FROM THE
Division Director

You will enjoy taking a look at the renderings on page 11 illustrating what the new Center for Translational Plant Sciences might look like when that project comes to fruition. We hope these drawings will help potential donors envision the facility they might support in our effort to help feed the world population of more than 9 billion expected within the next few decades. Working with Darcy Wells, Dean Payne, and many others, we are getting started on the fundraising component of the project. The need to raise more than $70 million during the current fiscal climate is daunting, but we also know that if we don’t start we will never finish.

A MAJOR POINT currently in our favor in this funding effort is that Plant Sciences and the broader plant sciences community on campus are among the strongest in all aspects of the Land Grant University mission. The hard work and achievements of our faculty, staff, and students are also well recognized across our campus and beyond. Our Extension programs are nationally recognized as models for identifying important issues, designing effective programming, delivering the educational information, and measuring the impact of the effort. This is reflected in Rob Kallenbach’s receipt of the national Excellence in Extension Award recently and receipt by Craig Roberts and his colleagues of the Extension Teamwork Award for their work with the Alliance for Grassland Renewal (both on page 4). This recognition is very timely because MU Extension is celebrating the 100 year anniversary of the signing of the Smith-Lever Act which established the Cooperative Agricultural Extension Service that has been an example for the rest of the world in how to deliver science-based information to producers other clientele.

OUR PERFORMANCE on the important Association of American Universities metrics that emphasize refereed journal articles, external grants, graduate student training, and major awards, among others, rank among the very best on our campus and contribute to the ranking of University of Missouri plant and animal research programs at 8th nationally and 15th globally by Thomson Reuters in 2010. Even in this difficult funding climate, our faculty are succeeding in bringing in external funding. Our research expenditures totaled $11.1 million in FY2014, which ran from July 2013 through June, 2014. You can review the new awards received recently on pages 13 and 14 of this issue.

WE KNOW that major changes are in store for Land Grant Universities like Mizzou, but I believe strongly that the Division of Plant Sciences is well positioned to continue our success in every aspect of our mission. Thanks to everyone for the important role each of you play in this success.
John Bryan Webber is currently completing his junior year at the University of Missouri in Columbia with a degree in Plant Science with an emphasis area in Horticultural Sciences.

This past summer John worked full-time at the University of Missouri’s Horticulture and Agroforestry Research Center (HARC) under Mark Coggeshall, a professor and tree improvement specialist. HARC’s goal is to improve several species in the genus *Juglans* for timber and nut production, to phenotype the leaf morphology of *Quercus rubra* for further application through an NSF sponsored project, to create improved varieties of other woody plant species for ornamental value, and to explore many other projects for plant improvement. Through Coggeshall’s work, John is learning how observations can be made in order to manipulate plants through cultivation and genetics. John plans to use these observations as the building blocks in creating unique varieties of plants, as well as plants that are easier to propagate and better suited for a landscape. These better-suited plants would ensure that landscapes look better for longer period of time than current varieties, and would require less maintenance to do so.

Awards & Honors

Golden Opportunity Scholarship

Plant Science students Kaitlin Flick, Nick Meier and Hannah Wahl were recognized with the golden Opportunity Scholarship at the ASA, CSSA, SSSA annual meeting held in Long Beach, CA, November 2-5.

The Golden Opportunity Scholars Institute is a program of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America that matches undergraduates with scientist-mentors during the ASA, CSSA, and SSSA Annual Meetings. Undergraduate scholars have to go through an application process and are selected on their academic achievements and interest in agronomy, crop and soil sciences.

HANNAH WAHL is a senior majoring in Plant Sciences with an emphasis in breeding, genetics, and biotechnology, with a minor in Biological Sciences. Hannah plans to attend graduate school studying mycology after graduation in May 2015.

NICK MEIER is a senior majoring in plant science with an emphasis in crop and soil management. Nick plans to attend graduate school in breeding or genetics after graduation in May 2015.

KAITLIN FLICK is a senior majoring in plant science with an emphasis in crop and soil management. Kaitlin plans to attend graduate school in Agriculture Education after graduation in May 2015.
University of Missouri graduate and undergraduate students in the Division of Plant Science recently traveled to Minneapolis, MN to present their research at the 2014 North Central Weed Science Society of America’s Annual Conference. Junior undergraduate students Isaiah Akers and Austin Straatmann both presented research posters, along with graduate students Heidi Davis and Cody Cornelius. Austin won first place in the undergraduate poster competition in the Agronomic Crops category, and Cody was awarded first place in the graduate student poster competition in the Cover Crops category. Graduate students Joe Bolte, Cody Cornelius, Heidi Davis and Jaime Farmer each gave oral presentations on their graduate research projects. Jaime won second place for his talk in the Weed Biology, Ecology, and Management category while Cody was awarded first place in the Agronomic Crops category.

The six students work under the direction of Reid Smeda or Kevin Bradley.

The North Central Weed Science Society is comprised of 15 states and 1 Canadian province; the meeting included over 200 presentations from researchers and students throughout the region.
Kallenbach Receives Excellence in Extension Award

Rob Kallenbach, University of Missouri professor of plant sciences and MU Extension forage specialist, received the 2014 Excellence in Extension Award at the 127th annual meeting of the Association of Public and Land-grant Universities (APLU) in Orlando, Florida, Nov. 2-4.

The Excellence in Extension Award is given annually to one cooperative extension professional who excels at programming, provides visionary leadership and makes a positive impact on constituents served. The USDA’s National Institute of Food and Agriculture (NIFA) and the Cooperative Extension System sponsor the award.

Kallenbach’s educational programs help forage-livestock producers optimize pasture management. His efforts have led to more than $100 million in new investments in pasture-based dairy operations in Missouri, which in turn generate $40 million in annual milk sales and support 1,110 new jobs. In addition, Kallenbach’s winter-feeding systems program for beef cattle has helped nearly 22,000 producers reduce annual costs by up to 30 percent.

Awards & Honors

Krishnan recently elected as an ASA Fellow

STORY BY ELEIA YONKE

Being chosen as an American Society of Agronomy Fellow is the highest recognition awarded by the Society. Every year members nominate deserving colleagues based on their professional work and achievements. Hari B. Krishnan, adjunct professor in the Division of Plant Sciences and Research Molecular Biologist with the USDA-ARS, was recently elected as an ASA Fellow.

Research in Krishnan’s lab seeks to improve the overall protein content and quality of soybeans for human and animal consumption by increasing the amount of sulfur-containing amino acids, improving digestibility of soybean proteins, and eliminating allergens and anti-nutritional factors. His research also focuses on the enhancement of biological nitrogen fixation in soybeans.

Extension Teamwork Award

The Extension Teamwork Award was given to Team Leaders: Craig Roberts and Justin Sexten along with Eldon Cole, Wesley Tucker, Will McClain, Stacey Hamilton and Dave Davis for the formation and Early success of the “Alliance for Grassland Renewal” project.

The Alliance was formed in 2011-12. Its four goals are 1) education, 2) seed quality, 3) promotion, 4) incentives. Within only two years, the Alliance developed and implemented regulation standards for all tall fescue seed that hosts novel endophytes. (Novel endophytes are patented organisms that grow in the plant and impart resistance to pests and drought.) The Alliance seed standards ensure quality control, and adoption of standards required international approval; parent companies are headquartered in the Netherlands, Denmark, New Zealand, and the U.S.

The Alliance membership includes members from the University of Missouri, the Noble Foundation, the Missouri Forage and Grassland Council, NRCS, farmers, and the following companies: Dow AgroSciences, Agrinostics, Barenbrug, Pennington, DLF, Mt. View, and AgResearch. It has spread into Oklahoma and is being considered in Kentucky. This week, the Alliance for Grassland Renewal received 501(c)3 nonprofit status from the IRS.

For more information on the Alliance, visit their website at www.grasslandrenewal.org.

Scholarships

Kaitlin Flick (left) and Jeana Bane (right), seniors in Plant Sciences, were awarded scholarships by the Western Seed Association at a banquet in Kansas City on November 10. Reid Smeda attended the event with the students.
This year, University of Missouri Extension celebrated the 100th anniversary of the signing of the Smith-Lever Act, which established the Cooperative Agricultural Extension Service. This program was created to provide people nationwide with access to research being done at land-grant universities like the University of Missouri.

Over the past century, MU Extension has improved the lives Missourians in countless ways. In the beginning, extension workers demonstrated to farmers how to improve the yield and quality of various agricultural products. Today, the role of MU Extension has expanded to include hundreds of programs for after-school youth leadership curriculums, learning or updating computer skills, and business development, to name just a few.

As MU Extension celebrates the many accomplishments of its first 100 years, it will also expand programs to address the challenges of the next 100 years. MU Extension remains focused on providing relevant, reliable and responsive information that will improve the lives of people in our state, the nation and around the world.
Brad Fresenburg conducts programs related to Sports Fields Management, Master Gardening, and Home Lawn Care. He conducts certification and recertification classes for Commercial Pesticide Applicator Training in Ornamental & Turf.

Richard Houseman teaches continuing education seminars and publishes information that is used by University of Missouri extension faculty, homeowners, professional pest management companies, and state agencies in making decisions about safe, effective, and profitable management of insect pests in human environments.

Moneen (Mo) Jones is developing a program on control strategies for economically important arthropod pests of soybeans, cotton, rice, corn, and other crops produced in southeast Missouri. She is working to establish economic thresholds using pest monitoring and through the evaluation of pest control techniques to assess compatibility with Integrated Pest Management principles.

Robert Kallenbach’s program emphasizes forage-livestock systems. Specific projects include optimizing use of stockpiled tall fescue, inclusion of alfalfa and/or warm-season grasses into forage systems, and season-long performance of the grazing animal.

John Lory’s extension objective is to promote the efficient use of nutrients from manure and other fertilizer sources for crop production while protecting water and other natural resources. His extension program is focused on management of edge-of-field nutrient losses in runoff from manure and fertilizer, developing nutrient management decision support tools and software, improving phosphorus and nitrogen fertilizer recommendations, and using sensor technology to improve our understanding and management or forage systems.

Lee Miller directs his extension programs towards disease diagnosis and control in turfgrasses, serving the lawn, golf, sports turf and sod industries. Lee also acts as the faculty supervisor of the MU Plant Diagnostic Clinic, which has provided diagnosis and management recommendations for over 400 plant samples since reopening in April 2014.

Realizing that not everyone could go to college, Congress established the Cooperative Extension Service with the Smith-Lever Act in 1914. The purpose of the act was “to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture.”

To learn more about the programs offered in your area, please visit our website at extension.missouri.edu or visit the Division of Plant Sciences Extension page at plantsci.missouri.edu/extension.
Brent Myers studies precision agriculture in cereal cropping systems. A key focus of his program is understanding and managing effects on crop productivity and sustainability due to plant interactions with soils and landscapes. He uses a mix of approaches including yield maps, plant and soil sensors, and digital soil mapping, often employing ‘big-data’ analytics with geospatial modeling tools. Some specific topics he researches are seeding rate response in corn, soil functional changes due to corn cropping systems, and new methods to develop high resolution maps of soil and plant processes.

Manjula Nathan provides soil fertility, plant analyses and research-based nutrient management recommendations to agricultural producers, consumers and agribusinesses for promoting a competitive agricultural industry, a healthy environment and improved quality of life. Additionally, she directs the University of Missouri Extension Soil & Plant Testing and Nematology Diagnostic Service Laboratories.

Peter Scharf develops and promotes methods to optimize nutrient application rates and to minimize nutrient movement to water.

Gene Stevens’ extension program educates commercial growers on innovative production practices that increase the profitability of their field crop enterprises. Emphasis is placed on soil fertility and soil management inputs.

Laura Sweets’ extension program focuses on field crop diseases and their management. Educational programming emphasizes the correct identification of diseases of corn, soybean and wheat, the factors which influence the development of field crop diseases and integrated strategies for managing these diseases. Applied field research includes trials evaluating seed treatment fungicides, foliar fungicides, nematode protection products and varietal resistance to field crop diseases.

David Trinklein’s extension responsibilities include greenhouse management and the Missouri Master Gardener Program. The Missouri Master Gardener Program promotes and raises public awareness of the University of Missouri Extension as a source of unbiased, research based gardening information.

Michele Warmund’s extension activities include working with commercial fruit and nut growers to enhance their cultural practices. She also provides training to Master Gardeners on home fruit production.

Bill Wiebold’s extension objectives include the development of cropping systems that improve productivity, enhance stability, and protect the environment. He promotes grower acceptance of these cropping systems through educational programs targeting growers, input dealers, and regional extension specialists in Missouri.

Over the years, legislation affecting extension has brought about changes. And extension’s clientele and teaching methods have changed. But extension’s mission is still every bit as viable and crucial — to bring reliable, responsive and relevant research-based information from the university to the citizens of Missouri.
Plant Sciences Image Selected for Joy of Discovery Sculpture

The scientific images featured in the Joy of Discovery sculpture located in the McQuinn Atrium of the Bond Life Sciences Center were recently replaced with new images. An image by Post-Doctoral Research Associate, Anju Verma, from the laboratory of Melissa G. Mitchum, Associate Professor, Division of Plant Sciences was one of the images selected to represent Plant Sciences across campus.

Cyst nematodes are one of the world’s most economically important groups of plant-parasitic nematodes. These obligate parasites form specialized feeding cells within host roots to serve as a nutrient sink. This image is a picture of second-stage juveniles of the beet cyst nematode Heterodera schachtii (stained pink with acid fuchsin) infecting an Arabidopsis root transformed with a plant gene promoter that is fused to a reporter gene. The blue color indicates activation of this plant gene’s promoter within the nematode-induced feeding cell.

Meet Your Extension Specialist, Sarah Denkler

Sarah Denkler was raised on what is now an 8th generation family farm in Missouri where she learned how to grow and preserve food from her grandparents. Agriculture has been deeply rooted in each generation of her family. It was understood that the agriculture department at the University of Missouri was the best place to get a college education. It was there she received her B.S. in Horticulture with an emphasis in landscape design in 1990.

For several years she worked in the commercial sector doing landscape and ornamental maintenance before teaching Commercial Turf and Grounds at Linn State Technical College. During her 10 years as a horticulture instructor she commuted to Columbia for three years to attain her M.S. in horticulture from the University of Missouri in 2000. This degree provided opportunities to work with prairie restoration and conduct research on root growth in soils with various levels of organic matter.

In 2005 she would move with her family to Athens, TX where she began work at a commercial wholesale tree nursery. There she learned care and maintenance of ornamental trees, the effects soil has on potted roots, developmental growth of fruit trees, Integrated Pest Management programming, fertility of potted ornamentals and quality control.

Sarah began work with extension in 2008 as a horticulture educator in Dunklin County where she worked with commercial watermelon growers. She transferred to a permanent position in Butler County one year later and now works with commercial specialty crops including watermelon, homeowners, commercial horticulture companies, community gardens and as Master Gardener advisor.

She knows that agriculture is vital and must be supported as technology moves forward at a lightning pace. Extension has the capability to help those in agriculture keep pace and to help every citizen in Missouri learn to be self-sustaining. The challenge remains to reach those who want to learn.

Hort Club Helps Feed Missouri

Members from Horticulture Club went apple picking earlier this fall and donated 223 pounds of apples to the food bank. Pictured are (from left): Rachael Wolf, Kirsten Steiner, Liz Prenger, Matt Burger, and Natalie Wehner. The club has also adopted a family of three for the holidays through the Voluntary Action Center’s holiday program.
Follow our best practices to ensure you holiday shopping goes without a hitch!

**HTTP://MAKEITSAFE.MISSOURI.EDU/**

1. Utilize anti-virus protection and make sure you firewall is on. Your operating system, anti-virus software, and web browser must also be kept up-to-date with the latest security patches.

2. Limit your web browsing to well-known and trusted websites and use encryption when possible. Encrypted websites contain an https:// web address and most browsers will display a padlock icon as a visual symbol for encryption. However, an encrypted website alone is not sufficient evidence of a merchant’s integrity! Encryption helps protect information in transit; it does not enforce regulations over a merchant’s business practices 1.

3. Be aware of your surroundings. You should never use unsecured networks (such as public wireless networks) or public computers for making online purchases.

4. Double check your domain names. Almost all reputable vendors have registered domain names which match their company name, such as: www.<companyname>.com. Check your spelling; subtle misspellings of company names are often used by phishers seeking to lure you to counterfeit websites 1.

5. Employ strong password safety. If the vendor requires account creation, use a strong and unique password for each individual site. If possible, opt out of automatically saving your credit information. It is safer to enter your credit information. It is safer to enter

6. Read other customer’s feedback about the vendor and merchandise. Read both positive and negative comments from other consumers to help you make educated decisions before you make a purchase 1.

7. Select your payment method carefully. Prepaid credit cards and gift cards are optimal. Also, regular credit cards are required to provide basic purchase protection securities to their customers. If you use your credit card, you should monitor your account activity regularly and report unauthorized charges immediately 1. In addition, the safest and easiest way to make a purchase with a smaller vendor is to use a third-party payment service, such as Paypal, which acts as the intermediary between you and the vendor.

8. Be an informed consumer. The merchant’s website should tell you if the product is in stock, provide you with a choice of shipping methods, and offer you a timeline of when you will receive your merchandise 1. Never commit to buying something if the bottom-line price is ambiguous.

9. Know the return policy before you buy! Before you make an online purchase, understand your rights when it comes to returns, exchanges, refunds, and credits 1. Will there be a restocking fee or a shipping charge for returning the merchandise?

10. Take your time and price shop! From the safety of your couch you might be tempted to drop your defense. Just because you are not in the thick of random elbow jabs and shopping cart Indy car races doesn’t mean you should stop looking out for your best interest! Shopping at home offers you the luxury to stop and think before being swayed by ‘cheap’ impulse buys; it also grants you the opportunity to check other online competitors in order to make sure you are getting the best deal for your money.

References:

J. Perry Gustafson
Instrumental in the
Formation of the
Borlaug Training
Foundation

The Borlaug Training Foundation (BTF) will support training courses and capacity development opportunities for young scientists, especially from the developing world. The BTF will engage with teachers and mentors from around the world and connect them with students and early-career scientists. The goal of the BTF is to raise $20 million by 2020 so that these training opportunities will be available well into the future, and so that agricultural science training is of a high quality and thoroughly prepares scientists to take research and improved technology to the farmer.

Are you in need of a beautiful 2015 desk calendar?
Then you’re in luck!

The Division of Plant Sciences Graduate Student Association is selling beautiful desk calendars featuring photography by DPS students!

Here are some featured photos:

To order, contact Kathryn at ksiggc@mail.missouri.edu by December 15th. Calendars will be $10. Money will be collected when calendars are delivered.
The MU Division of Plant Sciences has been developing a plan to **BUILD**. Not only have we been building outstanding research, extension and teaching programs but we are ready to build a new facility that will allow greater collaboration amongst our outstanding faculty, staff, students and the world.

For more details visit the project website: [BuildingPlantSciences.missouri.edu](http://BuildingPlantSciences.missouri.edu)
UPCOMING EVENTS:

CROP MANAGEMENT CONFERENCE
December 17-18, 2014
Columbia, MO
plantsci.missouri.edu/cmc

The Crop Management Conference will be held at the Hilton Inn Select in Columbia, Missouri. Keynote Speaker will be Scott Shearer, Professor and Chair, from Ohio State University. His seminar is entitled, “Big Data: Managing a Grower’s Most Elusive Farm Asset.” Go to the website for more details.

11TH ANNUAL SOYBEAN BIOTECHNOLOGY SYMPOSIUM
April 8, 2015 Columbia, MO
soybiotechcenter.org/symposium

Attendance at the symposium is FREE and open to the public but registration is requested and required. Registration to the NCSB Symposium includes entry to all talks, morning reception, afternoon break, and closing reception.

32ND ANNUAL INTERDISCIPLINARY PLANT GROUP SYMPOSIUM,
“Plants Between a Rock and a Hard Place: The Interface Between Abiotic and Biotic Stress Responses”
May 27-29, 2015 Columbia, MO
ipg.missouri.edu/symposium

The 14th meeting of this international Symposium aimed at providing a broad survey of the latest advances in the field of protein phosphorylation in plants and to promote interactions among plant scientists working in this field across the globe.

Do you know about an upcoming event...
If you know of an upcoming event that DPS faculty and/or students are involved in or attending, please contact Jared Fogue at foguej@missouri.edu.

Millikan Luncheon held September 10th

Back: John Koehler, John Smith, Johann Bruhn, Walter Gassmann, Morgan Halane, Mustafa Adhab, An Pham
Fifth: Bob Heinz, Gary Stacey, Jim Schoelz, Lee Miller
Fourth: Natalie Pan, Michael Gardner, Julia Thompson
Third: Marriam Lin, Melba Shaffer, Yu Zhang
Second: Melissa Mitchum, Corola de la Torre Cuba, Hal Shaffer, Patricia Wallace, Susan Taylor
Front: Ben Spears, Beverly Agtuca, Jingwen Kang, Sharon Pike, Nhung Hoang

Plant Microbiology and Pathology Faculty, Graduate Students (Students for the Advancement of Plant Pathology), and Staff in the Division of Plant Sciences gathered for the 2014 Daniel F. Millikan Luncheon on September 10th at the University Club in the Reynolds Alumni Center. The luncheon honors Daniel F. Millikan, former faculty member, who was a charter member of the Department of Plant Pathology at MU. The Millikan Endowment was established in 1997 through a gift of more than $1 million from the estate of Millikan. Special guests, Hal and Melba Shaffer were also in attendance. Hal was a colleague and close personal friend of Millikan. He is also the executor of Millikan’s estate.

Millikan Memorial Lecture given by Savithramma Dinesh-Kumar

The Division of Plant Sciences 9th Annual Millikan Memorial Lecture was held October 1, 2014 in the Leadership Auditorium. The lecturer was Professor Savithramma Dinesh-Kumar from the University of California-Davis. His lecture was entitled, “Emerging Perspectives on Plant Innate Immunity.” Thank you to the Students for the Advancement of Plant Pathology (SAPP) for their excellent leadership hosting this event.
<table>
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<tr>
<th>Investigators</th>
<th>Title</th>
<th>Sponsor</th>
<th>Amount of Funding</th>
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<td>Houseman, R.</td>
<td>2014 Local Area Detection Survey for Red Imported Fire Ants (Solenopsis Invicta) in Southern Missouri, USA</td>
<td>Department of Agriculture</td>
<td>$4,700</td>
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<td>Wallace, P.</td>
<td>MU Plant Diagnostic Clinic</td>
<td>Michigan State University</td>
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<td>Nelson, K.</td>
<td>Evaluation of a New Nitrification Inhibitor for Anhydrous Application in Corn (2014)</td>
<td>Koch Agronomic Services</td>
<td>$14,875</td>
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<td>Bradley, K.</td>
<td>Agrochemical and Seed Evaluation Agreement</td>
<td>Dow Agroscience</td>
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<td>Nguyen, H.</td>
<td>Phenotyping of Samples for SCN Resistance</td>
<td>Bayer Cropscience</td>
<td>$96,148</td>
<td>10/26/2012-02/28/2015</td>
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<td>Nguyen, H.</td>
<td>Genetic Engineering to enhance oil traits in Soybean</td>
<td>Missouri Soybean Merchandising Council</td>
<td>$175,265</td>
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<td>Nguyen, H.</td>
<td>Development and Deployment of Biotechnology for Soybean Improvement</td>
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<td>Nguyen, H.</td>
<td>Germplasm Identification and Selection for Soybean Cyst Nematode</td>
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<td>06/01/2014-05/31/2015</td>
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<td>Bradley, K.</td>
<td>Support of MU Weed Science Extension Efforts Directed Towards the Management of Glyphosate-resistant Weeds</td>
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<td>Nguyen, H.</td>
<td>Identification of Genes for Resistance to Multi-Soybean Nematode Species</td>
<td>Missouri Soybean Merchandising Council</td>
<td>$89,917</td>
<td>07/01/2014-06/30/2015</td>
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<td>Bailey, W.</td>
<td>Lygus Rearing</td>
<td>Bayer Cropscience, LP</td>
<td>$12,447</td>
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<td>Lory, J.</td>
<td>Maintenance and Enhancement of the National Nutrient Management Data Download Website (Missouri Clipper) and National Setbacks Database</td>
<td>Department of Agriculture</td>
<td>$10,000</td>
<td>09/30/2014-09/30/2015</td>
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<td>Jones, M.</td>
<td>Monsanto Service Order #24</td>
<td>Monsanto Company</td>
<td>$7,080</td>
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<td>Stevens, G.</td>
<td>To develop proof-of-concept for Integrated Farming Systems (IFS) FieldScripts (SM) elements related to hybrid, seeding rate, nitrogen, and water management in multiple yield environments on a farm scale in the Missouri Delta region</td>
<td>Monsanto Company</td>
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<td>Nguyen, H.</td>
<td>Development of Soybeans with Improved Functional Traits for Missouri</td>
<td>Missouri Soybean Merchandising Council</td>
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<td>Nelson, K.</td>
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<td>South Dakota State University</td>
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<td>Shannon, G.</td>
<td>To Develop Productive Group IV and V Soybeans Resistant to Nematodes and Diseases</td>
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<td>$238,110</td>
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<td>Shannon, G.</td>
<td>Evaluation of Elevated Oleic Acid Germplasm for Development of Soybeans with High Oleic Acid</td>
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<td>English, J.</td>
<td>Bark and Ambrosia Beetles Colonizing Stressed Black Walnut</td>
<td>Forest Service</td>
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<td>07/26/2011-03/31/2014</td>
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<td>Fritschi, F.</td>
<td>Identification and Characterization of Soybean Germplasm to Improve Drought Tolerance</td>
<td>Missouri Soybean Merchandising Council</td>
<td>$72,003</td>
<td>04/01/2014-03/31/2015</td>
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<td>Scaboo, A.</td>
<td>Discovery of Yield Genes for Soybean Improvement</td>
<td>Missouri Soybean Merchandising Council</td>
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<td>06/01/2014-05/31/2015</td>
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<td>Bailey, W.</td>
<td>Modernization of Missouri PSEP to Achieve Enhanced Competency of Pesticide Applicators and Programmatic, Staffing, and Fiscal Sustainability</td>
<td>CropLife Foundation</td>
<td>$23,783</td>
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<td>Smeda, R.</td>
<td>Monsanto Service Order #27</td>
<td>Monsanto Company</td>
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<td>Scaboo, A.</td>
<td>North Missouri Soybean Breeding Program</td>
<td>Missouri Soybean Merchandising Council</td>
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<td>Zhang, Z.</td>
<td>Novel Construct Design for Plant Gene Silencing Employing Artificial tasiRNA</td>
<td>Missouri Soybean Merchandising Council</td>
<td>$83,502</td>
<td>05/01/2014-04/30/2015</td>
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<td>Stevens, G.</td>
<td>Effects of the Introduction of Feed Grains into Mid-South Soybean Production Systems</td>
<td>Mississippi State University</td>
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<td>Nguyen, H.</td>
<td>High-impact public research for modified carbohydrate composition in U.S. Soybeans</td>
<td>Purdue University</td>
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<td>Wiebold, W.</td>
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<td>Jones, A.</td>
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<td>Nguyen, H.</td>
<td>Genes and Markers for Resistance to Phytophthora sojae, Pythium spp., and Fusarium graminearum</td>
<td>The Ohio State University Office of Sponsored Programs</td>
<td>$147,211</td>
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<td>Shannon, G.</td>
<td>Nested Association Mapping (NAM) of Genes Controlling Soybean Yield and Other Key Traits</td>
<td>University of Illinois Urbana-Champaign</td>
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<td>Mitchum, M.</td>
<td>Testing Trial Agreement (Syngenta &amp; MGM)</td>
<td>Syngenta Seeds Inc.</td>
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