

Virginia Tech Students Attend Conference on Global Food Security – Cape Town, South Africa

About the conference

December 3-6, four Virginia Tech students: Sarah Bateman, Abigail England, Madelyn Dynes, and Abigail Han, working with Ozzie Abaye, professor of crop, soil, and environmental sciences, participated in the third International Conference on Global Food Security held at Cape Town, South Africa. More than 660 individuals from 60 countries, the majority from Africa, attended the meeting. The opening ceremony highlighted three crosscutting initiatives: the use of technology to solve global food and nutrition security, empowerment of youth, and the role of women in agriculture.

The students gave a poster presentation on the community service project they conducted through VT-Engage in 2016. The conference focused on food systems and emphasized a systems approach to achieve the Sustainable Development Goals (SDGs). Food system is broadly defined as “the path that food travels from field to fork.” That includes the growing, harvesting, processing, packaging, transporting, marketing, consuming, and disposing of food. It also includes all activities involving the governance and economics of production, its sustainability, the degree to which we save food, and how food production affects the natural environment. Issues of how food affects health and well-being, including nutrition, obesity, and food safety, were presented during the plenary and breakout sessions.

In addition to their poster presentation, the students interacted with world-renowned experts involved in solving food security issues including World Food Prize winner Jan Low (International Potato Center – USA) and Ken Giller, Wageningen Centre for Agroecology and Systems Analysis in The Netherlands.



During poster presentation and with winner Jan Low, World Food Prize (International Potato Center – USA)

While in Stellenbosch, the group had the opportunity to visit Kayamandi Township. The lovely and cheerful Thembi Koli, who lives in the Kayamandi Township, guided the group through the

community. In South Africa, the term township and location usually refers to the often-underdeveloped, segregated urban areas that, from the late 19th century until the end of apartheid, which officially continued until 1991, were reserved for non-whites, namely Indians, Africans and Coloreds (mixed-race). The townships, often built on the outskirts of towns and cities, are home to nearly 60 percent of South Africa unemployed.

As we navigated through the town, we learned how the community lives and functions. We saw eight to ten children taking a bath in a small plastic tub filled with cloudy water and learned that most of the houses do not have indoor plumbing. We walked through alleyways that wind around the shacks made of uneven sheets of corrugated iron. The tour included a visit to a typical household, a ceramic artist where one of our students, Madi Dynes, made pottery, a jewelry maker, and ended at Mama Swartbooi's lovely dining room for a traditional lunch – delicious.



Walking through Kayamandi Township; Madi Dynes, making pottery with Mama Swartbooi, respectively.

The tour of the township was an eye-opening experience. The stark difference between Stellenbosch, one of the most beautiful and tourist-friendly places in South Africa, and just a short drive from the Kayamandi Township, was simply shocking. Regardless of the unforgettable impactful experience in the community, it would be unjust to dismiss the legitimate social issues like poverty that are still prevalent in Kayamandi.

We also visited the sustainability Center near Stellenbosch and other tourist and cultural sites.



At the sustainability Institute, Cape of Good Hope and with the Penguins

Conference highlights:

1. Adipale Ekwamu (RUFORUM) - Uganda - talked about the potential of Africa to feed itself and stressed the fact that the potential must turn to reality. Africa must invest in **potential**, but at the same time transform that potential. As Dr. Ekwamu said, “you can’t eat potential.” Dr. Ekwamu stressed the alarming future demand for food and nutrition:
 - Hunger and malnutrition related to the inability of the poorest members of society to access food at an affordable price and less to availability of food.
 - Estimates predict a global shortage of 214 trillion calories per year by 2027
 - Net calorie imports to China, India and Africa will far exceed increases in production from North America, South America, and Europe.
 - Currently 64 percent of African population is under the age of 24.
 - Majority of farmers in Africa are old and the youth is not interested in agriculture.
 - He asked, “Why should the youth be interested in agriculture when the average farmer is poor and food insecure?” He suggested to advocate vocational agriculture – training for leadership and entrepreneurship, a problem-solving approach – which has been effective for agriculture in the past

2. Professor Ken Giller of the Wageningen Centre for Agroecology and Systems Analysis in The Netherlands asked what is “the Future of farming: **Who will produce our food?**” He addressed existing and emerging issues in food security (fertilizer use, land size and scarcity, and increase in global population). Highlights from his talk:
 - Global population will increase by one billion people by 2030, the same year in which the Sustainable Development Goals are supposed to be met.
 - Will increase in population coupled with increase in affluence see an increase in food demand per capita. It is unknown how much food is needed to feed the increasing population by 2030
 - The population of Africa (urban or rural) is expected to exceed that of any other region. This poses a range of challenges. Currently, 90 percent of potential yield is achieved in Europe vs the 10 - 20 percent potential that has been achieved in Africa.
 - Giller asked “what is a sustainable farm size?”
 - A study in Tanzania has shown that only around 35 - 40 percent of farmers live above the poverty line (around US\$1 per day). However, most of these farmers do not meet a proposed ‘living income’ line of around US\$7 (income necessary for a worker to meet the basic needs). If yield were to improve by 50 percent, only 40 percent of the farmers will live above the poverty line due to the current farm size of 1 acre. Thus, at 10 - 20 percent of yield potential, farm size would have to be increased to around 9 acres to lift the farmers above the poverty line, and 37 acres to get them to a living income line.
 - Giller’s take-home message: “You can’t imagine that rural development can be independent of urbanization and urban employment. We need those to go hand-in-hand to be able to develop agriculture.”

3. World Food Prize Winners 2016 presented their work –

Drs. Jan Low, and Robert Mwangi, of the International Potato Center (CIP) and the 2016 World Food Prize Laureates presented their research and outreach programs. Their collective program focused on biofortified crops to reduce hidden hunger and specifically vitamin A deficiency (VAD), one of the most pernicious forms of undernourishment in the developing world. Vitamin A deficiency causes blindness, limits growth, weakens immunity, and increases mortality. Orange fleshed sweetpotato (OFSP), when coupled with community nutritional education, provides high levels of vitamin A to vulnerable populations, especially women and young children. OFSP is a good source of energy, a number of B vitamins, several minerals (phosphorus, potassium) and vitamins C and K.

4. Changing Household membership

Dr. Robyn Alders, University of Sydney, Australia asked “who is in a household?” Household food security is defined as: “At the household level, food security refers to the ability of the household to secure, either from its own production or through purchase, adequate food for meeting the dietary needs of all members of the household.” (FAO, 2010). She defined household members as “A group of people who live together and take food from the “same pot” even if not blood relatives, lodgers, or agricultural laborers. A household member is someone who has lived in the household at least 6 months and at least half of the week in each week in those months. What about family pets? Most of the family pets contribute to the well-being, safety and contribute to labor and share. Do pets (dogs and cats) have impact on food and nutrition security? Alders answered, “in rural areas pets usually have positive contribution to the household while in urban areas, usually their impact is negative.” In the USA, relative to humans, cats and dogs consume 19 percent dietary energy, 33 percent of animal-derived energy and approximately 25 - 30 percent of environmental impacts from animal production (Okin, 2017). Alders then suggested changing the definition of household membership to include all consuming high quality food within the household.

5. The management and implantation of social protection in South Africa –

In South Africa, the social protection program (CSG - child social grant) that targeted the poorest of the poor, transferred cash that was not linked to need, and single vertical unintegrated program showed minimum impact on child growth stunting. The program’s failure to achieve the desired outcome (reduce child stunting) was attributed to the lack of linking between cash transfer and other social services such nutrition education, school nutrition program, employment opportunities and broader economic development strategies. Reduction in child growth stunting reported in Ethiopia and other African countries was attributed to several coordinated programs such as cash or food transfer plus community based nutrition programs, national nutrition program, agricultural growth program, and water and sanitation programs.

6. Food Waste and losses in the context of sustainable food systems

Approximately one-third of the food produced is lost or wasted along the food chain, from production to consumption (FAO, 2014). This amounts to 1.3 billion tons per year. The reduction of this waste is now presented as essential to improve food security and to reduce the environmental footprint of food systems (High Level Panel of Experts on Food Security and Nutrition (HLPE) report, 2014). Food losses and waste (FLW) impact food security and nutrition by three main ways. First, a reduction of global and local availability of food. Second, a negative impact on food access, for those involved in harvest and post-harvest operations and who face FLW-related economic and income losses, and for consumers due to the contribution of FLW to tightening the food market and raising prices of food. Third, a longer-term effect on food security results from the unsustainable use of natural resources on which the future production of food depends (HLPE report, 2014). During the FLW session, the question was asked, “do poor people waste food?” The answer was yes. Food waste includes cooking too much (for unexpected guests - cultural), significant loss of vegetables and fruits due to lack of technological to preserve/conservate excessive seasonal production, and Africa’s fresh produce market is via rail which takes a long time to reach and result in significant loss on the way. South Africa produces enough food to feed its population but wastes 10 million tons of perfectly good food per year. Suggested strategies to reduce food losses include produce/consume efficiently, which can reduce food loss by 50 percent, by implementing policies such as land fill tax in UK, and changing people’s behavior towards food waste.

Sobering Statistics and Challenges:

- By 2030, global population increase from 7.5 - 8.5 billion. By 2050, while the population growth in China (decline) and India stabilize, the population of Africa will double.
- 40 percent global population supported by agriculture
- 23 percent of the population in Sub-Saharan Africa are undernourished.
- Currently 64 percent of African population is under the age of 24.
- Majority of farmers in Africa are 65 years of age or older (the youth not interested in agriculture)
- Women empowerment is essential for food security and poverty alleviation
 - 90 percent of food is prepared by women – yet they are the ones who eat less
 - Women comprise, on average, 43 percent of the agricultural labor force in developing countries and up to 50 percent in Eastern Asia and sub-Saharan Africa (FAO, 2011).
 - Assuming that women have access to the same resources and assets as men, agricultural output could increase by 2.5 - 4 percent overall and could bring down the number of undernourished people by as much as 150 million (FAO, 2011)

In summary, the conference provided opportunities and information to narrow gaps between research and outreach as well as an emerging and urgent need to link production and nutrition.

Key take home points from the conference:

- Africa can feed itself if agro-tech pioneers work closely with farmers using field demonstrations to show that new technologies can deliver better results.

- Agricultural food systems need to cut food waste, utilize solar energy, micro-processing, commercialization through digital opportunities.
- Translate youth into entrepreneurs and innovators to realize the demographic dividend.
- Find affordable solutions to problems on nutrition, food safety, and food supply chains.
- Create an enabling environment with the skills and policies to take up opportunities that will drive the continent's renewal.
- Africa MUST manage its population growth; we cannot afford to keep multiplying poverty from within.

Acknowledgement

- Thomas Thompson, Associate Dean and Director-Global Programs (CALs Global)
College of Agriculture and Life Sciences, Virginia Tech.
- Erik Ervin, Dept. Head-Interim and Assistant Dean of Academic Programs
Crop Soil Environmental.
- Reinvest – ASA (American Society of Agronomy).