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Smallholder integrated crop management (ICM) research planning; A case for Mukono and Kayunga districts

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Abstract

A pilot planning project intended to learn more about the farmers' current practices in order to develop appropriate research interventions. The project challenges the stakeholders to describe ICM practices in use by farmers, their origins and history of adaptation to specific situations. An ICM Planning Workshop was convened at Mukono ARDC to provide a platform for the various relevant stakeholders to come together to contribute knowledge and experience to the planning process. Participants included farmers from Kayunga and Mukono districts. More women farmers were invited because they do most of the farming. Other participants came from local government and researchers. Other researchers were facilitators who included the research team of the ARDC and scientists from Agricultural Research Information Service (ARIS). Current relationships among agricultural sector service providers were identified and visually presented. Current land and farm management strategies in the two target parishes were also presented. Future visions for land and farm management strategies and relationships among agricultural sector service providers were presented. A consolidated vision of the desired future was drawn. Priority elements were identified and a consolidated matrix for the action plan formed. An interim committee consisting of all stakeholders was elected to follow up implimentation of the action plan.

Key words: Farmer visioning, innovation, stakeholders, technology options

Introduction

Over 90% of agricultural production in Uganda is done by small holder farmers with limited resources. Farming relies on natural resources that are being eroded with constant farming practices. Erosion of the natural resource base has led to ever declining agricultural productivity. There is need to create awareness among small holder farmers and other stakeholders to use natural resources in a sustainable manner (Altieri, 1989). It is for the above purpose that NARO/ Mukono ARDC attempted to find new ways of supporting smallholders to innovate their land and crop management strategies. This would be achieved through an integrated crop management pilot project that could be implemented in Kayonza and Wakisi sub-counties of Kayunga and Mukono districts, respectively. It would also facilitate exchange of knowledge and information about ICM practices and principles among farmers' groups and assist in the documentation of the processes and principles farmers use to chose, generate, adapt and lay aside ICM practices in their farming systems. Identification of what agricultural research can do to enhance development and use more sustainable ICM practices by smallholder farmers will also be one of the project activities.

Sustainable management of natural resources depends on people's capacity to make appropriate decisions (Lightfoot *et al*. 1993). Farming practices of smallholder farmers are influenced by a number of stakeholders who include researchers, local government agents, NGOs, churches, agricultural extension and the private sector (Korten, *1980*). It is, therefore, important that planning, implementation and monitoring of projects geared towards improving the welfare of the smallholder farmers be carried out in a participatory manner with all the relevant stakeholders (Conway, 1985). An Integrated Crop Management Project Planning Workshop was held at Mukono ARDC. Stakeholders came together and contributed knowledge and experience and also learnt from farmers about their smallholder farm management practices. The results of the workshop would guide us in our effort to work with farmers to improve and sustain the land and crop management strategies used in Kayunga and Mukono districts.

Approaches and Methods

Project core team

Scientists of Mukono ARDC and a World Bank consultant constituted the Project Core Team that did the initial planning of the workshop. The team brainstormed on several issues and laid strategies to achieve the following objectives. *Selecting target sub-counties, stakeholders and participating farmers*

Sub-counties
The sub-counties were identified in partnership with the Mukono District Farmers Association (MDFA) and the Farmers Organisation Secretariat (FOS). Kayonza sub-county of Kayunga district was chosen because of its strong component of mixed crop-livestock farming. This would provide learning experiences on the interactions between livestock and crops. The Wakisi sub-county of Mukono District was chosen because the area has been identified as a pilot area for operationalising the National Agricultural Advisory Services the National Agricultural Research Organisation (NARO) and NAADS to share experiences and get common ground for serving smallholder farmers.

Farmers
Guidelines were prepared for the invitation of farmers based on the assumption that a number of local officials to be invited were men farmers. So, it was decided to invite more women than men farmers from the selected parishes. As a result, five female and two male farmers from each were invited. Local farmer organisations or groups selected the farmers who participated in the workshop.

Scientists
The scientists that were invited work in programmes dealing with bananas, beans, coffee, maize, livestock, soil and water management, root crops and appropriate technology. The need to document agricultural practices in the project area necessitated inviting staff of the Agricultural Research Information Service (ARIS) department of NARO.

Farmers Organisations
The Farmers' Organisations Secretariat (FOS) and the Uganda National Farmers' Association (UNFA) are actively involved with farmer groups in different areas of the country. It was suggested that involving them in the project planning process and implementation would be beneficial to the organisations and the farmers themselves. FOS seconded one of it's Monitoring Specialists to the planning process, whose long-term working experience with smallholders enriched the scope and perception of the team. The President of UNFA opened the workshop.

Integrated crop management (ICM)
Integrated crop management is understood differently by various people. In the workshop planning process it was suggested that a shared view on ICM be developed (Daniels and Walker, 1996; Fernandez and Lusembo, 2002). The shared view was that ICM is the management of the interactions among soils, plants, water, forests and animals in a sustainable manner that focuses on the knowledge and expertise of the farmer to improve productivity without depleting the natural resource base.

Current relationships among agricultural sector service providers
The participants were divided into four groups: farmers, researchers, private sector and local government. Each group was asked to show graphically how current institutional interactions in support of smallholder agriculture are working. The groups were provided with large sheets of newsprint, felt markers and cards of different sizes and shapes to enable them to draw their respective maps. A reporter presented the results of the group's work and the plenary was asked to identify two critical aspects of institutional linkages.

Current land and farm management strategies
The farmers were divided into three groups. Farmers from Kayonza made the two groups while the third group was composed of the farmers from Wakisi. The groups were asked to draw out the land and farm management strategies they are currently using.

Future visions for farm management and institutional support strategies
The participants returned to working groups i.e. the two groups of farmers from Kayonza and Wakisi. The service providers worked in three groups where research, private sector and local government were represented in each. The farmers' groups were asked to draw out the land and farm management strategies as they would like to see them 10 years into the future. The service providers were asked to show graphically how institutional interactions in support of smallholder agriculture should be working 10 years from now.

Consolidated visions of desired futures
The participants worked in sub-plenary sessions to consolidate the future visions. The farmers from Kayonza and Wakisi worked together to come up with a common vision for their future land and farm management strategies. The service providers, researchers, private sector and local government staff worked together to consolidate their visions for the future of institutional support strategies in support of smallholder agriculture.

Consolidated matrix for the action plan
The key elements identified previously were inserted into a matrix so that they might form the basis for an action plan. The participants organised themselves into five groups with the representation of all of the stakeholder groups in each: farmers, private sector, research and local government. Each of the five groups worked out a plan for tackling each of the six elements. The five matrices were combined.

Main Findings

Farmers view service providers in three broad categories namely Government, Commercial agencies and Civil society (Fig. 1). The Government group is comprised of Ministry of Agriculture Animal Industry and Fisheries (MAAIF), NARO, NAADS and district extension staff. The Commercial agencies are made up of buyers and consumers of agricultural products, rural finance organisations, input suppliers and hired labourers. The Civil Society is made of community-based organisations (CBOs) and NGOs like UNFA, FINCA, FETAS, UWESO, Churches and Schools. The farmers view themselves as made of three groups, i.e. contact farmers, extension link farmers and special interest groups (Fig. 1).

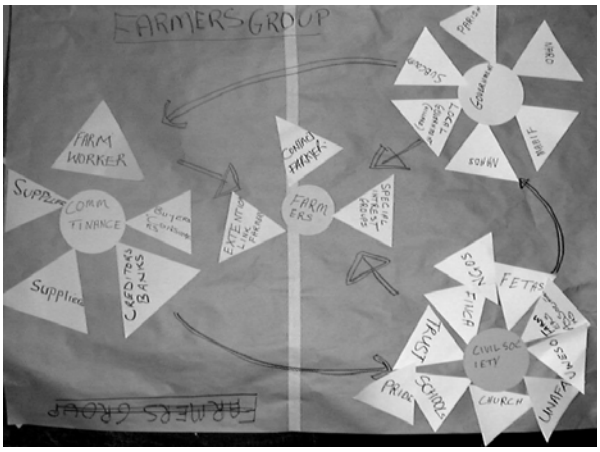

Fig. 1. The visual presentation of how smallholder farmers view the institutional linkages of service providers influencing their farming activities

The local government agents (Fig. 2) indicated more service providers than any of the groups. This was because all organisations have to register themselves with the District administration before they are allowed to operate. The strongest linkages among all the service providers were described as moderate. This is because local government staff feel that many of the service providers do not deliver services to target farmers and others are rooted in their offices, hence not effectly addressing farmers' needs.

The research group showed that NARO has been reaching out to smallholder farmers, mainly through intermediaries like NGOs and other service providers (Fig. 3). The implication of this is that the Farmer/Research linkages have not been strong enough to facilitate generation of technologies appropriate to location specific needs of smallholder farmers. This calls for stronger interactions and consultations with the farmers and other service providers for NARO to be identified with the smallholder farmers for who NARO generates technologies.

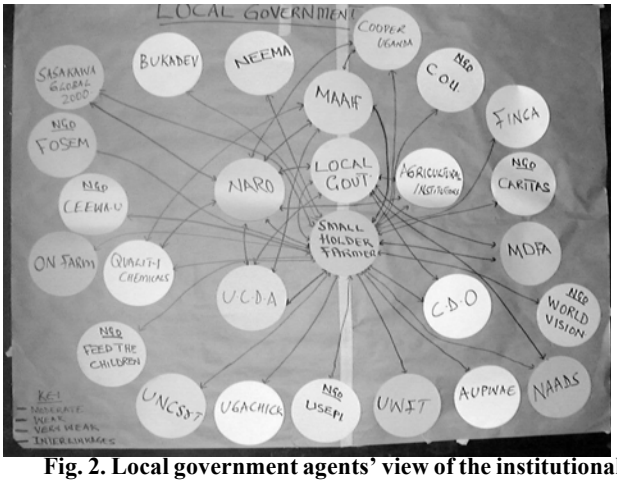

Fig. 2. Local government agents' view of the institutional linkages of service providers influencing smallholder farm operations.

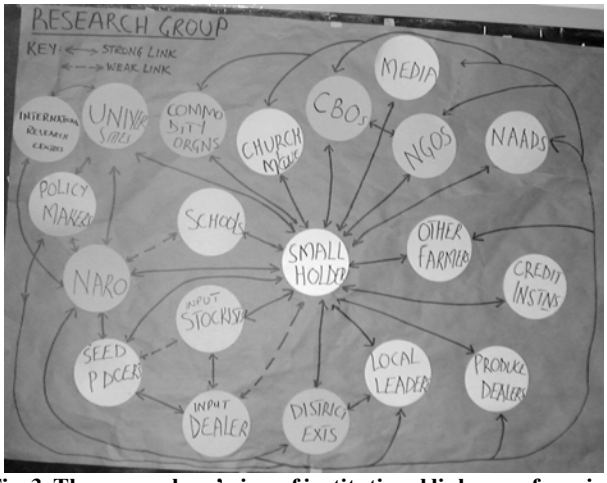

Fig. 3. The researchers' view of institutional linkages of service providers influencing smallholder farm operations

The description of linkages among services providers and farmers suggests that the farmer is the focal point for the information. This is ironical since the natural resource base and productivity have continued to decline while the farmer is under the guidance of all these service providers. It was also noted that the farmer is overwhelmed by too many service providers. These may be giving the farmer conflicting messages. These observations suggest an urgent need for re-orientation of farmer guidance by service providers and the need for coordination of activities.

Current integrated crop management practices as presented for Namaliri parish (Fig. 4) indicate that productivity of the system is constrained by lack of adequate inputs (like pesticides), technical knowledge, soil exhaustion, occasional extended dry spells, poor communication and marketing. Some areas are rocky, hence no agricultural production. Some of the control measures presented are use of ash concoctions to control insect pests and removal of diseased plants (rouging).

When it came to visioning the farmers focussed on homesteads instead of villages or parishes (Fig. 5). This clearly brought out the desired farm conditions. Farmers look to a future when they will have farms fenced with live material to protect their animals and crops from thieves (Fig. 5). They would also like to live in improved houses that have water storage tanks, kitchen, servants house and a store. They would also like to have large compounds with shade/ fruit and medicinal (neem) trees in them. Farmers still want to produce a variety of crops from the same areas as an insurance against failure of some of the crops. Inclusion of a high value/income generating crop, i.e. vanilla in the farming system was found appropriate. They would also like to have access to irrigation and efficient post-harvest handling facilities plus availability of solar systems for household lighting and other domestic needs. It was clear that smallholder farmers view their production activities as a whole system instead of individual commodities. This calls for re-examination of the research interventions to address cross cutting issues in order to improve the entire agricultural production system.

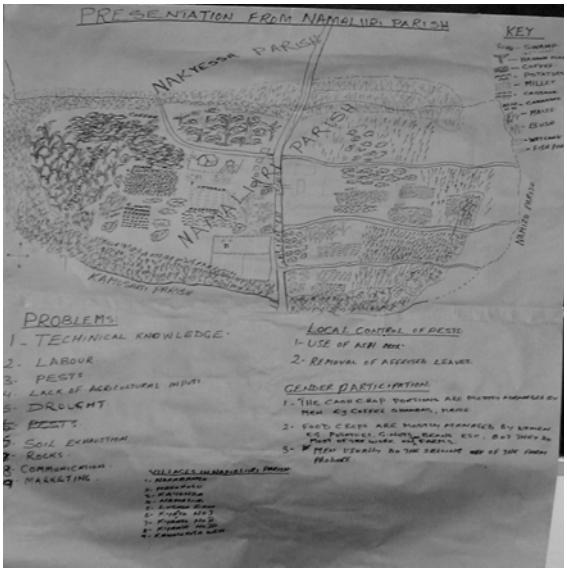

Fig. 4. Namaliri parish farmers' view of their current integrated crop management practices

It is not easy to expect smallholder farmers to be able to describe their farming practices. However, they were able to generate relevant ideas, hold constructive discussions among themselves and then draw these ideas and present them to participants.

Consolidation of the visions of farmers of Kayonza and Wakisi clearly identified the following priority areas: (i) Need for harvesting rainwater for domestic needs and irrigation. (ii) Increased availability of animals for manure and traction. (iii) Good breeds and seeds including fruit tree seedlings. (iv) Adoption of appropriate irrigation systems. (v) Improved availability of transport for farmers' produce. Improved technical knowledge in form of seminars and general sensitisation for farmers.

Additional issues farmers are concerned with in the two parishes were;

-Most of the fertile land has been washed away
-Extension services based on groups
-Farmers forum members should also be paid
-Use of affordable tractor service
-Solar power use to reduce rate of cutting down trees for fuel
-Providing agricultural equipment
-Lack of soil fertility
-Farmers must be taught to improve their farming methods
-Market & communication
-Seeking better markets for farmers' products

Fig. 5. The visual presentation of how smallholder farmers of Namaliri parish, Kayunga district would like to be in ten years time from now.

Priorities for Service Providers

Sevice providers identified formation of fora for farmers and Service Providers as priority one. They opined that stakeholder participation in the following areas be priority number two; Problem identification, planning, implementation, monitoring and evaluation. Priority three was establishment of a co-ordination desk at all levels of administration. Priority number four focussed on capacity building for farmers and farmer groups, intermediary organisations, local leaders, policy makers, researchers and agents in fields of marketing and agro-processing.

Key elements from future visions

Of the priorities identified by each of the two groups, farmers and service providers, the top three priorities of each of them were selected as the basis for development of the integrated crop management work plan (Table 2). The farmers came out with; i) water harvesting and erosion control, ii) animal, manure and crop management and iii) good breeds and seeds. The Service providers came up with; i) Farmer & Service Provider Fora, ii) Co-ordination Desk at LG level and iii) Participation in planning, implementing,

Table 2. Basis For Integrated Crop Management Work Plan

Key Elements	Why		With Whom	How		When	Where
1. Water harvesting and erosion control	Irrigation Soil and water conservation	Domestic use	Fellow farmers Local leaders Extension staff NGO's Researchers	Mulching Contours Bush fire control Favourable credit Improving system of intercropping Village by-law	Trenches Water tanks Ditches; Dams Tree planting Cover crops Collective farmer action in fields	Immediately Continuously	On farm Parish
2. Animals, manure and crop management	Diversification Raise household income Improve nutrition Disease and pest control/management For energy	Maintain soil fertility Improve soil fertility Food productivity Security Traction Transport	Extension staff Researcher Local leaders NGO's Other farmers	Proper manure Use Composting Improving system of intercropping	Crop rotation Training Post harvest Handling	Regularly Timely	On-farm Demonstra-tion sites
3. Good seeds and breeds	Better markets Tolerance to drought, diseases and pests	Higher yields Food security Better quality	Commodity organizations Extension staff Researchers & NGO's Farmers	Cross breeding Improving system of intercropping Training	Multiplication of seeds Post harvest handling	Continuously	On-farm Research centres
4. Fora: **- Farmers** **- Service Providers**	One common voice Identification of gaps	Avoid duplication of activities Harmonisation of messages	Farmers & Researchers Local government Extension staff Market institutions NGO's	Regular and timely meetings Workshops	Group formation Seminars	Regularly Timely	Parish Sub-county District level
5. Coordination Desk	Streamlining activities Transparency	Improved communication	Extension agents Researchers Market institutions	Farmers Local leaders NGO's	Local government Forum to select coordination desk	Immediately Continuously	Parish Sub-county District level
6. Participatory **- Planning** **- Implementing** **- Monitoring & Evaluation**	Sustainability Track progress To achieve objective Improve performance	Farmers ownership Farmers confidence Ensures faster Adoption	Researchers Extension agents Market institutions	NGO's Local leaders Farmers	Field visits Workshops Joint activities	Immediately Continuously	Parish Sub-county District level

monitoring and evaluation. It was clear that the main elements in the farmers' future visions are improved farming practices leading to income generation and improved livelihood.

Way forward and ensuring implementation of the work plan

After having incorporated the findings from the field visit into the work plan matrix the plenary was asked to decide which of the "hows" within the matrix would help to ensure the implementation of the work plan that had been agreed upon. Scoring was used and priorities were identified in the following order; Technical training, planning, monitoring and evaluation workshops, improving systems of intercropping, initiation of a Co-ordination Desk, group formation for farmer fora and favourable credit facilities. It was felt that in order for the above activities to take place it would be necessary to form an interim committee that would be responsible for following up on the work plan and would eventually turn their responsibilities over to the fora and co-ordination desk. The interim committee was made up of nine members representing Wakisi and Kayonza Farmers' groups, Private Sector, Local Govt, Local NGOs and Mukono ARDC. The election of an interim committee to implement the project indicates the project management desire to ensure participatory execution of the workplan by all stakeholders who formulated it, thus a continued linkage and project progress information flow among researchers, farmers, service providers and local Government agents. The interim committee, in conjuction with the farmers, is currently documenting farmers practices in the parishes of Namaliri and Wakisi. This process seems to be empowering and tapping the innovativeness of the farmers to articulate their needs and hence make demands on the required services. Concurrently the committee is in the process of identifying technological options (from Research Institute) that will be availed to farmers' groups for potential incoporation into existing farming systems. Much as farmers have individual commodities in their production systems it is evident that their major interests are in the entire production system as a whole. Considering the fact that farmers are rational in their decisions concerning their productions systems (Lightfoot *et al.*, 1993) which they have managed over a long time it is rational to give individual farmers or groups of farmers overriding decisions in selecting what is good for their production systems.

Conclusion

This type of workshop was timely and its objectives were achieved. The implementation of the project started with immediate effect. The success of this first ICM workshop suggested that the approaches and methodologies employed were right. They have been adopted to run a similar workshop in Kachwekano for the Kabale agroecosystem. It is hoped that the experience gained in running this type of planning workshop will be shared among farmers and service providers throughout the 12 NARO's ARDCs in Uganda.

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