



Board for International Food & Agricultural Development (BIFAD) Public Meeting
“Feeding the World in 2050:
Agricultural Research Capacity and Youth Engagement”

Tuesday, 14 October 2014
 Downtown Des Moines Marriott, Des Moines, Iowa

Meeting Minutes
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Welcome and Opening Remarks

Welcome by BIFAD Chair Brady Deaton

BIFAD Chairman Dr. Brady Deaton welcomed the audience and presenters to the BIFAD Public Meeting which was globally streamed and Twitter-active. He expressed thanks to USAID and APLU for their support, and acknowledged that BIFAD Board Member Catherine Bertini was not able to attend in person but would be joining via webcast. Five members were present; one joined via webcast.

Chairman Deaton noted that public meetings are a special opportunity for BIFAD to meet with the public. BIFAD was created in 1975 through Title XII Legislation. BIFAD Board Members are Presidential appointees who advise USAID on agriculture and higher education issues pertinent to food insecurity in developing countries.

Changes in the Bureau for Food Security at USAID: Tjada McKenna is now the Assistant to the Administrator and Deputy Coordinator for Development, U.S. Feed the Future Initiative. Rob Bertram is the new Chief Scientist in the Bureau For Food Security.

Chairman Deaton asked the Borlaug LEAP Fellows and Susan Johnson to stand for applause and recognition.

BIFAD Member Introductions:

- Hon. Marty McVey- President, McVey & Co. Investments LLC, Houston, Texas
- Dr. Waded Cruzado- President, Montana State University, Bozeman, Montana
- Dr. Gebisa Ejeta- Distinguished Professor, Department of Agronomy, Purdue University, West Lafayette, Indiana; World Food Prize Laureate
- Dr. Harold Martin, Sr.- Chancellor, North Carolina A&T University, Greensboro, North Carolina.
- Dr. Catherine Bertini- Professor, Maxwell School of Citizenship and Public Affairs, Syracuse, New York; World Food Prize Laureate
- Dr. Brady Deaton- BIFAD Chairman, Chancellor Emeritus of University of Missouri, Columbia, Missouri; Executive Director, Deaton Institute for University Leadership in International Development

Chairman Deaton introduced the conversation. BIFAD wants to engage members of the public with Title XII university issues related to global hunger and poverty, and get feedback for what USAID and organizations are doing abroad.

The President of the United States has charged BIFAD with the advice and guidance around these issues, and 'all hands on deck' for global issues around food security. BIFAD came into being because members of Congress believed that BIFAD would bring apply the expertise of US land-grant universities to global hunger and poverty. To quote former Representative Findley, BIFAD is a "new authority designed to enlist fuller and more effective use of one of America's greatest

resources – its land-grant and similar agricultural colleges and universities – in meeting the challenges of increasing food supplies for the growing populations of developing countries”. Rep Finley, Illinois, gave a mandate and emphasized engaging the American public in this process to ensure that these issues are as understood today as they were in 1975. We have more work to do.

Old and New Business

An HICD study was recently taken on by BIFAD: *BIFAD Review of Strategic Human and Institutional Capacity Development (HICD) Issues and the Role of USAID and Title XII under Feed the Future Programs*. USAID Administrator Rajiv Shah asked the BIFAD to commission a study to find a “consensus” on HICD. Dr. Shah wanted guidance regarding progress on HICD to guide future initiatives and programming.

The Board undertook this study with support from APLU and the USAID/Bureau for Food Security. The study was done over a short period of time, with preparations back to 2010. Administrator Shah has read the report and submitted a response in support for the work being done.

BIFAD, USAID and APLU want to hear back from the public regarding this study. On November 18-20, an e-Consultation will be held to continue this conversation and allow for greater feedback into this study.

Chairman Deaton introduced Dr. Victor Lechtenberg, Purdue University, who provided an overview of the study and summarized a couple of the findings.

Dr. Lechtenberg acknowledged his colleagues on the HICD Review Team: Dr. Albert Ayeni, Rutgers University; Dr. Ralph Christy, Cornell University; Dr. Carol Kramer-LeBlanc, Former U.S. Department of Agriculture Economist.

The Review Team was asked to do the assessment in August 2013 and completed the report in March 2014/April 2014. The final document was submitted to BIFAD and the USAID Administrator.

The report consisted of fourteen recommendations in four key issue areas. The four areas are as follows:

1. Strengthening Institutional Capacity and Partnerships to Advance Impact Pathways
2. Strengthening Access to U.S. Higher Education Systems by Students from Feed the Future Countries
3. Enhancing Collaboration Between Developing Country Universities, U.S. Universities and Other Public/Private-sector Institutions
4. Building Developing Country Access to U.S. Technology

There are three principal players- USAID/Bureau for Food Security, USAID/Missions and U.S. Higher Education Systems

Some recommendations focus on specific institutions whereas others are broader reaching. At the Wednesday Session on HICD, a more in-depth report readout and discussion took place.

Recommendations:

- More attention should be placed on one-to-one institutional partnerships. Issue of institutional capacity rose to the top. Needs more than improvement in human capacity development.
- U.S. academic institutions should look at promotion and tenure procedures- especially regarding the recognition of work in international and development fields.
- More attention should be paid to advocacy and branding for HICD, both internally and externally.
- U.S. institutions should expand their international student recruitment
- Networks should be encouraged and nurtured with USAID and Missions. Enable FTF students, institutions to be more engaged in the global network.

BIFAD Member Outreach Reports

Chairman Deaton discussed the Board's outreach activities. Each member of the Board voluntarily has speaking engagements, reaches out to the public, and raises awareness about Feed the Future issues related to international agriculture. Administrator Shah has encouraged BIFAD to participate in meetings, represent U.S. Universities and to provide support for development issues. BIFAD hosts two to three public meetings a year. Member Bertini traveled to Ethiopia for the AGRA meeting; BIFAD member McVey to Nepal. Chairman Deaton attended the Grain Legumes Innovation Lab meeting in Athens, Greece.

Report on World Edible Legume Researcher Conference

The Grain Legumes Meeting brought together collaborators, investigators, and speakers in support of the grain legume work. The Innovation Lab seeks synergies across disciplines to enhance research capacity. Area range from seed systems to marketing to transportation and how this matters to households. It is important that the whole of government/science is brought to bear on these critical issues. Bring USAID, CGIAR and researchers together to further refine the kind the science that can help society.

Chairman Deaton introduced the first panel and Moderator, Board Member Harold Martin.

Panel 1: Needs for agricultural research capacity in order to feed the world in 2050

Introduction- Harold Martin

Board Member Harold Martin (moderator) introduced the two panelists and said that the global demand for food security has expanded not only from food commodity research, but also non-commodity. The big question is whether Title XII collaborations are responding strategically to these challenges. Are they involving non-food areas of agriculture? Are they expanding partnerships?

BIFAD is working to ensure feedback to the Administration. Is the emphasis on short term technology transfer shortchanging long-term impacts to meet the global demand of 2050?

Some of the analysis focuses on the longer term issues of strengthening agricultural research capacity

There are four focus areas:

- Food commodity agricultural research
- Nonfood commodity research
- Non commodity agriculture research
- Crop research resilience

Total Factor Productivity Studies- Keith Fuglie

Fuglie began by reviewing evidence on Total Factor Productivity (TFP) as a way of looking at overall technological improvement in agriculture.

Evidence over several years has shown that crop yield growth has declined, but this is only a partial measure of the rate of technical change. If this downward trend were to continue, it would be increasingly difficult to meet global food needs.

Future growth will rely more on raising yield rather than expanding. Yield growth could come from input intensification or technical change. Raising TFP depends on long-term investments in “technology capital” and enabling institutions. When prices are high, farmers will intensify inputs; when prices are low, they don’t. Underlying growth in TFP lies in technology capital and enabling institutions, i.e. long term capacity development in research and agricultural institutions.

Improvements in TFP account for a rising share of global agriculture growth. On average, output growth has moved from input intensification and has moved over the past two decades to TFP. In industrialized versus developing countries, TFP growth rate has been maintained at 1-2% for the past 50 years - major source of growth in TFP has been in developing countries. Output growth rate has been positive even though resources are shrinking.

Though robust overall, agricultural TFP growth is highly uneven among countries. There have been large success stories in Brazil and China, where they have raised their growth and maintained it for decades. Sub-Saharan Africa (SSA) has seen little growth. Some developed countries, such as the UK and Australia also are experiencing TFP stagnation.

How can we relate “technology capital” with rate of agricultural TFP growth? A comparison of 90 developing countries from 1970-2010 measures the ability of farmers to adopt technology rapidly. At a level of 6, adoption is similar to an industrialized economy. This underlies trends seen in the global economy and is the result of the investment in research and development capacity made in the 1970s and 80s. A lot of the momentum in building agricultural research and extension slowed down in the 1990s and 2000s, leading to stagnated growth.

Returns to Investment in Agricultural Research- George Norton

Norton first noted that agriculture research benefits are widespread--they lead to economic returns, environmental sustainability, poverty reduction (direct and indirect R&D effects) and nutritional improvement. Economic return is estimated at 10-30% annually on research costs; in some cases, a small investment can have a very high return. Many studies do a good job of a statistical analysis of this return, but does this tell us the whole story?

Agricultural research has made a significant contribution to poverty reduction. The number of extreme poor has reduced by 1 billion people since 1990. In nutritional improvement, the severely undernourished have declined by almost 100 million people since 1970, while global population has doubled from 3.6 to 7.2 billion.

Norton then listed three enablers of food security:

1. **Agricultural productivity growth**- higher yields, lower cost and less water per unit. There is a need for research to identify traits for speeding up the breeding process for improved seed and animal breeding. Can shorten the process by 5-6 years.
2. **Inclusive institutions**- property rights, credit, marketing, agricultural and research policies, safety nets. Traditional societies as well as industrialized societies have rules, even if they aren't written down. As development occurs, rules need to be formalized to assist in the adoption of technologies. Norton shared a story of a family in Columbia and the rules they have for sharing. This family had 13 children, and they sold a pig to be able to put a roof on another's house.
3. **Education and Health**- improves efficiency on and off the farm, lowers birth rates. As people move from traditional to modern technologies, it can disrupt equilibrium.

Norton also listed three disablers of food security.

1. **Climate change**- drought, floods, extreme weather events. Reports show that SSA and SE Asia are going to continue to experience extreme events, needing drought resistant, flood resistant, disease and pest resistant crops.
2. **Evolving agricultural pests**- If agricultural research diminishes, TFP does as well, due to threats like evolving agricultural pests that are resistant to treatment and move geographically. He used the example of the cassava bug that moved from South America to SSA.
3. **Non-Inclusive institutions and conflict**- cause productivity loss. Low productivity also causes conflict. You need research to get productivity gain for many reasons.

This leads to several implications for agricultural research policy. There is a need for increased agricultural research investments, including maintenance research. There is also a need to pursue innovative programs for scaling up useful innovations.

Norton laid out several steps in the path to improved food security.

- Favorable institutional environment and relative price changes create incentives for agricultural innovation.
- Innovation and institutional changes raise productivity and efficiency, leading to higher incomes
- Income growth leads to improved health and nutrition, larger non-farm sector, and smaller families
- Smaller families stimulate investment, as fewer resources are spent on dependents
- Demographic-led investment leads to higher labor productivity and income growth
- Income growth reduces poverty and improves food security when institutions are inclusive.

Question and Answers

Question: *Mark Erbaugh, Ohio State University*- You talk about the benefits of research, does the model account for agricultural extension services?

Keith Fuglie response: TFP gives a metric for how fast technology is changing in the agricultural sector, as well as sharing drivers of that change. Studies in regions have identified items such as property rights, etc. that contribute to productivity growth. Prolonged TFP is attributed to sustained research leading to farmers being able to adopt the technologies.

Question: *Samantha Alvis*- How are the technologies adopted?

George Norton response: Extension and education expenditures are included in the models. Public and private sector are both important.

Question: *Paul Randolph, GRM Futures Group*- How do you know the breaking point with extension to know when a technology can be scaled?

George Norton response: An easy case was the cassava mealy bug infestation and introduction of beneficial pests, which scaled on its own. Some types of approaches used to scale up are effective, but expensive; others are less expensive with less impact. Each situation is different and could rely on different players, such as farmer's organizations.

Question: *Online viewer*- Many rural people don't own land or are viable to survive as subsistence farmers. What are your thoughts on how to solve this?

George Norton response: You don't have to own land to adopt technologies or farm. The long-term answer is that some of these people will move off the farm or are already part-time

farmers. *Hunger and Hope*, a book that Dr. Norton has written, shares, some thoughts. The change has to increase off-farm opportunities as well.

Question: *Linley Chiwona-Karlton, Swedish University of Agricultural Sciences*- Within the Grain Legume Innovation Lab, how much consideration is given to underutilized legumes? One of the recommendations was the inclusion of institutions in addition to the individual. How much is being done to include strong SSA institutions?

Chairman Deaton response: The team is looking at any legumes that have potential to improve nutritional gains. Alternative technology was discussed at the May workshop, maybe out-of-date technology in the U.S., but valuable with a different situation and inputs. There is a need to sometimes look at research that is already on the shelf.

Linley mentioned a legume called Marama that is currently being looked at by University of Botswana. Chairman Deaton then shared that in regards to the second question, tomorrow's discussion will focus more specifically on inclusion of SSA institutions.

USAID Updates

Feed the Future Initiative Update- Tjada McKenna

Thank you to the Board for your strong support of USAID and Feed the Future. Assistant Administrator McKenna presented updates on Feed the Future, the U.S. Government's Global Hunger & Food Security Initiative. At the beginning when Feed the Future was launched, BIFAD was a "gem" dedicated to promotion of global food security.

Feed the Future was created in April 2009 to eliminate global hunger and drastically reduce extreme poverty. It was one of the first foreign policy acts of Obama's presidency, which speaks to the importance of this issue. Feed the Future is both a reinvestment in agricultural development and a challenge for USAID to display a new and better model that focuses on country-led development, smallholder farmers, public-private partnerships, and to bring the best of the American people to this work. In the past year, USAID has hosted several high profile events to showcase the progress made under Feed the Future and to underline the importance of strong partnerships with both private sector and universities.

First, there was the Feed the Future Forum. It brought together practitioners from Feed the Future Missions and host-country governments and organizations (including Ministers of Agriculture), and implementing partners.

The Africa Leaders' Summit in August 2014 included participation by BIFAD members. A Summit side-event was held to discuss how to build upon food security, entitled "Resilience and Food Security in a Changing Climate". This was one of the largest side-events at the Summit, with over

700 people in attendance, and one of five official side-events. Second Lady Dr. Jill Biden announced at the Summit another key deliverable pledging that in FY13 and FY14 the United States will train 1300 future leaders in Africa.

Finally, during the Frontiers in Development Forum AA McKenna moderated a panel, titled “Advancing Food Security among the Extreme Poor”, on which Chairman Deaton was a panelist.

Much has been achieved through Feed the Future. In FY13, nearly 7 million farmers and food producers used new technologies and management practices, the Initiative reached more than 12.5 million children with nutrition interventions, and leveraged over \$160 million in private sector investment.

New legislation has been introduced to institutionalize Feed the Future. These bipartisan pieces of legislation authorize and integrate Feed the Future beyond Obama’s administration and maintains the co-leadership at USAID. This truly shows the impact and importance of the work being done.

Feed the Future is partnering on scaling and nutrition interventions to push and promote new technologies. The New Alliance, launched by President Obama at a G8 meeting in 2012, was created to promote private sector partnerships with the US Government and NGOs.

Feed the Future’s new nutrition strategy looks for improvements in nutrition along with agriculture development. Mr. Richard Greene will be touching on that and its goals in the next presentation.

USAID Nutrition Strategy Update- Richard Greene

Thank you to Chairman Deaton and the BIFAD Board.

New nutrition strategy target data shows that the first 1000 days from pregnancy to the second birthday are critical ones as related to child stunting. Stunting is a serious problem causing lifelong effects including up to a 10% decrease in income due to diminished mental and physical capacity. More must be done beyond the standard public health interventions. By simply taking the traditional route only limited improvements will result. Interventions need to go beyond health to improved nutrition.

People consider stunting to be a developing country problem, but it can be found many countries. Bangladesh, for example, is a middle income country but still has 40% stunting. This is why the focus of USAID’s Nutrition Strategy is on a multi-sectoral approach that sets and monitors nutrition targets, manages nutrition funds, focuses on high impact actions.

The goal is to reduce the stunting rate in Feed the Future countries by 20% over the next 5 years. Then through further inventions, USAID hopes to keep stunting below 15%, and of course ideally to eliminate it. This new strategy has provided funding support and knowledge to treat nutrition in an organized manner/rigorous fashion.

The aim is to concentrate resources in a small number of focus countries. Then regularly monitor, provide direct support relating to the country's own nutrition strategy, and better integrate nutrition across programs (agriculture, education, nutrition, etc.).

The 1000 days approach includes key interventions- breast-feeding, dietary diversity, maternal health, and nutrition-sensitive interventions such as hygiene and sanitation. The first major nutrition interventions were hand washing, feeding children on mats, and home gardens. The multi-sector approach can be seen in action.

Sustainability can be achieved through increased private sector investment, production of more nutritious foods, making nutritious foods, and increasing the number of nutrition professionals in the target countries.

The nutrition strategy was launched on May 22, 2014. Already, there are nine new nutrition programs with multi-sectoral strategies for reducing stunting. New partnerships with NGOs achieved over \$700 million in commitments. Guidance has been developed for nutrition- smart agriculture. The goal is to make agriculture programs as nutrition-sensitive as possible. For instance, livestock, fish, legumes and horticulture programs all have nutrition as one of their overall objectives. All agriculture programs need to have a behavioral change component. These components are predominantly led by women with small children because we want to market nutritious foods and promote consumption among target populations.

Today, promising results can be seen in Ethiopia, Sierra Leone, and Nepal where there have been dramatic reductions in stunting. Feed the Future and global health efforts will make a difference.

Feed the Future Research, Policy and Capacity Development Update- Rob Bertram

Good afternoon. Thank you, Chairman Deaton

The Feed the Future Innovation Labs held a meeting in September that provided an opportunity for discussion of programs and attendance at Congressional meetings. The Hill was very interested in work being done by the Innovation Labs and what U.S. Universities are doing in Feed the Future. The Small Scale Irrigation and several other Lab Directors, BIFAD Chair Brady Deaton, Dr. Bertram, and others were able to meet both with Congress members and staffers. One major point that emerged was the idea of win-win both for the US and partner countries. The Soy Innovation Lab specifically demonstrated the benefits to U.S. soy producers due to African partnerships with local food systems.

The Innovation Labs are led by 24 US universities who are partnered with 50 others. At the Innovation Lab Meeting, the new Sustainable Intensification (SI) Innovation Lab was announced. The new SI Innovation Lab is a \$50 million award over 5 years with KSU to focus on farming systems and smallholder farmers.

Dr. Bertram announced that a new RFA on mechanization will be issued in the next 6 months. The aim of this RFA is to deal with issues of high labor-intensiveness and improve access to capital for small farmers.

At the Nepal Innovation Lab meeting, the Tufts Nutrition Lab and the Mission in Kathmandu organized a visit to value chain programs to see technology adoptions and how research communities transfer research to farmers. It is one of the great opportunities USAID has, our overseas Missions in the field having resources and established partnerships to build upon. In July, there was a symposium on animal sourced foods. Saharah Moon Chapotin, Joyce Turk, Jim Yazman, One Health, and other participants discussed the nutritional value of animal sourced foods, market development, and animal health. Key points from this discussion will feed into the design of the new Animal Sourced Foods Innovation Lab.

In New York City, during the UN General Assembly, Secretaries Vilsack and Kerry launched the Global Alliance for Climate Smart Agriculture. This is an important pillar because 30% of greenhouse gases are due to agriculture. USAID is focused upon increasing income, adaptation, and reducing the carbon footprint through a “mitigation where appropriate” approach. This approach aims to drive down emissions per unit of productivity while also searching for ways to improve the whole value chain. There is an increased opportunity for linking technologies, drought/heat and resilience partners. Innovation Labs are working on solar powered technology for drying and cooling. Bridges need to be built among local communities, Innovation Labs and USAID.

USAID is partnering with World Bank and the CGIAR to view systems and understand how to create synergies. USAID is also working with IFDC in this way to maximize partner engagement and to work strategically.

There is good news from partners. Market constraints are starting to relax in Africa. The growth of towns and information technology is helping connect farmers to markets. USAID is going to be watching this closely so as to better understand how to position investments going forward. As Feed the Future enters this phase the US Government is thinking about how to scale technologies in order to reach the greatest number of farmers.

Question and Answers

Question: New Sustainable Intensification Innovation Lab seems to have a less clear distinction than other innovations labs (crops) where do under underutilized crops fit in?

Answer: This new Lab is multi-disciplinary, bringing together necessary inputs to build sustainable systems. This reaches the heart of diversification, bringing in nutrition and income opportunities. Sustainable intensification is about putting the system together, and linking technologies together.

Question: Can you speak to the Global Resilience Challenge Partnership with Rockefeller Foundation?

Answer: This is a major new initiative announced at the African Leaders Summit. It involves the Swedish Government setting up the challenge to build resilience in victim populations and build a robust learning initiative and targeted research focused on the horn of African and Nepal. Team Africa, Asia and BFS all are working to keep resilience in mind when thinking of programing and organization.

Welcoming Remarks from Ambassador Kenneth Quinn

Ambassador Quinn welcomed the group. He referenced an opinion piece by him in the newspaper that day on youth programs. Dr. Norman Borlaug's vision when he founded the World Food Prize was to have a youth institute in every state and on every campus. Dr. Quinn, in his view, believes that Dr. Borlaug is the most important graduate of any land-grant. His passion was to inspire the next generation. In 1994, a group of high school students were brought to the World Food Prize, which started youth involvement. At the Borlaug Dialogue, there were 160 high school students from 25 states: Egypt, China, Morocco, and Mexico. Ninety-two percent of students who go through these high school programs end up majoring in agriculture. Ambassador Quinn challenged the group to send students to the WFP in the future.

Panel #2: Youth Engagement in Food Security Efforts

Introduction- Brady Deaton

Chairman Deaton introduced the two panelists of the youth engagement in food security session. Dr. June Henton is the Dean of the College of Human Sciences at Auburn University and has driven the college to be globally aware and socially engaged. Dr. Henton began the Universities Fighting World Hunger (UFWH) Initiative in 2006, which has involved universities all over the world. Gary Burniske is the Managing Director of the Center for Global Food Security at Purdue University, and has 35 years of experience in over 50 countries.

Auburn University Hunger Initiative- June Henton

Dr. June Henton's presentation focused on a game-changing youth engagement model pioneered by Auburn University that inspires students to take action to end hunger. Through the recently inaugurated Presidents United to Solve Hunger (PUSH) Initiative, students, professors, and university administration from all over the country are forming a collective to work together to end hunger in our lifetime. Auburn University's involvement in the issue of global hunger began in 2004 when the UN World Food Program, realizing the tremendous potential of young people to address critical global issues, invited Auburn to partner with them in a new initiative called the Student War on Hunger. Dr. Henton noted that at the time, Auburn University did not have a particular focus on global hunger, but decided to support the initiative. They knew that their involvement in the effort

would not only have an impact on global food security, but would also help to globalize and educate their students and reinforce the university's institutional goals.

The University's thoughtful consideration about how to get involved in efforts to end hunger led to the Auburn Hunger Model. Auburn's first consideration was that its involvement needed to focus on hunger both at home and abroad—it could not focus on world hunger without recognizing hunger in its own state and community. Another consideration was that all disciplines should be involved in this effort. Early on, Auburn leaders thought that only faculty in the life sciences would be interested in this effort, but soon realized that all disciplines had something to contribute towards ending hunger.

A big part of Auburn's effort in the beginning was raising the profile of the hunger issue on its own campus. The university's hunger awareness campaign penetrated all aspects of the campus—from putting up screensavers promoting hunger awareness on campus computers, to students participating in a hunger march where they walked over 60 miles to the state capital. They encouraged action, innovation, and entrepreneurship and developed the “lucky iron fish” a low cost, low-tech, iron supplement in the shape of a fish that can be dropped into a pot while cooking to help reduce iron deficiency. This innovation proved a great success particularly because of its recognition the importance of culture. It was targeted in Cambodia, where the fish is considered a symbol of luck, and the iron supplement's fish shape encouraged Cambodians to use it. Auburn University also sought to implement a hunger focus into its core curriculum and international programming.

In 2006, Auburn University had its first Hunger Summit, with 29 universities represented, and the Universities Fighting World Hunger (UFWH) Initiative was officially formed. UFWH is now a coalition of 300 universities that has a yearly summit that has been held in the US, Canada, and Europe.

The Universities Fighting World Hunger Initiative has had many successful outcomes. A series of state hunger dialogues initiated by higher education institutions have been held, first in Kansas, then North Carolina, Ohio, Maine, and North Dakota. The Hunger Solutions Institute (HSI) was launched in 2012, with a goal of convening, connecting, and multiplying best practices in the fight against hunger. The HSI also helped to launch the End Child Hunger initiative in Alabama that seeks to reduce food insecurity in Alabama. This past year, top leadership from 30 universities gathered together to discuss how collective action by universities could help end world hunger, resulting in the launch of the Presidents United to Solve Hunger (PUSH) campaign, which seeks to push university presidents to sign a “President's Commitment to Food and Nutrition Security.”

Dr. Henton concluded by noting that the complexity of the hunger problem is such that no one sector can end it; it requires governments, the private sector, non-profits, multilateral organizations, and universities to work together. Universities have been on the sidelines for far too long when it comes to global hunger, and it is time they do their part by getting involved in efforts to end hunger.

Global Food Security Fellows Program- Gary Burniske

Mr. Gary Burniske is the Managing Director of the Center for Global Food Security at Purdue University- he spoke about Purdue's involvement in the US Borlaug Fellows program for Global

Food Security. This 5-year program funded by USAID seeks to help train the next generation of food scientists with an understanding of global food security, support the key research themes of the Feed the Future Initiative, foster cross-cultural dialogue and long-term research relationships, and work with international partners to sustain a global learning community. The program has two main components: a graduate research fellowship that supports graduate research in a developing country setting to 30 students per year; and a 2-week long summer institute for beginning graduate students interested in food security.

Purdue will be having its fourth summer institute in July. Past summer institutes have seen students from 41 different universities from a variety of disciplines. Students attend lectures and panel discussions and have the opportunity to interact with speakers, participate in practicums and field trips, work directly with faculty mentors, and form lasting friendships. Many students who attend the summer institute go on to receive Borlaug Fellowships.

Students who receive graduate research grants work with mentors from CGIAR and focus on food security topics such as gender issues in agriculture and the effects of climate change, in many cases engaging directly with local farmers. Currently, Purdue has students working in 31 different countries, seventy-five percent of which are Feed the Future countries. The program helps students build leadership skills and obtain problem-solving experiences. Students emerge from the program with a knowledge, skill, and passion for tackling global food security that will benefit many people around the world.

Question and Answers

After the presentations, BIFAD board members and the audience commented and asked questions about the two programs. Chairman Deaton applauded both programs' ability to engage and connect with students. Dr. Henton noted that student engagement is contagious and can have a catalytic effect on rallying people to tackle these issues. Board Member McVey noted that he was very impressed with Auburn University's initiative and asked Dr. Henton to keep BIFAD updated on activities and progress. Board Member Cruzado noted that as President of Montana State University, she is ready to sign the President's Commitment to Food and Nutrition Security, as did BIFAD member Chancellor Harold Martin

Board Member Martin asked Mr. Burniske about the career track for students who have completed the graduate Global Food Security fellowships. Mr. Burniske noted that most students use their research to help develop their thesis, with many students returning to the countries where they conducted research, in some cases working with the same research institutions and organizations.

Dan Silversteen, a private sector advisor in agricultural development, asked Dr. Henton to speak about how Auburn University's "core curriculum" helps to promote inter-disciplinary efforts to end hunger. Dr. Henton noted that early on, the Dean of the College of Architecture at Auburn was insistent that every discipline needs to be involved in ending hunger and every discipline has something to contribute, even if it is the business school contributing marketing knowledge.

Bernard, a Borlaug LEAP fellow from Uganda, asked Mr. Burniske if it would be possible to link Purdue's Global Food Security Fellows that are sent to African countries with Borlaug LEAP fellows that have returned home to Africa. Mr. Burniske answered that this idea has great potential to develop a critical mass for this issue and asked that Bernard speak to him afterwards to discuss how to move this idea forward.

Innovation Lab Awards

Board Member Cruzado presented the two awardees with the Board for International Food and Agricultural Development (BIFAD) Award for Scientific Excellence in a Feed the Future Innovation Lab.

Ms. Kelsey Barale of UC Davis was awarded the Student Researcher Award for Scientific Excellence in a Feed the Future Innovation Lab for her research on understanding how agricultural information can be best transferred to farmers, particularly disadvantaged women.

Dr. Rangaswamy (Muni) Muniappan, Director of the Integrated Pest Management (IPM) Innovation Lab at Virginia Tech, was awarded the Researcher Award for Scientific Excellence in a Feed the Future Innovation Lab for his significant contributions to economic entomology, biological control, and integrated pest management research for well over four decades.

Ms. Barale and Dr. Muniappan each gave presentations on their research.

Agricultural Information Access in Guatemala- Kelsey Barale

Ms. Barale spoke about her research on information access for farmers in the Western Highlands of Guatemala. While a lot of attention is placed on teaching new practices to farmers and ensuring that the information they receive is practical and applicable, methods of getting out new information is often an afterthought. Ms. Barale noted that if you can't communicate your information in a way that suits your audience, it will not have an impact.

Ms. Barale carried out her research through group and individual interviews with farmers and other locals in Guatemala. Her main research questions were:

- What information do farmers want?
- Where do they currently get this information?
- What methods of information transfer are the most trusted and effective?
- Do ICTs (cell phones, radios) have potential for spreading agricultural information?
- Are there gender differences in information access and evaluation?

Her research found that where locals get their information varies largely based on the community they are in, crops they grow, and the prevalence of migration. She found that the information needed by locals differs based on gender--women are largely responsible for home gardens and home-based animals and thus need information about that. Ms. Barale also noted the importance of considering time and literacy constraints, as many women are illiterate.

The Guatemalan Ministry of Agriculture estimates that their extension agents reach 50 percent of municipalities with new information. Ms. Barale found through her research that the limited number of female agents could inhibit women's access to new information. She also found that input suppliers, especially those that are community-based, are an important and trusted source of information for farmers. Her research conclusions were:

- Working with input sellers and providing them with training on information distribution greatly improves information access
- Radio has good potential for distributing information, especially since listening to radio does not require literacy and there are radio stations that broadcast in indigenous languages
- Repetition of effort is not bad, as communities trust information more if it comes from multiple sources
- There is a need for more female extension agents to improve information access for women

IPM Innovation Lab- Rangaswamy Muniappan

Dr. Muniappan spoke about his efforts to use biological predators to combat pests in the developing world. The IPM Innovation Lab has been working in 17 developing countries and has introduced several different technologies into these countries.

USAID initiated an IPM Collaborative Research Support Program (CRSP) in 1993. Virginia Tech was successful in winning the management role based on a nationwide competition.

The IPM Innovation Lab produces packages for crops, where technologies that replace the use of chemical pesticides are packaged and given to host country scientists so that they can translate them into local languages and pass them on to local farmers. Dr. Muniappan gave an example of an IPM package for tomatoes, which, among other things, includes treating seedlings with *Trichoderma*, a fungus that is beneficial to plants.

Dr. Muniappan spoke about his work using parasites to combat the Papaya mealybug pest in Asia. The Papaya Mealybug is an invasive species native to Mexico that showed up in Asia in 2008 and Africa in 2010. Within three months of an infestation of the Papaya Mealybug, an entire crop will die out. In 2010, through Dr. Muniappan's efforts, a parasite was introduced in India to combat Papaya Mealybug infestations. The parasite lays eggs inside the Mealybug, which then hatch and cause the Mealybug to die within 10 days. Having successfully cleared up infestations of Papaya Mealybug in India, this parasite is now being introduced in African countries.

Dr. Muniappan then spoke about the IPM Innovation Lab's work to combat the *tuta absoluta*, or the South American tomato leafminer. The infestation of this pest is more recent, so they are taking a proactive approach to getting rid of it. In 2006, this invasive pest was accidentally brought to Spain, and within 3 to 4 years it covered the entire Mediterranean region. In 2012, the pest showed up in West Africa. The IPM Innovation Lab is helping countries to monitor the spread of the pest and develop ways to combat it.

Finally, Dr. Muniappan talked about the IPM Innovation Lab's work to scale up its programs by introducing technologies through value chain field officers, extension agents, and NGOs. Although the farmers are learning about new technologies, they are often not able to implement them because they do not have the resources they need. The IPM Innovation Lab has begun working with companies in developing countries in order to help farmers gain access to biopesticides.

In closing, Board Member Cruzado thanks the award winners for their presentations and for their contributions to agriculture and to the world.

Public Comment Period

Chairman Deaton opened the Public Comment Period.

John Ferrick, University of Wisconsin, thanked the board for the information presented at the meeting. Dr. Ferrick raised the idea that awareness should be raised for capacity building in our own institutions and not only building international institutions. He noted that there is a need to look at introducing new models and focusing on partnering institutions both here and abroad.

Board Member McVey commented on the importance of what the award winners are doing and looks forward to their continued contributions to the field.

Patrick Binns commented that the work that Dr. Muniappan is doing shows what is possible in biotechnology development related to plant health and resilience. The research for this biotech work is very fragmented, underfunded, and under recognized for its potential to improve sustainable agriculture. He recommended that USDA and USAID look at what is possible with bio soil and fungi to focus on research related to this area.

Henry Njako from Tanzania asked a question to Dr. Muniappan regarding challenges to his research. What if the parasite becomes a problem? Dr. Muniappan responded that this has been studied and introduced to various locations without any problems. Parasites like this don't become a problem because they are very specific to the mealy bug.

Matthew Blair, Tennessee State University commented that he is interested in engaging faculty and asked whether the Borlaug fellowship program has been built upon or enhanced. Dr. Burniske's response: The Borlaug fellowship allows the fellow to work closely with the academic advisor. The Borlaug Fellowship includes a very close relationship and engagement between the fellow, faculty advisor in the US and the research center overseas.

Comment from University Professor in Ghana: Tenure- Why isn't research and work related to international and global development activities the same as other areas?

Chairman Deaton's response: Faculty conditions are set by faculty. This is important to remember. We have been trying to make changes for the last decade and some progress has been made but it can be a difficult process.

Board Member Martin's response: In most universities the faculty, their colleagues and university administrators together help shape involvement in areas of emerging opportunities. He suggested that faculty involvement in international and global activity be recognized so that individuals feel enabled to participate more freely.

Board Member Cruzado response: In the past there has been a hierarchy regarding the elements of research, teaching, and service. Can we expand the definition of scholarship? Can we talk about the importance of these elements on an equal playing field? Then we can talk about the importance of teaching and learning, research and creativity. Universities still need to discuss the importance of service and global engagement to faculty careers. This is one of the most valuable conversations we are having at many universities today.

Board Member Ejeta: The HICD study makes the recommendation that U.S. Universities consider promotion systems that evaluate scholarly work done by faculty interested in international development. This dialogue needs to begin, because some capable individuals abandon their careers as system isn't ready for them. For universities to continue work with developing countries these conversations need to take place. Board Member Ejeta uses the Borlaug fellowship as an example of engaging faculty with international research and scholars.

Chairman Deaton closes the meeting by thanking the audience (here and on webcast) for being present and participating. He extends an invitation to participate in future Public Meetings and the HICD Session, Wednesday morning. Meeting adjourned at 4:30pm.