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Farmer field schools approach, a viable methodology for technology development and transfer

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Abstract

Farmer Field Schools is a systematic and continuous method of training and working with farmers under real life field conditions. The method was initiated in South East Asia nearly ten years ago under a mono-crop rice culture and basically focusing integrated pest management (IPM). In Uganda the method was slightly modified and made to apply not only on a number of crops but also for use in livestock, fisheries and natural resources management activities. Through the use of this methodological approach, farmers in the Kacaboi and Kasenge parishes of Uganda have been fully empowered to manage their own development. For the last four years farmer groups have kept increasing in number and keeping intact. Farmers have been able to multiply the scarce improved crop varieties over 50-fold within a mere three years. Communities have consequently been able to address their own household food security and indeed move towards focusing improvements in household incomes as a wider means of attaining sustainable livelihood. This method is flexible and lends itself well to being applied in research, technology dissemination as well as in a number of development initiatives. The paper outlines the methodological approach and recommends its wider applicability in the NARO research system

Keywords: Farmers field schools, Technology development and transfer

Background

The term "Farmers Field Schools" (FFSs) came from the Indonesian expression *Sekolah Lapangan* meaning just field school. The first field schools were established in 1989 in central Java by 50 Plant Protection officers. The objective was to test and develop, on a pilot basis, field-training methods as part of the FAO-supported IPM training of trainers course. Two hundred Field schools were later established in Indonesia that season alone and by 1990 a total of 50,000 farmers were actively involved in the schools which were then run by 450 crop officers.

The name *Sekolah Lapangan* was created to reflect the educational approach at these schools which was:

- The courses took place in the field and the field conditions, production system and priority problems of the farmer groups defined most of the curriculum;
- Through a discovery learning process, farmers were empowered and their participation enhanced;
- The participants established a field with a research study to compare introduced methods and farmers' conventional practices;
- Season-long real field problems were observed and analysed from land preparation and planting of the

crop through to weeding, pest management and finally harvesting;
- Group decisions on crop management were evaluated at the end of the season by measuring the yield and assessing the quality of produce;
- Pre- and post-tests were given, the same farmers and facilitators attended throughout the season and graduation and certificate awards were based on attendance and performance;
- Thus, the Field School without walls taught basic ecology & management skills.

Doubtless, there are many other programmes besides Field Schools, which have succeeded in providing good educational results to farmers. However, much of the Field Schools ideas grew out of the traditions of literacy education initially focusing village-level basic health care. Similar programmes have since developed for soils and livestock in other regions. The Field Schools are not a new idea, but rather an effective idea that has been ignored by those caught in the system of top-down research message delivery and who too often turn a deaf ear to the conventional wisdom of farmers. Some farmer participants say that Farmer Field Schools succeed because they provide basic scientific conceptual frameworks and knowledge in very democratically run mode and of course because farmers then end up being the major driving force behind their development, resulting in them making more money with less inputs.

During the early 1980s the FFSs approach spread rapidly in S. E. Asian countries including Thailand and Philippines. Later, however, the FFSs concept was picked up notably by Ghana and several other countries in West Africa during the early 1990s. At about the same time, scientists and extension workers from Kenya paid a training visit to the Philippines and brought similar experiences to their country. At the inception of the Farm level Applied Research Methods for Smallholders in East and Southern Africa (FARMESA) in the East and Southern African region in 1996, the FFSs concept spread into a number of FARMESA member countries including Uganda and Tanzania in the East and later Zambia and Zimbabwe in the southern part of the continent.

Past extension approaches in uganda: Strengths and weaknesses

Train and visit method

It is to be noted that in the early 1980s, the World Bank, through the Ministry of Agriculture introduced the famous *Training and Visit (T&V)* extension methodology into Uganda. This method focused on scheduled training of extension personnel at different levels. These in turn were supposed to train individual contact farmers on a scheduled basis. In this case each field extension worker (FEW) was to train a number of farmers for four days in a week. The fifth day was put aside for make-up visits to those farmers who, for one reason or another, could not be visited during the week. The above cycle was repeated the following week with a new set of farmers. During the third and fourth week, the FEW made a second round of visits to the same lot of farmers above. In other words, in a month each contact farmer was scheduled to receive two extension visits. At the end of the month, the various FEWs had to attend a one-day monthly training, which involved:

- reporting on their work progress during the month;
- discussions with the various subject matter specialists (SMS) on the various constraints observed in the field;
- receipt of onward key-messages and impact points on various enterprises obtaining in the field; and
- consolidating work-plans for the following month.
- The monthly cycle was repeated during the following month. The above approach of the T&V method did reflect a number of weaknesses that included:
- Limited extension coverage, since the FEW could theoretically handle only up to 8-10 contact farmers a month;
- The tight visiting schedule did not effectively take into account complex situations in the field. Funerals, sickness, public holidays, markets, village meetings and other functions, etc, often interfered with the rigid schedule of work;
- Farmer' time was often wasted, as s/he had to receive (as applicable) persons of different disciplines (crops, livestock, and fisheries etc) at different days and times during the week;
- The resources, especially in terms of human time and funds, per unit farmer served was much higher compared to that of any extension method used before and these expanded as operations moved into new (areas) circles;
- At times contact farmers became bored when a FEW had nothing new to deliver even though he had a routine visit to fulfil;
- Facilitation of the FEWs in terms of mobility, lunches, accommodation at or near their area of work was often a problem.

Train and visit method modified

The T&V approach soon proved ineffective and very costly in terms of resources per beneficiary farmer. Consequently, the Ministry of Agriculture Animal Industry and Fisheries recommended modifications on the method. In the place of contact farmers, a visit by FEWs now targeted farmer-groups each consisting of 15 to 20 farmers. The visit-schedule however remained the same as during the T&V method earlier practised. The change from individual to groups of farmers significantly improved coverage and to some extent, reduced on operational costs. It was a positive development on the method.

Unified extension method

In a bid to reducing operations costs further, the Ministry recommended a "unified" approach where one FEW was to attend to all agricultural problems met by farmers in his/her circle, be they in crops, livestock, fisheries, etc. The farmers had still to be handled in groups other than individually. The work of the FEW, therefore, called for interdisciplinary knowledge and skills well beyond that covered in the training of the then extension personnel in the field. Because of this shortcoming, all FEWs in the pilot districts had to undergo intensive field training in all aspects of agriculture lasting up to 2-3 months before their re-deployment. This approach came to be known as the *Unified Extension Method.*

The Unified Extension Method also soon displayed its own shortfalls, the major ones being compromise in the quality of extension messages since a FEW with a given professional training had to handle constraints on other disciplines as well. The accelerated retraining for the FEWs also became fairly costly and was not much of value for money. The T&V methodology in its various forms was finally rejected in Uganda in 1994/95. Later in 1996/97 even the Unified Extension Approach was also declared inappropriate for the country.

Village level participatory approach

With the exit of the T&V approach, several new extension approaches were initiated by some districts, among which was the *Village Level Participatory Approach, (VLPA)* then being experimented in Masaka and Mukono districts. This method was unique in that it encouraged participatory problem diagnosis as well as planning with farmers prior to the implementation of field activities. It offered a new perspective to extension. Due to unknown reasons this method did no go beyond the pilot districts above.

Initiation of the FFSs approach

The changing environment in extension

The FARMESA project was approved to operate in Uganda in late 1996. A year later, government, through the *Local Government* Act, decentralised most agricultural extension functions to the management of districts other than by the Centre. In the process there was massive reduction in the physical numbers of extension personnel on the ground. Financial resources that used to go to the districts specifically earmarked for agricultural extension had now to go to the district financial pool and be competed for by other priorities in the district. In most districts agriculture often scored a rather low rating in the sharing of these resources in comparison to the rating for universal primary education, health and infrastructure development, particularly roads. This was a rather new situation calling for new ways of handling extension business. A significant proportion of the new political leadership at district level had neither served in the traditional civil service nor in private sector service and lacked experience. All this meant that decentralised districts needed sometime to adjust to the new challenges and be able to operate normally under the new mode.

PRA training and survey by FARMESA

In realisation of the above problem, the management of FARMESA initiated its activities by a ten-day training of an interdisciplinary team of persons on *Participatory Rural Appraisal (PRA)* method renowned for its viable field level constraint identification and planning tools. This training brought together 20 research and extension collaborators from NARO, Ministry of Agriculture, Animal Industry and Fisheries, Makerere University, the Uganda National Farmers Association, Private Sector and a number of NGOs. Following the training, a PRA-survey was carried out at Kasenge Parish in Mukono and Kacaboi Parish in Kumi district, which were respectively selected as representing high and low potential sites in Uganda. The results of the survey brought out 7-8 main constraints faced by farmers at each of the field sites. After further discussion these constraints were aggregated through a participatory planning process that followed with the communities, to only three main constraints (below) for immediate redress:

- Lack of knowledge on improved farming practices – calling for systematic farmer training at field sites;
- Inadequate farmer access, particularly to improved crop varieties and technologies for enhanced household food security and incomes - calling for technology acquisition through effective linkage to sources of such technologies;
- The Extension staffs were too few to effectively delivery services to farmers.

The survey also identified weaknesses in the past extension methodologies as a serious constraint mitigating delivery of improved agricultural technologies and information to end-users. It was reaffirmed that the old T& V methodology that was used in technology development and transfer (TDT) with farmers was complicated, unsustainable to implement and had created frustration and more problems than solutions within the existing extension system. It was consequently decided that the FARMESA Programme should introduce (on an experimental basis) the *Farmer Field Schools (FFSs)* methodology in its field sites. The methodology which had been tried in some parts of Africa promised genuine ownership of the project by ultimate beneficiaries, placed them in the main decision-making position, offered avenues for continuous dialogue in partnership with development agents and consequently better chances for project sustainability. The methodology was to redress the agricultural

knowledge-gap identified above and be used as avenue for conveying new information and technologies to farmers.

Identification and redress of gaps in the traditional FFSs methodology

In recommending the FFSs approach, it was soon noted that in its traditional form the method called for a season-long field *Training of Trainers* to be followed later by another season-long training of the first batch of farmers. This would result in a considerable amount of delay, which for such a short-term project would be disastrous. It was also noted that the staff calibre in the extension and research systems in Uganda is academically well qualified in generic agricultural skills, holding as a minimum, Diploma in Agriculture. The majority of the staff had a farming background by birth and actually possessed vital hands-on skills and practical knowledge on small-scale farming. These staffs were only deficient in *participatory methodologies* for working with farmers. This situation justified some modification on the traditional FFSs methodology derived from South East Asia.

Training of trainers for FFSs

A ten-day workshop was held to intensively train a selected team of extension and research staff on *Participatory field methods and tools with Farming Systems Perspective.* FFSs concepts and approaches were also covered during the course. This training resulted in a set of interdisciplinary trainers then ready to take on the first season-long training of farmers. The training strategy was in itself a modification in the conventional FFSs approach and drastically reduced the season-long training often recommended for trainers for FFSs in other countries. It is to be noted though, that while field activities immediately followed completion of the above training, another two courses (on Planning and the other on *Project Monitoring and Evaluation)* were later held for the same set of field research and extension staff each lasting 5-7 days. A total of 76 persons have undergone such a training cycle under FARMESA alone. Later in 1999, the Livestock Systems Research Program requested Dr Ananda, CTA FARMESA to run a similar set of courses to some 40 members of their research and dissemination teams.

Formation of Farmer and Field Site Working Groups

With the first training now done, awareness creation was conducted through massive mobilisation and sensitisation of the communities. This was followed by formation of voluntary Farmer Groups (FGs) mainly based on commonality of interests, proximity to the activity site, willingness to learn and to contribute to group interest, etc. These groups are open to all categories of people: women and men, young and old. Where informal interest groups actually existed in some of the communities (e.g. for provision of reciprocal labour, for organising burial and funeral rites and for advancing specific gender interests, etc), such groups actually transformed themselves into FGs for purposes of accessing new technologies, information and methods through FARMESA. With the formation of each FG, roles of the various partners were clearly defined.

- Researchers brought in new farming messages and technologies from their respective institutions for sharing with extension agents and farmers;
- Extension agents translated and delivered the information in the forms readily appreciated by the communities;
- Community leaders (civic and political) helped in the mobilisation, sensitisation, and guidance of the communities;
- Farming communities freely provided land, labour, and some inputs to support project activities. They also provided feedback to research and extension and shared with them the wealth of useful indigenous knowledge from the field;
- Each FG elected their own leaders who helped guide their activities and interests.

In each of the field sites, individual farmer groups come under a *Field Site Working Group (FSWG)* that spear heads, organises, manages and oversees all activities of FARMESA at the field site. Each FSWG has a leadership hierarchy to enable it efficiently execute its functions on behalf of its FGs. A typical FSWG normally has a Chairperson, Vice-chairperson, Secretary and a set of Committee Members. From time to time these positions change through regular elections, hence bringing in new leadership blood with equal opportunities being given to both sexes. The composition of the FSWG for the two field sites is shown in Annex 1.

From the initiation of the project in 1997, Kacaboi parish in Kumi district had 10 FGs with estimated 650-700 farmers and two Primary schools having 778 pupils in total. Corresponding figures for Kasenge parish in Mukono district were respectively, 11 FGs with estimated 300-350 farmers and a primary school with a total 357 pupils. In the course of time however, what used to be very large farmer groups in both sites have sub-divided to form smaller groups for better operations. There are now a total of 18 such FGs in the Kumi field site with estimated 550-600 farmers, a slight decline from the original number of 600-700. Corresponding figures for the Mukono field site show a positive increase: 22 FGs with estimated 390-430 farmers.

The FARMESA field site is Kumi is a low-potential site and has demonstrated lesser ability to establish new partnerships. Never the less, the site has been able to establish three new FGs in the neighbouring

Kachumbala sub-county and Omatenga parish. The field site also established a FG at Oseera Primary School in Ongino sub-county as well as at Asuret Primary School in the neighbouring Soroti district. All these target multiplication of improved crop germplasm. A fourteen-person team from the FARMESA project in the district also visited several sites in the district explaining the FARMESA method of work and what have been the benefits on the ground. They also positively mobilised the new communities to emulate some of the FARMESA activities, such as variety multiplication that might not require physical resources. To advance this objective they willingly shared some of their improved planting materials (cassava, millet, groundnuts, etc) with some of the new contacts.

Besides the activities at the original field sites, there has been considerable "spill-over effect' to the neighbouring parishes/sub-counties/districts. In Mukono for example, another 5 FGs have been

established (in Nakisunga and Nakifuma sub-counties) outside the field site. The Mukono field site has also established an extensive network of partners and collaborators as indicated in Box 1.

Box 1: Collaborators with FARMESA Mukono

- *Association of Uganda Professional Women* in *Agriculture & Environment*, Kawolo sub-county invited FARMESA to start a FFS group which is currently benefiting from the FFSs training being offered to their farmers;
- *FOSEM* * (Kasawo sub-county) invited FARMESA to assist in establishing a FFS group to initiate development activities in the area;
- *Kulika Irrigation & Organic Farming* – having joint training activities with FARMESA on irrigation and organic farming;
- *Kalya Amagwa Group* – is one of the several sites that adopted the smallholder irrigation approach (high-value horticultural crops) initiated by FARMESA and is benefiting from the FARMESA FFS training.

There are also a number of Programmes within and outside NARO that have used existing FARMESA groups (or members) to advance field activities that are in line with FARMESA objectives. These include:

- Potato program at NAARI – multiplying potato and yam varieties for farmers
- Cassava Program at NAARI - multiplying new cassava varieties for farmers
- Banana program at KARI - multiplying new banana varieties for farmers
- Coffee Program at CORI – used the FARMESA site as a wider training ground
- Mukono District – used the FARMESA smallholder approach to initiate irrigation at other sites in the district;
- Makerere Department of Agricultural Engineering – are using the FARMESA irrigation site for field demonstration and training of their students;
- MAAIF Section on irrigation – actively participated in setting up of the irrigation site, and are looking at it as a model to be extrapolated in other areas;
- Yield Land Seed Company – used some of the FARMESA FGs to popularise seed and chemicals;
- *Bank of Uganda Export Promotion Unit – planning a contract with FARMESA farmers to produce horticultural crops with export potentials*

Other FFSs initiatives in Uganda

Following the establishment of the first set of FFSs in Uganda by FARMESA in 1997, IFAD/FAO (in 1999) came up with a much larger FFSs project now covering 13 sub-counties in Soroti district and 9 sub-counties in Busia district East of Uganda. The FFSs practice is based on the Integrated Pest Management (IPM) model derived from the way FFSs were initiated in South East Asia.

Execution of the FFSs activities by FARMESA

FFS strategy

As a systematic method of training and working with agricultural communities, initial FFSs efforts mainly handled improved crop variety-enterprises in accordance with the priority crops identified by farmers during the diagnostic phase of the project. Later, however, smallholder irrigation management, postharvest and improved work-animal technology dissemination, poultry management, fish fry centre development and coffee productivity improvement were all established in Kasenge and Kacaboi parishes in Mukono and Kumi districts with full incorporation of the FFSs concept. In an effort to attaining project sustainability beyond the funding period, a micro-credit savings and training component was introduced in late 1999 to enable farmers access funds (in small but usually critical amounts) to facilitate acquisition of technologies and information vital to the success of their enterprises. This initiative also effectively operated based on the FFSs concept characterised by the following sequence of activities:

- Farmers are sensitised;
- Community planning meetings are organised to clearly define and prioritise constraints;
- Project sites are selected FGs are formed and stake-holder roles defined;
- Activities are initiated supported by sequenced mode of training based on FFSs;
- Efforts are made to sensitise communities on other support aspects including gender, enterprise

Table 1: Constraints being addressed, technologies & methodologies under testing by FARMESA -based on mini-projects, 1998/2001

Title of Mini-project	Main farmer constraints	Technologies being tested	Methodologies being tested
FFSs approach, Mukono & Kumi	Inadequate knowledge on modern farming methods	FFSs used as a vehicle for conveying technologies and detailed in mini-projects modified	Modified version of FFS Case study wasdon on FFS
Farmer-managed multiplication of crop varieties,	Inadequate access to improved planting materials by farmers	A variety of improved crop germplasm Improved crop management techniques	Revolving farmer multiplication of planting materials, FFS, FGs, OFR, farmer-visits
Smallholder managed irrigation system, Mukono district	Unreliable rainfall & uncertainties in water for agric. production	Appropriate water harvesting & irrigation packages: (manual, motorised & wind-powered pumps)	Group management of water for agricultural production, FFS, FGs and OFR
Dairy feed management, Mukono	Low quality of and poor management of indigenous feed	Improved and appropriate mix of pasture grasses, legumes and crop residues with better management	Farmer evaluation through OFR, FGs and FFS
Promotion of postharvest processing and storage techniques	Poor traditional storage structures & processing techniques with high crop losses	Improved storage structures and processing methods Value addition with reduction in crop losses	Farmer Field Schools, FGs, OFR and FFSs
Micro-credit savings & training Kumi & Mukono	Inadequate farmer access to basic capital for production & other h/hold needs	Farmers' capacity to improve family incomes and household welfare	FFSs, micro-credit through Solidarity Groups, Case study on saving, training and credit
Improvement of indigenous cattle goats & poultry Mukono/Kumi	Low productivity of indigenous cattle, goats and poultry	Improved cattle, goat and poultry stock breeds Improved disease, pest and feed management	Shared bull/buck services through FGs Revolving multiplication of stocking materials
Popularisation of improved technologiesf or work animals	High drudgery in farm operations with low productive methods and technologies	Productivity enhancement and gender sensitive technologies	Farmer Field Schools, FGs, OFR and FFSs
IPM (groudnuts & sorghum), Kumi	Pest (leaf-miner & shoot-fly) in groundnuts & sorghum	Improved g/nuts and sorghum varieties Appropriate IPM-control packages	Farmer evaluation through OFR
Improving coffee productivity and quality, Mukono	Inadequate access to improved varieties; poor knowledge on diseases pests & processing	Improved varieties available to farmers Better management and processing techniques	Low-cost revolving seed multiplication FGs, FFS, OFR
Farmer-managed fish-fry development	Inadequate farmer access to ish-fry for farmed fisheries	Nile tilapia, Miracap & selected indigenous species	Commercialisation of fish-fry production, FGs, FFS

Table 2: The spread of improved crop varieties among farmers of Kacaboi & Kasenge

Item	1997/98	1998/991	999/2000	2000/2001
Kasenge field site, Mukono District				
Cassava	3 acres	14 acres	120 acres	230 acres under SS4. In addition six new cassava varieties (Akena, Omongole, 0414, 063, etc) were introduced through farmers' own initiatives collaborating with the Cassava Program at NAARI.
Beans	71 h/holds	98 h/holds	160 h/holds	Varieties fully adopted and farmers now using improved purchased seed
Maize improved purchased	23 h/holds	75	45% farmers	At least 60% of farmers using purchased seed h/holds using seed
Kacaboi field site, Kumi District				
Cassava	6 acres	63 acres	183 acres	365 acres under migyera & 39 under SS4.
Migyera	3 acres	12 acres	26 acres	The demand for migyera is now fully met, except for SS4 & other incoming varieties
F/millet now	107 h/holds	338 h/holds	Variety saturated at the field site	All farmers requiring the variety can access the seed through neighbours
G/nuts	8 acres	12 acres	35 acres	76 acres. The major problem hindering the spread has been the effect of the leaf minor and unreliable weather in the area.

selection, prioritisation and integration;

- Scheduled Field Days and demonstrations are organised at field sites;
- Study tours are organised to enable farmers visit their counterparts within the same district, across districts and (at least once) a visit was made outside the country into Kenya;
- Farmers have also been facilitated to visit relevant research institutes and agricultural training centres to see by themselves the technologies available and how they are being generated;
- The FFSs have also hosted a number of important visitors from within the field site districts and outside, as well as those from Kenya, Tanzania, Zambia, Zimbabwe, FAO-Rome and recently Malawi;
- There has been effective coverage of FARMESA activities in the local print and electronic media as well as in the FARMESA region. A video documentary is being made covering activities in the two field sites.

Table 1 shows major constraints being addressed as well as technologies and methodologies being tested in selected mini-projects where the FFSs concept was applicable

Farmer managed multiplication of crop germplasm

The entry point of FARMESA activities in the field site in Uganda involved introduction of farmer-managed multiplication of improved crop germplasm based on the priority crops that had been selected by farmers during the diagnostic phase. These crops were *cassava, finger millet* and *groundnuts* for Kachaboi parish in Kumi, and cassava, maize and beans in Kasenge parish of Mukono district. The introduction of these crops was coupled with systematic training of farmers during various stages of crop management.

Farmer representatives participated in the selection of cassava planting materials at field sites where such materials were being accessed. In this stage farmer representatives were exposed to the various attributes and short falls of the improved varieties. During planting, farmers were taught the correct planting spacing, appropriate planting stake length and the manner of planting. At the weeding stage onwards farmers discussed various weeds, pests and diseases and exchanged experiences on indigenous and conventional control strategies.

In the case of cassava, sustainability of planting materials during the drying season was stressed. The following strategies were recommended:

- Planting the crop in different stages such that there is always "seed" available throughout the year;
- Avoiding complete harvesting (especially during the dry season) to ensure that there are stems available for planting during the next season;
- Protection against bush-fires, thieves and stray domestic animals (especially goats) that normally destroy the crop;

For cereals and grain legumes emphasis was placed on proper preparation of the crop for safe storage

Table 2 gives the acreage of planted crop over the initial four years of FARMESA operation at the two field sites. It is worth noting that whereas the project supplied planting materials to farmers only during the first two years, there was rapid level of adoption over the years. For example the acreage under cassava in Kasenge parish grew from 3 and 4 acres between 1997/99 to 120 and 230 acres The figures for Kacaboi parish also show similar increase in acreage caused mainly by increased availability and care of planting materials through ratoon crop.

Use of primary schools as conduits for technology and information transfer

Selected primary schools in Kumi have been involved in FARMESA activities, mainly in the multiplication of improved crop varieties In the process pupils offer their labour to the plots free of charge. In turn they use the school gardens as fields for systematic and continuous learning during their agricultural lessons. Through this approach the pupils and their teachers benefited from regular technical back up from extension agents and researchers who provide them with new agricultural skills that integrate into the training programme. In the process the pupils also develop positive attitude towards agriculture, an effort which is in line with current government policy of teaching agriculture at all levels in Uganda. The pupils and teachers also utilise the proceeds from the gardens mainly in form of school lunches. Planting materials from the school gardens are distributed through the pupils to their teachers, members of the Parents Teachers Association (PTA) and of the Management Committees (MCs) and to parents of the school who also include civic and political leaders of the area. This has been noted an important avenue for technology transfer.

The approach of using primary schools as conduits for multiplication and distribution of improved planting materials has been documented as very positive (Adupa, 1999). This is also reflected by the increase in the number of primary schools involved in FARMESA activities from 1 in 1997/98 to 3 in 1998/99 to 4 in 1999/2001. The major constraint in handling planting materials through primary schools has, however, been the security of the highly valued planting materials. Pupils and the surrounding community steal quite often most of the materials during school holidays and weekends. The safe custody of the planting material poses a lot of challenges to the concerned school staff, pupils and surrounding communities. There is still need to achieve correct attitudes on this matter and in particular appreciation that the proceeds from the initiative must first and foremost benefit the pupils. It is only then that the other interest groups should progressively benefit from the proceeds but this must be in an organised manner.

Box 2.

" ...The coming of FARMESA has positively helped to stabilise household food security in Kacaboi, a sub-county which has for long, depended on food aid through the district..."

(Ms Rose Ochom, Chief Administrative Officer Kumi District, while meeting Dr Ananda, CTA FARMESA, May 2001)

Integration of enterprises under FARMESA

The above crop varieties have made significant impact on the communities as evidenced by their rapid spread and adoption. The cassava varieties have in particular stabilised the food security situation in the Kacaboi area of Kumi district which area was perpetually experiencing severe famine and food shortage since the period of civil strife in the area (1987/91). In the Mukono field site on the other hand, the contribution of cassava has gone beyond provision of food security to improving households incomes, as illustrated through the several case studies illustrated in Annex 2.

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The coffee improvement mini-project initiated its activities by group formation, sensitisation and training of farmers on improved management practices. A mother garden with six different coffee varieties (1½/2, 223/32, 257/53. 1½/3, 1½/6, 258/24) was planted in October. 1999 and having a capacity of yielding 7,500-10,000 seedlings per six months. In the year 2000, cuttings from the mother garden were used to establish a coffee nursery to generate planting materials for the surrounding farmers at a cost.

Improved clonal coffee lines

Between March and June 2001, 450 seedlings of Robusta were sold to the Uganda Coffee Development Authority raising Ushs180,000 and another 1,450 seedlings of lowland Arabica were sold at shs 300/=, a total of Ushs 615,000 all together. Six hundred seedlings of lowland Arabica were distributed to members. The nursery currently has 2,000 clonal coffee seedlings awaiting sale. Another 5,400 seedlings were sold in October 2001, fetching nearly 2,000,000 Ushs. Some of the resources are being recycled to strengthen the project. The group has noted significant amount of revenue in recent months and has consequently decided to open a bank account for safe custody of the funds with a view to improving family welfare.

Beneficiary	Arabica	seedlings	Total
Clonal seedlings			
Mr. Yiga – Kasenge	240	130	370
Mrs. Musisi Z – Kapeke	50	40	90
Mrs. Othieno – Walusubi	**50**	-	**50**

In 2001 four new demonstration fields (FFS-sites) were established at different sites of the parish geared at wider demonstration of the technologies to farmers. The new sites are as follows:

4.7 Improving local cattle, goats.and poultry breeds

The mini-project on local goats and poultry improvement was initiated with sensitisation of farmer groups and selection of beneficiary farmers by the community itself. The selected farmers were then given a step-by-step training on better management methods, including construction of housing structures, appropriate feed resources, disease management and records keeping A total of 100 farmers have been trained so far. The research and extension teams then carried out massive vaccination of livestock, goats and poultry in the localities concerned as a preparatory measure to receiving the new stock. A total of 4 bore goats and 40 improved cockerels were initially purchased and supplied to the selected and trained farmers at Kasenge parish. Likewise three sahiwal bulls were supplied to the selected farmers at Kacaboi parish in Kumi district.

The table below gives details of the performance of the bulls, goats and poultry during the two-three years they have been in the fields. From the table it is noted that the total numbers of she-goats since served is 44 with 25 deliveries giving a total of 32 offspring, 21 female and 11 male. Similarly the 3 Sahiwal bulls supplied to selected farmers have served an estimated 312 cows with 75 and 69 female and male calves delivered. The number of offspring is likely to grow very fast as both the bore bucks and Sahiwal bulls attain better maturity to serve their female counter parts. Of the off springs so far attained, farmers have noted better growth rate and health compared to the off springs from indigenous breeds.

4.8 Farmer managed credit savings and training

The mini-project started in 1999 with sensitisation and systematic training of farmers ending in the formation of "Solidarity Groups" and later "Community Associations" for purposes of credit and savings management in each of the two field sites. Initial membership was 102. In June 2001 total active membership of the Association stood at 212 persons (112 in Mukono and 100 persons in Kumi respectively) of which 120 were women.

Total funds released by FARMESA to the two associations as at 30th June 2001 is Ushs 8,280,000= with a cumulative interest of 2,194,802=. Community savings excluding interest is Ushs 7,851,897=,excluding shs 1,410,000 saved by the then members prior to

Beneficiaries from bore	goats supplied	S/goats served	Goats delivered	No by sex delivered	
				F	M
Mr. Mulindwa W	1	16	10	9	5
Mr. Kityamwezi	1	11	4	2	2
Mr. Sebidde	1	8	6	4	3
Mr. Sendaula	1	9	5	6	1
Totals	*4*	*44*	*25*	*21*	*11*
New bore goats	10	-	-	-	-
Beneficiaries from sah'al bulls	Bulls supplied	No of female cows served	Calves delivered	Calves sex F	M
Mr Imongit	1	96	42	19	2
Mr Orikodi	1	98	40	18	3
Mrs Arionget	1	118	62	38	2
Totals	*3*	*312*	*144*	*75*	*2*
	New bulls	4	-	-	-2
					4
					6
					9
					-

Farmesa's first loan. Current loans total shs 17,879,000= at interest rate is 15% per cycle (6months). When funds saved are re-loaned out these also attract interest as such raising actual annual interest rate to 25-30%. The main method being tested is the "solidarity group" where small groups of farmers (5–6) come together to collectively act as guarantee to a loan being accessed by their members. Should a member fail to pay the solidarity group takes collective responsibility of paying the loan.

By June 2001 loan recovery was still a record 100% in each of the two field sites. There have been some cases of a member defaulting in loan payment mainly due to ill-health or death. In such cases the affected community association has always raised funds to promptly offset the loan. The mini-project is under successful management by a three-person (2 women) Poverty Alleviation and Community Development Foundation (PACODEF), an NGO with over 5 years experience in micro-credit and savings management in Uganda. The micro-credit component has been effective in enabling farmers earn some resources to purchase agricultural inputs as well as improve household earnings and livelihood. Micro-credit is also hoped to be among the ways for sustaining some of the FARMESA activities in field sites beyond December 2001 when external funding of FARMESA is scheduled to end. In fact one of the community associations at Kasenge Parish in Mukono has already registered itself into a Village *Banking Association,* lending funds to members on scheduled terms defined by their articles of association. This is a positive step towards establishment of a farmer managed rural banking scheme.

Development & population of productivity enhancement technologies

Work on the mini-project started in 1998 with development of a lightweight plough for oxen and donkeys: responding to the needs of farmers in the Eastern and northern regions of Uganda. The first plough proto-type was imported by Eng.Ephraim Mbanje of AGRITEX in Zimbabwe for further testing and modification under their own conditions. In Uganda, the plough has so far undergone four proto-type modifications with active participation of farmers through on –farm trials. The recent modification (June 2001) involved tempering the front of the plough beam to facilitate more reliable fixing of the furrow wheel and hitching hook. The plough has now stabilised as a near final model with the specifications detailed in Box 3. Over

80 of the plough units have so far been sold off by A EATRI, with proceeds going into AEATRI recovery Account for ploughing back into the research process. Besides the work on the light model plough, the mini-project is also engaged in the development of a five-spring –tine animal drawn weeder. The first proto-type under went on-farm testing in the Teso Farming systems districts of the country late in 2000 and early 2001. The recommended modifications currently being effected include:

Box 3: Lightweight animal drawn plough

Average weight (kg) ……..26
Overall dimensions:
Length/height/width (mm) 1500/900/600
Maximum beam clearance? (mm)... 420
Maximum working depth (mm) 180
Maximum width of cut (mm) 220
Length of share (mm)…… 320
Width of share (mm).....110
External/internal diam of round beam profile (mm)....42/30

a) Replacements of tines with appropriate size sweeps for better weed control;
b) Having a taper at the from end of the beam for better fixing of wheel arms;
c) Having more rigid and better fitteds weep-holders in the place of the current ones;
d) Specifications of the modified animal drawn weeder are summarised in Box 4. The mini-project at AEATRI is currently collaborating in the development initiatives with the U.K funded DFID project on draft animal power based at SAARI.

Box 4: Animal drawn inter-row weeder

4verage weight (kg)……..
Overall dimension.:
Length/height/width (mm).... 1800/900/800
Maximum beam clearance (mm) ……330
Maximum row width (mm)……850
Minimum row width (mm)……400
Maximum working depth (mm)....120
Maximum/minimum number of sweeps ...5/3
Width of sweep: large/small (mm) 220/150
Dimens of box beam profile (mm).....40 x 40 x6

FFSs – Approach: Its role and impact in empowering farmers

FARMESA in Uganda is now moving towards attaining fully farmer-run FFSs in the two field sites. The FFSs approach certainly has a number of strengths that could lead to its institutionalisation in the entire research and extension delivery systems in Uganda. Through this approach extension agents and researchers can work themselves out of "business" as they systematically

create field conditions for their being replaced by technically well informed, organised and empowered farmers. The FFSs methodology with the main features below is already having a number of success stories.

a) Extension agents, researchers and other stakeholders (trained on the FFSs concepts) have continuously worked together with farmer groups to assist their development;
b) Farmer groups were voluntary formed based on common interests and hinged to priority crop, livestock, and fisheries or around a priority natural resource enterprise;
c) Farmers voluntarily provide FFS sites for use by the entire group, free labour and decide on roles of the various stakeholders and on procedures for equitable sharing of proceeds from their enterprises as well as by laws governing group activities;
d) Through scheduled training meetings (every two to three weeks) discovery learning is facilitated and ideas on the enterprises are shared. While researchers bringing in new information from their institutes, the farmers often come in strong on Indigenous technical knowledge (ITK) and hands on experience on the enterprises;
e) Through this approach all parties in the common R&D as well as the extension venture have something to contribute and something to learn;
f) There is stakeholder ownership and empowerment in that whenever the researchers or extension personnel are unable to attend, volunteer farmers substituted them;
f) The entire group has significantly matured to being both gender and environmetally
f) sensitive in all it does. This translates into better relationships and harmony not only with the ecosystems but also in households.

Developments in the FFSs in Uganda thus far demonstrates the flexibility and effectiveness of the methodology in being able to handle multiple technologies and support services simultaneously, covering the entire production cycle. It is also cost effective, empowers beneficiaries to rally towards their own development and to demand for services and promote equity. The methods can easily be modified to fit into local conditions or integrated with other participatory approaches.

Successful implementation of a FFS programme calls for commitment willingness on the side of the community to work as a group and with capacity for clear definition and prioritisation of their constraints. They should be able to voluntarily provide field sites and own labour for the FFSs activities. Well –trained , experienced and dedicated facilitators, equipped with appropriate technologies and adequate resources are a vital technical back up. These should have clear understanding of FFSs concepts and procedures.

Unflinching support and good will of the authorities at various levels is also pivotal to the success of FFS approach. Annex3 provides a comparison between the T&V and the FFs methodology.

Basic requirements for the success of a FFS

Technical skills requirement

An extension staff, member of government, farmer organisation or an NGO/CBO, usually initiates a FFS. But in all cases the person concerned must have certain skills. Most important is the skill of management of the enterprise in question. In many instances the extension staff has never grown crops from seed to seed, and most often lacks confidence. For this reason most FFS programme begin with training of staff in a complete season-long course to provide basic technical skills in growing and managing a targeted crop. Some people have called this "farmer respect course" in that field staff to realise how difficult it is and appreciate why farmers to do not immediately adopt their extension messages. During the course facilitation, skills and group dynamic are also included to strengthen the education process in FFS.

Field School site

The field Schools are always held in communities where farmers live so that they can easily attend and maintain the Field School studies. The extension and research officers travel to the site on the days of the field School.

Team building

The FARMESA project assisted the two communities of Kacaboi and Kasenge parishes to develop support groups so that members can support one another after the Field School is over. Having elected officers for each FG provides a sense of leadership and direction to the group. During the season, the FFS activities include group-building exercises to build group trust and coherence. The group also carry out seasonal planning and proposal writing so that it may later funding for activities that the groups decide to do together. Farmers under take scheduled systematic training on various aspects of agriculture. Volunteer members freely provide land, which can be used as FFSs sites for group activities. When farmers have this basic knowledge they are better clients for extension and research systems because they have more specific questions and demands. They are also able to hold these systems accountable for their output and benefits.

This is one of the biggest achievements of the project, which will have direct contribution to the incoming NAADS programme.

Hands -on learning activities

Besides season-long field studies, the field Schools also uses other hands on learning activities to focus on

specific concepts. These also provide ways for farmers to continue studding after the Field Schools. Farmers are able to use the same methods to help other farmers to learn as it happened in the Kumi field site where volunteers travelled to neighbouring areas to sensitise and train their counterparts n FARMESA principels and activities.

FFS is a process, not a goal

It must be remembered that field schools are methods to provide farmers with a learning environment so that they can achieve the goal of reducing inputs, and increasing yields, profits and incomes. In some FFS programmes the expansion in terms of numbers of FFSs becomes the overwhelming target and success criteria to the extent quality that suffers and the initial goals are not met. Implementers of FFS programmes should take note of this.

Follow-up

All Fields Schools normally have at least one follow up season, the intensity of which will be determined by the motivation of the field school participants, time constraints of participants and facilitator, and to some extent funding. Following –up has been known to be as little as monthly support sessions for farmers to discuss basic problems in implementation, to as much as farmers running a complete field School for other farmers. Often farmers agree to repeat the field school process for one more season to verify findings, or to repeat the process of the Field School on a new crop. The ultimate goal is that some groups should develop into associations or clubs that are organised well enough to carry on studying as a group. In this case the need for a facilitator usually becomes less central in the process if he/she has done a good job, more often providing some technical backstopping and stimulation for the group.

Local funding goal

Some of the Filed school activities focus on future planning and fund raising. There should be an explicit goal for groups to become independent and seek local support separate from project funding . In national programmes, it is desirable to have funds available directly to farmer groups that request support for their local activities. This is another areas where the current FARMESA field sites will find very little difficulty linking to the incoming NAADS programme.

Sustainability of the project beyond funding period

A number of measures have been put in places that provide very reasonable ground for sustainability of the FARMESA project beyond its funding life.

a) All along the project has operated within existing other than independent or parallel management structures all aimed at contributing to project sustainability:
   - At national level the project is hosted by NARO, a reputable research organization with staff well qualified and experienced ain various areas of agriculture and with capacity and mandate to effectively address a variety of farmers' constraints;
   - At district level the project is under the Production Department- responsible for support supervision and ensuring agricultural project implementation (at their level) through the existing extension systems including NGO involvement. In Mukono district where the project has operated for several years now, the district has already appreciated the achievements pf the project and has promised some resources to continue some of the FARMESA activities if donor funding ends. Similar approach is likely to be forthcoming in Kumi district where the project also operates;
   - At grass root level the primary responsibility of the project lies with the farmer groups (FGs) and in particular with the Filed Site Working Groups FSWGs) which oversee all project operations Both the FGs and FSWGs spearheaded by officials democratically and regularly elected by the farmers. Group members have undergone group dynamics and leadership training.

b) Farmers have been empowered through sensitisation and systematic training and are able:
   - to participate in community needs assessment and planning for interventions;
   - to collectively create a vision for the community's future and to practice and implement tier activities with gender and environmental considerations;
   - to develop an implementation strategy, manage technology development sites and solicit relevant technologies wherever available;
   - with some guidance , write bankable proposals for accessing funding;
   - organise themselves into interest groups and to choose and demand for agricultural services

c) The FFSs' training model is systematic and has significantly empowered farmers (particularly female ones) making them better clients for the extension service as indicated above. These farmers will smartly fit into the incoming *National Agricultural Advisory Services Programme (NAADS)* that is being introduced in Uganda to replace the current government extension systems, thereby paving way for private extension services in the country.

d) Since NAADS arrangement will provide conditional resources to farmers' at sub-county level, such grants will go on to funding some of the successful FARMESA activities, hence maintaining sustainability.

Lessons learnt

The following lessons have been learnt through several

years operating the FFSs approach in tw specific sites in Uganda:

- Although the FFSs stated in S.E started Asia were based on mono-crop (rice), in Uganda this approach has successfully been employed on multiple enterprises including crop, livestock, fisheries as well as on a number of natural resource management enterprises and using special interest groups;
- FFSs as a methodology is flexible and more cost effective in delivering technologies and information, since the farmers support the delivery and more farmers can be reached ;
- Farmers of all age groups (children to elderly) can actively participate when empowered and will surrender their land and labour willingly;
- Farmers participation in a FFS works best in small groups 15-25 persons instead of large groups of of over 40 people ;
- Whenever training activities and study meetings are scheduled at different times farmers can be members of more than one FFS;
- FFFSs enhance contact between Farmers Researchers- Extension workers and consequently adoptions of practices are high as farmers learn better with hands-on practices;
- Access to micro – credit positively enhances success of FFSs
- Farmer learning in FFSs consolidate their co-operation/friendship and improves their capacity to work together even in other enterprise such was the case in building up a whole primary school in Kacaboi field site.

Some problems in applying FFSs concept in Uganda

- At the beginning of operations there was indequeate stakeholder exposure to the concept and procedures of FFSs. This resulted in slow start during early stages of project implementation;
- Gender balance in field sites was also a big problem in the two sites. The women have all along been culturally looked down upon by the male folk.
- Even where the community had earlier sat to discuss and agree on procedures for sharing of proceeds later at harvest, there were still cases where sharing actually became a problem;
- There were few incidences where members elected to leadership position had failed to be sufficiently accountable to the members as a result of which they had to be sacked;
- During early stages of project implementation, most farmers displayed the tradition of *dependency syndrome* , with expectation for free handouts as wells as payment for some of their contributions to the project. Its elimination costed a lot of sensitisation by the project team.

Despite the above initial difficulties, the project systematically and cautiously progresses with appropriate strategies derived from the vital training on participatory methods that was recieved by most stakeholders in the implementation arena. The above initial difficulties were soon behind as the farmers got to appreciate their vital as the principle providers of solutions to their community problems.

Conclusion

Initial results from Uganda and elsewhere in the region have demonstrated that the FFSs approach to technology fine tuning and dissemination is useful and effective and can be integrated with other adopted participatory approaches such as FSA, PEA and VULPA. Nevertheless, for it to operate well the methodology calls for a significant amount of political commitment in terms of policy and resources. Emphasis must be on the training of human capital and establishment of mechanisms for continuous and systematic training and research.

There is need for demonstrated utility of the procedures together with an internally driven national strategy to integrate it within R & D. Success stories experiences will have to be documented and distributed and awareness creation drive made to policy makers and mangers at all levels. There is also need to support national level training on the concept and procedure including sensitisation workshops and networking.

Annex 1: Leadership positions at the Mukono and Kumi FSWGs, 1997/2001

Position in FSWG Leadership	*Mukono FSWG*				
	1997	1998	1999	2000	2001
1. Chair person					
• Male (Mr Kolongo, Mr. Walakira D)	1	1	1	1	1
• Female	-	-	-	-	-
2. Vice-chair person					
• Male	-	-	-	-	-
• Female (Mrs. Nakinda, Mrs Musisi J)	1	1	1	1	1
3. Secretary					
• Male (Mr. Ssebide S)	-	-	1	1	1
• Female (Mrs. Musisi J)	1	1	-	-	-
4. Treasurer					
• Male (Mr. Mulindwa W)	1	1	1	1	1
• Female	-	-	-	-	-
5. Mobilizer/Facilitator					
• Male	-	-	-	-	-
•Female (Mrs. Nsubuga E)	1	1	1	1	1
6. Committee members					
• Male	2	2	2	2	2
• Female					
Total					
• Male	4	4	5	5	5
• Female	6	6	5	5	5
Position in FSWG Leadership	*Kumi FSWG*				
	1997	1998	1999	2000	2001
7. Chair person					
• Male (Mr Imongit Mackay)	1	1	1	1	1
• Female	-	-	-	-	-
8. Vice-chair person					
• Male	1	1	1	1	1
• Female (Mrs Amodot J, Igoe Hellen)	-	-	-	-	-
9. Secretary					
• Male (Mr.Adoile S)	-	-	1	1	-
• Female (Ms Ikori Janet, Mrs Grace Okello)	1	1	-	-	1
10. Treasurer					
• Male	-	-	-	-	-
• Female(Mrs Aryong G, Ms Igoe Hellen)	1	1	1	1	1
11. Mobilizer/Security					
• Male (mr Ekusai A, Mr Obelon P)	1	1	1	-	-
• Female (Mrs Grace Atyang)	-	-	-	1	1
12.Committee members					
Male (Mr Icilat C, Mr Oumo M, Mr Okiring M)	3	3	3	2	2
Female (Ikori J, Mrs Achilot, Ms Anna J,)	2	2	2	3	3
Total					
• Male	5	5	6	4	4
• Female	5	5	4	6	7

Annex 2: Case illustrations on the successes of FFSs

Progressive integration of enterprises towards food security and household

"...A nine member women group at Mbalala village in Mukono district started in 1998/99 with a half-acre plot of cassava through planting materials obtained from the project. A year later the group harvested the stems and planted two new one-acre plots of cassava each under management by a smaller membership of the group. Six months later the ratoon stems together with tubers from the mother garden were sold at Ushs 400,000 of which shs 360,000 was used to purchase 150 one-day old broiler chicks together with associated feed and drugs. By the time the broilers (136) were being sold off at shs 460,000, the group also accessed a loan of Ushs 100,000 from the FARMESA micro-credit component The group decided to purchase a cross-bred heifer at shs 300,000 plus another 20,000/= to transport the animal. The aim was to alleviate the protein deficiency among members' kids while creating some reliable source of income for the members. The balance of shs 240,000 was equally shared between the members under conditions that each member uses the money to improve her household holdings and to buy a hoe. The group also later sold cassava stems from their new plots at shs 240,000. Ninety shillings were used to buy 9 female piglets for the 9 members of the group and another shs 30,000 was used to buy initial maize bran and de-warmer for the piglets. The members shared the rest of the money together with proceeds from the sale of new cassava stems and tubers. When the FARMESA mission visited the group in March 2001, the cow was due to produce. The members explained that they would be giving the calf to one member each in turn based on a procedure to be determined by the group. Part of the milk will be sold to generate some resources for the group and the remainder shared in small amounts by members of the group. The piglets were also then 7 months old: due to litter within 3-4 months. A success story on integration!

Impact of farmer-managed micro irrigation

"...Luwunga village in Mukono hosts the irrigation mini-project. This is currently the main centre of FARMESA activities in the area. During the dry season of 1998 the farmer group put two acres under irrigated maize destined for sale in fresh cobs during the dry season when there in no fresh maize in the market. The group received Ushs 1,200,000 from the sales. The following year the group planted 1.5 acres of beans under supplement irrigation. The harvest was 700 kgs of which 500 kgs were cleaned and dressed for sale to the district at Ushs 350,000. The district distributed the clean planting materials to farmers in other parts of the district and the group shared the remaining seed. The group then turned to growing selected high-value crops, mainly vegetables. Sales from a quarter acre of tomatoes in 2000 earned the group Ushs 420,000. The group has since continued with the growing of vegetable crops but of recent capacity to accurately keep records has declined. The group has also diversified the use of this site to include propagation of strategic crop varieties which the community acquires through the now strong linkages with research institutions serving their catchment, particularly Kawanda and Namulonge. In this connection six cassava varieties, 18 sweet potato varieties and four yam varieties most of which are recent releases by the National Variety Release Committee are already being carefully propagated at this site for distribution to members. Because the site has become among the major centres of activity in the parish, the project availed it with a protected well, which is providing clean and safe water for the farming community..."

Dedicated into multiplying crop varieties for other farmers

"... Mr & Mrs Othieno are very active members of FARMESA at Walusubi village, Mukono district. In 1997 the family offered a plot of land for a cassava mother garden for their farmer group consisting of 12 women and 6 men. A year later planting material from the mother garden was shared between half the members of the group for propagation in their individual plots. The mother garden still remained to generate more planting materials for the family as well as for other farmers. Mrs Othieno reported that for the first time in 10 years the family had managed to have excess cassava to dry as composite floor.

Mr and Mrs Othieno also started multiplying 8 improved banana varieties and to provide suckers for farmers in need. She also under took the multiplication of 18 sweet potato varieties. She supplies sweet potato vines to neighbouring farmers and offered samples of the variety to the irrigation site at Luwunga for further propagation for distribution to other farmers. Apparently the family does not believe in selling planting materials to other farmers since they believe this would slow down adoption process. Several programs in NARO now utilise the Othienos as reliable contact farmers. "

Micro-credit increases household incomes and livelihood

" Mr Oisu, one of the youth members of the Kalengera Micro-credit Group in Kacaboi field site, is a small-scale butcher and farmer. His business has for a long time faced problems of low capital resulting in his inability to channel any resources to improve his farming and household welfare. When he accessed a credit of Ushs 50,000/= from FARMESA in 1999, he was able to purchase two goats which he slaughters in a nearby rural market on a daily basis, earning a net profit of Ushs 10,000/= per day. He is able to slaughter at least 6 goats per week with a net profit of 30,000/= weekly. He was therefore able to pay back the first loan in two weeks, remaining with adequate capital to continue his business. When he accessed his second loan during the last quarter of 1999, this time 75,000=, he expanded his business to slaughtering at least 9 goats per week. With the profit earned he was able to invest on improving his farming. He hired two labourers to assist his wife on the farm on a daily basis while he attended his business in the butcher. With this he was able to open wider acreage for cassava, sweet potatoes, millet and groundnuts: basic food security crops in the area. His wife was also very happy to have been relieved of part of the garden work and had a little more time to rest.

Animal traction is a very important input to farming in the area. For this reason, Mr Oisu had to buy one ox-plough that has tremendously enhanced his farming capacity. Though he currently owns no oxen of his own, he has had to join his brother who has a pair of oxen but no plough. He now plans to save more resources so as to be able to buy oxen for himself. When the FARMESA team visited Mr Oisu in late June 2001, he was having two acres of sweet potatoes, which he hopes to sell off at harvest to improve his income base and improve further his household welfare.

Annex 3: Training and Visitation comparison with Farmer Field Schools Methodology

Point	Classical Training and Visit	Farmer Field School Evolution
Field-level extension officer's job	Deliver pre-packaged "messages" from a research-extension linkage. Primary job is information transfer, not technical expertise, which is reserved for Specialists not at the field level	Technical Facilitator: Every FFS trainer should have basic technical skills (at least able to grow the crop, or rear animals, etc.). Secondly, every FFS trainer should have group oriented training and management skills. These skills are typically learned in a season-long Training of Trainers where they learn what they will teach.
Experience of trainers	Variable, but most often lacking basic farming skills and experience field level staff given communication skills.	Master trainer with farming experience gained during Training of Trainer programmes in which each person is required to grow crops and carry out field studies so that they test what they will use in field Schools later.
Information	Primarily top-down messages from distant research stations about situations presumed to be representative of farms.	Recommendations are tested against conventional practices and new information about to the site emerges. Promotes local creativity.
Contact point	Contact farmers that are supposed to train other farmers by passing on external information.	Groups of interested farmers that farm on a daily basis through generating local study circles.
Time frame	Continuously, forever, on a two-week regular cycle not based on any natural phonology.	A pre-defined period. Usually on a weekly basis over a season. FFS may be longer than a season, but never less than one season integrated with the crop phonology.
Pedagogy	Training: Use of static pre-determined demonstrations and in field examples to show and tell.	Education: a focus on underlying principles that allow farmers to derive and adopt recommendations within their own dynamic ecological, social, and economic realities.
Evaluation	At best indirect: based on measuring delivery and funds spent.	Pre-and post-testing. Community self-surveying. Identifiable indicators defined in terms of system-critical factors. Internal rates of return.
Training site	Demonstration field, training centres, home of contract Farmer, static not revisited in time or observed in terms of any on going process.	A shared field in which the FFS uses to dynamically validate and test new management methods over the entire season (e.g. decisions during one part of the season can be verified by yield results)
Long term objectives	Increase food production, etc. "Farmer's attitudes, lack of knowledge, and practices are an object/ constraint of a development process"	Natural groups that will continue to address agricultural and community problems on their own and with technical backstopping. "Farmers as the subject of development".
Research	Primary source of information is research stations assumed to develop representative models that are widely applicable.	A process and consequence of local testing and within-community/ ecosystem learning.