# Integrating local and scientific knowledge:
## an opportunity for addressing production constraints for improved community livelihoods in Uganda

### Community Testimony

*The experiences and lessons shared herein were presented at the round table meeting on the theme 'Integrating Local with Scientific Knowledge' by representatives of farmers from village level community based organizations in an International Forum 'the World Social Forum' in Nairobi, Moi International Sports Centre, Kasarani 20th-25th January, 2007. The theme for the event was, 'Another World is Possible.' The round table was a side event organized by Environmental Alert. It provided opportunity for farmers to speak out and share their experiences widely for up-scaling.*

*Community representatives brilliantly shared their inspirational experiences in the forum on how they had interfaced their local knowledge with scientific knowledge in their farming systems and the resultant blend of knowledge working better for them given their low income levels. Participating in the world event was not just any other event. According to them, critical aspects that resulted into the achievements during and after the event were: information sharing and exchange with participants from all over the World, the mentoring and exposure to the International event and several side events within the forum. Providing such spaces to communities to share and speak out their views is an approach commonly used by Environmental Alert in building strong constituents with capacity to demand for rights and hold duty bearers responsible to peoples' needs and rights.*

### Background

Agriculture in Uganda employs over 80% of the population and contributes about 45% of the gross domestic product (MFPED, 2002). Agricultural production in Uganda is based on smallholder farming with about three million households cultivating less than two hectares each (UBOS, 2002). Over half (56%) of the total agricultural gross domestic production is subsistence and for household consumption (MFPED, 2002). Smallholder farmers in Uganda are faced with various challenges in agricultural production such as poor soils, pests and disease infestation, prolonged droughts, unreliable marketing systems and structures, and lack of adequate access to appropriate agricultural finance. This results in low farm productivity and has implications to food security, nutrition, household incomes thus capacity for households to meet their basic needs and requirements for sustainable livelihoods is increasingly harder. Amidst these challenges, both scientists and farmers are looking for solutions to address these constraints. Most of the time both parties are working independently and there is limited opportunity for farmers to influence the scientists research agenda to solve the real problems affecting them but also their involvement in the development and evaluation of appropriate technologies to overcome the constraints.

This is largely due to the stereo type and myths between scientists and farmers. Some of these include: (i) Farmers' thinking that the scientists know it all and hence have all the answers; (ii) Scientist's thinking that the farmers do not know anything, they are helpless and have failed to find solutions to solve their problems or challenges and hence are the only ones who can provide the solutions; (iii) Scientist's thinking that the farmers' have probably tried out some innovations/solutions to solve their problems but these require validation and statistical evidence to prove that they work. Consequently, farmer knowledge (innovations/solutions) to problems affecting them exists among communities but they rarely come out to present them. Therefore, it's upon the scientists to observe them while in the field or

through probing them to find out how farmers are coping. Likewise, the scientists have developed various technologies at their stations to address agricultural constraints. But many times these remain on the shelf. This therefore leaves much desire for exploring opportunities for integration of local and scientific knowledge in solving challenges/constraints in agricultural production.

Fortunately, in Uganda recently, there has been a paradigm shift towards research for development and involvement of all stakeholders including farmers in research. This will be achieved through implementation of the National Agricultural Research Systems (NARS) which was established through an act of Parliament. The implementation of NARS in Uganda should therefore be monitored and evaluated closely to ensure that the anticipated intentions are achieved.

This publication therefore, shares lessons and experiences of Environmental Alert and farmers towards integration of local and scientific knowledge in solving agricultural production and natural resource management constraints. It also describes processes, steps, principles and recommendations to increase opportunities for integration of local and scientific knowledge in development initiatives in Uganda.

The process for integrating local and scientific knowledge

The process for integration of local and scientific knowledge involves a number of steps which are implemented in a sequence as follows:

### Step 1:

Participatory identification of the constraints and opportunities (PDCO). Farmers' involvement in any development initiative from the start triggers ownership.

### Step 2:

Participatory development of solutions (technologies, technique or practice) both by the farmer and scientist.

### Step 3:

Enhancing knowledge and skills of farmers and scientists and other stakeholders. This gives opportunity for exchanging and sharing ideas. These trainings can take the form of farmer to farmer through field days, exhibitions and exchange visits. Secondly, farmers should be linked to research and development organizations to provide opportunities for enhancing knowledge and skills but also support towards sustainability of the development initiatives.

### Step 4:

Evaluation of solutions considering what is practical in prevailing situations (social, economic, cultural, and environmental) from which the most practical options are selected and tried out.

### Step 5:

Practically trying out the selected options on farm through season long observations to compare the performance of farmers' practices with new practices/technologies.

### Step 6:

Participatory evaluation of tested options after the seasons based on observations made which could be qualitative or quantitative considering environmental and social economic factors. This gives an appropriate technique, practice, technology to the problem which is a blend of both local and scientific knowledge.

### Step 7:

Taking grass roots' experiences into policy and decision making processes. After a long time of working with communities using empowering approaches, communities are confident and ready to interface with government policy making processes.

This process is guided by principles derived through the piloting of Farmer Field Schools (FFS)[1] and Participatory Innovations Development (PID) approaches in solving soil fertility depletion and validation of innovations in sustainable agriculture and natural resources management under the INMASP[2] and PROLINNOVA[3] projects, respectively.

The principles for effective integration of local and scientific knowledge include:

- Scientist/Extension worker as a facilitator
- There must be a change in attitudes of both the farmers and the scientist/extension worker
- Farmers also considered as experts with knowledge to solving the problem
- Equal opportunity for all (including farmers and scientists) in sharing information, knowledge and possible solutions to the constraints/problems
- Effective participation of different stakeholders including Local leaders, Farmers, Extension workers and Policy makers at different levels
- Action oriented. The interventions should deliver short term benefits to the farmers to maintain their moral and motivation for effective participation in the processes as the long term solutions are being developed.

Additionally, both the scientists and the farmers have specific interests hence the scientist knows it all, it has been tested, reinforces own knowledge to prove scientific evidence right whereas the farmer-has a particular problem/constraint that requires an immediate and practical solution, and is ready to experiment because they have to get a solution. Therefore these interests should be balanced for successful integration of local and scientific knowledge.

## Conclusions

The experiences of Environmental Alert and the corresponding community testimonies and scientific evaluations demonstrate that the integration of local with scientific knowledge works and can have a positive change on community livelihoods and there is potential to contribute more significantly to Uganda's agricultural growth and development.

The key success factors in this integration include openness, respect and equal opportunity for all stakeholders including farmers, extension workers, researchers and leaders given that they are all knowledgeable and have a contribution to make to development. In addition, interests of both the scientists and farmers should be balanced but also active participation and involvement of all stakeholders in planning, decision-making and implementation, monitoring and evaluation of plans are equally important. In such a setting, extension worker/ researchers are facilitators whereas the farmers are experts.

## Recommendations

Development projects and programs should be built on existing local knowledge and or levels of social organization and explore opportunities for integration with new scientific knowledge or thinking for successful implementation and sustainability in communities.

Change in attitudes of farmers and scientists and or extension workers through continuous trainings and sensitization.

Policy dialogues and lobbying with targeted stakeholders including researchers, academia and policy makers for continuous support for integrating local and scientific knowledge.

Curricula for agriculture and natural resources management for institutions of learning at different levels should be reviewed to produce desired profiles of scientists and extension workers with appropriate training and skills for promotion of integration of local and scientific knowledge in development work.

Empowerment of farmers and their institutions is critical for continuous engagements and scaling up and out of lessons and experiences learnt through the integration of local and scientific knowledge.

1 FFS is a 'school' without walls located at the farmers' field under a tree shed. It comprises of 25-30 farmers who come together to solve a common problem (FAO, 2000).

2 Integrated Nutrient Management to attain Sustainable Productivity increases in East African Farming Systems. This was an action research project implemented by Environmental Alert in Lukwanga parish, Wakiso district, Central Uganda. It focused on integrated soil and nutrient management for improved food security among smallholder farmers. It involved various stakeholders at different levels including local farmers, local leaders, policy makers, NGO's and International stakeholders such as Wageningen University, National Agricultural Research Foundation-Greece, ETC-East Africa, Kenya Agriculture Research Institute, Makerere University, Debub University and SOS-Sahel. http://www.inmasp.nl

3 Promoting Local Innovation in ecologically oriented agriculture and natural resources management. It is a global NGO led partnership Programme whose main activities include: identification, documentation and validation of local innovations; information exchange and networking; institutionalization of participatory approaches. Environmental Alert is the Secretariat for PROLINNOVA Uganda. http://www.prolinnova.net/

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