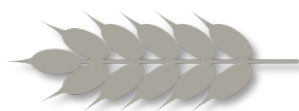




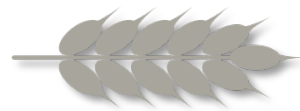
Office of International Programs in Agriculture
COLLEGE OF FOOD, AGRICULTURE, & ENVIRONMENTAL SCIENCES
The Ohio State University



INTERNATIONAL PROGRAMS IN



BRAZIL



August, 2016



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Map of Ohio State CFAES -Brazil Formal Partnerships



Indicates Brazilian institutions with active and approved Memoranda of Understanding with Ohio State University's College of Food, Agricultural, and Environmental Sciences.

Discovery Themes



Energy and the Environment



Food Production and Security



Health and Wellness

Memoranda of Understanding

CFAES has active and approved Memoranda of Understandings (MOUs) with the following Brazilian Institutions:

1. **Universidade Estadual Paulista (UNESP)** - São Paulo, Brazil
2. **Universidade do Estado de Santa Catarina (UDESC)** – Florianopolis, Brazil
3. **Universidade de São Paulo - Escola Superior de Agricultura (ESALQ)** - São Paulo, Brazil
4. **Universidade Federal de Viçosa (UFV)** – Vicoso, Brazil
5. **Brazilian Federal Agency for Support and Evaluation of Graduate Education , Ministry of Education (CAPES/MEC)** – Brasilia, Brazil

Recent Activities & Engagement

The College of Food, Agricultural, and Environmental Sciences is engaged with the following Brazilian Institutions:

University of São Paulo (USP) - Escola Superior de Agricultura (ESALQ)

Ohio State and University of São Paulo (USP) - Escola Superior de Agricultura (ESALQ) share a long (50+ years) history of collaborative research and educational cooperation. Beginning in 1964, USAID contracted with OSU's Office of International Programs in Agriculture for an institutional development project in Brazil, initially with the College of Agriculture (ESALQ) of the University of São Paulo. The Ohio State project was one of four such university agreements in Brazil, that focused on integrating teaching, research and extension activities; development of graduate level courses and U.S. style graduate degree programs; the development of a School of Home Economics; and policy research development. Under this project, 16 CFAES faculty undertook long-term assignments at ESALQ and over 75 ESALQ faculty members undertook graduate degree programs at Ohio State. Newly created graduate degree programs were then filled and sustained by returning ESALQ faculty. Upon termination of this funding, several other sources of USAID funding were used to promote continued collaboration between Ohio State and ESALQ and other agricultural colleges and the Brazilian Ministry of Agriculture, through 1989. Over the entire period of this strategic relationship, 90 OSU faculty members

have been engaged and over 100 Brazilian faculty members have received advanced degrees or special training at Ohio State.

Kelly Newlon (Director, CFAES Study Abroad) oversees a study abroad program at the University of São Paulo, ESALQ. The University of São Paulo, ESALQ campus, has hosted a six-week study abroad program for 18-20 students for more than 15 years. The program focus is agricultural economics, rural sociology, and international studies with an emphasis on leadership. Portuguese language training is included along with various field visits to industries, farms, government agencies, etc. Ohio State's primary partner there is Dr. Ricardo Shirota, a Ohio State alum in Agricultural Economics. The group that attends each year is the **Alpha Zeta Partners Student Honorary**.

Pablo Jourdan (Professor, Department of Horticulture and Crop Science) has had a long relationship with partners in Brazil and has worked with them extensively through Ohio State's Ornamental Plant Germplasm Center (OPGC). Over the last 4 years, 6 Brazilian students (2 PhD, 4 undergraduate) from 3 different universities in Brazil (ESALQ, UFLA, Maringa) have worked and studied as visiting scholars at the OPGC on various aspects of seed biology:

Clissia Barboza, PhD candidate at ESALQ, visiting scholar at OPGC from August 2013 - August 2014. The following publication is a result of this work:

Barboza da Silva, C, Marcos-Filho J, Jourdan P, and M Bennett (2015) Performance of Bell Pepper Seeds in Response to Drum Priming with Addition of 24-Epibrassinolide. *HortScience* 50(6):1-6.

Valdinei Moreira- PhD candidate at ESALQ, visiting scholar at OPGC from August 2014 - December 2014. Tissue culture research with Phlox; exploration of oryzalin as a polyploidization agent in vitro.

Juliana Espindola - PhD candidate at UFLA, visiting scholar at OPGC from November 2014 - November 2015. Seed biology research with Phlox; flower and seed development and assessment of seed quality. Manuscript in preparation.

Sibelle Santanna - PhD candidate at ESALQ, visiting scholar at OPGC from May 2015 - January 2016. Viability and germination systems for Phlox. Manuscript in preparation.

Dr. Jourdan also visited ESALQ and UFLA in December 2013 to expand the collaborative linkages in seed science research and education between the Ohio State's Department of Horticulture and Crop Science and the Seed Science programs at ESALQ.

Michael Day (Professor, Department of Animal Sciences) has been a co-PI on a São Paulo Research Foundation (FAPESP) grant with Dr. Alexandre Pires, USP-ESALQ, studying the nutritional effects on sexual maturation in Nelore heifers. Dr. Pires completed a 1 month visit to Ohio State in 2013 and Dr. Day has hosted a fifth year animal sciences student from ESALQ as

an intern in his program. His collaboration with Dr. Pires has yielded the following meeting abstracts:

Biehl, M. V., A. V. Pires, M. V. C. Ferraz Junior, D. D. Nepomuceno, E. M. Ferreira, R. S. Gentil, L. H. Cruppe, and M. L. Day. "Reproductive performance of *Bos indicus* heifers with reduced serum progesterone concentration at the onset of a 5-d Co-Synch + CIDR program". J. Anim. Sci. 91(E-Suppl 2; 2013):353.

Ferraz Junior M. V. C., A. V. Pires, M. V. Biehl, E. M. Ferreira, D. D. Nepomuceno, V. N. Gouvea, R. Sartori, J. R. S. Goncalves, L. H. Cruppe, and M. L. Day. "Timing of artificial insemination in a 7-d P4-E2 estrous synchronization program in *Bos indicus* postpartum cows". J. Anim. Sci. 91 (E-Suppl 2; 2013):596.

In 2013, Dr. Day advanced a memorandum of understanding between Ohio State's CFAES and USP-ESALQ to promote greater collaboration in the areas of teaching and research.

Andy Michel (Associate Professor, Department of Entomology; Insect Molecular Ecology and Adaptation Laboratory; and State Extension Specialist: Field Crops Entomology) has hosted a number of visiting scholars and post-docs over the past few years from ESALQ including Julio Fatoresso (Nov 2013-April 2014); Natalia Leite, a PhD student from ESALQ-USP funded by Science Without Borders (Sept 2015-Jan 2016), and Dr. Vitor Pavinato, a post doc funded by a CNPq fellowship (June 2015 – Present).

In March 2015, he taught a 4 day course on Insect Molecular Ecology to 13 students at ESALQ. Prior to that visit, he visited ESALQ with a contingency of faculty from CAPS and CFAES administration in September 2014 to celebrate their graduate program and the 40+ years of collaboration between OSU and USP-ESALQ. During that visit, he also delivered an invited lecture at the Brazilian Congress of Entomology.

Center for Applied Plant Sciences (CAPS) at Ohio State and USP share a 40+ year history in collaborative research and educational cooperation, including several undergraduate and graduate student exchanges. A collaborative partnership between Ohio State, USP, and Rutgers University constitutes the Tripartite Collaborative, which holds meetings every two years where faculty and students meet in person to propel their research forward and find new ways to collaborate (<http://tripartite.osu.edu/>).

Erich Grotewold (Director of the Center for Applied Plant Sciences), along with Glaucia Souza (USP), have been developing tools to investigate gene regulatory networks in grasses, focusing primarily on sugarcane. Two researchers from Dr. Glaucia's lab spent several months in the Grotewold lab, resulting in a joint publication:

Yilmaz et al., 2009; Plant Physiology 149: 171-180). Sugarcane transcription factor information is also part of the jointly developed database GRASSIUS (<http://www.grassius.org>)

Berenice K. de Alcântara, PhD student in the International Program of Cellular and Molecular Biology of Plants ESALQ-USP, has worked with the effect of aluminum in gene expression of maize, especially regarding the genes of the phenylpropanoids pathway. The study also aims to

show a possible relationship of this pathway with oxidative damage caused by aluminum, which is one of the research areas in Laboratory of Genetics and Biochemistry of Plants coordinated by Dr. Ricardo Antunes de Azevedo. Berenice was supported by a grant that involves the Brazilian government (CAPES) and U.S. government (Fulbright), which allowed for the partial development of her project at The Ohio State University for 9 months under the supervision of Dr. Erich Grotewold. In the laboratory of Dr. Grotewold, she also examined if the effect of aluminum is more harmful in dark or in light, and if tolerance is induced in maize seeds by pre-treatment with aluminum when germination occurs under this stress.

Bob Tabita (Center for Applied Plant Sciences) has collaborated with Professor Helaine Carrer of USP to improve CO₂ fixation metabolism in sugar cane. ESALQ Ph. D. student, Manuella Nobrega Dorado spent a 6 month internship in Professor Bob Tabita's lab to apply metagenomic principles to CO₂ fixation research.

Tom Mitchell (Professor, Department of Plant Pathology) has been working with the Universidade de São Paulo and National Laboratory of Science and Technology of Bioethanol, Brazil. He has worked with Dr. Gustavo Goldman at the Faculty of Pharmaceutical Sciences of Ribeirão Preto, University of São Paulo, who is a known expert in fungal biology and functional genomics. Dr. Mitchell and Dr. Goldman have been collaborating for 5 years now and have two publications with a third being submitted shortly. He has worked for over a decade on the fungus that causes human Aspergillosis, the major human respiratory disease and a leading cause of death in people who are immunocompromised. In collaboration with Dr. Mitchell, Dr. Goldman's postdoctoral researcher Ricardo Almeida traveled to Ohio State to perform a ChIP-seq study of a central transcription factor in the calcium signaling circuit. This work confirmed DNA binding motifs for this protein and elucidated several new metabolic pathways it regulates.

Dr. Mitchell is also a member of CAPS at Ohio State and has visited Brazil on two recent occasions to visit CAPS collaborators, give lectures, and attend the opening of the OSU Gateway office. Dr. Mitchell is also the Chair of the Translational Plant Science Graduate Program that has a dual degree program with the Universidade de São Paulo.

Sudhir Sastry (Professor, Department of Food, Agricultural, and Biological Engineering) has collaborated extensively with faculty at USP over the years and recently delivered a lecture at USP in 2014 entitled "The Physics and Engineering of Fresh Produce Safety".

John Finer, (Professor, Department of Horticulture and Crop Science) hosted Adriana P. Martinelli, faculty member in Centro de Energia Nuclear na Agricultura (CENA), "Luiz de Queiroz" University of São Paulo, Piracicaba, Brazil. She has worked with the development of tissue culture, transformation and gene expression systems for crop plants, especially soybean and sugarcane. Dr. Martinelli took a sabbatical in the laboratory of Dr. Finer and worked on the isolation and characterization of a soybean (*Glycine max*) polyubiquitin (Gmubi) promoter. In transgenics, this promoter shows the strongest expression of any soybean promoter studied to date. The promoter has been requested by and distributed to academic and private sector scientists and is being utilized to regulate transgenes for both basic and applied research.

Steve Schwartz and **Robin Ralston** (Center for Advanced Functional Foods Research and Entrepreneurship, Department of Food Science and Technology) recently met with Dr. Severino Alencar (Associate Professor, ESALQ/Univ. São Paulo-Piracicaba) and Dr. Pedro Luiz Rosalen (Professor of Pharmacology, UINCAMP) to discuss a potential graduate student exchange.

Rattan Lal (Professor, School of Environment and Natural Resources) hosted Carlos Edwardo Pellegrino Cerri of USP for two weeks in 2013 and Audrey Konda (Agronomic Engineering) in 2015 as visiting scholars in the Carbon Management and Sequestration Center.

Peter M. Piermarini (Assistant Professor, Department of Entomology) was awarded a Mobility Grant through the 2015 OSU-Brazil/FAPESP Collaborative Research Program. The funded project, entitled "The effects of dengue infection on the molecular physiology of mosquito kidneys", will be carried out with Dr. Margareth Capurro, Institute of Biomedical Sciences, University of São Paulo, and will involve reciprocal visits to each other's labs in 2016.

Universidade Estadual Paulista (UNESP)

Normand St-Pierre (Professor, Department of Animal Sciences) is currently an Invited Professor with the Universidade Estadual Paulista (UNESP) in Jaboticabal, SP, Brazil, where he conducts research in animal nutrition, applied statistics, and mathematical modeling of animal and farming systems. His prominent position is being funded by the Science without Borders program initiated by the federal government of Brazil to fund ad hoc endowed professorships in STEM disciplines for foreign scholars. Dr. St-Pierre typically spends 3 months out of every year working with Brazilian colleagues, advising graduate students, and post-doctoral fellows, and organizing specialized conferences and workshops to rapidly disseminate his findings and those of others. His engagement has led to the following scholarly presentations made in Jaboticabal:

St-Pierre, N, Presenter. "So you want to be a scientist!." Presented at Special seminars to the graduate students, UNESP, Jaboticabal, Brazil. (Jul 2013)

St-Pierre, N, Presenter. "Stochastic models in growth and nutrition." Presented at Workshop organized by the non-ruminant section, UNESP, Jaboticabal, Brazil. (Jul 2013)

St-Pierre, N, Presenter. "Nonlinear statistical models." Presented at Workshop organized by UNESP, Jaboticabal, Brazil. (Jun 2013)

St-Pierre, N, Presenter. "Statistical issues in nutritional modeling." Presented at International Symposium: Modelling Pigs and Poultry Production, Jaboticabal, SP, Brazil. (Jun 2013)

He has also been hosting a series of Brazilian graduate students who are visiting Ohio State on a 3, 6, or 12-month sandwich internship, which is an activity embedded in their graduate program in Brazil.

Peter Thomison (Professor, Horticulture and Crop Science) and **Laura Lindsey** (Asst. Professor, Horticulture and Crop Science) have hosted one student from Universidade Estadual de São Paulo (UNESP) in Botucatú, SP. The student is studying under Prof. Saulo Guerra at UNESP.

Laura Lindsey (Assistant Professor, Horticulture and Crop Science) serves as the research advisor of Lucas Paschoal, an undergraduate student at UNESP, for his project entitled “Using Two Different Technologies to Measure Sidedress Nitrogen Application Rate in Corn”. Paschoal graduates in 2013.

Rattan Lal (Professor, School of Environment and Natural Resources) Prior to 2014, Dr. Lal hosted Jose Eduardo Cora, Ricardo Oliviera de Bordonal, and two professors of Ricardo’s from UNESP - Newton La Scala Jr. and José Marques Jr. – at the Carbon Management Sequestration Center where they focused on research projects related to greenhouse gas emissions and biofuels.

Michael Day (Professor, Department of Animal Sciences) has conducted collaborative research for the past 9 years in estrous synchronization, precocious puberty and pregnancy in heifers, and bull fertility with Dr. Jose Vasconcelos, UNESP, Botucatu. Dr. Vasconcelos was here on a mini-sabbatical from December 2012 - February 2013 to set up joint research efforts. This collaboration resulted in the following publications:

Abreu F.M., Geary T.W., Cruppe L. H., Madsen C. A., Jinks E. M., Pohler K. G., Vasconcelos J. L. M., and M.L. Day, "The effect of follicle age on pregnancy rate in beef cows". J. Anim. Sci. doi:10.2527/jas2013-6760, 1-7. 2013.

Abreu F.M., Cruppe L. H., Maquivar M., Utt M. D., Madsen C. A., Vasconcelos J. L. M., M.L. Day and T. W. Geary, "The effect of follicle age on conception rate in beef heifers". J. Anim. Sci. doi:10.2527/jas2013-6761, 1-7. 2013.

Martins T, Peres RF, Rodrigues AD, Pohler KG, Pereira MH, Day ML, Vasconcelos JL, "Effect of progesterone concentrations, follicle diameter, timing of artificial insemination, and ovulatory stimulus on pregnancy rate to synchronized artificial insemination in postpubertal Nelore heifers". Theriogenology doi: 10.1016/j.theriogenology 1-8. 2013.

Dr. Day gave two talks at a conference attended by 1700 veterinarians, producers, academics and allied industry in March, 2013. On the same trip, he co-taught 3 graduate level short courses in Botucatu that were open to and attended by graduate students from throughout São Paulo state.

Bo Harstine (Ph.D. student in Animal Sciences), studying under Dr. Day, completed a project to evaluate Angus AI semen fertility in Nelore cows from January-March, 2014 in Goiás and São Paulo. Funding for travel was supplied by OSU Global Gateway and by the Graduate School of UNESP, Botucatu.

Universidade Estadual de Maringa (UEM)

Warren A. Dick (Professor, School of Environment and Natural Resources) hosted a visiting graduate student, Leandro Michalovicz, in his laboratory at OARDC from January- December 2014, where he investigated the effects of flue gas desulfurization (FGD) gypsum on soil chemical properties, crop nutrition and crop yield in Ohio. Warren plans to travel to Brazil at the end of 2016 to participate in Leandro's PhD defense exam and to help prepare final versions of manuscripts for submission to journals for publication.

R. Mark Sulc (Professor, Department of Horticulture and Crop Science) hosted one student, as well as Prof. Marcelo Augusto Batista, from Universidade Estadual de Maringa (UEM) in 2014.

Laura Lindsey (Assistant Professor, Horticulture and Crop Science) served as the research advisor of Rafael Murano ("Evaluation of Semi-Dwarf and Conventional Soybeans at Two Seeding Rates"), an undergraduate student at Universidade Estadual de Maringa who also was hosted in the Lindsey lab as a visiting scholar in 2014. Together they have produced the following publication:

Alves Correa Murano, R., Lindsey, L.E., Bethel, J.D. "Use of Semi-Dwarf Soybean Varieties in Productive Soils May Generate Lower Losses or Lodging and Higher Yield to Producers". 2014 International Scholar Research Summaries. Columbus: Office of International Affairs, The Ohio State University. (2014)
[Editor-Review] (Published)

Rattan Lal (Professor, School of Environment and Natural Resources) in 2012 hosted Guilherme Anghinoni for 5 months as a visiting scholar in the Carbon Management and Sequestration Center.

Universidade Federal de Viçosa (UFV)

Pierce Paul (Associate Professor, Department of Plant Pathology) received his MS in Plant Pathology and BS in Agronomy from the Universidade Federal de Vicosá, Brazil. He has worked collaboratively with Emerson Del Ponte, Federal University of Visoca, and a number of his students to publish manuscripts. Additionally, past collaborative work with Francisco X. R. Vale of UFV has resulted in two publications:

Paul, P. A.; Vale, F. X. R.; Zambolim, L.; et al. "Epidemiologia comparativa da pinta-preta do tomateiro sob quatro regimes de pulverização." *Fitopatologia Brasileira*. Vol. 29, no. 5. (Jan 2004): 475-479.

Coelho, R. R.; Vale, F. X. R.; Jesus Junior, W. C.; et al. "Determinação das condições climáticas que favorecem o desenvolvimento da ferrugem e da mancha angular do feijoeiro." *Fitopatologia Brasileira*. Vol. 28, no. 5. (Jan 2003): 508-514.

Universidade do Estado de Santa Catarina (UDESC)

Woodbridge Foster (Professor Emeritus, Department of Entomology) has worked collaboratively with Prof. Carlos Brisola Marcondes, a Brazilian mosquito biologist at the Federal

University of Santa Catarina's Dept. Microbiol. Immunol. Parasitol. Recently they've published a paper together on sabethine mosquito egg structure, and Dr. Foster's lab has been sending Dr. Marcondes material for future collaborations.

Santos-Mallet, J., Sarmento, J. S., Alencar, J., Müller, G. A., Oliveira, E. M., Foster, W. A., & Marcondes, C. B. (2013). Scanning Electron Microscopy of Eggs of *Sabethes cyaneus*. *Journal of the American Mosquito Control Association*, 29(1), 64-68.

Universidade do Vale do Rio dos Sinos (UNISINOS)

In July, 2013 CFAES's **Center for Advanced Functional Foods Research and Entrepreneurship** (CAFFRE) hosted Denize Rigehtto-Ziegler and four other colleagues from the new Instituto Tecnológico em Alimentos para a Saúde at UNISINOS in Brazil. The UNISINOS group met with **Steven Schwartz**, **Yael Vodovotz**, and **Robin Ralston** in the Food Science and Technology department, and Dr. Steven Clinton in the Department of Internal Medicine. They discussed collaborating via student exchange or a joint research project involving a clinical trial at Ohio State.

Sudhir Sastry (Professor, Department of Food, Agricultural, and Biological Engineering) delivered a lecture at UNISINOS in 2014 entitled "The Physics and Engineering of Fresh Produce Safety".

Universidade Federal de Lavras (UFLA)

Peg Redinbaugh (Adjunct Professor, Department of Plant Pathology) hosted Rafael Parreira Diniz, a Ph.D. student in the Department of Genetics and Plant Breeding - Universidade Federal de Lavras, from (3/13 to 3/14) to complete a 'sandwich' research visit in her OARDC lab. Peg participated in Rafael's qualification exam in December 2014, and he has since graduated from his Ph.D. program.

R. Mark Sulc (Professor, Department of Horticulture and Crop Science) hosted a visiting scholar from Universidade Federal de Lavras (UFL) for 10 months (Dec 2014 – Oct 2015) who was funded by the Science Mobility Program in Brazil (Ciencias sem Fronteiras) who conducted a research project here at OSU. Prof. Sulc also advised one undergraduate student for an internship in Summer 2015 who was on this program of study here at OSU, and will advise another undergraduate student during an internship on the program here at OSU in Summer 2016.

Rattan Lal (Professor, School of Environment and Natural Resources) hosted Andre Baldansi Andrade for 11 months (2012), Marla Alessandra de Araujo for 9 months (2012), and Eudane Jose de Padua (2015) as visiting scholars in the Carbon Management and Sequestration Center.

Pablo Jourdan (Professor, Department of Horticulture and Crop Science) – From July 16-17 2015, Dr. Jourdan welcomed a delegation of faculty members from UFLA to the OPGC to explore new opportunities for collaboration. Included in the delegation was Prof. Patricia

Duarte de Oliveira Paiva, Crop Science Department (Ornamental Horticulture specialist; now Department chairman); Prof. Maria Laene Moreira de Carvalho, Crop Science Department (leader of the Seed Science group); Prof. Thelma Safadi, Statistics Department; and Prof. Renato Paiva, Biology Department. As a result of this visit to Ohio State, Dr. Jourdan was invited to write a review article for the Brazilian journal *Ciência e Agrotecnologia*.

Michelle Jones (Professor and D.C. Kiplinger Floriculture Endowed Chair in the Department of Horticulture and Crop Science) is currently hosting Angela Maria Pereira Do Nascimento, a PhD student at the Federal University of Lavras, who is visiting her OARDC lab from September 2015 - August 2016 with funding from CAPES. She is working on a research project entitled "Evaluating the use of beneficial microorganisms to suppress root rot pathogens and increase drought tolerance in bedding plant plugs".

David Francis (Professor, Department of Horticulture and Crop Science) has recently sat on the dissertation committees for two Ph.D. students from UFLA since 2014:

Marcela Carvalho Andrade, Doctoral Student in UFLA's program in genetics and plant breeding.

Regis Carvalho, Doctoral Student in UFLA's program in genetics and plant breeding.

Universidade Federal do Rio de Janeiro (UFRJ)

Doug Doohan (Professor, Horticulture and Crop Sciences) has worked collaboratively with Professor Pedro Christofolleti, Piracicaba, on the biology of *Nicandra pycnantha*. They were joint applicants on an unfunded USDA proposal, and joint authors of a book chapter.

Brazilian Enterprise for Agricultural Research (EMBRAPA)

V.M. (Bala) Balasubramaniam, (Professor, Department of Food Science and Technology; Department of Food, Agricultural, and Biological Engineering) served as an International Scientific Program Committee Member for the 2013 Nonthermal Processing Workshop co-hosted in part by EMBRAPA and SENAI (<http://www3.fiescnet.com.br/home-nonthermal>). The conference was held on 30 September - Oct 02, 2013 in Florianopolis, Brazil.

David Francis (Professor, Department of Horticulture and Crop Science) has been working in Brazil with Alice Maria Quezado Duval from EMBRAPA. His relationships with Brazil dates back to 1979 when he was an exchange student.

Anne Dorrance, (Professor of Soybean Pathology and Host Resistance, Department of Plant Pathology) has been working collaboratively with Dr. Leila Costamilan characterizing Brazilian *Phytophthora sojae* populations and has produced one publication to date:

Costamilan, L.M., Clebsch, C.C., Soares, R.M., Seixas, C.D.S., Godoy, C.V., and Dorrance, A.E.
2012. Diversity of *Phytophthora sojae* pathotypes from Brazil. European J. of Plant Pathol. DOI:
10.1007/s10658-012-0128-9.

Rattan Lal (Professor, School of Environment and Natural Resources) visited the EMBRAPA's campus Agrosilvopastoral Center in Sinop in May 2016 and discussed cooperation with Dr. Eduardo da Silva Matos and Dr. Marina Morales. There he delivered a seminary entitled "Environment and Agriculture".

Universidade Estadual de Campinas (UNICAMP)

Thaddeus Ezeji (Associate Professor, Biotechnology and Fermentation Group, Department of Animal Sciences) has worked collaboratively with Dr. Adriano Pinto Mariano, School of Chemical Engineering, on two projects funded by the São Paulo Research Foundation (FAPESP), one of which ("Energy-efficient production of butanol (an advanced biofuel) from eucalyptus wood") was awarded during the 2015 OSU-Brazil/FAPESP Collaborative Research Competition. Their collaboration has resulted in one-peer reviewed publication:

Mariano AP, Ezeji TC, and N Qureshi (2015) Butanol (Biofuel) Production by Fermentation: Efficient Bioreactors. Chapter in Commercializing Biobased Products: Opportunities, Challenges, Benefits, and Risks. (Ed. Snyder SW) Royal Society of Chemistry (RSC), Cambridge, CB4 0WF, UK.

Andy Michel (Associate Professor, Department of Entomology; Insect Molecular Ecology and Adaptation Laboratory; and State Extension Specialist: Field Crops Entomology) hosted Vitor Pavinato from the University of Campinas as a visiting scholar from Sept 2012-May 2013. Vitor was awarded a Fulbright to work on populations genetics of sugarcane borer. Vitor's major professor is Maria Zucchi from São Paulo's Agency for Agribusiness Technology.

Monica Giusti (Associate Professor and Graduate Studies Chair, Department of Food Science and Technology) hosted Vivian Caetano Bochi as a Visiting Scientist from the University of Campinas, São Paulo, Brazil from 2011-2012. Her research visit involved experimental work towards her dissertation research: "Chemical characterization of Ceilon Gooseberry (*Dovyalis hebecarpa*) at different ripening stages", under the supervision of Dr. Helena Teixeira Godoy, UNICAMP, Department of Food Science, College of Food Engineering. Since her graduation, Dr. Giusti and Vivian have continued to work together to produce 3 manuscripts.

Sudhir Sastry (Professor, Department of Food, Agricultural, and Biological Engineering) has been collaboratively engaged with faculty at UNICAMP, having delivered lectures there on "Ohmic and Moderate Electric Field Processing" at the invitation of Marcelo Cristianini.

Rattan Lal (Professor, School of Environment and Natural Resources) hosted Antonio Pereira Filho, Assistant Professor at UNICAMP, from September 2014- February 2015, during which time he researched the "Nutrients Dynamics in the Melon Crop Under No-till and Conventional Tillage Systems with the Use of Plant Cocktails as Green Manure in Semiarid Land."

Universidade Estadual de Ponta Grossa (UEPG)

Sally Miller (Professor, Department of Plant Pathology) is currently working with Cláudio Vrisman, a master's student in the Plant Pathology program and a graduate of Universidade Estadual de Ponta Grossa.

Rattan Lal (Professor, School of Environment and Natural Resources) in 2012 hosted João Carlos de Moraes Sá for 6 months (2012), Clever Briedis for 13 months (2014), as visiting scholars in the Carbon Management and Sequestration Center. Dr. Lal has collaboratively published the following pieces with Joao Carlos de Moraes Sa:

de Moraes Sa, Joao, Carlos; Tivet, Florent; Lal, Rattan; et al. "Long-term tillage systems impacts on soil C dynamics, soil resilience and agronomic productivity of a Brazilian Oxisol." *SOIL & TILLAGE RESEARCH*. Vol. 136, (Mar 2014): 38-50.

Tivet, Florent; de Moraes Sa, Joao, Carlos; Lal, Rattan; et al. "Soil organic carbon fraction losses upon continuous plow-based tillage and its restoration by diverse biomass-C inputs under no-till in sub-tropical and tropical regions of Brazil." *GEODERMA*. Vol. 209, (Nov 2013): 214-225.
<http://www.sciencedirect.com/science/article/pii/S0016706113002085>.

Tivet, Florent; de Moraes Sa, Joao, Carlos; Lal, Rattan; et al. "Assessing humification and organic C compounds by laser-induced fluorescence and FTIR spectroscopies under conventional and no-till management in Brazilian Oxisols." *GEODERMA*. Vol. 207, (Oct 2013): 71-81.

Universidade Federal de Alagoas (UFAL)

Rattan Lal (Professor, School of Environment and Natural Resources) in 2012 hosted Stoecio Malta Ferreira Maia for 2 weeks as a visiting scholar in the Carbon Management and Sequestration Center.

Universidade Federal do Rio Grande do Sul (UFRGS)

Sudhir Sastry (Professor, Department of Food, Agricultural, and Biological Engineering) has worked collaboratively with Giovana Domeneghini Mercali, Ligia Damasceno Ferreira Marczak, and Isabel Cristina Tessaro (Chemical Engineering Department, UFRGS) and has resulted in a number of joint publications including:

Effect of the Electric Field Frequency on Ascorbic Acid Degradation during Thermal Treatment by Ohmic Heating. Giovana Domeneghini Mercali, Steven Schwartz, Ligia Damasceno Ferreira Marczak, Isabel Cristina Tessaro, and Sudhir Sastry. *Journal of Agricultural and Food Chemistry* 2014 62 (25), 5865-5870

Additionally, he delivered a number of lectures at UFRGS in 2014 including "Ohmic and Moderate Electric Field Processing", "The Role of Engineers in Assuring Food Safety", and "Research Methods in Food Engineering".

Universidade Federal do Parana (UFPR)

R. Mark Sulc and David Barker (Professors, Department of Horticulture and Crop Science) have ongoing research collaborations with Universidade Federal do Parana (UFPR) in Curitiba, PR and Universidade Federal do Rio Grande do Sul (UFRGS) in Porto Alegre, RS involving the area of integrated crop – livestock production systems and livestock grazing systems. Professors Sulc and Barker hosted two faculty colleagues from UFPR for 10 months (Aug. 2014 – June 2015), Prof. Anibal de Moraes and Prof. Claudete Reisdorfer Lang who conducted a research project in Ohio. During their time here, a workshop was held at OSU to discuss research and potential collaborations, with attendees from UFPR, UFRGS (Prof. Paulo de Faccio Carvalho), other state universities in Parana, and a private consulting firm operating in the state of RS in Brazil. Prof. Sulc occasionally guest lectures to classes or conferences held at UFPR via video-link. Prof. Sulc co-authored a joint peer-reviewed publication in 2015 with Prof. Moraes and Carvalho.

Laura Lindsey (Assistant Professor, Horticulture and Crop Science) and Dr. Sulc are hosting two professors on professional leave from UFPR from August, 2013 - August, 2014 - Prof Anibal de Moraes and Prof Claudete Reisdorfer Lang. Dr. Lang's research focused on winter wheat seeding rates, and together they produced the following works:

Szymczak, L.S., Moraes, A, Lustosa, S.B.C., Oliveira, E.B., Lang, C., Sulc, R.M., Lindsey, L.E. "Establishment of Aries Grass Submitted to Interspecific Competition with Weeds". American Society of Agronomy, Crop Science Society of America, and Soil Science Society of American Annual Meeting Abstract. Madison: American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America. (2014) (Published)

Lindsey, L.E., Richer, E., Lentz, E., Reisdorfer Lang, C., Presenter. "Optimizing Wide Row Wheat Production in Ohio." Presented at Crop Science Society of America. Long Beach, California, United States. (2014)

Stanley Thompson (Professor, Department of Agricultural, Environmental, and Development Economics [AEDE]) hosted Dr. Mauricio Vaz Lobo Bittencourt, Professor in the Department of Economics and an Ohio State alum, as a visiting scholar from April, 2013 – July, 2014. **David Kraybill** (Professor, AEDE) and **Donald Larson** (Professor Emeritus, AEDE) also worked with Dr. Bittencourt throughout his graduate work at Ohio State. In June 2015, Dr. Thompson traveled to Porto Alegre, Brazil to present "What Can be Said About Trade Quality Between Brazil and Major Developed Countries?" with Dr. Bittencourt. Manuscripts being prepared include:

Alex do Carmo, M. Bittencourt and S.R. Thompson. "Do Chinese Exports Compete with Brazil in MERCOSUR?" To be submitted to *Economic Integration*.

Bittencourt, M. and S.R. Thompson. "Intra-industry Trade between Brazil and OECD Countries: Decomposition and Determinants." Journal submission preparation.

Alex do Como, Mauricio Bittencourt and S.R. Thompson. "Effect of Exchange Rate Volatility and the Extensive Margin of International Trade." Journal submission preparation.

Dr. Thompson and the Office of International Programs in Agriculture have also extended an invitation to Dr. Joao Batista Padilha, Department of Rural Economy and Extension, to be a visiting scholar at Ohio State/AEDE pending his securing funding from CAPES/CNPq.

Monica Giusti (Associate Professor and Graduate Studies Chair, Department of Food Science and Technology) hosted Andressa Valerio, a pharmacy student from Federal University of Parana – Palotina Campus, supported by the Brazilian Scientific Mobility Program from April-August 2015. They are planning to generate a publication from Andressa's work at Ohio State, in collaboration with Dr. Mark Failla, Professor Emeritus in the College of Education and Human Ecology, Ohio State.

Universidade do Estado de Mato Grosso (UNEMAT)

Rattan Lal (Professor, School of Environment and Natural Resources) in 2012 hosted Getulio de Freitas Seben Junior for 1 year as a visiting scholar in the Carbon Management and Sequestration Center. Getulio is now a professor of soil science at the University of the State of Mato Grosso – UNEMAT.

Universidade Federal do Mato Grosso (UFMT)

Rattan Lal visited UFMT in May 2016 and presented lectures to students, and seminars at the Sinop and Cuaiba campuses. Prof. Lal was accompanied by **Mr. Rodrigo Da Silva Viana Goncalves**, a program assistant in the Ohio International Intern Program. They held meetings and discussions with Dr. Maria Lúcia Cavalli Neder, Provost of the International Programs; Prof. Paulo Texeira de Sousa, Jr., Provost of the Sinop Campus; Prof. Dr. Frederico Terra de Almeida, Coordinator of the Agronomic Curricula; Prof. Rogerio de Andrade Coimbra, Associate Professor in seed science; and Prof. Daniel Abreu, Assistant Professor in soil science.

Universidade Estadual do Centro-Oeste (UNICENTRO)

Anne Dorrance, (Professor of Soybean Pathology and Host Resistance, Department of Plant Pathology) is currently hosting Jaqueline Huzar Novakowski, who is completing at full Ph.D. in Plant Pathology at Ohio State. Jacqueline is supported by the Science without Borders Program, and is a graduate of the Universidade Estadual do Centro-Oeste located in Parana State, Brazil. Her graduate research focuses on the management of white mold of soybean with host resistance and chemical control.

Instituto Federal de Educação, Ciência e Tecnologia Catarinense (IFC)

Michael Chrisman (Assistant Director, International Programs in Agriculture) hosted 3 officials from IFC from July 21 until July 24, 2014. Fernando Jose Garbuio (Professor, Agronomy), Jose Carlos Brancher (Extension Pro Rector), and Carlos Antonio Krause (Campus Director) visited Ohio State to meet with researchers, & explore opportunities for collaboration.

Agência Paulista de Tecnologia dos Agronegócios (APTA)

Erich Grotewold (Director of the Center for Applied Plant Sciences) is a 2015 recipient of a OSU-FAPESP mobility grant, and is working with Michael dos Santos Brito of the Agronomic Institute of Campinas (IAC) on a project entitled “Wax or wood? Establishing the function of plant shine transcription factors”.

Peg Redinbaugh (Adjunct Professor, Department of Plant Pathology) and **Lucy Stewart** (Adjunct Professor, Department of Plant Pathology) both hosted Sara Rovaris, a doctoral student studying tropical agriculture at the Agronomic Institute of Campinas (IAC) in São Paulo for eight months in 2014 for a sandwich research experience.

Additional Programmatic Engagement with Brazil

Ohio State Brazil Gateway

The following CFAES faculty serve on the Faculty Advisory Committee for OSU’s Brazil Gateway office, located in São Paulo:

- **Valente Alvarez:** Professor, Food Science and Technology
- **David Hansen:** Professor Emeritus, International Programs in Agriculture
- **Claudio Gonzalez:** Professor, Horticulture and Crop Science
- **Douglas Southgate:** Professor Emeritus, Agricultural, Environmental, and Development Economics
- **Normand St-Pierre:** Professor, Animal Sciences

The Ohio International Agricultural & Horticultural Intern Program (OIAHIP)

Within the Office of International Programs in Agriculture (IPA), the OIAHIP has been working with Brazil heavily over the last several years. The Program has a partnership with around 14 Brazilian universities and institutions where recent graduated or undergraduate students come to complete internships in American companies. In 2015, the program hosted and placed 44 Brazilian trainees in the U.S. They choose their interested area among Agriculture, Horticulture and Landscaping, Enology, Equine, Floristry, Food Processing, Turfgrass and Applied Research.

Currently there is a partnership between OIAHIP and the following universities:

- ESALQ (Escola Superior de Agricultura “Luiz de Queiroz”) – Piracicaba/São Paulo
- PUC-PR (Pontificia Universidade Catolica do Parana) - Curitiba/Paraná
- UDESC (Universidade do Estado de Santa Catarina) – Florianópolis/Santa Catarina
- UEL (Universidade Estadual de Londrina) – Londrina/Paraná
- UEM (Universidade Estadual de Maringa) – Maringá/Paraná

- UEPG (Universidade Estadual de Ponta Grossa) – Ponta Grossa/Paraná
- UFPR (Universidade Federal do Paraná) – Curitiba/Paraná
- UFLA (Universidade Federal de Lavras) – Lavras/Minas Gerais
- UFRGS (Universidade Federal do Rio Grande do Sul) – Porto Alegre/Rio Grande do Sul
- UFV (Universidade Federal de Viçosa) – Viçosa/Minas Gerais
- UNIGUAÇU (Faculdades Integradas do Vale do Iguaçu) – União da Vitória/Paraná
- Casareu Comunicação e Cultura – Uberlândia/Minas Gerais
- IFC (Instituto Federal Catarinense) – Blumenau/Santa Catarina
- UFMT (Universidade Federal de Mato Grosso) – Cuiabá/Mato Grosso



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AND ENVIRONMENTAL SCIENCES