TARGETED REQUEST FOR PROPOSALS SUBMISSION
DEADLINE EOB 1/16/2024

TRFP TITLE: APPLICATION OF SOIL BIOLOGICAL PRESENCE AND ACTIVITY TO SOIL FERTILITY PRINCIPLES IN MS SOYBEAN PRODUCTION

TRFP CONTACT:
NAME: Brewer Blessitt, PhD, CCA-CPAg
PHONE: 662.207.5723
EMAIL: research@mssoy.org

PROPOSAL DEADLINE: EOB 1/16/2024

INTRODUCTION:
The Mississippi Soybean Promotion Board (MSPB) focuses on investing Mississippi checkoff dollars to develop and promote soybean and soybean production to improve the bottom-line potential for soybean farmers. The MSPB strategy is to leverage funds and partner with public and private entities to address production research, identify market opportunities, and communicate the outcomes to Mississippi soybean farmers and industry influencers.

PURPOSE OF TRFP:
MSPB is trialing a framework through which it can more effectively invest checkoff dollars on behalf of Mississippi soybean growers. That framework will utilize Targeted Requests for Proposal (TRFP). The strategy of TRFPs is built upon identification of comprehensive General Focus Areas (GFAs). The GFA is a general agronomic subject matter with high interest of growers and industry. A single TRFP is tied to a single GFA. The GFA is further divided into Specific Research Targets (SRTs) which correspond to the 'scope' of the more comprehensive GFA. Proposals should be directed to address one or several of the SRTs. The intentions of the framework include: 1) shift a portion of research focus and budget spend from present issues and impact and toward near-term (5 year) and longer-term (10 year) efforts and impacts, 2) develop a greater proportion of funded research that is unique, new, and likely to accentuate MSPB funded research within the soybean industry, 3) encourage collaborative efforts across disciplines for a better understanding of key issues, and 4) close some of the gap between current research and focus areas of early-adopters in the state.

BACKGROUND & PURPOSE OF PROJECT:

Much of the understanding of soil fertility and fertilizers is based on testing conducted many decades ago. Some labs have changed extractants for key nutrients and geographical areas. Some adjustments have been made to critical values for modern yields. Even considering these examples, very little has changed in the science of soil fertility for some time. Yield gains have been relatively constant over the same period, based on both genetic gain and agronomic management improvements. Recent years have seen a surge in information tying key soil microbes to productivity of a soil, and more specifically to the ability of a soil to supply nutrients to a crop. Vast gains have been made in the ability to detect both presence (species and number) and function of these soil microbes. This testing was not available or economically viable at the time of much of the research on which recommendations for MS soybean fertility was built.

The purpose of this CFA/TRFP is to assist in building a more thorough understanding of how the soil microbiome influences the principles of soil fertility and plant nutrition in the various production systems of MS soybean.

Expected outcomes should include, but are not limited to:

1) A comprehensive understanding of soil microbiomes across MS soybean production areas and systems as a baseline for future decision making.
2) A local understanding of the impact of key factors such as soil type, tillage, cover crop, crop rotation, litter usage, fertility level, use of biological products, yield level, etc. on biological diversity and function at different times throughout the growing season in MS soybean acres.
3) Data to support or negate the need to adjust critical values or fertilizer application based upon varying levels of biological activity. Better understanding could be used to identify lower critical values and ultimately commercial fertilizer application needs.
4) An understanding of what key species of microbes, classes of biologicals, etc. have on soil biological activity, nutrient uptake and recovery, and crop growth and yields to share with growers and industry players.

TARGET AUDIENCE:
The target audience is both the MS Soybean growers and those who influence soybean production in MS.

SPECIFIC RESEARCH TARGETS (<u>Proposals to Include one to several SRTs</u>):

1) *Evaluate various tests for biological diversity, quantity, and function.*
    a) Soil health/microbial function tests (respiration, PLFA, Haney)
    b) Microbiome testing (Biome Makers, Trace Genomics, Pattern Ag)
2) *Characterize the status of biological activity (with physical and chemical testing) across different production systems of MS.*
    a) Geographical spread
    b) Soil types
    c) Tillage types
    d) Irrigation
    e) Litter utilization
    f) Yield level
3) *Determine if critical values of key nutrients vary based on biological activity level.*
    a) Conduct fertilizer amendment trials embedded within varying levels of nutrients and biological activity.
    b) Couple with supplementation of biological products
4) *Evaluate the impact of commercial fertilizer on biological activity.*
    a) Major fertilizers, varying sources
    b) Rate titration
    c) Fertilizer additives
5) *Determine if biological (and biologically friendly) and bio-stimulant products impact biological activity and nutrient recovery in different production systems in MS.*
    a) Products
        i) Biological
            (1) Single strains
            (2) Consortia
        ii) Bio-stimulant
            (1) Commercially available options
    b) Soil function (See #1 above)
    c) Nutrient uptake
        i) Tissue testing, SAP testing
            (1) Temporally (duration, level at key growth stages)

ADDITIONAL CONSIDERATIONS:

The contractor is expected to work with MSPB and BBRC and maintain regular contact throughout the contract period.

DELIVERABLES

Completion Date	Description of Deliverables
October 15, 2023	Posting of TRFPs
January 16, 2024	Submission of Proposal
February 6, 2024	Revision of Proposal (if necessary)
February 20, 2024	Funding
March 15, 2024	Verbal Check In
June 15, 2024	Field Visits, Short Summary to Date
October 15, 2024	Q4 Preliminary Review, Data Sharing
December 1, 2024	Yearly Analysis in PPT Form
December 31, 2024	MSSOY.org Postings

RFP TIMELINE:

- TRFP distribution: October 15, 2023.
- Last day to submit questions: January 16, 2024
- Initial project proposals due: January 16, 2024
- Selections made: February 20, 2024
- Prospective contractors notified: February 23, 2024

INSTRUCTIONS:

Please email proposals to research@mssoy.org January 16, 2024.

Proposals must contain at a minimum the specific criteria listed below:

1) A description of PI's capabilities, resources, and experience. Emphasis should be placed on experience related to this RFP.
2) A thorough proposal outlining PIs' planned work, deliverables, and timeline to complete the work focused on Research Specific Target(s).
3) Detailed budget: all bids for services must provide a breakout of how the fee was derived including but not limited to a breakdown of hourly rate and the amount of effort they anticipate doing the work.
4) Proposals should be no longer than 10 pages (8 ½" x 11").