MISSISSIPPI SOYBEAN PROMOTION BOARD
2017-2018 FUNDED RESEARCH/EXTENSION PROJECTS

Title: Evaluation of alternative management tactics for early season insect pests of soybeans and impact of seed treatments on stand establishment and replant prevention, 01-2017, $14,126

PI: Don Cook, dcook@drec.msstate.edu; MSU-DREC

Objective(s): Evaluate at-planting insecticides as alternatives to neonicotinoid seed treatments; determine impact of neonicotinoid seed treatments on stand establishment and minimizing risk of replanting

Duration: Year 2 of 3

Expected Results: Identify alternatives to neonicotinoid seed treatments, and determine the benefit of seed treatments for minimizing failed stands/replanting.

Title: Refinement/validation of soybean looper thresholds in Miss. Soybeans, 02-2017, $53,460

PI: Don Cook, dcook@drec.msstate.edu; MSU-DREC

Objective(s): Refine/validate soybean looper thresholds in soybeans, evaluate alternative insecticides (non-diamide products) for looper management, and monitor response of soybean looper populations to diamide insecticides in lab. assays.

Duration: Year 1 of 3

Expected Results: Refinement/validation of management strategies for soybean looper infestations in soybeans.

Title: Impact of fruiting structure loss at various growth stages on soybean yield under conditions that may limit yield potential, 03-2017, $17,928

PI: Don Cook, dcook@drec.msstate.edu; MSU-DREC

Objective(s): Determine impact of fruiting structure loss (flowers, pods) at different reproductive stages on soybean yield in low-yield environments (nonirrigated, late-planted)

Duration: Year 2 of 3

Expected Results: Determination of how fruiting structure loss differentially affects soybean yield in high- and low-yield environments so that economical management guidelines can be tailored for the different production environments.

Title: Stepwise evaluation of high technology production systems by omission research techniques, 06-2017, $23,077

PI: M. Wayne Ebelhar webelhar@drec.msstate.edu, MSU-DREC

Objective(s): Determine the value/importance of specific inputs, through addition or omission, to both agronomic and economic productivity of soybeans under dryland and irrigated conditions across years

Duration: Year 1 of 3

Expected Results: Demonstration of the agronomic and economic implications from adding or omitting various technologies, both alone and in combination, associated with proven yield enhancement of soybean

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Title: Agronomic and economic evaluation of soybean/corn rotation with twin-row production and increased nutrient management, 07-2017, $26,427

PI: M. Wayne Ebelhar webelhar@drec.msstate.edu, MSU-DREC

Objective(s): Determine agronomic implications of soybean/corn rotations in twin-row planting systems under standard and high soil fertility with irrigation; evaluate impact of soybean/corn rotation system on whole-farm profitability.

Duration: Year 6 of 6

Expected Results: Determine the feasibility of a soybean/corn rotation system for increasing yields and profits when used on irrigated soils in Mississippi.

Title: Using weeds as a resource to develop herbivore-resistant soybean, 08-2017, $57,292

PI: Te-Ming Paul Tseng t.tseng@msstate.edu, MSU-PSS

Objective(s): Determine if extracts from weed species can be used to formulate repellents that will prevent deer and insect feeding on soybean, and use UAV and camera technology to assess effectiveness of these repellents when applied to soybean in the field

Duration: Year 1 of 2

Expected Results: Field testing of extracts from various weed species will identify candidate species that have anti-herbivory potential.

Title: Practical application of sensor-based irrigation scheduling method in soybean, 11-2017, $20,000

PI: Ruixiu Sui, ruixiu.sui@ars.usda.gov; USDA-ARS

Objective(s): Develop practical applications for using soil moisture sensors to schedule soybean irrigation; compare soil moisture sensor-based scheduling with Arkansas Irrigation Scheduler

Duration: Year 2 of 3

Expected Results: Guidelines for using soil moisture sensors to schedule soybean irrigation–to include sensor installation, data collection, and data interpretation–so that resulting data can be used to schedule most efficient irrigation.

Title: Managing irrigation water usage and scheduling with producers in NE Mississippi, 12-2017, $9,000

PI: Dennis B. Reginelli, dennis.reginelli@msstate.edu, MSU-ES

Objective(s): Demonstrate the value of using soil moisture sensor technology for irrigation scheduling, encourage soybean producers to adopt this technology to more efficiently use limited irrigation water, and educate soybean producers on how to integrate this technology with soybean growth and development stages to schedule irrigation.

Duration: Year 1 of 2

Expected Results: Using turn-row presentations at grower-participant fields as educational venues to disseminate the benefits from using this technology

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Title: Influence of cover crops on early season insect pest dynamics in Mississippi soybeans, 13-2017, $49,768

PI: Angus Catchot, acatchot@ext.msstate.edu; MSU-ES

Objective(s): Determine 1) influence of cover crops on early-season insect pest dynamics, 2) how cover crops affect efficacy of foliar spray programs for control of early-season insect pests, and 3) effect of cover crops on growth and yield of soybeans in conjunction with IPM insect control programs.

Duration: Year 2 of 3

Expected Results: Information on the effect (risks or benefits) of cover crops use on early-season insect management strategies in soybean production systems, and guidelines to manage insect-related risks if they occur.

Title: Determining environmental management schemes to influence the development of high seed quality in MG IV and MG V soybean, 14-2017, $74,871

PI: Tom Allen, tallen@drec.msstate.edu, MSU-DREC

Objective(s): Create environments (controlled and natural settings) conducive to the development of seed rot, and determine their impact on seed quality; determine specific pathogenic organisms that infect soybean plant parts in the different environments, and their pathogenicity; and determine nutrition status of seed and plant tissue and its possible correlation with seed rot.

Duration: Year 2 of 6

Expected 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.

Title: Soybean disease monitoring for Mississippi soybean producers ,15-2017, $32,000

PI: Tom Allen, tallen@drec.msstate.edu, MSU-DREC

Objective(s): Monitor occurrence and geographic location of foliar diseases, including rust, and provide producers with up-to-date information that can be used to make timely treatment decisions; determine environmental conditions that promote soybean rust and other foliar diseases of soybean; and determine effective fungicide management schemes for treatment of foliar diseases when they occur.

Duration: Continuous

Expected Results: Notification to producers through media outlets within hours of detection of significant outbreaks of yield-limiting diseases so that recommendations for product choices and timely treatment decisions can be made.

Title: Kudzu bug management in soybeans, 17-2017, $54,573

PI: Fred Musser, fm61@msstate.edu, MSU

Objective(s): Develop action thresholds for treatment during vegetative growth stage and evaluate existing action thresholds for treatment during reproductive stages; determine seed treatment efficacy against early-season infestations; and evaluate foliar insecticide efficacy against kudzu bug infestation.

Duration: Year 2 of 3

Expected Results: Development of economic control/management strategies for kudzu bug in Midsouth soybean systems.

Title: 2,4-D and dicamba resistant soybeans: stewardship and testing, 18-2017, $42,310

PI: Ashli Brown, abrown@msstate.edu, MSU

Objective(s): Determine best sampling procedure for detection of auxin herbicide injury on soybeans; develop and validate testing methods to differentiate 2,4-D and dicamba herbicide formulations; design off-target field sampling program to determine best practices and participate in grower education program to promote stewardship of auxin herbicide use.

Duration: Year 2 of 3

Expected Results: Development of methodologies for identifying low-volatility 2,4-D and dicamba formulations, and design and implementation of a stewardship program for effective weed management with auxin herbicides.

Title: Evaluation of soybean varieties for resistance to Cercospora blight, frogeye leaf spot, stem canker, and root-knot nematode, 19-2017, $37,369

PI: Tom Allen, tallen@drec.msstate.edu, MSU-DREC

Objective(s): Evaluate Miss. OVT entries for resistance to Cercospora blight and frogeye leaf spot (natural infestations), stem canker (inoculated trials), and root-knot nematode (naturally infested field); and collect and maintain stem canker isolates from infestations (when they occur) throughout Mississippi.

Duration: Continuous

Expected Results: Data that will provide producers information about the level of varieties' disease/nematode resistance and/or susceptibility so that tolerant/resistant varieties can be selected to avoid yield losses associated with the above pathogens.

Title: Weed management programs for Mississippi soybean production, 20-2017, $88,338

PI: Jason Bond jbond@drec.msstate.edu, MSU-DREC

Objective(s): Evaluate new and/or currently registered herbicides and herbicide-resistant (HR) technologies for use in Mississippi soybean weed management programs; characterize synergism or antagonism between glyphosate and PPO herbicides; and conduct studies to refine Mississippi recommendations for use of PPO herbicides to manage glyphosate-resistant (GR) Palmer amaranth in GR soybeans.

Duration: Year 2 of 3

Expected Results: Identification/development of cost effective control strategies for the 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 that provide new weed management options.

Title: Effect of cover cropping systems on dryland soybean plant vigor, growth, and yield, 21-2017, $61,158

PI: Mark Shankle, shankle@ra.msstate.edu, MSU-PRFBES

Objective(s): Determine the effects of cover cropping systems on dryland soybean growth and yield, soil health, and determine their potential economic benefit

Duration: Year 1 of 6

Expected Results: Identification of an affordable cover cropping system that will contribute to the minimization of inconsistent dryland soybean yield

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Title: Development of fertilization practices for sustaining Miss. soybean production, 22-2017, $58,768

PI: Bobby Golden, bgolden@drec.msstate.edu, MSU-DREC

Objective(s): Evaluate soybean yield response to P and K fertilization rate; continue to build the Miss. soil test responsiveness database in order to update soil test recommendations for soybean in varying cropping systems; determine the appropriate sulfur (S) source and application rate and timing; evaluate potential soil test variability associated with soybean rotations and possible need to adjust soil test recommendations based on rotational crop history.

Duration: Year 1 of 3

Expected Results: Updated P, K, and S fertilization recommendations for soybeans grown in monocropped and rotational cropping systems.

Title: Enhancement of Mississippi Soybean Variety Trials through entry standardization, 23-2017, $30,000

PI: Brad Burgess, bburgess@pss.msstate.edu, MSU-MAFES

Objective(s): Conduct standardized soybean variety trials at multiple Mississippi locations.

Duration: Continuous

Expected Results: Soybean yield and trait results 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: Corn and soybean crop residue management impact on soil quality, yield, and returns, 25-2017, $32,713

PI: Normie Buehring, buehring@ra.msstate.edu, MSU-NMREC

Objective(s): Determine how tillage and management of residue in a corn/soybean rotation affect soil quality, crop yields, and economic returns.

Duration: Year 7 of 7

Expected Results: Information that can be used by producers to make informed decisions (based on soil quality and economic returns) regarding tillage-crop residue management practices in a corn/soybean rotation production system.

Title: Delta agricultural weather project, 29-2017, $24,000

PI: Mark Silva, marks@ext.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

Expected Results: Collection of weather data for Delta Counties that will be assimilated into the DREC weather website archive to be available as a historical weather source for researchers, producers, and consultants.

Title: Evaluation of soybean breeding lines for resistance to Phomopsis seed decay (PSD) and for high seed germinability, 31-2017, $46,570

PI: Shuxian Li, (shuxian.li@ars.usda.gov), USDA-ARS

Objective(s): Evaluate/test soybean breeding lines for resistance to PSD under field-inoculated conditions, and identify agronomically acceptable PSD-resistant lines that can be used in developing PSD-resistant varieties

Duration: Year 2 of 3

Expected Results: Identification of soybean breeding lines with resistance to PSD and having high seed quality that can be used in the development of high-yielding varieties with PSD resistance.

Title: Inheritance of a water use efficiency (WUE) trait in soybean and its integration into improved soybean germplasm with high germinability, 32-2017, $24,900

PI: Jeff Ray, jeff.ray@ars.usda.gov, USDA-ARS

Objective(s): Identify QTL's associated with WUE in a soybean population developed from soybean lines differing in WUE, and select agronomically sound breeding lines with improved WUE from these populations

Duration: Year 1 of 3

Expected Results: Development and release of soybean germplasm that possesses improved WUE and high seed germinability when grown in high temperature environments

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Title: Provide in-field soybean diagnostic service for Mississippi soybean producers and researchers, 35-2017, $12,500

PI: Billy Moore, wfm1888@aol.com, Private Consultant

Objective(s): To provide soybean disease diagnostic assistance to soybean producers and leaders of MSPB-funded projects.

Duration: Continuous

Expected Results: Disease problems that occur in producer and MSPB-funded project fields will be evaluated to provide disease management assistance to MSU researchers and extension personnel.

Title: Soybean management by application of research and technology (SMART), 36-2017, $164,141

PI: Trent Irby, tirby@pss.msstate.edu, MSU-ES

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), 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

Expected 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: Quest for an alternative, environmentally friendly control method for charcoal rot fungus: mycoviruses, 37-2017, $27,522

PI: Nina Aboughanem, nja62@msstate.edu, MSU-IGBB

Objective(s): Identify and characterize mycoviruses that naturally infect the charcoal rot fungus (CRF) so that potential sustainable tools can be developed for biocontrol of the CRF.

Duration: Year 1 of 2

Expected Results: Selected isolates that contain viruses with possible virulence toward the CRF will be identified for use in further studies designed to develop possible biocontrol agents for the CFR.

Title: Irrigation scheduling of soybean–A dual threshold method to eliminate yield-reducing stresses and maximize water use efficiency, 40-2017, $70,752

PI: H.C. Pringle, III lpringle@drec.msstate.edu, MSU-DREC

Objective(s): Determine a dual threshold based on heat and moisture deficit-related stresses to use to maximize irrigated soybean yield while simultaneously ensuring the greatest WUE and economic return

Duration: Year 1 of 3

Expected Results: Irrigation scheduling thresholds will be developed that will ensure proper furrow irrigation in order to minimize both number of irrigations and amount of irrigation water applied

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Title: Video support for Mississippi soybean producers, 41-2017, $16,216

PI: Leighton Spann, leightons@ext.msstate.edu, MSU-OAC

Duration: Continuous

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 MSPB website (www.mssoy.org)

Expected Results: Video segments featuring projects and presentations of results from MSPB-funded projects posted on the MSPB website.

Title: Evaluation and development of effective tank cleanout procedures following use of auxin herbicides, 44-2017, $60,000

PI: Dan Reynolds, dreynolds@pss.msstate.edu, MSU–PSS

Duration: Year 1 of 1

Objective(s): Evaluate the effectiveness of various tank cleaners used after sprayer contamination with auxin herbicides, determine if these cleaners cause a phytotoxic plant response, determine the percent tank volume necessary for cleanout, and determine rinse/cleaner sequence to be used in the cleanout after use of auxin herbicides.

Expected Results: Final procedures and guidelines necessary for tank/sprayer system cleanout following contamination with auxin herbicides will be provided.

Title: TBD, 46-2017, $60,000,

PI: Dan Reynolds, dreynolds@pss.msstate.edu, MSU-PSS

Duration: TBD

Objective(s): TBD

Expected Results: TBD

Title: Ultra-low altitude plant sensing through UAV's with protable hyperspectral imagers for detection of glyphosate-resistant and susceptible weeds in soybean fields, 47-2017, $18,839

PI: Yanbo Huang, yanbo.huang@ars.usda.gov, USDA-ARS

Duration: Year 1 of 2

Objective(s): Develop a UAV-based hyperspectraul system for differentiating GR weeds from GS weeds in soybean fields: determine optimal flight altitude, classify GR and GS weeds using field-acquired hyperspectral data, map GR and GS weed distribution based on this classification, and evaluate the technical and economic feasibilities of UAV imaging systems for this purpose.

Expected Results: Combining hyperspectral sensing techniques with UAV's to provide rapid, consistent, and accurate field identification of GR and GS weed populations in soybean fields in order to implement site-specific weed management practices.

Title: Sample collection and transportation method effects on accuracy of nematode analysis in Miss. soybean fields, 48-2017, $5,082

PI: Bill Burdine, (bill.burdine@msstate.edu), MSU-ES

Duration: Year 1 of 1

Objective(s): Compare and contrast nematode sampling and transportation techniques of producers vs. Extension Specialist on results from sample analyses

Expected Results: Guidelines for proper sampling and handling techniques to ensure accurate nematode analyses and resulting recommendations to soybean producers

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Title: Investigation and demonstration of the potential for UAV systems to detect and quantify stressors in soybean production fields, 49-2017, $18,787

PI: Joby Czarnecki, (joby.czarnecki@msstate.edu), MSU-GRI

Duration: Year 1 of 1

Objective(s): To determine the potential utility of UAV technology to identify specific stressors in soybean fields in order to indicate the potential for and scale of investment in it

Expected Results: Documentation of the usability of and estimated costs for using UAV's in soybean fields in order to determine the feasibility of investment in the technology

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Title: Farm Families of Mississippi, MFBF, 50-2017, $15,000

Title: Cover crop and tillage effects on irrigation application efficiency, irrigation scheduling, soil physical properties, runoff, soybean yield, and economic return, 52-2017, $70,772

PI: Jason Krutz, jkrutz@drec.msstate.edu, MSU-DREC

Duration: Year 3 of 3

Objective(s): Determine the effect of cover crops combined with tillage system on irrigation efficiency, soil properties, runoff, and soybean yield and economic return.

Expected Results: Development of BMP's for using a combination of cover crops and tillage system in irrigated soybean production systems.

Title: Row crop irrigation science extension and research (RISER) program, 55-2017, $193,331

PI: Jason Krutz, jkrutz@drec.msstate.edu, MSU-DREC

Duration: Year 2 of 3

Objective(s): Develop and validate irrigation best management practices (BMP's) for soybean, and utilize onsite farm application and training programs to transfer and facilitate wide-spread adoption of these BMP's and complementary water conservation tools to and by producers who irrigate soybeans in Mississippi; determine effect of different agronomic practices on water use efficiency and irrigation economics for soybean

Expected Results: Identification and validation of irrigation BMP's; facilitating the adoption of BMP's by disseminating this information to Mississippi soybean producers in training venues offered via new and existing extension programs and a comprehensive irrigation guide; and determination of best agronomic practices to use for irrigated soybean.

Title: Evaluation of the effects of flooding on soybean growth, recovery, and yield, 56-2017, $10,623

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Year 1 of 2

Objective(s): Characterize germplasm and identify genes for flood tolerance that can be used to develop high-yielding soybean genotypes that are tolerant of soil flooding

Expected Results: Development of soybean varieties that are tolerant to soil flooding, and a guide of BMP's for dealing with prolonged soil flooding

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Title: Evaluation of multiple agronomic considerations with harvest aid use in Mississippi soybean production, 57-2017, $59,348

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Year 2 of 2

Objective(s): Investigate the effects of 1) adjuvants and spray volume on efficacy of harvest aids applied to soybean, 2) harvest interval after harvest aid application on yield, seed moisture, and shattering, and 3) various rates of paraquat applied to soybean at multiple growth stages to simulate spray tank contamination and drift

Expected Results: Recommendations for proper spray volumes and adjuvants to use to minimize costs and maximize efficacy of harvest aids, and provide producers yield loss estimates associated with delayed harvest that may result from harvest aid use.

Title: Red-banded stink bug (RBSB): An immediate threat to Miss. soybean producers, 58-2017, $29,043

PI: Angus Catchot, acatchot@ext.msstate.edu, MSU-ES

Duration: Year 1 of 1

Objective(s): Determine in-field damage potential of RBSB in Miss. soybean fields, determine insecticidal efficacy to control RBSB, and determine effect of insecticide termination timing on damage caused by RBSB

Expected Results: Guidelines for managing RBSB in Miss. soybean fields to prevent yield and seed quality losses.

Title: Development of a new and improved growth staging system for soybean, 59-2017, $10,000

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Year 1 of 1

Objective(s): Simplify current growth stage indicators to better describe soybean seed fill duration, physiological and harvest maturity, soybean maturity groups, and role of determinancy in designation of growth stages (This is a collaborative project among 9 US soybean-producing states)

Expected Results: Development and description of an improved soybean growth staging system that can be used to 1) better time inputs that are based on growth stage, and 2) improve criteria for selection of maturity groups

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Title: Characterization of antifungal activity of endophytic bacteria associated with the charcoal rot disease system in soybean, 60-2017, $18,300

PI: Shi-En Lu (sl332@msstate.edu), MSU-BMBEPP

Duration: Year 1 of 2

Objective(s): Determine effect of inoculation of bacteria and fungi on charcoal rot disease development on soybean, and characterize the genes associated with this potential antifungal activity

Expected Results: Identification and development of a charcoal rot control package based on microbe-based systems

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Title: Stabilizing dryland soybean yield and profit in dominant soils across Mississippi, 62-2017, $26,000

PI: Gary Feng (Gary Feng, gary.feng@ars.usda.gov), USDA-ARS

Duration: Year 1 of 3

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

Expected 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

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Title: On-farm, interactive soybean Management Verification Program (MVP), 63-2017, $59,384

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Continuous

Objective(s): Work with growers to increase adoption of MSU-ES recommendations by soybean producers in Mississippi to increase profitability and efficiency of soybean production on individual farms

Expected Results: Adoption of MSU-ES best management practices by multiple grower participants, which will eventually lead to widespread adoption of these practices

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Title: Maximization of yield and economic returns from nonirrigated soybean production in Mississippi, 65-2017, $34,371

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Year 2 of 3

Objective(s): Determine best agronomic practices (beds vs. flat planting, row spacing, MG, and planting date) to use for profit maximization from dryland soybean production

Expected Results: Recommendations of production systems that should be used to consistently produce profitable soybean yields under dryland conditions

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Title: On-farm, field-scale evaluation of soybean row spacing and seeding rates, 66-2017, $59,348

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Year 2 of 2

Objective(s): Determine interaction of row spacing/seeding rate (using precision planting) combinations on yield from soybean, and quantify effects on physiological characteristics, plant water status, and water use efficiency in various production systems

Expected Results: Define appropriate seeding rates for varying row spacings used in irrigated soybean production

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Title: Agronomic evaluation of USDA heat-tolerant MG III soybean germplasm for use in the Early Soybean Production System (ESPS), 67-2017, $14,964

PI: John Orlowski, john.orlowski@msstate.edu, MSU-DREC

Duration: Year 2 of 2

Objective(s): Compare productivity and seed quality of newly-developed late MG III soybean lines to traditional MG III soybean varieties, and compare the economics of narrow- and twin-row soybean production for traditional and heat-tolerant MG III genotypes

Expected Results: Identify early-maturing heat-tolerant soybean lines that can be used to develop varieties that will produce acceptable yields of seed with higher quality from dryland production systems

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Title: Developing screening tools to assess abiotic stress tolerance among newly released and most commonly used soybean cultivars, 75-2017, $56,849

PI: K. Raja Reddy, krreddy@pss.msstate.edu, MSU-PSS

Duration: Year 1 of 3

Objective(s): Determine possible variation in cold and/or drought tolerance among commercial soybean cultivars, determine traits that can be used for screening for cold/drought tolerance, and classify/rank commercial soybean cultivars based on combined stress response to cold/drought tolerance

Expected Results: Identification of cold- and drought-tolerant traits that can be used to develop improved genotypes for early soybean planting

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Title: Maximizing soybean yield in Mississippi: Influence of plant populations, seed treatment, and stand loss on overall profitability, 74-2017 (Moore Fellowship), $71,970

PI: Angus Catchot, acatchot@ext.msstate.edu, MSU-ES

Duration: Year 2 of 3 (Started Jan. 1, 2016–ends Dec. 31, 2018)

Objective(s): Effect of plant population (with precision planting), seed treatments, and planting date on soybean yield; identification of alternatives to neonicotinoid seed treatments; and effect of stand loss (often caused by insects) and timing of stand loss in different plant populations on soybean yield

Expected Results:	Identify plant populations that will maximize soybean yield potential from differing soybean production systems, provide information on potential replacement products or practices for neonicotinoid seed treatments, and provide information that can be used to make replant decisions that are specific to specific plant populations

Title:	Effect of incremental sub-threshold levels of insect defoliation on yield of soybeans in Mississippi, 77-2016 (Hester Fellowship), $71,858
PI:	Benjamin Thrash, recipient, bct157@msstate.edu, Miss. State Univ.
Duration:	Year 3 of 3 (started Aug. 15, 2014–ends Aug. 14, 2017)
Objective(s):	Evaluate effect on yield reduction in soybeans resulting from incremental insect defoliation during vegetative and reproductive development, and determine influence of irrigation on soybean yield loss from insect defoliation
Expected Results:	Refinement of treatment thresholds 1) that take into account the incremental foliage losses in soybean that result from multiple defoliation events caused by multiple insect pests during the growing season, and 2) that are based on dryland vs. irrigated production systems

Title:	Characterization of soybean taproot decline; a new disease in Mississippi soybean production fields, 78-2017, $57,772
PI:	Maria Tomaso-Peterson, mariat@pss.msstate.edu, MSU-
Duration:	Year 2 of 3
Objective(s):	Study colonization and infection process of the taproot decline pathogen, ID the growth stage at which soybean is most susceptible to infection by the pathogen, and develop a screening method to determine tolerance among soybean cultivars to the pathogen
Expected Results:	A description of the timing of interaction between the soybean host and the taproot decline pathogen, and approaches to timing and methods of fungicide applications to prevent yield loss caused by the pathogen

Title:	Mississippi soybean forum, 80-2017, $10,000
PI:	John Orlowski, john.orlowski@msstate.edu, MSU-DREC
Duration:	Year 2
Objective(s):	Provide a venue and program to discuss topics pertinent to soybean production in Mississippi

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Expected Results:	Presentation and discussion of topics pertinent to soybean production in Mississippi, and recognition of winners of Mississippi Soybean Yield Contest
Title:	Mississippi soybean yield contest, 82-2017, $22,000
PI:	John Orlowski, john.orlowski@msstate.edu, MSU-DREC
Duration:	Year 1
Objective(s):	Promote soybean production in Mississippi by having a yield contest that provides insight into producer practices/BMP's used to obtain high yields
Expected Results:	A yield contest summary that identifies high-yield winners and other top entries, and their production practices used to achieve the winning yields

Compiled by Larry G. Heatherly, Mar. 2017, larryheatherly@bellsouth.net