

**Sub-Saharan Africa consultation on the proposed
international assessment on the role of agricultural
science and technology in improving food security and
enhancing rural livelihoods**

**International Livestock Research Institute
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Introduction

The regional consultation for sub-Saharan Africa, June 9-10, drew on the knowledge and experience of 70 participants from 19 countries¹. The participants represented a cross-section of stakeholders in African agriculture: small producers, scientists, input suppliers, processors and exporters, governments, nongovernmental organizations (NGOs), community based organizations (CBOs), and sub-regional, regional and international agencies. The purpose of the workshop was to obtain a sub-Saharan Africa perspective on whether there should be an international assessment on the role of agricultural science and technology in the elimination of hunger and the enhancement of rural livelihoods, and if so, how the assessment should be governed and what questions it should ask. The list of participants is contained in Appendix 1 and the workshop agenda is in Appendix 2.

The workshop was co-hosted by the International Livestock Research Institute (ILRI), the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Ethiopian Ministry of Agriculture. It was generously supported by funds from the Government of Ireland and the Rockefeller Foundation. The keynote address was given by the Ethiopian Minister of Agriculture, Ato Belay Ejigu, who said the utilisation of science and technology in agriculture and sustainable economic growth was one of the cornerstones of Ethiopia's poverty reduction strategy. He observed that the regional consultation would ensure that the assessment was demand-driven, owned by all the stakeholders and targeted to well-defined user audiences.

The plenary address by Robert Watson, Chief Scientist at the World Bank and Seyfu Ketema, the Executive Director of ASARECA elaborated further on the reasons for the proposed assessment and the regional consultations. Their presentation highlighted the contextual changes such as global warming, water shortages and increases in population that necessitate a review of how agricultural productivity can be enhanced over the coming decades to have marked impact on food security and livelihoods. Another plenary presentation by Simeon Ehui of ILRI summarized the key issues for reflection and action outlined by the InterAcademy Council (IAC) and the Consultative Group on International Agricultural Research (CGIAR) consultations.²

Some of the points made in plenary discussion after these presentations were as follows:

- We have been discussing the same issue for the past 30 years- what we really need to do is change how we disseminate research and apply science and technology in African agriculture.

¹ Countries represented were: Malawi, Zambia, Zimbabwe, Lesotho, Botswana, Swaziland, South Africa, Uganda, Tanzania, Kenya, Congo, Rwanda, Cameroon, Gambia, Burkina Faso, Ethiopia, Djibouti, Senegal and Ghana.

² In March 2002, the UN Secretary General Kofi Annan requested that the Inter Academy Council develop a technological and strategic plan for Africa to harness S&T for improved productivity and food security. Consultative workshops have been held in four regions of Africa. The CGIAR has been engaged in defining systemwide research priorities using regional panels to review and elaborate on CGIAR priorities as stated in the 2000 Vision and Strategy document.

- Participatory research is key to successful implementation of the recommendations.
- There needs to be closer connections between National Agricultural Research institutions (coordination for agriculture) and universities (coordination for training). Also universities must collaborate with each other across the continent. But how do we deal with the language barrier between francophone and anglophone Africa?
- Is there any model from the commercial farm sector that smallholder farmers can replicate?
- African “brain drain” – it is very difficult to keep good, highly trained personnel because they are attracted to higher salaries and better facilities abroad.
- Developed countries do not want to get rid of their agricultural subsidies. What type of strategies can we develop to cope with these subsidies?

The workshop’s participatory and inclusive nature was highlighted by two panel presentations: one featuring small producers and NGOs/CBOs who participated in the deliberative process leading up to this regional meeting; the other drawn from women scientists, government officials and farmers. The producers gave concrete examples of obstacles in accessing information (technical, market); innovations; and technologies. Priority concerns mentioned by the producers included food security, livelihoods (the impact of HIV/AIDS on labour) and the erosion of skills and knowledge in rural communities. A particularly interesting feature of the producers panel was the presentation by an urban farmer underlining the importance of urban agriculture in Africa.

The farmers expressed great concern about their inability to access and utilize technologies. Problems related to access include: (i) the collapse of formal transfer structures, which has resulted in ad hoc extension service, short-term missions and no feedback mechanism; (ii) poorly designed technology transfer campaigns, which do not attract a critical mass of adopters; (iii) high cost of science and technology (S and T) applications; (iv) low disposable incomes; and (v) inadequate support institutions. Areas of concern in utilizing S and T include (i) low literacy levels and “incomprehensible” technical language used in innovations and research products; (ii) sub-standard (often adulterated) and expensive inputs; (iii) inappropriate policies; (iv) gender insensitivity (e.g., Dorper sheep given to women in a project in Kenya failed when the sheep became sick and the men sold them); (v) institutional vacuum. A summary of reports from the deliberative process is attached as Appendix 3.

The panel of women (a molecular biologist from Kenya; a plant pathologist from Swaziland; a poultry farmer from Zambia; and a senior technical officer for aquaculture in Kenya Department of Fisheries) talked about the individual struggles they face as women working in the field of agriculture. The plant pathologist spoke about the absurdity of her male car driver having to collect plant specimens (instead of herself) from the “royal fields” in her country because no women are allowed to enter them. The biologist spoke of how men rake in the profits from the innovations that the women are

the first to adopt. The fisheries officer said that men resisted women's entrepreneurship in aquaculture until they saw their success. The poultry farmer spoke of unemployed ex-miners resisting employment on a woman-owned poultry farm.

The discussion that followed the gender panel made some very pertinent observations on gender considerations. It is necessary to incorporate gender considerations at all stages of development. Agricultural science and technology also must address frequent male appropriation of innovations once they prove economically viable. The case of transferring the banana tissue culture technology to small-scale farmers in Kenya was given as an example. Whereas bananas were traditionally viewed as a woman's crop, this changed with wide dissemination of tissue culture technology. During the initial stages of introducing the innovation to farmers in Central and Western Kenya, 80% of those who participated in the dissemination meetings were women. Once the advantages of the innovation were demonstrated, the trend started to change; distribution and control of resources shifted in favour of men and currently more men than women are now involved in banana production. As this trend illustrates, women's economic empowerment can be compromised/sabotaged when the profitability of new technologies poses an incentive for men to appropriate decision making regarding how the resources for banana cultivation (land, inputs, labour, etc.) are allocated and how the products of science and technology are shared. Other examples emphasized that innovations adopted successfully by women must anticipate the effect (often negative) of success and profits on their husbands; gender balance in the home and equity issues in the community. Impact of interventions on both men and women must be taken into consideration at the design stage.

The core of the two-day meeting was discussion in small groups on the three main issues brought for regional consultation:

1. Do we need an international assessment: what would be its goal, added value and broad scope?
2. What are the key questions that the assessment should address?
3. How would the assessment be governed?

The participants were divided into five groups which met over several hours to discuss the above. Their responses to each of the above questions are summarized below.

Goal, scope and value-added

Title and Goal

Participants suggested that the title should not refer to hunger, but to poverty, as poverty is the cause of hunger. All agreed that the goal of the assessment should be to reduce hunger and to reduce poverty. One group also took the initiative and proposed a title for the assessment: "The Role of Agricultural Science and Technology in Reducing Poverty and Fostering Economic Growth in an Environmentally and Socially Sustainable Manner". There was also a suggestion that the assessment be an ongoing phenomenon

and not a one-time event, so that its findings and recommendations are updated at regular intervals.

Value

All groups agreed that there should be an assessment. The participants thought that work in African agricultural productivity had not adequately taken account of the context of increased climate variability and globalization. The need for international policies on agriculture-related issues such as trade, IPR etc. provided a strong rationale for an international assessment. It would allow Africa “to capture the bigger picture since the (all) economies are interconnected”. It would facilitate dialogue between the regions and different stakeholders and an inventory of S and T initiatives around the world would help identify opportunities and priorities for research.

More specifically, this is how the participants described the value-added of the proposed assessment:

1. A high profile assessment might help correct inadequate political commitment and attention to agricultural productivity in many African countries. It was felt that a new policy environment is needed. For example, land tenure anomalies is a critical area for policy redress but often suffers from lack of government commitment. The most important shift that needs to take place in Africa is with respect to macro issues (policy, good governance, land tenure). Efforts at the micro level (e.g. strengthening markets and extension, improving education) are hindered by lack of requisite change at the macro level.
2. The assessment could emphasize the need for a balance between new science and technology research and best methods for disseminating existing S and T.
3. The assessment could document best practices both at the national and international levels. Also, it should document what has not worked and why.
4. It could help identify markets – both local and international.
5. The assessment would bring groups of stakeholders to the table to discuss selected issues and this in itself would be added value. It could help identify who is doing what and, in the process, identify technological options on shelf.
6. The assessment could be used to convince development partners to invest more in public goods research.
7. It could help create stronger African networks.

Scope

Participants made the following points:

The scope of the international assessment would need to be streamlined with that of the IAC and CGIAR consultative processes. Broadly, the assessment would examine national systems of innovation, the system elements, their inter- and intra-linkages (both vertical and horizontal) and their capacities.

The assessment should take stock of the work of agricultural institutions and identify success stories. It should assess research capacity needs and dimensions, delineate organisational and institutional infrastructure and incentives arrangements for innovation and technology adoption. The roles of national, sub-regional and regional bodies in technology generation and transfer should also be assessed.

The scope of the assessment must cover productivity as well as issues of marketing and trade. This would mean analysis of issues such as:

- gross margins (pricing of commodities vis a vis cost of inputs)
- post-harvest losses
- subsidies and access to markets (domestic and international)
- the impact of HIV/AIDS in the region
- key leverage points: what to invest in for maximum impact
- future technological and research needs at the national, regional and international levels.

The overall consensus was that the scope be kept broad and that the short-term imperatives be given particular attention.

Key Issues

The second session of group discussion looked more closely at the above points to delineate key issues in sub-Saharan Africa around agricultural science and technology. Two characteristics of farming in Africa are important to keep in mind: most farming is for subsistence and pastoral farming is particularly important. The key issues were the following:

1. Natural Resource Management: impact of agricultural S and T on the resource base particularly with regard to
 - Soil fertility
 - Sustainable water sources management
 - Land degradation
 - Wildlife management
 - Harvesting, processing of natural resources
 - Conservation of indigenous species (biodiversity)
2. Diversified rural livelihoods: include livelihoods based on crops, livestock, fisheries, forestry as well as value-adding off-farm rural enterprises.
3. The role of S and T in agricultural productivity, value addition, quality and marketing of products.
4. International trade and implications for food security.
5. Institutions: human resources, financial capacities and capabilities, retention of skilled staff. Sources of energy (fuel and electricity) and basic infrastructure for the application of S and T.
7. Policy Environment: national, sub-regional, regional policies on S and T, land tenure systems, investments, trans-boundary issues, harmonization of policies, intellectual property rights and bio-safety

8. Stakeholder empowerment – farmers, consumers, policy makers, researchers, CBOs. Access to accurate information, education and knowledge.
9. The relationship of indigenous knowledge to formal science and applied research.
10. Sustainable funding of research:
 - Definition of short-term, medium and long-term returns to investment
 - Private vs. public research funding
 - Priority setting for research
11. Rainfed agriculture and irrigation technologies
12. Gender issues in S and T: gender considerations in access to assets and resources
13. Networking, linkages, coordination, partnerships in S and T
14. Impact of disease and malnutrition on agricultural productivity
15. Impact on region of emerging global trends (policies related to GMOs, WTO, subsidies, conventions)
16. Data management systems for reliable long-term projections: harmonize collection protocols across regions to facilitate comparison.

Governance

There was consensus that the assessment should be intergovernmental (IG), but it should be a process with a strong monitoring and evaluation component. The merits of IG assessment were seen as ownership by governments, which could engender political will and commitment to appropriate policies and resources for the application of S and T in agriculture. By making governments the key players, knowledge gained in the assessment process could be more easily integrated into decisions at the national level.

Participants suggested that the Bureau or Board of Trustees for the assessment include representatives from about 22 governments representing all regions of the world, and that it further include at least 18 civil society organization (CSO) representatives. Participants strongly suggested that 75% of these CSO representatives be from developing countries so that developed country NGOs do not speak on behalf of the South. Placing CSOs directly in the Bureau was viewed as giving more voice and influence to them than they would have in any advisory forum. The Bureau should select a chair or co-chairs who should be an acknowledged agricultural experts and non-partisan with reputation for integrity. For Africa, the Bureau's representatives should be nominated by the African Union.

In addition, they made the point that the process must ensure that participation occurs at all levels so there can be a sense of ownership by the countries and stakeholders involved. It was recommended that at the Africa region level, institutions such as FARA/NEPAD/AU/ECA/ADB/ACTS³ play coordinating roles and help appoint regional committees drawing upon sub-regional institutions such as ASARECA,

³ FARA: Forum for African Agricultural Research; NEPAD: New Partnership for Africa's Development; AU: African Union; ECA-United Nations Economic Commission for Africa; and ADB: African Development Bank; ACTS: African Center for Technology Studies.

CORAF-WECARD and SADC-FANR⁴. The scientific community should be well represented in these regional committees. At the country level, there should be a National Task Force comprising representatives of various ministries, National Agricultural Research Institutes, universities, NGOs, the private sector and farmers.

A peer review mechanism encompassing different levels (national, sub-regional, regional and international) was recommended for the products of the assessment. The peer review teams should be drawn from all stakeholder groups.

Closing Remarks

In summarizing the proceedings and closing the workshop, Carlos Seré, the Director General of the International Livestock Research Institute, said that the participants had reached consensus that the proposed international assessment should take place and that it should have a poverty focus. They had also agreed that the scope of the assessment should be kept broad but at the same time incisive in terms of what needs to be done and can be done in the short term. Both large and small-scale farming should be addressed and agriculture should encompass both urban and rural activities. The link between agriculture and health was underlined as was the relationship between technology uptake, land tenure and institutional capacities. Cross-cutting themes such as gender considerations in capacity building emerged in all sessions and also issues such as natural resource management, access to water, indigenous knowledge use and intellectual property rights. Although biotechnology and biosafety were talked about, they were not brought out as priority concerns for this region. Much more emphasis was laid on value addition and alternative livelihoods. The role of sustainable financing was seen as central to agricultural S and T and its analysis in the proposed international assessment.

⁴ CORAF: Conseil Ouest Africain Pour la Recherche et le Développement Agricoles; WECARD: West and Central African Council for Agricultural Research and Development; and FANR: Food, Agriculture and Natural Resources department within SADC, the Southern Africa Development Community.