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734 S. Country Club Drive
Jefferson City, MO 65109

Funded Projects – Fiscal Year 2022

Understanding the Impacts of Soybean Cyst Nematode Seed Treatments on SCN and Sudden Death Syndrome in Missouri

Kaitlyn Bissonnette, University of Missouri
\$29,000

An evaluation of many SCN seed treatments to manage SCN and SDS symptoms to develop Missouri specific management recommendations

Foliar fungicides and disease management: a strip-trial study

Kaitlyn Bissonnette, John Lory, Kent Shannon, University of Missouri
\$42,000

A strip trial comparing the use of fungicides versus no fungicides and the continuation of Scouting Schools to promote active disease management

"MU Certified" Strip Trial Initiative: Cover Crop Trials

John Lory, Katlyn Bissonnette, Kent Shannon, University of Missouri
\$70,000

A signature Missouri program helping farmers validate management decisions on their farm and document efficiency and environmental stewardship. The "MU Certified" Strip Trial Program is uniquely focused on management questions and challenges associated with cover crops and other agronomic practices.

Monsanto Education Center for Sustainable Solutions (MECSS) Project Coordinator/ Research Assistant

Darrin Peters, Mihira Wijeweera, Rockwood Summit School District
\$21,600

We plan to continue to improve the educational outreach of the MECSS (Monsanto Education Center for Sustainable Solutions) as a STEM/ Agricultural resource for the St. Louis Metro area. Our research assistant works closely with RSD, and Ranken Technical College STEM and Science Coordinators to recruit small groups to tour MECSS or bring Ranken's Renewable Fuel educational trailer to them. Our Goal is always to increase the learning opportunities of our community with renewable fuel. Curriculum and lab materials already exist for this purpose. The MECSS curriculum was developed with the cooperation of RSD and is aligned with the Next Generation Science Standards. This curriculum is given to teachers who want to use the MECSS building or Ranken's STEM trailer as a STEM/ Agricultural resource.

Protecting Soil After Soybean

Peter Scharf, University of Missouri
\$25,000

Continue testing the best ideas from the farmer board for protecting soil after soybean on the University of Missouri research farm; we will evaluate how well they protect soil, along with how they affect yield of a following corn crop.



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Evaluating Electrocutation as a Viable Method of Preventing Weed Seed Production in Missouri Soybean Systems

Kevin Bradley, Mandy Bish, University of Missouri
\$70,000

Determine if weed electrocutation can reduce/inhibit weed seed from returning to the soil seedbank without causing injury to soybean

A comparison of two seed treatments for SCN and SDS efficacy in MU strip trials

Kaitlyn Bissonnette, John Lory, Anthony Ohmes, University of Missouri
\$45,000

Providing Missouri producers with farm-based information about two nematode-protectant seed treatments for sudden death syndrome and SCN

Biodiesel Technology

Will Cooper, Three Rivers College
\$25,000

Three Rivers College's Diesel Technology Program is expanding its program and will offer biodiesel courses to educate students on its advantages and positive impact on industry.

In-Pond Raceway System Development to Enhance Aquaculture Feed Sector Intensification in Cambodia -- Phase II

Alan Pooch, World Initiative for Soy in Human Health
\$50,000

Promote inclusion of soybean meal in commercial aquaculture feed and continue to increase awareness of IPRS as an aquaculture production system

Soy Aquaculture Alliance Membership

Kenlon Johannes, Ginny Tauer, Soy Aquaculture Alliance
\$25,000

The Soy Aquaculture Alliance (SAA) works to create new opportunities for soybean farmers within a growing domestic and international market, aquaculture. SAA funds programs and research that increases the utilization of U.S. soybeans in the diets of fish and shrimp through affiliations with academic and private researchers and industry leaders. MSMC is asked to join this alliance.

Optimization of food process engineering process parameters for shelf stable SOYLEIC™ milk, SOYLEIC™ yogurt, SOYLEIC™ tofu and SOYLEIC™ extruded okara products fortified with Vitamin B12

Kiruba Krishnaswamy, Azlin Mustapha, University of Missouri
\$58,701

Researchers have found that SOYLEIC™ milk could be an ideal carrier for vitamin B12. They aim to optimize processing parameter for developing value added products from SOYLEIC™.



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Industrial applications of soybean hulls/meals for rechargeable batteries

Ram Gupta, Pittsburg State University
\$55,484

More research and development are needed to use soy-carbons to fabricate high energy capacity batteries (advanced batteries) to meet the current demand for portable energy in automobile and electronic industries.

Explosives and Soybeans: Meeting the Need for a More Environmentally Friendly Explosure

Phillip Mulligan, Missouri University of Science and Technology
\$90,927

Examining using soybean oils in emulsified explosives, gas toxicity of emulsified explosives, and marketing of soybean-based explosives

OEM's: Maintain and Secure Approvals for B20 and Higher Blends

Brad Shimmens, Scott Fenwick, National Biodiesel Board
\$25,000

The National Biodiesel Board will continue targeting training programs and relationship building, strategic planning and feedback sessions and provide on-going technical briefings and updates to targeted OEMs, as well as continued networking with other groups such as Clean Cities organizations, the Diesel Technology Forum, auto industry trade associations and other stakeholder groups.

Evaluating and optimizing the use of high oleic low linolenic (HOLL) soybean oil in ice cream

Bongkosh Vardhanabhuti, Andrew Scaboo, University of Missouri
\$34,161

Researchers aim to investigate several approaches to improve the properties of the ice cream made with HOLL soybean oil. They will evaluate the effect of different methods by determining the properties of the ice cream mixes before and after aging, after which the most promising will be selected for ice cream making and sensory evaluation.

Biodiesel Market Expansion Drive

Brad Shimmens, Floyd Vergara, National Biodiesel Board
\$25,000

Overall, this highly targeted national advertising campaign provides the biodiesel industry the opportunity to proactively and aggressively build biodiesel's brand as a better, cleaner fuel option that is available now, to extend biodiesel messages and keep the door open for markets to follow.

Quality Assurance Programs

Brad Shimmens, Scott Fenwick, National Biodiesel Board
\$25,000

This Quality Assurance program assists with supplemental efforts to address questions on fuel quality, storage and handling, fuel tank corrosion, immediate marketplace concerns, and items outside the scope of the other technical programs. This program works to minimize barriers to growth and higher volumes



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of soybean oil and biodiesel (biodiesel and renewable diesel) consumption. Growing industry volumes and addressing market barriers requires targeted research, communication, education, and outreach activities.

Commercial application of soybean oil for flame-retardant polyurethanes

Ram Gupta, Pittsburg State University

\$56,982

Researcher proposes to prepare flame-retardant polyurethane foams using soybean oil as a renewable resource along with nitrogen and phosphorous-containing compounds as non-toxic flame-retardants. This work will provide a new pathway to utilize a large quantity of soybean oil.

Creating Demand for U.S. Poultry in the Philippines' Foodservice Sector

Shelby Watson, U.S. Poultry and Egg Export Council

\$36,500

This is a trade development and foodservice marketing program to promote U.S. poultry products in the Philippines targeting Chefs, foodservice operators, culinary schools and students, and the top five retail chains in the country.

Value-added applications of soybean for golf industries

Ram Gupta, Pittsburg State

\$58,622

The objectives of this project are development of core material for golf balls using soy meal or soybean-based chemicals; development of outer layer for golf balls using soybean-based polyurethanes; testing and optimization of properties of soybean-based golf balls; and develop technology/products for commercialization.

SEI – State Regulatory and Environmental Support

Brad Shimmens, Floyd Vergara, National Biodiesel Board

\$25,000

This program provides technical and informational assistance to stakeholders seeking to implement biodiesel programs in their states and to regulators who implement these programs. It includes regulatory experts, economists, environmental science professionals, and more traditional technical experts who specialize in issues such as biodiesel's impact on engines, warranties, and infrastructure.

North Missouri Soybean Breeding Program

Andrew Scaboo, Mariola Usovsky, Eduardo Beche, University of Missouri

\$450,000

The objective of this project is to develop commercially competitive conventional and herbicide resistant (LL55 and Enlist E3) soybean varieties for northern Missouri. This project's sole focus is to deliver new and improved soybean varieties and germplasm for release by the MU seed committee.



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Fisher Delta Research Center Soybean Breeding Program

Pengyin Chen, Andrew Scaboo, University of Missouri
\$460,000

To develop high-yielding group IV and V soybeans profitable for Missouri farmers and for licensing to other entities for sale in other states; project objective is to develop group IV and V conventional and herbicide tolerant (RR1, R2Y, R2X, LL, and E3), pest resistant, and stress tolerant soybeans with equal or better yield than popular commercial varieties of similar maturity.

Screening Soybean Germplasm and Breeding for Flood Tolerance

Pengyin Chen, University of Missouri
\$60,000

The objectives are to (1) identify flood tolerant cultivars from elite and germplasm source – recommend current tolerant varieties to farmers and (2) incorporate flood tolerance into elite backgrounds; \$60,000 is Missouri's share of \$160,000 Mid-South Soybean Board project MSMC manages with the University of Missouri.

North Central Soybean Research Program Member State FY21/22 Funding Proposal

Ed Anderson, North-Central Soybean Research Program
\$175,000

The North-Central Soybean Research Program evaluates projects that have a regional impact and involve both basic and applied research. The Qualified State Soybean Boards contribute to the funding pool and studies are decided upon by the farmer board.

Utilizing Molecular Markers for Soybean Variety Development

Andrew Scaboo, Mariola Usovsky, Pengyin Chen, University of Missouri
\$109,000

This project facilitates marker-assisted selection for introgression of essential traits in the MU breeding programs. This project's sole focus is to deliver data for the breeding programs that characterizes the genetic architecture of important traits for variety development. These data are used for selection and quality control, as well as for research publications.

SCN Screening for MO Breeding Programs

Andrew Scaboo, Pengyin Chen, University of Missouri
\$120,000

This project facilitates screening of the MU breeding programs' experimental lines and varieties for resistance to SCN. The primary goal of this project is to develop productive soybean varieties for Missouri with resistance to SCN races prevalent throughout the state and nationwide. The work performed under this project will ensure the continued development of high yielding soybean cultivars with SCN resistance for Missouri producers.



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Screening and Selecting Non-Xtend Soybeans for Dicamba Tolerance

Pengyin Chen, University of Missouri

\$16,375

The objectives of this project are to (1) characterize soybean line response to Dicamba drift; (2) identify the regions of the soybean genome that control response to tolerance of Dicamba; (3) find and develop Midsouth soybean varieties that are tolerant to Dicamba drift; and (4) develop markers to find soybean lines with Dicamba Tolerance to expedite breeding; ; \$16,375 is Missouri's share of \$65,500 Mid-South Soybean Board project MSMC manages with the University of Missouri.

Leveraging Stable Isotope Traits to Improve Soybean Water Use Efficiency and Yield Under Drought

Felix Fritschi, Andrew Scaboo, University of Missouri

\$75,000

Gene identification, mapping population development, and breeding for greater drought tolerance based on carbon and oxygen stable isotope discrimination

HOLL plus soybean variety development

Andrew Scaboo, Kristin Bilyeu, University of Missouri

\$95,000

The objective of this proposal is to enhance and focus the HOLL plus soybean breeding and molecular selection program dedicated to developing more profitable high yielding maturity group III and IV soybean varieties for Missouri farmers.

Enhanced Pest Control Systems for Midsouth Soybean Production

Trey Price, Mid-South Soybean Board

\$40,000

This study is looking for a breeding solution for stinkbug and certain Cercospora, which cause significant damage annually. The expected deliverable is germplasm resistant to CLB and Stinkbug; and genetic markers for stinkbug, CLB, FLS will be available to public and private breeding; new lab screening for CLB resistance, use of these method/markers to screen breeding stock and learn mor about fungicide resistance.