



International Forum

Unleashing Science, Technology and Innovation for Food and Nutrition Security
With special focus on Africa, Caribbean and the Pacific

Developing a road map

October 15-17

NH Rijnhotel Arnhem, The Netherlands

Programme

In a nutshell

- Novel pathways for agricultural innovation need to be explored and exploited for addressing development challenges specifically the food and nutrition security challenge.
- Optimizing resources (financial and human) and mobilizing public and private investments are critical.
- An enabling policy and institutional environment which fosters experimentation, learning, collaboration and innovation is needed for implementing the changed agenda to achieve the desired impact.
- It's a shared responsibility to make this happen. Through this forum concerned organizations can map the terrain and jointly agree on the way forward.

Background

Innovation in all spheres of endeavour including research, education, training, extension, production, processing, markets, distribution and trade is needed to transform the agri-food system and, more so in the African, Caribbean and Pacific (ACP) region. While it is recognized that a complex package of inputs, support systems and management practices would be required to achieve the desired results, there is need to unleash the **innovation** potential of ACP scientists, engineers, farmers and other agri-entrepreneurs and make visible the knowledge that remains out of reach of stakeholders. The policy and institutional environment is key.

In contrast to the Green Revolution that offered farmers standardized packages of technologies, the **21st century agricultural scenario is different** and an interventionist approach is no longer valid. All system actors, including policymakers, need to be able to access information, use knowledge and innovate either in anticipation of or in response to potential or unforeseen challenges and create as well as take advantage of opportunities. Such a differentiated strategy requires: (i) flexible and alert scientific, engineering and farming communities who can deliver solutions, increase efficiency and minimize costs in an environmentally sustainable manner; (ii) nimble entrepreneurs including farmers who can adapt, innovate and expand product offerings in response to changing consumer and market demands; (iii) policymakers who can sustain the enabling environment. These dynamics must be factored into policies, institutional mechanisms and programmes that shape agricultural research and development (R&D), higher education (HE), extension, entrepreneurship and innovation.

The **globalization of knowledge** is considered a driver of economic diversification and socio-economic development but many developing countries may not have the necessary infrastructure including the critical mass to optimize the existing knowledge. Research results and technologies that have been developed in universities and research institutes are said to “remain on the shelf”. Farmer “innovations” and those of other local innovators are sometimes ignored and generally not valued or promoted. While there have been several calls to increase budgetary allocation and strengthen public-private partnerships; many ACP countries continue to lag behind in attracting private sector investments. What additional evidence is needed to support critical decision making for increasing public and private investments in science, technology and innovation in the medium to long term.

On a **positive note**, a 2013 call for proposals was launched by CTA for the Top 20 Innovations that are benefitting smallholder farmers. This yielded 251 responses of which twenty (20) have been shortlisted. These innovations are having an impact on farming communities, especially small-scale farmers, fisher-folk, agro-processors and traders but they are most likely taking place under the radar of governments, the private sector and other stakeholders. A CTA/CoS-SIS Wageningen UR 2013 expert consultation on *Innovation Systems: Toward Effective Strategies that Benefit stallholder farmers* demonstrated that while innovation systems thinking has permeated the culture and actions of several key national, sub-regional and regional research organizations and university networks in ACP countries and beyond, much more work is needed in understanding the context of smallholder farming systems so that policy and institutional changes can be effected and development is inclusive.

Food and nutrition security (FNS) is a complex, multi-dimensional challenge requiring a multi-sectoral (agriculture, health, environment, science, education and trade) approach and multi-disciplinary collaboration, well-equipped facilities, highly motivated, well-trained and creative human resources and public and private investments and partnerships. While there is a growing body of scholarship on science, technology and innovation (STI) for food and nutrition security, there is little attempt to identify good practice and customize these developments for implementation in a local/national context. What then are the implications for R&D, HE, extension and innovation within the agricultural and wider national innovation systems for addressing the global FNS challenge.

In view of the foregoing, a number of **key thematic issues** emerge which require the attention of policymakers, academicians/researchers/scientists, the private sector and civil society. These include: (i) the growing internationalization of knowledge; (ii) the potential opportunities and distributional implications of investing in R&D and HE not only as a public good and for private gain but also as a commercial activity; (iii) how to achieve the right balance in resource allocation for supporting local innovation, exploitation and exploratory (basic, applied and blue sky) research; and (iv) entrepreneurship and innovation as the enabler of local SME and commercial operations. What are the ST&I policy options and best fits for ensuring that economic and societal issues are addressed and that the public goods nature of knowledge is adequately funded and sustained? How can the knowledge generated be used for addressing the FNS challenge?

These thematic areas are **deceptive** in so far as they appear self evident and simple when they are in fact complex and layered webs of inter- and intra-locking sub themes. The task of the international forum is to initiate a discourse which would unpack the complexity and distill the results in useful terms for influencing policy and practice so that ACP and other developing countries can make greater inroads in tackling food and nutrition insecurity through investments in science and innovation.

The CTA international forum kicks off this debate for addressing the food and nutrition security challenge by focusing on a selected number of **themes** namely:

1. Governance of science, technology and innovation (STI);
2. Leveraging higher education (HE), research and development (R&D) and innovation;
3. Private and public sector investments and partnerships in R&D, HE and innovation;
4. Innovation systems, entrepreneurship and commercialization.

Key questions to be addressed for responding to the FNS challenge

1. What are the tensions, if any, in public vs private investments in HE and R&D? What funding mechanisms; bloc vs competitive or public vs private or public-private-partnerships? What are the benefits? What are the trade-offs?
2. Entrepreneurship and innovation in agriculture at what levels and scales? What are the related IPR issues in taking existing innovations to scale (commercialization)?
3. What are the key STI governance issues? For example basic vs applied vs blue sky research; access as well as contribution to global knowledge; international / regional / national collaboration?
4. How best to move forward, and where do the responsibilities lie? Target setting: what can and should be achieved over the next three years?

Deliverables

The International Forum will comprise leading scholars, senior scientists/researchers/academicians, policy-makers, development practitioners, innovators and farmer and private sector representatives who will:

1. Assess the relevance and effectiveness of current agricultural research and innovation policies and programmes for addressing the food and nutrition security challenge;
2. Analyze and generate evidence on innovations occurring in ACP agriculture for shaping future STI policy formulation and implementation for achieving food and nutrition security;
3. Agree on how best to move forward in sharpening the STI focus, strengthening national innovation systems and increasing public and private investments to effectively address food and nutrition insecurity in the future.

It is expected that this will influence CTA and partners' future programmes for agricultural research and development, higher education and innovation for addressing food and nutrition security.

October 14 Arrival and Registration

Day 1: October 15

8:30 Registration

9:00 – 9:20 Opening Session

Chairperson – Stephen Muchiri, Eastern Africa Farmers Federation (EAFF), Kenya

9:00 – 9:10 Welcome Remarks – Mr Michael Hailu, Director, CTA, The Netherlands

9:10 – 9:20 Setting the Scene: *The Global Food and Nutrition Security Challenge* and the ACP Context – Judith Ann Francis, Senior Programme Coordinator, Science & Technology Policy, CTA, The Netherlands

9:20 – 13:00 Focus – The Enabling Policy and Institutional Environment

9:20 – 9:50 **Keynote Presentation** – *Governance of Science, Technology and Innovation for Food and Nutrition Security* – **Prof. John Mugabe**, University of Pretoria, South Africa

9:50 – 10:10 *Food and Nutrition Security Challenges in Ethiopia and the role of the Ethiopian Agricultural Transformation Agency (EATA) in facilitating Technology Access and Adoption* – **Dr. Seife Ayele**, Director, Technology Access and Adoption Program, EATA, Ethiopia

10:10 – 10:30 Discussion

Q. What are the key science, technology and innovation (STI) governance issues?

10:30 – 11:00 Coffee Break

11:00 – 11:30 **Keynote Presentation** – *Research, Higher Education and Innovation: Implications for Public Policy* – **Prof. Merle Jacob**, Lund University, Sweden

11:30 – 11:50 *Controversies of Intellectual Property Rights in Food and Nutrition Security* – **Dr Isaac Rutenberg**, Director, Centre for Intellectual Property and Information Technology Law (CIPIT), Strathmore University, Kenya

11:50 – 12:10 *Harnessing the Power of Higher Education for Global Food and Nutrition Security* - **Roseanna Avento**, University of Eastern Finland, Finland

12:10 – 13:00 Discussion

Q. What are the tensions if any in public vs private investments in higher education and research?

Q. How to achieve the right balance - Basic, applied & blue sky research; research collaboration and contribution to global knowledge?

13:00 – 14:30

Lunch

14:30 – 18:00

Focus – Novel Pathways to Innovation: Scaling Up & Scaling Out

Chairperson – Judith Ann Francis, CTA, The Netherlands

14:30 – 16:00

World Café – Innovation Stories from the Field

CTA Top 20 Innovations that benefit Smallholder Farmers & a selection of CTA Caribbean Science and Agriculture Videos.

Group A: Finance and Management Innovations – (i) The farmer ownership model: Uganda's coffee revolution, Uganda; (ii) Producer business group model for value addition, Kenya; (iii) Innovation fund for agricultural transformation, Sierra Leone; (iv) Beekeeper to beekeeper business model, Uganda.

Group B: Pest and Disease Management Innovations – (i) Aflatoxin reduction for Haitian peanut farmers, Haiti; (ii) Bio-herbicide: eco-management of water hyacinth, Mali; (iii) Biological control of the millet head miner, Niger, Burkina Faso, Mali; (iv) Natural protection for stored onion seeds, Ghana.

Group C: Equipment Innovations – (i) Cassava steam dryer, Sierra Leone; (ii) Solar irrigation pump, UK; (iii) Fuel-less brooder for chicks, Tanzania; (iv) Locally designed cassava planter and harvester, Trinidad and Tobago; (v) Climate smart hydroponics: growing more with less St Kitts/Nevis; (vi) Improved churner for butter extraction, Sudan; (vii) Improved crop processing with adapted technologies, Tanzania.

Group D: Production Innovations – (i) Cowpea then maize: innovative approach to intercropping, Ghana (ii) Local fertilizer for soil fertility, Malawi; (iii) Low cost feed for semi-commercial chicken farmers in PNG, Papua New Guinea; (iv) More productive local chickens: faster growing, more eggs; (v) Improved beans outperform traditional varieties, Kenya; (vi) Livestock-crops-fish: integrated in Benin, Benin; (vi) Captive Breeding, Suriname (video); (vi) Purple sweet potato, St Lucia; (vii) Organic farming.

Group E: ICT and Extension Innovations – (i) Rural resource centre: community based approach to extension, Cameroon; (ii) Voice-activated information delivery, Ghana; (iii) Digital extension for Southern African livestock farmers, Zimbabwe; (iv) M-fodder: SMS sourcing of hydroponic fodder, Kenya; (v) Innovative tropical weather forecasting, Ghana.

16:00 – 16:30	Coffee Break
16:30 – 18:00	Plenary Discussion Synthesis Reports from World Café Q. Entrepreneurship and innovation in agriculture at what levels and scales? What are the related IPR issues in taking existing innovations to scale?
19:00 – 21:00	Cocktail Reception End of Day 1

Day 2: October 16

9:00 – 13:00	Focus: Leveraging Higher Education, Research and Innovation Chairperson: Dr Yemi Akinbamijo, Executive Director, Forum for Agricultural Research in Africa (FARA)
9:00 – 9:15	Summary/recap of Day 1
9:15 – 9:45	Keynote Presentation – <i>Research, Innovation and Entrepreneurship</i>, Prof Ameenah Gurib-Fakim, Managing Director, CEPHYR, Mauritius
9:45 – 10:05	<i>Role of Universities in the Knowledge Triangle</i> – Prof. Sabine Moebs , Business Information Systems, Baden–Wuerttemberg Cooperative State University, Heidenheim, Germany
10:05 – 10:30	Discussion Q. Leveraging higher education, research and development for innovation – How to transition from the laboratory to engaging with the private sector?
10:30 – 11:00	Coffee Break
11:00 – 11:30	Keynote Presentation - <i>Science and Innovation: Lessons in Commercializing University Research Outputs – the case of Anthuriums, Hot pepper and Cocoa in the Caribbean</i>, Prof Pathmanathan Umaharan, Director, Cocoa Research Centre, University of West Indies, Trinidad and Tobago
11:30 – 11:50	<i>Enhancing Commercialization and Strengthening the Linkages between Universities and Public Research Institutes with the Private Sector</i> – Dr Maurice Bolo , Director, The Scinnovent Centre, Kenya
11:50 – 12:10	<i>Supply Chain Management and Food Security during Crises</i> - Prof. Gyongyi Kovacs , Supply Chain Research Institute, Hanken School of Economics, Finland

12:10 – 12:30 *FOODSECURE - Agricultural Commodity Markets and Commodity Exchanges: Recent Research Findings - **Gerdien Meijerink**, Wageningen University and Research centre, The Netherlands*

12:30 – 13:00 Discussion

Q. Potential opportunities and distributional implications of investing in R&D and HE not only as a public good and for private gain but as a commercial activity?

13:00 – 14:30 Lunch

14:30 – 16:00 Working Group Session: How can Knowledge generated be used for addressing the Food and Nutrition Security Challenge?

Q. What is the relevance and effectiveness of current agricultural research and innovation policies and programmes for addressing the food and nutrition security challenge? Where should the emphasis be in the next three years?

Q. What evidence is available on innovations occurring in ACP agriculture for shaping future STI policy formulation and implementation for achieving food and nutrition security?

Q. How best to sharpen the STI focus, strengthen national innovation systems and increase public and private investments to effectively address food and nutrition insecurity in the future?

16:00 - 16:30 Coffee Break

16:30 – 17:00 Working Group Reports

Day 3: October 17

9:00 – 13:00 Focus: Innovation Systems

Chairperson: Norman Gibson, Scientific Officer, Caribbean Agricultural Research and Development Institute (CARDI), Trinidad and Tobago

9:00 – 9:15 Summary/recap of Day 1

9:15 – 9:45 **Keynote Presentation – Innovation Systems and Inclusive Growth – Prof. Lynn K. Mytelka**, Professorial Fellow, UNU – MERIT, France

9:45 – 10:15 *Innovation Systems: Towards Effective Strategies that benefit Smallholder Farmers: The CoS–SIS Experience – Prof. Niels Röling & Prof. Arnold van Huis*, Wageningen University and Research centre, The Netherlands

10:15 – 10:30	Discussion
10:30 – 11:00	Coffee break
11:00 – 11:30	Panel Discussion – Issues and perspectives on Innovation Systems, Inclusive Growth & Effective Strategies that benefit Smallholder Farmers Judith Francis, Merle Jacobs, Lynn Mytelka, John Mugabe, Niels Röling,
11:30 – 13:00	Working Group Session Focus: Setting Priorities for the Future (Next three years) STI Governance and Public Policy – Research and Development, Higher Education and Engaging the Private Sector Taking Innovation to Scale <i>and Private Sector Engagement</i> Financing/ Investment modalities, Partnerships/linkages; Incentives and reward systems;
13:00 – 14:30	Lunch
14:30 – 15:30	Working Group Reports
15:30 – 16:00	World Café: The Road Map – Who will do what?
16:00 – 16:30	Coffee Break
16:30 – 17:00	Next steps and Wrap – up Closing Remarks – Judith Ann Francis, CTA, The Netherlands