McGill Institute for Global Food Security

Sixth McGill Conference on Global Food Security:

Strategies against Food Insecurity and Hunger

SUMMARY,
KEY FINDINGS AND RECOMMENDATIONS

OCTOBER 8-9, 2013

MONTREAL, CANADA

McGill Institute for Global Food Security

Institut pour la sécurité alimentaire mondiale de McGill

McGill

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EXECUTIVE SUMMARY

Different perspectives on how to improve food and nutrition security reflect the different emphases of public, private and nongovernmental organizations. Financial investments to raise productivity and develop infrastructure, nutrition supplements and biofortification to address malnutrition, agri-system approaches, social welfare programs, restoration of degraded environments, sustainable use of inputs, reduction in food losses and food sovereignty all have global food security and the well-being of small rural farmers at heart. However, these different perspectives sometimes result in conflicting or incompatible responses, reflecting the lack of policy environment and structure that allows for clear guidance, common goals, and coordination. Key messages of the conference are:

- Empowering small-scale farmers to address food insecurity can be a complex and challenging task which requires leadership and cooperation across a wide range of partners.

- There are 500 million smallholder farms, which account for one third of all humanity if immediate families are included. Smallholder farmers account for 60% of global agriculture and 80% in developing countries; they also account for half the world's undernourished people, and the majority of those living in absolute poverty.

- The growth in demand for food, coupled with expanding markets and breakthrough technology, can be seen as an opportunity for farmers – particularly smallholders with their currently very low yields and low technology adoption rates. Farmer empowerment at a large scale requires technologies for sustainable productivity growth, innovative ideas, social entrepreneurship and methods of aggregation.

- Public institutions do not have a good record of progressing from research to development to delivery of products such as seed. Partnerships with the private sector, which bring a business orientation to the table as well as valuable advanced research skills, may help.

- Chronic hunger affects 1 billion people and hidden hunger (vitamin and mineral deficiencies which affect health and growth development) affects 2 billion. Critical micronutrients are vitamin A, iodine (I), iron (Fe) and folic acid, zinc (Zn).

- Underlying causes of malnutrition include: insufficient access to food; inadequate maternal and child care practices; poor water, sanitation and health care.

- Increasing not only the quantity of food but also the quality (such as crops with high levels of protein, calcium or iron) positively affects food security.

- Education is a very important determinant in securing a diversity of household food supplies for a healthy diet. If people understand the short and long term benefits of nutritious foods for themselves and their children, they are more likely to consume them.

- The Hunger and Nutrition Commitment Index (HANCI) evaluates the commitment of countries to address food insecurity and undernutrition. It provides transparency and accountability, allows governments to be praised when due, supports civil society to engage with governments, may stimulate additional commitment and is a tool to assess whether increasing donations improve food and nutrition security in the long term.

- Agriculture and the economy are one and the same in Africa: one sector cannot grow without the other. One of the major problems for the continent is the lack of roads and power transmission lines. Less than 30% of Africans live within 2 km of an all-weather road. It does not make sense to grow food if you cannot move it.

- From 1996 to 2012, transgenic crops added US$100 billion to the value of global agricultural output. In 2012, emerging countries reaped nearly US$ 1 billion more than their industrial country counterparts. Africa is a latecomer to biotechnology and only four countries currently grow transgenic crops.

- In order to ensure sustainable global food security, it is necessary to reduce agricultural expansion into forested areas; use inputs (fertilizers, water) efficiently; shift diets away from meat, and reduce waste.

- Incorporation of insects into diets can play an important role in providing a nutritious food source in many societies. Developing this source of high protein, nutritious and low-cost food can raise local incomes and address seasonal gaps in food security in urban areas where insects are already an accepted part of the diet.

- Degraded ecosystems are a cause of food insecurity and productive ecosystems are a foundation for greater agricultural productivity. Valuing longer-term services provided by ecosystems above short-term gain, and strengthening ecosystem governance and institutions at local and national levels, including collaborations between the public and private sectors, civil society and local communities, are key to global food security.

- Food sovereignty is the right of the people to control their food systems, produce food in their own territory, and play a central role in determining research directions and policy decision-making. Such a production model is socially just, with an equitable distribution of access and control over food, water, land and seeds.

- Canadian statistics indicate that food insecurity is found throughout the country, particularly in the north.

ACKNOWLEDGEMENTS

We are very grateful to the following sponsors and donors who supported the conference:

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Syngenta Foundation for Sustainable Agriculture
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We would also like to thank the numerous McGill student volunteers who helped throughout the conference and Helen Cohen Rimmer who assisted with the conference website and all promotional materials.

We are extremely grateful to Kim Reany who organized everything from preliminary meetings to the program and registration to meals and accommodation.

CONFERENCE ORGANIZING COMMITTEE

The members of the conference organizing committee were:

Hugo Melgar-Quiñonez (Chair), Caroline Begg, Sylvia Borucki, Sharon Campbell, Eduardo Ganem Cuenca, Julie Fortier, Helen Fyles, Katherine Gombay, Carole Graveline, Douglas Hedley, Ron Henry, Tim Johns, Kristine Koski, Chandra Madramootoo, Anwar Naseem, Kim Reany, Paul Simard, Don Smith, Doug Sweet, Pascal Thériault, Paul Thomassin.

1. Background

Previous Conferences

In September 2008, McGill University's Faculty of Agricultural and Environmental Sciences convened a high level, international global food security conference to examine the underlying causes of rapidly rising food prices. The success of this first conference at bringing together international experts and scholars, representatives of farmer organizations, policy makers from developed and developing countries, NGOs, private industry and the Canadian public for direct exchange about the long term solutions to declining world food stocks and rising food prices provided momentum for annual Global Food Security conferences and the establishment of the McGill Institute for Global Food Security.

The four subsequent conferences were:
2009 ***'Impacts of the Global Financial Crisis on Food Security'***
2010 ***'Addressing the Water and Nutrition Challenges'***
2011 '***Risks and Threats to Global Food Security'***
2012 ***'Food Prices and Political Instability'***

Summaries, recommendations and speaker presentations from all conferences can be found at www.mcgill.ca/globalfoodsecurity.

The State of Food Security in 2013

FAO's most recent estimates indicate that 868 million people (12.5%) worldwide are undernourished in terms of caloric intake. They also estimate that 26% of the world's children are stunted, almost 30% of people suffer from micronutrient deficiencies and 20% are overweight. These unacceptably high levels of malnutrition in all its forms impose very high social and economic costs on countries throughout the world. Addressing malnutrition requires interventions not only in the food system, but simultaneously in health, sanitation, and education.

Managing the agricultural sector to provide nutritious and safe food in an environmentally sustainable and economically feasible manner is complex. Most agricultural research has focussed on improving crop production, with the nutritional value of the crops often being of secondary importance. Although the traditional role of agriculture in food production and income generation is fundamental, agriculture and the entire food system – from inputs and production, through processing, storage, transport and retailing, to consumption – can contribute much more to the eradication of malnutrition.

2. Conference Objectives

The objective of the 2013 conference "***Strategies against Food Insecurity and Hunger***" is to examine how agricultural and nutrition interventions along the value chain can reduce food insecurity in vulnerable populations.

Specific Objectives:

I. To provide a forum for direct exchange between international experts and scholars, policy makers from developed and developing countries, NGOs, students and the Canadian public, in order to establish a basis for long-term solutions to food insecurity and malnutrition;
II. To use the inputs and discussions emanating from the Conference to engage policy makers, development experts, food and agriculture specialists, and civil society, in deriving solutions to the global food crisis;
III. To explore new ways in which the McGill Institute for Global Food Security can contribute to solving the challenges associated with agriculture and food production in providing nutritious food in a way that is economically feasible and environmentally sustainable.

3. Conference Organizer and Host: McGill Institute for Global Food Security

The McGill Institute for Global Food Security, the organizer and host of the conference, was created in 2010 and provides a focal point to examine issues constraining the measurement of food insecurity, malnutrition, agriculture and food production, the development of agricultural systems that produce nutritious food in a sustainable manner, the development of marketing and distribution systems and drivers of food insecurity such as climate, food safety, world markets, commodity prices, changes in land use, water resources, labour, and agricultural inputs. The Institute creates a platform for scholars and policy makers from around the world to guide and support the needs of governments, international agencies, foundations and the agri-food industry.

4. Breadth of Conference Participation

The Sixth McGill Conference on Global Food Security provided an important forum for direct exchange between experts, scholars, students and policy makers from developed and developing countries, NGOs and the business community. The Conference drew 250 participants from 11 developed and developing countries, with representatives from 13 international organizations, and many student participants, as well as academics and representatives of industry. All speaker biographies are available at: www.mcgill.ca/globalfoodsecurity/conference/2013/speakers/bios.

Conference attendees were as follows:

- *International and national agencies*: International Food Policy Research Institute (IFPRI), The World Bank, International Development Research Centre (IDRC), Inter-American Institute for Co-operation on Agriculture (IICA), Agriteam Canada, Kenya Agricultural Research Institute (KARI), International Fund for Agricultural Development (IFAD), Belfer Center for International Affairs, People Centered Development, Center for Studies of Sensory Impairment. Again and Metabolism (CeSSIAM), United Nations Environment Programme (UNEP);

- *Private sector and non-governmental organizations:* Syngenta Foundation for Sustainable Agriculture; Micronutrient Initiative, Food Secure Canada;
- *Policy makers and specialists* involved in the agriculture and food sectors from: Guatemala, Ethiopia, Haiti, India, Kenya, Nigeria, Peru, Switzerland, UK,US, and Canada;
- *Government officials* from Africa, Canada, Europe, US;
- *International scholars* from Africa, South America, Canada, India, US;
- *Graduate and undergraduate students;*
- *Members of the public.*

5. Conference Program

Each session consisted of experts delivering an invited presentation, followed by a lively and thought provoking question and answer period. The conference website (www.mcgill.ca/globalfoodsecurity/) contains full details on the conference program, speakers and presentations.

Public Lecture: Tuesday October 8, 2013

Moderator*:* Hugo Melgar-Quiñonez, *Director of the McGill Institute for Global Food Security, McGill University*

Public Lecture: ***Government and other Obstacles to Food Security: A Tale of Leadership and Cooperation***
Marco Ferroni: Executive Director, Syngenta Foundation for Sustainable Agriculture Switzerland

Conference: Wednesday October 9, 2013

Moderator: Humberto Monardes, *McGill University*

Keynote address*: Improved Food Security with Nutrition: Collective Solutions, Limitless Benefits*
Venkatesh Mannar, *President, Micronutrient Initiative (MI)*, *Ottawa, ON*

Linkages between Agriculture and Nutrition in Fighting Food Insecurity and Hunger

Session Chairs:
Ajjamada Kushalappa, *McGill University*
Claudia Ringler, *International Food Policy Research Institute, Washington, DC*

Panelists:
Brent Swallow, *Professor and Chair, Department of Resource Economics and*

Environmental Sociology, University of Alberta, Edmonton, AB
Carol Henry, *Associate Professor and Acting Head, Division of Nutrition, College of Pharmacy and Nutrition, Saskatoon, SK*
Rick Sunstrum, *Ethiopia Project Director, Safety Net Support Facility Project (SNSF), Agriteam Canada, Gatineau, QC*
Berhanu Woldemichael, *Director, Food Security Coordination Directorate, Disaster Risk Management and Food Security Sector, Ministry of Agriculture, Federal Democratic Republic of Ethiopia*
Felister Wambugha Makini, *Deputy Director Outreach & Partnerships, Kenya Agricultural Research Institute (KARI), Nairobi, Kenya*

Global Approaches in the Fight against Food Insecurity and Hunger

Session Chairs:
Timothy Johns, *McGill University*
Gordon Hickey, *McGill University*

Panelists:
Thomas Pesek, *Partnership Officer, North American Liaison Office, Partnership and Resource Mobilization, International Fund for Agricultural Development, Washington, DC*
Dolf te Lintelo, *Fellow, Vulnerability and Poverty Reduction Team, Institute of Development Studies, Sussex, England*
Mark Fryars, *Vice-President, Programs & Technical Services, Micronutrient Initiative, Ottawa, ON*
The Honorable Michel Chancy, *Secrétaire d'État à la Production animale, Ministère de l'Agriculture des Ressources Naturelles et du Développement Rural, Haïti*

Keynote Address: ***Agricultural Biotechnology and Food Security: Threat or Opportunity?***

Calestous Juma, *Professor of the Practice of International Development, Director, Science, Technology and Globalization Project, Belfer Center for Science and International Affairs, Harvard Kennedy School, Cambridge, MA*

Moderator: Humberto Monardes, *McGill University*

Future Generations and the Emerging Challenges on Food Insecurity and Hunger

Session Chairs:
Caroline Begg, *McGill University*
Bruce Moore, *People Centered Development, Ottawa, ON*

Panelists:
Rachel Krause, *PhD candidate, Institute of Parasitology, McGill University*
Shrikalaa Kannan, *PhD candidate, Bioresource Engineering, McGill University*
Colleen Eidt, *PhD candidate, Natural Resource Sciences, McGill University*
Mohammed Ashour, *MD-CM-MBA candidate, McGill University*
Shobhita Soor, *BCL-LLB-MBA candidate , McGill University*

Policies and Programs against Food Insecurity and Hunger

Session Chairs:
Philip Oxhorn, *McGill University*
Noel Solomons, *Co-founder and Scientific Director, Center for Studies of Sensory Impairment, Aging and Metabolism (CeSSIAM), Guatemala*

Panelists:
Yurie Tanimichi Hoberg, *Senior Economist on the Rural Strategy and Policy Group, Agriculture and Rural Development Department, World Bank, Washington, DC*
Richard Munang, *Africa Regional Climate Change Coordinator, United Nations Environment Programme (UNEP), Kenya*
Annette Desmarais, *Associate Professor, University of Manitoba, Winnipeg, MB*
Diana Bronson, *Executive Director, Food Secure Canada, Montreal, QC*

Wrap up Session

Facilitator: Hugo Melgar-Quiñonez, *Director, McGill Institute for Global Food Security*
Audia Barnett, *Inter-American Institute for Co-operation on Agriculture, Ottawa, ON*

6. Conference Summary

Public Lecture – Marco Ferroni
Government and other Obstacles to Food Security: A Tale of Leadership and Cooperation

- Empowering small-scale farmers to address food insecurity can be a complex and challenging task which requires leadership and cooperation across a wide range of partners. Government and markets play critical roles in creating the right conditions and, respectively, in developing and delivering the resources and solutions that farmers need.

- Farmers want and need: technology (genetics, plant breeding, soil fertility, crop production, irrigation, post- harvest mechanisms); services (agricultural extension, organizations of farmers, property rights, financial services, insurance; access to markets (transportation, storage, information logistics, contracts).

- The world's food security is under threat because the system is squeezed by unprecedented demand growth, a deteriorating natural resource base, which is increasingly unpredictable due to climate change, and a slow-down in the growth rate of global cereal production.

- The demand growth and expanding markets coupled with breakthrough technology can be seen as an opportunity to enable a supply response from farmers– particularly smallholders with their currently very low yields and low technology adoption rates. Technologies needed for sustainable productivity growth must be generated and disseminated in ways farmers can adopt and farmers need to be linked to value chains and consumers in mutually advantageous ways. Farmer empowerment at a large scale requires innovative ideas, social entrepreneurship and methods of aggregation.

- Public institutions do not have a good record of progressing from research to development and delivery of products into seed and other distribution channels. Partnerships with the private sector, which brings a different business orientation to the table as well as valuable advanced research skills, might help.

- Partnerships (in R & D and developing markets) combine the complementary strengths of public, private and voluntary actors to achieve desired, smallholder-relevant benefits that none of them could produce on their own.

- Government policy inconsistencies make the private sector reluctant to invest in agriculture and food value chains. Governments view this reluctance as a market failure, change their policies and generate a cycle of instability. Designing and implementing the right public policies, investments and regulations to promote food security is not a trivial task.

- We live in a world of market-based approaches to economic development and growth. Farmers large and small, the business sector that supports them, NGOs, civil society, and government) all play fundamental roles in agriculture.

- We need to deliver technological innovations, relevant services and access to markets to the farm population as we build agri-food value chains. We need to combine the motivations and skills of different stakeholders and work together, incubating solutions and approaches, and scaling them up.

Keynote Address – Venkatesh Mannar
Improved Food Security with Nutrition: Collective Solutions, Limitless Benefits

- Chronic hunger affects 1 billion people and hidden hunger (vitamin and mineral deficiencies which affect health and growth development) affects 2 billion.

- Critical micronutrients: Vitamin A, iodine (I), iron(Fe) and folic acid, zinc (Zn).

- Micronutrient Initiative (MI) works with governments to develop and implement key strategies and reaches 500 million people in 70 countries. MI increasingly bundles interventions through health and food systems ("integrated interventions"). An example of such an intervention is the creation of a microenterprise which now sells iodized salt across West Africa. This intervention:
  - Invested in health by empowering a community with knowledge and skills.
  - Built a stronger community through economic development.
  - Empowered women through job opportunities as most of the employees are women.

- Iodine deficiency is the leading cause of preventable mental impairment in the world. It impacts growth, development, productivity and IQ, and hinders nations from achieving their full capacity. One third of the world's population does not receive enough iodine.

- Iron deficiency affects 4-5 billion people, Vitamin A deficiency 250 million and almost 1 million children die each year from diarrhea – something Zn can prevent.

- Undernutrition and micronutrient deficiencies need to be addressed through a combination of complementary approaches: supplementation, commercial point of use fortification, dietary diversity, and emerging biofortification.

- Improving nutrition in agriculture positively affects food security and a commitment to strengthening organizational capacities is crucial. National and international momentum to integrate nutrition into food security and agriculture has never been greater – seize the opportunity to act.

Linkages between Agriculture and Nutrition in Fighting Food Insecurity and Hunger

The fight against malnutrition in all its forms requires a multidisciplinary and multisectoral approach which brings agriculture and nutrition together with complementary interventions in public health and education. Improving agriculture to produce more food remains a fundamental challenge but greater attention needs to be paid to the production of nutrient-dense foods. Food supply chains can be enriched by increasing the availability and access to a larger variety of nutritious foods. Educating local communities about the health and long-term welfare benefits of nutritious foods will encourage their consumption.

There is a poor link between agriculture and the consumption of nutritious foods in many home garden projects. Because of the complexity, long time lags and expense of nutrition studies, nutrition indicators have been developed to assess the quality of diets. Agricultural production as a determinant of the quality and quantity of food consumed was studied in contrasting situations in seven sites in India, South Africa and Tanzania. Of the agricultural determinants, physical assets were important to consumption of nutritious foods everywhere they were measured, farm size was important only in India and farm income was negatively related to quality food consumption in South Africa (where food was diverted to markets as farms became more profitable) and positive in India (Figure 1). Education was very important to

securing household food supplies in all three countries and healthy adult labour and physical assets were significant in the African study sites.

	Children under 18 years Eastern Cape, South Africa			Central Tanzania HH food Consn Score	Dietary Diversity 3 sites in India		
	Food energy needs	Dietary Dvrsty	Wild Food Dvrsty		Kerala	Tamil Nadu	Odisha
Livestock	n.s.	n.s.	++	+++	((((No results))))		
Physical assets	+++	+++	- - -	+++	((((No results))))		
Size of crop fields	n.s.	n.s.	+++	n.s.	+++	n.s.	++
Farm Income	- - -	n.s.	n.s.	No result	+++	+++	n.s.
Male headed	+++	+++	n.s.	+++	n.s.	n.s.	n.s.
Education	+++	+++	n.s.	+++	+++	+++	+++
Family size	- - -	n.s.	n.s.	n.s.	- - -	n.s.	- -
HIV affected	- - -	- - -	n.s.	No result	((((No results))))		

Figure 1: Determinants of food consumption in 7sites across South Africa, Tanzania and India (Source: B. Swallow)

The amount of food consumption that resulted from social protection programs vs own food production depended on the state of the economy and government policies. There was also evidence that social networks (gifting, sharing produce from home gardens, caring for orphans) were important at all sites.

Malnutrition is a major public health problem in Ethiopia with Fe deficiency in 50.1% of reproductive aged women, Zn deficiency in 53% of pregnant women and 72% of women in third trimester and a national stunting level of 44% of children under 5 years. Underlying causes of this malnutrition include: insufficient access to food; inadequate maternal and child care practices; poor water, sanitation and health care. Household food consumption is the key indicator to identifying improvements to household food security but it has not been shown solely to reduce malnutrition. The communities involved in the projects had limited to access to animal source food therefore plant-based nutrition was important. In order to increase micro-nutrition, legumes were used. Legumes already play an important role in the diet of low-income people and are a cheap source of nutrients. The plants require a short growing season, are moderately drought resistant and through soil nitrogen fixation, improve soil health.

To improve nutrition and health in the Ethiopian projects, an agro-systems approach (from 'field to fork') was used which included soil management, crop breeding, product development and nutrition education. The studies found that:

- double cropping and crop rotation (with legumes) can increase production and improve nutrition;
- integrating nutrition education and training, alongside production of pulses improved dietary diversity and nutrition security;

- markets can be used as a driver for nutrition security (through income, crop choice and diet diversity effect).

A Productivity Safety Net Program (PSNP) is one component of the New Coalition for Food Security in Ethiopia and provides transfers to food insecure households in chronically food insecure woredas (districts) to prevent household asset depletion and create assets at the community level. Eligible households must be a member of the community, be chronically insecure or have food insecurity due to sudden asset loss. The program provides either:

1. Direct Support to households who lack labour, have no other means of support, who are chronically food insecure or
2. Support through employment in Public Works (PW): Able bodied households targeted for PSNP participate in PW and are paid for their labor

Public Works are labour-intensive community-based sub-projects and use simple tools. The community selects and plans PW and is funded through a multi-annual resource framework. Work projects are within a walking distance, are harmonized/integrated with local development plans, planned according to a community-based watershed development approach and follow guidelines for environmental and sustainable practices. Households graduate from the program when they can meet all food needs for 12 months and be able to withstand modest shocks. So far there have been 3 million program graduates who were food insecure in 2006. Challenges include targeting, coordination, capacity, staff turnover, delay in resource transfer, quality of some of the PW especially water and road projects indicating technical challenges.

In Kenya, 10 million suffer from chronic food security; 30% of children are undernourished, and an estimated 0.8% of GDP is lost due to ill health from vitamin and mineral deficiencies. Kenya has regions of low land productivity due to drought, land and water degradation, weed and insect pests, low adaptation of technology and low soil fertility. Food security is largely dependent on maize and there is concern about the overdependence on this one crop. Gender disparities, poorly functioning markets and infrastructure, inadequate access to information and lack of value addition which leads to bulky product volumes and high transportation and transactions costs are all underlying factors of food insecurity in Kenya.

The role of the Kenya Agricultural Research Institute (KARI) is to enhance food and nutrition security. KARI's approach is to advocate for market responsive products and is not just focused on commodities. KARI activities include: variety development and evaluation; disease and pest management; food safety (aflotoxin), livestock breeding (chickens), research of low input, drought tolerant traditional crops (ex: finger millet high in protein and calcium; indigenous leafy veg); linking farmers to markets to access high quality inputs and participate profitably in markets (project with McGill), policy analysis of price incentives and dis-incentives for 10 agricultural commodities; development of Technology Innovation Units- inventory, packaging, and transfer of technologies and extension materials to farmers; exhibitions, shows and field days and use of media and ICT.

Global Approaches in the Fight against Food Insecurity and Hunger

National and international agencies and institutions of diverse nature are developing and carrying out a broad variety of interventions to improve food security and the nutritional status of vulnerable populations. Given the growing connections between countries within an increasingly globalized world, agencies working throughout the world face the challenge of how to address food insecurity taking into account learned lessons from different regions. In addition, a better understanding of the global food supply chain requires an approach that incorporates a global perspective of the international food system, from food producers working in one country to food consumers in another.

The goal of the International Fund for Agricultural Development (IFAD) is to help rural poor people overcome poverty by building viable and sustainable rural farm and non-farm enterprises that are integrated into national, regional and global markets and value chains and that provide higher incomes and greater employment opportunities. There are 500 million smallholder farms which equals one third of all humanity if their families are included. Small farmers account for 60% of global agriculture and 80% in developing countries and 85% of all farmland is less than 2 ha. Smallholder farmers also account for half the world's undernourished people and the majority of those living in absolute poverty.

The strategic directions of IFAD:

- Match aspirations of rural poor people.
- Invest in rural transformation: no matter how small, all farmers are business people.
- Reduce risk and fortify resilience (risk assessment, climate, appropriate technologies, microinsurance, practical research to benefit farmers).
- Differentiate and target: Tailor approach to specific diverse needs between different regions and countries (Figure 2). Particular focus on women, youth and indigenous populations.
- Unlock potential through organization (strong and inclusive producer organizations to leverage resources and influence policy decisions).

Figure 2: Diversity of needs of different regions and countries
(Source: T. Pesek)

The Hunger and Nutrition Commitment Index (HANCI) evaluates the commitment of 23 OECD donors in addressing hunger and undernutrition. The index was generated from seven financial aid and seven policy commitment indicators. Financial aid indicators included spending (in relation to capacity to give support and estimated funds needed), commitments vs disbursements (11% of commitments are not being carried out) and endurance (Are countries in this for the long term?). Policy indicators included: coherence of domestic policy action with foreign aid policy (ex: are donors acting locally on issues they are funding, such as climate change?), and engagement in international agreements and treaties that help address hunger and undernutrition. The HANCI index is a useful tool to:

- provide transparency and accountability,
- allow governments to be praised when due,
- support civil society to engage with governments and
- stimulate additional commitment,
- assess whether increasing donations improve food security in the long term.

The United Kingdom, Canada and Denmark had the highest HANCI scores.

Widespread problems of micronutrient deficiencies and the importance of nutrition investments to improve the health and welfare of people and hence to raising the GPD of a country by 2-3% were identified by Micronutrient Initiative (MI). Investing $1 in nutrition can result in a $30 return in increased health, schooling and economic productivity. However, these results take time and since the political return on nutrition investment is not always evident in the short term, governments are often reluctant to invest.

Agricultural sector actions include HarvestPlus which is breeding staple food crops in Africa and Asia bio-fortified with higher levels of iron, zinc, and vitamin A. For example: Fe-rich beans and pearl millet, vitamin A-rich cassava, maize and sweet potato and Zn-rich rice and wheat. MI is involved in community based action to address nutrition gaps in children's diets: if there is enough food, use multiple micronutrient supplements; if there is not enough food, add lipid-based nutrient supplement and fortified complementary foods. The Scaling-up Nutrition Movement has placed nutrition high on global agenda and there is a real opportunity to see return on investments by including nutrition-sensitive actions. However, more evidence is needed on how to plan and implement actions that are effective at improving nutrition.

Issues and challenges of food insecurity in Haiti are daunting. Imported food currently makes up 50% of the country's food supply (compared to 19% in the 1980s) although there are 1 million family farms which produce 90% of the country's food. An estimated 70% of the population is food insecure and 50% of the country's wealth is controlled by 5% of the population. Aid does not solve the food insecurity issues and current resources are not well used. Despite the good intentions of NGOs, the international community and government, many people are left out. Other voices of development and other sources of finance are needed.

There are four priorities to address food insecurity:

- School feeding programs
- Buying local (ex: Canada, Brazil, Venezuela)
- Coordination of the 400 NGOs
- Cash or food for work.

In the short term, the Haitian government has implemented a program for the population that is limited to security nets (rice subsidies, cash transfers to the vulnerable, microloans to women, school scholarships) and recuperation of the agricultural sector through tools, seeds, fertilizer, infrastructure built through local labour, aid to fishermen). Further investment is needed to develop capacity and build networks. An example of building up a milk production network was given. The network included organizing and training dairy herd owners, and building businesses to process and sterilize milk so that it can be kept without electricity. Private investment in equipment and commercialization is also being encouraged.

Keynote Address – Calestous Juma
Biotechnology and Food Security: Threat or Opportunity

- Agriculture and the economy are one and the same in Africa: cannot grow agriculture without growing the economy at the same time. One of the major problems for the continent is the lack of road and power transmission lines (Figure 3). Less than 30% of Africans live within 2 km of an all-weather road.

- It is estimated that USD 93 billion per year is required to address infrastructure problems in Africa. It does not make sense to grow food if you cannot move it.

- The World Bank expects that the African economy will grow faster than the rest of the world in the coming years, partly due to rising exports to China and to investments in rural infrastructure.

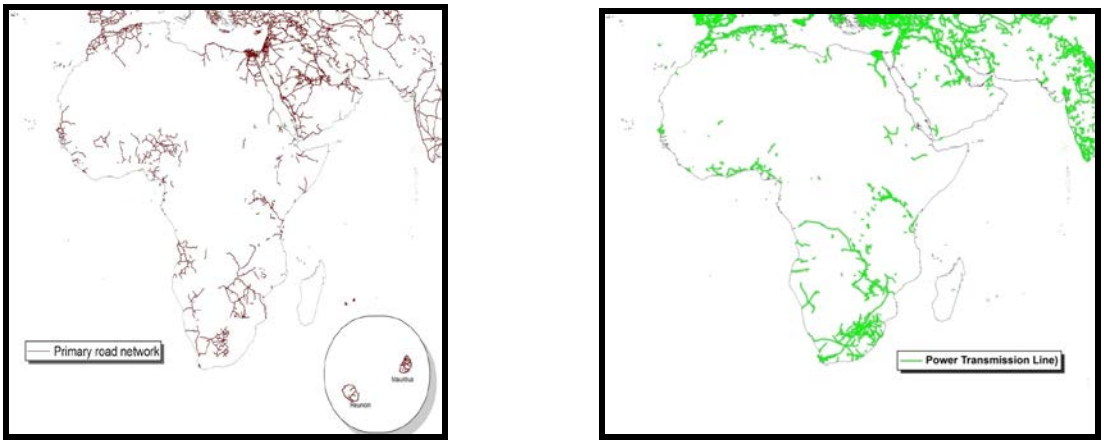

Figure 3: Primary Road Network and Power Transmission Lines
(Source: C. Juma)

- Africa has the potential to leapfrog over old technology and move to the frontiers of knowledge. An example of this is the mobile phone. Text messaging technology led to cash transfer technology and a whole new way of doing banking. In the last 4 years there has been USD 5 billion invested in undersea cables around Africa to meet the demand of mobile technology.

- Africa is a latecomer to biotechnology and only four countries on the continent currently grow transgenic crops. From 1996 to 2012, transgenic crops added USD 100 billion to the value of global agricultural output. In 2012, emerging countries reaped nearly USD 1 billion more than their industrial country counterparts.

- Bt has caused a 24% increase in cotton yield per acre and 50% gain in cotton profit among smallholders. Increased family incomes resulted in improved calorie consumption and dietary quality and reduced food insecurity by 15–20% among cotton-producing households.

- Use science-based risk laws that are transparent, predictable and support technological innovation (rather than political decision making).

- Foster the role of the private sector in product development and commercialization.

- Forge global partnerships to build biotechnology research capacity.

Future Generations and the Emerging Challenges on Food Insecurity and Hunger

The fight against food insecurity and hunger requires future professionals with training that includes theoretical and practical knowledge of food security across a wide diversity of disciplines. The new leadership in global food security will come from programs which build professionals used to thinking, assessing, analyzing, and proposing action while connecting multiple disciplines and incorporating the views and needs of different sectors. Four McGill students presented their projects and research on a diversity of challenges facing food insecurity and hunger.

Rachel Krause described her study with VERASAN in Panama which examined how intensified household agriculture might affect child nutrition, growth and exposure to parasites (*Ascaris lumbricoides*, hookworm and *Giardia duodenalis*). It was found that families who had been part of the agricultural extension program for five years increased the number of agricultural methods used (such as irrigation, collecting and applying manure) and planted more staple crops than families involved in the program for one year. Children who had been in the program for five years had significantly lower prevalence of hookworm than those in their first year but there was no significant effect on height and weight indicators. It was felt that intensified agriculture could be related to a higher presence of *Ascaris* which affected

children's health negatively.

The enormous challenge of contemporary agriculture is to double production without causing additional environmental degradation (Shrikalaa Kannan). Agriculture expands onto 5-10 M ha of forested land annually with repercussions for biodiversity and climate change. Agricultural intensification leads to higher fertilizer use, water degradation and increased demand for fuel/power. About 75% of the total agricultural land is used to grow feed for livestock and yield gaps, the difference between the actual yield and potential yield, remain wide due to socio-economic and environmental factors. Post-harvest losses can reach 50% in developing countries and these losses could be reduced through improvements to packaging, storage and transportation techniques (Figure 4).

A project in India used simple ventilation techniques to reduce losses of stored potatoes from 90% to 30%. In order to ensure sustainable food security it is necessary to reduce agriculture expansion, use resources (fertilizers, water) efficiently, shift diets away from grain fed meats and reduce waste.

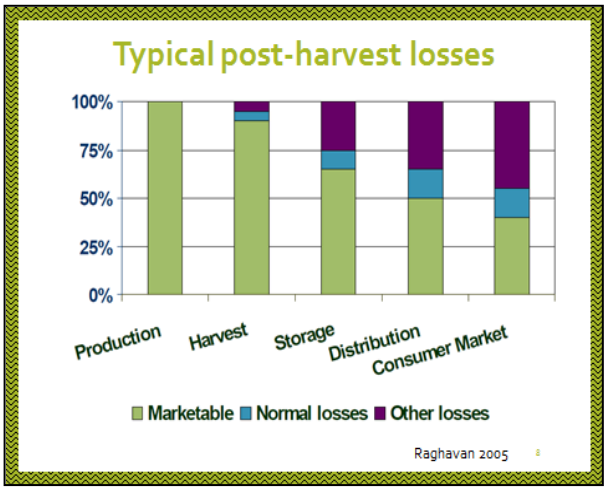

Figure 4: Post Harvest Losses
(Source: S. Kannan)

Colleen Eidt described how social networks could affect the transfer of new agricultural information and technologies in the semi-arid midlands of Kenya. Maize is widely grown in the area even though it is inappropriate for the region and results in consistent food insecurity and malnutrition. More suitable and nutritious crops (green grams, cow peas and beans) are not being planted by farmers in the study area possibly due to a lack of resources but also due to poor transmission of knowledge in the community. Interviews, focus groups, household surveys and observations were carried out to identify where farmers get their agricultural knowledge and how much they value that input. Identifying people that are central to the social network and thus the transfer of information may be a first step to increasing agricultural

adoption in the region. In this study, the central figure was a village headwoman. Building the capacity of such a central figure and helping her train new leaders may make it possible to disseminate new information about agricultural adaptations to the local population. However, if this central figure leaves the project there is a risk of collapse and project failure. Social networks are also important to transferring traditional knowledge back to researchers and extension workers so they can understand what works within the real context of rural agriculture.

Shobhita Soor is a member of the Aspire Food Group which is developing a business in supplying insects in order to address food insecurity in urban slums. Micro-livestock (insects) are a comparable source of protein and micronutrients to beef and an estimated 2.1 billion people worldwide consume insects as part of their diet. The business targeted countries which have an insect-eating culture but still have malnutrition due to seasonally limited availability of insects and labour and economic costs. The network includes hubs where insects are bred or collected, farmers who transport mature insects to hubs in exchange for eggs and fertilizer and distributers who buy insects from the hubs and transport them for sale in the city. This has resulted in increased insect availability year round, lower costs and improved access to nutrition in urban slums. In addition a fertilizer by-product is generated for use in traditional plant crop systems. It is anticipated that the business will expand the number of countries reached and create value-added products such as “power flour” which is fortified with roasted and ground-up insects.

It is evident that understanding the health effects of agricultural interventions designed to improve the consumption of nutritious foods at the household level is critical to improving malnutrition. Addressing food insecurity at a global level will require making the best use of the food we are producing and recognizing that some parts of the current production system are not sustainable in the long term. In order for agricultural adaptations to be taken up by farmers, local social and information networks need to be understood and influential figures identified and trained. Foods such as insects considered non-traditional by many countries play an important role in food security in many societies. Using a social enterprise to develop this source of high protein, nutritious and low cost food can raise local incomes and address seasonal gaps in food security in many urban areas.

Policies and Programs against Food Insecurity and Hunger

Governments and non-governmental institutions at national and international levels are developing policies and programs to address food insecurity and hunger and putting in place a diversity of interventions that demonstrate the willingness of a wide range of actors to work on this issue. Responses to food insecurity and hunger by different actors vary widely and understanding their different perspectives is critical to create a policy environment that allows for clearer guidance, common goals, and coordination and will, in the long-term, address global food insecurity.

The current context for global aid is a tight fiscal environment in traditional donor countries and the emergence of nontraditional development financing sources. From the perspective of the

World Bank, agriculture is only one player of many and there is a need to continually advocate for and to justify investments. It is estimated that USD 14billion/y is needed to meet MDG1 and US$ 10 billion/y is needed to scale up proven interventions for maternal and child under-nutrition. The long term focus of the World Bank is on:

- Raising agricultural productivity using climate-smart agriculture (70% of WB money is spent here – mostly on irrigation)
- Linking farmers to markets and increase value chains
- Facilitating rural non-farm income
- Reducing risk and vulnerability (with a cross-cutting focus on gender and nutrition)
- Enhancing environmental services and sustainability

Canada is a donor to all three ongoing World Bank partnerships:

1. Global agriculture and food security program (GASFP) (USD 0.9 billion has been allocated to 25 countries and USD 50 million to agribusinesses)
2. AgResults Initiative (rewards innovation)
3. Global food safety partnership.

Current global food security policies generally focus on three issues – agricultural productivity, trade and macro-economic policies, each of which has an array of diverse actors seeking often unsustainable and sometimes opposing goals while neglecting the central role of ecosystem management. In order to establish common goals, it is necessary to understand that food security is linked to ecosystem services at a multitude of levels and that diverse sets of actors all have impacts on ecosystem services in a variety of ways. Ensuring that their impacts and outputs are coordinated is the foundation to establishing long-lasting food security.

Effective policies for food security should value ecosystems as productive assets and invest in ecosystem restoration. This will not only stabilize the supply of wild-sourced food products from these ecosystems but will maintain or increase the income-earning opportunities of vulnerable groups from the sale of natural products (e.g. non-timber forest products, fish).

The United Nations Environment Programme (UNEP) has been working throughout Africa to demonstrate that these types of policies which maintain the flow of ecosystem goods and services to agriculture can generate food security. In one example of a UNEP project, mangrove restoration, construction of fish ponds and crab cage construction reversed declining fish populations, reduced coastal flooding and led to improved incomes and food security in Mozambique. Coastal cities are densely populated and capitalizing on seafood productivity provides an important source of food security in Sub-Saharan Africa. Of the over 30 countries in Africa that host a coastline, FAO estimates show that about 25 have varying degrees of mangrove. Dependent upon the similarities in given ecosystems, communities, and policies, the Mozambique project has large potential for up-scaling its initiatives to its neighbors and across Africa. Other UNEP projects included: Uganda (tree planting), Togo (small dams) and Burkino Faso (walnut trees/shea butter).

By understanding that degraded ecosystems are the root cause of food insecurity and productive ecosystems are the foundation for greater agricultural productivity, policymakers can begin to focus on sustainable, coordinated solutions. Valuing longer-term services provided by ecosystems above short-term gain and strengthening ecosystems governance and institutions at local and national levels, including through collaborations between the public and private sectors, civil society and local communities are key to food security.

Food sovereignty illustrates another perspective in addressing issues of food security. Food sovereignty is the right of the people to control their food systems and produce food in their own territory. Those who produce and consume food should be at the center of research and policy decision making. This also requires ecological intensification, a significant shift from conventional agriculture towards a mosaic of practices which emphasize human rights and are beneficial for people today and in the future. Such a production model is socially just, with an equitable distribution of access and control over food, water, land and seeds, and is self-sustainable.

An increasing number of people are food insecure in Canada. Every month, 800,000 people use food banks and 59% of people on social assistance are food insecure. In Nunavut, in northern Canada, 70% of families run short of food and even in families where adults are employed, minimum wage does not always allow for a nutritious diet. While the demand for food is increasing, there are fewer and fewer actors in the food chain and there is a need for decision making that gives the food insecure a voice. Food Secure Canada has published “A People’s Food Policy for Canada” which involved thousands of people across the country contributing their ideas and visions for a healthy, just and ecological Canadian food system.

Food insecurity is a multi-dimensional problem that can only be addressed through holistic approaches; technology cannot be the only solution. People need to have an opportunity to articulate their own priorities if policies are to address what they really want and need.

7. Key Messages

- Empowering small-scale farmers to address food insecurity can be a complex and challenging task which requires leadership and cooperation across a wide range of partners;

- There are 500 million smallholder farms, which account for one third of all humanity if immediate families are included. Smallholder farmers account for 60% of global agriculture and 80% in developing countries; they also account for half the world’s undernourished people, and the majority of those living in absolute poverty;

- The growth in demand for food, coupled with expanding markets and breakthrough technology, can be seen as an opportunity for farmers – particularly smallholders with

their currently very low yields and low technology adoption rates. Farmer empowerment at a large scale requires technologies for sustainable productivity growth, innovative ideas, social entrepreneurship and methods of aggregation.

- Public institutions do not have a good record of progressing from research to development to delivery of products such as seed. Partnerships with the private sector, which bring a business orientation to the table as well as valuable advanced research skills, may help.

- Chronic hunger affects 1 billion people and hidden hunger (vitamin and mineral deficiencies which affect health and growth development) affects 2 billion. Critical micronutrients are vitamin A, iodine (I), iron (Fe) and folic acid, zinc (Zn).

- Underlying causes of malnutrition include: insufficient access to food; inadequate maternal and child care practices; poor water, sanitation and health care.

- Increasing not only the quantity of food but also the quality (such as crops with high levels of protein, calcium or iron) positively affects food security.

- Education is a very important determinant in securing a diversity of household food supplies for a healthy diet. If people understand the short and long term benefits of nutritious foods for themselves and their children, they are more likely to consume them.

- The Hunger and Nutrition Commitment Index (HANCI) evaluates the commitment of countries to address food insecurity and undernutrition. It provides transparency and accountability, allows governments to be praised when due, supports civil society to engage with governments, may stimulate additional commitment and is a tool to assess whether increasing donations improve food and nutrition security in the long term.

- Agriculture and the economy are one and the same in Africa: one sector cannot grow without the other. One of the major problems for the continent is the lack of road and power transmission lines. Less than 30% of Africans live within 2 km of an all-weather road. It does not make sense to grow food if you cannot move it.

- From 1996 to 2012, transgenic crops added US$ 100 billion to the value of global agricultural output. In 2012, emerging countries reaped nearly US$ 1 billion more than their industrial country counterparts. Africa is a latecomer to biotechnology and only four countries currently grow transgenic crops.

- In order to ensure sustainable global food security it is necessary to reduce agricultural expansion into forested areas, use inputs (fertilizers, water) efficiently, shift diets away from meat and reduce waste.

- Incorporation of insects into diets can play an important role in providing a nutritious food source in many societies. Developing this source of high protein, nutritious and low cost food can raise local incomes and address seasonal gaps in food security in urban areas where insects are already an accepted part of the diet.

- Degraded ecosystems are a cause of food insecurity and productive ecosystems are a foundation for greater agricultural productivity. Valuing longer-term services provided by ecosystems above short-term gain and strengthening ecosystem governance and institutions at local and national levels, including through collaborations between the public and private sectors, civil society and local communities are key to global food security.

- Food sovereignty is the right of the people to control their food systems, produce food in their own territory and play a central role in determining research directions and policy decision making. Such a production model is socially just, with an equitable distribution of access and control over food, water, land and seeds.

- Canadian statistics indicate that food insecurity is found throughout the country, particularly in the north.

8. Recommendations

- Partnerships (in research and development and developing markets) combine the complementary strengths of public, private and voluntary actors and have the potential to achieve desired, smallholder-relevant benefits that each actor could not produce on their own. Models of how such partnerships can work needs to be further explored.

- Technological innovations, relevant services and information, and access to markets need to be delivered to the farm population as agri-food value chains are built. Understanding local information networks and identifying individuals or groups key to the transfer of agricultural and nutrition knowledge is a critical part of improving food security in poor rural areas.

- Address undernutrition and micronutrient deficiencies through a combination of complementary approaches: supplementation, commercial point of use fortification, dietary diversity, and as well as biofortification.

- Improving agriculture to produce more food remains a fundamental challenge but greater attention needs to be paid to the production of nutrient-dense foods through the breeding of crops to increase levels of protein, calcium, iron and other minerals. An agro-systems approach which includes double cropping and crop rotation (with legumes) alongside production of pulses can also improve dietary diversity and nutrition

security. Food supply chains can be further enriched by increasing the availability and access to a larger variety of nutritious foods.

- Educate local communities about the health and long-term welfare benefits of nutritious foods to encourage their consumption.

- Develop strong and inclusive small holder farmer organizations which can leverage resources and influence policy decisions.

- Continue to monitor and evaluate the commitment of donors in addressing hunger and undernutrition using the HANCI index. Use this index as a tool to assess if increasing donations have improved food insecurity and nutrition in the world.

- Biotechnology in some agricultural crops has shown promising results and the use of science based risk laws that are transparent and predictable can be used to support biotechnological innovation in Africa.

- Help governments develop policies which allow for clearer guidance, common goals, and coordination among public, private and nongovernmental organizations who are all working towards the common goal of global food and nutrition security. Ecosystems should be valued as productive assets when developing policies for food security.

APPENDIX 1

Conference Photos


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