

Borlaug Summer Institute on Global Food Security

July 8–21, 2012
Center for Global Food Security
Purdue University
West Lafayette, Indiana

Sunday, July 8

All Day
First Street Towers
Arrival and Check-in

7:00-9:00pm
Mann Hall Atrium
Welcome Reception

Monday, July 9

8:00-9:00am
DLR Atrium
Registration & Continental Breakfast

9:00-9:15am
DLR 131
Welcome

9:15-9:45am
DLR 131
Discovery Park Concept at Purdue
*Alan Rebar, Senior Associate Vice President for Research,
Executive Director, Discovery Park*

9:45-10:00am
DLR 131
Opening Address
Timothy Sands, acting President, Purdue University

10:00-10:30am
DLR Atrium
Coffee Break

10:30-11:00am
DLR 131
Keeping the Norman Borlaug Dream Alive
*Julie Borlaug, Associate Director for External Relations
Norman Borlaug Institute for International Agriculture*

11:00-11:45am
DLR 131
U.S. Government Strategies and Direction in Global Food Security
Rob Bertram, Director, Office of Agricultural Research and Policy, USAID

11:45am-12:00pm
DLR 131
Group Photo

12:00-1:30pm
DLR Atrium
Lunch

1:30-2:00pm Summer Institute Goals, Outputs and Structure
DLR 131 *Gary Burniske, Managing Director, Purdue Center for Global Food Security*
2:00-3:00pm The Challenges of Global Food Security
DLR 131 *Dr. Gebisa Ejeta, Professor of Agronomy*
Director, Purdue Center for Global Food Security

3:00-3:30pm Coffee Break
DLR Atrium

3:30-5:00pm Private Sector Role in Meeting Global Food Security
DLR 131 *Vern Hawkins, President, Syngenta Crop Protection*

Tuesday, July 10

8:30-10:00am Lecture: Grand Challenge #1: Climate Change and Food Security
DLR 143 A&B *Dr. Matt Huber, Professor of Earth & Atmospheric Sciences, Purdue University*

10:00-10:30am Coffee Break
DLR Atrium

10:30am-12:00pm Lecture: Grand Challenge #2: Water Resources and Food Security
DLR 143 A&B *Dr. Ron Turco, Professor of Agronomy, Director of the Indiana Water Resources Research Center and Purdue Water Community*

12:00-1:30pm Lunch
DLR Atrium

1:30-3:30pm Practicum: Climate Change and Food Security
DLR 143 A&B *Dr. Matt Huber*

3:00-3:30pm Coffee Break
DLR Atrium

3:30-5:00pm Practicum: Water Resources and Food Security
DLR 143 A&B *Dr. Ron Turco*

Wednesday, July 11

8:30-10:00am Lecture: Grand Challenge #3: Energy Resources and Food Security
DLR 143 A&B *Dr. Jay Gore, Reilly University Chair and Professor of Engineering, Purdue University*

10:00-10:30am Coffee Break
DLR Atrium

10:30am-12:00pm Lecture: Grand Challenge #4: Ecosystem Sustainability and Food Security
DLR 143 A&B *Dr. Sylvie Brouder, Professor of Agronomy, Purdue University*

12:00-1:30pm DLR Atrium	Lunch
1:30-3:00pm DLR 143 A&B	Practicum: Ecosystem Sustainability and Food Security <i>Dr. Sylvie Brouder</i>
3:00-3:30pm DLR Atrium	Coffee Break
3:30-5:00pm DLR 143 A&B	Practicum: Energy Resources and Food Security <i>Dr. Jay Gore</i>
5:00-5:45pm	Free time
5:45pm First Street Towers	Board bus
6:00-9:00pm	Picnic at Happy Hollow Park
9:00pm	Board bus for return to campus

Thursday, July 12

8:30-10:00am DLR 143 A&B	Lecture: Global Land Security and Policy <i>Michael Roth, Senior Associate and Sector Manager of Land Tenure and Property Rights, Tetra Tech, ARD</i>
10:00-10:30am DLR Atrium	Coffee Break
10:30am-12:00pm	Lecture: Strengthening Market and Extension Services in Africa <i>Dr. John Sanders, Professor of Agricultural Economics, Purdue University</i>
12:00-1:30pm DLR Atrium	Lunch
1:30pm-3:00pm DLR 143 A&B	Practicum: Land Security and Policy <i>Michael Roth</i>
3:00-3:30pm DLR Atrium	Coffee Break
3:30-5:00pm DLR 143 A&B DLR Atrium	Group Work, Country Project

Friday, July 13

7:15am EDT
First Street Towers

Board bus

9:00am CDT
1:00pm CDT

The Chicago Council on Global Affairs visit
Free time to explore Chicago
Dinner on your own

7:30pm CDT

Board bus at The Chicago Council on Global Affairs for return to campus

Saturday, July 14

Free

Sunday, July 15

10:15am
First Street Towers

Board bus

10:30am-2:30pm

Visit to Historic Prophetstown, Battleground, IN

2:30pm

Board bus for return to campus

Monday, July 16

8:30-10:00am
DLR 143 A&B

Lecture: The African Resurgence: A New more Positive Narrative but with New Challenges to Equity in Market-Led Growth
Peter Matlon, Adjunct Professor of Applied Economics and Management, Cornell University; Board Chair of the Africa Rice Center; Steering Committee Member of the African Women in Agricultural Research and Development (AWARD) program

10:00-10:30am
DLR Atrium

Coffee Break

10:30am-12:00pm
DLR 143 A&B

Lecture: Data Systems and Remote Sensing
Dr. Melba Crawford, Associate Dean of Engineering for Research, Purdue University

12:00-1:30pm
DLR 131

Lunch and presentation
Dr. Jay Akridge, Dean, College of Agriculture, Purdue University

1:30-3:00pm
DLR 143 A&B

Lecture: Influence of Religion on Culture and Food Security
*Dr. Angelica Duran, Associate Professor
Director of Religious Studies, Purdue University*

3:00-3:30pm
DLR Atrium

Coffee Break

3:30-5:00pm Lecture: Social and Cultural Influences on Food Security
DLR 143 A&B *Gary Burniske, Managing Director, Purdue Center for Global Food Security*

Tuesday, July 17

8:30-10:00am Lecture: Nutrition and Food Security
DLR 143 A&B *Dr. Connie Weaver, Distinguished Professor and Head, Department of Nutrition Science, Purdue University*

10:00-10:30 Coffee Break
DLR Atrium

10:30am-12:00pm Lecture: State of Global Food Systems and Regulations and Food Security
DLR 143 A&B *Dr. Elsa Murano, Interim Director, Norman Borlaug Institute for International Agriculture Professor and President Emerita, Texas A&M University*

12:00-1:30pm Lunch
DLR Atrium

1:30-3:00pm Lecture: Role of Governance and Food Policy and Food Security
DLR 143 A&B *Shenggen Fan, Director General, International Food Policy Research Institute (IFPRI)*

3:00-3:30pm Coffee Break
DLR Atrium

3:30-5:00pm Group Work, Country Project
DLR 143 A&B
DLR Atrium

7:00-9:00pm Bowling
PMU

Wednesday, July 18

6:45am Board bus
First Street Towers

9:00am-2:30pm Farm Tours: Tuttle Orchards; Lewis Pork Farms; Cherry Farms; Bunge

2:30pm Return to campus

Thursday, July 19

8:30-10:00am Lecture: Challenges in Extending Technology in Developing Countries (The PICS Experience)
DLR 143 A&B *Dr. Jess Lowenberg-Deboer, Associate Dean and Director of IPIA, Professor of Agricultural Economics, Purdue University*

10:00-10:30am DLR Atrium	Coffee Break
10:30am-12:00pm DLR 143 A&B	Lecture: International Trade and Food Security <i>Dr. Phil Abbott, Professor of Agricultural Economics, Purdue University</i>
12:00-1:30pm DLR 131	Lunch
1:30-3:00pm DLR 143 A&B	Practicum: International Trade and Food Security <i>Dr. Phil Abbott</i>
3:00-3:30pm DLR Atrium	Coffee Break
3:30-5:00pm DLR 143 A&B DLR Atrium	Group Work, Country Project
5:30pm First Street Towers	Board bus
6:00-8:00pm	ACRE visit and dinner
8:00pm	Board bus for return to campus

Friday, July 20

8:30-9:15am DLR 143 A&B	Country Group Presentation #1
9:15-10:00am DLR 143 A&B	Country Group Presentation #2
10:00-10:30 DLR 143 A&B	Coffee Break
10:30-11:15am DLR 143 A&B	Country Group Presentation #3
11:15am-12:00pm DLR 143 A&B	Country Group Presentation #4
12:00-1:30pm Mann Atrium	Lunch

1:30-2:15pm DLR 143 A&B	Country Group Presentation #5
2:15-3:00pm DLR 143 A&B	Presentations Summary <i>Gary Burniske, Managing Director, Purdue Center for Global Food Security</i>
3:00-3:30pm DLR Atrium	Coffee Break
3:30-4:00pm DLR 143 A&B	Concluding Address <i>Dr. Gebisa Ejeta, Professor of Agronomy Director, Purdue Center for Global Food Security</i>
4:00-4:30pm DLR 143 A&B	Evaluations <i>Omolola Adedokun, Assessment Specialist, Discovery Learning Research Center</i>
4:30-5:00 DLR 143 A&B	Certificate of Participation Ceremony
7:00-9:00pm Morgan Café	Closing Dinner
Saturday, July 21	
All Day	Departure

SPEAKER BIOS



Philip Abbott

Dr. Philip Abbott is a professor in the Department of Agricultural Economics at Purdue University. He teaches courses on mathematical programming, international trade, trade policy and agricultural development, macroeconomics and mathematical economics. His current research focuses on international trade and international agricultural development, and four of his students have won national awards for the quality of their dissertations.

Phil has consulted for several domestic and foreign government agencies, including the United Nations Food and Agricultural Organization. He has been on the editorial boards of the American Journal of Agricultural Economics and the Journal of Development Economics. In addition, Phil has published numerous articles and studies. Recent publications include studies on Tariff Rate Quotas, Globalization, Wheat-Importing State Agricultural Commodity Production and Trade, Implications of Game Theory for International Agricultural Trade, American Journal of Agricultural Economics.

He has been on the editorial boards of the American Journal of Agricultural Economics and the Journal of Development Economics. Notably he also serves on numerous committees including The International Agricultural Trade Research Consortium and The USDA–USTR Agricultural Technical Advisory Committee for Trade in Grains, Feeds and Oilseeds.

Jay Akridge

Dr. Jay T Akridge was appointed Dean of the Purdue University College of Agriculture in 2009. As dean he is responsible for administering academic programs in the College of Agriculture, the Indiana Agricultural Experiment Station, the Purdue Cooperative Extension Service and a number of state regulatory services.

Prior to being named dean, Dr. Akridge was the James and Lois Ackerman Professor of Agricultural Economics at Purdue and served as director of the Center for Food and Agricultural Business and the MS-MBA in food and agribusiness management program. He has worked with agribusiness managers in the areas of strategy and marketing across the United States and in more than 20 countries around the world.

Dr. Akridge received his master’s degree and doctorate in agricultural economics from Purdue University and his bachelor’s degree from Murray State University in Murray, Kentucky. A native Kentuckian, his family owns and operates a third-generation retail farm supply business in Fredonia, Kentucky.





Rob Bertram

Rob Bertram is the Director of USAID's Office of Agriculture, Research and Technology. He has been with USAID for more than 20 years, and comes from a plant breeding and genetics background, with degrees from UC Davis, the University of Minnesota and the University of Maryland. His doctoral work focused on molecular techniques in assessing plant genetic resources and evolution in the genus which includes cassava. His work includes building stronger research ties between the US research community (especially universities and USDA) and the international centers, and research partners in Europe and Japan. He has been active for many years in plant genetic resources policy, having served on the CGIAR Genetic Resources Policy Committee and as a technical advisor during the negotiation of the International Treaty on Plant Genetic Resources. He chaired the FAO Commission on Genetic Resources for Food and Agriculture from 2002 to 2004.

Julie Borlaug

Julie Borlaug is the granddaughter of Dr. Norman E. Borlaug and the Assistant Director of Partnerships at the Borlaug Institute for International Agriculture at Texas A&M. Since the passing of her grandfather, Julie has worked to continue his legacy through developing agricultural partnerships between public, private and philanthropic groups to further the Borlaug legacy and expand upon his mission to feed the world's hungry.

Julie received her BA from Texas A&M in International Studies and Political Science in 1997 and her MBA in Nonprofit Management from the University of Dallas in 2004. She has spent her career in the nonprofit sector and has worked for organizations such as the Salvation Army and the American Cancer Society as Development of Director.

She has recently transitioned into her new role as Assistant Director of Partnerships in order to champion her grandfather's legacy and lend a voice to his desire to see more successful collaborative partnerships between the public and private partnerships in order to ensure the continuation of breakthroughs in international agriculture.



Sylvie Brouder

Sylvie Brouder's research addresses implications of converging U.S. biofuel and food security agendas by developing field-to-landscape analyses of the potential for dedicated energy crops to provide renewable fuel on marginal lands while protecting natural resources and food or feed productivity. She directs Purdue's Water Quality Field Station and is responsible for developing and promoting agro-ecology programming campus-wide. A core theme of Brouder's research and the field station's research portfolio is quantitative

assessment of synergies and tradeoffs among productivity and environmental objectives to inform development of policy that promotes agricultural sustainability.

She specializes in crop mineral nutrition with an emphasis on crop ecology, water quality and agro-ecosystem nutrient balances and losses. In her research, she concentrates on nitrogen, carbon and potassium, evaluating the practicality of systems and management practices, and ecological viability and sustainability, including influences on water quality and greenhouse gas emissions from agricultural soils. Brouder earned a doctorate in ecology from the University of California, Davis, and a bachelor's degree in biology from Harvard University.

Gary Burniske

Mr. Burniske is a specialist in international relief and development, with a technical focus on sustainable agriculture, forestry and natural resource management. He is the Managing Director of the Center for Global Food Security within Discovery Park at Purdue University. Mr. Burniske is responsible for the day to day management of the Center and networks with Purdue's faculty and scientists to take a multi-disciplinary approach to tackling global challenges affecting food security.



Prior to joining Purdue, Mr. Burniske held senior leadership positions with prominent international organizations such as Mercy Corps, CARE, Institute for Sustainable Communities, International Tropical Timber Organization and Rainforest Foundation International. Most recently, he led Mercy Corps flagship country offices for nearly 10 years, serving as Country Director in Tajikistan and Colombia. One of Mr. Burniske's most noted accomplishments include the transformation of a small local Tajik NGO, the National Association of Business Women into the largest microcredit provider in Tajikistan, IMON International with a \$30 million portfolio serving 27,000 borrowers.

Mr. Burniske holds an MS in Forest Economics and a BS in Natural Resources Management, both from the University of Massachusetts. He is fluent in Spanish, Russian, Thai and Arabic, and conversational in Portuguese.



Melba Crawford

Melba Crawford is a Professor of Civil and Electrical Engineering and Agronomy at Purdue University, where she holds the Chair of Excellence in Earth Observation and serves as the Associate Dean for Research in the College of Engineering. Previously, she was a faculty member at the University of Texas at Austin, where she founded an interdisciplinary research and applications development program in remote sensing. Her current research program focuses on pattern recognition, active learning, and sensor fusion.

Dr. Crawford was a Jefferson Senior Science Fellow at the U.S. Department of State, a member of the NASA Earth System Science and Applications Advisory Committee, the NASA EO-1

Science Validation team, and an advisory committee for the IEEE Committee on Earth Observation to the South African Department of Science and Technology. Dr. Crawford is a Fellow of the IEEE.

Angelica Duran

Angelica Duran is an Associate Professor whose English and Comparative Literature courses reflect her primary areas of research: an interdisciplinary study of 17th-century arts and sciences and a comparative literature study of Miltonic influence in Hispanophone literature. An early version of her first book ***The Age of Milton and The Scientific Revolution*** (Duquesne UP, 2007) entitled "The Sexual Mathematics of Paradise Lost" was the most electronically-accessed article in ***Milton Quarterly*** in 2003. She has also edited ***A Concise Companion to Milton*** (Blackwell, 2007) and penned articles and chapters on various topics, all of which reflect her interest in showing points of unity between groups that are often seen as antagonistic and oppositional, and of extending the readership of 17th-century literary texts both in the classroom and in society at large. Having been born and schooled in California, she (nevertheless and thoroughly) enjoys living in the U.S. Midwest during the school-year with her husband Sean, daughter Jacqueline, and son Paul, and traveling nationally and internationally in the summers, most recently to Argentina, Costa Rica, Mexico, Spain, and Thailand.



Gebisa Ejeta

Gebisa Ejeta is the Distinguished Professor of Plant Breeding & Genetics and International Agriculture at Purdue University and the Executive Director of the Purdue Center for Global Food Security. He completed his early education in his native country of Ethiopia, including a BS in Plant Sciences from Alemaya College in 1973. He attended graduate school at Purdue University earning his Masters (1976) and PhD (1978) in Plant Breeding & Genetics. In March 1979, Gebisa joined the International Crop Research Institute for the Semi-arid Tropics (ICRISAT) and conducted seminal sorghum research in Sudan for five years. In January 1984, Dr. Ejeta returned to Purdue University as an Assistant Professor in the Department of Agronomy. Since then, he has led a comprehensive educational and research program at Purdue with emphasis on African agricultural research and development.

Dr. Ejeta serves on the Board for International Food and Agricultural Development, the Consortium Board of the Consultative Group for International Agricultural Research, the Sasakawa Africa Association, and the Chicago Council for Global Affairs Agricultural Development Program. He is a Fellow of the American Association of the Advancement of Sciences, the Crop Science Society of Agronomy, and the American Society of Agronomy. He was a member of the team that launched the Alliance for Green Revolution in Africa, a joint effort of the Rockefeller and Gates Foundation.

Among his many awards, Gebisa Ejeta was the recipient of the 2009 World Food Prize; and a national medal of honor from the President of Ethiopia.

Shenggen Fan

Shenggen Fan has been Director General of the International Food Policy Research Institute (IFPRI) since 2009. Growing up in rural China in the 1960s and 1970s, Dr. Fan became deeply committed to reducing poverty and hunger. He is convinced that innovative, country-owned, country-led approaches are required to achieve ambitious development goals. Along those lines, he recently proposed a new “business-as-unusual” approach to ending hunger: (1) invest in two core pillars—agriculture and social protection, (2) bring in new players, (3) adopt a country-led, bottom-up approach, (4) design policies using evidence and experience, and (5) measure whether commitments have been fulfilled. Dr. Fan joined IFPRI in 1995 as a research fellow, conducting extensive research on pro-poor development strategies in Africa, Asia, and the Middle East. Dr. Fan led IFPRI’s program on public investment before becoming the director of the Institute’s Development Strategy and Governance Division in 2005.



He received a PhD in applied economics from the University of Minnesota and bachelor’s and master’s degrees from Nanjing Agricultural University in China.



Jay P. Gore

Dr. Jay P. Gore is the Vincent P. Reilly Professor in Mechanical Engineering and a Jefferson Science Fellow at the US Department of State. He is the former Director of the Energy Center in Discovery Park. He served as a Research Fellow in Aerospace Engineering at the University of Michigan and as an Assistant Professor of Mechanical Engineering at the University of Maryland prior to joining Purdue as an Associate Professor. Jay is a past Chairman of the Central States Section of the International Combustion Institute and the ASME K11 Committee on Heat Transfer in Fire and Combustion. He has served as an Associate Editor of the ASME Journal of Heat Transfer. He was the U.S. Editor of the 28th International Combustion Symposium. Dr. Gore currently serves as an Associate Editor of the AIAA Journal.

Jay's research is in the area of combustion and radiation heat transfer with applications to pollutant reduction, efficiency enhancements, fire safety, and improved fundamental understanding. He has received over \$10M in research funding and is currently serving as the PI for grants over \$1M in gas turbine combustion and radiation heat transfer applications. He has authored or coauthored over 100 archival papers, 4 book chapters, and 175 conference papers. Jay has developed/revised 2 courses (Combustion and Advanced Combustion) at Purdue University and three courses in heat transfer and thermodynamics at the University of Maryland.

Vern Hawkins

Vern Hawkins is Syngenta's Regional Director of North America and President.

Growing up in a rural Indiana community, Vern's love for agriculture began early. He worked as a farmhand for his neighbors, was active in both 4H and FFA (formerly Future Farmers of America) and attended Purdue University, where he obtained his bachelor's degree in Agronomy. Later, Vern earned an executive master's degree in Business Administration from Temple University.



When Syngenta was formed, Vern headed the Product Portfolio Management team. He was responsible also for the Syngenta Brand Management, Biological Research and Development, Regulatory Affairs and Development Planning teams in the NAFTA region before moving on to lead the U.S. Horticulture Business Unit. Vern was appointed head of Commercial Operations for Syngenta Crop Protection in 2004 and promoted to president in 2010. In addition to his role as president, he also serves as North America Regional Director with responsibility for leading the integration of the Syngenta Crop Protection and Seeds businesses in North America.



Matthew Huber

Dr. Matthew Huber is a Professor of Earth and Atmospheric Science. He is a Co-founder and Member Purdue Climate Change Research Center. He is the head of the Climate Dynamics Prediction Laboratory. His research and that of the CDPL is focused on past, present and future climate, the mechanisms that govern climate, the different forms that

climate can take on Earth, and the relationship between climate change and life. Major research areas include the radiative and dynamical processes generating tropical 'thermostats', and polar amplification of warming, as well as the ecological and evolutionary implications of these processes and patterns.

He has won numerous awards and accolades including the IBM Scholars Program for Linux Award. He is the Fmr. Co-Chair of the NCAR CCSM Paleoclimate Working Group, Fmr. Associate Editor of *Paleoceanography*, and is Currently Topical Editor of *EGU Journal*, "Earth System Dynamics".

He received a Bachelor from the University of Chicago in Geophysics, a Masters from the University of California Los Angeles in Atmospheric Sciences, and a Ph.D. from the University of California Santa Cruz in Earth Sciences.

Jess Lowenberg-DeBoer

Jess Lowenberg-DeBoer is professor in the Department of Agricultural Economics and Associate Dean and Director of International Programs in Agriculture (IPIA) at Purdue University. His research focuses on agricultural production economics, including soil fertility management, cropping systems, technology adoption, risk management and financing. Since 1997 he has been West Africa facilitator for the USAID Bean/Cowpea Collaborative Research Support Program (CRSP) working to build multidisciplinary teams and supervising CRSP social science research.



Lowenberg-DeBoer has a Masters degree in Agricultural Economics from Cornell University, Ithaca, New York, and a Ph.D. in Economics from Iowa State University, Ames. He joined the Purdue faculty in 1985, dividing his time between the West Lafayette campus and Purdue activities in West Africa. He returned in 1992 from a four year tour of duty in the Republic of Niger, West Africa, where he served as economist and team leader for a Purdue University project. He brings to his research and teaching a perspective gained through private sector experience as farmer and journalist western Iowa.



Peter Matlon

Peter Matlon has worked in international development for more than 35 years as a teacher, researcher, research manager and donor. He lived and worked in West and East Africa, and in Asia, for 25 years with several organizations including two CGIAR centers (ICRISAT and WARDA), UNDP and The Rockefeller Foundation. In 2007 he retired as Managing Director with Rockefeller, based in Nairobi, Kenya, where he oversaw all Foundation programs throughout Africa. He is an Adjunct Professor in Cornell University's Applied Economics and Management Department, Board Chair of Africa Rice, and serves on the boards and advisory committees of several other US and African institutions. He obtained a PhD in agricultural economics from Cornell University in 1977.

Elsa Murano

Dr. Elsa A. Murano, Professor and President Emerita of Texas A&M University, currently serves as Interim Director of the Norman E. Borlaug Institute for International Agriculture. A graduate of Florida International University (B.S. in Biological Sciences) and Virginia Tech (M.S. in Anaerobic Microbiology and PhD in Food Science & Technology), Dr. Murano began her career as an Assistant Professor in food microbiology at Iowa State University in 1990, where she conducted research in food safety. In 1995, she joined the faculty at Texas A&M University as Associate Professor, leading the university's Center for Food Safety as Director. In 2001, Professor Murano was appointed by President George W. Bush to serve as Undersecretary for



Food Safety at the Department of Agriculture. In that position, she was the highest-ranking food safety official in the U.S. government. One of her main accomplishments was achieving the Healthy People 2010 goals for reduction of illnesses due to *E. coli* O157:H7 four years ahead of schedule.

In 2005, Dr. Murano returned to Texas A&M, where she was appointed Dean and Vice Chancellor of Agriculture and Life Sciences, the largest such program in the nation. In 2008, Dr. Murano became the first woman, and first Hispanic president of Texas A&M University, and one of the youngest in the institution's 133-year history. In her brief tenure, she pursued the development of an Academic Master Plan, outlining strategies to enhance teaching, research, and engagement activities in fulfillment of Vision 2020.

Dr. Murano conducts research and teaching in food safety, with lifetime research funding since 1990 of over \$9 million, and more than 50 published scientific articles and 7 book chapters. In addition to her teaching and research duties, she currently serves as Interim Director of the Norman E. Borlaug Institute for International Agriculture, with a portfolio of \$60M in projects on almost every continent. She is also a member of the Board for International Food and Agriculture Development, a presidentially-appointed position that advises the Administrator of the U.S. Agency for International Development within the State Department, and serves on the Board of Directors of Hormel Foods Corporation and the Food Processors Institute Foundation.



Alan H. Rebar

Alan H. Rebar is the Senior Associate Vice President for Research and Executive Director of Discovery Park at Purdue University. Dr. Alan H. Rebar received his DVM degree in 1973, and his PhD in 1975, both from Purdue University. Dr. Rebar's current positions are Purdue University Senior Associate Vice President for Research and Professor of Veterinary Clinical Pathology in the School of Veterinary Medicine, Purdue University. He is a Diplomat of the American College of Veterinary Pathologists. Dr. Rebar is currently the Editor-in-Chief of the *Journal of the American Animal Hospital Association*.

Dr. Rebar is the author or co-author of 11 books/monographs, 23 textbook chapters, and over 100 scientific articles in the areas of diagnostic cytology, hematology, and inhalation toxicology.

Michael Roth

Michael Roth is a senior associate and Sector Manager of ARD's Land Tenure and Property Rights sector. Formerly a Senior Social Scientist at the University of Wisconsin-Madison's Land Tenure Center, he conducted policy-oriented research on land tenure and resource policy. He has conducted land subsector assessments in Zambia, Zimbabwe, and South Africa, and land tenure and property rights assessments in Ethiopia, Kyrgyzstan, and the Ukraine. Dr. Roth was formally Program Director of the Broadening Access and Strengthening Input Market Systems (BASIS) Collaborative Research Support Program (CRSP) and principal investigator of BASIS CRSP projects in Ethiopia, Kyrgyzstan, and South Africa. He also served as the University's Project



Director of the Zimbabwe Land Reform and Resettlement Project. He conducted research on land tenure and property rights in the Gambia, Ghana, and Mozambique under the USAID-funded Peri-Urban Areas of Africa project, and on linkages among customary tenure, formalization, and agricultural performance in Somalia and Uganda under the USAID-funded land markets project. Dr. Roth is currently the leader of USAID's Lessons Learned: Property Rights and Natural Resources Management Task Order within ARD and serves as the Senior Technical Advisor/Manager for USAID/Ethiopia's Strengthening Land Tenure and Administration Program. Beyond Technical Advisor, his responsibilities have included training, monitoring and evaluation, project design, and strategic planning.



John Sanders

John Sanders is a professor of Ag Economics at Purdue University.

Before coming to Purdue Sanders spent almost twelve years overseas doing his PhD fieldwork and working for the Ford Foundation in Brazil in a graduate education program (Fortaleza, Ceara), as the economist in the Bean Program in CIAT (Cali, Colombia) and representing Purdue in a university development program in Portugal (Evora).

Since 1983 he has been at Purdue teaching economic development (see the link to his 2012 course lectures) and doing field research in Sub-Saharan Africa and Central America Since this time he has made over 100 trips to Sub-Saharan Africa concentrating his activities in West Africa and Ethiopia. Since 2003 along with Botorou Ouendeba they have focused on a combined technology and marketing extension project in West Africa. Besides the new technologies for sorghum and millet production they have been introducing a five point marketing plan and developing farmers' associations into functioning marketing coops. During 2011 in Mali and Senegal this pilot project activity had moved into scaling up activities. In 2012 they were involved in Burkina Faso, Niger, Senegal and Mali with this project (Production-Marketing project).

Timothy D. Sands

Timothy D. Sands is the Interim President, Executive Vice President for Academic Affairs and Provost of Purdue University. On June 21, 2012, the Purdue Board of Trustees announced that Timothy D. Sands will serve as acting president of the university until January 2013 when Gov. Mitch Daniels becomes the 12th President of Purdue. At the conclusion of Dr. Sands' service as interim president, he will return to the position he has served in since April 2010, Executive Vice President for Academic Affairs and Provost of Purdue University. As executive vice president and provost, Dr. Sands is responsible for all of Purdue's colleges and schools, the regional campuses and related academic activities in coordination with the Office of the President. The provost also oversees libraries, cultural centers, and enrollment management including admissions, registrar and financial aid and various student success programs in addition to the appointment and retention of faculty and academic staff.



Dr. Sands earned a bachelor's degree with highest honors in engineering physics and a master's degree and doctorate in materials science from the University of California, Berkeley. He joined the Purdue faculty in 2002 as the Basil S. Turner Professor of Engineering in the schools of materials engineering and electrical and computer engineering. Prior to becoming Provost, he served as the Mary Jo and Robert L. Kirk Director of the Birck Nanotechnology Center in Purdue's Discovery Park. He is a fellow of IEEE and the Materials Research Society.



Ronald F. Turco

Dr. Ronald F. Turco is a Professor in the Department of Agronomy, Director of the Indiana Water Resources Research Center and the Purdue Water Community. He has B.S. degrees from the University of Idaho in Bacteriology and Soil Science and a Ph. D. from Washington State University in Soil Microbiology. His research program is divided over four areas: understanding the fate of introduced E. coli in soil and water and the role these processes play in such things as water and food contamination, developing a better predictive capacity to understand the environmental fate of manufactured nano materials (fullerenes, single wall carbon nanotubes and nanometals) in soil and water, defining the unintended consequences of using our soils resources for biofuel production and a long-term interest in the fate and degradation of organic materials and metals introduced to soil, the subsurface and water. He has authored many articles and reports and has delivered numerous invited and volunteered presentations. He has also managed numerous large projects from USDA, NSF and EPA. Dr. Turco teaches two graduate level courses: Soil Microbiology and a course titled Biotransformation of Anthropogenic Molecules. He also teaches an undergraduate course on Soil Ecology.

Connie Weaver

Dr. Connie Weaver was named professor and head of the Department of Nutrition Science in August 1991. In 2000, she became a Distinguished Professor in the department. Also in 2000, she was appointed director of a National Institutes of Health-funded [Botanical Research Center](#) to study dietary supplements containing polyphenolics for age-related diseases. In 2008 she became Deputy Director of The Indiana Clinical and Translational Sciences Institute. In 2010, she was elected to the Institute of Medicine of the National Academy of Science.



Her research interests include mineral bioavailability, calcium metabolism, and bone health. Dr. Weaver was appointed to the 2005 U.S. Dietary Guidelines Advisory Committee, and she served on the National Academy of Sciences Food and Nutrition Board Panel to develop new recommendations for requirements for calcium and related minerals. She has published over 300 original research articles and 100 book chapters and reviews. For her contributions in teaching, Dr. Weaver was awarded Purdue University's Outstanding Teaching Award. In 1993, she was honored with the Purdue University Health Promotion Award for Women, and in 1997, she received the Institute of Food Technologists Babcock Hart Award. Dr. Weaver received a Bachelor of Science and Master of Science in food science and human nutrition from Oregon

State University. She received a PhD in food science and human nutrition from Florida State University and holds minors in chemistry and plant physiology.

PARTICIPANT BIOS

Adedayo Adeyanju is from Nigeria. Currently a PhD student in Agronomy at Kansas State University, Adedayo's dissertation is titled "Association Mapping of Stalk-Rot Resistance in Sorghum." His research focuses on stalk rot, one of the most damaging diseases of sorghum worldwide. Losses associated with the disease can be as high as 60%. Identifying QTIs for resistance would help in the development of resistant lines. His interests in food security are focused on Nigeria.

Mario Andrada is from Metro Manila, Philippines. He is working on his PhD in the Department of Grain and Science Industry at Kansas State University, and the title of his dissertation is "Ecology and behavior of lesser grain borer (*Rhyzpertha dominica* F.) neonates in wheat kernels as affected by site of entry." His project explores the wheat tunneling behavior of first instars of the lesser grain borer and how the kernel site of feeding affects larval development and adult reproduction among various classes of wheat and on wild wheat ancestors. He is interested in food security in Myanmar, Laos, Cambodia, and in South America.

Jeff Fedenko is from Palm Harbor, Florida. He is working on his PhD in Agronomy at University of Florida where he focuses on sorghum, perennial grasses, and cool season rotation crops. The title of his dissertation is "Cool Season Rotations with Sorghum." He work investigates the beneficial effects of winter rotations with sorghum in terms of decreased need for supplemental nitrogen fertilization, suppressive effects on nematodes, and added value from winter covers as food, forage, green manure and biofuel feedstocks. He is interested in food security most in Tanzania or any area where tropical forages and sorghum are grown.

Sofia Feng is from San Jose, Costa Rica. She is working on her Master's degree in Food Science and Nutrition from North Carolina State University. Her thesis, "Sweet Potato Flour Fortification," focuses on product fortification—particularly, sweet potato flour enhancement. This idea started as part of another project for a non-profit organization that distributes meal packages to developing countries in a mission to eradicate hunger. The package is a mixture of rice, soy, dehydrated vegetables and a sachet that contains vitamins and minerals. Her goal is to substitute highly enriched food components for the micronutrient sachet. She is interested in food security most in in developing countries but she is also interested in the United States and local stories—how families dig deep for food, food justice, and fair trade.

Anubha Garg is from New Delhi, India. She is working on her Master's degree in Grain Science at Kansas State University. Her area of specialization is extrusion processing, and she is currently working on stochastic modeling of expanded snacks during extrusion cooking. The study will enhance the understanding of sources of variability in product characteristics and will be useful in process and quality control in production of snacks and breakfast cereal. She is interested in food security in Asian and African countries such as India, Vietnam, Indonesia, Mozambique, and Kenya.

Solomon H. Geleta is a native of Ethiopia. He is working on his PhD in the department of Agricultural and Resource Economics at Colorado State University. His research interests include CGE Modeling and Applications and Environmental and Natural Resource Economics. His dissertation project, "Climate Change and its Impacts on Agriculture and Natural Resources," uses cutting age methods in analyzing the economic impact of the vulnerability of agricultural and natural resources to climate shocks, the nature

and extent of the productivity loss associated with imperfectly observed climate changes and its implication on regional and global food security. He is conducting his research, and is most interested, in food security in the eastern part of Africa including Ethiopia, Somalia, and South Sudan.

Viola Glenn is from Crestview, Florida. She is working on her Master's Degree in Natural Resources with a focus in Economics from North Carolina State University. The title of her thesis is "An Economic Assessment of *Faidherbia Albida* in Malawi." Her specific interest is the trade-off between agriculture and forestry as this represent the greater nexus between development and human needs and the environment. At North Carolina State University, she studies an agroforestry system that intercroops maize and a leguminous tree species (*Faidherbia Albida*) to increase maize yields and provide additional benefits to semi-subsistence farmers in Southeastern Africa facing critical soil fertility issues and lacking access to chemical inorganic fertilizers. She is interested in food security in Southeastern Africa, especially Malawi and Zambia, and the southern United States.

Deanna Goldner is from Orange, Connecticut. She is working on her Master's Degree in International Development and Social Change at Clark University. Her thesis title is "Strategies for Improving Food Security in Sub-Saharan Africa: A Comparative Analysis of Agricultural and Trade Policies in Latin America and Asia." Her research for the thesis focused on both technology and trade policies that affected food security in both Southeast Asia and Latin America, and she applied those cases to areas in Africa that could potentially benefit. She is interested in food security in Malawi, Ethiopia, India and Bolivia.

Ryan Z. Good is from Overland Park, Kansas. He is working on his PhD in Geography from University of Florida. His dissertation title is "Economic Development, Social Movements, and Environmental Justice in Globalized Spaces of Tanzanian Fisheries." His dissertation work examines how natural resource-based economies, foreign investment, and urban environmental injustice in the form of food insecurity combine in Mwanza, Tanzania. He also focuses upon how the special distribution and organization of social movements provide an avenue to understand the evolving political economy of the city. He is interested in food security in Tanzania, Kenya, and the United States.

Kateryna Goychuk is from Kiev, Ukraine. She is working on her PhD at the University of Missouri-Columbia. Kateryna's doctoral research analyzes grain markets in Russia and Ukraine, as well as focuses on their role in global food security. The title of her dissertation is "Three Essays on the Black Sea Grain Markets". Kateryna is specifically studying the inefficiencies in these markets caused by the inconsistent agricultural and trade policies imposed by the Ukrainian and Russian governments, in addition to their possible implications on societal welfare. She is interested in food security in the former countries of the Soviet Union, especially those in Central Asia. She is also interested in research being done in vulnerable areas such as Africa and Southeast Asia.

Samiul Haque is from Dhaka City, Bangladesh. He is working on his PhD in Agricultural Economics from Purdue University. His dissertation title is "Effects of Government Policies on Producers." He is modeling producer behavior while recognizing the decisions that are made in a policy laden environment. He is interested in food security in Bangladesh.

Arun Jani is from Hilo, Hawaii. He is working on his Master's Degree in Soil Science from North Carolina State University. His thesis title is "Contributions of Legume Cover Crop Root Systems to Soil Carbon Pools in Row Crop Systems Using Different Termination Strategies." He is most interested in soil fertility

management strategies that allow subsistence farming families to achieve acceptable basic grain yields. Leguminous cover crops can be utilized to improve both soil nutrient status and soil structure. His research focuses on the contributions of leguminous cover crop root systems to long-term soil carbon in low input systems. He is interested in food security in Senegal, Niger, Burkina Faso, and other Sahel States.

Tracy Kirkland is from Boulder, Colorado. She is working on her PhD in Sociology with a concentration in Environmental Sociology from the University of Colorado. The title of her dissertation is “The Social and Health Impacts of Global Food Insecurity: An Analysis of Farm Workers in Chichigalpa, Nicaragua.” As a sociologist, she is interested in the intersections of globalization, agriculture and food security. Specifically, her research aims to focus on the social and health impacts of the restructuring of the global agricultural system in rural farming communities in developing countries. She is interested in food security in Nicaragua, Guatemala, and India.

Caitlin Lowe is from Liberty, North Carolina. She is working on her Master’s Degree in Agricultural Economics from Kansas State University. The title of her thesis is “Analysis of Risk Preferences and Market Access Opportunities for Maize Farmers in Sub-Saharan Africa.” She is analyzing subsistence farmers’ willingness to adopt drought-tolerant corn seed and how their land and fertilizer usage change if they do so. She is also studying opportunities the farmers have to get their crop to market, if they are profitable, and determining if their current agricultural practices are truly what are economically best for them. She is interested in food security in Tanzania, Kenya, South Africa, Zambia, and China.

Alexander Maas is from Boston, Massachusetts. He is working on his PhD at Colorado State University. Specifically, he is interested in the intersection of development economics and water allocation. The National Science Foundation awarded him an I-WATER fellowship, designed to foster interdisciplinary collaboration in addressing complex water related issues. Ultimately, he hopes to work for an international agency or organization dedicated to solving water scarcity and quality throughout the developing world. He is interested in food security in South America and Africa.

Isaac Madsen is from Portland, Oregon. He is working on his PhD from Washington State University in Soil Science. His dissertation title is “Improved Water Use Efficiency in a Potato Corn Wheat Rotation through Reduced Tillage and Increased Cover Cropping.” He is studying the effects of changing tillage practices on water use efficiency and nitrogen use efficiency in the Columbia basin. He models nitrogen budgets and water budgets and integrates these budgets into a regional model. He is interested in food security in Bolivia and Nigeria.

Gabriela M. Morello is from Campinas, Sao Palo, Brazil. She is working on her PhD in Animal Sciences at Purdue University. Her PhD program focuses on animal welfare issues in swine production. Her research is done at Purdue together with the USDA-ARS Livestock Behavior Research Unit under the instruction of Dr. Jeremy Marchante-Forde. She is interested in food security in large food producing countries such as the United States, China, Brazil, and India as well as countries with high prevalence of undernourishment in the total population such as Ethiopia, Angola, Mongolia, Bolivia, and others.

Saumyang Patel is from Godhra, Gujarat, India and is a PhD student in Construction Engineering and Management at Purdue University. His focus is on Disaster risk management with an emphasis on developing strategies and policies that enable countries to curtail their losses and post-disaster recovery time. His

dissertation is titled “Pooling and Assessing Risks of Disaster Insurance and Infrastructure Finance Research”. He is most interested in food security issues in Bangladesh, Mozambique, and Haiti.

Cininta Pertiwi is from Jakarta, Indonesia. She is working on her Master’s Degree in Biological Engineering from Purdue University. Her current research focus is in grain storage and her thesis title is “CO₂ Kit Fungal Susceptibility Measurement in Shelled Corn as an Indicator of Potential for Subsequent Fungal Growth.” Her research aims to test a fast and easy method in detecting potential for fungal growth within shelled corn that is either in subsequent storage or being transported to warmer regions where the climate will trigger growth of storage fungi. She is interested in food security most in Southeast Asia, including Indonesia.

Ian Pope is from Midland, Michigan in the United States. He is working on his Master’s Degree in the Department of Earth, Atmospheric, and Planetary Sciences at Purdue University. The title of his thesis is “Sustainable Agriculture in the Guatemalan Cloud Forest: Supporting Decision Making by Assessing Deforestation, Soil Erosion, and Land Tenure.” Through a working relationship with a local NGO, he is studying the dynamics of deforestation, soil erosion, and the implementation of sustainable agriculture in Q’eqchi’ Maya communities. Additionally, he is examining the role of land tenure in food security issues pertaining to these phenomena. He is interested in food security in Guatemala.

Mariela Poveda is from San Luis Obispo, California. She is working on her Master’s Degree in Dairy Products Technology from California Polytechnic- San Luis Obispo. The title of her thesis is “Improvements on Texture and Flavor on Low Fat Cheddar Cheese.” The aim of her project is to study possible alternative processes for the manufacture of low fat cheddar cheese with improved texture and flavor. She is interested in food security in Haiti, Bangladesh, and Mozambique.

Chantal Roberts is from Ames, Iowa. She is working on her Master’s Degree at Clark University in the Environmental and Policy Program. The title of her thesis is “Stakeholder Valuation of Post-harvest Technologies in Sub-Saharan Africa with Local Innovation.” Chantal’s research interest is in policy analysis related to global food systems, with a focus on understanding how and why stakeholder preferences influence technological implementation. This thesis uses multi-criteria decision analysis and geographic information systems methodology to create a baseline understanding of the regional and local political landscapes such that she can analyze food storage technologies available versus socially viable. She is interested in food security in Africa, building on her research in the United States, Mexico, and India.

Blossom Sehgal is from Ludhiana, India. She is working on her Master’s Degree in the Department of Grain Science and Industry at Kansas State University. The title of her thesis is “Stored-Grain Insect Management with Insecticides: Evaluation of Empty-Bin and Grain Treatments against Insects Collected from Kansas Farms.” Her research focuses on the variation in susceptibility among the field strains of stored grain insects to major commercial insecticides like spinosad, chlorpyrifos-methyl plus deltamethrin and β -cyfluthrin. She is interested in food security in south Asian countries such as India, Sri Lanka, and Bangladesh.

Jose Pablo Soto-Arias is from San Jose, Costa Rica. He is a PhD student in the department of Plant Pathology at the University of Wisconsin-Madison. His research focuses on studying the role of phytophagous insects in the multiplication and persistence of *Salmonella enterica* on plants. Throughout his career as a plant pathologist, he has always been interested in working on finding scientific solutions to solve agricultural problems, and implementing new technologies to enhance the safety, profitability, and efficiency of crop

production. Both his personal and professional experiences have made him aware that poverty, hunger and food insecurity are inherently connected. He is interested in food security in the Central America region.

Claire Superak is from Carrboro, North Carolina. She is working on her PhD at Rensselaer Polytechnic Institute in Environmental Engineering. Her dissertation topic is likely to be related to bioclogging of porous media, but her specific topic is undetermined. Her current research focuses on quorum sensing in microbial colonies in porous media. Through analysis of the colonization patterns of microbes in soils, she hopes to learn how to manipulate bioclogging for applications in bioremediation. She is interested in water availability for agricultural uses in numerous countries.

Mary Tiedeman is from Sioux City, Iowa. She is working on her Master's degree in Soil Science and Environmental Science at Iowa State University. Her thesis is "Influence of Ant Colonization on Pedogenesis in Iowa Prairie." Her research investigates specifically how ants alter their soil environment and what this, in turn, may mean for the health and sustainability of the soil as a natural resource. She is interested in food security in African and Central American tropics with personal travel experience to Ghana, Uganda, Guatemala, and Costa Rica.

Pajau Vangay is from Denver, Colorado. She is working on her Master's degree in Food Science at Cornell University. Her thesis combines two papers. Firstly, "Food Microbe Tracker: A web-based tool for storage and comparison of food-associated microbes" and secondly, "Machine learning as a quantitative model for identifying *Listeria monocytogenes* persistence in retail deli environments." She is using computational tools and mathematical models to increase the understanding of foodborne pathogen (specifically *Listeria monocytogenes*) transmission and persistence in food systems. She is interested in food security in Thailand, Laos, and China.

Rachel West is from Tifton, Georgia. She is working on her Master's degree in Animal and Dairy Science from the University of Georgia. Her current project is "Reprogramming Chicken Embryonic Fibroblasts into Naïve State Chicken Induced Pluripotent Stem Cells." Her project is funded by the Bill and Melinda Gates Foundation and, if successful, will create a line of Newcastle Disease resistant transgenic chickens that will be distributed throughout Nigeria. She is interested in food security in Sub-Saharan countries of Africa.

Doug Whalen is from Virginia Beach, Virginia. He is working on his PhD at Pennsylvania State University in Plant Pathology. The title of his dissertation is "Growth Enhancement of Cereal Crops via the Production of Volatile Organic Compounds by Formerly Pathogenic Endophytic Soil Fungi." As research on the fungal pathogens of major crop plants continues to evolve, phenotypic enhancement in the model system *Arabidopsis* via the production of volatile organic compounds (VOCs) by the notorious fungal pathogen *Fusarium oxysporum* has raised the question: are certain "pathogenic" fungi actually beneficial on "non-susceptible" plants in the natural setting? Are these effects mediated strictly by VOCs, as demonstrated recently in *Arabidopsis*, or must fungi infect endophytically to enhance growth? He is interested in food security in Karnal, India.

Alex Wohlgemuth is from Cleveland Heights, Ohio. He is working on his Master's degree in Environmental Engineering from Michigan Tech in partnership with the Peace Corps. The topic and technical depth of his project will be dependent of the needs and conditions of his community in Senegal. Currently he is investigating the effects of ventilation on indoor air pollution in developing world cooking environments. He is also interested in topics such as food processing, improved water management for agriculture, and biochar as a soil amendment. He is interested in food security in Senegal, Central Asia, and Afghanistan.

Ellyn Yakowenko is from Ellicott City, Maryland. She is working on her PhD in the School of Conflict Analysis and Resolution at George Mason University. Her research interests lie at the nexus of the international development and conflict transformation fields. She is interested in taking a structural approach, examining the interactions between food security from the human security paradigm and the state security driven framework of the international aid architecture. In addition, on a micro-level, she is interested in how food insecurity interventions can be used to re-create and/or strengthen social support networks in conflict-affected environments and bridge the humanitarian assistance to long-term development assistance gap in countries experiencing post-crisis transitions. She is interested in food security in Sub-Saharan Africa and Latin America.