



GCHERA World Conference 2017 on Food Security and Food Safety – Overview and Outcomes

John Kennelly, GCHERA President and University of Alberta

Executive Summary

The theme of the 9th GCHERA World Conference was **Global Food Security and Food Safety: the Role of Universities**. The conference was held at Nanjing Agricultural University in conjunction with the 2017 GCHERA World Agriculture Prize Award Ceremony, October 28-30th, 2017.

The FAO defines food security as “*when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious **food** that meets their dietary needs and **food** preferences for an active and healthy life.*” The focus of the conference was on the effectiveness of universities in providing the educational, research and outreach foundations so critical to achieving global food and nutritional security in an environmentally sustainable manner. The conference was organized in five separate sessions with the concluding session focused on “Putting the Pieces Together” to identify next steps for GCHERA. The Nanjing conference was preceded by a series of GCHERA conferences and workshops that culminated in the GCHERA Action Plan that identified human capacity development as the highest priority for GCHERA over the next three years.

The conference featured speakers from six continents who presented case studies based on innovative approaches that their institutions were taking to delivering on the core mandates of universities. While there was recognition of the critical historical role that universities have played, through education, research and outreach, in helping feed a world population that has quadrupled in 100 years, there was also agreement that universities need to be more open to change in curricula, pedagogy, research, outreach, and community engagement to meet 21st century needs. Several speakers highlighted the role of universities in value creation as being central to meeting societal expectations. There was a clear consensus on the need to move to a student-centred, experiential learning based educational model focused on developing leadership, entrepreneurship, values and ethics, so that graduates can make meaningful contributions to solving the twin challenges of nutritional security and environmental sustainability.

Next Steps: The outcomes from the conference provide strong support for the GCHERA Action Plan that identifies the desired outcome of undergraduate reform as “graduates having the ethical foundation, knowledge, skills – especially leadership, entrepreneurship and creativity - to succeed in

their future careers as agents of positive change in addressing global challenges in agriculture and life sciences.” GCHERA will shortly launch a Pilot Project, with the support of a Foundation, with a few select universities in Mexico and Haiti, to incorporate these key elements in their undergraduate programs. Selection of universities for the pilot project will be based on their commitment to positive transformation of the undergraduate experience. Over time with the help of other sponsors, we hope to expand the number of universities involved so that the pilot study has participating universities across six continents. We welcome feedback from our member associations on the pilot project and we would like to hear from universities who are currently in the process of undergraduate reform, or who are interested in receiving regular updates on the project. Our goal is to expand this project through linking with similar global initiatives and through engagement of other donors.

Opening Session: Overview of Global Food Security

The conference kicked off with Dr Jing Zhu, Nanjing Agricultural University, and Dr Ian Maw, Vice President, Association of Public and Land Grant Universities (APLU), presenting an overview of the global challenge of achieving food and nutritional security while at the same time reducing the environmental footprint of agriculture. Dr Zhu reminded the audience that over 800 million people suffer from hunger while an additional 2 billion experience some form of nutrient deficiency or “hidden hunger.” At the same time, overconsumption is driving an obesity epidemic that is afflicting both developed and developing countries. If current trends continue, obesity will be the most intractable public health issue in the coming decades. Dr Maw pointed out the world demand for food is expected to grow by 1.1% per year due to population growth, increased per capita consumption and changing diets, requiring a 60% increase in food production by 2050. The increased food production must be achieved in an environmentally sustainable manner as the world copes with the additional challenges associated with climate change. We were reminded that about 1/3 of all food is wasted. Several speakers commented on the importance of reducing waste, as this would lessen the amount of food required to achieve food and nutritional security.

Session 2: The Educational Role of Universities in Responding to the Global Challenge

Dr Rob Dyball, Australian National University (ANU) and Dr Jose Zaglul, President Emeritus, EARTH University led the discussion on the critical role of universities in human capacity development. Dr Dyball emphasized the importance of exposing students to research and building research training into all coursework. Providing opportunities for students to gain international experience, participate in field classes, and take an interdisciplinary approach to problem solving are key to providing graduates with a well-rounded education. Ensuring that students see the connections and interactions between different aspects of complex systems, and can identify the most appropriate approaches for various situations, is critical to helping prepare them to manage complex problems. Students are also trained to consider social issues alongside scientific and technical issues.

Dr Zaglul provided an overview of the unique EARTH University model. EARTH University takes a radically different approach to undergraduate education, starting with an admission process that takes into account leadership potential, vocation, socioeconomic background, values and social and environmental commitment. Although EARTH has only 450 students, they come from over 40 different countries and most would not be able to pursue a university education without the financial support provided by EARTH. Dr Zaglul spoke passionately about the role of universities in helping to promote

peace and harmony in a world that is afflicted by violence and conflict that has displaced millions of people. The mission of EARTH is to “prepare leaders with ethical values to contribute to sustainable development and to construct a just and prosperous society.” The four foundational pillars of EARTH are technical and scientific knowledge, ethical entrepreneurship, personal development, attitudes and values, and social and environmental awareness and commitment. Both Dr Dyball and Dr Zaglul stressed the importance of student-centred learning where the professor plays the role of facilitator/mentor so that students learn by doing, gain confidence, and develop leadership qualities in the process.

Session 3: The Research Role of Universities in Responding to the Global Challenge

Dr John Ingram, Oxford University, and Dr Aldo Stroebel, National Research Foundation, South Africa, provided their perspectives on the research role of universities. In describing the overall global food security situation, Dr Ingram emphasized the challenges associated with the rapid rise in obesity, often associated with nutrient deficiency. Dr Ingram spoke about the negative environmental impacts of our current food system and the need for “Food Systems Thinking” that “integrates a collective understanding and co-ordinated response from a variety of different stakeholders.” Like other speakers, he stressed the importance of a workforce “trained in concepts and tools” and equipped with both soft and hard skills. In response to this challenge, a consortium of higher education institutions in the UK have come together to create IFSTAL, a collaborative food systems training program that exposes students to interdisciplinary learning and provides opportunities that include symposia, placements, career workshops and summer schools. Students who participate in the program are attractive to potential employers as they have a more holistic understanding of food systems and the ability “to implement interventions leading to better outcomes for food security, enterprise and environmental goals.”

Dr Stroebel provided an overview of the special challenges faced by higher education institutions in Africa. Of the 10+ million young people entering the labour force in Africa each year, only 3 million find decent sustainable jobs. Although there has been a rapid growth in the number of students pursuing tertiary education, only 13% of young people in Africa are enrolled in tertiary education, compared to 33% globally. The proportion of students enrolled in postgraduate programs is very low (10%) and there is an acute shortage of PhD graduates which is reflected in very low scientific output. Dr Stroebel also spoke about the disconnect between the skills of graduates and societal needs. Traditionally, African universities have prepared students for careers in the public sector, however most current career opportunities are in the private sector, especially for those who are entrepreneurs. Dr Stroebel stressed the urgent need for curriculum reform and skills development and outlined the roles of government, universities and the private sector in achieving those reforms. He also stressed the importance of international partnership and the critical role of doctoral programs as the key driver for knowledge generation. His call for a transdisciplinary approach and greater emphasis on soft skills mirrored the comments of other speakers. He concluded by presenting the results of the ASSAF Consensus Study on Revitalizing Agricultural Education in South Africa. The report states that tertiary education does not produce enough graduates and they are not appropriately skilled. It also cites the importance of adequately resourcing the sector and strengthening the linkages between research, teaching and extension. Although this session focused on the research role of universities, human capacity development was again identified as being central to progress.

Session 4: Value Creation and the Role of Universities

Dr Tiny van Boekel, Wageningen University, Netherlands and Dr Xiangping Jia, Northwest Agriculture & Forestry University, China were the featured speakers in this session. Dr van Boekel described the evolution of universities from the traditional model of education, research and extension to a model where there is greater emphasis on value creation as a central outcome of the educational and research work of universities. He attributed the emphasis on value creation to societal expectations that universities work for the benefit of society. Factors contributing to changes in societal attitudes are reduced government funding, increased student numbers, greater private sector investment in universities and globalization of knowledge. He identified the following four examples of how universities create value; 1) by educating and training students, thereby supplying industry and society at large with new experts, 2) by offering industry and non-profit organisations access to knowledge infrastructure (facilities, tools, expertise, 3) by transferring knowledge and technologies to both companies and non-profit organisations, where new applications can be realised for the benefit of society, and 4) by stimulating co-creation together with stakeholders. He acknowledged that universities have always been in the business of value creation, but it has not always been explicit. Perhaps one the biggest changes is the emphasis on developing entrepreneurship, reflecting the shift in employment opportunities for graduates from the public to the private sector and the greater emphasis on applying acquired knowledge to create societal and economic value.

Dr Jia focussed on the role of universities in innovation and posed the question “can innovations be educated in agricultural universities.” He defined innovation as “a process of value creation by testing and commercialising a novel idea or invention with great uncertainties,” and considered how entrepreneurial activities could assist in improving food security and food safety. Dr Jia tracked global investment by venture capitalists and showed that China was rapidly catching up to the United States in its level of investment. Venture capital investment in agriculture has dramatically increased over the past three years. Interestingly, the majority of CEOs do not have an agricultural background and lack of agricultural experience did not have a negative impact on success rate of start-ups.