

iSEE Congress 2014

The Institute for Sustainability, Energy, and Environment presents ...

“Feeding 9 Billion: A Path to Sustainable Agriculture”

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Sept. 30-Oct. 2, 2014
Alice Campbell Alumni Center, University of Illinois Urbana-Champaign



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WELCOME

Rising incomes, growing population, and increasing consciousness about health and wellness are imposing unprecedented demands for expanding both conventional agricultural production as well as organic and local food production.

The Institute for Sustainability, Energy, and Environment has assembled worldwide ag and sustainability experts on the University of Illinois Urbana-Champaign campus to highlight the implications of climate change, scarce water resources and growing demand for food, feed, fuel and ecosystem services for sustainable agricultural development. We are excited to present our first *iSEE* Congress, “Feeding 9 Billion: A Path to Sustainable Agriculture,” which will emphasize the critical role that technology and policy can play in increasing agricultural productivity while reducing environmental degradation.

Sessions will address the impact of climate change on crop productivity, land use, and water resources — and the role for new crops and technologies, including biotech and precision agriculture, in increasing productivity while reducing the use of chemical inputs and fossil fuels.

The interaction between agriculture and ecosystem services and the importance of the public and private sector in providing the incentives for sustainable agricultural development will be discussed. Speakers will also explore the progress made in improving food security in the developed and developing world and the hurdles that remain due to slow adaptation and acceptance of new technologies.

This Congress will provide opportunities for interacting with leading scholars and advancing the discussion on future research needs for sustainable agricultural development. We are glad to have you join the discussion!

Madhu Khanna
iSEE Associate Director for Education and Outreach



CONGRESS SCHEDULE

Day 1: Tuesday, Sept. 30 National Soybean Research Center, Room 149

5-5:15 p.m. — WELCOME & INTRODUCTION

Evan DeLucia, Director, Institute for Sustainability, Energy, and Environment, University of Illinois

5:15-6:15 p.m. — KEYNOTE ADDRESS

Andrew Revkin, New York Times columnist, Pace Academy: “Peak food?”

6:15-7:15 p.m. — RECEPTION, Suite 350



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CONGRESS SCHEDULE

Day 2: Wednesday, Oct. 1 Alice Campbell Alumni Center: Ballroom

8-8:30 a.m. — REGISTRATION

8:30-8:45 a.m. — OPENING REMARKS

Evan DeLucia, Director, Institute for Sustainability, Energy, and Environment, University of Illinois

Peter Schiffer, Vice Chancellor for Research, University of Illinois

8:45-10:30 a.m. — SESSION I: CLIMATE CHANGE AND AGRICULTURE (Moderated by Andrew Leakey, Associate Professor of Plant Biology, University of Illinois)

Stephen Long, University of Illinois: "Can we have sufficient food and feed for 2050, while still expanding biofuels?"

The role of crop biotechnology and of new sustainable crops

Maximilian Auffhammer, University of California Berkeley: "The economic impacts of climate change on agriculture"

Madhu Khanna, University of Illinois: "Can farmer behavior offset the impact of climate change on crop yield?"

10:30-10:45 a.m. — COFFEE

10:45 a.m. -12:30 p.m. — SESSION II: WATER AND AGRICULTURE (Moderated by John Braden, Professor Emeritus of Environmental Economics, University of Illinois)

Upmanu Lall, Columbia University: "Can we provide water of appropriate quality to meet the needs of 9 billion people by 2050?"

Joshua Elliott, University of Chicago: "Constraints and potentials of future irrigation water availability on agricultural production under climate change"

Praveen Kumar, University of Illinois: "Water-food-climate squeeze: Can we (bio)engineer our way out?"

12:30-1:30 p.m. — BREAK FOR LUNCH

1:30-3:15 p.m. — SESSION III: AGRICULTURE AND ECOSYSTEM SERVICES (Moderated by Jeff Brawn, Professor and Head, Department of Natural Resources and Environmental Sciences, University of Illinois)

Scott Swinton, Michigan State University: "Ecosystem services from working agricultural lands:

Is multi-functionality a destination or a mirage?"

Ruth DeFries, Columbia University: "Borlaug vs. Jevons: Can forests and increasing agricultural production really co-exist in a landscape?"

Pedro Sanchez, Director, Agriculture and Food Security Center, The Earth Institute, Columbia University: "Africa: From basket case to breadbasket"

CONGRESS SCHEDULE

Day 2: Wednesday, Oct. 1 (continued) Alice Campbell Alumni Center: Ballroom

3:15-3:30 p.m. — COFFEE

3:30-5 p.m. — SESSION IV: MEETING THE DEMAND FOR FOOD SECURITY, HEALTH, AND WELLNESS SUSTAINABLY
(Moderated by Peter Goldsmith, Associate Professor and Interim Director, Food & Agribusiness Management Program, University of Illinois)

Craig Gundersen, University of Illinois: "Bridging the international and U.S. food security research areas"

Bryan Endres, University of Illinois: "Sustainable food: A legal approach"

Harriet Hentges, Hentges Associates: "Connecting the dots: Unleashing the power of collaboration"

Alex Winter-Nelson, University of Illinois: "Identifying the impacts: Corporate-NGO-University partnerships to better measure the effectiveness of food security interventions in Africa."

5-6 p.m. — RECEPTION, Lobby

6-7 p.m. — KEYNOTE ADDRESS (Introduction by Ben McCall, Professor of Chemistry and Astronomy and iSEE Associate Director for Campus Sustainability, University of Illinois)

Richard Heinberg, Senior Fellow, Post Carbon Institute: "Post-hydrocarbon food systems: The challenge of the 21st century"



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CONGRESS SCHEDULE

Day 3: Thursday, Oct. 2

Alice Campbell Alumni Center: Ballroom

8:30-9 a.m. — REGISTRATION

9-10:45 a.m. — SESSION V: ADVANCES IN TECHNOLOGY AND FOOD SECURITY (Moderated by Gene Robinson, Swanlund Chair of Entomology and Director, Institute of Genomic Biology, University of Illinois)

Natalie DiNicola, Vice President, Sustainability and Signature Partnerships, Monsanto: “The role of innovation and collaboration to drive sustainable agricultural solutions”

David Zilberman, University of California Berkeley: “The promise and prospects of genetically modified crops”

Don Ort, University of Illinois: “Improving photosynthetic efficiency for improved crop yield”

10:45-11 a.m. — COFFEE

11 a.m.-noon — KEYNOTE ADDRESS (Introduction by German Bollero, Professor and Department Head, Crop Sciences, University of Illinois)

Raj Khosla, Colorado State University: “Eureka! Precision agriculture for small scale farming systems”

Noon-1:30 p.m. — BREAK FOR LUNCH

1:30-3:15 p.m. — SESSION VI: SOCIAL DIMENSIONS OF FOOD SECURITY (Moderated by Paul Ellinger, Professor and Department Head, Agricultural and Consumer Economics, University of Illinois)

Helmut Haberl, Alpen-Adria Universitat, Austria: “Global human appropriation of net primary production: A biophysical approach to analyze systemic feedbacks in the global land system”

Usha Zehr, Chief Technology Officer, MAHYCO: “Food security and the role of private sector”

Bruce Chassy, University of Illinois: “Public acceptance of GMOs: Barriers and implications for food security”

3:15-3:45 p.m. — COFFEE

3:45-4:45 p.m. — KEYNOTE ADDRESS (Introduction by Madhu Khanna, Professor of Agricultural and Consumer Economics and iSEE Associate Director for Education and Outreach, University of Illinois)

Ashok Gulati, Indian Council for Research on International Economic Relations: “Challenges of Feeding India”

5-5:15 p.m. — CLOSING REMARKS

Peter Schiffer, Vice Chancellor for Research, University of Illinois

5:15-6:15 p.m. — RECEPTION, Lobby

AROUND CAMPUS

Have some down time while visiting? Check out some of Illinois' finest projects in sustainability:



POLLINATORIUM

The University of Illinois Pollinatorium is a science center completely dedicated to the study of flowering plants and their pollinators. Visitors will enjoy the displays and exhibits on a variety of topics including the history of beekeeping, monarch butterflies, bee biology, and the connection between food and pollination. The Pollinatorium is at 606 W. Windsor Road — north of Windsor between Lincoln Avenue and Race Street in Urbana.

To schedule a tour of the Pollinatorium facility, send an email to uibeesh@life.uiuc.edu or call 217-265-8302.

Website: <http://www.life.illinois.edu/pollinatorium/index.html>

STUDENT SUSTAINABLE FARM

The Student Sustainable Farm is a year-round production agriculture farm south of campus on Lincoln Avenue just south of Windsor Road in Urbana. The farm supplies fresh produce to the University's six dining halls and serves as a "living laboratory" for student to learn first-hand about food production and volunteer to "help harvest dinner."

The farm gates are open between 8 a.m. and noon and also 1 to 4 p.m. Stop by to check out the 6-acre facility.

Website: <http://www.thefarm.illinois.edu>

SOLAR DECATHLON HOUSE

The Solar Decathlon is a prestigious biennial competition sponsored by the U.S. Department of Energy and others that challenges 20 teams of college and university students from around the world to design and build energy efficient, fully solar-powered homes.

"The Element House (now on the Energy Biosciences Institute's Energy Farm) was designed and built by a collaborative team of architecture, engineering, and industrial design students to compete in the DOE's 2007 Solar Decathlon competition in Washington D.C. on the National Mall. After two years in planning and development, the University's first Solar Decathlon entry finished ninth overall in 2007. After the competition, The Element House was relocated and reassembled at the Chicago Center for Green Technology (CCGT), where several thousand visitors toured the house when it was featured during a Green Tech conference that year." — excerpt from a 2013 *College of Engineering* article about the Element House's return to campus and installation on the Energy Farm

While touring the house, you'll have an excellent view of the Energy Farm — a 320-acre farm managed by EBI and featuring perennial grasses, broadleaf plants, and woody feedstocks all being tested for their potential as fuel crops.

The Element House is on the farm on Race Street, south of Curtis Road in Urbana.

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OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAeRL>)

1. MAXIMILLIAN AUFFHAMMER

University of California Berkeley

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PRESENTATION: “The economic impacts of climate change on agriculture”

ABSTRACT: Agricultural production is heavily dependent on weather outcomes, and hence climate change has the potential to significantly alter the sector’s productivity. Reduced-form studies as well as integrated assessment models have found that the agricultural sector might experience significant impacts. I will discuss the advantages of empirical reduced-form studies and their link and potential usefulness to integrated assessment models before highlighting one key empirical finding: the importance of weather extremes. I will further discuss challenges facing empirical studies and recent research that looks at longer-term changes in climate and attempts to measure adaptation.

BIO: Maximilian Auffhammer is the George Pardee Jr. Professor of International Sustainable Development at UC Berkeley. He received his B.S. in environmental science from the University of Massachusetts at Amherst in 1996, an M.S. in environmental and resource economics at the same institution in 1998 and a Ph.D. in economics from UC San Diego in 2003. He joined the faculty at UC Berkeley in 2003. His research focuses on environmental and resource economics, energy economics and applied econometrics. He is a Research Associate at the National Bureau of Economic Research in the Energy and Environmental Economics group, a Humboldt Fellow, and a lead author for the Intergovernmental Panel on Climate Change (IPCC). Dr. Auffhammer serves as Co-Editor of the Journal of the Association of Environmental and Resource Economists. His research has appeared in *The American Economic Review*, *the Review of Economic Studies*, *The Review of Economics and Statistics*, *The Economic Journal*, *the Proceedings of the National Academies of Sciences*, *the Journal of Environmental Economics and Management*, *The Energy Journal* and other academic journals. He is the recipient of the 2007 Cozzarelli Prize awarded by the National Academy of Sciences, the 2009 Campus Distinguished Teaching Award and the 2007 Sarlo Distinguished Mentoring Award.

MORE: <http://www.auffhammer.com>



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

2. BRUCE CHASSY

University of Illinois

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PRESENTATION: “Public acceptance of GMOs: Barriers and implications for food security”

ABSTRACT: Global fear of GMOs, chemicals, and “industrial agriculture” have been stoked by opposition from well-funded and highly professional critics. Although from a science perspective genetic engineering is as safe as or is safer than other methods of breeding, concerns about public acceptance and time-consuming and expensive regulatory hurdles have stifled research and development. Feeding the world in 2050 will require intensifying production, using resources more efficiently, and reducing waste. Quantitative examples will illustrate the importance of being agnostic and “doing the math” when making choices about agriculture. GM crops and animals can play a role in food security, but only if concerns are addressed and regulatory barriers lowered.



BIO: Bruce M. Chassy is a Professor Emeritus of Food Safety and a Professor Emeritus of Nutritional Sciences from the Department of Food Science and Human Nutrition at the University of Illinois at Urbana-Champaign. He served as the Assistant Dean for Science Communications in the College of Agricultural, Consumer and Environmental Sciences. He was Head of the Department of Food Science and Human Nutrition at the University of Illinois from 1989 to 2000. Dr. Chassy completed undergraduate training in chemistry at San Diego State University and his Ph.D. in biochemistry at Cornell University. He was a research chemist at the National Institutes for Health (NIH) from 1968 to '89. Dr. Chassy's research experiences with the development of genetically modified microorganisms that are used in foods led him to an interest in food safety and the safety evaluation of “biotech foods.” He has become active in the development of strategies for food safety evaluation and their application toward public policy. He has worked with national and international organizations like the WHO, FAO, OECD, ILSI, IFT, U.S. FDA and U.S. EPA. His website explores the safety of GM foods at academicsreview.org. Dr. Chassy served on the Executive Committee of the Institute of Food Technologists (IFT) and served multiple terms as a Council Member. He is past Chair of the IFT Expert Panel of Food Safety and Nutrition, and of the IFT Biotechnology Division.

MORE: <http://ow.ly/zAF8c>

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OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

3. RUTH DeFRIES

Columbia University

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PRESENTATION: “Borlaug vs. Jevons: Can forests and increasing agricultural production really co-exist in a landscape?”

ABSTRACT: Sustainable agriculture requires increasing production while maintaining ecosystem services from forests and other non-agricultural land uses. Competition between agricultural expansion and forest conservation currently occurs in several frontier landscapes throughout the tropics. In some cases, expansion has led to increased deforestation. The factors that lead to “land sparing” include forest protection policies and enforcement. With increasing urban demand for commodities, a critical need for sustainable agriculture is to promote these policies without inadvertently promoting deforestation in other frontier landscapes.



BIO: Ruth DeFries is the Denning Family Professor of Sustainable Development at Columbia University in New York City. Her research investigates the relationships among human transformation of the land surface and the biogeochemical and ecological processes that regulate the Earth’s habitability. The research uses satellite imagery as a lens to examine changes in the land surface over large areas. The overall thrust of the research is to develop underlying science for balancing the needs of human society to transform the landscape for food production, settlements and other requirements while maintaining long-term habitability of the planet. She has conducted research in the Amazon and India among other places in the tropics. Dr. DeFries holds a Ph.D. in geography and environmental engineering from Johns Hopkins University and a B.A. summa cum laude in earth science from Washington University in St. Louis, MO. She is a member of the U.S. National Academy of Sciences, a Fellow of the American Association for the Advancement of Science, a recipient of the MacArthur Foundation “genius” award, and a Fellow of the Aldo Leopold Leadership Program, American Geophysical Union, Ecological Society of America, and American Academy for Arts and Sciences. She co-directs the undergraduate program in Sustainable Development at Columbia University.

MORE: <http://ow.ly/zAFdm>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAeRL>)

4. NATALIE DiNICOLA

Monsanto

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PRESENTATION: “The role of innovation and collaboration to drive sustainable agricultural solutions”

ABSTRACT: As the world faces challenges in food production resulting from population growth, changing economies, shifts in dietary habits, and climate change, agriculture is being asked to do much more with fewer resources. In addition to reductions in food waste, expansion of food distribution infrastructures, and other needs, improvement in core crop yields remains one of the most impactful variables in meeting future demands. Technologies that improve farm productivity and sustainability are evolving, with the development of new tools that build upon the yield improvements and crop protection technologies of breeding and biotechnology. Such innovations become particularly impactful in the developing world, where yield gaps are the greatest and barriers to technology adoption are high. Public-private partnerships, locally led and farmer-centric, play a key role in meeting global challenges and driving agricultural sustainability.



BIO: Natalie DiNicola is the Vice President for Sustainability and Signature Partnerships at Monsanto, where she leads sustainability efforts — including processes to embed sustainability principles throughout the company, the development of sustainability goals and commitments related to Monsanto’s business, and sustainability reporting through the Global Reporting Initiative and other tools. Her team also leads the development of public-private partnerships working with civil society, research institutions, and others to fight hunger and improve nutrition security, to protect natural resources and to improve the livelihood of farmers worldwide through the adoption of improved agricultural systems. Dr. DiNicola has worked with Monsanto for 16 years in roles ranging from global environmental stewardship and government affairs to harmonization of global regulatory structures. Before that, she served as a Federation of Animal Sciences Societies Science Fellow in Washington, D.C., where she worked for a U.S. congressman on agriculture and environment-related issues. She received her B.A. in biology and environmental biology from St. Mary’s College in 1989 and her Ph.D. in environmental toxicology from the University of Wisconsin-Madison in 1995.

MORE: <http://ow.ly/BvOta>

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OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

5. JOSHUA ELLIOTT

University of Chicago

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PRESENTATION: “Constraints and potentials of future irrigation water availability on agricultural production under climate change”

ABSTRACT: Freshwater availability is relevant to almost all socioeconomic and environmental impacts of climate and demographic change and their implications for sustainability. We compare ensembles of water supply and demand projections driven by ensemble output from five global climate models. Our results suggest reasons for concern. Direct climate impacts to maize, soybean, wheat, and rice involve losses of 400–2,600 Pcal (8–43% of present-day total). Freshwater limitations in some heavily irrigated regions could necessitate reversion of 20–60 Mha of cropland from irrigated to rainfed management, and a further loss of 600–2,900 Pcal. Freshwater abundance in other regions could help ameliorate these losses, but substantial investment in infrastructure would be required. Read a full abstract of the research findings at <http://ow.ly/zGais>.



BIO: Joshua Elliott works on a variety of topics at the intersect of global climate change, environmental, and social sciences through an assortment of applied modeling and computational projects. He leads teams at the Center for Robust Decision Making on Climate and Energy Policy (RDCEP) and in the Agricultural Modeling Intercomparison and Improvement Project (AgMIP). He currently runs several projects designed to improve global change vulnerability, impact, and adaptation (VIA) assessment tools (primarily in agriculture and forestry) using large-scale high-resolution models enabled by high-performance computing. He also works on predictions of agricultural production at seasonal time scales, the effects of large-scale extreme events (such as droughts and heat waves), and with socio-economic modeling and scenario analysis in the context of integrated assessment models. Dr. Elliott received his Ph.D. in high-energy theoretical particle physics from McGill University in 2008 and has been with the UC Computational Institute since Fall 2008.

MORE: <http://ow.ly/zAFwB>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

6. BRYAN ENDRES

University of Illinois

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PRESENTATION: Sustainable food: A legal approach

ABSTRACT: As society increasingly values “sustainable” consumer products, especially in the agricultural context of bioenergy and food, it raises legal issues with respect to certification, verification and product labeling. The organic movement successfully confronted many of these issues in its early years and now enjoys widespread understanding and acceptance in the consumer market. On the other hand, notions of “local” and “natural” have struggled to gain a firm foothold in the law and the attendant labeling certainty. The much broader concept of sustainable food must navigate between environmental, social and economic concepts of sustainability, while not infringing on the domain of the organic industry or alienating the large commodity groups that produce the majority of the nation’s food. From a legal perspective, the risk lies in the absence of widely accepted standards for “sustainable” — until resolved, a sustainable label risks legal challenges based on consumer misrepresentation.



BIO: A. Bryan Endres was named Interim Associate Provost for International Affairs and Director of International Programs and Studies in August 2013, after serving as Director of the European Union Center since 2010. He is an Associate Professor of Food & Agricultural Law in the College of Agricultural, Consumer and Environmental Sciences. He holds research appointments with the Energy Biosciences Institute (EBI) and the Business, Economics and Law program (BioBEL) within the Institute for Genomic Biology. His legal research interests include sustainable agriculture, renewable fuels, carbon sequestration, local food networks, agricultural biotechnology and intellectual property. He is a former Chair of the Illinois State Bar Association’s Agricultural Law Section Council and served on the Board of Directors of the American Agricultural Law Association from 2008 to ’11. Endres earned a B.S. in mathematical economics from the U.S. Military Academy at West Point, N.Y. (1992) and an M.S. in Administrative Management from the European Division of Bowie State University (1995). After five years of service as an Army officer, he attended the University of Illinois College of Law, where he was a member of the Illinois Law Review and Order of the Coif (2000).

MORE: <http://ow.ly/zAFJc>

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OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

7. ASHOK GULATI

Indian Council for Research on International Economic Relations

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PRESENTATION: "Challenges of Feeding India"

ABSTRACT: India is likely to be the most populous nation on this planet by 2028, surpassing China. During the next 15 years or so, per capita incomes are likely to rise at 5-6 percent per annum, generating tremendous pressures on food demand. With falling per capita availability of land and water, the only way India can feed its growing population is to raise land and water productivity. This requires large investments in technology (agri-R&D), better farm practices that take care of soil health and depleting water table, "more crop per drop" of water (precision farming), and building efficient value chains from farm to fork, that can reduce wastage, especially in high value perishable agriculture. To achieve all this, the policy focus has to be on getting "four I's" right, namely, Incentives, Investments, Institutions, and Innovations. And that's a huge policy agenda for rejuvenating Indian agriculture, a big business opportunity for global investors to make India the largest food factory in the world, and in the process a chance to feed Indians well.



BIO: Ashok Gulati is Chair Professor for Agriculture at the Indian Council for Research on International Economic Relations (ICRIER) since March 2014. From March 2011 to February '14, he was Chairman of the Commission for Agricultural Costs and Prices (CACP), a body responsible for recommending Minimum Support Prices (MSPs) of 23 important agri-commodities to the Government of India. Prior to this, Dr. Gulati was Director at the International Food Policy Research Institute (IFPRI) for more than 10 years. He holds an M.A. and a Ph.D. in economics from the Delhi School of Economics (India). Dr. Gulati has been deeply involved in agri-policy analysis and advice in India and has been a member of the prime minister's Economic Advisory Council; a member of the State Planning Board of Karnataka; and a member of the Economic Advisory Committee of the Chief Minister of Andhra Pradesh. He has to his credit more than 10 books on issues related to Asian agriculture with a focus on India, besides several research articles in international and Indian journals of repute.

MORE: <http://ow.ly/B2qzm>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

8. CRAIG GUNDERSEN

University of Illinois

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PRESENTATION: “Bridging the international and U.S. food security research areas”

ABSTRACT: Hundreds of millions of people worldwide are food insecure. While the depth of food insecurity and its attendant consequences are far less in the United States, almost 50 million Americans were defined as food insecure in 2012. A growing literature has evaluated and analyzed food insecurity, its consequences, and potential policy responses in the U.S.; this remains small in comparison to the literature in low-income countries. Insights drawn from the two research areas have not yet been exploited. While there are differences — magnitudes differ markedly; at least some of the causes differ; improving the well-being of farmers as a means to alleviate food insecurity is not an issue in the U.S.; and the U.S. has more resources than many countries to address food insecurity — many insights can be shared, including the similarity of measurement tools and the use of different determinants between the U.S. and abroad. A great deal can be learned about the construction and evaluations of food assistance programs.

BIO: Craig Gundersen is the Soybean Industry Endowed Professor in Agricultural Strategy in the Department of Agricultural and Consumer Economics at the University of Illinois and Executive Director of the National Soybean Research Laboratory. He is also a member of the Technical Advisory Group of Feeding America and is the lead researcher on the Map the Meal Gap project. Dr. Gundersen’s research is primarily focused on the causes and consequences of food insecurity and on evaluations of food assistance programs. His work has been supported by more than \$ 10 million in external funding from various government and non-government sources including the U.S. Department of Agriculture (USDA), National Institutes of Food and Agriculture (NIFA); ConAgra Foods Foundation; Canadian Institutes for Health Research (CIHR); American Beverage Association; US Agency for International Development (USAID); USDA Economic Research Service (ERS); Merck Foundation; National Foundation to End Senior Hunger (NFESH); and USDA Food and Nutrition Service (FNS). Dr. Gundersen received his Ph.D. in 1996 from the University of California Riverside.

MORE: <http://ow.ly/zAGqk>



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OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

9. HELMUT HABERL

Alpen-Adria Universität

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PRESENTATION: “Global human appropriation of net primary production: A biophysical approach to analyze systemic feedbacks in the global land system”

ABSTRACT: The socioecological metabolism approach underlying human appropriation of net primary production (HANPP) is a useful framework to analyze systemic feedbacks in the global land system. For this purpose, a global biomass balance model (BioBaM) has been constructed that allows us to assess the feasibility of combinations of future changes in (i) cropland yields, (ii) area extension of croplands, (iii) livestock feeding efficiencies, and (iv) human diets until 2050. BioBaM was derived from the full array of global land-use and biomass flow (production and use) data available in 2000, aggregated to 11 regions, 7 crop aggregates and 2 livestock aggregates (ruminants/monogastrics). Changes in (i)-(iv) are fed exogenously into the model, based on scenarios from the literature (e.g., FAO, MEA, etc.). The model allows researchers to assess if combinations of factors are thermodynamically “feasible”, i.e. allow supply and demand to be matched and, if so, what level of land-use intensity and combination of factors would imply for the entire land available globally for the supply of agricultural biomass, i.e. cropland and potential grazing area.



Photo by Pilo Pilcher

BIO: Helmut Haberl is the director of the Institute of Social Ecology Vienna at the Alpen-Adria Universität Klagenfurt, Wien, Graz and a KOSMOS research fellow at the Integrative Research Institute on Transformations in Human-Environment Interaction in Humboldt-Universität zu Berlin. He received an M.S. in biology and an M.S. in mathematics in 1991, a Ph.D. in ecology in 1995 and a Ph.D. human ecology in 2001, all at the University of Vienna. Dr. Haberl has authored numerous articles, including a chapter in the Austrian Assessment Report 2014 on Climate Change, and has served as a member of the Scientific Committee of the European Environment Agency and the Scientific Steering Committee of the Global Land Project. His research areas include integrated land-change science, long-term socio-ecological research (LTSER), energy and environment, biomass and bioenergy, sociometabolic transitions, and sustainability.

MORE: <http://ow.ly/zAFUm>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

10. RICHARD HEINBERG

Post Carbon Institute

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PRESENTATION: “Post-hydrocarbon food systems: The challenge of the 21st century”

ABSTRACT: Our current food system relies on oil and other fossil fuels at every stage. This reliance was forged for economic reasons, and has transformed agriculture, food processing, and distribution. However, it is a dangerous dependency because of climate impacts and fuel supply risks. Rising oil prices put pressure on farmers and force food prices up, impacting the poor first and foremost. Post Carbon Institute research shows that oil supply risks are in fact far greater than generally acknowledged. Society can and must wean its food systems from this dependency through a planned program of localization, along with substitution of labor and ecological knowledge for fuel inputs, yielding more livelihoods, healthier soil and other ecosystems, and more nourishing food.



BIO: Richard Heinberg is the author of 11 books, including some of the seminal works on society’s current energy and environmental sustainability crisis. He is Senior Fellow-in-Residence of the Post Carbon Institute and is widely regarded as one of the world’s foremost Peak Oil educators. He has authored scores of essays and articles that have appeared in such journals as *Nature*, *American Prospect*, *Public Policy Research*, *Quarterly Review*, *The Ecologist*, *Resurgence*, *The Futurist*, *European Business Review*, *Earth Island Journal*, *Yes!*, and *The Sun*; and on websites such as resilience.org, theoil drum.com, al ternet.org, projectcensored.com, and counterpunch.com. He has appeared in many film and television documentaries, including Leonardo DiCaprio’s “11th Hour,” is a recipient of the M. King Hubbert Award for Excellence in Energy Education, and in 2012 was appointed to His Majesty the King of Bhutan’s International Expert Working Group for the New Development Paradigm initiative. Heinberg’s animations “Don’t Worry, Drive On,” “Who Killed Economic Growth?” and “300 Years of Fossil Fuels in 300 Minutes” (winner of a YouTube’s/DoGooder Video of the Year Award) have been viewed by 1.5 million people.

MORE: <http://ow.ly/zAIJM>

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OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

11. HARRIET HENTGES

Hentges Associates

harriet@hhentges.com

PRESENTATION: "Connecting the dots: Unleashing the power of collaboration"

ABSTRACT: The pressure on corporations within the food chain to grow, produce and distribute more sustainably has increased exponentially. The number and the complexity of issues requiring new expertise, the setting and tracking of goals and the reporting on progress has meant finding new ways of doing business and new partners. It has resulted in increased transparency and unprecedented collaboration across the food chain from "soil to shelf." In this may be the best solutions to feeding a growing population without destroying the planet. NGO-business collaboration is almost commonplace, but collaboration among business competitors and from one part of the food chain to another is also becoming more common. Innovations are taking place, even though gaps and opportunities still exist. The collaboration is increasing the pace of the innovations, and an open source culture is developing, giving promise of a more sustainable food industry.

BIO: Harriet Hentges has extensive international and senior management experience in both public and private sectors. She serves as President of Hentges Associates, an advisory firm on corporate responsibility and sustainability, with special focus on the food industry advises clients on sustainability strategy and implementation. She was a principal in Hentges, Kahn & Strauss LLC (HKS), a consulting practice for food producers, manufacturers and grocery retailers, aimed at a more sustainable food system. HKS partnered with "Supermarket Guru" Phil Lempert to launch THE FOOD JOURNAL, a bi-weekly review of issues facing the agriculture and food industry. She has held executive positions in three major companies: Sears Roebuck, Wal-Mart and Ahold USA. Dr. Hentges also has addressed sustainability in the food industry as a member of the Food Marketing Institute's Sustainability Executive Committee. She and her husband (a University of Illinois graduate) owned an historic farm in the Shenandoah Valley of Virginia for 26 years. She holds a Ph.D. in international economics from the Johns Hopkins School of Advanced International Studies, an M.S. from American University and a B.S. from St. Catherine University. She is an adjunct professor at Georgetown University.

MORE: <http://ow.ly/zAJjd>



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

12. MADHU KHANNA

University of Illinois

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PRESENTATION: “Can farmer behavior offset the impact of climate change on crop yield?”

ABSTRACT: Rising and more variable temperature and change in the pattern of precipitation is anticipated to adversely affect the yields of major crops (corn and soybeans) in the United States and lead to a change in land use. At the same time, there is increasing demand for these crops to meet growing food and fuel needs that will affect crop prices.

Adaptive management by farmers induced by rising crop prices and climate change together with technical change have the potential to affect crop production in the future. Incorporating behavioral responsiveness of farmers is critical for more accurate assessment of the impact of climate change on crop production.

BIO: Madhu Khanna is a professor in the Department of Agricultural and Consumer Economics at the UofI. She received her Ph.D. from the University of California Berkeley. Her research has focused on analyzing the incentives for technology adoption and voluntary environmental management and welfare economic effects of environmental policies. Dr. Khanna is leading the research program on the economics, land use and environmental implications of biofuel production at the Energy Biosciences Institute at Illinois. She has co-authored more than 100 papers and book chapters and has co-edited the Handbook of Bioenergy Economics and Policy. Her research has been funded by the USDA, NSF, USDOE and EBI. She was selected as a University of Illinois Scholar for 2004-07 and a Leopold Leadership Fellow of the Woods Institute at Stanford University in 2010, and she received the Paul A. Funk recognition in 2013 from the College of Agricultural, Consumer and Environmental Sciences at Illinois. She has served on review panels for the U.S. Environmental Protection Agency and the U.S. Department of Agriculture and on the Board of Directors of the Association of Environmental and Resource Economists. She is on the Science Advisory Board (SAB) of USEPA and as the Chair of Environmental Economics Advisory Committee of the SAB. She has served on editorial boards of several prestigious agricultural and environmental economics journals and is editor of the American Journal of Agricultural Economics.

MORE: <http://ow.ly/zALb9>



A Path to Sustainable Agriculture”



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAeRL>)

13. RAJ KHOSLA

Colorado State University

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PRESENTATION: "Eureka! Precision agriculture for small scale farming systems"

ABSTRACT: What role can precision agriculture play toward agricultural productivity, resource management and food security? Is precision agriculture suitable for small scale intensive agricultural systems in Asia or Africa? The objective of this presentation is to offer a broad concept of precision agriculture and how precision agriculture is pertinent to all types of agricultural systems (i.e., large scale farming in developed world to small scale farming in lesser developed world) and the potential role it can play to address food security. The most commonly cited and used definition of precision agriculture is the one that consist of several "R"s of precision agriculture: the Right time, the Right amount, the Right place, the Right input and the Right manner. This presentation will offer multiple examples and success stories on how precision agriculture can be accomplished on small scale farming systems.



BIO: Raj Khosla is a professor of Precision Agriculture in the Department of Soil and Crop Sciences at Colorado State University (CSU). He was named the Jefferson Science Fellow by the National Academy of Sciences in 2012 and is the Senior Science Advisor on Food Security in the Bureau of East Asia Pacific Affairs at the U.S. Department of State. In 2009, he was named the CSU Distinguished Monfort Professor. Dr. Khosla's main research focus has been on "management of in-field soil and crop spatial variability in large and small scale agricultural production systems." He has active projects in many nations and has been invited globally to over two dozen countries. He has trained scientists from around the world in his Precision Agriculture laboratory. Dr. Khosla is a Fellow of American Society of Agronomy; Fellow of Soil Science Society of America; and Fellow of Soil and Water Conservation Society. He is the founder and the immediate past President of International Society of Precision Agriculture. He also serves on the U.S. "Presidential Advisory Board on Positioning, Navigation and Timing" for NASA. Dr. Khosla received his Ph.D. in soil fertility and crop management in 1998 from Virginia Tech.

MORE: <http://ow.ly/zAMoG>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

14. PRAVEEN KUMAR

University of Illinois

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PRESENTATION: “Water-food-climate squeeze: Can we (bio) engineer our way out?”

ABSTRACT: Providing water and food for a global population of 9 billion under an uncertain and changing climate remains one of the most formidable challenges facing scientists, engineers, and social scientists alike. The interdependence of water, food and climate systems makes addressing such challenges difficult due to complex trade-offs. Using simulations of whole canopy photosynthesis, we show that it is possible to construct new whole plant architecture that increases crop productivity while reducing water use. Additionally, it is possible to reduce surface temperatures by increasing the fraction of sunlight reflected by the crop surface through this architecture, thereby providing an offset to global warming. Since agriculture is the largest user of water, such solutions can provide a significant strategy for addressing emerging sustainability challenges. Such bioengineering solutions offer the possibility of benign geo-engineering approaches by taking advantage of croplands across the globe that are already being modified year after year through new variety of seeds.

BIO: Praveen Kumar holds a B.Tech. (Indian Institute of Technology, Bombay, India 1987), an M.S. (Iowa State University 1989), and a Ph.D. (University of Minnesota 1993), all in civil engineering. He has been a faculty member of the Civil and Environmental Engineering department at Illinois since '95. His research focuses on hydrocomplexity, the quantitative understanding and prediction of emergent patterns of form and function that arise from complex nonlinear multi-scale interactions between soil, water, climate, vegetation, and human systems — and how this understanding can be used for innovative solutions to water and sustainability challenges. This research includes traditional hydrology, hydro-climatology, eco-hydrology, hydro-geomorphology, remote sensing, informatics, etc. but focuses on integrated approaches. Dr. Kumar serves as the Director of the Critical Zone Observatory for Intensively Managed Landscapes and is a co-lead on National Science Foundation-supported projects for the development of cyber-infrastructure for structured and unstructured long-tail data, respectively.

MORE: <http://ow.ly/zARF4>



A Path to Sustainable Agriculture”



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

15. UPMANU LALL

Columbia University

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PRESENTATION: “Can we provide water of appropriate quality to meet the needs of 9 billion people by 2050?”

ABSTRACT: We will address this question by considering the consumptive water needs associated with agriculture and energy production and urban water needs, as well as the nature of climate variability today and in the future. This question is in some ways harder than asking if we will have enough food or energy to meet the needs of the projected population. It requires significant assumptions on both technological and behavior frontiers that determine where and how people will farm and generate energy, as well as the opportunities for reuse of water in urban settings and industry. We will examine some initial estimates and discuss the key factors that need to be addressed toward sustainability.



BIO: Upmanu Lall is the Director of the Columbia Water Center and the Alan and Carol Silberstein Professor of Engineering at Columbia. He has broad interests in hydrology, climate dynamics, water resource systems analysis, risk management, and sustainability. He is motivated by challenging questions at the intersection of these fields, especially where they relate to societal outcomes or to the advancement of science toward innovation. His current research covers five major initiatives developed through the Columbia Water Center: The Global Flood Initiative, America’s Water, Data Science and Multi-Scale Predictions, Risk and Financial Instruments and Water-Food-Energy Nexus. The programmatic initiatives are backed by research on systems level modeling of hydrology, climate, agronomy, and economics. Dr. Lall has published in journals that focus on hydrology, water resources, climate, physics, applied mathematics and statistics, development, policy, and management science. He has engaged in high-level public and scientific discussion through the media, the World Economic Forum, and with governments, foundations, development banks, and corporations. He has served on several national and international panels. He was one of the originators of the Consortium of Universities for the Advancement of Hydrologic Science, and is the President-Elect of the Natural Hazards Focus Group of the American Geophysical Union. He received a Ph.D. in civil engineering in 1981 from the University of Texas.

MORE: <http://ow.ly/zARLu>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

16. STEPHEN LONG

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PRESENTATION: “Can we have sufficient food and feed for 2050, while still expanding biofuels? The role of crop biotechnology and of new sustainable crops”

ABSTRACT: Demand for our major crops is expected to rise 50% by 2030, while we look increasingly to croplands for energy as well as food and feed. This is at a time when the increases in yield over the past 60 years are stagnating and global change poses a further risk to production. New biotechnological approaches are providing opportunities to overcome these limitations, while new sustainable energy crops could be produced at scale using land unsuited to food crops. Yet societal and policy acceptance of these opportunities is likely our greatest barrier to having it all in 2030.



BIO: Stephen Long is the Gutzsell Endowed University of Illinois Professor of Crop Sciences and a Fellow of the Royal Society (London). He obtained his B.S. (1st Class Honors) in agriculture at the University of Reading, UK, and Ph.D. in plant sciences at Leeds University. He worked previously for Tate & Lyle Co., the University of Essex and Brookhaven National Laboratory. His research spans from plant molecular biology and in silico crop design to field analysis of the performance of novel bioenergy crops and impacts of atmospheric change on food crops in the field. His group has developed dynamic and steady-state models to guide improvement of crop photosynthetic efficiency. He was the first to show the potential of Miscanthus as a high productivity crop for sustainable bioenergy on both sides of the Atlantic. Dr. Long has more than 400 publications in peer-reviewed journals, including *Science* and *Nature*, and an H-Index of 78. He is co-founder of two companies, SC4 Corp and GCS LLC, addressing mitigation of climate change through agriculture. Recently, he was recognized with the Marsh Award for Climate Change Research from the British Ecological Society, the Kettering Award from the American Society of Plant Biologists, and the Innovation Award of the International Society for Photosynthesis Research. He has given briefings on bioenergy and food security to the President at the White House, at the Vatican and to Bill Gates, and he serves an advisory role on key agricultural committees worldwide.

MORE: <http://ow.ly/zAR90>

A Path to Sustainable Agriculture”



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAeRL>)

17. DON ORT

University of Illinois

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PRESENTATION: "Improving photosynthetic efficiency for improved crop yield"

ABSTRACT: Feeding the world's population already requires 15% of the total net primary productivity of the globe's land area, and that will need to increase to 25% to meet the projected increase in demand. This near doubling of food production will have to be accomplished on globally declining acreage and with an ever-increasing demand on cultivated lands for

the production of bioenergy crops, while in the face of a changing environment that has already resulted in decreasing yield of some of the world's most important food crops. The yield potential of crops is determined by their efficiency of capturing available light energy, the efficiency of converting intercepted light into biomass, and the proportion of biomass partitioned into grain. Opportunities to improve photosynthetic efficiency exist in readapting photosynthesis to the rapid changes in atmospheric composition and temperature, in redesigning photosynthesis for agriculture and in applying synthetic biology to bypass evolutionary limitations and photosynthesis inefficiencies.

BIO: Don Ort is the Research Leader of the USDA/ARS Global Change and Photosynthesis Research Unit in Urbana and the Robert Emerson Professor of Plant Biology and Crop Sciences at Illinois. His B.S. is in biology/chemistry from Wake Forest University, and he earned his Ph.D. in plant biochemistry from Michigan State University. He is the Director of the SoyFACE project (igb.illinois.edu/soyface/); a unique open-air laboratory investigating the impacts of rising carbon dioxide and tropospheric ozone and their interactions with temperature and precipitation on crop systems of the Midwest, involving research groups from a range of Illinois departments and institutions across the U.S., Europe and Asia. Dr. Ort is also Theme Leader of Genomic Ecology of Global Change in the Institute of Genomic Biology at Illinois. His laboratory is engaged in three lines of research: i) redesigning photosynthesis for improved efficiency; ii) molecular and biochemical basis of environmental interactions with crop plants; and iii) ecological genomics: interactive effects of CO₂, temperature and drought on plant, plant canopy and plant ecosystem performance.

MORE: <http://ow.ly/zAQXQ>



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

18. ANDREW REVKIN

New York Times, Pace Academy

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PRESENTATION: “Peak food?”

ABSTRACT: An exploration of paths that give the best chance of limiting harmful impacts of humanity’s appetites on the planet and ourselves in a world heading toward 9 billion people seeking decent lives. I will explore food frontiers from the Amazon to the Caribbean, the meat lab to the farmers market.



Photo by Daniel Revkin

BIO: Andrew Revkin has been writing about environmental sustainability for more than three decades, from the Amazon to the White House to the North Pole, mainly for The New York Times. He has won the top awards in science journalism multiple times, along with a Guggenheim Fellowship. As the Senior Fellow for Environmental Understanding at Pace University, he teaches courses in blogging, environmental communication and documentary film. He has written acclaimed books on global warming, the changing Arctic and the assault on the Amazon rain forest, as well as three book chapters on science communication. Drawing on his experience with his blog, Dot Earth, which Time Magazine named one of the top 25 blogs in 2013, Revkin speaks to audiences around the world about the power of the Web to foster progress. He is also a performing songwriter, was a longtime accompanist for Pete Seeger and recently released his first album of original songs, which was hailed as a “tasty mix of roots goulash” on Jambands, an influential music website. Two films have been based on his work: “Rock Star” (Warner Brothers, 2001) and “The Burning Season” (HBO, 1994).

MORE: <http://ow.ly/zAQQd>

A Path to Sustainable Agriculture”



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

19. PEDRO SANCHEZ

Columbia University

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PRESENTATION: “Africa: from basket case to breadbasket?”

ABSTRACT: A major transformation is taking place in Sub-Saharan Africa. By 2005 average cereal yields (in tons per hectare) were: Sub-Saharan Africa 1; Latin America and South Asia: 3; China: 5, and North America/Europe 10. By 2011-12, cereal yields increased to 1.5 in Sub-Saharan Africa, where the GDP is growing faster than any other region (about 7 percent a year in the better governed countries not depending on oil exports) — especially those with significant growth of indigenous capital, private sector involvement and higher government budgets allocated to agriculture value chains. The African Green Revolution is in full swing behind farmer organizations, research institutions, NGOs, banks, donors, and governments. We may see an average yield similar to Latin America by 2020 — and 5 tons per hectare by 2050. Realistic options for adapting to climate change are available.



BIO: Pedro A. Sanchez is Director of the Agriculture and Food Security Center and Senior Research Scholar at Columbia University's Earth Institute. He served as Director General of the World Agroforestry Center (ICRAF) headquartered in Nairobi, Kenya, from 1991 to 2001, as co-chair of the United Nations Millennium Project Hunger Task Force from 2002 to '05, and as director of the Millennium Villages Project from 2004 to '10. Dr. Sanchez is Professor Emeritus of Soil Science and Forestry at North Carolina State University, where he was in the faculty from 1968 to '91 leading the Tropical Soils Research Program. He has lived in the Philippines, Peru, Colombia, and Kenya, and supervised research in more than 25 countries in Latin America, Southeast Asia, and Africa. He has written books on tropical soil science and hunger, serves on many boards, has received three honorary degrees and decorations from universities and governments. Dr. Sanchez was anointed Chief by the Luo in western Kenya with the name of Odera Akang'o, and by the Ikaram of southern Nigeria with the name of Atunluse. He is the 2002 World Food Prize laureate, a 2004 MacArthur Fellow, and was elected to the American Academy of Arts and Sciences in 2008 and to the National Academy of Sciences in 2012. He got his B.S., M.S., and Ph.D. in soil science from Cornell University.

MORE: <http://ow.ly/zAQeG>

OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAErL>)

20. SCOTT SWINTON

Michigan State University

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PRESENTATION: “Ecosystem services from working agricultural lands: Is multifunctionality a destination or a mirage?”

ABSTRACT: Working agricultural lands are managed to provide food, fiber and bioenergy. Apart from these provisioning ecosystem services (ES), the most important decisions about working agricultural lands are the regulations for ES — ones that maintain proper balance. The economic value of regulating ES varies greatly by type, from the bee whose pollination of a flower is tightly bound in space and time to the tree root whose sequestration of atmospheric carbon has lasting global effect. That value — and the potential to pay for it — are shaped by the forces that shape markets and their viability. Through examination of major types of ES regulation and associated market and policy forces, this presentation evaluates the prospects for inducing farmers to generate ES regulation as part of multifunctional agriculture.



BIO: Scott M. Swinton is a professor and associate chair in the Department of Agricultural, Food, and Resource Economics at Michigan State University. He directs the department’s graduate program and teaches Ph.D. applied microeconomics. His economic research explores how people manage agricultural ecosystems, and how changes in policy and technology can encourage better environmental stewardship while sustaining farm livelihoods. He collaborates closely with biologists, engineers and other social scientists in analyzing food and energy biomass production systems, particularly in the Americas and in Africa. Dr. Swinton has published more than 75 journal articles and edited three books. He is currently a director of the Agricultural and Applied Economics Association, as well as an Aldo Leopold Fellow, past co-editor of *Review of Agricultural Economics*, and past associate editor of the *American Journal of Agricultural Economics*, *Frontiers in Ecology and Environment*, and *Journal of Production Agriculture*. Dr. Swinton received his B.S. from Swarthmore College, his M.S. from Cornell University and his Ph.D. from the University of Minnesota.

MORE: <http://ow.ly/zAPGj>

A Path to Sustainable Agriculture”



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

21. ALEX WINTER-NELSON

University of Illinois

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PRESENTATION: "Identifying the impacts: Corporate-NGO-University partnerships to better measure the effectiveness of food security interventions in Africa"

ABSTRACT: Numerous technological and institutional interventions have been developed to address food insecurity among people living in poverty. These interventions aim to raise agricultural productivity or the incomes of the poor, or both, with the ultimate goal of improving access to food. However, the actual effectiveness of interventions is often debatable as there is rarely an appropriate controlled research setting to evaluate their impact on the food consumption, diets, or nutritional health of food insecure people. We will address how a partnership involving a private corporation, a charitable NGO and university researchers allowed the staggered rollout of an intervention to be converted into a controlled experiment to accurately measure its impacts for people living in poverty.

BIO: Alex Winter-Nelson is Director of the Office of International Programs at the College of Agricultural, Consumer and Environmental Sciences of the University of Illinois. He is also a Professor in the Department of Agricultural and Consumer Economics. His research has been motivated by a desire to understand the relationship between development interventions and poverty or food security in developing countries. Most of this research has related to Eastern and Southern Africa, with some work in other regions. Professor Winter-Nelson is currently involved in ongoing research in Zambia to evaluate the impact of livestock development on poverty and malnutrition among smallholders. His work in Africa was reinforced through visiting appointments at Egerton University in Kenya and at The University of Pretoria in South Africa as well as through consulting work for the World Bank, the International Food Policy Research Institute, and the International Crops Research Institute for the Semi-Arid Tropics. Professor Winter-Nelson has authored dozens of scholarly papers appearing in academic journals and books. His book, *The Atlas of World Hunger* was the winner of the 2011 James M. Blaut Innovative Publication Award from the Association of American Geographers.

MORE: <http://ow.ly/ASyv4>



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAERL>)

22. USHA ZEHR

MAYHCO

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PRESENTATION: “Food security and the role of private sector”

ABSTRACT: With current and growing populations, government programs, and changing food consumption patterns, it is critical to understand how the public and private sector capacities and resources can be leveraged to achieve and maintain food security in India. The success of the Green Revolution was public sector driven. Since then, the private sector has had a massive footprint in the agricultural value chain. This still does not cover essential commodities such as legumes and other self-pollinated crops. Technological advances at the same time have been more focused on “commercial” crops. Using these advances for crops that are essential for food security but not commercial presents an opportunity for close public/private engagement. The farmer is constantly challenged to produce as much as possible under limiting conditions such as availability of water, new pest emergence, market fluctuations and others. Also seen is area expansion in places that were not under cultivation due to salinity, soil type or resource availability. Scientific advances allow us to address some of these challenges and will be discussed.



BIO: Usha Barwale Zehr is Chief Technology Officer at Maharashtra Hybrid Seeds Company Limited (MAHYCO), India. Her current responsibilities include utilization of new technologies and tools, including biotechnology for improving the quality and productivity of seeds and agriculture. She received her M.S. and Ph.D. in agronomy from the University of Illinois at Urbana-Champaign. Subsequent to her formal education, she worked at Purdue University in the sorghum improvement program. For the last 16 years, she has been involved with MAHYCO. In addition, Dr. Zehr serves as Director of Barwale Foundation (a nonprofit research foundation) that focuses on improving the agriculture productivity in India. The Foundation has provided much support for the hybrid rice improvement programs in the country and promotes training for use of technologies. Dr. Zehr is also a member of the Intellectual Property Committee and Breeder Committee of the International Seed Federation. She also serves on the Board of the Donald Danforth Plant Science Center and Alliance for Green Revolution in Africa.

MORE: <http://ow.ly/B63NY>

A Path to Sustainable Agriculture”



OUR EXPERT PANEL

(in alphabetical order; full abstracts and bios at <http://ow.ly/zAeRL>)

23. DAVID ZILBERMAN

University of California Berkeley

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PRESENTATION: "The promise and prospects of genetically modified crops"

ABSTRACT: Genetically modified (GM) crops have become a major tool for pest control; they include three major crops (maize, cotton, and soybean) with two major traits (insect resistance and herbicide tolerance). These major GM crops have increased the supply of these commodities substantially and have reduced the price of feed and, indirectly, the price of food, thus providing a significant economic benefit to millions of consumers. GM crops have also reduced the agriculturally related GHG emissions, reduced erosion, and substantially decreased the use of the most toxic agricultural chemicals. Reduced regulation of genetically modified organism (GMO) varieties and expansion of their use for other crops, especially in developing countries, is likely to improve food security globally and reduce the footprint of agriculture. GMOs can be a valuable part of the climate-change adaptation strategy.

BIO: David Zilberman holds the Robinson Chair in the Department of Agricultural and Resource Economics, University of California Berkeley. Dr. Zilberman's expertise includes agricultural and environmental policy, marketing, risk management, economics of innovation, natural resources, water, biotechnology, and biofuels. He is a Fellow of the Agricultural & Applied Economics Association (AAEA) and the Association of Environmental and Resource Economists. He has served as a consultant to the U.S. EPA, the U.S. Department of Agriculture, the World Bank, the Food and Agriculture Organization, and the Organisation for Economic Co-operation and Development. He received B.S. degrees in economics and statistics at Tel Aviv University and his Ph.D. at Cal Berkeley. He was Department Chair from 1994 to '99 and has served on many organization boards, including the AAEA and the Council on Food, Agricultural and Resource Economics, as well as on three National Research Council panels. He is the Co-founder of the International Water Resource Economics Consortium and the International Consortium of Applied Bioeconomy Research. He established the Beahrs Environmental Leadership Program at Berkeley and the Berkeley Master's of Development Practice.

MORE: <http://ow.ly/zAOLW>



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- SoyFACE

Madhu Khanna
iSEE Associate Director for Education and Outreach



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