MISSISSIPPI SOYBEAN PROMOTION BOARD
2021-2022 FUNDED RESEARCH/EXTENSION PROJECTS

TITLE:	Management of Soybean Insect Pests, 01-2021, $13,827
PI:	Don Cook, dcook@drec.msstate.edu MSU-ES/DREC
Objective(s):	Provide up-to-date information on insect management strategies and tools for producers to use to combat soybean insect pests, and conduct studies to validate/verify insect damage potentials and thresholds for soybeans.
Duration:	Year 3 of 3
End Results:	Identify and disseminate up-to-date information for producers and consultants to use to make the most informed decisions for managing/controlling soybean insect pests.

TITLE:	Investigating High Magnesium Soils and the Impacts on Soybean Production, 04-2021, $36,206.
PI:	Dan Prevost/Southern Ag Services, Inc., dan@southernaginc.com, private firm
Objective(s):	The overall aim of this project is to determine the extent that high magnesium may be impacting soybean production and to improve our understanding and management of high magnesium soils.
Duration:	Year 2 of 2
End Results:	Impact perspective is what magnesium levels limit yield?

TITLE:	Impacts of Cover Cropping System on Soybean Grain Yield, Soil Health, Forage Production, and Animal Performance, 06-2021, $60,541
PI:	Brett Rushing**,** brett.rushing@msstate.edu, MSU-MAFES/Coastal Plain Exp. Station
Objective(s):	Determine the impact of integrated livestock cover crop systems on soybean growth and grain yield and monitor the change in soil physical, chemical, and biological properties during each phase of production while assessing the economic productivity throughout each phase of production.
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Duration:	Year 1 of 3
End Results:	Presentations at county Extension meetings, professional society meetings, short courses, grower meetings, etc. Additionally, appropriate data will be published in refereed journals, Extension publications, popular press, and social media accounts. Finally, a master's thesis will be completed by the selected student.

TITLE:	Developing Future Agronomy Leaders Through Day Camp and Individualized Learning Projects, 07-2021, $7,534.
PI:	Bill Burdine bill.burdine@msstate.edu, MSU-ES/NMREC
Objective(s):	Develop an agronomy day camp emphasizing hands-on training for young people through projects and contests
Duration:	Year 3 of 3
End Results:	Day Camp at NMREC, handouts and presentations by participants to provide results from hands-on activities.

TITLE:	Determination of Residual Control of Commonly Used Insecticides in Soybean and Cotton, 09-2021, $50,706.
PI:	Whitney Crow wdc165@msstate.edu MSU-ES/DREC
Objective(s):	This experiment will address true residual control (and also examine systemic uptake) producers can expect in both soybean and cotton with commonly used insecticides targeting several key pests in each crop.
Duration:	Year 2 of 3
End Results:	Data will be used for immediate release to advise growers and consultants on residual expectations of commonly used insecticides in soybean and cotton. This is currently the most commonly asked question regarding insecticide recommendations.

TITLE:	Low-Cost Precision Agriculture Solutions for Advancing Irrigation Efficiency, 10-2021, 51,998
PI:	Mary Love Tagert, mltagert@abe.msstate.edu, MSU-ES/ABE
Objective(s):	This experiment will create and apply a sector control VRI prescription on a production soybean field and measure the water savings realized while evaluating whether production fields would benefit from sector control VRI. Also evaluate the economic benefit from VRI adoption and perform a geospatial inventory of surface water storage systems used for irrigation in Northeast Mississippi, to assess the potential for VRI adoption. Information will be shared with producers and other stakeholders, especially those in Northeast Mississippi.
Duration:	Year 1 of 3
End Results:	By informing Northeast Mississippi farmers whether and how to adopt sector control VRI, project results are expected to enhance the economic and environmental sustainability of Mississippi soybean production.

TITLE:	Managing Iron Deficiency Chlorosis (IDC) Through a Cropping System Approach, 12-2021, $60,947
PI:	Mary Love Tagert, mltagert@abe.msstate.edu, MSU-ES/ABE
Objective(s):	Determine effect of selected cropping systems on yield of IDC tolerant and intolerant soybean varieties, and evaluate soil moisture sensor data relationship to IDC symptoms in these cropping systems.
Duration:	Year 3 of 3
End Results:	MAFES and MCES publications that will outline management practices that should be used to stabilize yields from soybeans grown on IDC-susceptible sites.

TITLE:	Row-Crop Irrigation Science Extension and Research (RISER) Program, 13-2021, $135,532
PI:	Drew M. Gholson, drew.gholson@msstate.edu, MSUES-ES/DREC
Objective(s):	Identify, evaluate, and demonstrate new irrigation automation technologies in furrow irrigation; 2) Conduct hands-on training and learning opportunities with producers that have yet to adopt proven irrigation water management practices, and continue to offer assistance for producers who already utilize irrigation water management (IWM) practices.
Duration:	Year 2 of 3
End Results:	Identify, evaluate, and demonstrate new irrigation automation technologies in furrow irrigation; Field Days, Presentations, written publications, audiovisual outputs, identify, evaluate, and demonstrate new irrigation automation technologies in furrow irrigation, and conduct hands-on training and learning opportunities with producers that have yet to adopt proven irrigation water management practices, and continue to offer assistance for producers who already utilize IWM practices.

TITLE:	Determination of Fungi Affecting Soybean Grain Quality and Fungicide Efficacy in Reducing Losses, 14-2021, $74,812
PI:	Tessie Wilkerson, twilkerson@drec.msstate.edu, MSU-MAFES/DREC
Objective(s):	Determine causal agent(s) of reduced quality of mature soybean seed and efficacy of fungicides for controlling these pathogens, evaluation of mechanisms for pathogen entry into maturing/mature soybean seed, and evaluation of response of new soybean germplasm that is exposed to conditions that promote reduced seed quality
Duration:	Year 3 of 4
End Results:	Determination of the fungal complex responsible for and its association with seed rot in conducive environments; determination of specific environmental conditions and associated pathogens that promote seed rot in soybeans; development of strategies involving fungicide/insecticide applications and application timing that can be used to reduce the impact of seed rot on harvest seed quality of soybeans when conducive environmental conditions are anticipated; and identification of germplasm lines that can be used to develop varieties that are less susceptible to causes of seed damage.

TITLE:	Determining Management-Related Factors That Impact the Severity and Incidence of Soybean Taproot Decline (TRD), 15-2021, 67,414
PI:	Shankar Ganapathi Shanmugam, sg383@igbb.msstate.edu, MSU-MAFES/IGBB
Objective(s):	A questionnaire-based survey will be utilized to assess agricultural production system characteristics on TRD symptomatic fields (year 1). Based on results from year 1 of the infectious period (Objective 1), fields will be selected for quantifying the microbial ecology of residue associated Xylaria spp. and TRD.
Duration:	Year 2 of 2
End Results:	Outcomes and information from this project will help soybean producers in both understanding and managing taproot decline disease. Indirect benefits are associated with an increased understanding of taproot decline ecology, particularly in how the disease interacts and responds to crop and residue management practices. The survey and classification of farming systems in relation to TRD occurrence and severity is anticipated to provide direct benefits to soybean growers by identifying practical management decisions that may reduce the impact of TRD.

TITLE:	Evaluation of Overseeding of Cover Crops in Dryland Soybeans at Different Timings, 16-2021, 12,916
PI:	Gurpreet Kaur, Gk340@msstate.edu, MSU MAFES/DREC
Objective(s):	The objective of the proposed research is to determine the optimal cover crop species or mix for overseeding in the dryland soybean crop and its influence on soybean plant population, seed yield, and quality. Also determine the optimal timing for overseeding of cover crops during soybean growing season and evaluate the effect of overseeding various cover crop species on weed suppression
Duration:	Year 1 of 2
End Results:	Farmers growing continuous soybean can opt for cover crops as rotational crops and economic analysis at end of this study will help determine the rotational effect of cover crops on continuous soybean.

TITLE:	Biochar as a Tool for Preventing Root Infection of Soybean Seedlings by Macrophomina phaseolina and Other soil Fungi, 18-2021, 10,000
PI:	Hamed K. Abbas, Hamed.Abbas@ars.usda.gov, USDA-ARS
Objective(s):	The objective of the proposed research is to determine if biochar, which is a type of charcoal produced as a soil amendment, can be used to protect germinating soybean seeds from root infection by fungi using (-)-botryodiplodin, or other charcoal-binding mycotoxins to facilitate root infection by killing meristematic tissue in the root tip.
Duration:	Year 2 of 2
End Results:	Successful development of a strategy for reducing/preventing root infection of soybean seedlings by M. phaseolina and other fungi in the soil would reduce seed need and hence seed costs, improve land use and increase profitability.

TITLE:	Evaluation of Soybean Varieties for Resistance to Cercospora Blight, Frogeye Leaf Spot, Stem Canker, and Seed Quality, 19-2021, 43,988
PI:	Tom Allen, tallen@drec.msstate.edu, MSU-ES/DREC
Objective(s):	Evaluate Miss. OVT entries for resistance to Cercospora blight and frogeye leaf spot (natural infestations), and stem canker (inoculated trials); collect and maintain stem canker isolates from infestations (when they occur) throughout Mississippi; and evaluate OVT entries for differences in mature seed quality when/if conditions promoting poor seed quality occur.
Duration:	Continuation
End Results:	Data that will provide producers information about the level of varieties' disease resistance and/or susceptibility so that tolerant/resistant varieties can be selected to avoid yield losses associated with the above pathogens, and identification of varietal differences in mature seed quality.

TITLE:	Weed Management Programs for Mississippi Soybean Production, 20-2021, 106,050
PI:	Jason Bond, jbond@drec.msstate.edu, MSU-ES & MAFES/DREC
Objective(s):	Evaluate new and/or currently registered herbicides and herbicide-resistant (HR) technologies for use in Mississippi soybean weed management programs; identify production practices that optimize GR Palmer amaranth control when RR2 Xtend soybean varieties are used; and designing grass weed control strategies that mesh with current herbicide programs in Miss. soybean.
Duration:	Continuation
End Results:	Identification/development/dissemination of cost effective control strategies for various weed control problems that occur in soybeans, to include control options for GR/HR weeds, management options to prevent or delay development of HR weeds, and assessment of new herbicide technologies and traits in consort with management practices that provide new weed management options.

TITLE:	Effect of Cover Cropping Systems on Dryland Soybean Plant-Vigor, Growth, and Yield, 21-2021, 62,416
PI:	Mark W. Shankle, mark.shankle@msstate.edu, MSU-MAFES/NMREC
Objective(s):	Determine the effects of cover cropping systems on dryland soybean growth, yield, soil health, and determine their potential economic benefit.
Duration:	Year 5 of 6
End Results:	Identification of an affordable, effective cover cropping system that will contribute to the minimization of inconsistent dryland soybean yield.

TITLE:	Soybean Response to Potassium Application, 22-2021, 48,432
PI:	Michael Cox, mcox@pss.msstate.edu, MSU-MAFES/PSS
Objective(s):	Determine the effects of in-season potash application on soybean yield and quality and determine if in season potash application aids plant recovery and improves soybean quality after off target herbicide injury occurs
Duration:	Year 3 of 4
End Results:	This data would immediately affect those producers who annually apply K and perhaps bring heightened awareness to those who do not or provide economic balance for those producers who are over applying nutrients. If successfully correlated the data could provide a university-based prescription equation for variable rate nutrient application based on grid sampling.

TITLE:	Enhancement of Mississippi Soybean Variety Trials Through Entry Standardization, 23-2021, 51,954
PI:	Brad Burgess, bburgess@pss.msstate.edu, MSU-MAFES/PSS
Objective(s):	Conduct standardized soybean variety trials at multiple Mississippi locations to result in unbiased yield data with varied soybean cultivars.
Duration:	Continuous
End Results:	Soybean yield and trait results data, and seed quality data, that can be used by producers to select varieties for individual production environments throughout Mississippi, and that can be entered into the MSPB soybean variety selection tool on www.mssoy.org.

TITLE:	Using Drones to Sample Insects in Soybeans, 25-2021, 12,821
PI:	Fred Musser, fm61@msstate.edu, MSU-MAFES/BMB-EPP
Objective(s):	Develop a drone-powered effective sampling method for insects in soybeans. 2. Correlate the new drone sampling method (Obj. 1) to the current manual sweep net sampling method. 3. Conduct an economic comparison of the drone and manual sweep net sampling methods. This will allow growers and consultants to decide where and when the drone sampling method makes sense for them.
Duration:	Year 2 of 2
End Results:	Drone sampling will improve sampling efficiency and the quality of insect management decisions, especially in fields where walking is difficult. Economic component will allow growers and consultants to decide where and when the drone sampling method makes sense for them.

TITLE:	Development of an Automated System to Incorporate Holes in Lay-Flat Irrigation Tubing During Initial Development in Mississippi Soybean Production Systems, 27-2021, 60,845
PI:	Wes Lowe, wlowe@abe.msstate.edu, MSU-MAFES/ABE
Objective(s):	Develop and assess methodologies for hole insertion into lay-flat irrigation tubing. Develop outlet formation methodologies for punched and slitted holes; assess hole performance (flow characteristics over time change in flow, hole integrity, etc.) for each tubing size and over working pressure range of typical irrigation systems in small-scale laboratory experimentation (single hole or equivalent in transverse cross-sectional area of tubing). Assess lay-flat irrigation tubing material and hole performance characteristics in large-scale experimentation (outdoor, multiple holes, timeline to mimic growing season use and conditions).
Duration:	Year 1 of 4
End Results:	Results from this project will impact 1,100,000 irrigated soybean acres in Mississippi. CHS can decrease pumping costs by 25% on average. With an average savings of $9/acre with the use of CHS alone, the development of an innovative automated hole punching system has the potential to save almost $10 million for Mississippi soybean growers.

TITLE:	Evaluating New Production Inputs That Will Contribute to High Yield Soybeans, 28-2021, 28,459
PI:	Alan Blaine/Southern Ag Services, Inc., alan@southernaginc.com, Owner private firm
Objective(s):	1. Evaluate the effect of plant bug control on soybean yield using insecticide (Transform and/or Orthene) application and timing strategies. 2. Evaluate the effect of plant growth regulators (Pix and Apogee) on soybean physiology and yield. 3. Evaluate combinations of treatments listed in Objectives 1-3 for synergism and opportunities to minimize trips across the field.
Duration:	Year 2 of 2
End Results:	Research and support for the identification of high yield inputs for soybeans will benefit the soybean industry in several ways. First, it will keep the crop at the forefront of U.S. production and secondly, will allow us to possibly identify cost effective ways for increasing yields.

TITLE:	Delta Agricultural Weather Center, 29-2021, $30,000
PI:	Mark Silva, ams158@msstate.edu, MSU-DREC
Objective(s):	Continue data collection and dissemination of pertinent agricultural weather data and products required by Delta researchers and producers.
Duration:	Continuous
End Results:	Collection of weather data for Miss. Counties that will be assimilated into the DREC weather website archive to be available as a source for both current and historical weather data for researchers, producers, and consultants.

TITLE:	Development of Molecular Diagnostic Method for the Diamide Resistance in Soybean Looper, 32-2021, 55,139
PI:	Seung-Joon Ahn, seungioon.ahn@msstate.edu, MSU-MAFES/ BMB-EPP
Objective(s):	Establish and maintain a resistant strain of soybean looper from Puerto Rico and make comparisons between susceptible and resistant strains of the diamide resistance genes. Also conduct standard diamide bioassays for soybean looper populations collected in Mississippi. Develop a molecular diagnostic marker to detect resistant soybean looper larvae and monitor resistance in field populations with a molecular diagnosis kit.
Duration:	Year 1 of 3
End Results:	Develop a rapid and accurate diagnostic method based on DNA sequences to screen populations of soybean looper for resistance to diamide insecticides.

TITLE:	Developing Improved Soybean Lines for Seed Composition, Quality, and Heat Tolerance in Mississippi, 33-2021, 22,210
PI:	Nacer Bellaloui, nacer.bellaloui@ars.usda.gov, USDA-ARS
Objective(s):	Identifying/development of inbred lines with improved heat tolerance and better seed composition and quality that can be incorporated into a soybean breeding program to develop improved cultivars.
Duration:	Year 3 of 3
End Results:	Identifying/development of inbred lines with improved heat tolerance and better seed composition and quality that can be incorporated into a soybean breeding program to develop improved cultivars.

TITLE:	Soybean Management by Application of Research and Technology (SMART), 36-2021, 216,362
PI:	Trent Irby, tirby@pss.msstate.edu, MSU-ES/PSS
Objective(s):	Identify and apply key management practices that increase soybean production profitability, provide a hands-on educational opportunity to assess profitable best management practices (BMP's) for soybean producers, collect long-term data for determining specific BMP's that consistently increase yields and profits, and promote BMP's that are proven to sustain profitable Mississippi soybean production.
Duration:	Continuous
End Results:	Demonstrating and showcasing BMP's that are proven to consistently and sustainably improve soybean production in all Mississippi regions, and disseminating this information to producers, extension personnel, and consultants.

TITLE:	Development of a Predictive Model to Determine the Influence of Weather on the Northern Expansion of Red Banded Stink Bug, 39-2021, 49,120
PI:	Angus Catchot, acatchot@entomology.msstate.edu, MSU-MAFES/ BMB-EPP
Objective(s):	Conduct ditch bank and early cover crop surveys in legumes in the early spring to predict RBSB population and to quantify the role of weather in its range expansion and contraction in Mississippi.
Duration:	Year 1 of 2
End Results:	These analyses will use two landscape-level approaches to evaluate annual range dynamics of RBSB. For the first, we will develop a spatial regression model in which the response variable will be the presence/absence of stink bugs per site per year.

TITLE:	Evaluating Nutrient Availability Following Cover Crops in Mississippi Soybean Production Systems, 40-2021, 29,781
PI:	Justin M. McCoy, justin.mccoy@msstate.edu, MSU-MAFES&ES/NMREC
Objective(s):	Determine if cover crop systems will improve nutrient availability and subsequent soybean yields in a possible nutrient deficient situation. Determine if cover crop systems will improve nutrient availability and subsequent soybean yields following a routine P and K fall fertilization regime.
Duration:	Year 2 of 3
End Results:	This data would immediately affect producers who intend to plant cover crops and also those who annually apply P and K. This data could also bring heightened awareness to those who do not use these practices or provide economic balance for those producers who wish to implement a cover crop system.

TITLE:	Video Support for Mississippi Soybean Producers, 41-2021, 16,387
PI:	Elizabeth North, elizabeth.north@msstate.edu, MSU- MSU-OAC
Objective(s):	Identify important soybean production topics and produce video segments that will provide producers with current, timely information needed to address issues related to those topics; video presentations of results from MSPB-funded research projects that will be posted on the MSSOY YouTube channel.
Duration:	Continuous
End Results:	Video segments featuring projects and presentations of results from MSPB-funded projects posted on the MSPB website.

TITLE:	Safeguarding Mississippi Soybean Production from Interactive Heat and Drought Stress Induced Yield and Quality Losses, 43-2021, 59,079
PI:	Raju Bheemanahalli Rangappa, rajubr@pss.msstate.edu, MSU- MAFES/PSS
Objective(s):	Evaluate reproductive and physiology responses of soybeans to interactive heat and drought stress and to quantify the impact of drought and heat stress during the flowering and pod-fill stages in terms of soybean yield and quality dynamics
Duration:	Year 1 of 2
End Results:	The information developed and identified tolerant soybean lines from this project would help growers choose lines suitable to their local environment. The project's outcome or results will be disseminated through presentations, and journal publications, in regional and national meetings and producer meetings.

TITLE:	Evaluation of Palmer Amaranth Control with Summer and Winter Annual Cover Crops Alone and Coupled with Herbicides, 46-2021, 41,925
PI:	Dan Reynolds, dreynolds@pss.msstate.edu, MSU–MAFES/PSS
Objective(s):	Evaluation of indigenous and exotic cover crop species for establishment, growth rate, biomass production, and persistence; Evaluation of effect seeding time of summer and winter annual cover crops on pigweed control; and development and evaluation of precision planting practices for planting soybeans into standing cover crops.
Duration:	Year 5 of 5
End Results:	Development of an alternative production system that utilizes the best cover crop management practices to control problematic weeds in Mississippi soybeans.

TITLE:	Cover Crop Aerial Seeding and Sensor Thresholds for Irrigation Scheduling in Soybean Production, 49-2021, 17,736
PI:	Gurpreet Kaur, Gk340@msstate.edu, MSU-MAFES/DREC-NCAAR
Objective(s):	Evaluate the impact of irrigation thresholds (-40 kpa and -90 kpa) and cover crops on soybean yield and yield components, seed quality, irrigation water used and water use efficiency, and net returns above irrigation costs. Evaluating the effects of cover crops on soil available nutrients, soil physical properties including bulk density, compaction, infiltration; and subsurface water quality.
Duration:	Year 1 of 3
End Results:	The rotational benefit of soybean cover crop rotation can supplement the issue of monoculture soybean production system. Results from this project could impact 1,000,000 irrigated soybean acres in Mississippi and aid in sustaining the Mississippi River Alluvial Aquifer. Water and fuel savings will increase the producer's bottom line.

TITLE:	Sicklepod Extract Formulations as Natural and Effective Deer and Insect Repellent, 51-2021, 64,067
PI:	Te-Ming Paul Tseng, t.tseng@msstate.edu, MSU-MAFES/PSS
Objective(s):	**P**repare and characterize four formulations of sicklepod extract for improved deer and insect repelling efficacy and select effective formulations for trials in forestry and agronomy research fields using unmanned aerial vehicles (UAVs), plant surveys, and trail cameras to quantify deer and insect use and damage to soybeans in treatment and control plantings.
Duration:	Year 2 of 3
End Results:	The availability of natural anti-herbivory compound formulation(s) identified in this study will lead to an increase in the environmental sustainability of agriculture with reductions in the need for synthetic pesticides. The project will identify anthraquinone formulation(s) (developed using sicklepod seeds) effective in repelling insects and deer (anti-herbivory). The other part of the project is to determine the specific anti-herbivory compounds associated with the anti-herbivory trait. These compounds can be used in identifying genes useful in molecular breeding to breed anti-herbivory traits into soybean. Soybean with significant anti-herbivore property will prevent yield losses incurred due to herbivores especially deer and insects.

TITLE:	Characterize Root Microbial Communities with Anti-Fungal Activities in Soybean, 53-2021, 122,002
PI:	Sorina C. Popescu, scp319@msstate.edu, MSU-BCH-EPP
Objective(s):	Characterize the growth-promoting and Xylaria-biocontrol activities of rhizobiome microorganisms in soybean and evaluate the impact of Xylaria infection on the composition of soybean rhizobiome. Also evaluate the biocontrol activity of rhizobiome microorganisms against soybean taproot decline in the field
Duration:	Year 2 of 4
End Results:	**C**haracterize the diversity of rhizobiome microorganisms that cause specific phenotypes in soybeans, test rhizobiome isolates for beneficial activities, and utilize this knowledge to establish methods for improved growth and biological control of soil pathogens. Anticipate having characterized a library of microorganisms for biocontrol and growth-enhancing effects. Results are expected to have an important positive impact on TRD management because they will provide evidence and proof-of-principle for the future development of synthetic rhizobiomes for targeted use against Xylaria sp., ultimately providing new opportunities to enhance soybean production in MS by reducing TRD incidence.

TITLE:	Evaluation of the Effects of Early Season Flooding on Soybean Growth and Yield, Physiology, and Economics. 56-2021, 13,848
PI:	Daryl Chastain, drc373@msstate.edu, MSU-MAFES/DREC
Objective(s):	Identify physiological mechanisms related to flood tolerance in soybean germplasm, and develop flood-tolerant, high-yielding germplasm that can be used to develop MG III and IV soybean varieties with this trait.
Duration:	Year 3 of 3
End Results:	Availability of soybean breeding lines that can be used to develop soybean varieties with improved tolerance to flooding, plus a management guide that can be used by producers to identify and adopt BMP's to deal with flooding.

TITLE:	Improving Dryland Soybean Yield, Profit and Health of Dominant Soils Across Mississippi, 62-2021, 29,125
PI:	Gary Feng, gary.feng@ars.usda.gov, USDA-ARS
Objective(s):	Determine cost-effective, optimal management practices to stabilize dryland yield and economic return from soybean grown on the major soil types/growing environments across Mississippi.
Duration:	Year 2 of 3
End Results:	Determination/identification of optimum soil management practices that should be used to stabilize yield, production costs, and economic return from dryland soybean production across years.

TITLE:	Determining Duration of Residual Control of Soil-Applied Herbicides to Form Total Preemergence Herbicide Programs in Soybean, 63-2021, 40,677
PI:	J. Conner Ferguson, connor.ferguson@msstate.edu, MSU–MAFES/PSS
Objective(s):	Evaluate duration of control for labeled soil-applied herbicides in soybean production and determine the rainfall activation requirements for labeled soil-applied herbicides in soybean production. Overall goal is to take information from the two objectives and develop and evaluate total preemergence (PRE) herbicide program for soybean**.**
Duration:	Year 1 of 2
End Results:	The expected end products will be an experiment station bulletin – including a separate guide for rainfall activation of soil-applied herbicides and length of control for soil-applied herbicides, as well as one or more refereed publication(s) that describes the results.

TITLE:	Improving Herbicide Efficacy and Residue Penetration of Herbicides Using Common Adjuvants for Weed Control in Soybean, 64-2021, 39,672
PI:	J. Conner Ferguson, connor.ferguson@msstate.edu, MSU–MAFES/PSS
Objective(s):	Evaluate herbicide efficacy and weed control of several commonly available adjuvants for control of Amaranthus spp., prickly sida (teaweed), and barnyardgrass. Research the effectiveness of non-ionic surfactants and silicone-based herbicides at penetrating through cover-crop and crop residues to improve soil contact and herbicide efficacy for soil-applied herbicides. Develop an easy-to-use guide for soybean farmers to aid in making adjuvant purchases for specific herbicide programs in Mississippi.
Duration:	Year 1 of 2
End Results:	This project seeks to determine which adjuvants are most effective in aiding herbicide applications for control of Amaranthus spp., teaweed, and barnyardgrass. Improved herbicide efficacy through the adoption of effective adjuvants will ensure that herbicides work the first time, resulting in maintaining maximum yields for soybean growers. By improving control of weeds at initial application, the potential for herbicide resistance development will be mitigated, and ultimately the return on investment of herbicide programs will improve for Mississippi soybean farmers.

TITLE:	MSSOY Website Hosting and Management, 65-2021, 13,967
PI:	James R. Loper, randy.loper@msstate.edu, MSU–MSUES
Objective(s):	Establish and configure new web server and hosting software for MSSOY.org. Transition content from OBP hosted servers to new servers. Launch website(s) under new hosting platform. Provide for day-to-day management and editing of web content. Formulate long term plans for websites.
Duration:	Continuous
End Results:	The end product will be the mssoy.org website and its sub-domain websites will be hosted on a commercial hosting service and will be supported by MSU-ES CTO personnel that will work closely alongside MSPB members.