



1st MATF Grant Holders' Experience Sharing Workshop

*17-19 June 2004
Silver Springs Hotel
Nairobi, Kenya*

FARM Africa
Making a lasting difference to Africa's families

MATF

Maendeleo Agricultural Technology Fund



1ST MATF Grant Holders'
Experience Sharing Workshop Report
17 - 19 June 2004
Silver Springs Hotel
Nairobi, Kenya



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1ST MATF Grant Holders'
Experience Sharing Workshop Report

ACRONYMS

ABL	African Bee-keepers Limited
ARI	Agricultural Research Institute
BGA	Banana Growers Association
CBOs	Community Based Organizations
CFs	Contact Farmers
CIAT	International Centre for Tropical Agriculture
CIFA	Community Initiative Facilitation and Assistance
C-MAD	Community Mobilization Against Desertification
CPDA	Christian Partners Development Agency
DRD	Directorate of Research and Development
EA	Environmental Alert
ELF	Extension Link Farmers
FAO	Food and Agriculture Organization of the United Nations
FARM-Africa	Food and Agricultural Research Management - Africa
FFS	Farmers' Field Schools
FSUA	Focal Scaling Up Areas
GoK	Government of Kenya
HCDA	Horticulture Crops Development Authority
HVT	High Value Trees
ICRAF	International Centre for Research in Agroforestry
ISAAA	The International Service for the Acquisition of Agri-biotech Applications
KARI	Kenya Agricultural Research Institute
KDC	Kitui Development Centre
KEFRI	Kenya Forestry Research Institute
KFWG	Kenya Forestry Working Group
KIRDI	Kenya Industrial Research Development Institute
K-REP	Kenya Rural Enterprise Program
LBDA	Lake Basin Development Authority
LPRI	Livestock Production Research Institute
LVIA	Lay Volunteer International Association
MATF	Maendeleo Agricultural Technology Fund
MBD	Microfinance Business Development
MOA/MOARD	Ministry of Agriculture/Ministry of Agriculture and Rural Development
MOH	Ministry of Health
MOU	Memorandum of Understanding
MUK	Makerere University Kampala
NAARI	Namulonge Agricultural and Animal Research Institute
NADIFA	Nakasongola District Farmers Association
NGOs	Non-governmental Organizations
PEC	Parish Executive Committee
PRA	Participatory Rural Appraisals
QDS	Declared Seed Production System
SAARI	Serere Agriculture and Animal Research Institute
SARI	Selian Agricultural Research Institute
SEC	Sub-county Executive Committee
SIGs	Special Interest Groups
SPG	Seed Producer Groups
SQL	Seed Quality Inspectors
SVIP	Sironko Valley Integrated Projects
TAWLAE	Tanzania Association of Women Leaders in Agriculture and Environment
TOSCA	The Tanzania Official Seed Certification Association
ToT	Trainers of Trainers
UHT	Ultra Heat Treated
VCT	Voluntary Counselling Testing
VEO	Village Extension Officers
VGL	Village Government Leaders
ZARF	Zonal Agricultural Research Fund

PREFACE

MATF-Helping to Move Remarkable Technologies from Research into Farmers' Fields

African agricultural development has lagged behind that of other developing countries, especially Asia. Majority of the continent's smallholder farmers still employ inferior and often inappropriate production and post-harvest technologies, which in turn results in low productivity, aggravating poverty. Many, especially women primary producers and food processors are not able to exploit existing new technologies because they lack knowledge and skills due to weak linkages with research and extension, or they cannot afford the technology inputs and have no access to credit facilities. In many instances, smallholders lack access to markets and credible market information. Constraints, such as these hinder adoption of proven profitable technologies.

The Maendeleo Agricultural Technology Fund (MATF) was established to identify and promote innovative ways of *speeding up transfer of proven viable agricultural technologies from research and promoting their profitable adoption and utilization by farming communities in East Africa*. MATF is jointly funded by two prestigious foundations, the Gatsby Charitable Foundation of UK and the Rockefeller Foundation and is managed by the Food and Agricultural Research Management (FARM) Africa. The purpose of MATF revolves around innovation in technology, partnerships and dissemination approaches.

Since its establishment in 2002, the fund has made a significant progress of identifying and funding 35 innovative technology transfer projects. Preliminary results from monitoring and evaluation of the first 17 projects show tremendous productivity and livelihood enhancing capability of existing technologies. For example, mosaic resistant cassava varieties and banana tissue culture, which have raised productivity from merely 3MT to over 15MT per hectare and from about 15MT to 90MT per hectare, respectively, small scale silage making technologies appropriate to smallholder dairy farmers. MATF has also proved that building of innovative partnerships, for instance linkages between research, microfinance institutions and organizations with skills for downstream extension, as well as the use of innovative technology transfer models, such as farmers' field schools or micro-credit approaches, such as the *Juhudi* lending model can greatly enhance technology adoption and impact on livelihoods.

This report on the first grant holders' experience sharing workshop is one of MATF's inbuilt processes of research, learning, documentation and sharing of lessons. The workshop brought together grantees and partners from the first 17 projects. I hope that as you read through the briefs on each project you get the feel of the enormous potential that exists in terms of innovative technologies, diverse partnership possibilities and approaches to improve smallholder farm productivity and livelihoods. For more information on our portfolio of projects and other details on MATF, please visit our website: <http://www.maendeleo-atf.org>



Lydia N Kimenye, PhD
Fund Manager

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Session 1: OPENING CEREMONY

The Maendeleo Agricultural Technology Fund (MATF): An Overview and Workshop Objectives

by Lydia Kimenye, PhD

MATF and its Mission

MAFT is a competitive fund aimed at improving farm productivity and incomes through promotion of innovative technologies and dissemination processes in East Africa. It was started in 2002 with joint funding from the Gatsby Trust and the Rockefeller Foundation and managed by FARM-Africa through its regional office in Kenya. The fund was established after realizing that while research institutions had developed numerous improved technologies, most of these had not reached farmers' fields. Instead, smallholder farmers continue to apply inferior farming practices and technologies, which in turn result in low agricultural productivity, perpetual food insecurity and poverty. In many cases, smallholders fail to exploit improved technologies either because they are unaware of them, lack the skills and knowledge needed to apply them, or lack capital to pay for the necessary inputs. MATF tries to develop innovative partnerships between organizations, which offer different skills, expertise and approaches to deal with the constraints to technology adoption and utilization.

Purpose

The goal of MATF is to improve livelihoods of smallholder farmers and herders in the East African region by increasing household productivity to agricultural resources. To achieve the goal, the fund strives to facilitate smallholder farmers' access to and utilization of improved viable technologies. This is done by encouraging different organization involved in agricultural research like research institutions) and technology dissemination especially those close to the grassroots level, such as NGOs and community-based organizations (CBOs) to form strong and effective partnerships and to work together using innovative approaches and methods that address farmers' constraints to adoption.

Objectives

The specific objectives of MATF are:

- through innovative approaches and methods, facilitate smallholder farmers to access and utilize improved viable technologies for improved productivity and incomes
- to foster partnerships between different organizations involved in agricultural technology development and dissemination to improve technology transfer and adoption
- to capture, document and disseminate lessons on best, processes (partnerships and methodologies) for effective transfer of specific proven technologies

How Does it Work?

MATF implementation strategy and process involves:

1. Selection:-where MATF has developed a three level selection process of:
 - concept note
 - proposal
 - field visits to make ground assessment of proposed project
2. Monitoring and evaluation of projects
3. Documentation and dissemination of lessons from project

Funding Level and Eligibility

- Successful projects receive up to UK£ 60,000 per project to be used in two years
- CBOs, NGOs, research institutions and agricultural colleges/universities are eligible

Current Status

Since 2002, over 1,500 applications have been received. The following have been achieved:

- Thirty-five projects with seven ending this year (2004) having been evaluated; and preparations for documentation of lessons on 'best' technologies and practices are underway
- MATF is currently in the final stage of selecting projects for the fourth round

Objectives of the Workshop

This workshop is intended to offer an opportunity to:

- share and learn from each other (grantees) and with stakeholders
- review and update technologies
- form further partnerships and linkages
- exchange and update views on approaches and methods
- review achievements and lessons learnt



Plenary Session Comments

The following issues were raised by the participants and the response follows.

While the growth of MATF was appreciated, it was observed that for technological evolution, MATF project period of two years was too short and should be extended. Participants were also concerned about the selection criteria, support in improving proposals and the non-allowable items in the budget, such as funding staff, capacity building, computers and vehicles.

The funds representatives and donors assured the participants of possible extension but emphasized that only projects with cross-cutting technology logical framework, positive results and good work on the ground will be given preference. Due to limited resources and overwhelming demand, the fund cannot offer pre-funding for proposal preparation, staff salaries, vehicles and capacity building of implementing agencies. Projects are verified to ensure that the real needs are addressed.



Session 2: DISSEMINATION OF IMPROVED CROP VARIETIES (BANANA TISSUE CULTURE)

Diffusion of Banana Tissue Culture Technology to Smallholder Farmers in Kisii District through a Micro-credit Scheme

Project Team: Samuel Wakhusama, Margaret Karembu, Margaret Onyango, David Munyi, Fidelis Kimonyi, Tunda Bosco

Executive Summary

Banana production in East Africa had declined over the last two decades due to unavailability of clean planting materials, lack of appropriate technologies and environmental degradation. The tissue culture (tc) technology that has been fully commercialized in banana exporting countries, such as Costa Rica and South Africa was identified as a possible intervention. The sterile operational nature of tc technology results in production of large quantities of clean, superior planting material in the form of plantlets. In six months, up to 2,000 individual plantlets can be produced from a single shoot compared to about 10 suckers from the traditional sucker-propagation method. Other advantages include uniformity in fruiting, which is ideal for commercializing smallholder banana production. Preliminary results from pilot activities had demonstrated the suitability and adaptability of the technology within existing farming practices of Kenyan small-scale farmers. However, diffusion was constrained by weak distribution system for the tc plantlets and lack of micro-credit to facilitate establishment of viable commercial orchards. Against this background, the project aimed to improve diffusion of the technology in Kisii District through a micro-credit scheme.

Project Objectives

The following outputs are expected from the project:

- expanded benefits of banana tc production through acquisition of planting material for establishing viable commercial units of at least 40 plants per farmer
- established sustainable pilot micro-credit scheme targeting at least 200 farmers
- increased household incomes by at least 30%

Partnerships

The project was implemented through partnership among the following organizations with the tasks assigned according to comparative advantages:

- **The International Service for the Acquisition of Agri-biotech Applications (ISAAA) AfriCenter**, was in charge of project implementation, playing the facilitative and coordination role. This entailed sourcing and delivering the tc planting materials to farmers, monitoring, maintaining partnerships through regular communication, financial management, reporting and donor liaison.
- **Kenya Agricultural Research Institute (KARI), Kisii and the Ministry of Agriculture** were in charge of field extension and orchard management.
- **Kenya Rural Enterprise Program (K-REP)** provided micro-credit.
- **Farmers** were the direct beneficiaries of the project.

Methodology

Participatory approaches were used to implement the project using the farmers' field schools (FFS) model as technology uptake path, where farmers learn by doing, discovering and comparing. It nurtures a non-hierarchical relationship between farmers and trainers. Analysis and action revolve around four basic principles of grow, observe, understand and become experts. This approach made it possible to collectively train the farmers in all aspects of orchard management and enhanced expansion of the activities without additional facilitation since the trained farmers would become trainers of trainers (ToTs). Monitoring and evaluation was done within the schools.

Credit Administration

The group-based lending or *Juhudi* loaning system was used where farmers were organized into small groups of three to eight farmers known as *Watano* and sub-groups called *Kikundi cha Wakulima* (KIWA) comprising 15 to 20 farmers. Four to eight *Watano* groups were combined to form the KIWA, which was the administrative and legal entity through which loan transactions were carried out. The KIWAs were registered as self help groups with the Ministry of Social Services. Security for loans was a combination of cash collateral, pledges through a sworn affidavit and savings by *Watano* group members. Farmers accessed loans as individuals but were guaranteed by group members. Repayment was matched to the farmers' cash flow and interest paid on a monthly basis while the principle was paid in one balloon payment after realizing sales of the first crop in about 14 months. K-REP delivered and managed the credit.

Session 2: Dissemination of Improved Crop Varieties (Banana Tissue Culture)

Achievements

The project has achieved the following:

- established nine FFSs with 256 farmers distributed evenly across gender
- assisted farmers to acquire 7,500 tc plantlets worth Ksh. 750,000 (£6,173)
- trained farmers on the tc technology, orchard management cycle, micro-credit management and re-orientation of farm enterprises
- widened farmers' scope in farming as a business through exposure to other technologies, such as interaction with different stakeholders
- strengthened the social fabric of the community and enhanced healthy competition and self-monitoring
- initiated entrepreneurial activities, such as the establishment of a hardening and distribution nursery
- worked with K-REP to incorporate the paid-up farmers into an existing micro-credit scheme where several people have obtained loans for buying dairy cows or starting small businesses

Visions for Sustainability

The project's vision for sustainability beyond the grant period is outlined below:

- K-REP will convert the micro-credit into a revolving fund through its village banks
- At least 50% of the FFS will become ToTs and form their own FFS
- The project hopes to establish linkages between farmers and service providers currently facilitated through exchange visits
- A few farmers expressed interest in establishing private tc distribution nurseries
- The project is exploring ways of diversifying markets and value addition through processing

Lessons Learnt

- Group-based approach is more cost effective in introducing a new technology
- Women are better mobilizers as they tend to share experiences of success more than men
- Micro-credit can enhance diffusion of new technologies and improve overall farm enterprises
- Incorporation of a marketing component at the start of the project is crucial in preventing farmers from becoming victims of their success due to increased production
- Availing the desired banana varieties is crucial to building trust with farmers
- For crops that require a lot of water during initial stages of establishment and where most farmers depend on rainfall, timing is crucial
- Good will from partners at institutional and field level is fundamental in realizing the set goals

Challenges Encountered and Recommendations for Future Projects

Despite the resounding success that the project has had, the following challenges were encountered:

- limited availability of farmer-preferred varieties and poor access to plantlets for orchard expansion
- a relatively higher loss of plantlets due to the long distribution chain (Nairobi-Kisii-Farmers fields)
- unpredictable weather conditions leading to underperformance of some varieties (*Ng'ombe and Uganda green*)
- difficulty in harmonizing diverse interests from partners
- quarterly reporting was too frequent for perennial crops, such as bananas

The following suggestions could be used to address some of the challenges:

- involving micro-credit provider in identifying beneficiaries
- assuring farmers that desired varieties would be available before hand and if possible, establish a hardening nursery at the onset of the project
- monitoring loans, by at least two officers, to pre-empt unexpected eventualities

Diffusion of Banana Tissue Culture Technology to Rural Farmers in Kiboga and Mubende Districts of Central Uganda

by Arthur Musoke - BUCADEF.

Background

The objective of the project- Banana Tissue Culture (tc) Technology Transfer Project (BATICUTE) was to eradicate food insecurity, and alleviate poverty through the promotion of banana tc planting materials to produce high yielding bananas (both cooking and sweet varieties) among rural households in the districts of Mubende and Kiboga.

Innovative Aspects of the Technology

The adoption of banana tc technology would ensure that large quantities of uniform suckers, free from pathogens and high yielding, are readily available to farmers.

Objectives

The objective of the project was to improve food security in Kiboga and Mubende districts among 3,600 households by:

- encouraging the adoption of planting disease and pest free bananas
- promoting sustainable agriculture in the production of bananas
- training 3,600 farmers in the basic agronomic management practices to curb soil erosion
- creating greater involvement of the local government in food production issues
- setting up banana nurseries in Kiboga and Mubende
- setting up 36 secondary multiplication sites
- transferring scientific knowledge from research to the farmers
- lobbying 500 households to plant tc bananas

Methodology

The project worked with the community and their leaders to identify eight farmer group leaders (GL) from each sub-county to participate in the demonstrations and generation of clean planting materials for others. Sixty-five per cent of the GLs were women, who were required to register and train 100 farmers, give out 15-20 clean suckers to each of the 25 group members and set up 1/4 - 1/2 acre of banana tc, facilitated by the project.

Sixty- seven acres of banana have been set up for demonstration and mother gardens and one tc nursery established to receive and harden off tender tc materials from the laboratory. Government extension officers worked jointly with BUCADEF field extension workers (FEWs) and were to train farmers on banana agronomic practices, post harvest handling (PHH) and product development.

Project partners and Roles

The project was implemented in collaboration with the following partners, who played the following roles:

- **Kawanda Agricultural Research Institute** provided *technical backstopping and availed banana tc planting materials, post harvest and handling(PHH) and value addition.*
- **Agro Genetic Technologies Limited** sold *banana tc plantlets to the project farmers and assisted in establishing banana nurseries.*
- **Ministry of Agriculture Animal Industry and Fisheries Extension staff** (MAAIFs) provided *extension services and trained farmers.*
- **Local governments** provided *political support, advocacy and donated land for nurseries.*
- **Farmer's representatives** provided *land and assisted in training and provision of labour.*
- **BUCADEF** played a catalytic role in mobilizing and coordinating resource utilization by providing quarterly project progress reports and documentation, strengthening of farmer groups and procurement of project inputs.

Achievements

The project has achieved the following since its implementation:

- It has won local government support to construct two collection centers for bananas in Myanzi
- Four-thousand food secure households have surpassed project expectations of 500 units
- Eleven sub-counties in Mubende and Kiboga have adopted disease and pest free bananas against nine, which were originally proposed by the project
- Six thousand, seven hundred (6,700) farmers have been trained on basic agronomic management practices to curb soil erosion against the projected 3,600
- The local government, district and sub-county level are more involved in food production
- A banana nursery has been set up in Kiboga
- Sixty-seven secondary multiplication sites have been set up

Session 2: Dissemination of Improved Crop Varieties (Banana Tissue Culture)

- Scientific knowledge has been transferred from Kawanda Research Station to TOTs, adopters, and field extension workers of BUCADEF and MAAIF
- Five hundred and ninety six (596) households currently plant tc bananas
- Two hundred and fifty (250) farmers have purchased tc planting materials
- FEWs/MAAIFs have been trained in post-harvest and value addition of bananas and are poised to train the ToTs
- Linkages between farmers, research institutions and technology providers have been strengthened

Reasons for Success:

The success of the project is attributed to the following factors:

- Positive attitude and faith of the farmers in the superiority of tc bananas. Farmers were convinced that the tc plants grew and matured faster than the common ones and the bunches are five times heavier and sweeter
- Partners now participate actively in the project
- People are more loyal to the Kabaka who launched the project

Lessons Learnt

The following lessons have been learnt during the project:

- Improving food security among rural farmers requires a link between them and researchers
- Improving the income of rural farmers requires farmers to be organized in groups with proper product development and marketing strategies
- Linking production to market requires experts for effective results
- Adult learners adopt faster through participatory approach

Challenges

The project currently faces the following challenges:

- demand, by farmers, for coverage beyond the scope of the project
- lack of a micro-finance institution in the coalition
- limited use of banana and by-products among the farmers
- the banana tc from AGT are too costly for most farmers

Mitigation Measures

The following measures should be taken to ensure project sustainability:

- look for additional sources of funding to support core activities, such as integrated pest management (IPM), marketing, value addition and establishment of parish pest and disease free multiplication sites and to open up sub-counties
- foster linkages to improve marketing, for example, with the International Institute for Tropical Agriculture (IITA) and similar organizations
- encourage frequent training and sensitization of farmer groups in enterprise development and entrepreneurial skills
- support technical backstopping on problem shooting areas, for example, payments, marketing and sales
- set up a fund for purchasing the initial tc banana to alleviate the problem supply of banana tc

Diffusion of Banana Tissue Culture Technology to Small-Scale Farmers in Arumeru District of Tanzania and its Environs through a Micro-credit Scheme

*Project Team: Tanzania - Ally Mbwana, Charles Panyika, Fredrick Mumbuli, Getrude Kweka.
Kenya - Samuel Wakhusama and Margaret Karembu*

Background

The project aims to enhance diffusion of banana tissue culture (tc) technology to smallholder farmers in Tanzania. It is based on successful experiences from adoption of the tc techniques on bananas by small-scale farmers in Kenya. Subsequent sensitization to the Kenya project for Tanzania farmers who were experiencing similar problems of banana production decline due to unavailability of clean planting materials raised demands for the tc materials. However, the costs of establishing a viable commercial orchard estimated at 80 plants per farmer and valued at US\$80 was prohibitive.

This project availed micro-credit to the resource-challenged farmers to enable them establish viable commercial units of banana orchards. The project directly inputs into efforts aimed at addressing food insecurity and poverty reduction in Tanzania.

Project Objectives

The objectives of the project are:

- to expand benefits of banana tc production within rural communities through acquisition of planting material adequate for establishing viable commercial orchards
- to establish a micro-credit scheme targeting at least 500 farmers with potential spillover to other farmers
- to increase rural household incomes from sale of banana fruit and exploitation of entrepreneurial opportunities created by large-scale adoption of tc technology

Partnerships

The project was implemented through partnerships with defined roles and responsibilities of the following organizations:

- **The International Service for the Acquisition of Agri-biotech Applications (ISAAA) AfriCenter** was in charge of project coordination and implementation. It facilitated access to tc planting materials, field monitoring and maintenance of partners' cohesion while keeping the project focused.
- **Microfinance Business Development Services Company Limited (MBD)** administered and managed the micro-credit.
- **The Directorate of Research and Development (DRD)** of Tanzania through the **Selian Agricultural Research Institute (SARI)**, coordinated extension services and training for the FFS on orchard management, post-harvest handling and utilization through extension staff.

Methodology

The project used participatory approaches in form of FFS, and group lending model of micro-credit delivery. FFS emphasizes growing/raising a healthy crop or animal with the least disruption of the ecosystem. The training methodology was through learning by doing as the learning process invites discovery, comparison and non-hierarchical relationship amongst learners and trainers. The FFS approach strengthens farmers' field and management skills, enhances expansion to other areas because the trained farmers become trainers of trainers (ToTs), improves cost-effectiveness in monitoring and evaluation and facilitates collective marketing thus minimizing exploitation by middlemen.

Micro-credit Administration

MBD used the *Jitegemee* loaning system to administer the micro-credit. The *Jitegemee* groups constituted small groups of three to eight individual farmers known as UKO. Four to eight UKOs were combined to form a larger group known as MBOKO. MBOKO was the administrative and legal entity through which loan transactions to individual farmers were carried out. Security for the loans constituted a combination of cash collateral and pledges through a sworn affidavit. The UKO savings and the members' guarantee to each other offered additional security for these loans. Repayment was tailored to match the cash flow of the farmers with the total loan and interest paid monthly over 14 months starting from sales proceeds of the first crop. However, individual farmers who opted to make installments of the principle were also encouraged. The loan size and duration was determined by the number of banana plantlets, fertilizer and pesticides the farmer required but was not to exceed Tsh. 200,000 during the first loan series. Loan disbursements were made in kind (in form of plantlets, fertilizers and pesticides).

Session 2: Dissemination of Improved Crop Varieties (Banana Tissue Culture)

Impact on Technology Transfer and Achievements

The project has made the following remarkable impact in technology transfer:

- Ten FFS have been formed with total enrolment of 260 farmers
- Twenty three thousand (23,000) tc plantlets have been delivered to Tanzania from Kenya
- About 80% of these farmers have already planted and accessed the credit with a loan portfolio of TSh. 17,448,934 million (£14,300)
- Training on orchard management cycle has enhanced farmers' skill in technology
- Farmers' skills in record-keeping, mobilization of savings and re-orientation of farm enterprises into business ventures has improved
- Links have been formed for service providers through in-country and Kenyan exchange visits, exposing farmers to clonal trees technology and small-scale drip irrigation
- The early recruits have started harvesting and an entrepreneur, Banana Investments Limited, is willing to buy the bananas, translating into increased disposable income especially for women

Visions for Sustainability

MBD intends to convert the micro-credit into a revolving fund. Over half of the trained farmers are expected to become ToTs and to form new FFS. The upcoming entrepreneurs will be encouraged to take up distribution of planting material and marketing of the fruit as well as value-addition. Participating farmers are also encouraged to form a banana growers association (BGA) as a key ingredient for social, financial and institutional sustainability.

Lessons Learnt

The FFS approach is effective in educating and enhancing skills efficiently. These schools are useful entry points for information sharing and introduction of other technologies and products. The unique micro-credit delivery system constitutes a showcase on how diffusion of technologies perceived as costly could be availed to rural communities. For perishable products, such as bananas, it is important to develop marketing strategies at the project inception to sustain adoption. Successful projects thrive from goodwill from all partners at institutional and field levels.

Challenges

The project has encountered several challenges including:

- unreliable water distribution from village councils and persistent drought
- small land sizes in a majority of the farmers earlier earmarked for the project who had to uproot their old orchards and other crops delayed implementation
- political interference by some village leaders inciting farmers against the credit slowed down the project
- drawback at the initial stages due to a misunderstanding between the Contact Officer at FAIDA-BDS and the top management led to change of partner delaying the project



Plenary Session Comments

Even though micro-credit was identified by ISAAA as an approach to avail tc materials to farmers, the participants wondered whether credit was a pre-requisite for technology adoption and if so why K-REP could not make it a policy to lend as a portfolio instead of waiting for projects. K-REP is donor dependent and funding should be scaled out. It was also noted that politicians claimed the project as their initiative due to the success, but this had a multiple effect because it solicited their cooperation and support, which the project needed for rapid success.

A decorative graphic consisting of several grey and black squares of varying sizes arranged in a cluster.

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Even though in all the three countries the tcs are said to be expensive, the successful expansion especially in Uganda where there is no credit, indicates that the benefits far outweigh the expenses. In all the regions, marketing remains the biggest challenge to the farmers as production increases.

Session 3: DISSEMINATION OF IMPROVED VARIETIES (CASSAVA AND CEREALS)

Increasing Cassava Production through Improved Technology in Nakasongola District, Uganda

by Magado Ronald, Coordinator, Nakasongola District Farmers Association (NADIFA)

Project Area

The project was carried out in Wabinyonyi and Lwampanga sub-counties of Nakasongola District in Uganda. Ten parishes were marked with a targeted beneficiary group of 500 farmers, comprising 200 women and 300 men. Low cassava yield is a major problem in the district, which was once a food basket. Key production problems are pests, especially the African cassava mosaic virus. Thus, the yields have decreased tremendously from an estimated 8 tons per acre to about 1 ton per acre. There is insufficient supply of clean and resistant cassava planting materials, creating food insecurity and low incomes. Nakasongola District Farmers Association (NADIFA) has attempted to reverse this trend through the Maendeleo Agricultural Technology Fund (MATF) supported project.

Project Development Objective

The overall objective of the project was to contribute to improved food security and increased income from cassava cultivation with special focus on poverty alleviation and gender responsiveness at household levels in Nakasongola District.

Immediate Objectives

The immediate objectives of the project were to:

- build capacity of farmers to sustain cassava production
- train farmers and special interest groups (SIGs) on how to increase cassava yield
- increase cassava yield from 1 ton to 8 tons/acre
- train trainer of trainers (ToT), extension link farmers (ELFs) and contact farmers (CFs)
- procure improved cassava cultivars and distribution to selected farmers
- produce and distribute educational materials
- monitor and evaluate the cassava project

Innovative Aspects of the Technology

The project introduced and distributed the following cassava cultivars varieties bred from Namulonge Research Institute (NAARI) that were resistant to cassava mosaic virus: NASE 1, NASE 4, NASE 9, NASE 10, NASE 12, SS8, TME 14 to the selected farmers.

Partnership and contributions

The project was implemented through the following partners with specific contributions:

Partners

Contribution

Farmers (SIGs, CFs, ELFs)
and local government

mobilized groups and took charge of administration,
demonstrations and monitoring cassava growing and logistics

Extension advisors (SMS)

trained cassava farmers

NADIFA (Production Dept)

organized training

NAARI

developed improved cassava varieties resistant to cassava mosaic
and new technologies for dissemination to farmers, identified farmers
with improved cassava for sale

FOS/DANIDA

participated in development, capacity building and paid staff salaries

UNFFE

initiated capacity building

Session 3: Dissemination of Improved Varieties (Cassava and Cereals)

Nakasongola District Farmers Association extension structure

The association has a six tier structure in the following descending order:

District Executive Committee	(DEC)
Sub-county Executive Committee	(SEC)
Parish Executive Committee	(PEC)
Special Interest Group	(SIG)
Contact Farmer	(CF)
Extension Link Farmer	(ELF)

Methodology (Activities)

The team adopted the following approaches to implement the project:

- used the already established NADIFA extension structure –DEC-SEC-PEC-SIG - CF- ELFs to reach the targets
- held meetings to select target parishes and farmers for cassava project
- selected farmers based on gender concerns and grouped them into cassava SIGs per parish
- mobilized and sensitized farmers and leaders about the project
- planned and held strategic planning workshops
- trained farmers
- purchased improved cassava varieties
- established demonstrations/multiplication sites at house hold levels

Achievements

The project achieved the following:

- The cassava steering committee has been formed
- Over 500 farmers were mobilized and sensitized
- Two strategic planning workshops were held
- Training in improved cassava production and post harvest handling were done and 1,500 farmers trained
- One thousand bags of improved cassava stems(TME14, NASE 1, 12, SS4, SS8, NASE 9) were purchased and distributed to 500 farmers in all 10 parishes and planted
- Follow-ups were done and are on-going
- Monitoring of the project was done and is continuing
- With the help of ELFs and CFs, cassava project technologies have been replicated to more than 500 farmers and 500 bags of improved cassava stems cut and planted
- The number of acreage under cassava cultivation has increased from 200 acres to 400 acres of improved cassava cultivars in about one and half years
- The improved cassava planted is resistant to cassava mosaic virus and high yielding compared to local varieties, yield has increased from one to more than 9 tons/acre
- The target beneficiary have adequate cassava and are food secure
- Some farmers have started selling cassava to build better houses, buy cattle, pay school fees and domestic necessities and also expand the cassava acreage
- Farmers prefer **TME 14** and **NASE 12** varieties from the basket and they are demanding for the expansion of the project to areas outside the target sectors

Reasons for the Success

The project was successful because it:

- addressed the need/problem of farmers in the target area, such as, cassava mosaic virus, leading to food insecurity
- mobilized and sensitized local and farmers' leaders in the sub counties and at the district level
- adopted participatory planning and implementation of the project activities with District Executive Committee (DEC), partners and beneficiaries
- collaborated with DEC, staff, partners, funders and beneficiaries
- used existing NADIFA extension structure
- held meetings of local leaders, farmers' leaders and cassava SIGs at parish levels that made them to own the project



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- made strategic planning and review workshops at district levels
- conducted relevant training of farmers at farm level
- established cassava demonstrations/multiplication sites at house hold levels
- formed the Cassava Steering Committee to check on the progress and performance of the project and reporting
- made periodic follow-ups and monitoring of the project

Vision on Sustainability after the Grant Period

The following steps and activities are planned to ensure project sustainability beyond the grant period:

- Farmers within SIGs are expected to continue the transfer of the technologies to other farmers with help of ELFs and CFs
- Cost recovery approach will continue to be used
- More project proposals will be written for cassava production and marketing, as emerging issues are realized
- The existing cassava groups will be strengthened to become self-sustaining
- NADIFA will link cassava farmers to the business practitioners to market their cassava jointly after adding value

Lessons Learnt

The following lessons have been learnt from implementing the project:

- Cassava is the staple food in the district and needs to be commercialized to improve food security and generate income
- Cassava can be consumed in different forms, and there is need to process it to add value
- To expand and commercialize cassava production, it is necessary to introduce tractor- hire services instead of using hand hoes
- Graters and solar dryers should be introduced to reduce the drying period and improve the quality of cassava chips
- Cassava marketing is still poor, hence the need to build the capacity of the cassava groups
- Using improved cassava cultivars is the remedy to mosaic virus
- More women than men participated in the project because women are in the front line of food production and are concerned with food security at household levels
- Uprooting cassava planted on flat ground is difficult, hence the need to plant the crop on ridges to ease harvesting during dry season

Challenges

The following challenges were faced during the implementation of the project:

- invasion by termites, drought and damage from livestock
- delayed disbursement of funds
- poor attendance of meetings at times due to social and political programmes/activities

Recommendations and Suggestions for Future Projects

The following approach should be adopted to make similar future projects more successful:

- consolidate cassava production activities in the target areas and expand to other areas
- introduce cassava processing machines for chips, cassava flour, gari, starch and drying - value addition activities
- strengthen cassava groups through capacity building, and market cassava jointly
- encourage farmers' study and exchange visits
- introduce tractor hire services to expand and commercialize cassava production
- train farmers on cassava production, processing, utilization and marketing to increase production

On-Farm Production of Cereal Seeds (Maize, Sorghum and Pearl Millet) in Dodoma Region

by E.H. Goromela, L.J. Mzeru, H. Chambo, and E. Lugeye

Introduction

Dodoma is a semi-arid region in Tanzania with 400-900mm rainfall and occupies 5% of the total land of Tanzania. The average household size is 6.5 persons.

Rain-fed agriculture predominates with a few pockets of irrigation agriculture. Important cereal crops grown include sorghum, millet and maize. Livestock production is second to rain-fed crops. Low production of cereal crops is caused by shortage of quality seeds for semi-arid regions and slow adoption of agricultural technologies due to insufficient extension services. Studies revealed that majority of the farmers use local seeds because of scarcity and high costs of quality seeds, and low purchasing power, awareness and acceptance of new technology.

Early maturing, drought tolerant and high yielding varieties, like STAHA, TMV1 and KILIMA for maize, TEGEMEO, MACIA and PATO for sorghum and OKOA, SHIBE and SERERE-17 for pearl millet are recommended for arid and semi-arid lands (ASAL).

Project Purpose: The aim of the project is to ensure ready availability of high quality and affordable cereal seeds (maize, sorghum, and pearl millet) to the Dodoma farming communities to increase food production and family income.

Project Objectives

The specific objectives of the project are:

- to produce and avail sufficient high quality cereal seeds to meet local demand
- reduce the distance and time wasted by farmers in search of seeds from stockists in towns
- increase the household food production and income through production and marketing of quality seeds produced on-farm by small-scale seed producers
- achieve a greater impact of seed production technology to the farming communities through wider participation of women who are a majority

The Innovative Aspects of the Technology

In Tanzania, the formal seed production and supply system has for many years been unable to satisfy the country's seed requirements. To increase the production of certified seeds, the Ministry of Agriculture and Food Security in collaboration with Food and Agriculture Organization (FAO) of the United Nations has designed a semi-formal seed production system. This system is community based or on farm in other countries and is commonly known as quality declared seed production system (QDS), a grade of seed produced by registered seed producers. During seed production a certification agency provides quality control services. The QDS system is less demanding on resources than the certification system and was designed to develop technical expertise within the seed industry so that seed production and distribution is more efficient. QDS is produced from improved varieties by small-scale farmer groups coordinated by private or government institutions, non-government organizations (NGOs) and government programmes for sale in their own localities and neighbouring communities. In QDS system, the seed producers market their own seed using simple seed production techniques. The reduced overhead costs make the price comparatively low. Use of QDS gives a farmer the following benefits:

- increased recoverable yield due to uniform maturity
- efficient use of other input, such as manure due to higher potential yield
- reduced seed rate due to better germination
- higher quality of produce due to less contamination by other varieties
- less infestation by seed borne diseases



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Approaches and Methods

Planning meetings for seed production and sensitization were used. Farmers were trained on site and residential on the following areas:

- site selection and land requirement
- selection of QDS farmers based on a set criteria
- improved land preparation methods
- planting, type of seeds, sources of seeds and agronomic practices

The identified QDS producers were then registered by the Tanzania Official Seed Certification Association (TOSCA). To be eligible as a registered seed producer, one is required to have access to variety of seed suitable for further multiplication, suitable land according to QDS production guidelines, basic knowledge of seed production, access to seed production advisors, and basic seed storage and conditioning facilities. Two inspections are required before flowing and harvesting. After certification by TOSCA the seeds were treated, stored and later marketed through mass media.

Partnerships

The project has established a collaborative network with contact farmers, seed producing groups, district councils, village leaders, research institutes, extension agents and NGOs who have played various roles in the on-farm seed production and technology transfer. The partners and their roles were:

- **Tanzania Official Seed Certification Agency (TOSCA)**, Morogoro, registered and ensured that quality seed was produced.
- **Livestock Production Research Institute (LPRI)**, Mpwapwa, was the lead agency coordinating the project activities.
- **Agricultural Research Institute (ARI)**, Hombolo, offered technical backstopping.
- **Livestock Training Institute (LTI)**, Mpwapwa, participated during farmer training sessions.
- **Seed producers' groups (SPGs)** are small-scale farmers who provided land, labour and security of QDS.
- **Village government leaders (VGL)**, mobilized community members.
- **Seed quality inspectors (SQI)** were the extension agents nominated and trained by TOSCA to conform with certification requirements.
- **Village agricultural extension officers (VAEO)** were responsible for field inspection and monitoring of the project activities in the respective villages.
- **Tanzania Association of Women Leaders in Agriculture and Environment (TAWLAE)** mobilized farmers into groups and sensitized them about the project.
- **Lay Volunteer International Association (LVIA)**, Kongwa, is a local NGO, which provided technical guidance in QDS production and processing.

Achievements

- increased availability of high quality cereal seeds in Dodoma region
- adoption of on farm seed technology in four districts and empowering of 342 farmers through the technology
- introduction of improved cereal seeds (QDS) to small-scale farmers in Dodoma region

Impact of Technology and Project

- High quality seeds suitable for the semi-arid area have been produced
- Seeds are now available and accessible within the villages
- Farmers have acquired knowledge and skills on good crop husbandry
- Seeds are sold at affordable yet profitable prices resulting in increased farmers' income, which enabled them to improve their livelihoods (e.g. construction of houses, buy household utensils, bicycles, water pumps, sewing machines, furniture, mattresses, livestock, etc), increased farm size per house hold and opened savings accounts with the local financial institutions
- Unity and solidarity among the SPGs is enhanced and they are now recognized by policy makers and government leaders, and there is increased group dynamics and resource mobilization in the area
- There is a spill over effect of the technology to other farmers from neighbouring villages
- SPGs are being used as training sites for other farmers dealing with seed production and for field practical training for higher learning institutions like Sokoine University of Agriculture hence enhanced partnerships
- SACCOs have been established through which farmers can borrow for sustainable seed production

Reasons for Success

The success of the project was due to cooperation between project team and other stakeholders, availability of land for seed production, farmers willingness to join SPGs, good farmers were willing to join seed production groups. Other

Session 3: Dissemination of Improved Varieties (Cassava and Cereals)

reasons include mobilization of farmers and resources, timely implementation of work plan, cooperation from stakeholders, awareness creation and quality seed source for multiplication.

Reasons for Failures

Noted failures were attributed to prolonged drought, disease outbreak (smut), inadequate isolation distance, poor handling of seeds (mixed with other crops-simsim) and poor response due to illiteracy and heavy workload for women.

Sustainability Vision:

The projects' vision after the MATF grant will be achieved when:

- SPGs recover the loans given by the project and the money is deposited by the project with SPG Savings and Credit Cooperative Organizations (SACCOs) account to form the basis of a revolving fund; set aside some amount of either crop produce or seeds for the purchase of foundation seeds equivalent to their seed requirements after every two seasons; and join together to form a strong seed producing SACCOs
- seeds produced by SPGs are stored and marketed as QDS seeds and bear a label identifying source, crop variety and seed quality, traceability and accountability
- district councils support SPGs by facilitating agricultural officers to have regular field monitoring of the seed production
- Zonal Agricultural Research Fund (ZARF) support production of foundation seeds at research centres, while the district councils support SPG agricultural marketing centres in the respective villages



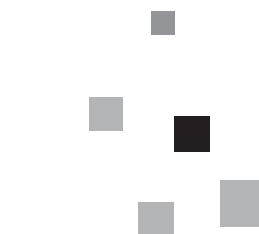
Plenary Session Comments

Participants wondered if the project had considered using oxen instead of tractors on small acreage and why the cassava steering committee seemed composed of NADIFA without incorporating other partners.

Seed prices were noted to be lower than foundation seed expenses creating an avenue for loss to the project.

The following considerations were noted:

- Farmers should not receive gifts as this compromised commitment
- Marketing and value adding through by-products is a way of sustaining the project



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Session 4: DISSEMINATION OF AGRI-PROCESSING TECHNOLOGY

Hygienic Processing and Preservation of Pastoral Milk and Milk Products for Improved Health and Food Security

by Chachu Tadicha

Introduction

The project is located in Moyale and Marsabit districts in the arid and semi-arid areas. These districts suffer from unreliable rainfall patterns making arable agriculture unrealistic. Pastoral communities in these areas depend on livestock and livestock products like meat and milk products from their animals for livelihood.

In line with the above, there were interventions to establish milk processing units in the two districts to increase and diversify food security and alleviate vulnerability and malnutrition among the pastoral people.

Therefore, Community Initiative Facilitation and Assistance (CIFA) has established four mini-dairies, which have led to the realization of the following core objectives:

- general improvement of health status of the pastoral community
- diversification of pastoral income by processing milk into marketable products
- dissemination of information on integrated modern methods of processing and preserving milk

Partnerships

The Kenya Agricultural Research Institute (KARI), Marsabit, offers laboratory and backstopping services, and trains pastoralists on hygienic milk processing. The partnership has enhanced the capacity of CIFA staff.

Objectives of the Partnership

- increase household income
- improve health of the communities
- spread income evenly throughout the year

Effects of the Mini-dairies

- ready market and increased household income
- improved health standards of the pastoralists as milk related diseases have decreased
- a ready market saves time especially for women
- benefits for mothers with small children
- processing milk – diversification – food security
- employment opportunities are created
- dissemination of integrated – modern and traditional methods- leads to faster adoption rates
- loaning and dividend sharing system developed

Constraints and Challenges

- seasonal demand for milk and fluctuation of milk supply due to livestock movement
- inadequate equipment and lack of cold storage/fridge- OULMA, Logologo
- lack of transport of milk to processing centers
- insecurity – PARMCO, OULMA affected, which affects supply and operation

Lessons Learnt and Way Forward

- Animal health services must be strengthened
- Cost-sharing should be explored for continued activities
- Processing of ultra heat treatment (UHT) milk should be considered
- Training must be continuous
- Record keeping must be strengthened
- Up scaling and out scaling should be supported
- Collaboration with KARI and government line ministries should be strengthened
- Selection criteria for groups should be developed
- Business plan and business training should be conducted with the groups for the activities to operate efficiently

Transfer of Solar Drying Technology to Sweet Potato Farmers in Gairo Division in Kilosa District for Sustainable Food Security and Income Generation

by A.P. Mnkeni, Project Leader (SUA), M.E. Lyimo (TAWLAE), J.M. Msuya (SUA), L. Kisanga (AMKA)

Location of Project

The project area is Gairo Division in Kilosa District, Morogoro region in central Tanzania. The area covers about 100,000 hectares and is divided into four wards of 27 villages 11,587 households.

The Problem Statement

Sweet potato is grown by 80% of the households. The crop is both a food and cash crop in these villages. In the past years, the division experienced losses of up to 50% due to the perishable nature of the crop. The selling of sweet potato is exploitative as most traders prefer buying a plot (crop in the field) rather than harvested roots. Where farmers harvest the roots, the traders select the big ones leaving small ones to rot in the field. The sale of harvested roots is by volume. Packaging is strategic, by over-filling the bags, referred to as *rumbesa*.

Objective of the Project

The objective of the project is to reduce losses and extend the shelf life of the harvested roots using affordable preservation technology to improve household food security and farmers' incomes.

Partnership

The project is implemented by the following five collaborating partners each with specific function depending on expertise:

- **Sokoine University of Agriculture (SUA)**, who are responsible for the management of funds and transfer of technology
- **AMKA**, an NGO from Dar-es-salaam experienced in constructing solar dryers and marketing of the dried products
- **TAWLAE**, an NGO dealing with sensitization of women to adopt new technologies
- **District agricultural extension officers**, who are responsible for identifying farmers, follow-up and assisting them in adopting the technology
- **Farmers**, who are the beneficiaries of the technology

The Technology

The technology being transferred is solar drying of sweet potato. Solar drying is cheap, environmentally friendly and can be carried out at household level. The dryer is called Kawanda, and is composed of a box covered with visqueen (a special plastic) with compartments titled with fitted trays. Drying of the produce takes 2-3 days depending on the type of product and the intensity of the sun. The dried products can be kept for up to 1 year if stored under cool dry conditions.

The cost of construction depends on size but varies from TSh. 50,000 - 250,000. The amount of dried sweet potato per kilogram of fresh produce ranges between 400 and 500g.

Methodology

The following steps were used to implement the project:

1. Farmers were mobilized through open meetings and focus group discussions in each village and organized into groups. Sixteen groups were formed from three villages (Ibuti, Mtumbatu and Kibedyo) composed of 105 women and 100 men. Sixteen group leaders were chosen (14 of them women)

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Solar Drying Technologies for Sweet Potato Farmers, Tanzania

2. Each group was trained on leadership and entrepreneurship skills and solar drying of sweet potatoes, vegetables and tomatoes. Local artisans were also trained on construction of solar dryers
3. The groups were mobilized to form a union of farmers involved in solar drying of sweet potatoes, UWAVIMKI, a community based organization (CBO)
4. A revolving loan fund was established for project sustainability after the two years grant period
5. Regular monitoring and evaluation of the project activities was carried out by the project implementing team

Achievements

The following have been achieved to-date:

- increase in cultivation of sweet potato by the farmers involved in the project
- construction of nineteen solar driers already in use
- training of six artisans to construct solar dryers in the three project villages
- registration of UWAVIMKI and rented an office for one year
- establishment of a revolving loan fund to be operated by the CBO
- production and distribution of four types of leaflets to group members
- distribution cutting machines, weighing scales and other basic equipment for running the project activities to group members
- about 206 farmers have adopted and are practicing the technology in the three villages
- approximately 1 63 kg of different types of vegetables have been dried and stored while 1 17 kg of sweet potato and 56 kg of tomatoes were dried and used by farmers last season

Technological Impact and Spill-over in the Community

The following are immediate positive impact of the project in the community:

- Some groups are drying other products, which were not in the project including yams and chillies
- The demand for this project is high and non project members have approached some of the groups to learn and practice the technology
- Other groups are ready to rent-out the dryers as a source of income when they are not being used by their members
- Farmers use the preserved sweet potato and tomatoes for food during lean periods early in the year

Constraints /Challenges

The project encountered the following challenges and constraints:

- Weather pattern over the past two years has not been reliable hence very low production of sweet potato during the last season
- The reporting format was not available at the beginning of the project
- Farmers requested for information on HIV/AIDS, which was not in the project objectives

Reasons for Success

The following factors contributed significantly to the success of the project:

- working closely with the groups
- co-operation from local government and project partners
- continuous monitoring and evaluation
- farmers' willingness to accept and work with the project

Lessons Learnt

The success of this project emphasized that working with local groups facilitates faster adoption of technology.

Recommendations on Sustainability

To ensure sustainability of the project after the two year grant period, the following needs to be done:

- continuous mobilization, formation and maintenance of groups
- training more artisans to construct solar dryers in the project villages
- establishing a revolving loan fund, which will keep the project viable

Dissemination of Improved Sweet Potato Varieties and Technologies for Processing, Storage and Utilization amongst Smallholder Farmers in Rangwe Division, Homa Bay District

by Jane Obonyo, (C-MAD)

Background

The Community-Mobilization Against Desertification (C-MAD) is a non-governmental organization (NGO) established to improve management of natural resources and alleviate poverty in Western Kenya. C-MAD works with small-scale farmers in Rachuonyo, Homa Bay, Migori and Suba districts of Nyanza Province.

Problem Statement

Poverty levels in Homa Bay District are high (77.49%) against national average of 52%, partly contributed by low household incomes, inconsistent food supply, low farm output, poor marketing and malnutrition, low realization of optimal nutritional and economic benefits of sweet potato, although it is an integral component in their diet, and low yield of existing sweet potato varieties due to poor agronomic practices, susceptibility to diseases, lack of storage technologies and limited utilization technologies.

Project Goal and Objectives

- The overall goal of the project is to improve household food security and health of target communities. The project purpose is to improve nutritional status and family incomes of the target community by increasing their access to high yielding nutritious sweet potato varieties.

Technology being Promoted

The project will promote the following technologies to the community:

- introduction and provision of improved sweet potato varieties that are pro-vitamin A rich: Japanese, SPK 004, KEMB 10 and high yielding: KEMB 23, SPK 013
- post-harvest sweet potato storage on farm
- alternative post-harvest processing and utilization of sweet potato

Approaches Used

The project was executed through group approach using common interest groups in collaboration with various institutions and networks.

Partnerships

These included CMAD, KARI, KIRDI, MoA and farmers who had clear role to play as follows:

Partner	Role
C-MAD	lead organization
Kenya Agricultural Research Institute (KARI)	research and technical back-up on germplasm production agronomy and storage technologies
Kenya Industrial Research Development Institute (KIRDI)	research, fabrication of processing equipment and new products testing and development
Ministry of Agriculture (MoA)	community mobilization and extension
Ministry of Health (MoH)	awareness creation on nutrition, hygiene, licensing
Farmers	participants in technology development and technology end users

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Production, Utilization and Processing Strategies

Strategies used in implementation included farmer exchange visits, training and demonstrations in agronomy, rapid multiplication and utilization of produce, post harvest handling processing, baking and setting up processing sites. Training on marketing and entrepreneurship was done. Regular review meetings were also conducted and materials produced.

Achievements

The project has achieved the following :

- Five new improved pro-vitamin A rich varieties of sweet potatoes have been introduced on-farm, and adopted while nutritional awareness has increased
- Farmers have acquired new skills and knowledge on appropriate sweet potato production, storage and utilization, and sweet potato acreage and yields increased to 14 tons per hectare from 9 tons
- Farmers have increased sweet potato acreage and yields have increased from 9 to 14 tonnes per hectare
- Operational processing units have been established, while there is strong collaboration between partners
- Effects of strong partnership were efficient resource utilization, diverse expertise, enhanced farmer and organization confidence thus faster adoption, greater opportunity for feedback between key players and joint planning

Challenges

The project encountered these challenges in its implementation:

- no signed MoUs hence collaboration depended on good relations/good will
- difficulty in harmonizing work plans with different partners
- some actors located far away from the target area
- lack of budget for staff salaries, hence the dependence on other projects

Lessons Learnt

The following lessons have been learnt:

- Marketing aspects should be incorporated in all stages of project implementation
- Multi-institutional and multi-disciplinary collaboration enriches the delivery of extension services and efficient use of resources
- Group approach enhances level of implementation in terms of numbers reached and efficient use of resources
- Capacity building in entrepreneurship and business management is important for community groups
- It is important to work out a comprehensive budgeting
- Individual project budget and costs are important instead of depending on other projects whose work plans may be different
- Processing and novel utilization technologies stimulates enterprise development on non-cash crops

Sustainability

- On-farm rapid multiplication sites ensures sustained availability of planting materials, while the trained community resource persons ensures continued awareness
- The trained frontline staff from ministries of agriculture and health will continue to offer extension services in addressing the needs of the technology end users

Future Plans

The project plans the following for the future:

- conduct aggressive marketing and awareness campaign
- build capacity of entrepreneurs
- create linkages between producers, processors and consumers
- introduce higher dry matter (DM) pro-vitamin A value sweet potato to farmers
- customize sweet potato products to suit local palates
- develop and service sweet potato market niches
- standardize sweet potato processing – HACCP and ISO



Plenary Session Comments

Workshop participants compared the yield of the new potatoes variety to the local one and noted a ratio of 14:9 in favour of the new variety.

The farmers readily accepted the dried sweet potatoes and the technology adoption was more than anticipated. Finding new markets is a common challenge to increased productivity and conservation for both potatoes, milk and their by-products. Of interest was the nutritional quality where it was noted that the status of HIV+ patients using pro-vitamin A sweet potatoes changed. Farmers could get into contractual agreements to ensure market availability after production as technology moves from shelves to farmers' fields. The concept of advertisement to promote the products was discussed and adopted.





Kitui project on sunflower production and utilization integrated with bee-keeping: manual sunflower oil press



Products and publications from banana tc projects, developed by some projects



Rakai farmers formulating chicken feed ration from feed concentrate



Pro-vitamin A sweet potatoes, bulking and demonstration plot



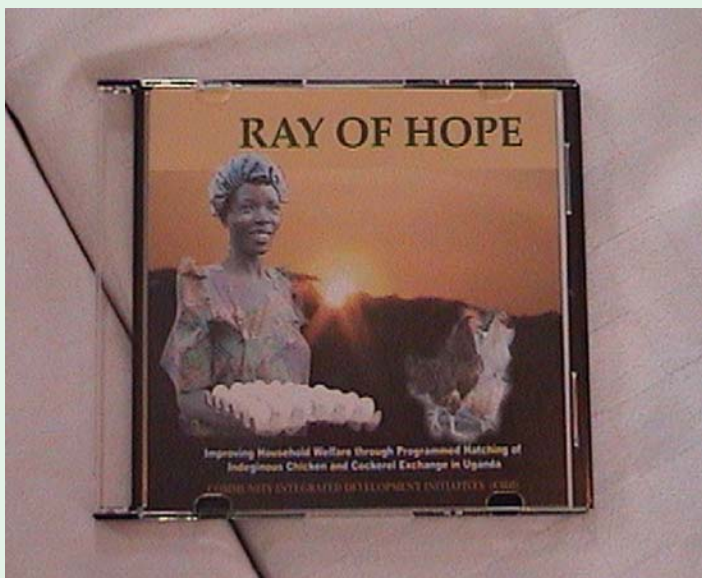
MATF and project implementer during a monitoring visit



Some novel products, cakes and bread made from pro-vitamin A sweet potatoes composite flour



Banana tissue culture (tc) plantlets ready for distribution



Some dissemination materials developed by the projects supported by MATF



Workshop participants, Silver Springs Hotel, Nairobi, Kenya



Improved high yielding cassava mosaic virus resistant variety



Solar dryer - drying the perishable sweet p

RIAL



Been root rot resistant climbing bean variety in Kisoro District, Uganda for enhanced food security



Kitui project on sunflower production and utilization integrated with bee-keeping: bees foraging on a sunflower



oes for enhanced food security



CIDI indigenous chicken breeding programme in Rakai District, Uganda - improving food security for AIDS orphans



Healthy foods preparation and preservation methods



Dairy goat, Toggenberg buck in a breeding station



Rakai chicken project farmers are innovative in making briquets for brooding



Improved cockerel used to cross breed with the selected local breeds



Women selling sweet potatoes by the road side in Kilosa, Tanzania



Longstroth beehive in the KDC project on an Acacia tree

Session 5: DISSEMINATION OF AGRICULTURAL MESSAGES THROUGH RADIO SOAP OPERA AND OTHER METHODS

Radio Soap Opera and Radio Magazine Initiative, Tanzania: Pilika Pilika Radio Production and Magazine

by Rose M. Kinoti -(Radio Production Skills Trainer – Mediae Company)

Introduction

Pilika Pilika Radio Soap Opera is set in a typical Tanzanian village called *Jitazame* and has a set of characters profiled to represent true personalities found in such settings.

The magazine radio component of *Pilika Pilika* elaborates some of the key issues highlighted in soap scenes in-depth.

Project Objective

The project aims to educate, entertain and change knowledge, attitude and practices of Tanzanian farming communities through priority needs-based radio programmes and eventually improve livelihoods of the target audience.

Choice of Radio

Radio was chosen because of the following features:

- It is cost effective
- It reaches all regardless of the level of education
- It is widely listened to by Tanzania peri -urban and rural communities
- It can reach many who speak Kiswahili

Soap Opera

The project adopted soap opera because it :

- entertains and educates
- has a set of characters, who listeners get to like or dislike, hence choose which way to live
- is located in a place audience believe in, hence want to adopt the lifestyles of the people living there
- builds large loyal audiences with time

The magazine

While soap operas are good at highlighting issues, magazines are better at giving detailed technical information. Thus for effective message dissemination, they complement each other.

Approaches

The project was implemented through the following time-table of activities:

1. Audience research – May to September 2003
2. Potential stakeholders’ workshop- October 2003
3. Staff recruitment, training and setting up programmes – November 2003
4. Pilot programme production – February 2004
5. Pilot programme pretesting – March 2004
6. Programme reproduction- April 2004
7. Programme launch- May 2004

Pilika Pilika Transmission-days and time

The Pilika Pilika radio programmes are transmitted on the following days and hours:

- Wednesdays 8.45 to 9.00 pm – RTD soap
- Thursdays 7.30 to 8.00 pm – Sauti ya Injili Soap and Magazine
- Saturday 7.30 to 8.00 pm – Terrat Soap and Magazine
- Sundays 8.30 to 9.00 am - Soap and Magazine on RTD repeat
- Mondays 8.30 to 9.00 am – Sauti ya Injili soap and Magazine repeat
- Tuesdays 7.30 to 8.00pm - Terrat Soap and Magazine repeat

Achievements

The project has achieved the following outputs to-date:

- conducted audience baseline surveys

Session 5: Dissemination of Agricultural Messages through Radio Soap Opera and Other Methods

- aired soap operas and magazine programmes
- trained production team members
- enlisted the following network of partners :
 - International Centre for Tropical Agriculture (CIAT) (bean research station)
 - Sokoine University (livestock production and health)
 - Selian Research Center
 - Smallholders Dairy Support Programme
 - Nat nets (negotiations under way)
 - RTD National Broadcaster
 - Terrat FM Radio Station
 - Radio Habari Maalum – radio production facility, Arusha
 - Radio Sauti ya Injili – local FM broadcaster (Moshi)
- planned to involve the audience/listeners in the project in the future

Challenges

The following challenges have been encountered:

- unrealistic audience expectations, such as instant solutions to lack of market for farm produce and poor infrastructure, among others
- poor implementation of some of the learnt skills due to limited resources
- difficulty in sourcing credible/reliable information
- farmers' disappointment due to unresolved farming related issues, such as marketing of agricultural produce, delayed payments
- unpredictable weather patterns interfere with planned agricultural activities
- difficulty in getting prime airtime

Lessons Learnt

The following lessons were learnt from implementing the project:

- Setting up radio soap with a back-up magazine programme is a complex initiative, which requires time, resources and well thought out implementation plan
- It is important to understand systems and culture of the environment. The project should be able to estimate how long it may take for each planned step to be realized
- Radio programme planning and success requires determination
- It is easier to effectively educate Tanzanian rural communities through Kiswahili Radio programmes because the language is widely spoken unlike in other countries in the region

Vision on Sustainability

The following are envisaged steps to keep the project running at the end of funding:

- bringing in commercial sector to pay for air time and have their products/ services advertised during programmes
- source partnership with development agencies to cater for production cost
- build local capacity to ensure project community ownership of the project for self reliance
- open up to other issues of life besides agriculture to attract a wide range of paying clients

Acknowledgement

The project is grateful to the following organizations for support in their fields:

- MATF/ FARM Africa for funding Pilika Pilika Radio Programmes production
- Partners and stakeholders for well researched and credible information
- RTD National Broadcaster, Terrat FM Station, Radio Sauti ya Injili for broadcasting the programmes
- Radio Habari Maalum for availing their studio for programme production
- Pilika Pilika production team for producing professional programmes
- listeners for appreciating the hard work it takes to produce such programmes

Introduction to Sunflower Production and Utilization Integrated with Bee-Keeping

by Janet S. Mumo

District Brief

Kitui District is in Eastern Province of Kenya. The district experiences low and erratic rainfall between 300–800mm with over 60% crop failures resulting in low farm output and incomes, food deficit and poor nutrition.

The community receives relief food from the government and non-governmental organizations (NGOs) to meet the food deficit gap. They engage in charcoal burning as a source of income hence over-exploiting natural trees, leading to land degradation and reduced productivity.

In mitigation, modern bee-keeping integrated with sunflower production was introduced to improve farm production and increase household incomes without degrading the environment. Sunflower production includes oil extraction, which provides the community with edible oil while providing bees with nectar and livestock with food supplement.

Technologies/Approaches

The following technologies have been transferred to the communities:

- promotion of langstroth beehives, which provides quality honey and is gender friendly
- promotion of sunflower production
- production of simple sunflower oil and honey

Partners

The project has the following collaborating partners:

- Four community based organizations (CBOs) coordinating 78 self help groups
- Ministry of Agriculture
- Ministry of Livestock Development and Fisheries
- Ministry of Gender and Sports
- Kenya Agricultural Research Institute (KARI) – Katumani, Machakos
- African Bee-keepers Limited (ABL)

Project Administration

A memorandum of understanding (MoU) was developed by the participating institutions where roles and responsibilities of each partner was defined. It was agreed that partners should have a joint field visit, quarterly coordination meetings, quarterly stakeholders meetings and an annual progress review meeting to assess performance.

Key Achievements and Impact

The following are noted achievements and impact of the project on the community's lifestyle, attitudes, standard of living and technological capacity:

- reduced sale of staple food to meet other basic needs, hence increasing its availability over a longer period after harvest
- increased household income due to sale of honey, sunflower oil and their by-products
- availability of animal feeds from sunflower seedcake
- establishment of small-scale businesses due to availability of initial capital, such as selling mandazi (buns)
- positive attitude change towards bee-keeping
- active participation by women in bee-keeping (traditionally a man's job)
- close relationship between the community and Government of Kenya (GoK) extension workers

Reasons for Success

The success of the project is attributed to:

- receptive farmers
- availability of financial resources
- timely release of funds from MATF
- support from partners
- availability of market for honey

Session 5: Dissemination of Agricultural Messages through Radio Soap Opera and Other Methods

Challenges Encountered

The following challenges have been encountered so far:

- drought, which affected the initial project implementation and reduced the expected results from sunflower and honey production
- use of manual sunflower oil press, which is not gender friendly

Lessons Learnt

- The technology gives farmers different options for household income, for example, a farmer can sell honey, wax, sunflower oil, seed cake to feed the livestock then sell the milk produced or the animal
- A well-managed bee-keeping venture can improve the community's food security as honey can be harvested thrice a year

Vision on Sustainability

To sustain the project after the grant period, the following measures need to be implemented

- The honey should be packed to add value and increase household incomes
- A credit scheme needs to be established with the payments anticipated from the beehives to cover other areas
- Kitui Development Centre (KDC) will package the surplus sunflower oil to increase marketability

Recommendations

The following steps are recommended for efficient implementation of future projects:

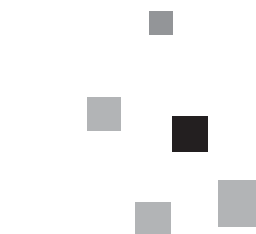
- Pre-project planning should be given more time
- Packaging of honey and sunflower should be included in the proposal
- Budget for a motorized sunflower oil press, which is gender friendly should be included



Plenary Session Comments

The participants appreciated the fact that using both magazine and radio on some important issues is a hybrid dissemination where the magazine looks at key issues discussed in soap opera in detail.

For sunflower and bee-keeping projects, pre-project planning and budgeting are essential areas, which deserve attention and time.



Session 6: DISSEMINATION OF IMPROVED GOATS

Ensuring Food Security through Increased Goat Productivity in Sironko District, Eastern Uganda

by Lule Kisolo, *Environmental Alert*

Introduction

The projects' activities are located in two sub-counties in Sironko District, Eastern Uganda. Malnutrition and food insecurity significantly affect people in the district due to acute poverty.

There are low returns to agricultural production, limited access and affordability of inputs, poor markets and marketing infrastructure and absence of gender equity at household levels. The project on increased goat productivity is aimed at reversing this trend.

Objectives

The objectives of the project are to:

- enable the farmers to build a strong community institution to market their produce, obtain technical services and improve their standard of living
- enable farmers to improve their nutrition and increase household incomes by adopting improved goat and vegetable production techniques

Technological Aspects

The technology involves the introduction of exotic male and female milk-goat breeds to farmers (75% and 100% purity) to crossbreed with indigenous breeds and improve productivity and consequently income and home nutrition. The farmers are to multiply the animals and provide a ready source of quality cross breeds to other farmers in the country. This would enable the project to:

- test the performance of Alpine goats for the area
- integrate goat management practices with vegetable production at commercial level

Approaches

The project adopted group participatory approach outlined below :

- Farmers were organized in 21 groups involving about 300 households
- Farmers' committees, called PMC were formed as the pinnacle of farmers involvement in decision making
- Farmers were trained in groups and visited at home at regular intervals and call basis
- Trainers were drawn from Environmental Alert (EA), district technocrats, Makerere University (MUK), Kampala
- Joint monitoring indicators were developed
- A project implementation team (EA, District, SVIP, PMC) was used
- Follow up at regular intervals by technical experts from MUK, SAARI, district, partner NGO and EA were well organized

Partnerships

The project was implemented in collaboration with the following partners:

- Sironko Valley Integrated Projects (SVIP)
- District Production and CBS departments
- Serere Agriculture and Animal Research Institute (SAARI)
- Makerere University-Veterinary Department
- Ministry of Agriculture

The partnerships promoted:

- linkages
- experience sharing
- information sharing
- technical backstopping

Achievements and Impacts

The following have been achieved:

- District political and community leadership now identify with the project
- The entire community has been inspired and now yearns to belong to the project

Session 6: Dissemination of Improved Goats

- Some farmers now enjoy goat milk, hence the project is fully supported at family level
- Farmers with male goats are organizing to sell them off
- All project partners are fully involved and have played outstanding roles

Project Sustainability

For the project's sustainability beyond the grant period, the following needs to be implemented :

- Umbrella association should be formed, to ensure marketing of farmers' products in Uganda and beyond
- Involved district departments should ensure that technical advice continues
- PMC and CBS should propagate the passing of goats to other beneficiaries
- Integrated farming systems ensures that support for the project should be practiced
- Linkages with other CBOs, NGOs to ensure more support to structure and strengthen their activities should be encouraged

Lessons Learnt

The following lessons have evolved from project implementation:

- Synergy of partnerships is invaluable
- Farmers' willingness to share costs is necessary
- Local political leaders have a big say in community projects

Recommendations

For a smoother implementation of similar future projects, the implementers should:

- concentrate more on community institutions
- provide more time for partners at proposal writing level



Improving Food and Nutrition Security among Women and Families Affected by HIV/AIDS

by Dorothy Nduku, ANP Project Manager, AMREF

Project Area

The project was implemented in Nguu, Makindu and Mtito Andei divisions of Makueni District. The area is arid and semi arid with an annual rainfall of 500mm. The communities constitute subsistence farmers growing maize, beans, cowpeas, pigeon peas, cassava and they also keep cows, goats, donkeys and chicken. The community does not grow cash crops, and is characterized by:

- high unemployment
- high dependency
- high poverty levels (73%)

Purpose of the Project

The project seeks to address food insecure households in the project area by applying appropriate agricultural technologies and managing resources sustainably to improve availability and accessibility of quality food.

Aspects Under Consideration

The project addressed the following aspects:

- appropriate crop technologies
- application of goat and chicken manure in kitchen gardening
- small-stock improved breeds
- proportion of households using nutritionally balanced diets from local food increased
- labour saving devices promotion
- gender concerns-food and nutrition

Partnerships

The project had the following partners:

- Ministry of Agriculture
- Ministry of Livestock Development
- Ministry of Culture and Social services
- Voluntary Counselling and Testing (VCT) centre
- FARM-Africa
- farmers

Methodology

The project was implemented through community involvement, training and gender mainstreaming.

Activities

For greater involvement of the community, the project undertook training and demonstrations in the following areas: credit procedures and management, goat and poultry management, seed selection and preservation and food utilization. It also undertook beneficiary identification and their capacity assessment, HIV/AIDS education, exchange visits, monitoring and evaluation.

Achievements

The project has achieved the following:

- set up 42 operational kitchen gardens and imparted soil fertility management to selected groups
- encouraged various families to use goat manure on the farms and make compost manure
- introduced several farmers to making composite from goat feed remnants

Sixteen community groups keeping dairy goats and 90 farmers have improved poultry breeds and they now have improved eggs and chicks. Twenty nine community groups have been trained on nutrition and the development of recipes. About 152 farmers can now access ox ploughs on credit and large tracks of land ploughed in a short time.

The project sensitized and trained partners on gender issues, carried out gender role analysis and continued with targeted training.

Session 6: Dissemination of Improved Goats

Lessons Learnt

The project learnt that community participation is key to success, exchange visits enhance new technology uptake as they expose farmers to new ideas, dairy goat project requires more time and involvement of both women and men and enhances household success.

Reasons for Success

Support from partners, participatory planning and addressing community needs and priorities were key to projects success.

Sustainability

The following measures are to be implemented to ensure sustainability:

- community development committees are to be formed and maintained
- capacity of extension staff and farmers' groups to be expanded
- revolving fund set-up for community

Vision on Future of On-going Project

The following steps are a necessary follow-up of the project:

- further training of the farmers on goat and poultry management/breeding
- monitoring and evaluating progress
- establishing a goat breeder's association
- developing marketing structures

Recommendations for Similar Future Projects

To avoid similar problems encountered during implementation of this project, the following measures should be taken:

- reduce the number of technologies and focus on priority
- plan for fodder establishment and preservation, such as hay and silage-making
- plan for the training of community animal health workers



Dairy Goat and Gardening Project

by Sammy Bunyali- Program Officer, Christian Partners Development Agency, Vihiga District- Kenya

The Technology

Christian Partners Development Agency (CPDA) is implementing an integrated food security and nutrition improvement project in Vihiga District. This project employs a multipronged intervention strategy involving four components:

- alternative leadership
- sustainable agriculture
- community health and nutrition
- water and environmental sanitation

Before the onset of the project, a baseline survey was conducted to identify areas of intervention.

Problem Area

According to the survey, the problems to be addressed are:

- low agricultural productivity due to application of modern technologies
- low income levels due to uneconomic crop and livestock production enterprise
- diminishing production due to continuous land sub-division caused by population pressure
- poor nutritional status owing to lack of diversity in crop and animal production

Under the sustainable agriculture component, CPDA focuses on interventions, which seek to maximize production for each unit of land holding, thus the development of the Dairy Goat and Gardening Project proposal and fundraising through the Maendeleo Agriculture Technology Fund (MATF). This project seeks to disseminate the dairy goat technology and organic crop production technologies.

Partnerships

To successfully implement this project, CPDA partnered with the following institutions:

- **FARM-Africa** financed the project
- **Novib of the Netherlands** paid for administrative/ personnel costs of CPDA
- **International Centre for Research in Agroforestry (ICRAF)** assisted in the dissemination of information on high value fodder trees for improved milk production and high value trees for soil fertility improvement
- **Ministries of livestock and fisheries and agriculture** assisted in training and follow up visits of farmers' groups
- **Ministry of Gender, Culture and Social Services** assisted in group formation/identification and mobilization, and group dynamics
- **Kima Integrated Community Programme**, a local NGO, was involved in sustainable agricultural practices

The programme benefited from the synergies created by the different actors in the course of implementation of their own activities and was, therefore, a good opportunity for joint effort since all partners were implementing their own different programmes while focusing on the same groups.

Methodology

Farmers were first mobilized into groups using the following strategies:

- Ministry of Agriculture and Livestock focal areas under the NALEP policy of the government, where different common interest groups are formed after performance rural appraisal (PRA) sessions with the community
- existing women's groups, self-help groups and youth groups
- neighborhood assemblies- grassroots forums created under CPDA as Alternative Leadership Programme for engendering democratic ideals among the people, encouraging voluntary community participation in development matters, providing a forum for people to meet and discuss issues affecting them and providing channels of communication between the grassroots people and development agencies.

A total of 24 farmers' groups comprising 20 members were consequently mobilized, four in each of the six divisions of Vihiga District. Ten members from each group were trained on dairy goat production and organic crop production techniques, bringing the total trained to 240. One farmer was selected from each group and trained as a community animal health worker/resource farmer.

After constructing sheds and establishing fodder, each group was 'loaned' one buck and at least one doe. The buck was to be used for up-grading and the doe for breeding high quality goats for demonstration.

Session 6: Dissemination of Improved Goats

A seed bank was also established to make high quality vegetable seed more affordable and available to the farmers. One demonstration garden was established in each farmers' group for training through field demonstrations and farmers' field days.

Achievements

- Dairy goat population has risen in a span of just one year by 69 goats by the end of April 2004
- The total acreage under high value crops has increased significantly according to statistics available at the Ministry of Agriculture offices in the district
- Household milk production has increased by an average of 2 ½ liters per day in households with lactating goats
- Scarce land resource is used optimally through more economic engagements
- An improved nutritional status of the target group is envisaged in the long run

Future Sustainability

The following actions are necessary for sustainability after the grant period:

- The NAs are permanent community based structures that will ensure continuity of the project even in the absence of CPDA
- Farmers' capacities will be enhanced through training to enable them to take charge of such intricate issues as breeding and animal health
- A structure, which will unify all the farmers to help in tracking of bucks to ensure there is no inbreeding should be in place
- The government extension system is permanent and monitoring will be easy

Challenges

- Adoption has been rather slow although there is great potential owing to the enthusiasm
- Partnerships were based largely on goodwill, resulting in lack of commitment from some partners
- Owing to thin budget lines, facilitation for partners was not adequate
- Procurement of high quality dairy goats was a nightmare due to high demand for dairy goats and limited sourcing points, resulting in a delay of one year before the animals were procured
- FARM-Africa declined to finance the purchase of motorcycles resulting in dependency on other programmes for transport, affecting the Programme officer's movement to monitor the project

Lessons Learnt

- Group approach has proved effective in extension service delivery since more people are reached at the same time
- It is not possible to realize any meaningful impact from a breeding programme in two years, especially when one has to book for breeding stock and wait for one year out of the two-year project period



Plenary Session Comments

The participants wanted to know how the project ensured balance between income generation and nutrition utilization at farm level, for example, eggs for food or money?

The session noted that the poorest of the poor do not belong to the group because of required contributions. There is need to target the poorest of the poor and improve their lives.

The HIV/AIDS project has to deal with negative attitudes towards those infected with the virus. KDC has attempted to target the poorest of the poor using repayment in kind and treat them as a unique group who should be uplifted and not marginalized by excluding them from new technologies. A programme should be developed where inputs are given

Dairy Goat and Gardening Project

in kind and repaid when benefits are realized. There is need to assess and decide on the level of subsidy needed for each development programme. Donors noted that even though two years is short time, other projects have been successful and one must justify the need for extension.

The session was informed that the Environmental Alert had a breeding plan of buck rotation but record keeping is a hindrance in both goat breeding and milk production, thus production levels have not been accurately established.

Session 7: DISSEMINATION OF LIVESTOCK PRODUCTION TECHNOLOGIES

Testing and Promoting Silage-Making Technologies for Smallholder Dairy Farmers

by Dr Methu

Introduction

Milk production and pricing in Kenya fluctuates with climatic patterns resulting in over supply during the wet season and shortages in the dry seasons. This is attributed to the fact that farmers generally do not conserve feed for dry season feeding. The dairy industry in Kenya is dominated by more than 600,000 smallholder farmers who supply over 70% of the marketed milk in the country. Smallholder dairy is, however, characterized by high levels of inefficiency in both production and the marketing process.

Project Objective:

The main objective of the project was to achieve an even/steady supply of milk throughout the year and enable the smallholder farmers in Kiambu and Nakuru achieve a constant income by mitigating the effects of the dry seasons on milk production.

Partnership

The project was a collaboration of the following institutions:

- Land O'Lakes, Inc.
- Kenya Agricultural Research Institute (KARI)
- Ministry of Livestock Development and Fisheries (MoLFD)
- Egerton University

Activities undertaken

The following activities were undertaken to implement the project:

- need assessment and community based organizations (CBOs) selection
- participatory planning workshops (PPW)
- training of trainers (ToTs)
- training of trainers (ToTs) reviews
- adoption study and quality assessment
- molasses level experiment

Needs Assessment and CBO Selection

Forty-two CBOs were identified through extension agents and visited in both areas; 21 in Nakuru and 21 in Kiambu. Through a rapid appraisal exercise to identify the constraints facing the farmers, 28 of them were selected to work with the project; 14 from each district. CBOs in areas where dry season feeding or dairy production was not perceived as a major constraint were dropped.

Participatory Planning Workshops (PPW)

Participatory planning workshops were conducted with each of the selected CBOs to help them clearly define their visions and missions, identify and understand their constraints including dry season feeding and define proposals to address these constraints. Participatory partial budgeting (PPB) was used to identify the problem and understand the potential benefits of adopting the technologies. During the PPB process the dry season strategies employed by the farmers without feed conservation was compared to a scenario where conservation was an integral part of the production system. The CBOs then developed proposals to identify constraints, which could be addressed during the workshop. Based on the proposals, action plans for CBOs were developed.

Training of Trainers (ToT)

Each ToT session was held over two days with trainees drawn from selected CBOs and extension agents (public and private) operating in the area. During the first day trainees were taken through the theory of silage making emphasizing the critical areas of the process. This also included a PPB exercise, which was the selling point for the technology. The ToTs were meant to equip the trainees with skills to enable them conduct PPB and effective demonstrations of the technologies to the farmers. The second day covered a hands-on



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Small-scale Silage-making for Dairy Farmers in Kiambu/Nakuru, Kenya

exercise where the trainees went through the process of making polythene tube silage (PTS) and above ground silage (AGS). All these activities were timed so that the ToT is carried out just before the peak of the wet season when surplus forage material would be available.

Training of Trainers (ToT) Review

ToT reviews were held six months after the ToT training. The aim of the ToT reviews was to bring the trainers together so that they could share their experiences and compile lessons to be applied in subsequent ToTs. During the reviews, data on the number of demonstrations each trainer had held and the number of farmers attending were presented. The data helped to design the sample frame for the adoption study. Other issues related to the technology were raised and have resulted in experiments being designed to solve particular problems experienced with the technology. Two ToT reviews were held during the project period; one in Kiambu and another one in Nyeri.

Adoption Study and Quality Assessment

An adoption study to determine the uptake of the technology was conducted in the three areas. Data was collected using a structured questionnaire administered to the sample farmers through face-to-face interviews. During the interviews, silage samples for quality assessment were collected. A stratified random sampling technique was used to select the sample farmers from the list of farmers who attended the demonstration. A total of 279 farmers were interviewed in three areas, Nyeri, Kiambu and Nakuru. The adoption rates are as shown in Table 1.

Table 1: Adoption rates

Area	Sample size	Adopters	% adoption per district	Cumulative adoption
Kiambu	125	36	28.8	12.9
Nakuru	98	26	26.5	9.3
Nyeri	56	12	21.4	4.3
Total	279	74	66.7	26.5

The amount of forage conserved by farmers ranged from 0.35 tons to 11.76 tons. The forage conserved in Kiambu was mainly Napier grass while in Nakuru farmers made silage from Kowkandy, sorghum, maize and a few from Napier grass. Accessibility to the market seemed to be an incentive to the adoption of the technology. PTS was highly adopted in Kiambu and this could be attributed to the land sizes available and the forage. In Nakuru there was preference for AGS also attributed to land sizes and materials available.

Silage quality assessment activities were done to determine whether the silage being made by farmers after the training was of acceptable quality. Most silage samples collected from farms in Kiambu had a pH of between 3.8 and 5.3, which was within the acceptable range and indicated that farmers were making good quality silage.

Molasses Level Experiment

Molasses is used as an additive when the forage being ensiled has less than 10% water-soluble sugars. This is the case with Napier grass or maize stover without the cob. Literature indicates that the level of molasses in ensiling can be between 4-5% or 1 kg molasses for 50-70 kg of Napier grass (Mbuthia *et al.* 2002). This is the rate that has been used by the project. An experiment was designed to determine whether a lower level can be used and its effect on the quality of the silage and the cost.

The treatments used in the experiment were:

- molasses levels – 1, 2 and 3% of DM
- dilution rate (Molasses: water) – 3:1, 1:1 and 1:3
- wilting – wilted or not wilted Napier grass

Data collected included dry matter (DM) content, pH, crude protein content, and ammonia nitrogen content. Preliminary results indicated that good fermentation took place at all the molasses levels including 1%. Spoilage was minimal ranging from 5.2 – 7.9% and the pH ranged from 4.3 – 5.0 indicating good silage and the possibility of using lower level of molasses to reduce the cost of silage-making.

Improving Household Welfare in Rakai District through Programmed Hatching and Cockerel Exchange Programme

by Dr Jjuuko Fulgesio, Project Leader, Community Integrated Development Initiatives (CIDI) and Dr Nsubuga Kizito, Project Manager

Introduction

The project is in two sub-counties in Rakai District in Western Uganda. Ninety percent of the households in the district depend on subsistence agriculture marked by low productivity, intermittent food insecurity, low incomes and a poverty index of more than 46%. The district has a high number of HIV/AIDS orphans.

Project Focus/Strategies

Improving household incomes and nutrition through improvement of indigenous chicken production, using the technology of programmed hatching (PH) coupled with improved management of stock, housing, feeding and health care.

Farmers are organized into groups and trained on the technology, with emphasis on gender equity. The technology of programmed hatching involves the following:

- Selected indigenous chicken are crossed with improved cockerels for eggs and meat. The hens are programmed to hatch on a particular day of the week.
- Farmers start off with 10-13 selected indigenous hens and two improved cockerels.
- For each bird that begins to lay, a nest is made and an infertile marked egg placed as a decoy. Each egg, which the bird lays is removed and marked with the date when laid. This is important in identifying new and old eggs, as old eggs rarely hatch.
- When the first bird begins to incubate, it is left with the infertile egg to wait for the others and this date is also recorded.
- The hen sits on the eggs for ten days during which most of the other hens will also go broody and similarly provided with infertile eggs.
- On the tenth day, the infertile eggs are removed and all hens that have incubated are given 17 fertile eggs each, starting with the one laid recently. Usually ten of the 13 hens will go broody and usually 15 out of 17 eggs hatch, hence giving 150 same day old chicks.
- Hatching normally takes 21 days and 6 hours but hens do not have the sense to count the days and will sit on the eggs till they hatch.

Project Activities

These include:

- training organized farmers' groups on programmed hatching technology, farm business education, disease control and herbal medicine application, feeding and feed mixing, general poultry husbandry and selective breeding
- extension services, farm inputs support
- training of community based trainers (CBTs)

Partnerships

Key partners and their roles include:-

- **Makerere University – Faculty of Agriculture, Department of Animal Science** – assist in record keeping and breeding
- **Indigenous Consultants Research and Trainers (INCORET)** participate actively in training farmers on programmed hatching technology and dissemination
- **St. Jude's Organic Rural Training Centre** involved in training farmers – CBTs, and on-farm practical demonstrations of the various technologies
- **District Extension Coordination Office of Rakai**, participates in extension services, delivery and vaccination of birds
- **Local farmers** are responsible for day to day management of the project
- **CIDI** – lead agency is responsible for project implementation, general training and extension, quality assurance and health programme
- Other private drug and feed stockists



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Achievements Realized

The following achievements were realized:

- Community and local leaders were sensitized and mobilized, there is active participation of partners
- Beneficiaries are now conversant with the PH technology, while other farmers outside the schemes are adopting the technology
- Poultry houses have been constructed at group (20) and individual farm (40) levels
- Farmers have started to realize benefits through the sale of improved eggs and first generation (F1) chicks, thus contributing to the objective of improving incomes
- Essential drugs and vaccines are stocked by CIDI and birds are vaccinated to reduce disease burden among project birds and surroundings. The District Veterinary Office provides some of the drugs and personnel
- Feed outlets have been established closer to the farmer and managed by the CBTs, for increased accessibility of supplement feeds to farmers
- Over 40 CBTs have been trained and are active in dissemination of the PH technology to other farmers
- Parish coordination committees and an Indigenous Chicken Breeders Association (ICBA) made up of farmers in registered groups have been formed
- There is increased use of poultry manure by farmers, thus increasing crop production
- Due to the PH technology project activities, other organizations have formed partnerships with CIDI to fill identified gaps, for example, food storage facilities, feeding orphans, animal feed production
- There is improved record keeping by the farmers
- Beneficiaries are passing on the F1 birds, which start laying at 4.5 months, compared to 8-12 months for the pure indigenous chickens, hence the loaning scheme is working

Challenges

The programme is facing the following challenges:

- High illiteracy level slows the recording system, thus extension workers workload had been increased
- Low community contribution due to high poverty levels limits project expectations
- Locally available feed stuff needed enrichment with feed concentrates, which were out of reach for most farmers
- Unvaccinated birds in the neighbourhood were a source of disease
- There is high demand for the project PH technology by other non target farmers as benefits were realized
- Lack of logistics by key partners like government extension staff, who also have a huge work load

Ways to Overcome Challenges

- Extension staff are getting involved in data recording and collection
- CIDI stocked feed pre-mixes and extra outlets created for the supply of animal feeds/concentrates
- Farmers are growing maize and diversifying feed ration formulation alternatives, for example, bananas, cassava, sorghum etc
- CIDI facilitates transport for government extension staff in terms of transport

Lessons Learnt

- Hatchability reduces with eggs stored beyond 10 days by up to 50%
- Hatchability of over 80% has been achieved by some farmers, after training
- Hatchability reduces noticeably if more than 15 eggs are left for incubation
- First generation (F1) layer crosses have shown excellent performance by starting to lay at 4.5 months
- An incubating hen can sit on eggs for 65 days continuously enabling it to hatch 3 times non-stop

Way Forward

There is need to:

- follow up on technical dissemination through on-farm technical support services
- train and consolidate parish committees
- form an ICBA to cover the district
- implement input revolving fund through the pass on chain
- strengthen the recording systems, data collection and analysis
- emphasize feeds, feeding and affordable ration formulation
- continue with the stocking exercise and input support services
- continue training in poultry husbandry, programmed hatching and selective breeding
- document programme activities and achievements

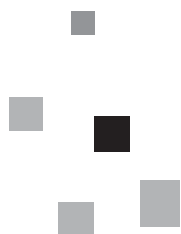


Plenary Session Comments

Like session 7, the plight of the poorest of the poor was of concern. It was noted that the technologies will go on after the grant period through the ToTs.

For the Rakai project, it is necessary to link CBT to district extension services, for sustainability.

MAFT was called upon to focus on processing and marketing as the basic approach to making rural community wealthier.



Session 8: DISSEMINATION OF NATURAL RESOURCE MANAGEMENT AND IPM MANAGEMENT TECHNOLOGIES

Improving Food Security in South Western Uganda through Transfer and Promotion of Resistant Varieties and Intergrated Management Packages for the Bean Root Rot Disease

by Fina Opiyo, Michael Ugen, Annet Namayanja, Isaac Mugagga and Danny Mawejeje, NAARI

Introduction

Beans are some of the most important crops in Uganda. South Western Uganda was the greatest producer and was responsible for 30% of the beans produced in the country (MAAIF, 1992) until early 1990s when production started to decline due to bean root rot disease. The disease is widespread in the area and can result in losses of upto 100% during severe attack. There was an outcry from the area for resistant varieties and other control measures for the root rot disease. In response, the National Beans Programme (based at Namulonge) and the International Center for Tropical Agriculture (CIAT) developed the following technologies to effectively control this disease:

- resistant bean varieties to the root rot
- integrated disease and crop management

To promote, sensitize and scale up the technologies, Bushenyi and Kisoro districts were selected to carry out the pilot project.

Innovative Aspects of the Technology

The technologies involved resistant bean varieties and integrated disease and crop management technologies incorporating soil amendments (both organic and inorganic fertilizers), crop rotation, intercropping and earthing up.

Partnerships

The national beans programme was the lead institution. The partners included Kachwekano ARDC, Africare, Kisoro and Bushenyi local administration, farmers' groups and individual farmers.

Project Objectives

The project had the following five output areas:

- accelerated multiplication and distribution of root rot resistant bean varieties in both Bushenyi and Kisoro
- demonstrations on integrated disease management options
- establishment of farmers' field schools (FFS)
- training of extension staff, local leaders and farmers
- sensitization workshops and field days

Methodology

1. Identification and selection of beneficiaries and type of farmers

Identification and selection was done during meetings with representatives of all stakeholders at the district and later at sub-county and parish levels.

2. Accelerated multiplication and distribution of root rot resistant bean varieties

Multiplication was done on-station (at NAARI and Kachwekano ARDC) and on-farm. Baseline surveys and sensitization meetings were used to determine the optimal areas for on-farm seed production. The strategy of availing seed for on-farm multiplication involved both individuals and farmers' groups. A seed loan system was used with a contract signed with individuals or groups. The contract stated that at harvest the loanees would give back to the extension staff twice the amount of seed received. The amount loaned varied from 0.5 kg (for individuals) to 5 kg (groups).

3. Demonstration on integrated options

The demonstrations were set up in selected parishes and dealt with varieties, soil and crop management.

4. Farmers' field schools (FFS)

FFS is one way of reaching farmers through self-teaching where they have opportunities to recognize factors that affect their crops. They learn through exercises based on self-discovery, and a curriculum following the growth stages of the bean crop was developed.

5. Training of Extension staff, local opinion leaders and farmers

Training was done at district, sub-county and parish levels, and was intended to give technical and practical knowledge on improved bean production but more specifically on control of bean root rot.

Results

- About 29 hectares was planted for seed multiplication and 9,317 kg of improved bean seeds was obtained and distributed to 2,213 farmers
- Ninety-four field demonstrations have been conducted in the two districts
- By June 2004, three FFS were set-up and 80% of the district/sub-county extension agents and local leaders had been trained, and 95% of the field extension workers were also trained in target areas

Impact of the Project and the Technology

Although it is too early to measure impact of the project at this stage, the following are indicators of positive impact:

- strengthened partnerships and collaboration between research and extension workers
- stimulated interest within the communities
- performance of the resistant bean varieties has been appreciated by farmers, for example, a farmer planted 0.5 kg and harvested 10 kg of seed
- farmers appreciation of soil improvement and the expense associated with inorganic fertilizer
- one group in Bushenyi has taken the initiative to train other farmers
- active participation and interest in the project
- scaling up of project activities by NAADS and AAMP to other areas in the district
- initiative by some farmers to multiply their own seed for sale
- ability of farmers to articulate issues related to the bean root rot

Reasons for Success

- positive support from the local governments of the two districts
- good mobilization of farmers, local leaders and extension staff
- willingness of the farmers and active participation of different partners
- the serious problem posed by the bean root rot disease in the area

Lessons Learnt

- Involving stakeholders at all stages ensures ownership of the project and the project outputs
- A technology that gives the desired outputs stimulates adoption and motivates the early adopters to spread it
- Demonstrations and field days are very useful in informing other members of the community
- FFS was effective for farmers to understand the constraints and advantages of the technologies
- Farmers learn more by seeing
- The proper selection of partners is important for successful implementation

Challenges

- uncomprising weather changes
- resistant varieties to root rot being affected by other diseases, for example, black root disease
- lack of land for seed multiplication especially in Kisoro District
- problems associated with marketing of beans

Recommendations

The following steps are recommended to sustain the project at the end of the grant period:

- The local governments should continue to scale up using other service providers, such as NAADS and AAMP
- Participating groups should be mobilized, encouraged and facilitated to train other farmers
- Groups within the project area should be identified and trained as community based seed producers

Accelerating Market-led Integration of High Value Trees into Smallholder Farms in Western Kenya: A Joint Partners and ICRAF Initiative

by Qureish Noordin and Stephen Ruigu, World Agroforestry Center (ICRAF)

Introduction and Background

The project, Accelerating Market-led Integration of High Value Trees into Smallholder Farms in Western, seeks to impart the following technologies to the target region:

- integrated soil fertility management (fertilizer trees)
- improved fruit trees varieties and indigenous trees
- timber /trees for construction
- medicinal /nutritional trees
- fodder /forage shrubs
- environmental services (Moringa, Bamboo)

Problem Statement

The region has faced the following problems:

- inadequate supply of quality planting materials
- weak linkages between producers and markets
- weak institutional delivery mechanisms

Approach

The project adopted a participatory approach channeled through :

- ten focal scaling up areas (FSUA) using 'change' teams
- ten partners : research, extension, NGOs, CBOs, farmers
- project implementing team
- focusing in five districts in Western Kenya:
 - Kisumu: Nyahera - covered by Africa Now
 - Nyando: Pap Onditi; Katuk Odeyo- by V. Agroforestry
 - Busia: Mayenje (REFSO); Bulindo (KARI)
 - Siaya: Nyamasare (UCRC); Nyaminia (NYAMSAC);Tatro (TATRO)
 - Vihiga: Ebukhaya (MOARD); Ochinga (KEFRI/ICRAF)

Innovativeness

The projects technology, approach and partnerships were geared towards:

- market orientation/business approach
- smallholder orientation
- income generation but strong environmental focus/soil fertility
- FSUA approach
- change teams as pacesetters
- diverse nature of partners under COSOFAP
- individual and group nursery operators
- community orchards as source of materials
- geo-referencing of orchards—link to HCDA/LBDA

Achievements/Impacts

The following activities were implemented with positive results:

- sensitization of stakeholders, strengthening/formation of change team
- exchange visits –Eastern Province/ Western Kenya and sourcing of high quality starter germplasm
- establishment of HVT nurseries, and mother orchards
- training of nursery operators and seed vendors (28 private, 10 group)
- training on market opportunities/ enterprise development and HVT utilization
- organization of field days

These activities resulted in :

- more income generation especially for nursery operators
- capacity building on technology and business skills, improved community organization
- introduction of high value crops, culture gender re-orientation
- Western Kenya nursery operators network and reaching a total of 20,000 farmers in FSUA (20,000 per FSUA)

Session 8: Dissemination of Natural Resource Management and IPM Management Technologies

Reasons for Success:

The project's success is attributed to good partnership, farmer/partner involvement in all the activities especially monitoring and evaluation (M&E), feedback/advice by advisory panel and colleagues and value addition by partners.

Reasons for Failure

The project suffered set-backs due to:

- erratic rainfall/weather conditions
- concentration on developing change team vis a vis the other farmers
- few seedlings and seeds available at the beginning
- other commitments of partners forcing rescheduling of activities
- business orientation—sale of seedlings/seeds
- socio-cultural and economic factors expressed in gender and power structures

Vision for Sustainability

The following actions will ensure sustainability after the grant period:

- capacity building at various levels/mainstreaming into partners/institutions 'change' teams at grassroots to act as ToTs
- use of already existing nursery operators, market orientation and private sector linkages
- multiple partners/links to COSOFAP will also ensure sustainability

Challenges

The following factors are hurdles that threaten the momentum of the project:

- perception of long term investment in trees
- decision tools for business (cost/benefit, profitability)
- timely provision of adequate and high quality germplasm
- coordinating 10 sites and 10 partners is no mean task
- maintaining momentum of change teams
- wider markets for tree seedlings
- appropriate technology for value addition of tree products at village level
- documentation of the project work/achievements

Lessons

The following were learnt from implementing the project:

- Strategic and genuine partnerships (including number) are the way forward
- Fast growing trees and high value crops as 'pacesetter baits'
- Market forecasting is a must for any business venture, including trees
- Schools are important partners that need to be included and developed
- Training on value addition to tree products is a must for future expansion, especially with high yields
- Balance long/short term benefits in technology transfer



Plenary Session Comments

Beans - The participants wanted to know whether the NAARI beans had quality assurance and whether they could be replaced with indigenous bush climbing beans or damping beans resistant to root rot disease to maximize on land use.

Trees – The participants wanted to know whether ICRAF was working with the government on the policy on 'tree felling' given the need for charcoal and the public 'tree planting' drive. The future of the tree was noted to be 'on the farm' and not the plantation. ICRAF has to lobby the concerned ministry to clarify government policy.

Accelerating Market Led Integration of High Value Trees in Western Kenya

Other remedies include farmers' tree growers association through Kenya Forestry Working Group (KFWG) and lobbying for indigenous trees to ensure the forest bill sails through Parliament.

It was recommended that since most issues raised were on policy, MATF should endeavor to invite policy makers in future experience sharing workshops so that they can respond to the issues adequately.

CLOSING SESSION

Wrap Up

by Joseph Wekundah and S. Makini

1. Methodology Used

Based on the presentations made by different grant holders, the following methods and approaches emerged:

- group approach where farmers' field schools (FFS) and other farmer groups were employed in the implementation of the projects
- the use of trainer of trainers (ToTs) for reinforcing and disseminating of technologies, for example, extension link farmers (ELF) of Nakasongola District Farmers Association (NADIFA)
- use of participatory rural appraisals (PRA) and focus groups in ensuring community participation
- focal scaling up approach
- exchange visits between groups
- use of existing structures of farmers or extension agencies to implement the projects
- farmer to farmer approach
- training

There were variations between projects on methods and approaches, and even the effects. A mix of the above methods and approaches ensured community participation and sustainability of activities.

2. Partnerships

There were variations in the way different projects worked with their partners. Some had silent partners while others had very active partners. These variations were based on:

- Initial agreements through MoUs spelling out the roles of different partners.** Some projects had MoUs established and signed while others did not. Most of those without MoUs had silent partners.
- Initial joint planning and budgeting based on the approved budget.** This created transparency among partners where some groups even agreed to get less allowances while in the field.
- Joint reviews of activities being implemented.
- Good coordination to involve all partners from production to marketing, processing and utilization of the product as per the project document.

3. Technology

Several technologies by different grant holders were shown to work. However, it was important that they address the immediate needs of the people they targeted for the new technology.

4. Impact/Outcomes/Achievements

- increase in yield/unit area
- improved marketing and adding value
- increased income hence changes of livelihoods

Some projects recorded good results while others are yet to realize the anticipated changes.

5. Lessons learnt and challenges

The workshop realized the following lessons and challenges technologies, partnerships, approaches/methodologies.

Technologies

Lessons Learnt

- Technologies should be appropriate and address the farmers needs for transfer to take place
- Good technologies create high demand by beneficiaries
- Good technologies are easily accepted and adopted by farmers
- Technologies that generate incomes and have marketable products are readily adopted

Challenges

- Most technologies were climate/weather dependent. Unfavourable climate/weather affected their adoption and realization of benefits
- Labour intensive technologies had limited adoption
- It was a challenge to target poorest of the poor due to some requirements on technology, for example, literacy and contribution
- Source of technology was a challenge to some projects, for example, bananas tc and dairy goat breeds technologies sources or links should be established closer to the farmer for effective uptake
- Some policy issues impact on technologies being transferred
- Cost of technologies: some were way beyond the reach of most farmers
- Some partners were insensitive to farmers preferences, for example, banana tc varieties
- Certain technologies need more time than the project timeframe for impact to be realized, for example, dairy goats and high value trees (HVT)
- Some projects had too many technologies. One should focus on a few for impact.
- Technologies should be gender sensitive, otherwise they result in marginalization and low uptake, for example, oil press for sunflower

Methodologies

Lessons Learnt

- Group approaches and high farmers/community participation were catalyst to technology transfer. Most projects used group approach
- For access of technology, functional revolving funds and micro credit and not free handouts enhanced technology adoption
- Most projects used exchange visits and training farmers on various aspects to enhance awareness and technology adoption

Challenges

- Projects did not have methods to address the poorest of the poor
- There was need to have accurate assessment of wealth groups, this proved to be a challenge in most projects
- High illiteracy levels limited technology adoption especially where training involved written materials and record keeping
- It was not easy to get feedback from farmers especially with the radio programme
- Most projects were suffering from their own success due to increased production and lack of markets or value addition, which had not been integrated in the project initially
- Land required for demonstration purposes was a limitation to most farmers who were not ready to give up their parcels, leading to resizing of the demonstration

Partnerships

Lessons Learnt

- Most of the partnerships in the projects are strong, synergistic and genuine
- They enhanced efficient and effective implementation
- Involvement of local political leaders may interfere or encourage the implementation
- The partners provided support and goodwill in most projects
- Transparency is important for effective implementation with partners, especially the lead agency
- Partnership if well handled enhances ownership of the projects

Challenges

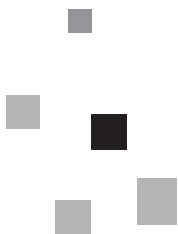
- Projects need to incorporate partners early in the project to enable them to plan/design together, for example, at proposal development level. However, this calls for facilitation, such as, pre-project financing
- Partners ability to contribute was minimized where there was no allocation for facilitation

- Partners had different work plans and activities. There is need to plan together in an attempt to harmonize the activities and work plans.
- Some partners are not appreciative of farmers needs. This affects availability and adoption of technology, for example, banana tc.

Way Forward/Recommendations

To succeed in technology transfer and realize the set objectives, projects need to:

- learn from the past, no need to reinvent the wheel
- address the challenges as they arise as a team
- strengthen/form appropriate partnerships and this should be done early in the project cycle
- involve political leaders where necessary, especially if they will add value, for example, loyalty
- projects should strive to address the needs of the poorest of the poor in their implementation to avoid creating a marginalized group in the community
- projects should address issues of marketing and value addition at the onset of the implementation
- projects should strive to enhance ownership for sustainability and success of their activities
- the time frame for a project should be commensurate with the type of technology(ies) being promoted for adoption, for impact to be realized



ANNEX 1

1st Grant Holders' Experience Sharing Workshop at Silver Springs Hotel Nairobi, Kenya on 16-19th June 2004

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