

# **Board for International Food and Agricultural Development (BIFAD)**

## **Public Meeting at Montana State University**

**April 9-10, 2015**

### **April 9, 2015: USAID Update and Panel**

Dr. Waded Cruzado, President, Montana State University (MSU) and BIFAD Board Member welcomed her fellow board members and the audience. President Cruzado emphasized the “special” moment at MSU to engage with BIFAD and food security experts. She expressed gratitude that the expertise both of BIFAD and the Montana State University faculty will benefit the MSU community. President Cruzado introduced BIFAD Chairman Brady Deaton to open the meeting.

Chairman Deaton thanked President Cruzado, acknowledging the beautiful setting and the hospitality of Montana State University. BIFAD always is thrilled to meet in a campus setting. BIFAD and the public benefit from the opportunity to experience, firsthand the knowledge generating process and feed off the energy of tomorrow’s future leaders.

### **USAID *Feed the Future* Research Priorities**

BIFAD Chairman Dr. Brady Deaton introduced Rob Bertram, Chief Scientist in the Bureau for Food Security at the United States Agency for International Development (USAID).

Dr. Bertram spoke about *Feed the Future*, the U.S. Government’s Global Hunger & Food Security Initiative. Though progress has been made, the challenge remains huge. Agriculture growth is effective in driving down poverty, 2 to 3 times more effective than non-agricultural growth. Improved agriculture not only improves human nutrition but also provides sources of income to both rural and urban smallholders.

Dr. Bertram emphasized that to focus on nutrition, *Feed the Future* is looking beyond agricultural production and focusing on overall nutrition. Calories from non-staple crops are just as vital, including milk and animal sourced foods. Access to clean water is also critical. Major advances in overall nutrition are possible with improvements in water, sanitation and women’s empowerment. Hidden hunger is also an area of concern that is being addressed in Sub-Saharan Africa and Southeast Asia.

Dr. Bertram described the overarching goal of sustainable intensification. *Feed the Future* aims to increase productivity per unit of land, labor, and capital. Often this means improved technologies, cover crops, appropriately scaled mechanization, improved water efficiency, integrate livestock, and other interventions. *Feed the Future* values its research partnerships with US universities, as well as its partnerships with the CGIAR system and the private sector. Two Innovation Labs are taking on challenges related to the sustainable intensification agenda- the *Feed the Future* Innovation Lab for Sustainable Intensification and the *Feed the Future* Innovation Lab for Small-scale Irrigation.

Dr. Bertram emphasized that the Bureau for Food Security is focused on making research investments about the people, smallholder farmers. Human and institutional capacity development projects under *Feed the Future* focus not only on individual training but on improved institutional performance..

Dr. Bertram summarized the progress as a result of *Feed the Future*, emphasizing the upcoming opportunities for *Feed the Future* around the area of climate resilient agriculture.

### **PANEL: *Effective Developments for Enhanced Nutrition in Smallholder Farming***

Dr. Glenn Duff, Department Head, Animal & Range Sciences moderated this panel. Dr. Duff addressed the reality of smallholder farmers, who are dependent on what they grow. He introduced the panel, stating that these scientists conduct university level research through engagement with smallholder farmers.

### **Florence Dunkel, Associate Professor, Entomology**

Dr. Dunkel discussed her research that included cultural competency. She emphasized that food security is a cultural issue and the approach to listen first allows better understanding for the needs of the smallholders. Dr. Dunkel explained the need to bridge the gap between western science and native science.

Dr. Dunkel described her students' experiences working with the Apsaalooke Reservation. Through the process, the students developed an improved understanding of the quality of life and what resources were needed by the reservation. She stated that through the listen-first approach the community, along with the students, realized berry picking would be a useful approach. Dr. Dunkel explained how the community utilized

the students to achieve their goals; they choose a location, researched berry varieties, and built gardens.

Dr. Dunkel related the Apsaalooke reservation experience to a previous experience in Mali. While in Mali, conversations with the community revealed that they were concerned with the large number of children dying from Malaria. This led to a programming shift from the production of green beans and tomatoes to teaching about the life cycle of the Malaria parasite. These interventions worked. The expansive collaboration model effectively taught and brought the community into the conversation.

### **Edward Dratz, Professor, Chemistry & Biochemistry**

Dr. Dratz emphasized the importance of nutrition for optimal health and the connection between chronic diseases and poor nutrition. Diseases such as depression, obesity, cancer, and heart disease can be better managed through improved nutrition.

Dr. Dratz introduced the field-readable seed monitor which is an inexpensive intervention to measure the availability of nutrients in the soil. Five hundred farmers analyzed their soil for nutrient bioavailability. Zinc was added to the soil around their cereal crops to improve productivity. By improving the bioavailability of nutrients in the soil, the cereal crops were more nutrient dense. This then led to improved nutrition and health for the individuals.

Dr. Dratz described a research project being done to show the benefits of improved nutrition to prevent disease. Students began taking their own blood samples which allowed them to see hands-on how food is affecting them. One group added an omega 3 fatty acid supplement which showed improvement over the placebo group which showed no change. Dr. Dratz emphasized the study of overall health and nutrition on improving individual's' general health, happiness and productivity.

### **David Sands, Professor, Plant Pathology**

Dr. Sands described the accomplishments of students at Montana State University; highlighting that many of them are making huge improvements in seeds, crops, and agriculture. He further stressed the need to adapt education systems to attract the smartest students to agriculture.

Dr. Sands elaborated on a project around Africa striga. He supported the position articulated earlier by Dr. Dunkel that researchers need to find out what the local community needs in Africa. Through research they found a way to get a fungus to wipe

out striga by growing this fungus on a toothpick and throwing it in rice. When farmers plant the pink rice they will see an improved yield. This project received funding through the Bill and Melinda Gates Foundation and aims to be implemented in seventeen countries.

Dr. Sands advised BIFAD regarding the need to get students involved in interesting projects; this will attract STEM students into agriculture.

### **PANEL: Question & Answer**

Dr. Glenn Duff asked the panel to expand upon unanticipated consequences of their work.

Dr. Dunkel responded that through the elimination of malaria there is an increase in the total population of an area. In Mali, this started a dialogue to educate women on reproductive decisions. Dr. Dratz stated that consequences of improved nutrition are healthier and happier people.

Dr. Duff posed another question to the panel, how do universities attract students into agriculture?

Dr. Sands responded that Montana State University does this well. Through good professors who question and challenge their students, the university is encouraging high achieving students to solve major development and agricultural problems. This gets the students excited about more than just their studies. Dr. Dratz added to this statement by encouraging engagement with freshman students so that, early on, they experience the excitement of pursuing science and all of the possibilities in agriculture. Dr. Dunkel encouraged engagement and encouragement. Students are drawn to the community aspect of programs.

Moderator Glenn Duff thanked the panel. Chairman Brady Deaton opened the discussion to BIFAD for comments or questions.

Board Member Harold Martin expressed excitement about the engagement with communities and connections to global problems. Dr. Martin asked the panel to elaborate on how to keep students engaged once they are interested in agriculture.

Dr. Sands responded by encouraging the board and others in the audience to view the poster display. These posters show the students' passion and excitement. Dr. Duff described the value of mentoring and connecting the students to interesting projects.

Board Member Gebisa Ejeta asked about students pursuing graduate or advanced degrees.

Dr. Sands explained that the faculty aim to get the students excited and “started off right”. Once they find the area they are passionate about we support them in what they want to pursue. Dr. Dratz encouraged the students to read literature and find out what truly interests them. The faculty here want the students to go where they can achieve.

Chairman Deaton thanked Dr. Bertram for his presentation and the panel for their leadership and student engagement. The public session in adjourned for the day and the public invited to attend the BIFAD outreach sessions.

### **BIFAD Member Outreach Sessions**

- **Session #1: *Montana State University and its role in Agricultural Economics***  
Dr. Brady Deaton, Chancellor Emeritus, University of Missouri  
Executive Director, Deaton Institute for University Leadership in International Development
- **Session #2: *How College of Agriculture students and faculty can contribute to the task of feeding the world/advancing sustainable human and institutional capacity development at home and abroad***  
Dr. Gebisa Ejeta, Distinguished Professor, Dept. of Agronomy, Purdue University  
Dr. Mark Varner, Senior Counsel, International Programs and BIFAD, APLU  
Dr. I. Miley Gonzalez, Deputy Director General, CATIE
- **Session #3: *Entrepreneurship and International Development***  
Hon. Marty McVey, President, McVey & Associates LLC
- **Session #4: *Student Engagement in the College of Engineering***  
Dr. Harold Martin, Chancellor, North Carolina A&T
- **Session #5: *Rooting Sustainable Futures***  
Susan Owens, Acting Office Director, Office of Agricultural Research and Policy, USAID/BFS, BIFAD Executive Director
- **Session #6: *Food Security: The Role of Feed the Future in Meeting the Challenges***  
Dr. Rob Bertram, Chief Scientist, USAID/Bureau for Food Security  
Dr. Montague “Tag” Demment, Vice President for International Programs, APLU

## **April 10, 2015: Public Meeting (live webstream)**

### **Welcome and Opening Remarks**

BIFAD Chairman Dr. Brady Deaton opened the meeting. He welcomed the audience both in the room and through the webcast to the BIFAD Public Meeting, held at the Strand Union Building on the Montana State University campus in Bozeman, Montana. He expressed thanks to Montana State University and President Waded Cruzado, and welcomed the panelists to the meeting. The BIFAD Board Members were introduced; five of them were in attendance.

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

Chairman Deaton introduced President Waded Cruzado to give welcome remarks.

### **Welcome to Montana State University by Waded Cruzado, BIFAD Board Member and President of Montana State University**

President Cruzado welcomed BIFAD and the audience to Montana State University. She expressed her gratitude, stating that it is an honor to have BIFAD at Montana State University. She described the significance of the BIFAD partnership with land-grant universities and the historical partnership between land-grant universities and USAID. Montana State University has extensive participation in international programs and takes seriously the mission of teaching, research and outreach both domestically and internationally. Dr. Cruzado welcomed the board's advice and leadership on how USAID can continue to develop even stronger partnerships in the future.

## Old and New Business

Board Chairman Brady Deaton introduced Board member Dr. Gebisa Ejeta for an update on the Human and Institutional Capacity Development (HICD) Working Group.

## HICD Working Group Status Report

Board member Gebisa Ejeta, HICD Working Group Chairman, described to the history of human and institutional capacity development and reflected on changes over the past 10 years. He highlighted the increased visibility of agriculture and food security on the U.S. national agenda, through *Feed the Future*, as well as the increased funding and development work around human and institutional capacity development.

In 2010, at the request of former USAID Administrator Rajiv Shah, BIFAD commissioned a study on human and institutional capacity development programs. [This study](#) examined USAID engagement on HICD. Following a workshop at the 2014 World Food Prize, BIFAD-USAID-APLU held an e-consultation on HICD, [Feeding the World in 2050: How Human and Institutional Capacity Development Can Support Agricultural Innovation Systems](#). This webinar had 175 participants from around the world. BIFAD received the report and noted the following general findings:

1. Design human and institutional capacity building activities in complementary ways.
2. Commitment to supporting long-term institutional capacity development activities is critical.
3. Build partnerships through mutual interest and motivation.
4. Support programs that increase institutional flexibility, adaptability, and responsiveness to the needs of the market.
5. Build both human and institutional networks.
6. Increase women's participation in the agricultural sciences by establishing and maintaining gender-equitable institutional practices.
7. Increase access and use of information technologies throughout the agricultural innovation system with careful monitoring and evaluation of real impact.

BIFAD aims to act on these findings through continued discussions with key stakeholders, including USAID Acting Administrator Alfonso E. Lenhardt and the Presidents of U.S. Universities. This study re-emphasized the value of building human capacity as well as putting in place functional institutions to allow for more sustainable government investment in the livelihoods of people in developing countries.

## **HICD Working Group Update: Comments and Questions**

Chairman Deaton thanked Dr. Ejeta for his summary and update. He then opened the discussion up to BIFAD for comments.

Board member Martin recommended advocacy and continued support from the Association for Public and Land-grant Universities (APLU) leadership to advance this important work. He advised action on the working group's best practice recommendations, which are critically important to carry forward this work.

Board member Cruzado emphasized the need for institutions of higher education, particularly land-grant institutions like Montana State University, to be resources for human and institutional capacity building. Dr. Cruzado asked Dr. Ejeta to elaborate on some examples for how land-grant universities can engage and move these recommendations forward.

Dr. Ejeta responded by describing the process for developing a meaningful implementation plan. He recommended an increased role of BIFAD as an educational resources for policymakers and emphasized the role that universities play regarding advocacy for legislative action. Networking is crucial, he recommended increased coordination with APLU, institutions of higher education and their stakeholders in the United States as well as international universities in order to engage globally.

Chairman Deaton thanked Dr. Ejeta for his response and elaborated on Dr. Cruzado's question about the role of land-grant universities in this work. Chairman Deaton reinforced the important role of building a wide network of educational leaders, particularly among land-grant institutions, which have historically played a role in building partnerships with universities in other parts of the world. He reinforced the equally important roles of education, research, citizenship, and scientific endeavors to ensure the food stability of communities in developing countries.

## **PANEL: Tribal Colleges**

Chairman Deaton introduced President Waded Cruzado, moderator for the Tribal College Panel

Dr. Cruzado expressed excitement and honor to engage with the tribal college leaders for this discussion. She reflected on the history of U.S. land-grant institutions. Tribal college institutions were not recognized as land-grant institutions until the 1990s. Montana State University played a prominent role in extending the land-grant



designation to tribal colleges, under former University President Michael Malone. Montana has seven tribal nations, each with their own tribal college, and through the work of President Malone and many others all seven tribal colleges received land-grant designation. Today Montana has the largest number of land-grant institutions in the United States.

Dr. Cruzado introduced each panel member.

- Dr. Billie Joe Kipp, President of Blackfeet Community College
- Dr. Carole Falcon-Chandler, President of Aaniiih Nakoda College
- Dr. David Yarlott, President of Little Big Horn College

***Dr. Billie Jo Kipp, President of Blackfeet Community College***

President Kipp thanked Dr. Cruzado for including the tribal colleges in this conversation and the continued friendship of Montana State University. Blackfeet Community College is a relatively new institution, established in 1972 on the Blackfeet reservation. Students attending Blackfeet Community College are not required to be members of the tribal nation. Dr. Kipp addressed the research activities of the College, and the College's history of collaboration with Montana State University-Bozeman. Healthcare and health disparities are the primary areas of research at the College. Blackfeet Community College is poised to build capacity; many students are involved and excited about research.

Dr. Kipp emphasized the tremendous potential for increasing the role of tribal colleges in the dialogue on human capacity development in agriculture, food sovereignty and poverty. Tribal colleges are especially relevant to research on development issues because reservations deal with poverty and empowerment on a daily basis. Tribal colleges can provide examples of best practices for adapting development initiatives to the local perspective. All of this can inform and benefit global research.

***Dr. Carole Falcon-Chandler, President of Aaniiih Nakoda College***

President Falcon-Chandler thanked Dr. Cruzado. Dr. Chandler spoke about the relevance tribal colleges in this dialogue, precisely due to the concerns of high poverty and unemployment that tribal nations face. In addition, the majority of the residents of the Fort Belknap Indian Reservation, where Aaniiih Nakoda College is located, are small-size farmers and ranchers. Health research is also a major focus at Aaniiih Nakoda College, which faces many of the same barriers of systemic poverty, health disparities and limited access to healthy, sustainable food supplies.

Dr. Chandler also discussed the partnerships between tribal colleges from around the United States; working together to accomplish things with limited resources.

***Dr. David Yarlott, President of Little Big Horn College***

President Yarlott thanked BIFAD and Montana State University President Waded Cruzado for including the tribal colleges in the discussion. He emphasized that courses of study at Little Big Horn College are most often directly related to economic development activities on the reservation. Even though the College has open enrollment, most of the students are tribal members. He described the central role that Little Big Horn College plays in keeping tribal traditions, culture, and language preserved. As a higher education institution they aim to prepare students for work, study and life.

**BIFAD Response**

President Cruzado asked the panel for examples of challenges related to HICD and nutrition on the reservations. In response to these challenges, please consider what types of research projects could have an impact on these issues for people living on reservations.

President Kipp addressed the importance of this question for the tribal colleges. Many nutrition challenges are not due to a lack of food. Instead, they are caused by the lack of nutritious food and the lack of resources to produce their own food and food products. Researchers at the Blackfeet Community College have begun collecting data on Indian children receiving WIC benefits. A high percentage of these children are anemic, and this presents an opportunity to pursue research on the causes of this nutritional deficit. The College also has a partnership with University of Wisconsin-Madison on a childhood obesity study.

President Kipp spoke about the resource challenges Montana tribal nations face as they often lack resources to develop their own food supplies and adapt to shorter growing periods. She identified this as another opportunity for research. Dr. Kipp emphasized the needs of young farmers and ranchers, who often inherit their land, to have access to knowledge about agricultural best practices and technologies. To respond to this, the College is working with Montana State University to develop a Bachelors of Agriculture. Dr. Kipp recognizes that without collaboration with large institutions, tribal colleges will continue to lag behind in expertise and resources. However by searching out collaborations and partnerships these problems can be addressed through local and community programs.

President Chandler affirmed the role of poverty and limited resources on reservations as primary factors in lack of available, affordable and healthy food. The Fort Belknap Indian Reservation is a food desert and the accessible foods are high-fat processed foods. Dr. Chandler highlighted an ongoing partnership with the MSU extension program to maintain a community vegetable garden. She spoke about the numerous roles community garden programs can play in educating the community, developing local food supplies through classes on canning and meal planning along with reflecting local values by providing communities the ability to grow native and medicinal plants. Blackfeet Community College has limited resources to operate this program, and there is a need for additional research and resources to expand and sustain this work.

President Yarlott spoke about his own experience growing up on the Crow Indian Reservation and the challenges people in poverty face when making food choices and the difficulty of changing behaviors. The Little Big Horn reservation has also started a community garden. Dr. Yarlott identified a growing interest and demand on the reservation for these gardens. He also identified a lack of resources to develop additional community gardens, equipment, and personnel to sustain these programs. Dr. Yarlott emphasizes that the way healthy foods and healthy eating is presented is just as important, and using locally tailored approaches to educate the community improve community buy-in.

President Cruzado thanked the panelists for sharing their experiences and perspective on these issues. Dr. Cruzado invited BIFAD to ask questions.

Chairman Deaton thanked the panel members and recognized the number of opportunities for future research on poverty, nutrition and health within the reservations and tribal colleges. He agreed with the panelists that issues of systemic poverty, rural access and health disparities presented tremendous challenges for the BIFAD to address. He also suggested involvement in the Presidents United to Solve Hunger (PUSH) campaign. Chairman Deaton opened the discussion up to the board for questions.

Board member Ejeta applauded the panel members for their commitment to these issues. He emphasized BIFAD's focus on engaging in community-specific needs. Dr. Ejeta asked the panelists whether there are opportunities for partnership among Montana's tribal colleges to build a community of faculty to address these needs and issues on reservations around the state.

President Kipp responded that the American Indian College Consortium is one resource to network tribal colleges. However, she admitted that efforts to network with tribal colleges is a low priority because of the high demands and few resources to meet the needs of her own reservation, first and foremost around the area of workforce development. She also identified the many roles of tribal college faculty and the few resources available to them to pursue this peer-to-peer collaboration.

President Yarlott identified the Association of Montana Tribal College Presidents as another networking resource available to tribal colleges. He also emphasized the difficulty of resource sharing across tribal colleges when resources are already so limited.

Board member Ejeta asked the panelists about the possibility of coordinating for development and fundraising to support healthy food production.

President Yarlott responded to Board member Ejeta's question. He spoke about the challenges of fundraising for tribal colleges, in part because they are young institutions with small alumni bases. For example, Little Big Horn College only has 600 alumni. Little Big Horn College does collaborate with Montana State University for development and grants support, but there are still differences between the institutions. Often times the indirect cost expense of a grant project will outweigh the benefits the College would receive from the grant project. Limited resources to manage grant programs inhibits the types of projects the College can seek out and participate in.

President Chandler emphasized the value of having a full-time grant writer at Aaniiih Nakoda College. However, she identified the sustainability challenges of being a grant-driven institution, and the highly competitive nature of tribal college funding because it is administered via the federal budget.

President Kipp recognized the important role an endowment could play for funding stability, but said there are currently few opportunities for the level of private funding needed to build an endowment for the college.

In response to the panelists, Chairman Deaton emphasized the central task of BIFAD to address fundamental poverty and solutions for eliminating poverty in developing countries and communities.

President Kipp asked the board to consider the needs and issues of tribal communities, as countries within a country, to be included and considered in the discussions.

Chairman Deaton thanked the panel members and identified the discussion as a momentous occasion to begin dialogues on these issues.

### **Poster Display: Montana State University Student Recognition Day**

President Cruzado invited the BIFAD members and the public to appreciate the research projects.

### **CATIE (Tropical Agriculture Research and Higher Education Center) Update**

Chairman Deaton introduced Dr. I. Miley Gonzalez, Deputy Director General, CATIE.

Dr. Gonzalez thanked the BIFAD and Dr. Cruzado for the opportunity to be a part of this meeting and share information about the work CATIE is doing. CATIE, established by Henry Wallace in 1946, is an international graduate university based in Costa Rica. The functions of CATIE—education, research, and outreach—are aligned with those of land-grant universities in the United States. As a graduate school, focused on agriculture and environment, CATIE offers research, professional and doctoral degree programs. CATIE is the oldest graduate school that focuses on agriculture and international resources in Latin America.

CATIE has more than 400 international development and agricultural research partners to expand opportunities for graduate students, faculty and outreach to international communities. For instance, CATIE partners with UICN, CARE, Terra, DAI and USAID on the Regional Climate Change Program which has an impact on health, development and agriculture internationally. In addition, CATIE partners with the Norwegian Ministry of Foreign Affairs on the Mesoamerican Agro-environmental Program. CATIE continues to build on their partnerships and is pursuing outreach activities throughout Central and South America and the private sector.

Dr. Gonzales described the unique funding structure at CATIE that enables faculty to be more entrepreneurial and seek out partnerships with faculty at other universities. The CATIE business model focuses on networking partnerships with prominent research and land grant institutions. CATIE currently has partnerships with 28 U.S. universities.

CATIE's agenda continues to evolve to create dynamic opportunities for students and faculty. An example is CATIE's new partnership with the Food and Agriculture Organization of the United Nations (FAO) and New Guinea.

## **CATIE: Comments and Questions**

Chairman Deaton opened the discussion up to the public for questions.

A Montana State University professor asked Dr. Gonzales about opportunities for faculty research and sabbaticals at CATIE.

Dr. Gonzales mentioned the possibility for joint appointments to address CATIE's hunger and poverty agenda. CATIE can benefit from all kinds of research. He welcomed the opportunity for faculty partnerships that aim to implement research solutions at the local level. CATIE's mission is particularly focused on integrating the social and cultural factors along-side research findings.

Chairman Deaton thanked Dr. Gonzales for the partnerships he has developed over the years and acknowledged CATIE's leadership in capacity development.

## **PANEL: Decision Making to Enhance Food Security and Resilience**

BIFAD Board member Waded Cruzado welcomed the panelists, and spoke about the importance of their research to develop food security and community resilience in developing countries. All three researchers are engaged in faculty partnerships that integrate behavioral, biological and agricultural sciences. Dr. Cruzado emphasized that through these partnerships and research, these faculty have the opportunity to inform policymakers and researchers.

### ***Dr. Sarah Janzen, Assistant Professor, Agricultural Economics and Economics***

Dr. Janzen presented on her work studying the effects of Heifer International livestock programs in Nepal. This collaborative project brings together multiple partners around the U.S. and international, including Montana State University, the University of Georgia, Nepa, and IFPRI.

Dr. Janzen emphasized that understanding poverty and asset dynamics are crucially important to build effective development programs. To exemplify this, Dr. Janzen described what she calls the "poverty trap" in northern Kenya. Many people in Kenya rely on livestock, but face challenges to rebuild their herds; if herds are not rebuilt to a certain level, these people remain stuck in a cycle of poverty. Research has revealed that there is a threshold of assets, or herd size that determines whether or not individuals fall into poverty. The Kenya poverty trap research reveals that poverty is a dynamic concept based on assets. These assets determine an individual's ability to

have sustainable income, investments and savings, as well as their ability to withstand negative shocks.

Dr. Janzen argued that to be most effective, development programs must be comprehensive in the way they address poverty dynamics and the full range of factors that keep people in poverty. Solutions must improve households' productive capacity, help individuals overcome structural forces, and shift households onto a permanent pathway out of poverty.

Dr. Janzen discussed her research on livestock transfer programs. The Heifer Model is one popular program that is presented as a tool to enable households to move out of poverty, improve nutritional and economic outcomes, and improve the status of women. However, there is little empirical evidence on the effectiveness of livestock transfers. Dr. Janzen's research seeks to conduct empirical research on the aspects of the Heifer Model that produce empirically measurable outcomes.

Dr. Janzen hypothesizes that the empowerment training component of the Heifer program may be most influential to the long-term outcomes of the program participants. Through a four-year, randomized control study, Dr. Janzen's research seeks to identify the impacts of livestock transfer programs, the components of these programs that are most effective, and any spillover effects of these programs. The study is currently in its second year. Baseline data collection took place between May-July 2014. Qualitative fieldwork is ongoing, and additional household surveys will be conducted over the next two years.

***Dr. Selena Ahmed, Assistant Professor, Health & Human Development***

Dr. Ahmed spoke about her research on climate change and global food security. Research has identified the need for adaptation and mitigation actions and the need for "climate-smart food systems" that are more resilient to climate change. Dr. Ahmed's research looks to the need for diversity, both agriculturally and nutritionally, rather than traditional approaches that look at energy-level yields.

The impact of climate change and horticultural practices on crop quality is less understood, but it is crucial to examine for food systems and food security. "Not just what we grow, but how we grow these foods" is important, she said. Dr. Ahmed's research suggests that the quality of fruits and vegetables, specifically their secondary metabolites, is based on horticultural practices.

Dr. Ahmed's research shows the need to build the capacity of small, local farms to develop new horticultural practices in the context of environmental change towards climate-smart food systems. To accomplish this, her research has an interdisciplinary approach that evaluates socio-ecological indicators as well as food and nutrition indicators.

Dr. Ahmed's study area is a tropical, mountainous area which is highly vulnerable to the effects of climate change in southern China. Her study is a comparative assessment of two smallholder farming communities in the region, one which uses an agro-ecological model and the other which uses a cash-crop model. Her research shows that diversified systems of land-use and crop genetic diversity increases the resilience and food security of the community with the agro-ecological model. In addition, the crop quality of agro-ecological farmers, as compared to the mono-crop model, shows increased nutrition yields, dietary diversity and increased food species diversity. The diversified community was also able to increase the local yields of food supplies for their communities, thus improving resilience.

***Dr. Eric Raile, Visiting Assistant Professor, Political Science***

Dr. Raile spoke about his research on political and public will for adopting climate-smart agricultural practices in Senegal and Uganda. Partnering on this project are colleagues from Montana State University, and a research consortium including USAID, USDA, Rutgers University, and other universities conducting research in sub-Saharan Africa.

The *Feed the Future* initiative and the Global Climate Change initiative are primary programmatic leads in climate-smart agriculture. The Global Alliance for Climate-Smart Agriculture, which was launched in September, also brings together numerous stakeholders on this movement.

Universal remedies can be ineffective. Individual behavior as well as community differences need to be understood when looking to understand the dynamics of sociopolitical change. Dr. Raile's research produced a few core findings that are necessary for developing political and public will in adopting climate-smart agricultural practices: 1) the need to develop local implementation solutions; 2) the need to understand how collectives, versus individuals, make decisions; and 3) the need for participatory approaches, versus mandated approaches.

Dr. Raile's research consortium seeks to develop a toolkit for adaptation and expansion of best-practice communications approaches to influence political and public will around



climate-smart agriculture, with the goal that these findings could be applied to additional countries and contexts.

## **BIFAD Response**

Chairman Deaton thanked the panelists and opened the discussion to BIFAD for questions and comments.

Dr. Ejeta asked the panelists about opportunities for cross-disciplinary or interdisciplinary research on these projects.

Dr. Janzen responded to Dr. Ejeta's question and affirmed that there are many opportunities for continued and future research across disciplines.

Dr. Ahmed also responded to Dr. Ejeta's question. On her current research project, Dr. Ahmed collaborates with researchers from 10 different disciplines at Montana State University. The Sustainable Food Systems Program at the University also encourages this interdisciplinary focus.

Dr. Raile also responded to Dr. Ejeta's question and spoke about the challenges of exchanging in research between social sciences and the natural and physical sciences, but affirmed that to solve these kinds of poverty and food security problems researchers must work with others across multiple disciplines.

Chairman Deaton suggested the possibility of applying Dr. Janzen, Dr. Ahmed and Dr. Raile's research projects and findings to the same geographical area.

Chairman Deaton asked Dr. Ahmed to explain the incidence of more unique food types in the mono-crop model vs. the agro-ecological model.

Dr. Ahmed responded to Chairman Deaton's question. She said that the indicator she used in her research did not capture a detailed level of dietary diversity, but rather basic food type groups. Meaning fruits and vegetables count as the same food type. Therefore, the number of different food type groups available to the mono-crop farmers appears larger; however she suspects that by developing an indicator to measure a more detailed level of dietary diversity, the agro-ecological model will presented a more dietary diversity than the mono-crop model. Dr. Ahmed identified this as a focus area for future research.

Board member Ejeta asked Dr. Ahmed to explain incidence of more antioxidant properties in organic crops versus mono-agricultural environments.

Dr. Ahmed responded to Dr. Ejeta's findings and identified a variety of factors that can influence the antioxidant properties of the crops. Shade and pest pressures are two possibilities that can contribute to the data. Genetic diversity could be another contributing factor.

Dr. Cruzado highlighted the benefit that universities bring to interdisciplinary research, and the importance of the work of researchers to overcome boundaries between disciplines.

### **Public Comment Period**

Chairman Deaton opened the public comment period by inviting questions and comments.

Dr. Renee Reijo Pera, Vice President of Research at Montana State University, asked the panel about experience gaining funding for their projects.

Dr. Janzen responded to Dr. Pera. Dr. Janzen funded her project by applying for a research grant through the *Feed the Future* Innovation Lab on Assets and Market Access (BASIS) and received supplemental funding from IFPRI. Dr. Janzen felt supported by the University throughout the process.

Dr. Ahmed received funding from the National Institutes of Health (NIH) and the INBRE research program. Overall, she feels optimistic regarding future funding opportunities.

Dr. Raile spoke about the challenges for early-career faculty to develop funding streams for new research. Funding for his research has been supported in part by the U.S. Government's *Feed the Future* Initiative. He has also used the research consortium partnership supporting his project to seek additional funding.

Dr. Linda Young, Department Head in the Department of Political Science at Montana State University, asked about how the panel's international research could be applied domestically in the U.S. and Montana.

Dr. Ahmed responded to Dr. Young's question. She spoke about her research on food environments and diabetic chronic disease with the Salish and Kootenai Tribes on the Flathead Reservation. Dr. Ahmed believes that her research working with smallholder

farmers internationally has been relevant to working with tribal colleges and reservations on food environments and wild food resources in Montana.

Dr. Raile also responded to Dr. Young's question. He identified his work with Montana INBRE as one example of applying these issues domestically. Dr. Raile also identified issues for future research, such as addressing issues of political sovereignty in collaboration with tribal nations, and how this aligns with international development work. He also identified parallels between rural food access in developing countries and the "food deserts" that the tribal college panel identified on their reservations. Dr. Raile also recommended future research on how food preferences have changed, and how the local food movement in the U.S. has gained popularity and can be applied internationally.

Dr. Janzen also responded to Dr. Young's question. She identified the importance of first understanding the local context, whether working on programs domestically or internationally. Dr. Janzen spoke about the need for more development economists to understand local economies when structuring development programs.

Dr. David Sands, Professor of Plant Sciences and Plant Pathology at Montana State University, applauded the panelists for their work and their patience to pursue research projects with limited or unsustainable funding. He encouraged continued collaboration with other faculty. Professor Sands thanked Montana State University for allowing him to pursue his research interests.

A commentor spoke about his involvement with Engineers without Borders and research at Michigan State University in the 1960s around international development. He discovered that there were a wide range of projects sought to achieve international development, but these "did not connect with the life of the university" or the student body. Commentor asked: How is the panelists' research is being brought back to the classroom in order to stimulate students to become involved in a formal academic way, not just in a volunteer capacity?

Dr. Florence Dunkel, Associate Professor of Entomology at Montana State University, gave the panelists advice: "Remember always the community, and that's where food security or insecurity happens". "But also remember we've talked about the word 'direction', and it's not just one direction, its two directions. There is a double learning taking place."

Mark Varner, APLU, presented a question from the web audience: "What is BIFAD doing to support women in developing agriculture independence and food security?"

Chairman Deaton confirmed that supporting and empowering women is a fundamental USAID and BIFAD focus.

Board member Ejeta highlighted the work of the African Women in Agricultural Research and Development (AWARD) program to empower women scientists in sub-Saharan Africa. In addition, the work being done by each of the *Feed the Future* Innovation Labs requires gender to be integrated into the project.

Board member Cruzado added that Board member Catherine Bertini is the contact at BIFAD focused on women. Dr. Cruzado shared her experience with women empowerment while on a trip to Cambodia. Empowered women build communities and families.

Mark Varner asked the presenters another question from the web audience: “What are opportunities for developing partnerships with institutions of higher education for international development?”

Chairman Deaton responded, and described the importance of faculty-to-faculty research, as well as student exchange programs, internships and service-learning programs. He emphasized that collaboration across the size of large institutions can be very important. Chairman Deaton urged anyone interested in this issue to reach out to their University presidents because there are already many consortia in place to make these processes work.

Board member Cruzado recommended finding a champion in your institution to connect with a champion in another institution. Emphasizing the importance of finding a topic that you are passionate about.

President Cruzado thanked her colleagues on BIFAD and USAID for coming to Bozeman, as well as the participation of faculty, students and the public.

Board member Marty McVey thanked Dr. Cruzado for making the board feel welcome at Montana State. He identified meetings like this as the most effective means to move these issues forward.

Chairman Deaton thanked the panelists and the Montana State University students and faculty for shaping the research on this issue. Chairman Deaton adjourned the meeting at 1:00 p.m. MDT.