year) proposals, PIs and collaborators must emphasize first year research concepts, justification, rationale, objectives, desired or expected outcomes, deliverables, and budget, while also describing second- and third-year research AND budgets. The template for three-year budget proposals must be filled out completely.
  - The NCSRP staff and board will review and consider three-year proposals and budgets in their entirety. Funding decisions for the first year will be determined by research relevance and influenced by longer-term investment considerations. The Board will anticipate that renewals for years 2 and 3 will be at the budget levels proposed in the first-year proposal.
  - Renewal requests (years 2 and 3) must contain brief statements of progress and deliverables from the previous year, as well as more detailed plans for the new fiscal year. Budget requests should be identical to what was provided in the original proposal for years 2 and 3. Only in extenuating and justifiable circumstances, should the renewal proposal and budget deviate from the information presented for years 2 and 3 in the first-year proposal. For example, if the original proposal requested \$100,000 for year one, \$125,000 for year two, and \$98,000 for year three, the renewal budget requests for years 2 and 3 should be \$125,000 and \$98,000, respectively.
  - NCSRP will continue to support long-term programs that innovate, evolve, and deliver documented progress, success, and advances for farmers and the industry. However, PIs and collaborators are encouraged to aggressively pursue and document for NCSRP additional funding sources to complement, extend, and perhaps eventually reduce NCSRP soybean checkoff support.
    - Beginning in FY25 and going forward, NCSRP-funded breeding programs/projects led by the same PI and composed of primarily the same team will have expected funding durations of up to four 3-year cycles (12 years).
    - Beginning in FY25 and going forward, programs addressing diseases, insect pests, abiotic stressors, weeds, agronomics and cropping systems, and SCN

- topics led by the same PI and composed primarily of the same team will have expected funding periods of up to three 3-year funding cycles (9 years).
- Beginning in FY25 and going forward, new innovations projects or programs led by the same PI and composed primarily of the same team will have expected funding periods of one 3-year cycle.
    - Researchers should consider and state from the outset (first year proposals) how their work will bring short- and long-term value to soybean farmers and to the soybean industry, how their programs are innovating, evolving, remaining relevant to soybean farmers' priorities, and how they intend to pursue and leverage other funding sources for complementing, extending, and continuing their checkoff funded research beyond the expected NCSRP funding periods and budgets. Renewal requests should continue to briefly state progress and any long-term goals for the programs.
  - The annual NCSRP budget for the recent past has been between approximately \$3.2M and \$4.2M, depending on state contributions (farmer investments in regional research that depend on each state's soybean acreage, soybean yield, and soybean price, as well as each state's research priorities and the value they see in NCSRP-funded research) and any unspent funding from the previous year. We'll use \$3.7M as a reference example here.
    - Operations, administration, and communication expenses represent approximately 5%-6% of the budget each year (e.g. ~\$225,000). Some of these funds are provided by the USB as part of their Research Coordination budget.
    - Soybean Breeding for genetic gain and improved quality (with partnership and complementarity across other yield preservation, agronomics, and new innovations categories):
      - The board guidepost (subject to board review and modification) for funding in this category in FY25 is approximately 20% of the NCSRP budget, e.g. \$740,000. Project and program proposals may include basic and applied work, discovery and development, and similar for things like:
        - e.g. germplasm development, gene discovery and development, native traits, biotech traits, new breeding tools and technologies, trait introgression, testing, and advancement into the public and private seed pipelines for yield, quality, and stress tolerance.
    - Diseases, insect pests, and abiotic stressors (with partnership and complementarity among breeders, agronomists, and Extension experts for various program elements and outreach to farmers):
      - The board guidepost (subject to board review and modification) for funding in this broad category in FY25 is approximately 20% of the NCSRP budget, e.g. \$740,000. This will represent a potentially significant reduction in support across some of NCSRP's strong and long-standing programs for disease and insect pest management (historically funded at approximately 35% of the annual budget). While there may be some flex when the board meets, researchers are encouraged to carefully consider possible smaller collaborations with very focused high-priority objectives for key basic and applied research on the most significant regionally important pathogens, pests, and abiotic stressors. In addition, it will be beneficial to work with other state, regional, and national staff and research groups to consider where other checkoff, public, and private funding sources might be pursued to support the large, diverse, integrated, holistic, and complementary programs.

- Agronomics and cropping systems (with partnership opportunities like those described above):
  - The board guidepost (subject to board review and modification) for funding in this broad category in FY25 is approximately 15% of the NCSRP budget, e.g. \$555,000. This is roughly equivalent to the level the board has funded this area in the past. Proposals should address the highest priority plot and on-farm research and outreach, and technology innovations for enhancing regional farmer efforts to produce the highest yielding, highest quality, most sustainable, and most profitable soybeans through improved and optimized use of genetics, inputs, equipment, technologies, and practices. In this category, as much or more than the others, researchers may have significant opportunities to impact the immediate / short-term needs and opportunities facing farmers “in the field”, while continuing to provide data and insights for long-term success. Like all NCSRP-funded research, these proposals should describe complementarity with other similar efforts at state, regional and national levels. Partnerships with and/or novelty that distinguishes checkoff funded work compared with the private sector will be important to demonstrate relevance and ROI potential.
- Soybean Cyst Nematode (SCN):
  - The board guidepost (subject to board review and modification) for funding in this broad category in FY25 is approximately 15% of the NCSRP budget, e.g. \$555,000. Because NCSRP’s long-term investment in both basic and applied aspects of SCN has been approximately 25% of the annual budget, this illustrates a potentially significant reduction in the size and scope of both program areas. PIs and their collaborators are encouraged to reconsider the size and scope of the NCSRP-funded portions of their important programs and consider other complementary funding sources.
- Weed management:
  - Historically, NCSRP has relied on USB and QSSBs to support important weed science and weed management projects and programs. With the increased and on-going concerns about weed management broadly and herbicide-resistant weeds, in particular, the NCSRP has recently decided to allocate approximately 15% of its research budget (e.g. \$555,000) to this important area. Like all NCSRP funded research and outreach, PIs are asked to clearly demonstrate awareness, partnerships, and complementarity with the others and their work in the areas of basic and applied research to manage soybean weeds across the Midwest and beyond. Other public and private partnerships to complement and extend checkoff funding are strongly encouraged.
- New Innovations, across biotechnologies, discovery research, engineering, computational biology, artificial intelligence, precision agriculture, biology, molecular genetics, and similar.
  - The NCSRP has always expected, appreciated, and relied on the innovative and creative researchers funded in other NCSRP topic areas to continuously conduct both discovery and development research for new tools and technologies that will bring short- and long-term benefits to soybean farmers, the soybean industry, to the broader science community, and to the public. Recently, the NCSRP board chose to develop a specific funding area, allocating approximately 10%, e.g. \$370,000, of the annual budget to projects in any of these higher risk, higher potential impact areas as stand-alone projects.