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

TRFP TITLE: FURTHER COMBATING PHOMOPSIS SEED DECAY IN MS SOYBEAN

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

PROPOSAL DEADLINE: EOB 01/16/2024

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:

MSPB has invested heavily in combating incidence and impact of Phomopsis Seed Decay (PSD) in recent years. Success was found in trait identification; to date those traits have not been deployed in commercial varieties planted in MS. It is highly likely that in addition to trait identification, very comprehensive molecular characterization is necessary for any private entity to pursue incorporation and deployment in their germplasm. A very high level of characterization of commercially available varieties exists. This characterization is required for incorporation into current breeding platforms. It is also often correlated with field performance and product advancement is increasingly reliant on genetic data as well as field performance. Genetic incorporation of known resistance genes into private portfolios is likely the optimal way for deployment.

Control of PSD also seems inconsistent, and predicting the incidence has proven difficult to say the least. Control has been solely focused on fungicides. Fungicides are not known for a high degree of systemic movement, so getting to or within pods to seed is unlikely. Synthetic chemistry also generally lasts less than three weeks on plant surfaces. Recent exploration of biological products, such as *Trichoderma* species, shows how these microbes can prevent infection from pathogens and persist for some time. Recent research and discovery of key additives can assist in movement of elements like copper, a known bactericide and fungicide, to both pods and seed. Further, recent advances in disease modelling and even spore traps to monitor progression of key diseases are improving the ability to predict disease incidence and severity. Finally, modelling can also illustrate and highlight the effects of weather parameters, namely duration of heat, during key growth stages on incidence of disease.

The purpose of this CFA/TRFP is to advance the effort of combatting PSD farther, and shift focus onto more opportunities.

Expected outcomes should include, but are not limited to:

1) Traits, more well characterized, to present to private soybean programs for incorporation into germplasm for MS.
2) Look for ways to utilize disease models and sensing technology to predict incidence during growing seasons.
3) Evaluate alternative control measures previously not investigated.
4) Evaluate alternative tools for genetic screenings.

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) *Survey sites and times of incidence (past and present year).*
   a) Good and poor quality, seed and soil samples, document planting data
   b) Create weather models, monitor heat accumulation during reproductive stages.
   c) Classify common varieties by quality, analyze grain profile.
2) *Varietal Screening*
   a) Growth chamber screenings with varying weather (weather taken from past good/bad years for PSD incidence; focus on heat in R5 stages)
   b) Monitor grain seed profile.
   c) Compare to in-field inoculated assays.
3) *Characterize the pathogen.*
   a) Collect samples from high and low incidence areas.
      i) Morphologic and genetic analyses
   b) Investigate opportunities with spore traps and disease models.
   c) Evaluate alternative control measures.
      i) OFT testing of SAR inducers, biologicals, elemental applications
4) *Further characterize known or previously identified PSD resistance traits.*
   a) Clean trait (free from any less-desirable traits)
   b) Thoroughly characterized in molecular sense
   c) Incorporated into the most elite lines possible

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 by 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").