FUNDED RESEARCH/EXTENSION PROJECTS–2013-2014

Title: Lepidopteran insect pest management in soybeans, 01-2013, $70,709

PI: Don Cook (dcook@drec.msstate.edu), Miss. State Univ.

Objectives: Refine/validate current corn earworm thresholds in soybeans; determine residual efficacy of new insecticides for control of soybean looper; maintain and continue testing of labeled insecticides to manage soybean insects.

Duration: Year 3 of 4

Expected Results: Development of data that will be used to update soybean insect control guidelines in the "Insect Control Guide for Agronomic Crops".

Title: Evaluation of soybean plant response to tillage system, 02-2013, $12,000

PI: Ernie Flint, ernestf@ext.msstate.edu, MCES

Objectives: Determine economic feasibility of adopting a no-till system for soybean production, and evaluate soybean performance and soil parameters when a no-till system is converted to a till system of production.

Duration: Year 1 of 3

Expected Results: Provide definitive expectations that will be realized from converting a till system for soybean production to a no-till system, and vice versa.

Title: Validity of current K recommendations for high yielding soybeans with respect to grain yield and disease control, 03-2013, $30,922

PI: Gabe Sciumbato (Gabe@drec.msstate.edu), Miss. State Univ./DREC

Objectives: Determine soil K level necessary for high-yielding environments and lowest foliar disease levels; determine optimum soil K level to minimize foliar disease occurrence and dependence on late-season foliar fungicide applications.

Duration: Year 3 of 3

Expected Results: Improved recommendations for soil K fertilization that will maximize yield in high-yield environments and improve soybean health and resistance to foliar diseases.

Title:	Support of Delta Agriculture, Delta Council, 05-2013, $15,000

Title:	Rapid ID of soybean fungi by spectroscopic techniques, 06-2013, $63,405
PI:	Ashli Brown (abrown@pch.msstate.edu), Miss. State Univ.
Objective:	Develop spectrometric techniques that can be used to identify specific fungi in field samples.
Duration:	Year 3 of 3
Expected Results:	Generation of spectral libraries that will allow the rapid identification of a specific fungus specie on soybeans in the field.

Title:	Agronomic and economic evaluation of soybean/corn rotation with twin-row production and increased nutrient management, 07-2013, $18,029
PI:	M. Wayne Ebelhar (webelhar@drec.msstate.edu), Miss. State Univ./DREC
Objectives:	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 2 of 6
Expected Results:	Determination of the feasibility of a soybean/corn rotation system for increasing yields and profits when used on irrigated soils in Mississippi.

Title:	Evaluation of seasonal irrigation requirements and impact on yield and seed quality of soybeans, 08-2013, $15,110
PI:	Daniel K. Fisher (daniel.fisher@ars.usda.gov), USDA-ARS
Objective:	Determine seasonal water requirements for soybeans, and examine impacts of irrigation management on soybean seed yield and quality.
Duration:	2 of 3
Expected Results:	Establish relationships between water use and soybean yield and seed quality, and subsequently establish guidelines for more efficient and economical irrigation of soybeans.

Title:	Improving soybean nutrient management using timely soil testing programs, 09-2013, $14,000
PI:	Larry Oldham (loldham@pss.msstate.edu), Miss. State Univ.
Objectives:	Improve soil sampling management for better utilization of inorganic fertilizer nutrients with variable price points; increase awareness of the importance of soil testing for P and K fertility management in soybean production environments.
Duration:	Year 3 of 3

Expected Results:	New or improved guidelines that will be used to improve fertilizer use efficiency by reducing either over- or under-fertilization of soybeans in varied Mississippi soybean production environments.

Title:	On-farm validation of the Mississippi Irrigation Scheduler Tool (MIST), 10-2013, $114,987
PI:	Mary Love Tagert, (MLTagert@abe.msstate.edu), Miss. State Univ.
Objectives:	Develop water release data for typical Mississippi soils and calibrate soil moisture sensors to these values; test and validate MIST for common Mississippi soybean production environments; confirm irrigation application rates recommended by MIST; develop the user interface and integrate research results into the web-based version of MIST.
Duration:	Year 3 of 3
Expected Results:	Development of a validated online irrigation scheduling tool for Mississippi soybean producers.

Title:	Assessing the impact of the new farm bill on Mississippi soybean farms, 11-2013, $28,280
PI:	Barry Barnett, (barnett@agecon.msstate.edu), Miss. State Univ.
Objective:	Develop risk-based simulation models for representative Mississippi soybean farms.
Duration:	Year 1 of 1
Expected Results:	Development of policy briefs that will be presented to producer groups and posted on MSSOY.

Title:	Nematode management investigations and varietal response to nematode pressure in old cotton field settings, 12-2013, $38,718
PI:	Tom Allen, (tallen@drec.msstate.edu), Miss. State Univ./DREC
Objectives:	On root-knot nematode infested soybean production sites, the following will be determined: 1) effect of seed-applied nematicide on soybean production; 2) variety response to nematicide seed treatment; 3) soybean yield response to K fertilization; and 4) possible role of winter cover crops for managing sites with high nematode pressure.
Duration:	Year 1 of 3
Expected Results:	Specific management guidelines for growing soybeans on soils that were previously cropped to cotton and have high densities of root knot nematode.

Title:	Determining environmental management schemes to influence the development of high seed quality in MG IV and MG V soybean, 14-2013, $268,506

PI: Tom Allen (tallen@drec.msstate.edu), Miss. State Univ./DREC

Objectives: Create environments (controlled and natural settings) conducive to the development of seed rot; determine specific pathogenic organisms that infect soybean plants in the different environments, and their pathogenicity; determine if plant nutrition status is correlated with seed rot.

Duration: Year 1 of 6

Expected Results: Determination of the fungal complex responsible for and its association with seed rot in high moisture environments; determination of specific environmental conditions 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 ,15-2013, $50,000

PI: Tom Allen (tallen@drec.msstate.edu), Miss. State Univ./DREC

Objectives: Monitor occurrence and geographic location of foliar diseases, including rust, to provide producers with up-to-date information that can be used to make timely treatment decisions; determine environmental conditions that promote soybean rust, and effective fungicide management schemes for rust treatment in locations where it occurs.

Duration: Continuous

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

Title: Irrigation use and efficiency in soybean production systems in Mississippi, 16-2013, $39,192

PI: Tom Eubank (teubank@drec.msstate.edu), Miss. State Univ./DREC

Objectives: Measure seed yield of and economic returns to ESPS soybean plantings in nonirrigated and irrigated production systems.

Duration: Year 1 of 3

Expected Results: Identification of conservation measures to use to reduce total amount of irrigation water applied to ESPS soybean plantings in the Delta in order to halt drawdown of the alluvial aquifer and also lower irrigation costs and associated energy usage.

Title: Threecornered alfalfa hopper (TCAH) management in soybeans, 17-2013, $47,285

PI:	Fred Musser (fm61@msstate.edu), Miss. State Univ.
Objectives:	Refine current TCAH thresholds in soybeans; estimate sweep net sampling efficiency for TCAH in soybeans; and evaluate efficacy and residual activity of insecticide seed treatments and foliar insecticides against TCAH.
Duration:	Year 2 of 3
Expected Results:	Refined thresholds to enable consultants and growers to apply insecticides when economically justified, and the guidelines to translate sweep net catches of TCAH into reliable threshold estimates.

Title:	Development of a rapid genetic field race test for SCN and generation of SCN resistance through gene inactivation, 18-2013, $99,606
PI:	Vincent Klink (vklink@biology@msstate.edu), Miss. State Univ.
Objective:	Develop a rapid genetic field race test that can be used for on-site testing of soil samples and that will reduce the time required for determining the presence and infestation level of SCN and other nematodes.
Duration:	Year 3 of 4
Expected Results:	Provide a molecular diagnostic tool that can rapidly and accurately detect SCN presence, race, and infestation level in soil samples, as well as determine the presence of other nematode species.

Title:	Evaluation of private and public soybean varieties and breeding lines for resistance to stem canker, forgeye leaf spot, purple leaf and pod stain, black root rot, and rust, 19-2013, $49,093
PI:	Gabe Sciumbato (Gabe@drec.msstate.edu), Miss. State Univ./DREC
Objectives:	Determine virulence of collected stem canker isolates; evaluate entries in the Mississippi Soybean Variety Trials (MSVT) for resistance/reaction to stem canker, frogeye leaf spot, purple leaf and pod stain, and black root rot; and evaluate MSVT entries for resistance to soybean rust.
Duration:	Continuous
Expected Results:	Development of data that will be published in the annual MSVT publication to provide producers information about varieties' disease susceptibility, which can be used as an additional aid in selecting varieties.

Title:	Addressing critical weed control issues in soybean, 20-2013, $76,070
PI:	Tom Eubank (teubank@drec.msstate.edu), Miss. State Univ./DREC

Objectives: Develop strategies for management of herbicide-resistant (HR) weeds; assess burndown options for management of early-season weeds; determine utility of Liberty Link soybeans and other emerging weed control technologies in the management of HR weeds; evaluate novel and little-used weed control strategies for managing weeds in soybeans.

Duration: Year 1 of 3

Expected Results: Identification/development of cost effective control strategies for the various weed control problems that occur in soybeans, to include burndown options to control problem weeds, control options for 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: Response and net profit of genetically enhanced and conventional soybean varieties to fertilizer amendments on low nutrient soils in rainfed and irrigated production systems, 21-2013, $57,434

PI: Mark Shankle (shankle@ra.msstate.edu), Miss. State Univ., PRFBES

Objectives: Compare/validate fertility recommendations from different soil testing facilities; identify optimum K fertilizer rate for new compared to old soybean varieties grown on soils low in K; determine the economic benefits of K fertility recommendations from different testing labs.

Duration: Year 1of 3

Expected Results: Determination of the economic K fertility rate for soybean varieties grown in rainfed and irrigated environments, and determination of the correct K fertilizer rate based on recommendations from different soil testing labs.

Title: Correlation of soil test K and P indices with plant tissue concentrations and soybean yield, 22-2013, $34,217

PI: Bobby Golden (bgolden@drec.msstate.edu), Miss. State Univ./DREC

Objectives: Evaluate soybean yield response to P and K fertilization rate; correlate Lancaster and Mehlich-3 soil test P and K with plant indices (tissue concentration and seed yield).

Duration: 2 of 5

Expected Results: Provide a set of soil test recommendations that can be applied to soil test data from laboratories that use the Mehlich-3 extractant; update current P and K fertility recommendations for soybean that are based on the Lancaster extraction method; develop prescription fertilizer application guidelines for variable rate equipment.

Title: Evaluation of effects of residual glyphosate and its soil metabolites on growth and development of soybeans, 24-2013, $5,000

PI: Ernie Flint (ernestf@ext.msstate.edu), Miss. State Univ./MCES

Objectives: Assess effects of long-term glyphosate use on soybeans; identity soil amendments that may alleviate these possible effects.

Duration: Year 3 of 3

Expected Results: Determination of soil amendments for and their effectiveness in improving soybean health and yield following long-term glyphosate use.

Title: Corn and soybean crop residue management impact on soil quality, yield, and returns, 25-2013, $32,714

PI: Normie Buehring (buehring@ra.msstate.edu), Miss. State Univ./NMREC

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

Duration: Year 3 of 5

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: Soybean response to N addition in high yield environments, 27-2013, $22,761

PI: Bobby Golden (bgolden@drec.msstate.edu), Miss. State Univ./DREC

Objective: Determine critical application time for and form of N fertilizer that will minimize detriment to N_2 fixation and potentially increase soybean seed yield.

Duration: Year 1 of 3

Expected Results: Recommendations and guidelines for applying N fertilizer to soybeans that may have insufficient N in high-yield environments

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Title: Developmentof Phomopsis seed decay-resistant soybean lines from new sources of resistance, 28-2013, $23,333

PI: Anne Gillen (Anne.Gillen@ars.usda.gov), USDA-ARS

Objective: Develop high-yielding soybean lines with resistance to Phomopsis seed decay (PSD).

Duration: Year 3 of 4

Expected Results: Identified germplasm lines with resistance to PSD that can used in a breeding program to develop resistant varieties.

Title: Delta agricultural weather project, 29-2013, $23,107

PI: Joe Street, (jstreet@ext.msstate.edu), Miss. State Univ./DREC

Objective: Continue data collection and dissemination of pertinent agricultural weather data and products required by Delta researchers and producers.

Duration: Year 2 of 3

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: Identification of soybean varieties with resistance to Phomopsis seed decay (PSD) to enhance soybean seed quality, 30-2013, $10,000

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

Objective: Screen available soybean varieties and identify those that have resistance to PSD and concurrent high seed quality when inoculated with the disease pathogen.

Duration: Year 3 of 3

Expected Results: Varieties with PSD resistance will be identified, and this information will be made available to producers and the seed industry.

Title: Genetics of resistance to Phomopsis seed decay (PSD) in PI 424324B; phenotyping F_2 populations, 31-2013, $10,000

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

Objective: Phenotype F_2 population of PI 424324B based on seed plating assays for incidence of Phomopsis infection from a Phomopsis-inoculated field trial in order to identify new sources/genes for resistance to PSD.

Duration: Year 1 of 3

Expected Results: New sources/genes that impart resistance to PSD that can be used in the development of high-yielding varieties and agronomically competitive breeding lines with PSD resistance.

Title: Phenotyping F_2 populations segregating for frogeye resistance, 32-2013, $9,993

PI: Jeff Ray (Jeff.Ray@ars.usda.gov), USDA-ARS

Objectives: Analyze and couple *C. sojina* isolate pathogeneticity and molecular data; phenotype soybean populations segregating for *C. sojina* resistance; and collect tissue for future DNA isolation and marker analyses.

Duration: Year 1 of 3

Expected Results: Phenotyping of data and DNA that will be used in future studies to map frogeye leaf spot (FLS) resistance genes that will ultimately be used to identify race-specific FLS-resistant soybean genotypes.

Title: Development of reniform nematode resistant soybean lines from JTN-5203 soybean, 33-2013, $10,000

PI: Salliana Stetina (Sally.Stetina@ars.usda.gov), USDA-ARS

Objectives: Develop F_2 and $F_{2:3}$ populations derived from JTN-5203 and soybean lines agronomically adapted for Mississippi, and evaluate progeny from these populations for selection of genotypes with superior reniform nematode resistance.

Duration: Year 1 of 3

Expected Results: Development of soybean germplasm with resistance to reniform nematode.

Title: Development of a seedling inoculation technique to evaluate soybean for resistance to Phomopsis seed decay, 34-2013, $10,000

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

Objective: Develop a seedling inoculation technique to evaluate soybean for resistance to Phomopsis seed decay (PSD), analyze the correlation between seed assays from field trials and the seedling assays, and use the technique to test soybean varieties for PSD resistance.

Duration: Year 1 of 3

Expected Results: Use of the technique to determine the reaction of soybean lines to Phomopsis infection in order to identify lines with resistance to PSD.

Title: Provide in-field soybean diagnostic service for Mississippi soybean producers, 35-2013, $10,000

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

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

Duration: Year 3 of Continuous

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

Title: Soybean management by application of research and technology (SMART): Support of on-farm soybean verification programs and other extension activities, 36-2013, $134,492

PI: Trent Irby (tirby@ext.msstate.edu), Miss. State Univ./MCES

Duration: Year 2 of 4

Objectives: Identify and apply key management practices that will increase profitability of Mississippi soybean production, and collect and assimilate long-term data that can be used to identify sustainable management practices to apply to producer fields to enhance profitable soybean production.

Expected Results: Continual updating of recommendations for practices that will enhance profitable and sustainable soybean production in Mississippi.

Title: Characterization of the resistance potential for the diamide insecticides Belt and Prevathon, 37-2013, $33,466.

PI: Jeffrey Gore, (jgore@drec.msstate.edu), Miss. State Univ./DREC

Duration: Year 1 of 3

Objective: For the diamide insecticides: Quantify the variation in response of bollworm; determine influence of selection pressure on resistance development in bollworm, soybean looper and beet armyworm; correlate field control with this insecticide class against resistant and susceptible insect populations; and determine heritability and mechanisms of resistance in these insects.

Expected Results: Management strategies for the use of diamide insecticides in soybeans that will mitigate resistance development and thus prolong/preserve their effectiveness.

Title: Yield and economic responses of soybean to irrigation initiation on clay soil in Mississippi, 40-2013, $25,322

PI: H.C. (Lyle) Pringle (lpringle@dres.msstate.edu), Miss. State Univ./DREC

Duration: Year 2 of 4

Objective: Determine the relationship of irrigation initiation timing to yield and economic return from soybean grown on clay soils.

Expected Results: Irrigation initiation timing recommendations that will lead to maximum economic yields and conservation of irrigation water (increased irrigation efficiency) for producers growing early-planted MG 4 soybean varieties.

Title: Video support for Mississippi soybean producers, 41-2013, $15,978

PI: Bob Ratliff (bobr@ext.msstate.edu), Miss. State Univ.

Duration: Year 2 of Continuous

Objectives: 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: Production of video segments for posting on the MSPB website.

Title:	Determining the effect of low concentrations of dicamba and 2,4-D on soybean growth and yield, 42-2013, $37,440.
PI:	Dan Reynolds (dreynolds@pss.msstate.edu), Miss. State Univ.
Duration:	Year 2 of 3
Objectives:	Determine effect of simulated drift and volatility of dicamba and 2,4-D on soybean growth and yield, and the most sensitive soybean growth stage to these herbicides; compare the effectiveness of various clean-out procedures for sprayers that have been used to apply these auxin herbicides.
Expected Results:	With the advent of new transgenic herbicide technologies, results from this research will demonstrate to producers the importance of good stewardship in the application of auxin herbicides, as well as the importance of and methodology for cleaning spray equipment used in their application.

Title:	Development of agricultural applications for use on Apple iPhone and iPad, 43-2013, $12,156
PI:	Dan Reynolds (dreynolds@pss.msstate.edu), Miss. State Univ.
Duration:	Year 2 of 3
Objective:	Research and secure mechanism for offering MSU-developed agricultural applications (apps) on the iTunes store, and develop two prototype apps to demonstrate the usefulness of this technology and its application.
Expected Results:	Development of two apps as well as the infrastructure necessary for development of additional agricultural apps.

Title:	Mitigating herbicide spray drift under field conditions, 44-2013, $37,958
PI:	Dan Reynolds (dreynolds@pss.msstate.edu), Miss. State Univ.
Duration:	Year 2 of 3
Objectives:	Compare effect of various spray tips on herbicide drift, and the efficacy of these spray tips when used with contact, auxin, and systemic herbicides; compare efficacy of light and non-light activated herbicides when applied during both daytime and nighttime hours.
Expected Results:	Recommendations to optimize efficacy and avoid off-target deposition when applying herbicides that can be used with new transgenic herbicide traits in soybean.

Title:	Large-scale drift assessment with aerial imagery and ground-based spectral reflectance, 45-2013, $39,966
PI:	Dan Reynolds (dreynolds@pss.msstate.edu), Miss. State Univ.
Duration:	Year 1 of 3

Objectives: Evaluate effect of drift reduction technologies on off-target soybean injury with dicamba; assess use of aerial imagery and ground-based spectral reflectance methods for mapping drift injury on large landscapes; and develop a pictorial guide for rating dicamba injury.

Expected Results: An objective tool for recognizing and assessing drift injury from auxin herbicides at the field or landscape level.

Title: Surface conditions affecting likelihood of temperature inversions and timing of aerial spraying, 47-2013, $9,642

PI: Steve Thomson (steve.thomson@ars.usda.gov), USDA-ARS

Duration: Year 1 of 3

Objectives: Use weather tower data to track atmospheric stability over a cropping season and use results to predict when a temperature inversion is likely to occur.

Expected Results: Provide guidelines to pilots and farm managers that can be used to avoid spraying under stable atmospheric conditions.

Title: Estimation of deer damage to soybean production in Mississippi: a spatial and temporal context, 48-2013, $57,306

PI: Bronson Strickland (bstrickland@cfr.msstate.edu), Miss. State Univ.

Duration: Year 2 of 3

Objectives: Quantify deer abundance and utilization of soybean fields during browsing, and estimate/quantify subsequent loss of soybean yield; characterize deer habitat surrounding soybean fields to establish relationship with soybean damage; and test various deer-damage mitigation techniques for potential economic benefit.

Expected Results: A reliable estimate of the impact of deer depredation on soybean fields that will be used to develop cost-effective management practices, and information for producers to use for accurately targeting areas for damage mitigation.

Title: Optimal timing of aerial spray application to avoid inversion-induced far-field movement of spray, 49-2013, $9,950

PI: Steve Thomson (steve.thomson@ars.usda.gov), USDA-ARS

Duration: Year 2 of 2

Objective: Obtain and apply data to track atmospheric stability during a cropping season, and translate results into meaningful guidelines for agricultural pilots and producers to use to avoid spraying in conditions that will result in inversion-induced movement of spray.

Expected Results: Pinpoint times of day and weather trends that can be used to spray in "safe" conditions, or conditions unfavorable for temperature inversions.

Title: Farm Families of Mississippi, MFBF, 50-2013, $15,000

Title: Bufkin Fellowship–Effect of fall-seeded cereal cover crops when used in soybeans for control of Palmer amaranth in Mississippi soybeans, 51-2013, $67,556

PI: Ryan Edwards, recipient (re219@pss.msstate.edu), Miss. State Univ.

Duration: Year 2 of 3

Objective: Determine effectiveness of cover crops for controlling underlying weed populations in conjunction with PRE residual herbicide applications in soybeans.

Expected Results: Determine if cover crops can be used as a viable weed management component for Mississippi soybeans, and determine which cover crop species may provide the most benefit if this option is viable.

Title: Developing scientific irrigation scheduling methods for Mississippi soybean production systems, 52-2013, $35,217

PI: Jason Krutz (jkrutz@drec.msstate.edu), Miss. State Univ./DREC

Duration: Year 2 of 3

Objective: Evaluate existing and new irrigation scheduling tools for improving soybean yield, seed quality, and irrigation water use efficiency under Midsouth growing conditions.

Expected Results: Identification of best method(s) that can be used by soybean producers to schedule soybean irrigation for optimum yield and returns, and water conservation.

Title: Developing profitable deficit irrigation guidelines for Mississippi soybean production systems, 53-2013, $99,135

PI: Jason Krutz (jkrutz@drec.msstate.edu), Miss. State Univ./DREC

Duration: Year 2 of 3

Objectives: Increase soybean yield potential and profitability by developing production systems that require up to 25% less irrigation water through; determining optimum physiological period for initiating irrigation; determining critical physiological period for terminating irrigation; determining growth stage(s) when deficit irrigation adversely affects yield and profitability.

Expected Results: Identification of those periods of soybean development when irrigation water can be withheld or curtailed in order to reduce seasonal irrigation application amounts.

Title: Developing strategies for improving furrow irrigation efficiency, 54-2013, $76,301

PI: Jason Krutz (jkrutz@drec.msstate.edu), Miss. State Univ./DREC

Duration: Year 1 of 3

Objectives: Determine utility of surge irrigation and surge irrigation + PHAUCET for increasing surface irrigation efficiency while simultaneously maintaining or improving irrigated soybean yields.

Expected Results: Identification of a furrow irrigation system that can be used by Mississippi soybean farmers to realize the most efficient use of surface-applied irrigation water applied to soybeans.

Title: Row crop irrigation science extension and research (RISER) program, 55-2013, $136,803

PI: Jason Krutz (jkrutz@drec.msstate.edu), Miss. State Univ./DREC

Duration: Year 1 of 3

Objectives: Develop and utilize training programs to facilitate wide-spread adoption of best irrigation management practices for soybean producers in Mississippi

Expected Results: Identify and validate irrigation best management practices, and disseminate this information to Mississippi soybean producers in training venues offered via new and existing extension programs.

Title: Impact of irrigation initiation timing on plant development and yield of indeterminate and determinate soybean varieites, 56-2013, $48,711

PI: Trent Irby (tirby@ext.msstate.edu), Miss. State Univ./MCES

Duration: Year 1 of 2

Objectives: Provide economic assessment of various irrigation initiation timings, and measure differences in plant development and yield from the different timings.

Expected Results: Determination of differing yields/costs/savings associated with different initiation timings, and determine the effect of these timings on plant development and yield components.

Title: MSU-ES on-farm soybean variety demonstration program, 57-2013, $46,118

PI: Trent Irby (tirby@ext.msstate.edu), Miss. State Univ./MCES

Duration: Year 1 of 3

Objectives: Identify soybean varieties that are best suited to specific soil regions of Mississippi, and collect data that can be used to refine results from the MSVT.

Expected Results: Identification of soybean varieties and subsequent management practices/issues that are specific to distinct production regions in Mississippi.

Title:	Impact of planting date and maturity group on management strategies for insect pests in Mississippi, 58-2013, $55,694
PI:	Angus Catchot, (acatchot@ext.msstate.edu), Miss. State Univ./MCES
Duration:	Year 1 of 2
Objectives:	In ESPS and conventional soybean plantings: Identify seasonal periods that are most susceptible to damage from insect pests; evaluate effects of season-long caterpillar control; and document potential risk from caterpillar pests by using disruptive pyrethroid sprays.
Expected Results:	Risk models for major caterpillar pests, identification of periods of greatest benefit for using high-value insecticides, and documentation of potential risk vs. reward for disruptive sprays.

Title:	Bee project: Assessing impact of neonicotinoid (NEO) seed treatments on pollinators, 59-2013, $53,467
PI:	Angus Catchot, (acatchot@ext.msstate.edu), Miss. State Univ./MCES
Duration:	Year 1 of 2
Objectives:	Quantify number of honey bees visiting agronomic crops in MS, titrate NEO insecticides in feeding stations in bee hives and monitor bee health, and determine NEO levels in soybeans from emergence through maturity after seed treatment with NEO insecticides.
Expected Results:	Identify active bee feeding times and duration in row crops, determine if NEO insecticides detected in crops have adverse effect on bees, and determine when NEO levels decrease to safe levels for pollinator exposure.

Title:	Characterization of endophytic microbial communities associated with charcoal rot disease in soybean, 60-2013, $55,157
PI:	Shi-En Lu, (sl332@msstate.edu), Miss. State Univ.
Duration:	Year 1 of 2
Objectives:	Characterize endophytic bacterial and fungal communities associated with charcoal rot disease, and investigate the effects of inoculation with bacteria and fungi on charcoal rot disease development and soybean growth.
Expected Results:	Provide basis for guidelines for charcoal rot disease management in soybeans.

Title:	Investigations into strobilurin fungicide resistance of soybean pathogens in Mississippi, 61-2013, $53,581
PI:	Maria Tomaso-Peterson, (mariat@pss.msstate.edu), Miss. State Univ.
Duration:	Year 1 of 4

Objectives: Monitor soybean fields for strobilurin (Qo1) resistance in selected diseases, ID mechanisms of resistance, and determine potential fitness costs associated with Qo1 resistant soybean pathogens.

Expected Results: New information and awareness concerning fungicide resistance, the extent of that resistance, the potential threat of that resistance to profitable soybean production, and a determination of the long-term effects of disease resistance to this class of fungicides.

Title: Soybean vein necrosis virus (SVNV), a relatively new soybean pathogen, 66-2013, $49,599

PI: Sead Sabanadzovic, (ss501@msstate.edu), Miss. State Univ.

Duration: Year 1 of 3

Objectives: Estimate incidence of SVNV in Mississippi soybeans, annotate symptoms in infected plants, ID alternative hosts, and study genetic diversity of the MS SVNV population.

Expected Results: New knowledge about this relatively new virus pathogen of soybeans.

Title: MSPB Alan Blaine Doctoral Fellowship, 72-2013, $70,356

PI: TBD

Duration: Year 1 of 3

Objectives: TBD

Expected Results: TBD

Compiled Larry G. Heatherly, Feb. 2013, larryheatherly@bellsouth.net