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Cultivate Africa's Future Fund
Science and Innovation to Transform African Agriculture
Conveners: Canada's International Development Research Centre (IDRC) and the Australian Centre for International Agricultural Research (ACIAR)

Monday, September 5, 2016
Intercontinental Hotel, Nairobi, Kenya
09:00 – 17:30hrs

Overview: The side event brought together Canada's International Development Research Centre (IDRC) and the Australian Centre for International Agricultural Research (ACIAR) who are partners in Eastern and Southern Africa to present results and outcomes from their joint research on post-harvest management, linking agriculture to nutrition. Convened at the Intercontinental Hotel in Nairobi, Kenya, their one day program was included as a "Side Event" in the 2016 African Green Revolution Forum and afforded IDRC and ACIAR, and their partners and stakeholders, an opportunity to share their results and experiences and thoughts on public private partnerships for taking research results to scale as part of the Cultivate Africa's Future Fund. The event brought together 200 attendees, including: researchers, senior government policy makers, Australian and Canadian scientists and policy makers, and private sector companies working on processing and post-harvest management including those from the feed industry.

Opening Film: After brief remarks on the partnership that has developed between IDRC and ACIAR by Ms. Melissa Wood, Manager for Global Programs, Australian Centre for IAR, a short documentary showcasing Cultivate Africa's Future Fund (CultiAF) was aired as participants settled in for the event. This fund supports innovative solutions to improve food and nutrition security in five countries in Eastern and Southern Africa.

The Moderator, Ms. Patricia Amira acknowledged that use of technology is indeed very low in Africa, and as a result, yields are sub optimal. This is right across the value chain. The clarion call is for an agricultural renaissance. What role can technology play to benefit the small scale farmer? Africa should be able to feed itself and the world.

The synergy between IDRC and ACIAR is based on the fact that both institutions are interested in supporting accelerated, enhanced agricultural production in Africa. Science and technology are keys to enhanced production as evidenced by the stories that will be shared. Post-harvest nutrition/gender considerations have the potential to generate results.

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Welcome and Opening Remarks

Dr. Simon Carter, Regional Director, Regional Office for Sub-Saharan Africa, IDRC

Partnerships are at the center of what IDRC does. The CultiAF is a flagship project – it is a public-private partnership that also includes civil society. The five-country program is only three years old but it is yielding results. The number of people living in absolute poverty is unacceptable. Post-harvest loss is very high across Africa and too few Africans have access to quality, nutritious food. The gains in productivity and connecting it to nutrition are undeniable. This should be linked to other sectors and actors. More research is required. Irrigation is increasingly being adopted (20% in the region) but the pace of deployment is still too slow and can be enhanced. Improving producer-market-consumer linkages is the key to change.

African women and youth are key in the development of production, processing, markets and entrepreneurship. This is crucial to the overall development of the agricultural agenda. This will inspire new partnerships and programs and bring change to those who need it most. Africa must invest in knowledge and technology for transformation in the sector.

Day 1 - Monday, September 5 09:20 - 10:30hrs Session 1: How do we position research to contribute effectively to Africa's agricultural Transformation?		
Name	**Picture**	**Discussion**
Ms. Patricia Amira, TV Personality, Kenya Role: Moderator		In opening this session, Ms. Amira posed the question - What is the role of Science and Innovation in transforming African Agriculture? Where do you position research? And people?

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Dr. Lindiwe Sibanda, CEO, Food & Natural Resource Policies Analysis Network Role: Keynote Speaker		Dr. Sibanda expressed concern that the clients of science have been left behind as research advances. Scientists have a charge to understand their clients. Innovation must address the needs of the end users. Her other concern was to know where to access finance that should serve and boost agriculture and production yield. She emphasized that the focus should be on the following: • On nature and on the people to ensure that it meets the needs of the agriculture communities; • Science and Innovation makes more sense if the knowledge generated from services is translated to goods and services that are taken to the farmers who are willing to pay for them; and • Transformation must take place in the culture and behaviour of policymakers, farmers, manufacturers as well as the consumers. For the last 22 years (1991-2014), the decline in Africa in hunger levels has been 14%, yet for under-weight children, the drop has been a mere 5% (24%-19%). This means that our agriculture is inadequately nutritious – as despite a decided drop in hunger, our children are remaining stunted. This is 58 million children in Africa. Our leaders of tomorrow. She emphasized the importance of positioning research to contribute effectively to Africa's agriculture so that child deaths from hunger can be prevented. She added that the Africa that we should aspire to have is an Africa that can prosper, an Africa that can adapt to new innovations and one with good governance and human rights. Agriculture cannot be practiced in silos. People must be at the centre of research. Multi-stakeholder engagement is crucial as well as policy frameworks that put women and youth farmers at the centre. There are complex issues such as climate change that also introduce new dimensions that must be more deliberately considered.

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		The globe has converged; the development agenda is focused on the SDGs. Most of them are linked to food. We cannot ignore the fact that only seven countries were able to meet the MDGs. All of Africa must transform. Frameworks are in place, for example, as the Paris agreement supports production. For transformation – we need to see an Africa that is prosperous, integrated, peaceful, having cultural identity, people driven, strong, united working towards self-sufficiency, adapting new innovations and having good governance. The Malabo declaration (2014) signatories committed to accelerate agricultural growth and transformation for shared prosperity and Improved livelihoods by 2025. In transformation, no one can be left behind.
Panelist		
Hon. Willy Bett, Cabinet Secretary, Agriculture, Livestock and Fisheries, Republic of Kenya		**Our Performance as a Nation** African agriculture, in the current multi sectoral-political environment, has not progressed adequately. The African reality is also true for Kenya. The nation has recorded increases in production, but not at the level of transformation. Nonetheless, the government has taken steps, for example and has: • Increased investment and steps to subsidize fertilisers, improved seeds and variety to upscale our productivity. There is a focus on helping to increase productivity; • The government is increasingly looking to the youth to bring out innovation and technology to enhance productivity. The intent is for youth to move Kenyan agriculture from predominantly subsistence farming to larger more commercial scale agriculture. **Measures taken by the Government of Kenya** • The government research institutions are under pressure to conduct turnkey research that is interfaced with the farmer's needs.

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		• The government has realised that its commodity based research institutions are not optimal. These institutions are now managed under one roof – for more coherent research activities. • There are currently about 21 universities undertaking agricultural research in Kenya. • The government has a budgetary component dedicated to research. The funds are inadequate – but in collaboration with partners, this will make an impact. The Cabinet Secretary stressed that the country still had a long way to go in areas such as fair trade, infrastructure, good governance and multi-sectoral collaboration. Yet, he was encouraged by current efforts to seek partnerships with the private sector and external donors, educational institutions, research centres and the government which is crucial. All parties need to work together to bring productivity to scale.
Dr. Dominique Charron, Director, Agriculture and Environment, IDRC		The central question in Dr. Charron's presentations was **Why Partnerships are Key for Transformation?** An example she noted of the benefit of collaboration is that IDRC's transaction capacity has been significantly improved by working with ACIAR. From a donor perspective, there is a definite advantage in bringing in shared resources and to learning together. Mutual interest in the research institutions ensures that funded research is relevant to the target client. This is done by input from the end user of the innovation. **Ensuring Quick Turnarounds in Research** IDRC is a research focused donor. It funds proactive researchers to run with relevant, cutting edge study. Downstream, IDRC connects the science/innovations to their application in the field. This type of research is able to deliver results within a year. Dr. Charron reiterated the IDRC mission and called for more inclusiveness and partnerships: • government actors and strategic leaders should work to develop and strengthen economic policies, • Universities institutions should promote knowledge transfer; and

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		• Other scientists and experts should assist in research for new solutions and innovations that can improve food security in communities, introduce new behavioural systems that can improve women's and youth development for a lasting impact in agriculture.
Dr. Segenet Kelemu, Director General, International Centre for Insect Physiology and Ecology		**Towards Agricultural Transformation** Dr. Kelemu stressed in her remarks that Africa must build its knowledge on how to tackle selected big issues, including: postharvest loss reduction and management, generally and climate change. Institutions like ICIPE need to be at the frontline to contribute to this knowledge (backed by sound science). Systemic and systematic change must take place in the agricultural sector. She further noted that there is a need to modify our education curriculum, and to influence the political environment. Africa must invest more in its youth, in addition to empowering its women by identifying relevant technology. We should do that while celebrating our achievements even as we move forward. **Insects Role in Ensuring Agricultural Transformation** Most insects are beautiful but can also cause disease. They also contribute to agriculture in very important ways – bees, in particular, are critical for agricultural production. Dr. Kelemu stressed that insect disease can cause contamination of plants in Africa and noted the negative impact that can come from using chemical products that introduce health issues in human beings. With climate change, there is an emergence of previously unknown insects that affect crops. To combat this threat, she urged that public and private sector stakeholders need to enter into partnerships to contribute to the research and development of new innovations of integrated solutions that can help small scale farmer's yields improve and protect crop growth. As technology evolves, she further noted that it is necessary to provide training especially to women as they are known to contribute significantly in farming. Africa should not sit back and wait for others to bring solutions to the continent, but should be the ones to provide

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		solutions that will impact small scale farmer and larger farmer communities across the continent. She gave the following example: 2 Billion People globally consume insects - mostly in Africa. These are harvested from the forests by women and children. ICIPE has a program through which it produces insects to enhance nutrition. Animals too depend on insects for food. The insects have higher levels of protein, amino acids, etc. This is an extremely viable source of good nutrition. It has been mainstreamed in China and Thailand. We have to be proactive, innovative and open minded to harness alternative food sources.
Mr. Mamadou Biteye, MD, Africa Regional Office, The Rockefeller Foundation		In his remarks, Mr. Biteye noted that successful use of digital media in agriculture is critical as there is a need to disseminate research findings in accessible and easily digestible formats. The result of effective use of media can result in the showcasing of successful application and scale of what appears to be most relevant to the end users. It is not about innovation alone as agriculture needs to align different actors for it to be transformative. Close to 40% of everything we produce in African agriculture is lost due to inefficiencies during harvest, transportation, and markets. Twenty-five percent of water is used to produce food that is not consumed, this has an economic dimension. The SDGs and Malabo Declaration call for a reduction in food loss. Concrete action is critical. The Ford Foundation has set aside $330 million to institutionalize catalytic actions for improved impact in four value chains in four countries to stem post-harvest losses. Broken links in the value chain are key contributors to post-harvest loss. Both the quantity and quality of produce can contribute to losses – it is important to be able to work with institutions like AGRA, Technoserve etc. – to meet the quality and quantity standards of produce for markets. Appropriate use of technologies: Ford Foundation funded research identified 290 different technologies available to be deployed in postharvest management practices. These were analyzed for accessibility and usability and 12 were identified as providing high returns on investment.

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		Financing: How do you bring innovative solutions to the farmers? The Rockefeller Foundation is committed to form multi sectoral partnerships and is investing millions of dollars to help bring solutions in the areas of technology data research, and risk insurance, financial mechanisms to address poverty and build on education of farmers' communities on food insecurity, climate change for a more sustainable global economy
Questions	Kenya is a big innovator, e.g., Mpesa – How much research are we doing and what are we doing to ensure that it reaches the farmers?	
	Crop and livestock insurance? One of the biggest challenges – to get information to ensure that relevant insurance is developed? How do we ensure that the premiums are low	
Responses	Insurance is now available to farmers but they need to be educated so that they take out policies and benefit from this type of risk mitigating facility. Africans need to learn from each other – what works/fails and why, for example, Kenya has learned to manage Aflatoxins from Nigeria. We also need to develop transport infrastructure on the continent to promote regional and inter- continental trade, as more focus has gone into trading with the West instead of within Africa. Several technologies/approaches have been developed but the information is not always adequately shared and transferred. Some countries have been successful and others are struggling. Platforms that bring stakeholders together, especially policymakers foster learning and need to be promoted.	

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Day 1 - Monday, September 5 11:10 - 12:10hrs Session 2: Science & Innovation to Drive Africa's Agricultural Transformation		
Name	**Picture**	**Discussion**
Dr. Yemi Akinbamijo, Executive Director, Forum for Agriculture Research in Africa Role Setting the Stage		Dr. Akinbamijo discussed the role of science and research and advised that without an integrated vision, it would be difficult to achieve scalable results in agriculture transformation. Africa is under-performing in harnessing science and innovation to enhance agricultural production. The nations are producers of raw material with limited processing capacity. In the future, Africa must produce more with less (land, water etc.) - we need to be smarter – going the way of science and innovation. If post-harvest losses are addressed, the continent will double the amount of food on the table (in Africa – food loss is before the table – in the West – it's after the table). Technology, innovation and vision – must be in place. Implementation has been low because of: i) Low investment in agriculture hence the limited impact ii) Low human resource capacity iii) Low collaboration FARA has an African driven/led agenda to strengthen its roles. For example, FARA has developed a Science Agenda for Agriculture in Africa (S3A) as an Africa developed and led strategy to strengthen capacities on the continent to support research, innovation and the development and better use of science in agriculture on the continent. He stressed that science In Africa is too important to be outsourced. Unfortunately, the continent lacks the critical mass it requires. There is not an adequate community of expert researchers on the continent to do this work alone, hence the need of implementing collective visions from across the continent within agreed frameworks.

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		With good policies, laws and straight forward regulations, global programs would make their way to improve farmers' productivity and yields by way of implementing massive cross sectoral value chains that can sustain African agriculture new innovations and practices.
Panelists		
Dr. Dorothy Nachibugwe, Makerere University		Dr. Nachibugwe introduced to the audience ongoing research on insects that her institution was undertaking and showed how insects can be used as a source of protein to feed local poultry. She emphasized the fact that specific parts of Africa were on the right track in applying these new solutions, but probably not as fast as needed as this was only being done in West Africa - where termites, cockroaches and house flies were used in poultry feed. In East Africa (specifically in Kenya), she noted that regulation had not yet changed to allow the use of certain insects as they were perceived to be contaminated. Africa should seriously consider the adoption of insects feed as reports show that in many communities there is poor availability of quality feed ingredients - which negatively affect the growth of the poultry and livestock sector. **Discussion:** Partnerships are key, especially public - private sector engagement. The private sector is very enthusiastic about using insect in feed and it has been easy to bring them on board. Policy is also very important and for standards certification the Kenyan and Ugandan Bureaus of Standard have been incorporated. A challenge to adopting the innovation is the mind set factor of the consumers.
Dr. Levison Chiwaula, Chancellor College, University of Malawi		Speaking about an initiative to reduce post-harvest losses in the fishing sector, Dr. Chiwaula noted in his comments that to promote adoption of the use of solar dryers, researchers are working with different actors in the fish value chain to create a sustainable business model. The aim is for low-income men, women, and young people at the community level, who have traditionally struggled to access good quality processing facilities, to be able to use the solar dryers. The project will also link the fish processors to transporters and distributers, to supply an established supermarket chain, the People's

		Trading Centre, and other markets. Improving the social and economic conditions of women, fish processors will be central to their effort. Influencing/engaging policy makers is not an easy thing. The project was initiated to address the contamination of harvested fish. The project uses solar dryers for processing. Historically, the cost of solar was prohibitive to the fisher folk but they have been encouraged to form cooperatives, which in addition to declining technology costs, has also made it easier to establish funding relationships with local financial institutions.
Dr. Loveness Nyanga, University of Zimbabwe		**Using Hermetic Technologies to Reduce Aflatoxin Contamination in Maize and Exposure to Humans** Dr. Nyanga's remarks centered on the harmful effects of aflatoxins on human beings. Research has proven that this toxin is a danger to global food security. So it is imperative to provide farmers with the right seed and fertilizer, improved storage facilities/ technologies, and to not neglect issues in food production, safety, nutrition for health. This is an issue that was also discovered in Nigeria back in 1965 with the lack of the right regulation and proper standards related to aflatoxins. Research has introduced solutions that work in Zimbabwe - applying hermetic storage technology and if more widely used, this should propel other countries to consider adopting these new technologies and practices to rapidly stop the spread of devastating diseases such as liver cancer which have been linked to the daily intake of aflatoxin. Dr. Nyanga appreciated the level of research especially as there was tangible transformation in production yields achieved in the farmers' communities. She stressed that education of farmers to help them better understand this toxin should be taken seriously, as it can go unnoticed. It is tasteless, odorless and invisible. There is also a need to engage multiple stakeholders so that they can collectively add value to the process. When conducting research, it is important to identify the ecosystem of stakeholders from inception. Zimbabwe already has a policy on aflatoxin contamination, but adequate enforcement is what is required.

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Dr. André van Rooyen, International Crops Research Institute for the Semi-Arid-Tropics		Dr. van Rooyen began his presentation by addressing concerns over water conservation and the education of rural farmers in the establishment and use of irrigation systems to better address climate change issues. Farmers risk considerable yield loss if they do not know how to measure their groundwater levels as this definitely helps to understand the root causes of low yields and degradation of the lands when irrigation systems are being used. He introduced the chameleon and the full stop techniques that have facilitated effective use of water. There is need to do further research on the technology and to share the findings so that it benefits the end users.
Q & A		Question: On insects, where is the client in all this? What do the chicken farmers say? Some insects are fed on waste hence contaminated and aflatoxins are a big issue. What are you measuring against – the level of contamination. They need to be assured that the food is safe. For upscaling, economic feasibility and other socio factors must be considered. The reared insects are grown in a controlled environment and are free of bacteria etc. Analysis did not find levels of contamination that exceeded acceptable levels. ICIPE and the UBS have state of the art laboratories.

Day 1 - Monday, September 5
12:15 – 13:15hrs
Session 3: Achieving Impact at Scale, What Works?

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Name	Picture	Discussion
Mr. Robert Ouma Role: Moderator		Achieving Impact at Scale is a critical area of development. We know that we need good ideas, good innovation, good partners etc. What do we need to do to achieve impact at scale?
Ms. Melissa Wood, Manager, Global Programs, Australian Centre for International Agriculture Research Role: Setting the stage		Ms. Wood opened the discussion by noting that there are complex global challenges requiring multiple solutions and stakeholders when one is seeking to achieve impact at scale. There is no recipe – every action must be taken within its context. However, it is important to consider some successes and failures that form a pattern that increase the possibilities of success. Partnerships, the research cycle, and a favourable physical and political environment are critical elements that fuel and energize optimization. Unfortunately, she noted, there is no magic bullet . . .behavioural change; market development and African entrepreneurial spirit; partnerships, the overall enabling environment and consistent time and effort, all have to be marshalled to achieve the desired results.
Panelists		
Mr. Joab Ouma, Lasting Solutions		Mr. Ouma discussed engaging farmers and the private sector to introduce rapid cooking bean products. Some research he said enabled less spending of time than is using charcoal and reduces the burden on women of having to travel distances to collect firewood – and then spend 3 more hours to cook. Everyone, but more so the children and pregnant women, would benefit from the precooked beans because of the protein/vitamin also included. Women in Kenya and Uganda have taken the lead in testing "pre-cooked beans" and the good news is that local governments have agreed to provide microfinance opportunities to commercial farmers to ensure

		they have sufficient seed to cultivate and to maintain the demand by consumers. This new shift has also opened up more opportunities for small scale farmers and the whole value chain. Lastly, pre-cooked beans are said to address some of the challenges in food security and reduce the high consumption of energy. Mr. Ouma ended his remarks by reminding those present that "Wherever you look the African renaissance is here – in agriculture as well. Nutrition remains a big challenge. Beans are a good source of protein and they are also very good for the soils." The results of expanding the pre-cooked bean market include: creation of jobs; reduction of cooking time, improved income and nutrition, and long term – better preservation of the environment.
Ms. Karen Hampson, Farm Radio International		Ms. Hampson discussed new innovations in ICT and how she believes they will help productivity yield far more in the next decade. She explained that farmer's radio listeners will learn about food security through radio programmes and takes advantage of information in various topics in agriculture. Information is the key for new technology transfer. Presently, discussions mainly focus on insect rearing for fish and poultry. This will help farmers grow healthier food. Not only does this technique reach millions of radio listeners, but it is also ideal for showing the impact of audio education on the transmission of extension practices and transformation in farmers' lives. Massive training projects have been undertaken that show radio is a very effective way of getting scientific/research information to the farmers. Farm Radio works with local FM stations to raise awareness and market the innovations. This ensures that the innovations are not sent to the mortuary of oblivion (libraries). Interactive radio is a different style of radio: Two radio stations are currently reaching 3M listeners. It is difficult to measure and attribute change to transmission but how else would one reach so many people? Farm Radio has a dashboard system to monitor

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		listenership and engage with the audience. It is able to monitor audience location.
Ms. Anne Mbaabu, AGRA		Ms. Mbaabu discussed the Rockefeller Foundation's new hermetic technology initiatives that can help reduce post-harvest food losses and, in doing so, transform lives. She said solutions for post-harvest management have already been tried in a few African countries, but challenges still remain - such as helping producers access closer market opportunities after increasing farmer training, and expanding access to finance to allow them to invest even more in new solutions identified. An example of such a new solution is food storage in hermetic bags or metal silos that can limit pest contamination and store crops for longer. The future belongs to the organized – the youth need to be empowered. She appealed to stakeholders to resource the youth with technology, finance etc. Working with 21,000 small hold farmers through funding from Rockefeller Foundation, the post-harvest PICS bags are preferred by the women and are seen as a good tool and a value product for storage, as they cost just $2 each.
Mr. Dyborn Chibonga, National Smallholder Farmer Association of Malawi Farmer Organization		Mr. Chibonga talked about agricultural sustainability as a whole and noted that the use of improved seed, quality fertilizer and sustainable production methods had a positive impact on yields food security. He mentioned that public and private partnership and collaboration was a key to managing investment finance for agriculture extension and advisory services, promoting education, improving the policy framework as well as governance. Furthermore, he noted the needs for stronger laws for agriculture science and research, and consistent and expanded stakeholder commitment to work to identify agricultural and agribusiness transformation solutions. He also emphasized the importance of gender consideration in farming and the need for more initiatives that can support stronger engagement with youth in farming by way of investing in new technologies such as mechanization, mobile services etc. Sustainable financing and favourable policies are key to enable farmer

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		communities to achieve impact at scale and to utilize agricultural innovations.
Q & A	Who takes the cost of pre-cooking?	The cost of cooking at home – energy waste is 40%. Using pre-cooked products you save a lot due to enhanced efficiency. The pressure/temperature is raised to ensure quick cooking.
	How does Radio Africa get feedback? A lot of people are on social media. How do we integrate the traditional with the new media?	Farm Radio undertakes mapping exercises, and face to face interviews. Estimates are available. The service works closely with the extension workers who provide indications of impact. The programming takes advantage of the social media, call-ins are encouraged.
	Do you use local languages to reach the target group?	We are working with local broadcasting stations (FM) - including those that broadcast in local languages.
	Why do we seem stuck in a rut in Africa? Millions are spent on agricultural research yet nothing is changing	There is a mind-set of the farmer, where farming is for subsistence and based on tradition is not necessarily a viable business option. Beyond changing the thinking of farmers themselves, this mind-set which is prevalent in government and the private sector as well also needs to be challenged. Technology is not just about mechanization (tractors), there is need to explore other appropriate technologies.

Day 1 - Monday, September 5
14:30 – 13:30hrs
Session 4: Building Leaders – Looking to the Future, Women and Youth in Agriculture

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Name	Picture	Discussion
Robert Ouma Role: Moderator		How do we better involve women and youth in African agriculture?
Dr Wanjiru Kamau-Rutenburg, Director, African Women in Agriculture Research and Development (AWARD)		Dr. Kamau-Rutenburg began her remarks by noting that Africa is a rising and growing continent. Agricultural growth needs to be a factor of growth and not just a means of extracting resources. Agriculture is a magnifier of inequality and we are at the fork on the road. There is a significant rural wage gap is between men and women and raising the productivity gap will close the wage gap. Opportunities: There is need to respond adequately. There is need to pay attention to what is happening around us. Youth and women are a small subset of agriculture. We need to see the segment connect for inclusive transformation. Agriculture is not growing as fast as the other sectors and there is need to have conversations, for example, with nations like China as well as to work towards expansion of the Free Trade Area, and redouble our efforts toward regional integration. Women and youth must be better positioned to benefit from agribusiness opportunities. Agricultural growth should be viewed using a gender lens. There is need to recalibrate democratization of content specific information. We also need to connect the dots between the policy/ technology and partnerships etc.
Panelists		

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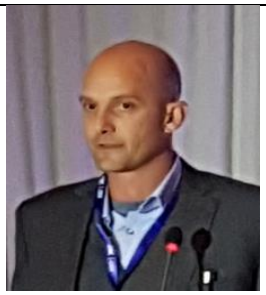
Ms. Karen Nguru, United States International University, Kenya		Ms. Nguru spoke about Cultivate Africa's Future Fund (CultiAF), a CA$15 million joint program of the Australian International Food Security Research Centre of the Australian Centre for International Agricultural Research and Canada's International Development Research Centre, that was developed to test different business models to support the Kenyan youth and women to actively engage in profitable agribusiness. CultiAF is planned to support research to achieve long-term food security in Eastern and Southern Africa. The project uses different training methods (classroom training, practical case methods, field visits, and business simulations) to develop skills among youth to engage in poultry and fish sector businesses. It builds on an existing and highly successful entrepreneurship-training program and adapts the content to address the needs of agri-food entrepreneurs. Nguru explained that by building leadership and management skills of agribusiness entrepreneurs, the programme will facilitate an environment that makes the agricultural sector more effective in improving the lives and livelihoods of small-scale agribusiness entrepreneurs. This project was undertaken by USIU-Africa through the Global Agribusiness Management and Entrepreneurship (GAME) and brought together a consortium of other partners who are the United States International University-Africa based in Kenya, Michigan State University, Van Hall Larenstein University of Applied Sciences in the Netherlands, and Licence to Grow.
Dr. Steve Cole, World Fish Centre		Dr. Cole continued to discuss CultiAF, addressing an effort he was involved with to address the post-harvest handling of fish in Zambia and Malawi in the Barotse Floodplain of Zambia and the Lake Chilwa Basin in Malawi. In these areas, poor post-harvest fish handling is common and substantial economic losses are regularly seen, with the potential for reduced nutrients in the fish. Social norms and power relations in the industry are also inequitable he added. Women's and men's share of the economic benefits are both reduced and inequitable throughout the fish value chain. The project therefore aims to improve the performance, governance, and equity of fish value chains in Malawi and Zambia through research methodology that combines technical fish handling and processing

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		practices with social innovations and gender transformative approaches. These approaches are aimed at helping communities to understand and question the social norms that lead to inequalities between men and women.
Ms. Wanjira Gitagia, United States International University, INSFEED		Ms. Gitagia introduced in her remarks the INSFEED project, a US$2 million initiative launched by ICIPE, the International Centre for Insect Physiology and Ecology. The Kenya-based Research Centre has launched the research project to develop insect based feeds for fish and poultry farmers in Kenya and Uganda. The project includes identification of suitable insect species, assessing the potential market and nutritional attributes of the products, and development and adaptation of cost-effective insect rearing, harvesting, and post-harvest techniques for smallholder producers. The project is also designed to ensure that women and men benefit equally when the time for commercialization comes. It will establish the risk factors associated with the insect-based feeds along the food chain and their mitigation strategies as well as conduct research to inform policies for promotion of safe, sustainable and cost-effective use of insect in the feed sector. Ms. Gitagia emphasized that key aims of initiative are to improve income generation, and food and nutritional security in Kenya and Uganda by developing insect-based feeds for sustainable, safe and cost-effective poultry and fish production.
Ms Mavis Dembeza, University of Zimbabwe		Ms. Dembeza is an entrepreneur whose interest are in the exposure of aflatoxin and child malnutrition. Ms. Dembeza provided an overview of different perspectives on aflatoxin risks in food and explained how to reduce the risks, and control its development and contamination in food. Aflatoxin is said to grow in maize, nuts, rice, legumes etc. - when they are poorly stored for prolonged periods in conditions of high temperature and relative humidity. This solution, she says is to use hermetic storage and drastically inhibit mold growth and hence the spread of aflatoxin.

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		Ms. Dembeza noted that she works with multiple associations that fund lab centres in deprived communities to help increase the disease awareness of the aflatoxin M1 found in dairy products such as in milk. Adapting good storage practices she noted will help minimize the contamination and reduce related negative health effects, especially for infants, and mothers need to be well informed about the risks associated with aflatoxin.
Q & A	What are we doing about the food production problems as Youth?	We are the ones who sit back and are waiting for things to be done for us. If we exposed ourselves to available opportunities, we will be more efficient. When we want to tackle something – willingness is a factor, youth need a lot of testimonials then they are more willing to take up a challenge.
	Q. Can we unpack what is uncool about agriculture?	What has been done at USIU? – We provided opportunities for young men and women. Provided accommodation where necessary, transport. Mentorship is very essential. Worked closely with partners – to link the youth. Link to markets was a key factor.
	Q. Magnifying inequality – how does this happen (education/access to finances?)	Stop calling the youth the leaders of tomorrow. They are leaders today. It starts with the leaders. In going to institutions and discussing how to integrate gender – understand how to apply gender transformative approaches.

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Day 1 - Monday, September 5 15:30 – 16:00hrs Closing Roundtable		
Name	**Picture**	**Discussion**
Patricia Amira Role: Moderator		What are the opportunities How do we meaningfully engage the youth? Policies for the future? How can education institutions be relevant? How can farmers needs be addressed effectively? How can the innovations be brought to scale?
Panelists		
Prof. Micheni Japhet Ntiba, Principal Secretary Fisheries, Ministry of Agriculture, Livestock and Fisheries Kenya		**The Kenyan Situation** Prof. Ntiba began his remarks by noting that a change of attitude is important to evade stagnation. Research is not followed through upon and far too much research is sitting in the libraries – the science must be interpreted and knowledge disseminated for it to be implemented. Otherwise the science will always be stillborn. Much of the research is too short term, the challenge of providing finances/ funding is that implementation does not immediately produce the expected results and the funding is withdrawn forthwith. The education curriculum must be changed to more prominently include agriculture. When we talk about mechanization – there are a whole host of machines (beyond just tractors) involved in agriculture. In developing policies, the process is incomplete and difficult to follow because it is developed by policy makers who are often removed from the realities on the ground. An inclusive process

		ensures a useable policy document. An inclusively developed regulatory framework is also critical. Population growth is not all negative as it creates a market for greater inter-African trade, which is very important, and also provides much needed labour. We should not see this as a negative as our population numbers, particularly our youthful labour force, need to work for us!
Prof. Paul Tiyambe Zeleza, Vice Chancellor, United States International University-Africa		Prof. Zeleza noted that today there about 70 major research universities across Africa. There has been tremendous growth in research output, but Africa's research must be better linked to the continent's policies. Issues of funding impact research. Investment is low by the public - private sector. Research and Development takes about 3% - whereas in the developed world it is at 70%. This has had an adverse impact on the quality of research. In Kenya, there are roughly 6,000 PhDs teaching in the universities; but we require 80,000. The curriculum at our universities also needs to be reviewed, he continued. We need to provide young people with practical education. Experiential learning is a prerequisite for our graduates to compete with their counterparts globally. Over 70% of the population is involved in agriculture – yet the investment is not reflective of this and far too low. There is a mismatch. We hear a lot about science and innovation - we also need to develop a generation of people with a good understanding of their society, people who are critical thinkers who appreciate the following 'I's;

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		i) Interdisciplinary learning: understanding of science and innovation as well as the arts. Ii) Interculturalism: International in their understanding and local in the application of knowledge ("globalization") iii) Information: having digital literacy; inclusive information – that reaches everyone irrespective of gender, culture etc. iv) Industry: must work closely with industry -engaging with the private sector, civil society etc. Among global manufacturers, "Research and Development" is done in their home countries. Who is doing RD for our local industries? Holistic education is mandatory.
Dr. Ambrose Agona, Director General, National Research Organization, Uganda		Dr. Agona explained that expanded development of local R & D is critical. The issues are at the core. If the resources that are attributed to development are released to farmers, as researchers we need to ask if there were no mutating factor what would the countries lose? What would be the gains? What are the factors and available resources? What implementation matrix are we putting in place? What can we do to fast track the process? We have moved from MDGs, but what did we achieve. Seventy-eight percent of Uganda's population is below 30 years of age, are we adequately thinking about how to engage this community in the agricultural development of the country. How can capacity be developed and the "ivory towers" brought down? The link between research, extension and the farmer is important. Technology must be bridged to the end users. Private-public partnerships are the key.

		However much as we try, as long as Africa's population growth rate is higher than the rate of food production, we are not going to get anywhere.
Dr. John Mutunga, Chief Executive Officer/Managing Director, Kenya National Farmers Federation		Dr. Mutunga noted that increasingly researchers engage farmers at demonstration levels. At that point, conceptualizing the entire Value Chain (post production) is not their concern. The youth of Africa are not very keen to go into productive farming. They are however more interested in other parts of the value chain. How much are the scientists studying how produce can be used in commercialization. Innovation triangulation is the key. Different processes and other actors in the value chain must be involved. Africa needs to embrace the commercialization of agriculture to make small farmers into larger more efficient and productive ones. Unfortunately, he noted that those involved in agricultural research and science today have not done much to destigmatise agriculture. Who checks to ensure that today's university graduates are relevant to the market? Where do the agricultural system actors meet? We need to interface to be able to model our products to fit the needs of the industry. Kenya has gone through this process and come up with an "Agricultural Associations" – where industry players can meet the innovators, researchers etc. Finally – we need to be asking ourselves how we contribute to the national agenda.

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D. Florence Wambugu, Chief Executive Officer, Africa Harvest Biotech Foundation International		Dr. Wambugu, noted in her remarks that today Africa spends US$30-40 billion on imported food that could be produced locally. How can this be reversed? Africa could be growing at 10% with agriculture as the baseline for development. To start, she stated that we must remove the silos. We must learn to work together across the value chain. Improving soil fertility, and using appropriate technology. Biotechnology has a role to play in enhancing production- simple technology such as tissue culture reduces disease, increases yields and ensures timely delivery. However, there is plenty of technology that has not reached the farmers. There is even the potential of using genetic technologies e.g. cotton – where you do not need to use pesticides. The technology has been there for 20 years. Let us look and learn from what our neighbours are doing. There is also a need to invest in IT to achieve scale.

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Day 1 - Monday, September 5 17:00hrs **Key Messages and Closing**		
Name	**Picture**	**Discussion**
Dr. Renaud De Plaen, IDRC		• **Approach towards transformation:** Must be multi sectoral and interdisciplinary and extraordinary efforts from extraordinary people need to be made; • **Research:** Must be sensitive to the changes in markets, climate, technologies and media • **Inclusivity**: Women and youth are not only beneficiaries but key partners, participants and decision makers in the process of transformation; and • **Scaling:** There is no one recipe – it is contextual. Principles must be systemized but the processes cannot be standardized.