The spring and summer of 2017 have flown by, bringing many changes, challenges, and opportunities. Among notable changes are those involving leadership at MU and in CAFNR. First and foremost, Mun Choi assumed the position of President of the University of Missouri system on March 1. Six months later, on August 1, Alexander Cartwright assumed the role of MU Chancellor. Also on August 1, Christopher Daubert became Vice Chancellor and Dean for the College of Agriculture, Food and Natural Resources.

All three administrative leaders have hit the ground running, and they have become immediately involved in CAFNR activities through participation at field days and other events around the state. If the past several weeks are any indication, I predict that these campus and college leaders will have immediate positive impacts for our academic community and for CAFNR stakeholders.

Likely foremost among challenges in recent months have been reductions to campus and college budgets. In this time period, Division and CAFNR have responded to mid-year budget rescissions and have planned for significant budget reductions for the 2018 fiscal year. The Division of Plant Sciences has worked closely with CAFNR to develop plans to successfully meet these budget challenges with minimal impacts on the teaching, research, and extension activities of our faculty.

Budgetary challenges have led to opportunities to better define and articulate the many strengths of the Division in its mission areas of teaching, research, and extension and engagement. We have made important early progress in conversations about future directions.

These conversations are made easier by the fact that we have a strong base of successes to build on, including those in the areas of student achievement and impacts of faculty involved in research, extension and engagement. You will find many examples of these successes in the current newsletter. For example, beginning on page 2, you can read about five faculty and staff members who received awards recognizing teaching, advising, and staff accomplishments at the 2017 CAFNR Celebration of Excellence. You can also read about faculty members who received national awards for their accomplishments or who were invited to make international presentations on their programmatic activities.

This newsletter issue also highlights the many Division of Plant Sciences students who were recognized for their scholarly and creative achievements. For examples, turn to page 5 to meet undergraduate floral design students who were awarded scholarships for academic performance and received awards for creative design and performance at a national professional conference. Further on, beginning on page 7, you will meet graduate students in weed science and turfgrass management who received awards for presentations at professional conferences and a competitive grant award for support of their research.

Many other accomplishments and activities can be found in this issue. I invite you to explore and discover the enthusiasm and energy of our students, faculty, and staff.
The College of Agriculture, Food and Natural Resources honors outstanding faculty, staff, students, alumni and friends of the College each spring at its annual Celebration of Excellence Award ceremony. A number of Plant Sciences faculty received recognition at the April 7, 2017 banquet held at the University of Missouri Reynolds Alumni Center.

**Brad Fresenburg**
Ag Alumni: Dana Brown Haynes Service Award

This award opportunity recognizes an outstanding University of Missouri and CAFNR faculty or staff member, alumni or student who has demonstrated a long-term commitment of service to the College of Agriculture, Food and Natural Resources.

Brad Fresenburg received four degrees from the University of Missouri — B.S. Ag ’76, M.S. Agronomy ’80, MBA ’90 and Ph.D. Agronomy ’10.

Fresenburg has conducted turf research since he joined Mizzou as a research specialist in 1987. Along with his research, Fresenburg has a passion for mentoring students and working as an extension specialist. He has numerous professional accomplishments and has built long-lasting relationships.

Fresenburg works hard to keep in touch with his former students. He acts as a mentor to those former students, as well as a friend. Many of his students have followed in his footsteps and went on to careers in turf management. Teamwork is a priority for Fresenburg, too, as he coordinates training sessions and programs for colleagues.

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**Debbie Finke**
CAFNR Outstanding Graduate Advisor/Mentor Award

This award recognizes the efforts of advisers working with students on their graduate degree; faculty are incorporating research or teaching responsibilities along with advising students on thesis and project proposals. Recipients of the outstanding advising award must demonstrate unusually effective ongoing mentoring relationships with advisees during their programs of study. Successful candidates will demonstrate a breadth of relevant knowledge including institutional regulations, policies and procedures, as well as information sources, referral procedures and career/life building skills. Awardees must be recognized for excellence by their advisees, peers and administrators at the undergraduate or graduate level, depending on the particular advising award.

Deborah Finke has been a member of the plant sciences faculty at the University of Missouri since 2007.

In 2013 she received the CAFNR Distinguished Early Researcher Award. Finke has published 31 refereed publications, advised 10 graduate students and been on the committee for 18 additional master’s and doctoral students. Her current and past graduate students describe her open-door policy, hands-on support, and encouragement to achieve above and beyond.

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“Dr. Brad Fresenburg is all of these things: a behind the scenes motivator who trains knowledgeable turf managers, giving all he can to a state and to students while never asking anything in return but your very best effort.”

- Chad Follis, associate professor, Mineral Area College.

“Debbie Finke helped me transform into a scientist, researcher, and leader that I myself never imagined I could be.”

- Elizabeth Y. Long, assistant professor, Ohio Agricultural Research and Development Center.

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Harley Naumann
CAFNR Outstanding Early Career Teacher Award
Faculty with less than six years of teaching experience at the college level who demonstrate clarity of presentations and assignments, variability of instructional materials and teaching methodology, enthusiasm for their subject matter and for teaching, and a teaching style that provides a variety of opportunities for students to learn.

Harley Naumann has been an assistant professor within the Division of Plant Sciences for the past three years. His courses focus on plant structure and function, forage crops and laboratory topics in forage analysis.

Naumann’s style of teaching and hands-on approach is consistently praised by his students and fellow faculty members. Naumann has served as a guest lecturer for a handful of courses as well, in both plant sciences and animal sciences. He serves as an advisor and mentor to several students, too. Naumann’s teaching philosophy includes a focus on helping students grasp new and challenging concepts. He works hard to provide students with examples they can inspect and touch instead of just providing an image on a PowerPoint slide.

Melissa Mitchum
CAFNR Distinguished Researcher Award
Award winners demonstrate excellence in research performance, national or international recognition and/or special contributions to research team efforts.

Melissa Mitchum joined CAFNR in 2003 as an assistant professor in plant sciences.

She has authored and co-authored more than 50 peer-reviewed research and review articles and nine book chapters. Mitchum has given over 40 invited seminars and presentations. She has filed 15 invention disclosures and patents and has garnered more than $15 million in external grant funding. Her findings have been published in Nature.

She received the 2015 Syngenta Award for Outstanding Research Contribution in Plant Pathology, American Phytopathological Society. Mitchum is the monitoring editor of Plant Pathology and associate editor of Molecular Plant-Microbe Interactions.

She studies nematode-plant interaction from both sides, shedding light on the biology of both. Her seminal discoveries have transcended the field of plant nematology.

Kris Simpson
CAFNR Staff Recognition Award
Staff recognition award recipients must demonstrate outstanding ability and performance in productivity, quality of work, congeniality, judgment, dependability, initiative, leadership and dedication to the mission and values of the College.

Kristin Simpson has served as the collection manager for the Enns Entomological Museum for nearly 30 years.

In that role, Simpson processes collections, donations, and incoming and outgoing loans. She also archives entomological program literature and maintains equipment and supplies for entomology courses. Simpson is incredibly organized, as she can quickly find any preserved specimen among the 7 million in the museum. She gives museum tours and also showcases live insects. Simpson prepares displays for numerous other events.

Simpson goes above and beyond to make visiting scientists feel at home at CAFNR. She creates a comfortable environment for those scientists, including preparing a workspace for them and providing informative literature.

“Kris lives and breathes the university’s core values of respect, responsibility, discovery, and excellence, and exemplifies what it means to be an outstanding staff member.” - Robert Sites, professor of entomology.
MANJULA NATHAN speaks in Nanjing, China

Manjula Nathan was an invited speaker and served as co-chair for a session on “Lab quality control and assessment” and chaired a session on “Soil Testing and water resource protection” at the International Symposium on Soil and Plant Analysis on “The Roles of Soil, plant, water and waste analysis in food security and environmental quality” at Nanjing, China from May 14-18, 2017.

CRAIG ROBERTS receives Crop Science Extension Education Award

Craig Roberts received the Crop Science Extension Education Award from the Crop Science Society of America. This award is presented in recognition of excellence in extension teaching activities in the area of crop science. He will receive the award at the tri-society annual meeting in Tampa, FL October 22-25, 2017.

WALTER GASSMANN invited to Bose Institute Centenary Celebration

Walter Gassmann was invited to give a talk at the International Symposium on Insight to Plant Biology in the Modern Era, at the Bose Institute Centenary Celebration, February 8-10, 2017 in Kolkata, India. His presentation was titled, “Life’s a Beach: SRFRI’s Unexpected Roles in Plant Biotic Defenses.”
LESLEIGHAN CRAVENS Receives Distinction in the Floral Industry

American Institute of Floral Designers
Lesleighan Cravens, Plant Sciences Instructor, was recognized by the American Institute of Floral Designers (AIFD*) as a recipient of its coveted Certified Floral Designer (CFD*) designation. Cravens was granted this designation after successfully completing the Professional Floral Design Evaluation (PFDE) that took place on June 29, 2017 immediately prior to AIFD’s National Symposium “X” in Seattle, Wash. This symposium is the floral industry’s leading floral design education event.

CFD recognition is granted only after a floral designer has demonstrated their understanding of the concepts of design through education and by subjecting their floral design work to a rigorous peer evaluation conducted by an international panel of design experts.

In addition to being honored with the CFD designation, Cravens’ designs and evaluation marks were considered to be so artistic that she has also been extended an invitation to become an Accredited Member of AIFD.

Society of American Florists
In addition, Lesleighan was selected to receive her Professional Floral Communicator – International (PFCI) designation through the Society of American Florists. The PFCI is the service mark of the floral industry’s finest floral educators. Each member of the organization has proven, through their education and experience, their ability to speak authoritatively about topics pertinent to the floral industry, such as the principles and elements of floral design, the proper care and handling of flowers, and effective business management techniques.

Florists’ Review – Top 35 under 35 in the Floral Industry
Lesleighan Cravens was selected as a Top 35 under 35 in the floral industry by Florists’s Review. Nominated by their professional peers, these 35 dynamos are keeping the industry vibrant, adding creative color to it and taking it to places it’s never been before.
http://www.floristsreview.com/thirty-five-35/

KATELYN STOOPS receives AFE Mosmiller Intern Scholarship

The American Floral Endowment offers two intern scholarship programs for students in floriculture or horticulture. The Mosmiller Internship Program allows interns to train at leading retail, wholesale or allied trade operations for a period of 10-16 weeks, getting valuable on-the-job work experience.

Katelyn Scoops, a Senior Agribusiness Major with a minor in Plant Sciences, received an internship at Kent’s Floral Gallery, Columbia, MO which includes a $2,000 scholarship.

Stoops fell in love with floriculture in high school and discovered her fondness for the design sector of cut flowers while attending the University of Missouri. She also works at the student-operated floral shop, Tiger Garden, and hopes to inspire young designers in the future.

Floral Design Students receive AIFD scholarships

Jessica Petree (left), Senior Plant Sciences major with an emphasis in Horticulture Science and Design and Katelyn Stoops (right), Senior Agribusiness major with a minor in Plant Sciences each received a scholarship through the Allen Shackelford American Institute of Floral Designers Foundation Endowed Fund.
For the first time, floral design students from the division were asked to compete in the Visual Art and Design Showcase. Both of Lesleighan Cravens’ students, Katelyn Stoops and Kailey Brooks, were accepted.

The Visual Art and Design Showcase began in 2016 and provides a platform for University of Missouri undergraduate students to submit projects in either the artistic expression or applied design categories. Sponsored by the Office of Undergraduate Studies, Office of Undergraduate Research, the Honors College, Mizzou Advantage, and the Chancellor’s Distinguished Visitors Program, students compete to win a grand prize of $3,000 in each category and one of four $500 awards per category.

The showcase began on Jan. 30 – a Monday – so most students prepared their displays on the previous Saturday. Since the other entrants had submitted completed pieces, their set-up process was under an hour, Lesleighan says. This was not the case for Kailey and Katelyn. To maximize the life of their artwork, they were forced to wait to add the flowers until as late as possible. After four hours in Jesse, they were finished. The work also needed heavy maintenance throughout the week.

At the end of the night, Kailey’s “Persistence” won a $500 award in the applied design category as well as the people’s choice award.

Each year at the annual symposium of the American Institute of Floral Designers, the Mizzou Chapter competes in the student floral design competition. Each student is given four design categories, four hours, and a bucket of flowers and products to create their arrangements. This year we are happy to announce we placed 4th as a team at the National level competing against other programs such as (Texas A&M, The Ohio State, Mississippi State, etc). This year’s Mizzou team was made up by Diana Fox (left): Senior Plant Sciences emphasis Horticulture Science and Design, Katelyn Stoops (center): Senior Agribusiness Major with a minor in Plant Sciences, and Kailey Brooks (right): Junior Plant Sciences emphasis Horticulture Science and Design.
SHEA FARRELL takes first with poster

University of Missouri graduate student Shea Farrell earned first place for his poster presentation at the annual Weed Science Society (WSSA) meeting in February of 2017. Shea won $300 for the award and is continuing his studies under Dr. Kevin Bradley. Shea presented his work on identifying correlations between dicamba herbicide injury to soybean and subsequent yield impacts.

JOHN KOEHLER places 1st at ITRC

John Koehler placed 1st in the Disease & Soils category at the 2017 International Turfgrass Research Conference (ITRC) Graduate Student Oral Presentation Competition in New Brunswick, NJ, July 16-17, 2017. His presentation was titled “Impact of nitrogen source and a pH buffer on the in vitro growth and morphology of Rhizoctonia solani AG-202 LP.”

He was awarded $500 and a complimentary International Turfgrass Society membership for the next 4-year cycle (2017-2021). John also received the “Top” domestic student travel award to attend the ITRC meeting. The award included the estimated full cost of his travel including airfare, lodging and a meal allowance as well as complimentary conference registration.

MICHAEL PATTERSON receives NCR SARE graduate student grant

Michael Patterson, M.S. student co-advised by Drs. Bruce Barrett and Xi Xiong, received a North Central Region SARE Graduate Student Grant. NCR-SARE’s Graduate Student Grant Program is a competitive grant program to fund graduate student projects that address sustainable agriculture issues. This $11,000 one year project is entitled: Developing an innovative approach for control of billbug on sod farms.
PLANT SCIENCES GRADUATE STUDENT AWARDS

The Division of Plant Sciences Award for Research in Plant Biology – Avinash Karn
This award recognizes the accomplishments of a masters or doctoral student in any area of plant biology. The funds for this award were provided through an endowment established by faculty in the Division of Plant Sciences at the University of Missouri.

The Daniel Millikan Award for Outstanding Research in Plant-Microbe Interactions – Morgan Halane and Carola De La Torre Cuba (co-awardees)
This award recognizes the accomplishments of a masters or doctoral student in the area of plant-microbe interactions. The funds for this award were provided through an endowment established by Daniel Millikan, a former Professor of Plant Pathology at the University of Missouri.

The Ferguson Award - Curtis Ransom
This award recognizes the efforts and accomplishments of an outstanding graduate student within the Division of Plant Sciences, specifically within the field of Agronomy.

Philip C. and Ruth E. Stone Scholarship in Entomology – Binita Shrestha
This annual award recognizes an outstanding entomology Master’s graduate student based on scholarship and professional activities.

The Lloyd E. Adams and E.P. Meiner’s Doctoral Scholarship in Entomology – Leland “Grant” Bolton
This award is available to an entomology doctoral graduate student and it is intended to improve the quality of the program’s doctoral students and their dissertations, and to enhance their professional credentials.

Leonard and Elosia Haseman Memorial Scholarship Award in Entomology - Hongwei Zhang
This annual award recognizes an outstanding entomology doctoral student based on scholarship and professional activities.

The Fred Clute Memorial Scholarship in Entomology - Jessica Kansman
This award is available to an entomology master’s or doctoral student who has demonstrated excellence in an area of pest management in their research and outreach activities, both in agricultural and urban settings.

Thomas R. Yonke Biodiversity Fellowship - Joseph Larose
This award is for master’s or doctoral students with a scholarly experience in insect biodiversity.

visit the Graduate Student Awards Page: http://plantsci.missouri.edu/graduate/awards/.

Hongwei Zhang, Binita Shrestha, Leland “Grant” Bolton, Joseph Larose, Jessica Kansman
Congratulations!

Spring 2017

MS
Kaley Hensel, Horticulture, Michele Warmund
Jacob Young, Plant, Breeding, Genetics & Genomics, Andrew Scaboo
Binita Shrestha, Entomology, Jaime Pinero
Andrew Luke, Crop, Soil & Pest Management, Reid Smeda

PHD
Enzhan Song, Crop, Soil & Pest Management, Xi Xiong
Carola De La Torre Cuba, Plant Stress Biology, Melissa Mitchum
Michael Gardner, Plant Stress Biology, Melissa Mitchum
Morgan Halane, Plant Stress Biology, Walter Gassmann
Avinash Karn, Plant Biology & Genetics, Sherry Flint-Garcia
Sarah Kenyon, Crop, Soil & Pest Management, Craig Roberts

UNDERGRADUATES
Nathan Anderson (Horticultural Science & Design)
Jessica Campen (Crop Management)
Wyatt Coffman (Crop Management)
Jacob Cogan (Horticultural Science & Design)
Catherine Dadmun (Horticultural Science & Design)
Raechel Douglas (Crop Management)
Sayde Heckman (Horticultural Science & Design)
Blake Kasten (Crop Management)
Matthew Malinski (Breeding, Biology and Biotechnology)
Weston Mefford (Crop Management)
Maria Murillo (Horticultural Science & Design)
Clayton Rushford (Breeding, Biology and Biotechnology)
Taylor Smith (Breeding, Biology & Biotechnology; Crop Management)
Matthew Stevens (Horticultural Science & Design)
Joshua Tooley (Crop Management)

Summer 2017

MS
Blake Barlow, Crop, Soil & Pest Mgmt, Kevin Bradley
Zach Trower, Crop, Soil & Pest Mgmt, Kevin Bradley
Kaile Zhou, Entomology, Qi Sheng Song & David Stanley

PHD
Tyler Dowd, Plant Stress Biology, Bob Sharp
Todd Lorenz, Crop, Soil & Pest Mgmt, Brad Fresenburg
The 34th Annual Interdisciplinary Plant Group (IPG) Symposium "Root Biology" was held June 7-9, 2017 in the Christopher S. Bond Life Sciences Center at the University of Missouri. This year’s symposium brought together nearly 200 attendees from across the globe to discuss recent advances in studies of root growth, development, and function as well as root-rhizosphere interactions. The sessions featured 23 invited speakers as well as seven invited poster talks.

The symposium kicked off with an evening reception with welcoming remarks from University of Missouri System President Dr. Mun Choi on Tuesday, June 6th at The Roof in the Broadway Hotel.

The scientific program began on Wednesday June 7th with opening remarks from Dr. Mark McIntosh, Vice Chancellor for Research, Graduate Studies and Economic Development, University of Missouri. Dr. Malcolm Bennett, University of Nottingham, UK presented the opening keynote, “Standing on the Shoulders of Giants to Uncover the Mechanism of Auxin Action”, which was dedicated to the memory of Dr. Tom Guilfoyle, Professor Emeritus in the Department of Biochemistry, University of Missouri.

This year’s symposium also included an evening keynote from Dr. Jonathan Lynch, Pennsylvania State University, and Dr. Jill Findeis, University of Missouri, on “New Roots for Agriculture: Better Beans for Africa”.

In addition to the session talks, the symposium provided networking opportunities through a dinner with the speakers, exclusive for students and postdocs, and receptions and poster sessions on Wednesday and Thursday featuring nearly 75 posters.
SHARE LIFE FARM ORGANIC FIELD DAY

Waana Kaluwasha, a M.S. student supervised by Dr. Xi Xiong, organized a field day at the Share Life Farm located in Marshall, Missouri, on August 16. For the past two years, Wanna, from Zambia, has been performing research related to sweet potato production. The Share Life Farm is a pesticide-free farm maintained by the Thomas family since 1929. Waana has an ongoing experiment and this field day was a part of the requirements of a Graduate Student Grant funded by the North Central Region Sustainable Agriculture Research & Education (NCR-SARE). The objectives of her field experiment are to develop a cover crop system that promotes sweet potato yield, quality and soil health.

Invited speakers, included Robert Kremer, Jaime Pinero, and Reid Smeda, Tim Reinbott and Kathi Mecham. Topics included soil health, insect control and pollinator plants, to weed control and fertility in organic production systems.

Despite heavy rainfall, the field day attracted more than 40 people representing farmers, industry and government representatives, community gardeners, and students and extension specialists from 17 Missouri towns. The majority of participants expressed satisfaction in attending the field day, and 96% of them stated their willingness to change their current practices based on what they learned.

This field day was supported by the Thomas family of the Share Life Farm and the South Farm and Bradford Research Centers. Without their support the Field Day would not have been successful.

“The Roots and Water” Workshop

The graduate students and post-doctoral researchers funded on the NSF grant, “Physiological Genomics of Maize Nodal Root Growth under Drought” (IOS-144448) organized a workshop on “Roots and Water” held on June 6, 2017 in the Bond Life Sciences Center at the University of Missouri. The goal of the workshop was to provide the students and post-doctoral researchers the opportunity to interact with, and learn from, the invited speakers in a discussion-based environment.

The workshop featured presentations from University of Missouri graduate students and postdocs working on research related to roots and drought, as well as from three invited speakers; Dr. Michelle Watt from Forschungszentrum Jülich, Germany; Dr. Andrea Carminati, Georg-August-Universität Göttingen, Germany; and Dr. Steve Tyerman, University of Adelaide, Australia.

The workshop also included a roundtable discussion with the speakers. Students had the chance to ask the three guest speakers questions about their presentations or research.

The invited speakers also spoke later that week at the Interdisciplinary Plant Group’s symposium on “Root Biology” held June 7-9th.
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

MEET YOUR EXTENSION SPECIALIST

Patrick Byers serves as commercial horticulture specialist with MU Extension in nine counties in southwest Missouri, including Webster, Christian, Douglas, Greene, Howell, Ozark, Taney, Texas, and Wright counties. Based in Marshfield in Webster County, he conducts educational programs for commercial horticulture clientele, with a focus on vegetable and fruit farmers and green industry professionals. Patrick also collaborates with farmers and specialists from MU, Lincoln University and Missouri State University to conduct specialty crop research and outreach; recent projects include commercialization of elderberry, high tunnel IPM, garlic planting dates, innovative blackberry trellis implementation, thornless blackberry cultivar performance, and investigation into hops production.

Prior to MU Extension, Patrick worked as an outreach specialist with Missouri State University’s Fruit Experiment Station, emphasizing commercial fruit production, and as a research specialist with the University of Arkansas. Key focus areas in Patrick’s program include specialty crop production, food safety training for farmers and community gardens, integrated pest management, sustainable and organic production practices, and programming with historically underserved populations. In particular, bringing science-based information to Missouri’s farmers drives Patrick’s Extension program, and he looks forward to a bright future for MU Extension’s role of improving lives, communities and economies in Missouri.

Patrick and Michele, his wife, live on a farm near Fordland where they raised four children. In past years, they produced and marketed peaches and elderberries; currently they are enjoying their grandson.

Forage-Livestock Brown Bag Resumes

The Forage-Livestock Brown Bag has resumed this semester. The Forage-Livestock group includes MU faculty, staff, and students in Plant Sciences, Animal Sciences, Agricultural Economics, Veterinary Medicine, as well as Rural Sociology, and Natural Resources. In the past, the group also included partners in government agencies.

The brown bag event is an informal, over-lunch discussion. Each week, a colleague volunteers to lead a discussion about research findings, extension programs, emerging issues, collaborative projects, and potential funding.

The Forage-Livestock Brown Bag is held each Tuesday at noon in 210 Waters Hall. All are welcome. For more information, contact Craig Roberts at RobertsCr@missouri.edu.
Graduate Student Recruitment Weekend

Every year in early February, Plant Science faculty, staff and graduate students join with Biochemistry, Genetics, the MU Informatics Institute, Interdisciplinary Plant Group, Molecular Pathogenesis & Therapeutics, and Life Sciences in a joint recruitment weekend. During this weekend, top applicants are brought to campus to meet faculty, tour facilities and learn about the exciting opportunities for graduate study. Each prospective graduate student is matched with a student host in order to learn more about the program from an insider’s perspective. In addition, the prospective students are provided with the opportunity to meet with faculty mentors based on the student’s research interests. On February 3-4, 2017 Plant Sciences invited five potential graduate students for this year’s event. On Friday they met with faculty members of their choosing, heard presentations from the various student organizations in Plant Science and toured campus before joining the other divisions for a social reception in Bond Life Science Center. Friday night they were treated to dinner with the hosts and other graduate students. On Saturday morning they attended a poster session and a presentation from STEM organizations on campus. Positive feedback over the years from all parties involved promotes the need to continue participating in the event each year.
Representatives from the Division of Plant Sciences (DPS), MU Extension (MUEXT), the Division of Applied Social Sciences (DASS), the Soil Health Assessment Center, Missouri Department of Natural Resources (MoDNR), and the Natural Resources Conservation Service (NRCS) offered a mini-symposium entitled "Scattering the Seed" at the 2017 MO State Fair. The information and demonstrations promoted cover crop use, their benefits to soil health in agricultural ecosystems, and acquiring NRCS technical assistance in their use on farms. Exhibits included cover crop displays to feature root growth, aggregate stability's effect on soil pore space and water infiltration, and a rainfall simulator to visualize runoff and erosion potential in different agricultural ecosystems. The Soil Health Assessment Center provided free, on-site soil active carbon tests for attendees. MoDNR engaged clientele with questions about incentives for implementing cover crops. Record setting attendance on August 12 provided an ideal venue to interact with stakeholders and the public regarding cover crops in agriculture.

Graduate students and postdocs from the Department of Electrical Engineering and Computer Science and the Division of Plant Sciences presented aspects of their research on high-throughput field phenotyping to the public, policy makers, and University of Missouri administrators on Legislators’ Day, August 17. The group consisting of graduate students Ali Shafiekhani and Parth Upadhyay, postdocs Hua Bai and Michael Maw, as well as Gui DeSouza and Felix Fritschi exhibited several phenotyping tools, including a small, autonomous robot and a phenotyping platform for a high-clearance tractor. These phenotyping platforms are under development as part of research funded through the NSF EPSCoR “Missouri Transect: Plants, Climate and Community” grant and a grant from the Missouri Soybean Merchandising Council. The exhibit highlighted the need to alleviate the phenotyping bottleneck in crop improvement and emphasized opportunities for interdisciplinary collaborations among biologists, computer scientists and engineers.

University of Missouri System President Mun Choi and Felix Fritschi discuss “vinobot”, an autonomous ground robot equipped with a variety of sensors and a linear slide with a robotic arm holding a trinocular camera that is used to acquire images for 3D reconstruction of field grown plants.

Left to right: Greg Luce, Michael Maw, Felix Fritschi, Parth Upadhyay, Hua Bai, Gui DeSouza, Truman and Ali Shafiekhani with vinobot at the MizzouCentral booth.
Students for the Advancement of Plant Pathology (SAPP) also presented during Legislators’ Day (August 17) at the 2017 Missouri State Fair. The team comprised of graduate students Waana Kaluwasha, Beverly Agtuca, Nhung Hoang, and Mustafa Adhab, as well as faculty sponsor Melissa Mitchum. The group educated producers, the public, policy makers, and MU administrators about the biology and importance of plant diseases. The exhibit also showcased the wide range of plant, soil, and nematode testing services offered at the University of Missouri. Representatives included Manjula Nathan and Steve Abernathy from the Plant & Soil testing lab and Amanda Howland from SCN Diagnostics. The group had the opportunity to interact with Provost Garnett Stokes, Vice Chancellor for Research, Graduate Studies, and Economic Development Mark McIntosh, and our new CAFNR Dean Chris Daubert among other administrators.
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<td>Evaluation of oleic acid germplasm for development of soybean with high oleic acid</td>
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<td>High-Impact Public Research for Modified Carbohydrate Composition in U.S. Soybeans</td>
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<td>Cry3Bb Resistant Corn Root Worm Eggs</td>
<td>Dow Agroscience</td>
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<td>Finke, D.</td>
<td>Invertebrate Species Monitoring and Monitoring Training Services in the Upper Osage Grasslands Priority Geography</td>
<td>Missouri Department of Conservation</td>
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<td>Flint-Garcia, S.</td>
<td>Biology of rare alleles in maize and its wild relatives</td>
<td>Cornell University/NSF</td>
<td>$180,586</td>
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<td>Fritschi, F. Scaboo, A. Nguyen, H.</td>
<td>Foundations for Soybean In Africa</td>
<td>University of Illinois</td>
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<td>Fritschi, F.</td>
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<td>Fritschi, F.</td>
<td>Understanding the role of ureide partitioning in the physiology and productivity of nitrogen-fixing and non-fixing soybean</td>
<td>Washington State University</td>
<td>$5,930</td>
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<td>Heiser, J.</td>
<td>Protocol: Loyant Demonstration</td>
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<td>Kallenbach, R.</td>
<td>Scattering the seed: An initiative to promote cover crop use, benefits to agricultural ecosystems, and acquiring NRCS technical assistance</td>
<td>Department of Agriculture</td>
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<td>McKendry, A.</td>
<td>Fusarium Head Blight Research in Winter Wheat</td>
<td>Agricultural Research Service</td>
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![Recent Grants](image)

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<td>Managing Water for Increased Resiliency of Drained Agricultural Landscapes</td>
<td>Purdue University</td>
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<td>Enhanced Photosynthesis technology in perennial ryegrass (Lolium perenne)</td>
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<td>Modifying Soluble Carbohydrates in Soybean Seed for Enhanced Nutritional Energy</td>
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<td>Scharf, P.</td>
<td>Evaluation of SUPERU® Fertilizer, Agrotain Advanced 1.0 and a competitor in corn production</td>
<td>Koch Agronomic Services</td>
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<td>Sharp, R.</td>
<td>Improvement of Drought Tolerance in Cotton-Understanding Root Growth Responses to Water Deficit Stress</td>
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<td>Smeda, R.</td>
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<td>Training Insect Cell Culturists for Establishment of Insect Cell Lines</td>
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<td>Carbon and nutrient dynamics of a bioenergy agroforestry system</td>
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<td>Scaboo, A.</td>
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RECENT Publications


