Connecting farmers with research

Most African farmers would rank soil erosion and the need to maintain fertility among their main constraints to improving crop yields and no doubt national and regional organisations would highlight similar issues.

There is also no shortage of research into these problems and practical advice on ways of dealing with them. Yet they persist across many parts of Africa on a wide scale. The problems and their solutions appear not to be connected and so the uptake of good soil fertility and water management practices is poor.

The reasons for this are many and varied. Critics point to promoted practices not being well matched to local physical and socio-economic conditions and not addressing the priorities of local people. Some information is confined to research journals and reports while other, more widely disseminated practices, are blanket recommendations that do not take account of different crops, soils and farming practices.

But it is not just a matter of bringing the right tools together. There must be effective links between researchers and farmers. Although this is the role of extension services and local NGOs, they often lack well-trained local professionals with the resources to do the job properly and so they have little to offer farmers and are often too formalised in what they have to say.

In the Mbale and Kapchorwa Districts of eastern Uganda a research team from the Ugandan National Agricultural Research Organisation and the University of East Anglia, UK has been examining this problem. Population densities and land-use intensities in this area are some of the highest in the country. Research information on soil and water management practices is readily available but local professionals appear ill-equipped to satisfy the diverse demands of large numbers of small-scale farmers.

A complex situation

A household survey revealed the complexities of providing support to farmers. They were different in many ways – in their access to resources, knowledge, perceptions of soil degradation and constraints to crop production. There were differences between districts, communities and villages and between households within the same village. Farmers on steep slopes, for instance, were concerned most about worsening erosion and loss of soil fertility. On more gentle slopes, poor soil fertility was still a problem but farmers' were more concerned about the lack of inputs for crop production. Rich farmers were worried about physical constraints and labour shortages while poor farmers wanted finance for farming inputs and access to land.

Although the common problem was how to improve land management, the survey clearly showed that there was not one common solution. Each farmer faced a unique set of physical, social and economic circumstances and so each was seeking his own unique solution.

A key constraint is the poor communication between researchers and farmers

So how can tools and local services be developed to meet this diverse range of needs? It was most unlikely that more resources would be made available for extension and so the approach taken was to examine ways of improving existing services using 'resource-light' options that offer a more practical and immediate way of supporting local professionals in their work. This focused attention on the role of local professionals and how they communicate with farmers and on the tools they needed for their job.

Four key roles were identified:

- Identifying problems: Are there soil management problems? How important are they from the farmers' perspective?
- Teaching and learning: What are the key soil properties and processes; common problems and their causes; options for improved soil management building on existing local practices?
- Identifying management options: What options are available to cater for the diversity of farmers' situations. How can farmers address their problems? What are the resource costs of different management options?
- Fine-tuning: How can farmers be helped with adapting/fine-tuning new management options to suit the local conditions?

Simple tools

There is already a wealth of information available in the project area on assessing soil fertility, on crops and their susceptibility to pests and diseases and on hillside field management practices such as run-off retention ditches and contour bunds with grass strips for erosion control. In addition to this, researchers set up observation plots of legume cover crops, and shrub and fast growing tree species at key locations to assess the adaptation and suitability of various species for highland conditions. All this formed part of the complement of options that local professionals can offer to farmers.

To communicate this information a field handbook was developed for the recognition of nutrient deficiencies in a range of relevant crops and tailored to meet local requirements. In this way, it could prove useful to the whole of the eastern hill zone of Uganda as well as other similar agro-ecozones and farmer circumstances in eastern Africa.

Analytical tools such as nutrient-flow mapping and participatory financial appraisal for soil management were also introduced for assessing farmers' circumstances.

However, these tools were not just about providing technical information. They were also designed to improve the way in which local professionals communicate with farmers. They needed to be sensitive to the way in which farmers went about their work, such as knowing the best times to approach them for discussions and with information and to understand how they go about making their decisions. It was equally important for them to be able to work confidently with researchers to make sure their information was accurate and well-founded.

Farmers made the final decision and typically, they selected methods that best fitted their situation

Facilitators, not decision makers

Local professionals learnt to be facilitators and not decision makers. They learnt to offer farmers a variety of soil management options that they could adapt to their circumstances rather than make decisions for them. Technical options were jointly identified and assessed using criteria such as the benefits that can be derived, resource requirements, limitations, potential risks and the conditions under which the option was most likely to be successful.

Farmers made the final decision and typically, they selected methods that best fitted their situation. For example, most farmers selected Napier grass (*Pennisetum purpureum*) strips for erosion control. Others decided upon tree planting, manure management, mulching and fertilizer application for soil fertility. Napier strips were popular because they provide fodder for animals as well as erosion control. They are cheap, easy to implement and manage.

Local professionals learnt to be facilitators and not decision makers

Fine tuning, not imitating

There is huge scope for fine-tuning land management practices to fit local conditions and for local professionals to facilitate this process. Evidence showed that farmers did modify their practices differently depending on their particular needs. Some planted Napier grass strips for erosion control while others wanted to produce fodder. Some dug trenches to prevent soil erosion while others used them to trap fertile soils washed down from further up the slope. The opportunity is there for local professionals to pass on such experiences to others in similar circumstances.

Good partnership

A good partnership between researchers, local professionals and farmers is seen as an effective way of understanding and coping with the complexity and diversity of local farming conditions. Farmers are the key informants for identifying and assessing soil fertility problems; they make the final decision about which soil management option to choose and they lead the fine-tuning to fit their individual circumstances. The local professionals are the facilitators who support them and make the link with the researchers who provide the expert knowledge. These partnerships, together with the tools developed by this research can be an effective way of addressing farmers' priorities for soil management.

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