



Creating sustainable agricultural impact for smallholders:

MATF innovative partnerships and approaches

4th MATF Experience Sharing Workshop

3rd - 6th September 2007, Mombasa, Kenya



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The fourth experience sharing workshop of the Maendeleo Agricultural Technology Fund (MATF) brought together 44 participants drawn from various organisations working to improve the agricultural techniques and knowledge of rural communities in East Africa. These proceedings highlight the achievements and lessons from 16 Round 4 projects and three Round 3 extension projects which ended in 2007. Various focal issues such as gender, technology feasibility, value addition processes and market linkages have been explored and captured in this report. For more information on MATF and its projects, please visit our website, www.maendeleo-atf.org.

The Maendeleo Agricultural Technology Fund (MATF) is a regional initiative established in 2002 with joint funding from The Rockefeller Foundation and The Gatsby Charitable Foundation (UK), which has been supporting through The Kilimo Trust since 2005. It is managed by the Food and Agricultural Research Management - (FARM) Africa.

MATF aims to improve the livelihoods of rural and peri-urban communities in East Africa by facilitating agricultural innovation processes, productivity, and market access through competitive grants.

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ABBREVIATIONS AND ACRONYMS

AIVs	African Indigenous Vegetables
ARI	Agricultural Research Institute
AP Member	MATF Advisory Panel member
ASCAS	Accumulating Savings and Credit Accounts
CBOs	Community Based Organisations
CDA	Coast Development Authority
CFs	Contact Farmers
C-MAD	Community Mobilisation Against Desertification
CPDA	Christian Partners Development Agency
CRS	Catholic Relief Services
DEC	District Executive Committee
ELF	Extension Link Farmer
FARM-Africa	Food and Agricultural Research Management - Africa
FFS	Farmers' Field Schools
FSA	Financial Services Association
GDP	Gross Domestic Product
ICRAF	International Centre for Research in Agro-forestry
ISAAA	The International Service for the Acquisition of Agri-biotech Applications
KARI	Kenya Agricultural Research Institute
KDFA	Kabarole District Farmers Association
K-REP	Kenya Rural Enterprise Programme
LZARDI	Lake Zone Agricultural Research Development Institute
MANREC	Ministry of Agriculture Natural Resources Environment and Co-operatives
M&E	Monitoring and Evaluation
MFI	Micro Finance Institutions
MOA	Ministry of Agriculture (Kenya)
MATF	Maendeleo Agricultural Technology Fund
MARI	Mikocheni Agricultural Research Institute
NAADS	National Agricultural Advisory Services
NADIFA	Nakasongola District Farmers' Association
NGOs	Non-Governmental Organisations
PEC	Parish Executive Committee
PME	Participatory Monitoring and Evaluation
PRSP	Poverty Reduction Strategy Paper
RECA	Relief and Environmental Care Africa
ROSCAS	Rotating Savings and Credit Accounts
SACCOS	Savings and Credit Co-operative Society
SANA	Sustainable Aid in Africa International
SEC	Sub-county Executive Committee
SIDA	Swedish International Development Agency
SIGs	Special Interest Groups
SITE	Strengthening Informal Sector Training and Enterprise
SPG	Seed Producer Groups
SUA	Sokoine University of Agriculture
TANCERT	Tanzania Organic Certification Association
TOSCI	Tanzania Official Seed Certification Institute
TOT	Trainers of Trainers
VEDCO	Volunteer Efforts for Development Concerns

Opening Session

A brief overview of FARM-Africa
by Helen Altshul

Kenya Country Director



Developing innovative approaches and practical models to promote sustainable livelihoods for the rural poor

“We have as our values, a fundamental belief in the potential of small farmers and herders to improve their own well-being and in the need to promote their interests.”



FARM-Africa's vision for its work remains a “Prosperous rural Africa”. Our goal is to reduce poverty by enabling marginal African farmers and herders to make sustainable improvements to their well being through more effective management of their renewable natural resources. We have as our values, a fundamental belief in the potential of small farmers and herders to improve their own well-being and in the need to promote their interests. Priority is given to those in greatest need, i.e. those with a degrading resource base and poor access to markets and services.

These priorities include pastoral development, community forest management, land reforms and small holder development, where MATF work fits very well.

Cross-cutting issues found in our priorities are in the areas of:

- HIV/AIDS and reproductive health;
- Mitigation of natural resource based conflict;
- Crisis and emergency situations; and,
- Mainstreaming gender.

Strategic outcomes from our work

We seek to promote models of good practice (in 3 priority areas) that demonstrably reduce poverty in diverse situations with wide applicability. These are:

- Documented improvement in relevant government policies inhibiting good practice adoption and prioritisation of agriculture in public sector expenditure and PRSPs;
- Demonstrable improvement in the practice of demand-led agricultural development by government, civil society and private sector staff; and,
- Increased understanding of African development and engagement in relevant global agricultural issues among the public, media and relevant companies or organisations.

Our key strategies are as follows:

- Developing new ideas through research;
- Promoting wider application of proven technologies and approaches;
- Linking grass roots work with national and international audiences for greater impact;
- Being specialised, practical and operational;
- Building on the capability of people and local institutions;
- Disseminating practical experience; and,
- Advocating good policy and practice.

FARM-Africa's experience and expertise

Registered in Kenya in May 1985, we are working in Ethiopia, Kenya, Tanzania, South Africa, Sudan and Uganda. We've been using innovative approaches to pastoral development and successful community goat breed improvement. We continue to promote participatory processes in developing local institutions. We've nurtured strong collaboration with relevant line Ministries (Agriculture and Livestock) and assisted in the development and promotion of privatised community-based animal health delivery services. Finally, FARM-Africa has been engaged on the development and implementation of an innovative technology transfer fund for grass-root initiatives, the Maendeleo Agricultural Technology Fund (MATF).

Introduction

By Ralph Roothaert, Phd
MATF Manager



“As we shall witness this week, MATF projects have achieved impressive impacts. Innovative technologies have been the starting point, but the initiative has been designed in a clever way to enhance success.”



Creating sustainable agricultural impact for smallholders: MATF innovative partnerships and approaches

Dear Guest of Honour, Mrs Phoebe Odhiambo, grant holders of MATF, representatives of the media, ladies and gentlemen,

It is a special day today as we are about to start the 4th Grant holders Workshop of the Maendeleo Agricultural Technology Fund, or MATF in short. I would like to say a few words to introduce the concept of the MATF because it is unique in various ways.

The problems of Africa's agricultural sector we know all too well: it provides a livelihood for many millions of families, but the technologies used by the majority of smallholder farmers are not up to date compared with other parts of the world. This puts farmers in a disadvantaged position in a global economy. For African farmers to compete in the world market, they need to be enlightened and efficient producers and marketers.

On the other hand, there is no lack of improved agricultural technologies that we can choose from: new crop varieties, livestock breeds, cultivation techniques, disease control methods, etc, are being developed and published on a continuous basis. The bottlenecks to adoption and impact have been:

- (1) to deliver these innovations to farmers;
- (2) to allow them to experiment with them; and,
- (3) to provide only those strategic services that the farmers need.

The Rockefeller Foundation and the Gatsby Charitable Foundation, through Kilimo Trust, identified the problem and asked FARM-Africa to design a program which would enhance the transfer of agricultural technologies. This became the core of the MATF initiative.

MATF started in 2002 and in the past five years it has provided 58 grants to different organisations such as NGOs, CBOs, Research Institutes, Ministry of Agriculture, private sector, and so on. All these organisations won grants through competitive proposal writing and by demonstrating outstanding development achievements in the field. So far, 20 projects have been implemented in Kenya, 18 in Uganda, 17 in Tanzania, and 3 across boundaries in the East African region. Over the past five years, a total of about £3 million has been disbursed as grants.

As we shall witness this week, MATF projects have achieved impressive impacts. Innovative technologies have been the starting point, but the initiative has been designed in a clever way to enhance success.

MATF has an Advisory Panel consisting of highly recognised and experienced professionals in their field. The Advisory Panel selects proposals, monitors projects in the field, and provides general guidance to the initiative.

Introduction

By Ralph Roothaert, Phd
MATF Manager

Innovative Partnerships & Approaches



Workshop participants during the 4th grant holders' experience sharing proceedings.

They are often accompanied by the FARM-Africa Country Directors and Donor representatives while performing their important tasks. The Fund Manager, is also part of the Advisory Panel.

MATF attaches great value to monitoring and evaluation, not just for the sake of monitoring progress, but more importantly to enhance a culture of learning, correction, action, and documentation. We have professional and committed staff who are responsible for this.

MATF has two major objectives:

1. To increase the impact of agricultural technologies on the livelihoods of smallholder farmers in East Africa.
2. To develop and disseminate effective approaches for scaling out agricultural technologies.

Bearing these objectives in mind, we have learnt many important lessons in the past 4 rounds. Firstly in terms of agricultural innovations. The creativity of proposal writers has stretched our imagination. And this is what we need. We are not happy with a *status quo*, the smallholder agricultural sector needs a boost of innovative technologies and practices.

To give you an example of an impressive and appropriate agricultural technology: the development of a new chicken breed in the poverty stricken District of Rakai in Uganda. The new hybrids derived from the local breeds have become so popular that demand overwhelms supply. It provides lucrative business opportunities for the young and the old. The technology has been well tried, and is appropriate for smallholders. For every dollar MATF spent, it has already generated 16 dollars in terms of increased farmers' incomes.

Secondly, we have learnt important lessons in terms of dissemination approaches. Let me continue with the same example to illustrate this point. The first need in the Rakai chicken project was the introduction of the technology into a community, which was undertaken by workers at Makerere University. This was followed by the Community Integrated Development Initiative (CIDI) who trained Community Based Trainers (CBTs) to further promote the technology in the community.

The CBTs are now happily training many other farmers in the District, with little more than a bicycle and a lot of knowledge and experience. Simultaneously, the commercially operating Rakai Chicken Breeders Associations sprung up to facilitate input and output markets.

Thirdly, we've also learnt lessons on strategic partnerships. For instance, in the sunflower-honey project managed by the Kitui Development Centre, three Ministries played a role: Ministry of Agriculture - to run Farmer Field Schools; Ministry of

Introduction

By **Ralph Roothaert, Phd**
MATF Manager

Innovative Partnerships & Approaches

Gender and Sports - to build leadership skills among women groups; and Ministry of Cooperatives and Marketing Development - to manage loans. Other partners provided improved sunflower varieties (KARI); enhanced commercial aspects of enterprises (African Beekeepers Ltd.); sold seeds (agro-vet stores); or made beehives (carpenters). This is a large number of partners in one project, and we have learnt that on average 3-4 key partners drive the initial development process.

Fourthly, we've learnt that a multi-faceted approach is needed on the journey from the adoption of technology to sustainable impacts on farmers' livelihoods.

The approach consists of:

- Technology support;
- Appropriate dissemination methods;
- Enhancing market access;
- Strategic partnerships including private sector;
- Saving and credit services;
- Targeted capacity building and empowerment; and,
- Integrated natural resource management.

During the next four days, we shall be hearing many practical examples from Round IV projects on these very issues. We are here not only to absorb. We have designed the workshop in such a way that everyone is challenged to contribute their own experiences to these development issues that can make or break agricultural innovation. I hope you will be sitting on the edge of your seat to contribute.

Workshops usually have themes. The themes of previous MATF experience sharing workshops show an interesting evolution. The first workshop didn't have a theme. The theme of the second workshop was: 'Moving innovations – From research into farmers' fields'. It was a reflection of the early experiences very much related to the challenges of introducing new technologies. The third workshop's theme reflected the experiences of reaching more farmers, it was called: 'Scaling-up farming technologies – Building on MATF projects' achievements'.

Since then, our projects have benefited from cumulative lessons learnt, sharper selection procedures, and more targeted facilitation. Projects have paid considerable dividends to farmers. And we want to stress that successes are generated through strategic partnerships. Therefore the theme of this workshop is: **'Creating sustainable agricultural impact for smallholders - MATF innovative partnerships and approaches'**.

Thank you for your attention.

Keynote Speech

By Mrs Phoebe A. Odhiambo

Provincial Director Of Agriculture,
Coast Province, Kenya

“I’m glad that MATF’s projects have inbuilt sustainable capacity building activities that are aimed at empowering the communities to discover on their own, problems and their possible solutions.”



Opening Ceremony

Full text of the speech

Distinguished guests, ladies and gentlemen.

It is a great pleasure for me to be part and parcel of this very important regional workshop. Indeed the presence of each and every one of us here symbolizes the great fight against poverty and food insecurity in our region.

The republic of Kenya currently has an estimated population of 35 million people and covers an area of 600,000 square kilometers, two thirds being arid and semi-arid. The agricultural sector contributes about 24 per cent of the countries GDP and 60 per cent of the export earnings. 80 per cent of the population lives in the country side and derives their livelihood directly from agriculture. The agricultural sector growth has moved from a depressed -3.0 per cent real decline in 2002 to a recovery of 2.6 per cent real growth in 2003 before finally registering a dramatic 6.7 per cent growth in 2005. This growth is no doubt attributed to a concerted effort of which MATF shares credit.

Ladies and Gentlemen, poverty and food insecurity are two major ills that affect a good portion of our population. In Kenya, 46 per cent of the population lives below the poverty level. In Ethiopia this is estimated at 45 per cent. The situation in other African countries is no better. This is further worsened by HIV-AIDS status that depletes the work force and other resources dearly needed for agricultural production. Food insecurity is experienced not only in terms of low quantity but the scenario is such that in many cases even what is available is of poor nutritional value.

Ladies and gentlemen, it is also important to note that since 2004, world cereals production is on general downward trend while consumption continues to rise. This no doubt results in increased world prices. Our countries that are net importers will bear this burden and hence the need for concerted efforts so as to increase local food production. The realization of the aforementioned situations confirm the reasons as to why we need to embrace any efforts geared towards alleviating rural poverty.

Ladies and gentlemen, MATF projects are being implemented in Uganda, Tanzania, Ethiopia, Sudan, South Africa and Kenya. The activities being implemented are geared towards capacity building of communities with special interventions along enterprise value chain. Above all, the programmes put emphasis on farming as a business. It is common knowledge that most poor communities have remained at that level due to continuous practice of subsistence farming that not only make them live from hand to mouth, but also depresses their economic abilities further.

It's therefore of paramount importance that any programme geared towards poverty reduction focuses on activities that can usher the communities to sustainable market oriented production. I'm glad that MATF's projects have inbuilt sustainable capacity building activities that are aimed at empowering the communities to discover on their own, problems and their possible solutions.

Ladies and Gentlemen, no meaningful agricultural activity can continue to the foreseen future if it is not anchored on sustainable environment. It is encouraging to note that MATF's projects include activities that nurture environmental sustainability. The inclusion of advocacy activities and gender issues has further deepened the importance of this programme.

Ladies and gentlemen, I believe that this programme has no doubt contributed enormously, to poverty reduction and food security in your various countries. For the Kenyan experience, we do embrace the activities since they have gone along way in enhancing the synergies existing in the areas of operation. The synergies have been seen in a more positive way due to the fact that the current national agriculture and

Keynote Speech

By Mrs Phoebe A. Odhiambo

Provincial Director Of Agriculture,
Coast Province, Kenya

Opening Ceremony

livestock extension policy encourages pluralistic extension delivery and nurtures partnership, participation and collaboration from other players. The government through agriculture sector ministries is committed to provision of an enabling environment for extension provision.

Ladies and Gentlemen, technology dissemination remains one big challenge in agricultural production arena. For example in the Kenyan situation, we have quite a number of technologies that have been developed by researchers of all disciplines but a big portion still remain on the shelves. This situation is worse for the poor communities since they lack the ability to demand for these technologies even when they are aware of their existence. It is encouraging that MATF has dissemination of proven technologies as number one objective, and above all the promotion of innovative dissemination methods.

Ladies and Gentlemen, I believe that each country has got a number of development partners some operating in the same localities and sometimes sharing common resources. This calls for proper regulatory and harmonization strategies to ensure maximum impact without duplication or gaps. In Kenya, the government is in the process of coming up with a regulatory body that would not only ensure harmonization but also bring about standardization of extension services being delivered by various providers. It is important to note that whereas implementation can be accomplished within the stipulated time, the most important thing remains the impact that arises from the activities as evidenced by the actual results. It is indeed the results that translate into poverty reduction measurable indicators.

Ladies and Gentlemen, I wish to extend my sincere gratitude to the sponsors and conveners of this workshop for choosing this favourable venue. It is my desire that this workshop be a fruitful one full of experience sharing and exchange of ideas that will enhance effective implementation of the programme. I also wish you successful field trips for the furtherance of experience sharing. May I also take this opportunity to wish you an enjoyable stay in this coastal town endowed with many natural beauties that should bring you the feelings of God's abundant love to our region.

Ladies and Gentlemen, may I now declare this workshop officially opened.

Workshop Objectives

Objectives of the 4th experience-sharing workshop

Monicah Nyang'

MATF Project Office

The 4th MATF experience-sharing workshop, whose theme is "Creating sustainable agricultural impact for smallholders: MATF innovative partnerships and approaches," will have the following objectives:

1. To share lessons and achievements from individual round IV and Round I extension projects. In this regard, the workshop will seek to provide answers to the following questions:

- How has impact of agricultural technologies been achieved?
- Which dissemination approaches have worked?
- Which partnerships were innovative and effective?

Within the various project presentations, there will be special issues that will be discussed as follows:

- Feasibility of the technology
- Gender issues
- Group dynamics
- Access and use of natural resources
- Micro-credit approaches
- Value addition processes and market linkages
- Private sector partnerships

2. To provide an opportunity for stakeholders to share and learn new innovative technologies, approaches and methods for creating wide scale impact on smallholder agriculture in East Africa. This workshop is a rich environment to share and learn from each other on these issues.

3. To document and disseminate thematic issues arising from Round IV and Round I extension projects, during the workshop. Presentations will be conducted based on the identified thematic areas.

How do we plan to achieve these objectives?

On day one and two of the workshop, presentations by the grantees will be based on identified issues for different projects.

On day two and four, we shall be having working groups discussion according to five themes on - Gender, group dynamics, micro-credit, dissemination approaches and integrated natural resource management.

On day three, we shall participate in a field trip to two MATF-funded projects in Malindi District, Coast Province. These are the Coast Development Authority's (CDA) project on production and marketing of African Indigenous Vegetables (AIVs), and the Kenya Agricultural Research Institute's (KARI-Mtwapa) project on improved mango production techniques.

The workshop also encourages informal interactions between the grantees, right through the proceedings. This is aimed at exchanging ideas and information regarding the different technologies from the different East African regions.

The exhibition forum, which we are calling the *marketplace*, also offers a wonderful snapshot of the projects that are represented at this workshop.

"The exhibition forum, which we are calling the *marketplace*, also offers a wonderful snapshot of the projects that are represented at this workshop."



Exhibition

Workshop participants display their project work.

Interaction and discussion

Marketplace

The workshop exhibition area was organised as a marketplace, to display the work from the various projects at the experience sharing workshop. Ralph Roothaert, MATF Fund manager, while introducing the novel workshop concept to participants remarked that, "markets are usually noisy, disorganised and lively." He invited participants to walk around the display area, and see the wonderful impacts generated by the projects, in line with the workshop theme.



Nancy Kaaya of Horti-Tengeru (left), explains how bottled mushroom pickle is prepared to an attentive Phoebe Odhiambo, the Coast Provincial Director Of Agriculture.



George Odhiambo, FARM-Africa's Tanzania Country director at the KARI exhibition stand. On the display table are mango products such as jam and dried mango chips.



Pamela Marinda (left) of Prolinova, listens keenly as the Caritas Kasanaensis project representative Dr Fred Kasirye explains the finer details of promoting fish farming in Luweero District, Uganda.



Augustine Cheruyiot from K-REP Development Agency (left), makes an enquiry at the CMAD exhibition table regarding the sweet potato project. Alsen Aduwo, the project representative is all set to provide the answers

Soil Management Technologies

Improving labour productivity through Draught Animal Power

Eng Saidi Mkomwa

ARI-Uyole, Tanzania

Introduction

Draught Animal Power (DAP) employed as ripping and weeding technologies greatly reduce farm labour requirements. The project, implemented by the Agricultural Research Institute (ARI-Uyole), has shown that farmers can save about 90 per cent of their farm labour requirements and increase their crop yields if they use superior DAP implements.

The project, improving labour productivity through animal traction weeding and ripping technology, further shows that farmers can increase their crop acreage and also to diversify to other income generating activities such as horticulture, petty businesses, crocheting of table cloths, carpentry, beekeeping and timely preparation of quality meals.

Farmers in the project area - Njombe and Sumbawanga Districts, Tanzania - were able to increase area under crop production by 14 per cent, from 2.96 to 3.36 ha per household. Maize areas increased by 50 per cent from 0.8 to 1.2 ha per household.

When combined with other farm inputs, these labour saving technologies greatly increased crop yields. Targeted households increased maize yields by 267 per cent from 324 to 1188 kg per acre.



Cultivator



Ripper

Partnerships and approaches

The project has demonstrated that, it takes more than just making DAP implements available to farmers to realize this kind of impact. A good strategy for dissemination of the technologies is a prerequisite.

The multi-disciplinary nature of the implementing team from the Ministry of Agriculture Research Institute ARI-Uyole and partnerships ensured that the intervention had a holistic approach – that the project would address complete packages of inputs such as implements, improved seeds, fertilizers and water.

Lead by Eng Saidi Mkomwa, the team comprised of R Mwakimbwala, agronomy and animal traction specialist; E Kiranga - technology transfer and linkages specialist; N Mulengera - agronomy and micro-credit specialist; and A Mussei - monitoring and evaluation specialist. Implementing partners included Njombe and Sumbawanga District Councils; SEAZ Agricultural Equipment Ltd; Anglican Church; Diocese of SW Tanganyika; Njombe and Caritas, Sumbawanga Diocese.

Aware that farmers were more likely to accept a technology if they experienced its benefits and had knowledge of how it operates, the project used farmer field schools (FFS) to introduce and sensitize the community to the technologies. Farmers

“The project, implemented by the Agricultural Research Institute (ARI-Uyole), has shown that farmers can save about 90 per cent of their farm labour requirements and increase their crop yields if they use superior DAP implements.”

Animal Traction & Ripping Technology

were organised under 16 FFS, each made up of 16 households. Each FFS provided one-hectare plot for training and awareness creation. The project then selected 124 farmers (36 per cent women) whom they retrained to become farmer trainers. These in turn trained 203 households in 11 neighbouring villages.

As part of the awareness creation campaign and raising the level of interest of farmers in the technology, the project distributed 1000 calendars with DAP messages, held eight weeding competitions (two in each village) and facilitated farmers to participation in two annual zonal agricultural shows known as *nane nane*.

With a solid strategy and innovative approaches, the project managed to facilitate the formation of two farmer community-based organisations - Utimale and Ukuwamambu – in 2006. It also managed to secure contracts (in partnership with SEAZ) to train 210 households in 14 FFS in Chunya and Mbarali Districts, thereby spreading their impact way beyond the project area.

Project outcomes

The success of the project would not have been realised without provision of micro-credit facilities, which has also become a success story of its own. Within two years, Utimale and Ukuwamambu had loaned a total of Tsh 19.4 million to farmers. Of the participating 252 households, 116 had acquired credit.



A beneficiary farmer, Generosa Msokwa, using the ox ripper in a weeding competition at Mbuza.

Through the micro-credit facility, farmers own DAP implements, which they can use for 10 years before replacement. Despite the high capital costs of acquiring the implements (Tshs 620,000), access to DAP implements increased by 22 rippers, 81 weeders, and 11 carts. These were also hired out or shared through social arrangements. Further support from the Directorate of Irrigation and Technical Services (DITS) and the Ministry of Agriculture, enabled farmers to acquire maize seeds, fertilizers and some training implements.

Many projects often struggle with the management of micro-credit schemes, but the two CBOs are setting an example to emulate. By end of project, the CBOs had managed to recover Tshs 6,158,100 (60 per cent) of the borrowed funds from their members. On average 90 per cent of farmers who have borrowed from Utimale are servicing their loans compared with 62 per cent for Ukuwamambu. The lower loan servicing or recovery recorded by Ukuwamambu is due to the fact they invested heavily in trading and loaning fertilizers to members. Unfortunately, extra heavy rains experienced that year were a disaster, making it difficult for farmers to repay their loans having lost much of their crop.

As an indication of viability and sustainability of the project, the two CBOs have borrowed Tsh 15.5 M from SACCOS for their members for the 2007 growing season even after the project wound up in October 2007.

The success of the project is due to the NGO credit partners mobilizing farmers' savings, and cultivate farmer connectedness before eventually providing micro-credit.

Despite the success, there are still challenges and opportunities for the future of the project. Farmers are pressing for credit for industrial fertilizers amidst the huge resources of untapped farmyard manure and legumes. Farmers still need to be trained on appropriate compost preparation and manure handling techniques.

Another challenge is that partnership with government agencies at the District level is not institutionalized and largely depends on individual understanding rather than the Memorandum of Understanding (MOU).

Reclaiming Degraded Salty Fields

Juma Wickama

ARI-Mlingano, Tanzania

Introduction

Faced with low and unpredictable rainfall, many farmers with access to water sources such as rivers resort to irrigation. However if the irrigation system is not well managed, it has the potential to turn very productive soils into saline soils that can hardly support crop production, as has happened in the Kileo Irrigation Scheme in northern Tanzania.

Before 1970, Kileo was bush land mostly used for grazing. In the 1970s, farmers were allocated this area as agricultural land and began irrigating their farmlands from the local rivers. However, drainage was never addressed in the design of the irrigation systems and because of this, salts started accumulating in the soils.

By the 1980s, many farmers could see accumulated salt deposits in their fields. Studies carried out in 1992 established that soil salinity had affected 1050 acres (65 per cent) of the 1615-acre irrigation area, with disastrous effects on crop yields.

Maize yields on salt affected soils (SAS) dropped to as low as 300kg/acre compared to 700kg/acre on non-salty fields.

While yields of beans, tomatoes and watermelon averaged 500, 1900 and 4800kg/acre respectively on fields not affect by salinity, farmers could hardly get 50kg/acre of any of the crops on SAS.

Salinity also seriously affected okra production with yields dropping to 1400 kg/acre from 6200kgs per acre. Something had to be done.

In 2002, Agricultural Research Institute (ARI-Mlingano), Tanga, found that combined use of gypsum - a naturally occurring colourless or white mineral (hydrated calcium sulphate), together with drainage and good irrigation techniques can reclaim the area.

While studies had shown that the technology is effective in managing or reclaiming saline soils, many farmers and even policy makers were not aware of it. ARI-Mlingano therefore set up this project to assist farmers in Kileo reclaim the affected areas.

“Studies carried out in 1992 established that soil salinity had affected 1050 acres (65 per cent) of the 1615-acre irrigation area, with disastrous effects on crop yields.”

Reclaiming Saline Soils



Farmers at the Kileo irrigation scheme in activities aimed at reclaiming salt-affected farming lands.

Project outcomes

By end of 2005, the project had successfully reclaimed at least 20 per cent of the salt affected fields in Kileo. Crop yields on reclaimed fields have, as expected also greatly increased maize yields from 300kg/ha to 700kg/ha by end of 2006 for farmers who have adopted the technology of gypsum application.

The interest and enthusiasm shown by the farmers and the adoption rates are clear indications of the success and impact of the technology on agricultural production in the area.

By end of 2006, 279 farmers had taken up the technology, reclaiming 420 acres - an area about 40 per cent of the cultivated area under the salts (1050 acres). This was double the target area.

More farmers are taking up the technology because they can see the benefits. Incomes on restored land have increased from the initial Tshs 300,000 to Tshs 450,000 per annum by end of 2006, mainly due to increased crop yields.

Project approaches that led to success

Other than the effectiveness of the technology, there are other factors that were incorporated in the project design that have greatly contributed to its success.

Building capacities of farmers to apply the technologies – gypsum and improved techniques for irrigating and drainage – have indeed contributed to the successful adoption of the technology by the farmers.

By mid 2005, the project had trained 50 farmers as trainers of trainees and four extension staff in areas related to improved irrigation, drainage, causes of soil salinity, its reclamation, and management of SAS. In addition, the project trained farmers in agribusiness and entrepreneurial skills so as to strengthen their business acumen.

The project further facilitated establishment of revolving funds to establish a sustainable source of funding for farmers.

Another innovative approach by ARI-Mlingano that has catalysed farmers into adopting the technology has been the diversification of crops and other products that enable them tap into a wide market potential.

Indeed, the project introduced improved varieties of tomatoes, cabbage, beans, maize and onions, which are now emerging as a main commercial crop in the reclaimed area.

Another motivating factor for farmers has been the assurance that they have reliable markets for their increased produce.

Reclaiming Saline Soils



A Farmer working on his reclaimed land. The soil reclamation project has helped many farmers regain the productivity of their farms.

Effective partnership

The success of the project can also be attributed to effective partnerships that have been crucial in implementation, and scaling up of the project and ensuring sustainability. These are as follows:

- The Selian Agricultural Research Institute, Arusha - Provided appropriate crop varieties and their husbandry packages.
- Zonal Irrigation and Drainage Unit, Moshi - Surveyed the three villages for irrigation conditions, re-designed farmers' irrigation and drainage systems and trained farmers on maintenance of the irrigation and drainage system.
- Mwanga District Council extension staff - Were crucial in linking the project to community, facilitated formation of farmers groups, linked project to stockists and gypsum supplier.
- Association for Land use Environmental Care Research and Technology Transfer, Tanga - Was critical in linking farmers to markets and also training farmers on business skills.

Post-harvest Technologies

Grain storage: Keeping weevils at bay with metal silos

By Ruth Nguyo

Catholic Relief Services, Kenya

Introduction

In Kenya, and particularly Eastern Kenya, weevils have been singled out as the major causes of post-harvest grain losses. Poor storage facilities including substandard storage and pesticides have aggravated the attack and losses.

Traditional cribs and gunny bags, the most common storage facilities could not guarantee protection against the larger grain borer that causes over 30 per cent of the losses, sometimes wiping out the entire harvests during severe infestations. They were not even effective against the common weevil that accounts for 10-20 per cent post-harvest losses in the area.

However, a new technology is proving effective in protecting harvested grains from attack not only from these deadly weevils, but also from other insects and pests. This technology comes in the form of Metal silos. These containers are airtight, therefore minimizing oxygen and killing any weevils or pests that may be inside. Trained metal artisans or tinsmiths can easily fabricate these cylindrical grain storage structures.

Metal silos are not only guaranteeing full protection against the destructive pests, they are promising to be the ultimate weapon for improving food security for small-scale farmers in eastern Kenya.

Aware of its potential, the Catholic Relief Services (CRS) initiated the Metal Silo Promotion Project in July 2005. The Project's main objective is to reduce post-harvest on-farm grain storage losses in Machakos, Kitui, Mwingi, Kirinyaga, Murang'a Districts. It is implemented by Catholic Dioceses of Machakos, Murang'a and Kitui in collaboration with Ministry of Agriculture and Kenya Agricultural Research Institute (KARI). It was co-funded by MATF and CRS private funds.

Other than just losses, pest damage on stored grain is also linked to severe aflatoxin poisoning like the ones experienced in 2004 and 2005 in some parts of these districts.

Despite metal silo being a simple and effective grain storage technology, there are several challenges that require both innovation and creativity if poor farmers are to benefit from it. One of the biggest challenges is the initial high cost of the silo that varies according to capacity - from Ksh 4000 for a one-bag capacity silo to Ksh 18,000 for a 20-bag capacity.

However, considering that the silos can be used for over 50 years, with minimum or no maintenance costs, they are much cheaper than the conventional storage technologies that cost Kshs 200 to 3,040 per season. The silos can also protect the

“Metal silos are not only guaranteeing full protection against the destructive pests, they are promising to be the ultimate weapon for improving food security for small-scale farmers in eastern Kenya.”



Farmers removing stored grain from a metal silo.

Metal Silos Technology



grain in storage for a much longer period of time than the four months under the conventional storage systems.

Project approaches

One of the strategies CRS employed to ensure that needy farmers acquire the silos was to set up a revolving fund from where the farmers could borrow to buy the silos. The revolving fund was designed such that a farmer only raises 40 per cent down payment to qualify for 60 per cent loan.

However it was soon realized that, establishing a revolving loan scheme is not enough and that farmers need to be sensitised on the loaning process if the scheme is to succeed. Alternatively groups should be selected on basis of exposure to micro-finance services.

Having sensitised the community on the effectiveness of the silos – through trainings, participatory evaluations and demonstrations - the project trained artisans on fabrication, use and maintenance of metal silo so that the silos are locally available to the farmers. This was accompanied with entrepreneur or business skills development for the artisans so that they set up businesses to fabricate and sell metal silos.

Considering that the artisans may not be able to have adequate funds to fabricate the silos, the project advanced them 60 per cent of the cost of fabricating the silos, the balance is met by the farmer on completion and collection of silos.

Project outcomes

While the dissemination approaches were very effective in promoting the metal silo in areas of intervention, there is still room for improvement that could increase the impact or adoption of the technology in the area.

For instance, it was felt that the frequency of conducting participatory evaluations should coincide with grain harvest and storage periods. Selection of artisans should also be based on level of interest and scale of business.

While credit scheme or revolving fund enabled poor farmers access the technology, the 40 per cent down payment is high depending on the silo capacity and needed to be reduced. The period of repayment should also be increased to at least one year. The initial cost is still high even with the credit scheme especially for the poor farmers that the project intended to help.

To speed up adoption of this technology, it is important to widen the target to include groups with grain storage enterprises as well as individual farmers.

Metal Silos Technology

Responses on Soil management and Post-harvest technologies

Considering that uptake of new technologies is usually slow, two years are not enough for the project to realize its full potential, especially in light of the erratic climatic conditions and cropping seasons in marginalised agricultural zone. The implementers recommend that timing of project inception should coincide with good cropping seasons to create effective demand for the technology.

Although the project can boast of several achievements, it has not been smooth sailing. There still remain serious challenges that threaten the further adoption of this technology.

As per the end of the stipulated two-year project life span, the project had not transferred funds for purchase of silos to farmer groups as stipulated in the project design. The reason advanced is that the groups lacked the capacity to effectively run a revolving fund.

The project was further hit by mass transfers of project staff especially from the Ministry of Agriculture. Commitment is therefore required from partners to assign and commit staff to the project.

An alternative approach to engage the partner dioceses to act as custodians of the funds for the community seems the most feasible and sustainable way forward. Further more, the project has only accessed 50 per cent of the project funds, which are still being managed by the partners, instead of the groups. The project has been extended by one year in order to overcome the problems and realise its maximum potential.

Discussions

Following the presentation session, participants were keen to establish from the three project presenters answers on particular issues that arose from their respective projects:

- Whether or not a cost-benefit analysis of the promoted technologies had been carried out by the implementers.
- Apparent low marginal returns from the projects and recommended land units for project optimisation.
- Micro-credit aspect of the projects and the rates of repayment.
- Labour saving aspects of the projects.
- The possibility of farmers in the ARI-Uyole project renting out their ploughs and oxen carts to other farmers.
- Food security and marketing.
- Approaches for project implementation.

ARI-Uyole project coordinator, Eng Saidi Mkomwa, commenced his responses by clarifying that initial cost-benefit analysis showed that starting costs were quite high. He was in agreement that initial cost of investing in the ploughing implements was high for farmers, but it later becomes a profitable business once someone is able to acquire the equipment. For example, "from just hiring out the oxen carts, one can recoup the investment costs in just one season, with adequate business opportunities," he added.

He also informed participants that the project had commenced on the up scaling phase through the farmer field schools. These had trained 1200 farmers at little cost to the project in the first one year. CBOs have also been linked to the SACCOS with farmers borrowing loans through their group savings to acquire additional tools and inputs.

On the question of marginal returns and issue of scale, the ARI-Mlingano presenter Juma Wickama, was of the view that the initial investment at start of project is little when viewed in the long term. In the ARI-Mlingano project, gypsum can only be applied once a year to reclaim salty land.

Discussions

Responses on Soil management and Post-harvest technologies

“Farmers should be discouraged from selling all their produce in seasons where there was plenty of harvest. Instead they should use the CRS silo technology to preserve their produce during good harvests so that they can sell during times of scarcity.”

Up scaling also requires other implementer's efforts, such as the political District Councils, who need to be reached.

Several more questions followed on the ARI-Mlingano project:

- What was the source of gypsum used in the project?
- Can the project implementers find a stockist who can be retailing gypsum in the project locality?
- Are there other suitable alternatives, organic or non-organic that would be suitable or more readily available?
- What is the source and history of the salt in the soil?
- What were the partnerships and the MOUs?
- What policy implications arose during project implementation?

The ARI-Mlingano project coordinator explained that in the first year of the project, the most reliable source of gypsum was 70 kilometres from the project site. This gypsum had to be transported by trucks to the project site.

They later discovered another source, with better quality and only 20 kilometres from the project area. In the second year therefore, they started using the new source. There is a local stockist of gypsum who is already operating in the project area.

The District Council of Mwanga, where the gypsum was found, was also keen to encourage farmers to use the gypsum in their farms. They therefore offered to subsidise the project cost of transporting the same to farmers. “That’s how we were able to deliver twice the amount expected,” he explained.

After observing the project benefits, the District Council agreed to take up the project and fund it from its annual budget. This will ensure continuity.

In terms of partnerships, Juma Wickama informed workshop participants that the organisations that came on board were the ones that had registered a keen interest in the project.

CRS presenter Ruth Nguyo commented that her project had started out by focusing on the issue of food security at the household level. The business aspect later came in through the artisans who were fabricating the grain silos.

“There had to be creation of demand for the silos by farmers in order to spur fabrication of the silos,” Ruth explained. However, she was of the view that agri-business was certainly the way to go in the projects.

On marketing, other participants suggested that farmers should be discouraged from selling all their produce in seasons where there was plenty of harvest. Instead they should use the CRS silo technology to preserve their produce during good harvests so that they can sell during times of scarcity. This can provide valuable income to the farmers and is essentially part of the marketing mix.

Participants had more queries for the silo project:

- What is the science behind the silo technology and the maximum capacity of the silos, in regards to a farmer who harvests up to 100 bags?
- What is the average group savings and the produce available for sale in order to pay back loans?
- How clear were the partner roles were at the time of project commencement?

Ruth Nguyo clarified that sizes of silos differ from capacity to capacity ranging from 1 to 25 bags. The one-bag silo goes at Ksh 4000/= while the 20-bag silo goes for Ksh 18,000/=. The small size was not cost-effective. Most farmers therefore preferred to buy the 3-bag silo and up to the 8-bag capacity. In parts of Kitui grain growing areas, some farmers were buying even the 25-bag capacity.

The metal silos can be used up to 50 years, though Kenyan farmers started using them in the year 2000 (CRS Western Kenya). “If the metal gauge was lower, this can compromise the longevity of the silo and its maintenance,” she continued.

Discussions

Responses on Soil management and Post-harvest technologies

The silo works by preventing access to the grain by destructive pests such as rodents. Silos also minimise oxygen within the containers. In one crucial step before storage, farmers minimise the oxygen available for such pests by lighting candles or papers to reduce oxygen inside the silos.

“We always advocated to the farmers to wait 30 days before removing the grain so that no weevils may survive,” the CRS project coordinator clarified.

On the issue of group savings, participants were informed that some selected groups had “merry go rounds” and some savings which they lend their members. Most groups did not have this system of savings and loaning. However, the project partners who are the diocese had a micro-finance service, which is currently managing group funds.

“Because of initial fears of transferring funds directly to the groups, we are seeking a no-cost extension of the project so as to see how best to transfer these funds to the groups,” Ruth explained.

One partner pulled out all the staff due to an emergency relief operation. Therefore little was done in that area of Kitui. Mass transfers of extension officers (MOA) who had been sensitised on the project also affected the project. On the way forward during the no-cost extension, the partner was committed to providing at least one staff to manage the project.

The metal silo technology has not been evaluated through cost-benefit analysis. However, from participatory evaluation, its effectiveness compared to the traditional cribs has shown a clear benefit. “There’s probably no other comparable technology in Kenya that prevents the grain borer from getting to the grains. Its innovation lies in the structure of the silo,” she concluded.

Crop Production Technologies

Enhancing livelihoods with African Indigenous Vegetables

Josephine Rondo

Coast Development Authority, Kenya

Introduction

Women and particularly families that are affected by HIV and AIDS at the Kenyan coastal areas have discovered the power of African Indigenous Vegetables (AIVs). Introduced two years ago, the AIVs have greatly improved food security of the coastal communities, majority of whom have been living under abject poverty and food insecurity.

It is estimated that about 38 per cent of Kenyans are absolutely poor with the coastal areas being the worst hit. Of the estimated 2.5m people living at the coastal areas, 62 per cent are poor while 42 per cent are food poor; that is, they cannot meet food requirements. The situation is sometimes so bad that many children below five years die as a result of hunger and malnutrition.

“Introduced two years ago, the AIVs have greatly improved food security of the coastal communities, majority of whom have been living under abject poverty and food insecurity.”



An AIV farmer standing in his black nightshade (ndunda) plot in Taita Taveta District. Inset: Black nightshade seed ready for packaging and sale.

Concerned about the spiraling poverty and food insecurity, the Coast Development Authority (CDA), with funding from the Maendeleo Agriculture Technology Fund (MATF) embarked on a project in 2005 to reverse the trend.

Project outcomes

Within two years, the project can boast of achieving its main aim - to improve productivity, incomes and nutrition security for the community especially women farmers and HIV-affected farm households in the coastal areas through improved production, utilisation and marketing of the AIVs. The AIVs promoted include

African Indigenous Vegetables

Nightshade (*Solanum scabrum/ americanum/villosum*), spider plant (*Gynandropsis gnandra*), amaranth varieties and vegetable cowpea (*Vigna unguiculata*).

The project has had a huge impact on the farming practices and livelihoods of the target communities in Malindi and Taita Taveta Districts. Majority of the farmers are now using improved, high yielding AIVs. Crop yields have greatly increased as a result of adopting improved production practices. Farmers have also adopted improved but simple preservation techniques involving blanching, sun drying and salting to increase shelf life.

The AIVs are even more deliciously served as farmers have learnt how to prepare better recipes and better utilisation techniques to improve consumption and utilisation. More importantly farmers are shifting from the traditional subsistence farming to commercial farming. While all target farmers are producing seed for individual use and for sale, 31 expressed interest to produce on commercial basis.



A farmers' representative explaining how the bucket irrigation works and its importance in AIV production.

Project partnerships and approaches

One of the pillars of success was the choice and cementing of project partnerships. Partnership with Farm Concern International (FCI) brought in expertise in marketing, improving processing/packaging techniques, and supporting evolvement of business support groups. FCI is also giving technical backstopping in seed multiplication and other agronomic aspects.

The Ministry of Agriculture through the extension department is involved in Mobilisation of farmers into growing AIVs. KARI - Mtwapa is providing technology on the drip and bucket irrigation kits. Choice Humanitarian helped in operationalizing the micro-credit or revolving fund scheme.

Another pillar for success was the innovative dissemination approaches. Using the Farmers Field Schools (FFSs) and Training of Trainers (TOT), farmers were mobilized, sensitised and received training on importance of AIVs, how they are produced, processed and marketed. Some selected farmers were further trained to be trainers.

To have a wider reach and impact, the project opted to work with farmer groups rather than individual farmers. The Commercial Village Approach (CVA) was quite innovative. This involved the commercialisation of various farmer groups clustered in a village. This ensured that almost all members of a village are beneficiaries of the project and are running their farms commercially.

Another pillar of success was the incorporation of a micro-credit scheme in the project. CDA envisaged a strategy of funding the women farmers and other farmers

African Indigenous Vegetables

through a revolving fund. This was to be initiated, organized and implemented by Yehu Enterprise Support Services (YESS) - a micro-finance unit established in 1999 by Choice Humanitarian to provide working capital to women in the rural villages.

Under the scheme, each village FFS was recognized as a savings and credit unit. The members of each center were sub-divided into smaller groups or unit of five people that co-guarantees other individual members.

Each member is required to have saved at least 30 per cent of the total cost of the item (equipments/seeds) to be purchased. This serves as their down payment for the same and shows commitment by farmers.

The project strategically targeted women and for good reasons. Over 80 per cent of small-scale farmers are women practising subsistence type of farming with a small percentage in market-oriented type of farming. They have less access to material and financial resources. The project aimed to empower women, including those from HIV and AIDS affected families to ensure full participation, leadership and access to resources.

Of the farmers trained in Participatory Monitoring and Evaluation, 66 per cent were women and of the 58 farmers trained in production, processing, utilisation and marketing, 44 were women.

Organic Farming of Vegetables

Empowering women through organic vegetable production

Ruth Madulu

ARI-Mikocheni (MARI), Tanzania



Farmers in Mkurunga District taking care of their vegetables.

Women in Mkurunga District, Tanzania may not have had control over finances arising from sale of main cash crops like cashew and coconut nor have they had the financial resources to invest in high-level commercial farming but they have now found an affordable and highly rewarding farming venture that is already changing their financial fortunes.

Starting two years ago, organic vegetable farming is transforming lives of many women in Sotele and Kitomondo villages Mkuranga District. The initiative by the Mikocheni Agricultural Research Institute (MARI), Tanzania, with support from MATF has seen women drastically increase their incomes.

Buoyed by high demand and good prices for organic produce, women have increased acreage under organic vegetable production from 490 kg/acre/year to 4620 kg/acre/year. Amaranthus yields increased from 390 kg/acre/year to 2300 kg/acre/year, while okra yields increased from 100 kg/acre/year to 520 kg/acre/year. Income from vegetable sales in Sotele and Kitomondo villages increased from TS 4,000 to TS 25,000 per month.

Project objectives

Prior to the project, the women farmers were resource-poor and lacked improved technology. This limited vegetable production.

“Buoyed by high demand and good prices for organic produce, women have increased acreage under organic vegetable production from 490 kg/acre/year to 4620 kg/acre/year.”



A farmer in Kitomondo village tending her vegetables.

To unlock the potential of vegetables to improve livelihoods, the Mikocheni Agricultural Research Institute initiated the project with the overall objective being to contribute to improvement of the livelihood of the Mkuranga community through organic vegetable farming.

The specific objectives were:

- To promote organic vegetable farming to women farmers;
- To increase women farmers' household income and food security through organic vegetable farming and;
- To increase the production and productivity of organic vegetables at house level.

Approaches and methodologies

Thirty women farmers from each of the two villages were selected during village meetings, which involved mostly women farmers and village leaders. They were selected on their willingness to participate and to provide labour:

Having organized the women into groups, the project then embarked on training them using on-farm demonstration plots, farmers' field days, exchange visits and participation in exhibitions.

The farmers were trained on production techniques related to:

- Nursery management and compost making;
- Use of livestock/green manures;
- Crop residue;
- Mulching and legumes to enrich soils and conserve water;

- Crop rotations and use of repellants plants to control weeds, disease and pests and;
- Use of recommended spacing during transplanting and planting.

The women were also trained on post-harvest technologies – preparation, preservation (solar/sun drying), storage, packaging, and vegetable seed quality control.

Project outcomes

So successful was the training that one of the groups, Mshikamano Women Group (MKIWAKI) has opened a bank account and a savings of Tsh 150,000. The group is also diversifying into new projects. It is running a chicken project with 100 chickens. The group is to acquire a cashew nut processing machine and has sponsored one member to undergo training on the use of the machine.

The other reason why the project was successful was the easiness with which the farmers could adopt the technology. Indeed, area residents had been growing vegetables without use of inorganic fertilizers - organic farming by default.

More farmers are now venturing into organic vegetable production with many expanding acreage under the vegetables. Farmers can also get return on their investment much faster than with other crops. Vegetables take only three months to mature.

However, the women still face a number of challenges the major one being the limited supply of irrigation water which is very important due to the long dry spells common in the area.

Meeting the demand with the supply still remains a challenge. For instance, SeaClif Hotel and Envirocare Organic shop in Dar es Salaam wanted the group to commit themselves to a regular supply of different vegetables (500kg) and fruits amounting (800 kg) per week. The production capacity needs to be enhanced to meet these targets.

The Project was implemented by MARI in collaboration with Tanzania Association of Women Leaders in Agriculture and Environment (TAWALE), Kilimo Hai Tanzania (KIHATA), Small Industries Development Organisation (SIDO), Tanzania Organic Certification Association (TANCERT), District Extension Officer (DEO) and Village Extension Officer (VEO) extension officers with financial support from MATF.

Organic Farming

Improving livelihoods through improved mango production and marketing

Edward Kilonzo

KARI-Mtwapa, Kenya

Project background

Mango (*Mangifera indica*) is an important cash crop in the Coast Province of Kenya with high potential for employment and wealth creation. However, the hot and humid weather conditions fuel disease (anthracnose and powdery mildew) and pest (mango seed weevil and fruit fly) attack resulting in huge losses.

Other factors that limit mango production and marketing include poor agricultural practices, ageing trees, lack of superior varieties, poor marketing structures - leading to up to 40 per cent yield losses per annum – and lack of value adding technologies.

In 2005, Kenya Agricultural Research Institute (KARI) with financial support from MATF initiated a project that would empower smallholder farmers in Kilifi and Malindi Districts reap maximum benefits from mangos.

The project - Empowering smallholder farmers in Kilifi and Malindi Districts through improved mango production techniques, marketing and information dissemination to ensure poverty reduction, food security and employment creation - had the following objectives:

- Maximize production of high quality fruit;
- Reduce mango losses at pre- and post-harvest stages;
- Introduce varieties suitable for various end uses;
- Disseminate production technologies that are environmentally safe;
- Train farmers on value adding technologies;
- Build capacity of farmers on marketing (identification, price negotiation and contract signing); and,
- Empower farmers on technological, entrepreneurial and business skills.

Project partnerships

Realizing that a multi-disciplinary approach for technology transfer was required to achieve the set objectives, KARI – the overall project leader responsible for crop production and processing technologies and project coordination - entered into strategic partnerships with other organisations. These were:

- The Ministry of Agriculture (MoA) - Facilitated farmer group identification and formation, sensitisation and mobilisation at the grass root level;
- Kenya Gatsby Trust (KGT) - Designed viable marketing strategies;
- Kenya Bureau of Standards (KEBS) - Involved in capacity building of farmer groups on product development and quality standards; and,
- Kenya Plant Health Inspectorate Services (KEPHIS) that sensitised farmer groups on good agricultural practices.

Outcomes

The achievements in the first two years of the project has indicated the production of mangos and the livelihood of the mango farmers could be significantly improved.

Through sensitisation, farmers have already adopted good agricultural practices (GAPs). Superior mango varieties - *Kent*, *Tommy Atkins*, *Van dyke* and *Haden* - have been introduced to the groups. Demonstration sites for GAPs and nurseries for improved mango varieties have been established in Kilifi and Malindi Districts.

Farmers have been trained on nursery management and grafting techniques with seven farmer groups having established their own nurseries. Two mother blocks have been established in Mtwapa in Kilifi and Msabaha in Malindi to provide scions of popular and commercial varieties and , farmers have been trained on value addition technologies and product development. Several groups are processing and preserving the mango as chips, jam, juice, pickles and chutney.

“The achievements in the first two years of the project has indicated the production of mangos and the livelihood of the mango farmers could be significantly improved.”



Mango Production & Marketing



Popular mango varieties. from left: Van dyke, Kent, Haden and Tommy Atkins.

Realizing that markets (local and international) for mango and its products are available as long as the farmers meet the required conditions, the project further sensitised the farmers on quality and hygiene requirements of products for different markets both at the local and international levels.

Aware that the production interventions would result in increased productivity or yields, the project has been active in identifying high value markets so as to avoid over supply and consequently falling prices.

The project has also helped farmers in price negotiations with identified buyers. More importantly, the project has helped farmers enter into contract farming. Other than guaranteed market for the produce or product, contract farming also protects farmers against price fluctuations especially during a glut.

Purchasers of large volumes want guaranteed deliveries, therefore the farmers are merging their groups into an umbrella group, the Kilifi Malindi Agricultural Products (KIMAP). This will help to achieve the needed economies of scale through combined marketing of their produce.

Funds should have been set up for the establishment of a mini processing plant for farmers to realize the potential of value addition.

While farmers can now access credit for up scaling the production and value addition technologies.



Mango jam.



Packaged dried mango chips.



Group members sorting out solar dried mango chips in preparation for packaging.

Discussions

“The project had strived to involve the men whose wives are group members through plot preparation and weeding, but the main emphasis remains on women.”

Ruth Madulu
MARI

Participants commenced the discussion session by requesting for more information regarding the AIV project from the CDA presenter Josephine Rondo:

- Why was the bucket drip irrigation a constraint yet it was a very simple technology? Was it possible for the farmers to be trained on how to make the irrigation kits themselves or even encourage a local agro-vet shop to supply the same?
- How had the CDA project identified and selected groups with members affected by HIV.

Josephine Rondo clarified that initially she thought it was very simple to make the irrigation kits. Unfortunately, it was established that the piping materials required were not available locally and had to be imported at high cost. The project was not able to do this on behalf of the farmers because the demand for the kits was also quite low. It would not have been cost-effective to import for just a few groups.

She also clarified that they had gone round at the start of the project, identifying potential groups with HIV affected members in the project area. She provided the example of St. Monicah farmers' group which had lost some members to HIV/AIDS. They were not only helping to raise orphans but were also already growing AIVs.

For the MARI project, the following questions were raised:

- Were the women farmers getting any premium prices because of engaging in organic farming practices?
- Was the project only targeting women as a gender-specific project.
- What were the yields per acre for the organic vegetable produce?

The MARI project presenter, Ruth Madulu clarified that farmers were not yet receiving premium prices for their produce. This was because the project had been targeting the high-value markets such as hotels and shops that would offer good prices.

Unfortunately, farmers were yet to meet the stringent requirements of the hotels. “The farmers are therefore still selling their produce to schools at the village and District level,” she explained.

On the issue of being gender-specific, she explained that most groups had women as members. The project had strived to involve the men whose wives are group members through plot preparation and weeding, but the main emphasis remains on women.

On the question of yields, she explained that the production figures provided earlier, (490 kg rising to 4,620 Kg per acre) was an average indication of production levels during the project duration.

Participants also raised a number of questions for the mango project implementers:

- Did the project have more groups than required?
- What did the mango processing aspects of the project involve?
- Were the demonstration sites on-farm or on KARI plots, and their viability?
- What was the private sector involvement in the project, and clarification regarding the project partner misunderstanding?
- Do the Farmer groups require more empowerment when it comes to marketing?

Discussions

Responses on crop production technologies

Responding on behalf of KARI-Mtwapa, Edward Kilonzo explained that groups were selected by all project partners. They sought to build up from existing groups in the project area that had already been exposed to aspects of value-addition processes. “We later realised that the groups required much more than had been planned for. They required lots of capacity building and training on group dynamics and cohesion,” he explained. Twenty groups were eventually selected and this was reasonable for that size of project.

Value-addition processes were indeed part of the project implementation. “Along the coast of Kenya, mangoes have always been sold as fresh fruits. In recent times however, this has been changing and dried mango chips and pickles are now being seen,” he said. Value addition at the village level has picked up and this has helped to tackle the mango glut during harvest seasons.

“For purposes of project sustainability, the demonstration sites were located both on-farm and at KARI plots,” explained the presenter. The on-farm sites were established with accessibility of farmers in mind. There is one in each District of Malindi and Kilifi. These farms are used for demonstrating good agricultural practices. The KARI site demos are used to ensure future sources of mango varieties.

On the partnership issue, he clarified that initial conflicts that had arisen on the question of administration and accounting ended when the partner left the project. Regarding the private sector involvement, the project had registered tremendous interest from other NGOs, notably in the area of marketing.

The project has encouraged private sector involvement because of the large volumes of mangoes that can be produced with export markets in mind. An extension phase for the project would be ideal to harness this opportunity.

It was concluded that formation of marketing associations should be encouraged so that farmers are able to participate actively in the value chain. Large-scale mango buyers require at least 10 tons of fruits, hence the need of building farmers' capacity to produce adequate volumes in a consistent manner.

The lesson was that farmers had to team-up in order to benefit from economics of scale. There were also suggestions to make organic produce certified so that farmers can be able to reap the maximum benefits from premium prices that would accrue from organic farming.

Commenting on the way forward, participants noted that communities involved in the projects are not necessarily business people. They are usually organised around self-help groups and this limits their participation in business.

Private commercial companies are usually reluctant to sign contracts with such self-help groups because “they are amorphous and they cannot be sued”. The way forward is for a project to work with a private sector partner who can be the business chain leader, empowering the community to sell their produce at prices that bring them profit.

Livestock Technologies

Dissemination of thermo-stable New Castle Disease vaccine in rural chicken of Mwanza Region, Tanzania.

Moses A. Ngendello

LZARDI, Tanzania

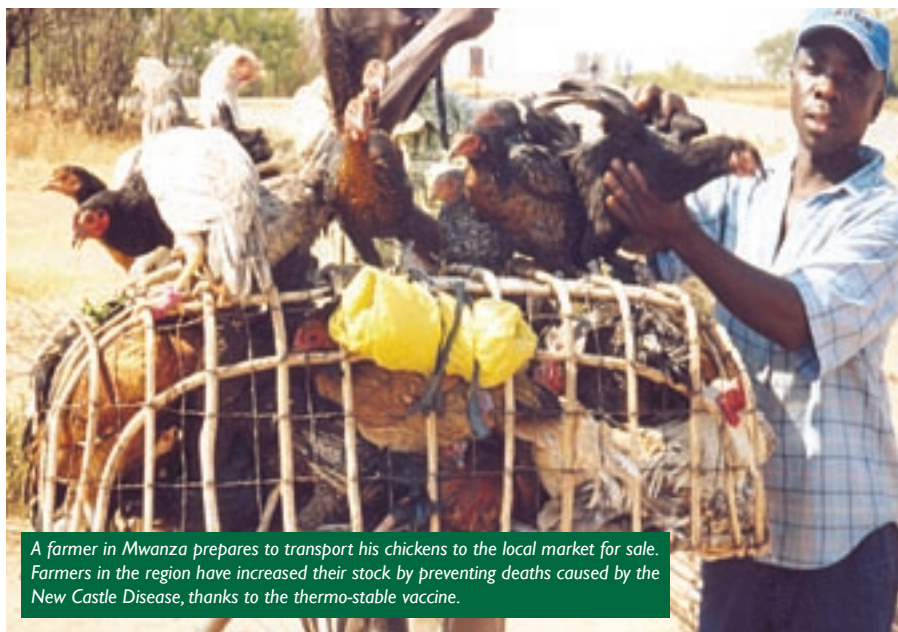
Introduction

Throughout Sub-Saharan Africa chicken is an important food source. It is prized as a delicacy and as an investment.

In the Mwanza region of Tanzania, more than 90 per cent of rural households keep local poultry and the chicken population is over 2.8 million. This accounts for about 8.8 per cent of Tanzania total chicken population, contributing up to 30 per cent urban meat supply in Mwanza.

However, chicken production in Mwanza is severely constrained by the deadly New Castle Disease (NCD) that accounts for 80 per cent of chicken deaths, sometimes completely wiping out the flock during severe outbreaks.

“Thermo-stable NCD Vaccine can reduce indigenous chicken mortality by 80 per cent as demonstrated by a recently concluded vaccination project in Mwanza.”



A farmer in Mwanza prepares to transport his chickens to the local market for sale. Farmers in the region have increased their stock by preventing deaths caused by the New Castle Disease, thanks to the thermo-stable vaccine.

The good news is that NCD is easy to control through vaccination. Thermo-stable NCD Vaccine can reduce indigenous chicken mortality by 80 per cent as demonstrated by a recently concluded vaccination project in Mwanza.

Despite its availability in other parts of Tanzania, chicken keepers in Mwanza were hardly aware of the vaccine. In 2005, Lake Zone Agricultural Research Development Institute (LZARDI) initiated a project that would introduce the vaccine in Mwanza, and ensure that as many farmers as possible used the vaccine.

The project was implemented in partnership with Veterinary Investigation Centre (VIC) of Mwanza, Ministry of Agriculture Training Institute (MATI)-Ukiriguru and District Agricultural and Livestock Development Officers (DALDOS) in the intervention areas.

New Castle Vaccine

Project approaches

As lack of awareness was one of the principle factors limiting the application of the vaccine, the first task was to sensitize and mobilize communities into groups for wider dissemination of the technology. The project then embarked on training of the groups on various aspects of chicken rearing, procurement and administration of the vaccine, marketing and group dynamics. Once they had aroused significant interest in the communities, they embarked on procurement, verification and supply of the vaccine.

With the demand for the vaccine rising, the project had to find ways of ensuring that communities have easy access to the vaccine. The strategy was to link community groups with agro-vets in the villages and town for continued supply of the vaccine.

Outcomes

Due to the vaccine's efficacy and user friendliness, it has widely been adopted by both men and women with sales tripling within two years. The dramatic effects of the vaccine and the lack of segregation between vaccinated and non-vaccinated birds meant the vaccine was widely adopted.

The vaccine - produced by Veterinary Investigation Centre, Ministry of Agriculture - reduced bird mortality by 80 per cent. The vaccine is also very cheap. A vial costs Tshs 3000 (US\$ 2.5) and is enough to vaccinate 300 birds. Once administered, it protects the birds for three months. However, the birds need only two more vaccinations at three months interval to get permanent immunity to the disease.

The technology has shown great impact at household level and farmers are now increasing their flocks due to the security offered by the vaccine. The number of birds per household has increased from an average of 10 to 34 per household. Sale of indigenous chicken has also increased with the number of birds sold per household rising from two to six per month.

However, for the project to have significant impact on the lives of the community, it is important that farmers move from subsistence to commercial poultry keeping. There is need for the farmers or groups to have flocks that can attract commercial interests, and also necessary that farmers become linked to market information sources and traders.

While it was not possible to assist farmers increase flocks from 10 birds to 100 or 200 within two years, the increasing bird stocks in the community is a good indication of technology uptake. The project team feels it is just a matter of time before the farmers or groups go commercial.

Though incomes from sale of chicken may not be huge, they have nonetheless been used for buying school uniforms, domestic items, food and farms inputs among others. The increased revenue from the sale of chicken has also created other opportunities for the communities.

Out of the 58 groups so far formed, 50 have opened accounts, with savings ranging from US \$200 to 600. Forty per cent of the money is currently used for buying vaccine while the rest is for the revolving fund. The groups are using revolving funds as movable group bank; group members borrow funds to invest in other enterprises and return with some interest.

Lessons

Managing the revolving fund or micro-credit scheme remains a major challenge. There is need for further training of established saving and credit groups on financial management.

A major lesson learnt from the project is that mutual trust, responsibility, sharing experience among partners and group strengthening is critical to project success, sustainability and up scaling. District councils and NGOs have institutionalized the technology for wider dissemination, building on good partnerships and group approaches that played a key role in accelerating and adopting the technology.

Presentation

By Hashim H. Chande
MANREC, Tanzania

“The technology is not only environmental friendly, but the blocks are easier to manufacture using locally available resources - urea, salt, molasses, crop residues and maize or rice bran.”

Improving milk production: The use of Urea molasses multi-nutrients blocks

Hashim H. Chande
MANREC, Tanzania

Project background

In 2001, the Ministry of Agriculture introduced Urea Molasses Multi-nutrients Blocks (UMMB) Zanzibar. On-station trials demonstrated that the technology could double milk production from 7 to 14 litres per cow per day.

Initially, the technology was not disseminated to the majority of farmers due to limited financial resources and weak agricultural extension services in Zanzibar. In March 2006, Zanzibar's Ministry of Agriculture, Livestock and Environments (MALE), with financial support from MATF initiated a project aimed at empowering small-scale livestock keepers in Uguja and Pemba islands, Zanzibar to adopt UMBB as a feed supplement to their dairy animals.

With increased milk production, it was envisaged that the technology would positively change farmers' livelihoods through increased incomes, improved health of family members, and employment creation at household level.

Project approaches

Having learnt from the mistakes of the previous attempts to disseminate the technology to a wider community, MALE adopted several innovative approaches to ensure success and sustainability. Instead of going solo, MALE adopted multi-sectoral and multi-disciplinary approaches that brought on board different partners in project implementation.

One of the strategies was to train farmers to become trainers of other farmers. This combined with farmer groups and field schools approaches have been very critical in enhancing dissemination and adoption of UMBB technology considering the limited extension services in the project area.

Many farmers have adopted the technology because the technology is cheap, affordable and easy to demonstrate its ability to improve milk productivity. The technology is not only environmental friendly, but the blocks are easier to manufacture using locally available resources - urea, salt, molasses, crop residues and maize or rice bran.



Project beneficiaries engaged in the manufacture of Urea molasses blocks.

Urea Molasses Blocks

Lessons and challenges

A major lesson learnt was that there is need to involve more extension workers at village levels for wider dissemination of the technology.

The project introduced aspects of SACCOS (revolving fund scheme) that would provide credit even when the project has wound up. But as the implementing team learnt, there is need to adequately build the capacity of those running the revolving fund schemes to be professionally and therefore ensure sustainable production of UMMB.

Though innovative, the partnerships had its own challenges the MALE had not foreseen. Majority of partners are not coherent with their roles and responsibilities. However, one partner was able to consistently supply raw materials for UMMB manufacturing. This was *Farmer Care Mwanakwerekwe*, an agricultural stockist based in Zanzibar. Other than providing materials on credit to farmer groups, the partner also managed to link farmers with reliable markets for their milk.

Despite challenges with partners, the project has achieved most of the set objectives. Over 90 per cent of the planned project activities have been successfully implemented. Over 70 per cent of targeted households are aware of UMMB technology with majority of farmers showing willingness to continue with project.

While majority of farmers through their groups/FFS continue to manufacture and use UMMB, some farmers are reluctant to feed their animals on UMMB due to concerns of toxicity. When dissolved in water urea can break down into Ammonia, which can be toxic in large doses. However, when used correctly the urea supplied in the multi-nutrient block is harmless to the animals.

For the remaining period (5 months), the project will put emphasis on the issues of marketing linkage and operation of SACCOS via the establishment of more farmers' field schools for enhanced sustainability of the project.

The project implementers feel that two years is not enough to significantly realize the impact of the interventions for a project such as this.

Dairy goat and gardening

Sustaining the dairy goat technology

Sammy Bunyali

CPDA, Kenya

Introduction

Dairy cows are not an option for many Kenyan farmers as their holdings are too small to sustain a cow.

Dairy goat rearing requires much less land than dairy cows, therefore the Christian Partners Development Agency (CPDA) introduced the Dairy goat and gardening project in Vihiga with the intention of improving production from the land.

The strategy was to integrate dairy goat rearing with kitchen gardening thus enabling farmers improve milk productivity as well as soil fertility. The goats would be reared under zero-grazing so as to facilitate easy collection of farmyard manure.

Project objectives

Started as an extension of Vihiga integrated food security and nutrition project, the project had the following specific objectives:

- To have a sustainable dairy goat multiplication programme in Vihiga.
- To enhance the level of management practices among Vihiga dairy goat farmers.

“The goat milk has become very popular and now is over twice the price of cows milk: Kshs 50 per 750 ml compared to Kshs 20. On account of the good prices, these goats are becoming very popular in communities that were hitherto not concerned with goats.”



A dairy goat farmer in Vihiga District.

- To realize improved animal health care in Vihiga.
- To establish a dairy goat farmers' association in Vihiga.

To have a bigger impact on improving livelihoods, it was important that the project took a holistic approach that required assembling multi-disciplinary and multi-sectoral partnerships.

Partnerships

- With CPDA as the lead agency, the International Center for Research in Agro-forestry (ICRAF) - Kisumu was responsible for training farmers on high value fodder technologies.
- Kenya Agricultural Research Institute (KARI)-Kakamega was responsible for training farmers on utilisation and value addition of dairy goat products especially milk.
- The Dairy Goat Association of Kenya- West Kenya branch was to play the critical role of tracking records (especially breeding) and organize buck rotations.
- Ministry of Livestock and Fisheries - Vihiga District was to provide the technical backstopping and monitoring.

Outcomes

These innovative partnerships have ensured wider dissemination and impact of the dairy goat rearing technology in Vihiga. CPDA initially introduced the dairy goat technology in 2002 under the first round of MATF grant support.

The aim was to combine up-grading of local goats for increased milk production and the use of goat manure to improve soil fertility for vegetable production. A one-year extension phase was later granted in August 2005 to build and consolidate the gains from the project.

The technology has been received well throughout the District, though with some skepticism especially among the Tiriki sub-tribe of the Luhya, largely due to their cultural practices and beliefs.

The goat milk has become very popular and now is over twice the price of cows milk: Kshs 50 per 750 ml compared to Kshs 20. On account of the good prices, these goats are becoming very popular in communities that were hitherto not concerned with goats.

For instance, within one year Musasa women group of Tiriki, one of the most successful dairy goat groups in Vihiga, is now keeping over 30 goats. The popularity has driven up demand, pushing up prices to over Ksh 10,000 per goat irrespective of size and pedigree.

Dairy Goat Gardening

The project has also contributed immensely to women empowerment. The goat has never been of much value among the Tiriki community from time immemorial.

The project has also contributed immensely to women empowerment. Men had little interest in an animal they considered of little or no value, and it was women who took up the enterprise. They have become economically empowered because they have income from a successful business.

Lessons and exit strategy

The success of the project can also be attributed to the innovative dissemination approaches. The use of farmer-to-farmer approach in dissemination of the technology greatly enhanced acceptability. Group approach was effective for wider dissemination in a cost-effective manner.

Another pillar of success has been the involvement of community animal health workers (CAHWs) through the community-based vet extension scheme. The use of CAHW has seen a significant drop in mortalities since vet services are available at the village level.

The project trained 24 CAHWs that are involved in the day-to-day health management of the dairy goats. The CAHWs are backed by six private veterinary doctors for referrals.

As an exit strategy, the project has facilitated the formation of the Vihiga Dairy Goat Farmers' Network, which has divisional steering committees and a District management committee that is charged with the responsibility of realizing a farmers' association for goat producers in Vihiga.

Despite the success, the project encountered several challenges, especially where partnerships were constrained by institutional dynamics. For instance, officers from ICRAF and KARI were transferred to other stations, which affected some project activities.

A major lesson from project implementation is that participation of farmers in passing the technology greatly enhanced ownership and wider dissemination. Another lesson is that project success is very much dependent on partner dedication and commitment.



Goat manure has become useful in boosting soil fertility. This has enabled the growing of crops that had virtually disappeared in Vihiga District due to poor soil fertility.

Discussions

“The project was currently moving from subsistence to commercial poultry farming. The aim was to encourage farmers to increase their flocks from just 5 chickens in some instances, to over 100 chickens per household.”

*Moses Ngendello
LZARDI*

Workshop participants started the discussion session by raising a number of questions for the LZARDI presenter:

- Were the stockists part of the original project design or were they already existing in the project area?
- What was the relationship between the stockists and other animal service providers in the project area, such as the para-vets?
- Someone remarked: “Middlemen are probably the most important people in the value-chain, especially on local chicken marketing. They should not be overlooked.”

In his response, the LZARDI presenter Mr. Moses Ngendello, explained that the private stockists were part of the project design. Funds were put aside during project implementation to build the capacity of the stockists.

In addition, the District animal health personnel certified all the para-vets before they were allowed to operate. A number of groups had received certificates as para-vets, at the end of the project. Three to five farmers were selected to practice as para-vets from each group.

He also noted that middlemen had played a critical role in the project. “The project is nevertheless looking forward to a time when the farmers can link directly to large market outlets and traders,” he concluded.

A whole flock can be wiped out if the birds have not been vaccinated. Where the farmers had mixed the birds, the vaccinated ones would survive an outbreak and this ultimately helped to convince the farmers that the thermo-stable vaccine was good for their birds.

Moses Ngendello explained that the project was currently moving from subsistence to commercial poultry farming. The aim was to encourage farmers to increase their flocks from just 5 chickens in some instances, to over 100 chickens per household.

He further explained that the Newcastle Disease was initially the biggest constraint to chicken production. The project implementers decided to tackle this problem first before other aspects of the value-chain could be considered.

Workshop participants sought more information from the MANREC presenter, Hashim Chande, regarding the Urea molasses project:

- What was the role of the Trainers of Trainers (TOTs) in the dissemination process?
- What was the correct milk yields recorded by the project?
- What are properties of the mineral block supplement, which caused greater milk production?
- Why do farmers fear to feed urea to cattle?

Hashim Chande explained that participatory training had been conducted for the TOTs at the start of the project. However, he noted that there was still a great need to increase the number of extension officers to support technology dissemination. The government provided all extension services in the project.

He also shared information on studies that had been conducted at the Sokoine University of Agriculture. It was found that the blocks worked very well during dry seasons but did not significantly increase milk yields from dairy cattle during other seasons. With the MANREC project, new studies were conducted which established

“A case study of a beneficiary farmer had been conducted in the project area and the study recorded average production levels of 4 litres a day. The farmer kept 12 goats.”

Sammy Bunyali
CPDA

that the milk yields increased by between 0.5 litres to 2 litres with the use of the molasses blocks.

He further explained that, “Livestock keepers have found the blocks nutritious for their animals with weight gain and fertility rates increasing tremendously.” These were additional benefits besides the increased milk yields.

Urea can be toxic for cattle when consumed in large amounts. After hydrolysis it turns into ammonia. A certain amount of ammonia in the rumen can be captured and converted into protein by rumen microbes. Amounts of urea in the blocks are balanced and safe.

The project presenter explained that the project carried out demos with a few innovators to convince other farmers that the urea molasses blocks were safe for use. Once the farmers saw for themselves that no harm came to the livestock, they gained the confidence to adopt the mineral blocks for their own animals.

The presenter was of the opinion that more artificial insemination should be encouraged to improve the breeds, and thus to enhance the returns of better feeding.

More discussions followed thereafter on the CPDA dairy goat project. Some issues were raised through the following questions:

- How did the professional vets receive the idea of Community Animal Health Workers (CAHWs)?
- The breeds of goats that were introduced.
- Milk yield data of 4 kg per day may be too high and should be treated with caution.
- Skepticism about high medicinal value of goat milk, where some had alleged the milk could cure HIV ailments

In his response, the CPDA project presenter Sammy Bunyali, explained that professional vets had found that they were receiving more referrals from the CAHWs. The introduction of CAHWs was good for the vets businesses and there was no antagonism between them. However, a policy document was being prepared to set out guidelines on their working relationship.

On the goat breeds promoted by the project, the presenter informed participants that the Toggenburg and Alpine breeds had been introduced. The Toggenburg was zoned in two divisions while the Alpine was zoned in six other divisions to avoid cross-breeding.

Each of the divisions had a breeding centre. “In phase one, the project did not require any direct contributions and this led to problems with farmer groups on the question of ownership,” he explained.

The end-term evaluation recommended that the project design should involve a 20% share of contributions from the farmers. This would contribute to building of units, provision of fodder, and monetary contributions to buy goats for other groups.

Concern was also raised on how projects can sustain improved breeds. Sammy Bunyali mentioned that a case study of a beneficiary farmer had been conducted in the project area and the study recorded average production levels of 4 litres a day. The farmer kept 12 goats.

Regarding the curative claims of goat milk, he clarified that the CPDA project

had verified an instance when a child was cured from chest ailments after regular consumption of goat milk.

Another participant shared on the importance of sustaining the livestock projects by integrating closely related aspects from other projects. "For example, the dairy goat project can integrate the push-pull technology which can provide desmodium for feeding the goats," the participant explained.

In concluding the session, it was observed that the cost-benefit analysis in the various projects needed to be carried out more comprehensively. The aim is to give a better picture of the profitability of the scheme. This information can provide good comparative data with the funds invested in the project.

Value addition & Marketing

Smallholder marketing of orange-fleshed sweet potato in Homabay District, Kenya

Oduwo Alsen

CMAD, Kenya

Introduction

Acceptance is one of the greatest challenges facing any new technology. This is especially so if the traditional systems or technologies appear to be serving the community perfectly well.

The situation was not any different when Community Mobilisation Against Desertification (C-MAD), with financial support from MATF, introduced orange-fleshed sweet potato in Rangwe division, Homabay District in 2002. First, the traditional sweet potato varieties had served the community pretty well, being drought tolerant and the communities' security against other crop failures like maize and sorghum.

Secondly, the project was introducing not just a new potato variety, but new ways of processing potato into products. The first project phase ended in late 2004 and a one-year extension phase was granted in August 2005 to deepen impact.

In this extension phase, C-MAD needed a strategy that would have the community fully exploiting the new variety. Through processing and marketing of sweet potato products, the project would also ensure that the introduced variety contributed significantly to improvement of the communities' livelihoods.

Project objectives

The smallholder marketing of orange-fleshed sweet potato project was therefore introduced with two main objectives: to increase marketing opportunities for orange-fleshed sweet potato products in Rangwe; and to create self-sustaining community based marketing organisation for orange-fleshed sweet potato varieties in Rangwe.

Part of the strategy was to diversify products and add value to the products to be marketed. The project intended to introduce flour products such as sweet potato flour and composite flour for making *mandazis*, *chapati*, biscuits, bread and *Karukaru*. Other products to be introduced included sweet potato chips, potato juice and chinchin.

Partnerships

It was imperative that C-MAD would enter into strategic partnerships with other organisations and institutions if it was to achieve project objectives.

These included:

- Kenya Agricultural Research Institute-Kisii and International Potato Center (CIP) for provision of approved germ plasm and training;
- Ministry of Agriculture - Extension for provision of market information;
- Ministry of Health for provision of extension and quality assurance services;
- Kenya Agricultural Commodities Exchange (KACE) for provision of market information and training;
- Africa Now for training on quality assurance, standardization and market information.

Partnerships were formed strategically and they were required to commit to the work personally if they were to be of any use to the project.

Approaches

Having established a holistic team of implementers, the next challenge was to come

“The project intended to introduce flour products such as sweet potato flour and composite flour for making *mandazis*, *chapati*, biscuits, bread and *Karukaru*.”



Members of Achune widows group preparing mandazis.

up with innovative approaches for maximum technology dissemination and project impact on community livelihoods.

Considering that the project had production, processing and marketing components, the project adopted the following approaches and structures:

- Rapid multiplication plots;
- Processing centers;
- Market information centers;
- Bakeries, marketing outlets and farmers' associations.



Left: Members of Achune widows planting their group farm.
Right: Chipping in progress at Achune widows processing center



1



2

Project impacts:
1. The modern processing centre run by the Kinda women group.
2. A man admires a modern oven inside the processing centre.

Outcomes

By end of the extension phase in July 2006, the project had registered several achievements. These were:

- The establishment of five rapid multiplication sites for the orange-flavoured sweet potato;
- Thorough screening - two superior varieties (SPK 004 and Ijumula) were selected for scaling up. By end of the project, farmers had planted the two varieties on 64.45 acres;
- To ensure high productivity, the project helped farmers to improvise greenhouses that speeded up maturity by two weeks;
- The project also successfully established two processing centers, two motorized mills and two bakeries. One modern bakery at Kinda has capacity to bake 5000 loaves a day.

Through aggressive but innovative marketing, the project has seen acceptance of the products. Demand for the bread now outstrips supply with two schools regularly supplied with sweet potato bread.

The success of the project did not come without challenges. Adverse weather conditions, group cohesion, low bakery capacities and standardisation of processed products for marketing purposes all had to be overcome.

The technology has had great impact on community livelihoods as follows:

- There is wide acceptance of value added sweet potato products in the market;
- Increased production has greatly contributed to food security in the area;
- Increased incomes from sale of surplus potato;
- Commercialisation of vine production and processed or developed sweet potato products has helped parents or guardians sustain education of children and orphans; and,
- The technology has also contributed towards economic empowerment of women, who are the majority of the farmers.

Sustainability measures

It will be necessary for the volumes of value added products to be increased for greater impact. This will require that farmers acquire electric ovens. It's also important that C-MAD in collaboration with University of Nairobi and Kenya Bureau of Standards (KBS) develop certified standards if the products are to penetrate the lucrative high-value markets. It is also imperative that the management capacity of entrepreneurs be enhanced through training and follow up for project sustainability.

Increasing cassava utilisation for improved household incomes, Tanzania

Prof F. P. Lekule

Sokoine University of Agriculture (SUA)

Project background

While cassava is well established in many parts of East Africa as a food security and cash crop, it is still considered a subsistence crop with little commercial value in Tanzania's coastal Districts.

One of the reasons why cassava has not been fully exploited as a cash crop lies in the way farmers have tried to market it – in its raw and unprocessed form. However, there is a huge potential of processing cassava into value added products. Cassava could also be a processed or provide raw material for food and feed industries.

It is against this background that Sokoine University of Agriculture (SUA) initiated a project on increasing cassava utilisation for improved household incomes through on-farm processing for human and livestock in three coastal Districts in Tanzania. These are areas where cassava is grown but where the farmers are still among the poorest because they have not commercialized cassava farming.

“One of the reasons why cassava has not been fully exploited as a cash crop lies in the way farmers have tried to market it – in its raw and unprocessed form.”



A farmer with a bicycle loaded with fresh cassavas on the way to a local market. Processing will alleviate this kind of hardship.

It was envisaged that by processing cassava into high value products, it would become a commercial crop and improve farmers lives through improved incomes.

Project objectives and partnerships

The project had the following objectives:

- Promote on-farm cassava processing using improved technology;
- Promote utilisation of processed cassava;
- Provide linkage to markets; and,
- Market access, cassava production and productivity, income.

For purposes of up scaling, wider dissemination, and maximum impact on the target beneficiaries, SUA forged partnerships with strategic institutions. As the lead agency, SUA was responsible for overall management and training of farmers and groups on cassava production, processing and marketing.

Sugar cane Research Institute (SRI-Kibaha) was responsible for training of farmers on seed multiplication and management of multiplication farms.

The credit component that was critical to project success was left to Tanzania Gatsby Trust. Farmers Center was to process animal feed while Powerfoods Ltd. was to process human food.

Cassava Value- addition



A cassava flour milling centre. Inset is a cassava chipper. Chipping and drying reduces HCN toxicity.

Approaches

As part of the intervention strategies, the project trained farmers and farmer groups on various production and processing technologies. The team also established cassava seed farms for Kiroba variety that is resistant to most diseases and is also high yielding.

Considering that most of these interventions required capital input, the project established a revolving fund for purchase of chippers and milling machines.

For wider dissemination, sensitisation and as part of training, the project organized farmer exchange visits days and trade fairs. Although the project increased awareness of processing technology, the cassava smallholder farmers were still unable to organize themselves to deliver cassava chips to the feed factories which are located in the city.

The project implementers had earlier on realized that cassava has not previously been used in livestock feeds due to lack of awareness and the problem of cassava-Hydrocyanic Acid (HCN).

Tackling these two issues within the two years of the project cycle, it became evident that cassava processing and marketing of cassava value-added products is viable commercially and that there are large markets which are currently inaccessible to farmers.

Outcomes

By end of project in 2007, 40 tons of cassava had been processed as human food compared to three tons of Cassava processed for livestock feed.

A major lesson learned from the project is that entrepreneurship, credit repayment culture/ability take longer to inculcate in farmers and need more than the current two years project time. Flexibility in project time is required.

It was also learned that training if combined with activities like exchange visits, trade fairs and farmers' field days greatly enhances learning and technology uptake.

Another important lesson was that cassava could be turned into a cash crop capable

Cassava Value- addition

of reducing poverty in rural areas through value addition. While project viability is important to attract political attention and create credibility, regional sharing of experience among countries was also found to enhance sustainability.

Although groups had been trained on various aspects including management of revolving fund schemes and business management, one group had to be phased out and machinery transferred to another group in Kibaha, as it was not making profit after three months. It simply did not meet the set criteria.

Each group was required to draw and adhere to a business plan. Having defaulted on loan repayment for over three months was an indication that either the group's business plan was not working or the group was not simply adhering to it.

A major recommendation from the project was that the Sustainable Livelihood Approach should always be used in assessing the impact of a project. These are gains in social, natural, and financial, human and physical capital. Farmers measure their achievement in those terms looking at increased food security, increased well-being, reduced vulnerability, increased income and sustainable natural resource use.

Improved cassava multiplication, chip processing, utilisation and marketing in Nakasongola District, Uganda

Ronald Magado

NADIFA, Uganda

Project background

In 2002, Nakasongola District Farmers Association (NADIFA), introduced cassava varieties that are resistant to Cassava Mosaic Disease (CMD) in Nakasongola District, Uganda. This was in response to an outbreak of CMD that was responsible for the drastic declines in cassava production – less than a ton per acre - and a great erosion of cassava biodiversity, resulting in food shortages, famine and untold hardship among the farming communities that are heavily dependent on cassava as a staple food and cash crop.

The intervention was so successful that by end of project in 2004, CMD was no longer a threat. Yields shot to greater heights as the introduced cassava plants were also high yielding varieties.



The introduction of CMD-resistant cassava varieties to Nakasongola District has helped boost harvests. Cassava farmers are now being encouraged to increase their cassava income through value-addition processes.

Project extension and outcomes

Building on these achievements and to consolidate the contribution of cassava towards securing food security in the district, NADIFA introduced an extension phase to the initial project in November 2005.

This second phase sought to build the capacity of farmers to sustain cassava production for marketing, train them in quality cassava chips processing, utilisation and marketing and also train them in business management.

The introduced technologies have had great impact on the livelihoods of farmers in Nakasongola District within the one-year the project has been implemented. The technologies have been widely disseminated with over 5000 farmers having adopted the new improved cassava varieties such as TME14 and NASE 1-12. Cassava acreage has grown to over 10,000 acres.

Food security at household level has greatly improved to the extent that there have been no cases of food relief in the District since the introduction of the technologies. The project was also able to set up or facilitate cassava factories in the area and procurement of other cassava processing equipment and tools. With assistance from JICA, three farmer groups have acquired a cassava factory - Acaproma – and are now processing and marketing cassava chips/flour collectively.

“The impact of new varieties on cassava production and processing in the district has been a source of inspiration for other development partners to up scale the technology in other areas of Uganda.”



A group in Nakasongola being trained on the use of a motorised cassava chipper.

Another cassava factory, Naccapam-NADIFA is owned by seven groups. The factory, which was acquired with financial support from MATF, is used for processing cassava chips, flour and gari, which are marketed collectively by the seven groups.

The impact of new varieties on cassava production and processing in the District has been a source of inspiration for other development partners to up scale the technology in other areas of Uganda. For instance, World Vision, Save the Children, and Concern-Uganda have supported the multiplication of 00067 and 2961 varieties, which are resistant to cassava brown disease within and out side the project area.

Farmers have used additional income from the sale of cassava to diversify their income generating enterprises with many venturing into livestock rearing. Others have constructed houses for residential and commercial purposes.

Partnerships and approaches

The success of the project can be attributed to innovative partnerships and dissemination approaches. To ensure a holistic approach to food security and farmer empowerment, NADIFA entered into partnerships with various organisations and institutions to build a multi-disciplinary team of partners.

NADIFA as the lead agency was also responsible for planning, group formation, training, management, marketing and monitoring. The others were as follows:

- Namulonge Crop Resources Institute (NACRI) - Responsible for developing and dissemination of new cassava technologies, market linkages and training farmers.
- Nakasongola District local government was to guide the project planning, mobilisation of farmers and putting aside funds for procurement of cassava mosaic free stems to distribute to other areas.
- TONNET Enterprises- its role was to fabricate chippers and training service machine operators.

Some of the innovative approaches that contributed to project success included mobilisation of farmer groups using the already established NADIFA Extension structure-DEC-SEC-PEC-SIG-CFs-ELFs (see list of acronyms, page 5) and local leaders for cassava project.

Another strategy for wider reach was through farmer to farmer exchange visits, advertisement and promotional campaigns for processed products like chips, flour and gari carried out on radios, newspapers, meetings, shows and functions.

For wider reach and impact, the project chose to work with groups rather than individual farmers. The project also undertook training of ELFs/CFs from the seven target groups.

“More support is needed in the areas of product development, packaging, labeling, business planning and marketing research if the community is to reap maximum benefits from cassava growing enterprise.”



Market promotions of factory products like chips, flour and gari have been carried out e.g. on radios, newspapers, meetings, shows and social functions.

Challenges and the way forward

Despite the success and impacts on farmers' livelihoods, the project can still achieve more if certain challenges can be overcome. Lack of electricity is a major challenge to factory milling activities.

Marketing of the processed cassava products still remains a challenge. There's need for proper marketing strategies to sell about ten tons of cassava chips still in stores. Inadequate product development, packaging and labelling are other challenges that require urgent attention.

Considering that many farmers are now diversifying into livestock keeping, it may also be necessary to diversify into animal feed processing at the cassava factories.

Promoting Garlic production in Kabarole District, Uganda

Joseph Baguma

KDFA, Uganda

Introduction

Garlic has traditionally been grown as a backyard crop especially for communities around Mt. Ruwenzori in Uganda. Farmers have had very little access to improved garlic farming practices and technologies, mainly relying on local seed varieties from neighbours and local markets.

Even though it was grown as a backyard crop, it was never for home consumption. It was unacceptable to the local community due to its repugnant smell. The small quantities harvested were usually sold fresh to middle men at low prices and measured in plastic containers.

In March 2005, Kabarole District Farmers Association (KDFA) initiated a project that would transform garlic farming from a minute backyard activity to a booming enterprise that would greatly impact on the livelihoods of farmers in Kabarole District.

Project objectives

The project - Promoting Garlic Production in Kabarole District- (Western Uganda) - had the following objectives:

- To build and strengthen the capacity of garlic farmers' groups through Forest Inspection Division, formation of pool-marketing and savings and credit associations.
- To introduce, multiply and distribute two varieties namely Valencia and Roja and popularise their consumption at household level.
- To offer improved and appropriate production technologies to the farmers.
- To improve on storage facilities through construction of garlic cribs and marketing strategies through pooling.

Aware that community interventions require a holistic approach if they are to have realistic impacts on farmers' livelihoods, the project aptly chose a multi-sectoral and multi-disciplinary approach - an approach that needed innovative partnerships to effectively handle various aspects during implementation.

“In March 2005, KDFA initiated a project that would transform garlic farming from a backyard activity to a booming enterprise in Kabarole District.”



A garlic farm.

Partnerships and approaches

With KDFA as the lead organisation, Kawanda Agricultural Research Institute (KARI) was incorporated to carry out adaptive research for the technologies particularly seed variety screening, agronomic practices, IPM technologies, soil and water

Garlic Production

conservation, crib construction, aging technology, including training farmers on garlic preparation for home consumption.

National Agricultural Advisory Services (NAADS) Kabarole was responsible for conducting a Training Needs Assessment, Forest Inspection Division and linkage to markets; Western Rift Valley Ecological Farm Institute (WREFI) to conduct TOT, backstop and disseminate technologies; RECO industries to provide local market for farmers' garlic; Uganda Export Promotions Board (UEPB) - to link Garlic Marketing Associations to external markets and share relevant information on export trade; Kabarole District Production Department (KDPD) to monitor and evaluate project progress and for quality assurance and; Kabarole District Local Government (KDLG) to lobby and advocate for project scale up and sustainability.

Though innovative, the partnerships had their own positive and negative aspects. Most of the partners were very committed to the project with 80 per cent actively playing their roles well. However two partners played passive roles for the first three quarters of the project. Others did not understand the project strategy or objectives and therefore felt they were competing for the same farmers.

KDFA has through this partnership, established a permanent mutual cooperation with KARI in implementation of other projects.

A major lesson from the partnerships was that meetings and personal contacts are vital in maintaining partnerships. One of the major challenges during project implementation was harmonizing production and related marketing activities. Because this was hardly achieved by the lead organisation alone, trained farmers who had not received seed in time lost confidence or interest in the project.

However, it was all benefits for farmers who took up the technology. The project used pool-marketing strategy that helped to eliminate middlemen who often offered low prices. The project also attracted better prices since the farmers sold in bigger quantities as a group. The pooling strategy also improved garlic group cohesion and marketing associations that made it easy for them to access both financial and technical support.

Under the strategy, garlic farmers form a parish pool-marketing group and elect an executive officer. The group is then registered at parish level. Aggregated parish pool-marketing groups form a sub-county pool-marketing association with an elected executive and registered at the sub-county level. By end of project in February 2007 there were eight marketing groups and three marketing associations.

Through this strategy, marketing associations have so far sold 2,315 Kgs of garlic benefiting a total of 34 group members.

However one of the challenges facing the pooling strategy was poverty, which forced most farmers to sell individually for quick returns. Another challenge is that while marketing associations needed funds to purchase produce at harvest time from farmers or groups, this was not usually available.

Despite the achievements of the pooling strategy, there is still need for further sensitisation and capacity development for group and executive members on the strategy. One of the major achievements of the project is that it has managed to popularise garlic farming as a commercial enterprise through introduction of new and improved high yielding varieties and identification of new market. The communities have also taken up garlic consumption as a cure to common ailments.

Introduction and promotion of fish farming, Uganda

Fred Kasirye

Caritas Kasanaensis, Uganda

Introduction

While many communities appreciate the value of fish both as an important food source - yielding high amounts of proteins, vitamins, minerals and fats – and as a commercial product, fish farming has not been widely practiced.

Lakes, rivers and dams remain the main sources of fish, either for commercial or home consumption for many fishing communities. Fish farming has a great potential to contribute to people's livelihoods, food security, poverty alleviation, income generation, employment and trade.

In 2005, Caritas Kasanaensis, Kasana Luweero Diocese embarked on a project to promote fish farming in Luweero District, Uganda. Considering the diverse social and economic aspects of the project and being a new enterprise or technology, Caritas sought partners to implement the project.

“Fish farming has a great potential to contribute to people’s livelihoods, food security, poverty alleviation, income generation, employment and trade.”



*Pond sampling in Luweero District.
Inset: Pond excavation by an individual farmer in a three-month site.*

Partnerships

As the lead organisation, Caritas was responsible for overall administration and coordination of the project. It was also responsible for project finance, preparation of reports and training in Aqua business.

Makerere University - Wildlife and Animal resources Management (WARM) department was brought on board to take charge of technology dissemination, training of trainers, provision of teaching aids and training materials and, technical back stopping.

Fisheries Department - Luweero District was responsible for mobilising farmers, provide guidance on policy issues and link project to Poverty Eradication Action Plan (PEAP) programmes.

Kajjansi Aquaculture Research and Development Centre (KARDC) was responsible for production of initial fish fry, production of initial feeds and overseeing adoption of the technology by the local farming communities.

Fish Farming

The importance of these innovative partnerships became evident during project implementation that called for flexibility and in some instances change of strategy.

The group dissemination approaches were adopted because it is easy to mobilise and train farmers in groups, for farmers to share problems and experiences in fish farming. In the case of fish farming, it even made it easier mobilise monetary savings in some groups and enabled saving and sharing labour for pond excavation and fish sampling.

Approaches

However, for the project, the group approach was not the perfect dissemination strategy. They realised that ponds managed collectively as a group did not perform well as compared to the ones managed individually due to failure to actualise collective ownership and responsibility. This was seriously threatening project sustainability.

A major lesson from this experience and one that charted the way forward was that a demonstration pond should be hosted by an individual farmer rather than a group. It is important to focus on pioneer farmers with the objective of making sure they grasp the technology and have productive ponds that can be demonstrated to be profitable.

The new innovative strategy then was to form groups, mobilise and train farmers in groups but select individual farmers from some of the groups to host the demonstration ponds.

However, the costs of setting up the demonstration ponds and inputs are met by the project and provided to the farmer as a loan to be paid back when he starts harvesting. The hosting farmer pays back as agreed on each harvesting to a common group revolving fund that is accessible to all farmers in turns.



A fry production centre in Luweero District. Newly hatched fry are collected, counted and stocked into tanks.

Challenges and outcomes

Due to these challenges, only one out of the 30 farmers were trained in fish marketing and value addition adopted and commercialised the technology. The farmer, other than buying fish from other farmers who have adopted the technology, has established a market in Kampala and Nairobi for seasoned and smoked fish.

Although still limited by funds to improve and expand the processing unit, his major constraint is still low production from the farmers, which cannot sustain his current market.

Another factor that could have contributed to the low commercialisation of the technology is the design of micro-credit schemes. A major lesson from the project is that micro-credit institutions repayment periods tend not to be compatible with the

Fish Farming

Responses on value-addition and marketing

production cycle of most agricultural enterprises, which denies many poor farmers the opportunity to apply for loans.

Micro-credit organisations are not the appropriate source of credit for poor farmers investing in agricultural income generating activities and who have no other supplementary incomes to service their loans.

For micro-credits to have more impact, farmers' institution should be improved and empowered to manage their own integrated revolving funds at the Sub-county level. This will ensure that the limited funding can rotate around the groups in the same Sub County.

The project managed to overcome these challenges due to the well-innovated and planned partnerships that improved on the efficiency of project implementation. Though modest, the project has recorded significant achievements. It has managed to sensitise and introduce fish farming to 120 farmers in the two Districts. It has improved on the farmers' skills in fish farming.

The project has established demonstration ponds that can be utilised by the farmers for exposure and learning purposes. The establishment of the breeder ponds has improved sustainability by ensuring easy accessibility and availability of seed to the farmers.

It has also created employment and improved on the use of household labour in the communities through creation of a new income generating activity in the area. In addition, it has established an integrated revolving fund, which is a source of credit that is accessible and affordable by the fish farmers.

Discussions

The discussion session from the value-addition and marketing presentations brought up several issues through the following questions:

- How were the green houses established by the CMAD project to grow the sweet potato vines?
- How were the market centres organised to disseminate market information to the farmers?
- What was the amount of time the women beneficiaries, who were a majority in the project, spent on group activities?

The project presenter Alsen Aduwo, commenced by explaining that the green houses were made with transparent plastic sheeting supported by sticks, which covered the growing crops to conserve moisture. This cover allows the vines to mature two weeks earlier than if they were growing in the open.

About the market centers, he explained: "The centres were equipped with mobile phones, for which the farmers contributed 30 per cent while the project contributed the rest".

He further explained that CMAD had collaborated with the Kenya Agricultural Commodities Exchange (KACE), to create a text message service through their mobile phones which provided market information for the farmers, including the place where their products were needed.

In addition, notice boards were also provided by KACE to put up market information downloaded from the Internet service at the market centre. This did not work out because of the poor connectivity in the area.

Other questions later followed for the SUA cassava project:

- What were the criteria used to select beneficiary groups in the project, and what was the fate of a group that was unable to clear a loan and was subsequently denied machinery?

Responses on value-addition and marketing

“Farmers are always approaching NADIFA to assist in looking for markets. For us, this is a sign of success for the project because it means our beneficiaries have achieved food security.”

**Ronald Magado
NADIFA**

- One participant was curious about the sales of cassava, and the demand.
 - Who were the private sector players that were involved in the processing?
- The SUA presenter Prof Lekule responded: “During the initial training, each group was expected to draw up and adhere to a business plan. If there were any defaults in loan repayment for a period of three months, that group was deemed to have failed,” he explained.

He further explained that such a group would then be removed from the beneficiary list because it was not well organised. Equipment was also subsequently given to other groups that were following their business plans.

He indicated that some farmer groups sold 30 tonnes of their fresh cassava to the local markets. Of this, 50% was sold fresh with the rest going for processing. He clarified that the average yields at the coast region per hectare was 8 tonnes.

Dar es Salaam provides various markets. The Kisumu market had business people selling cassava flour; while supermarkets such as Imalaseko provided retail outlets. Some groups had linkages with feed millers, who bought the cassava to mill and sell as flour to supermarkets including Imalaseko and Shoprite.

However, most groups sold to traders who came to the villages to buy in small amounts. The animal feed manufacturers and other private sector players demand that cassava is competitive in terms of costs as compared to maize.

“Various tests conducted between SUA, the private companies and a few farmers established that the use of cassava in manufacturing animal feeds was actually cost-effective compared to maize,” he clarified.

This encouraged the manufacturers to commit themselves to purchase large quantities of cassava from farmer groups at a guaranteed price.

Workshop participants raised a few questions for the NADIFA project:

- What are the challenges facing farmer groups in Nakasongola District of Uganda, especially on group cohesion?
- Is it possible to link up with external markets beyond the project area?
- The cassava success in Nakasongola had spurred competition for natural resources between the livestock keepers and the cassava farmers - was this perceived as a problem by the project implementers?
- 5000 farmers had adopted the technology and 10,000 acres of cassava had been planted - had a survey been conducted to verify this data?
- Was this a cassava growing area?
- Was there a drought or famine that facilitated this adoption?

Ronald Magado commenced his responses with a clarification regarding the group cohesion. “At the start of the project, the smaller groups had 5-10 members and were known as the Special Interest Groups (SIGs). They were not sustainable and so they came together to form larger groups which had the Extension Link Farmers (ELFs) who were now the contact farmers,” he explained.

These contact farmers were trained by NADIFA to share the knowledge from the project with other farmers. One of the most critical challenges was the question of marketing.

“Farmers are always approaching NADIFA to assist in looking for markets. For us, this is a sign of success for the project because it means our beneficiaries have achieved food security,” he clarified.

On natural resources, the presenter agreed with a participant’s observation that there was natural resource competition between livestock keepers and the cassava farmers. “This problem is usually serious during dry seasons when animals frequently destroy crops in search for nourishment,” he explained.

To solve the problem, NADIFA has been collaborating with Concern Uganda in order

“The labour intensive nature of preparing the ponds remained a major constraint. A solution has been found though, which involves the identification of appropriate sites where partial excavations are conducted.”

*Dr Fred Kasiryé
Caritas Kasanaensis*

to reach favourable policies. “The community has been consulted in order to draft a by-law that will guide the relationship between the livestock keepers and the crop farmers,” he concluded.

A few questions were also raised by workshop participants for the KDFA garlic project as follows:

- How was the issue of seed availability and lack of varieties related to the sustainability of the garlic project?
- How did you handle group cohesion and other related challenges while marketing of the produce?

Joseph Baguma, KDFA, clarified that the farmers were using their own local variety which gave low yields. The project’s variety was the Roja, which was readily available.

“This is the variety that we have multi-plied during the course of the project,” he explained. The project was targeting 8 groups of 20 people each. The project later observed that some groups were willing to purchase their own garlic seeds once they saw the benefits from other farmers.

“We have continued to maintain the groups through the Special Interest Groups (SIGs) and this has helped us write proposals for future seed support,” he added.

The Caritas Kasanaensis project on fish farming was thereafter on the spot light from workshop participants. Concern was raised about:

- The low adoption rates of the technology.
- The labour intensive aspect of manually digging the ponds.
- Why were the micro-credit institutions not appropriate in providing credit for poor farmers?
- What was the percentage of women farmers involved in the project?
- What steps were taken when other farmers started feeling demotivated when resources are directed to one farmer’s demo plot?

On behalf of Caritas Kasanaensis, Dr Fred Kasiryé explained that the few farmer beneficiaries in the project area had just started producing.

The inputs required for value-addition and marketing were also quite high, beyond the reach of most Luweero farmers. However, one farmer outside the project area had managed to take up the project.

He informed participants that the labour intensive nature of preparing the ponds remained a major constraint. “A solution has been found though, which involves the identification of appropriate sites where partial excavations are conducted,” he explained.

“Some dug-up soil is used to form the banks in this process, reducing the work of building a pond considerably. However, the project has not yet used animal traction for this kind of work,” he concluded.

The workshop participants thereafter began a general discussion on the way forward on the value addition and marketing projects:

- One contributor to the discussion began by emphasising the importance of local markets.
- Had any studies been conducted to establish where to sell, what the volumes are and how much one can sell for? Lots of work was being done on introducing new technologies but there was little clarity on whether the farmers are able to sell what they produce.
- What drives the projects funded by MATF: are they market driven, product driven, or food security driven?
- There was need to demonstrate a comparative change in prices, market access and incomes for farmers derived from the new forms of products. Otherwise the whole essence of the value-addition process would be lost.
- Which measures can be taken in order to establish such information by both MATF and the grantees?

Responses on value-addition and marketing

- When is the best time to identify markets?
- None of the presentations had provided any information on standardisation or whether they had brought on board a partner to oversee it.
- How can projects such as the CMAD one in Kenya up-scale to other areas such as the nearby Kisii or Kuria Districts?
- Similarly as a challenge to MATF, how can the fish production in Uganda be up scaled to Kenya?

The Caritas Kasanaensis presenter agreed with the idea of local markets and their independence. He also supported the idea of selecting suitable private commercial partners for entrepreneurial purposes, market research and value-addition.

The KDFA presenter observed that it was better to establish what the market was offering before commencement so that you produce the right items for the markets.

The question “Why do we submit proposals to MATF for support?” was answered emphasising that it was not about focusing on the product or the market, but on the farmer. “This is because it is the farmer who must benefit and the project design should ask what the farmer requires in order to improve income” a participant said.

Echoing those remarks, the NADIFA project presenter was of the opinion that development was a process which should focus on the livelihood of the people. Drawing from NADIFA’s experience, he noted that food security had to be addressed before other aspects of the project could be implemented.

“The basic idea behind value-addition in the project is to preserve the cassava, prolonging its shelf life. The marketing aspect comes in afterwards,” he explained.

On his part, the CMAD project presenter Alsen Aduwo observed that up scaling was possible although this had to be done with the market in mind. In the CMAD sweet potato project, production had increased tremendously with some groups integrating their activities with value-addition. However, this has brought new challenges.

“A group operating in the village is now looking at setting up a factory. How do we move to that stage?” he wondered.

He noted that standardisation and certification from KEBS or KEPHIS was a costly undertaking for most of these cottage industries that aspired to grow bigger. This has remained a major constraint for small-scale producers who preferred to operate outside the formal market.

Dr Fred Kasiry of Caritas Kasanaensis was categorical that standards were market driven. “If we are targeting the market, it is necessary to meet these standards and the cost has to be taken into account,” he remarked. He added that a cost-benefit analysis needed to be carried out so as to arrive at the right decision.

In the closing remarks of the session, Ronald Magado shared the experience of NADIFA when the association applied to supply the World Food Programme (WFP) with 50 metric tonnes of maize. The local farmers were not able to meet the stringent standards demanded by the WFP, especially on weevil-free white maize.

“Learning from this failure, NADIFA trained a few farmers to oversee quality controls at the storage level,” he explained. The second application was successful and the association was able to meet the standards and amounts required.

The lesson for other projects here was that farmers needed an institution that would train and guide them in meeting quality standards so as to meet the demands of the market successfully.

“The lesson for other projects here was that farmers needed an institution that would train and guide them in meeting quality standards so as to meet the demands of the market successfully.”

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Promotion of efficient water use to improve farm production for small-scale farmers, western Kenya

Alfred O. Adongo

SANA International

Project background

The combined use of drip irrigation and application of both organic and inorganic fertilisers has led to significant increases in farm productivity in Nyando and Kisumu Districts of western Kenya.

Due to increased productivity, the small-scale farmers are now shifting from the traditional subsistence farming to commercial oriented farming of high value crops with considerable contributions to improved livelihoods.

These benefits would not have been possible without the intervention of a project by SANA International - Promotion of efficient water use for improved on farm production to small-scale farmers of Nyando and Kisumu Districts of western Kenya. This was initiated in 2005 with financial support from MATF.

“Due to increased productivity, the small-scale farmers are now shifting from the traditional subsistence farming to commercial oriented farming of high value crops with significant contributions to improved livelihoods.”



A water tank at a SANA demonstration farm. The SANA project has boosted horticultural productivity in Nyando and Kisumu Districts of western Kenya.

The project that ended in 2007, did not only introduce appropriate technologies for improved agricultural productivity, it also ensured that needy farmers have access to credit facilities to help them acquire the rather expensive technologies. To run successful businesses, the project further trained the farmers in business development services (BDS).

Partnerships

Successful implementation of the project called for collaboration with different partners to manage key project components based on their expertise in those key areas.

SANA as the lead agency was responsible for overall co-ordination. KARI-Kisii and the District Irrigation Engineer (DIE) was responsible for agricultural technology transfer. Relief and Environmental Care Africa (RECA) was responsible for co-ordination and management of credit component of the project business development services.

Efficient Water Use

Considering its kingpin role in the horticultural industry, Human Development and Capability Association (HDCA) was tasked with the responsibility to advise on most suitable horticulture products to be produced given the market potential and also to train target farmers on good agricultural practices and link farmers to target market outlets.

VI Agro-forestry and Life Project were responsible for agriculture extension services focusing on soil fertility improvement technologies and contribute to marketing skills capacity improvement.



A demonstration farm using water from the SANA water tanks.

Approaches

Several dissemination approaches were used to ensure widest reach and up scaling of the technologies. These included farmer field schools for awareness campaigns, demonstration and training, group approach and common interest groups.

Value adding processing technologies have been introduced and have contributed to improved market access and increase in income through sale of farm products such as peanut butter; and sweet potato products such as cakes, chapati and mandazi.

The introduction of drip kit technology has not only improved farm productivity. Through the construction of water tanks that are key components of drip irrigation, households now have access to clean water.

The other important aspect of the project that it has completely involved both men and women in the project activities such as increased horticulture production with a Village Bank being managed almost exclusively by women.

However, the project would not have been successful without a micro-credit facility considering the high cost of constructing water tanks and other technology applications like value adding processing technologies and farm inputs. This also required an innovative micro-credit scheme system that would ensure that farmers have access to the funds and also that they effectively repay the loans so that others can also benefit.

The micro - credit scheme, managed through Village Banks with supervision from RECA, has by and large been successful. The project has provided Kshs 2.2 million as a revolving loan fund for accessing water tanks, drip irrigation equipment, value adding processing technologies and other technologies being promoted by the project.

The repayment period for loans to buy farm inputs stands at six months, and 18 months for tank loans, both attracting an 18 per cent per year interest.

Under the first phase of the project, Tank Loan beneficiaries save a minimum of Kshs 14000, that is, 30 per cent of the tank cost to qualify for a loan covering the remaining

Efficient Water Use

tank costs. However, the beneficiaries now have to meet the entire tank costs, though provided as a loan.

The establishment of marketing committees within GAWU Village Bank is expected to smoothen loan repayment that sustaining the project. Though still high at 90 per cent, the marketing committee together with the finance committee intend intensify loan recovery and repayment rate to at least 95 per cent.

While the Village Bank acts as an apex marketing center, additional capacity building is required for optimal operation.

Lessons and Challenges

A major lesson from running a micro-credit facility is that for it to be appropriate, a pre-existing level of on-going economic activity, entrepreneurial capacity and managerial talent is needed. If not, then clients may not be able to benefit from credit, and will simply be pushed into debt.

Another lesson is that resources earmarked for project activities should be availed in good time and community responses need to be fast to avoid inconveniences. Marketing is key to promoting agriculture as a business and should be approached through broad networks and collaborations while the farmers maintain volume and continuous production.

Despite the successes, the project experienced several challenges. Variations in cost of water tank materials significantly increased leading to revision in loan terms with part of savings from tank beneficiaries being ploughed into implementation instead of being set asides as collateral.

The project areas have been experiencing erratic weather - droughts when rains are expected especially in the first year, rains when least expected, as was the case in the second year.

Owing to high poverty levels, there is generally a slow pace in individual saving at the community bank hence delays loan disbursement for both Tanks and Farm Inputs, slowing down technology uptake.

While the choice of partners was very strategic, high staff turnover starting in early 2006 in the Department of Agriculture (Nyando) and VI Agro-forestry weakened the extension services. This resulted in inactive ToTs and irregular visits by extension officers.

Transfer of Oyster mushrooms cultivation technology to Hai District, Tanzania, for nutrition, food security and poverty alleviation.

Nancy Kaaya

Horti-Tengeru, Tanzania

Introduction

One of the greatest challenges in a project is introducing a technology or product to a community that has an already set mind about it. How do you convince people to eat something that they have traditionally believed is poisonous?

This is the challenge the Horticultural Research Institute (Horti-Tengeru) faced when they introduced oyster mushroom cultivation among the Chagga community who had long held a belief that all mushrooms are poisonous.

Through this project, Horti-Tengeru introduced mushrooms cultivation in Modio, Ngira, Inshara, Kinangolo, Kisau, Shirinjoro Kawaya, Naibili and Kilingi villages in Hai District, Tanzania in 2005.

“The project also sought to add value to the produced mushrooms and assist farmers to identify suitable markets for the diversified mushroom processed products.”



A trainer demonstrates to a farmer group how crop substrates are steam sterilised in metal tanks to prepare them for mushroom growing in plastic bags.

Although the Chagga people constitute 90 per cent of the inhabitants in the project area and believed mushrooms were poisonous, the other communities in the area have a history of cherishing mushrooms as a delicacy. However, one of the constraints other mushroom feeding communities had faced was lack of the technology of mushrooms cultivation. They relied on the wild growing mushrooms.

Other than convincing the Chagga that mushrooms are edible and very nutritious, the project also sought to promote oyster mushrooms production for food consumption and income generation to all communities in Hai District.

To ensure that farmers get maximum returns from mushroom cultivation, the project also sought to add value to the produced mushrooms and assist farmers to identify suitable markets for the diversified mushroom processed products.

Dissemination approaches

Breaking into new grounds like this required innovative dissemination approaches. First, the community had to be made aware and sensitised on the new technology and its potential to improve their livelihoods through improved nutrition and income generation. These awareness and sensitisation campaigns were to be carried out

through demonstrations during field days, agricultural shows and trade fairs, through production and distribution of promotional materials such as leaflets and, through mass media- televisions, radio and news papers.

The project had to chose the best way to reach out to the farmers that is through groups rather than individual farmers for wider dissemination and greater impact. Capacity building was necessary for the chosen groups of farmers to effectively grow the oyster mushrooms, process them for value addition and market both the raw and processed products such as mushroom roast and soup.

It was also necessary to establish a revolving loan fund for farmers groups to facilitate their acquisition of farm inputs and other products needed for oyster mushroom production and processing. For sustainability purposes it was also necessary that a sustainable source of planting materials be established within the area and training farmers representatives on simple multiplication of the material in their homes.

“Capacity building was necessary for the chosen groups of farmers to effectively grow the oyster mushrooms, process them for value addition and market both the raw and processed products such as mushroom roast and soup.”



Farmers processing mushrooms into pickles.

Partners

For overall success of the project, it was necessary that Horti-Tengeru as the lead agency in charge of project coordination, bring on board other partners with special expertise in implementing specific project components.

Hai District Council had the responsibility to organize awareness and sensitisation meetings, logistic support and dissemination of technologies. HACOBAE and World Vision (Tz)- Sanya ADP were responsible for mobilizing farmers' groups. PATE Care and AWOMUG were responsible for provision of planting material.

Through these innovative partnerships and dissemination approaches, the project has successfully introduced mushroom farming in Hai District, not only breaking the negative cultural attitudes towards mushrooms as poison but also seeing communities take up mushroom farming as commercial enterprise.

Outcomes

By end of project in 2007, it was evident that mushrooms cultivation will contribute to food security and poverty alleviation in Hai District since mushrooms can be produced all year round and extra incomes from mushrooms sale can be used to buy more food for mushroom farmers and meet other family needs.

Within the two years, 284 farmers now produce, process and market mushrooms.

The establishment of a planting material production center in Hai District and establishment and registration of the Hai Mushrooms Growers and Marketing Association (HAMUGAMA) has further boosted the production and marketing of mushrooms.

Mushrooms production in target villages has increased from 0.174 tons to 6.9 tons and incomes from Tshs 367,000 to Tshs 18,300,250 by April 2007. The incomes are likely to continue rising considering the big and growing demand for mushrooms by supermarkets, tourist hotels and local communities in Hai District.

The acceptance of the technology in the area is high. Out of the 185 farmers that received loans to purchase mushrooms planting material, 180 farmers (97 per cent) have repaid the loan plus interest, an indication of the success of the revolving loan scheme and farmers commitment to the new enterprise.

Popularity and acceptance of mushrooms as food in the community has greatly shot up. The Number of people eating mushrooms has increased from 854 people in 120 households to 5,942 people in 1,028 households that consumed a total of 1,339 kg of mushrooms by April 2007.

Lessons

The project has also generated some positive lessons. Adding value through processing using quality solar drying and pickling increased shelf life, taste and flavour of mushrooms. Establishing a revolving loan for farmers groups is important for technology sustainability and enhances technology adoption.

When farmers are taught in groups, the technology is adopted widely. Demonstrations of the technologies during field days and agricultural shows are a good means of disseminating mushrooms technologies.

Silk production in Kabarole District, Uganda

Project background

Kabarole District in western Uganda is endowed with good climatic conditions for production of silk - a high value agro-product used for manufacture of exotic fabrics. Coupled with a high demand and high prices, silk production can significantly contribute to wealth creation and improved livelihoods for communities in Kabarole. International market demand is 120,000 tons of silk yarn per year with prices ranging from US\$ 20-30 per kg.

In 2005, Kyembogo DATIC Ltd with support from MATF, initiated a project to promote commercial silk production in the area. The project, Silk Production Technology Transfer Project in Kabarole District, sought address constraints that had hindered farmers from venturing into a simple but lucrative agricultural enterprise.

The project had the following objectives:

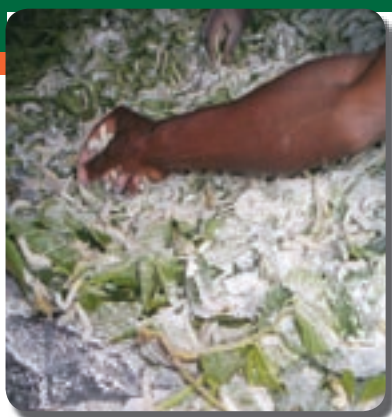
- To improve knowledge and skills of silk farmers in commercial silk production.
- To facilitate silk farmers access to improved silk production technologies
- To facilitate silk farmers access to micro-credit for commercial silk production
- To strengthen farmers' institutional capacity and linkages with technology providers and the silk market

Partnerships

Considering the diverse nature of the project components, Kyembogo DATIC Ltd – the lead organisation - sought strategic partners for proper implementation of the project.

Kawanda Agricultural Research Institute was brought on board to lead the training component in silk production and also provide technical backstopping. NAADS was responsible for provision of advisory services. Kabarole Silk Farmers Association (KASIFA) took up the responsibility of coordinating farmers' groups. Uganda Women's Effort to Save Orphans (UWESO) was responsible for the administration of the revolving fund. The local government was responsible for organizing stakeholders

“International market demand is 120,000 tons of silk yarn per year with prices ranging from US\$20-30 per kg.”



“The project has gone further and established two production units - a high cost silkworm housing unit worth UGshs 14 million and a low-cost silkworm housing worth UGshs. 1,980,00.”



The mulberry plant, whose leaves are used for silk worm feeding.



A farmer inside the low-cost silk worm house.

review meetings and advocacy for the project.

Outcomes and lessons

While the project can boost of addressing the major constraints to commercial silk production in the District, the adoption rate or number of farmers venturing into commercial silk production has been rather low.

Indeed, farmers have trained on mulberry production and silkworm rearing technologies. The project has

gone further and established two production units - a high cost silkworm housing unit worth Ushs 14 million and a low-cost silkworm housing worth Ushs 1,980,00. It has also managed to establish a micro-credit scheme for the farmers. Through a revolving fund each farmer got a Ushs 1,350,000 loan that was to be recovered in two years. The loan attracted a 5 per cent interest rate per year.

Another notable achievement of the project is that it managed to establish a pool silk marketing system. The system also helped in loan recoveries that were directly deducted from sales of silk cocoons.

However, after two years, the project has had modest achievements in promoting commercial silk production in the District, only 15 per cent of participating farmers were producing silk.

This was partly due to the fact that only 40 per cent of the farmers had the required acreage for commercial silk production by the end of the project. Another factor could be the low silk yields that made loan recovery from the revolving funds difficult. By end of project only 9 per cent had accessed the revolving fund.

The short project time may also have contributed to the low uptake of the technologies. While commercial silk production is viable at household level, it needs more than two years to break even. The project therefore needed more than two years to demonstrate the rate of return on silk investment at household level.

A major lesson from project implementation was that while partner commitment is important, it should also be backed by financial contributions. The limit of the MATF budget to execute partner roles may have worked against wider dissemination of the technologies and project impact on the livelihoods of the target community. Only NAADS contributed UK£ 4,784 (Ushs 14,952,180) to the project activities.



A farmer group in Kabarole harvesting ready silk balls. The whole process from egg to silk harvest is about 3 weeks.

Promotion of Upland Rice in Luweero District, Uganda

Dan Kisitu

VEDCO, Uganda

Introduction

Rice farming is one of those enterprises that have the potential to address challenges of food security and household incomes. However, rice production in Luweero District, Uganda had initially been hampered by a number of constraints.

These include low productivity of the crop associated with poor management practices, poor harvests and post-harvest handling practices plus poor storage. For the few that produced, they lacked access to market information and markets. There was also general lack of capital making it difficult for farmers to acquire farm inputs required for production.

It is against this background that Volunteer Efforts for Development Concerns (VEDCO) with financial support from the MATF started a project to promote Naric III upland rice in Luweero in 2005.

“VEDCO chose Naric III rice variety because of its superiority over other varieties, especially the local varieties. Unlike other varieties that require wetlands, Naric III can be grown and performs well on dryland.”



The Bulamba farmers association marketing centre in Luweero. This is the collective centre for the members' rice harvest.

The two-year project - Promotion of Naric III upland rice and organized produce marketing – targeted 600 farmers organized in 20 farmer organisations in five Sub-counties of Luweero District

VEDCO chose Naric III rice variety because of its superiority over other varieties, especially the local varieties. Unlike other varieties that require wetlands, Naric III can be grown and performs well on dryland.

Other than being high yielding – at least 1200 kgs per acre - it is also early maturing. It matures in 115 days. Local varieties take more than 120 days to mature with yields hardly exceeding 800 kgs per acre.

In addition Naric III has an attractive aroma, is less susceptible to birds and puts on heavier grains. These are attributes that local varieties lack.

Project partners

For the successful introduction and wider dissemination of the technology, it was important that VEDCO entered into strategic partnerships with other institutions

to implement specific components of the project. Farm Input Care Centre (FICA) a seed company was called into the project to provide target groups with improved seed of Naric III variety. National Agricultural Advisory Services (NAADS) provided technical and advisory support.

District production departments helped in community mobilisation and scaling up of the technology to other areas. Agricultural Engineering and Appropriate Technology Research (AEATRI), an institute under the National Agricultural Research Organisation was brought on to provide machinery to the project.

NARIC III Upland rice



The VEDCO rice project has been keen to get women involved in agro-marketing activities.

Outcomes and lessons

A major lesson from these partnerships is that the selection of partners, setting of well stipulated and clear roles plus active involvement of the already selected partners should be a key component at project design and implementation.

The project found it possible to disseminate the technology through farmer groups. The same group approach was used in mobilising farmers to become active actors in the market process.

For marketing purposes and economies of scale, farmer' capacities were enhanced to have strong viable groups that were amalgamated to form bigger farmer' organisations that collectively purchase inputs, produce and market their produce. However, the process of having farmer' organisations that can ably take on collective production and marketing effectively takes time, not easy to achieve with the short two year period.

Another lesson learned was with provision of market information. Some groups developed a culture of hoarding of their produce especially in the first month after the harvest, to dispose off when prices rose.

One of the approaches that proved critical to the project was the micro-credit component. Through the facility farmers could raise either 30 or 50 per cent of the cost of farm inputs such as seeds, herbicides, spray pumps tarpaulins and rice hullers. Some of the groups developed a group saving system and borrowed from their savings. However, the biggest challenge has been recovering money from farmers.

By end of project in June 2007, it had successfully reached out to 615 farmers organized in 20 farmers' groups of which 242 were women. The project also ensured that there was equitable role distribution, access and control over land, participatory decision making at households and participation of women in agro-marketing, as part of the intervention strategy.

Diversifying markets and utilisation of tissue culture-derived bananas through value-addition and processing in East Africa

Dr Faith Nguthi,
KARI-Thika, Kenya

Introduction

Over the last two decades, banana production in Eastern Africa region had been on the decline. This was due to lack of clean planting materials, diseases and pests, lack of appropriate technology, poor orchard management and high post-harvest losses.

Traditional methods of propagating bananas using suckers had perpetuated the problem of diseases and pests reducing production further. As a result, bananas had become increasingly costly and no longer served as a ready supply of highly nutritious food and cash for rural populations, particularly women and children. The situation threatened food, employment and income security in key banana producing areas of East Africa.

“Tissue culture technology has the advantage of producing large numbers of clean planting material that have fast and uniform growth and are very high yielding.”



Two farmers admire a bunch of growing bananas. The tissue culture banana variety has enabled many farmers enjoy high yields and food security.

In an effort to respond to the above problem, the International Service for Acquisition of Agro-Biotech Applications (ISAAA-AfriCentre) started a project that would establish a self-sustaining system of production, distribution and utilisation of farmer-preferred varieties of tissue culture banana.

The project was equipped with a suitable micro-credit component. To strengthen its distribution network, orchard management and post-harvest utilisation was also introduced.

Tissue culture technology has the advantage of producing large numbers of clean planting material that have fast and uniform growth and are very high yielding.

Under the project – Diversifying markets and utilisation of tissue culture-derived bananas through value-addition and processing in East Africa – the main focus was on how to increase the competitiveness of banana producers and processors in the market by addressing and establishing systems at strategic points on the value chain that added value, develop new products, identify niche markets and diversify utilisation all geared towards reducing post-harvest losses.

Tissue Culture Bananas

Partners

Due to multifaceted nature of the project, successful implementation of the project called for innovative partnerships. As the lead institution, ISAAA was in-charge of overall project management and implementation. It was responsible for facilitating access to tissue culture planting materials and link farmers to markets for their banana fruit.

KARI, Selian Agricultural Research Institute (SARI), Micro-Business Development (MBD-Tz), Tanzania Gatsby Trust (TGT), Agro-Genetics Technologies-Uganda, the Highridge Banana Growers Association and the extension staff of the Ministry of Agriculture in the various countries provided the necessary extension and training on orchard management and post-harvest handling.

Kenya Industrial Research Development Institute (KIRDI), Jakana Foods, Uganda Gatsby Trust, Nyirefami Limited, Banana Investment Limited (Arusha) and Aberdare Piknik were responsible for development of processed products. Several value addition processes and products have been developed - Juice extraction, Banana solar drying, Banana flour milling and Banana wine

IMPACT, Jakana, and Kenya Gatsby Trust took charge of product promotion and marketing. They have successfully linked to farmers alternative markets - Wine processor (Tz), Banana flour millers (Tz and Kenya), Banana juice processor (Ug), Crisps makers (Ke) and Bulk banana buyers (Ke).

Outcomes

Although it had been established that the technology had potential to alleviate hunger and poverty through increased production and creation of jobs, this would be possible only if essential institutional measures were put in place to address a number of identified constraints to widespread adoption, most importantly, the high cost of tissue culture plantlets and lack of micro-credit to motivate large-scale adoption and commercialisation.

Indeed, many farmers have the desire to switch to tissue culture bananas. Unfortunately, for a majority of farmers, accessing adequate planting material to establish viable commercial units had been a major challenge due to the cost of plantlets.

A viable commercial unit requires on average 80 tissue culture banana plants. With the average cost of the tissue culture materials being \$1–\$1.2 (Ksh 100) per plantlet, a viable commercial enterprise requires 80 plantlets with a capital investment of US\$ 100 or Ksh 7,000 on purchasing plantlets alone.

Many of farmers can afford only a few (5-10 plants); too little to impact on poverty alleviation, thus the need to provide them with credit to increase their adoption levels. This project therefore had to help farmers in the target area in accessing micro-credit to enable them establish viable commercial units of banana orchards, a mission that was made possible through partnerships with Rural Credit and Finance (RUCREF-Ug), MBD and K-REP.

These institutions mobilized and sensitised farmer groups on the micro-credit scheme. They further trained the farmer groups on bookkeeping and group dynamics and facilitated the conversion of refund money into a revolving fund to facilitate uptake.

Some of the challenges the project has encountered include coordination of partners due to diverse partners' interests and priorities. Loan repayment has been slow due to change of individuals in the partner institution, which interrupts monitoring and coordination. Delay in revolving the micro-credit (especially in Tanzania and Uganda) caused low uptake of the technology.

Discussions

“A proper combination of extension services and marketing is necessary for the farmers to see the benefits of the technology.”

The discussion session began with a query for the SANA project presenter: Does the project have any plans to up scale the technology to other parts of the country?

Alfred Adongo gave his response on behalf of SANA by sharing the that the project had noted that farmers were able to grow the crops but were challenged by a few things which needed to be addressed through extension. “A proper combination of extension services and marketing is necessary for the farmers to see the benefits of the technology,” he added. This is what creates potential for technology up scaling.

A workshop participant was keen to hear from the Horti-Tengeru project presenter regarding sustainable sources of the germ plasm and the technical nature of the mushroom production. The Horti-Tengeru presenter Nancy Kaaya explained that the germ plasm was initially produced by Horti-Tengeru. However, this changed after a monitoring visit at start of project implementation.

Farmers had been complaining of seed shortage even as they learnt about the mushroom technology. “We realized there was need to establish more multiplication units at the District level because of the high demand for the technology,” she clarified.

Extension officers from the Hai District council were trained together with TOTs on simple multiplication and this solved the problem of availability. “The germ plasm is no longer a problem for the project,” she added.

Participants were also keen to ask questions to the VEDCO project presenter:

- How can the project minimize bird attacks to ensure better yields? Rice growing areas in Uganda had in the past registered a high number of children dropping out of school to look after the rice.
- Which partner was responsible for micro-credit and what lessons can the project share on this?

Responding on behalf of VEDCO, Dan Kisitu explained that VEDCO had promoted the NARICA III rice variety because it was not as attractive to birds as the local variety. He agreed that it was still fed on by birds but it was not very palatable compared to other rice varieties. VEDCO had not found the bird problem daunting but farmers were still encouraged to protect their rice farms.

On the high incidence of children dropping out of school to participate in rice farming activities, the VEDCO presenter agreed that the problem existed in the past but this is now changing. “Luweero does not have a big problem with this,” he began.

“With the government policy on free education, farmers are now willing to enrol their children in schools. Initially when the farmers had to pay school fees, it was easier to pull out their children citing lack of money,” he explained.

Recovering the credit in the VEDCO project had proved to be a major challenge for the implementers. One partner had been responsible for the micro-credit component of the project but they only did a part of it.

“VEDCO had to take over the whole package,” Dan explained. Lessons learnt from this experience will ensure that in future, partnership roles are clearly articulated and stipulated.

Workshop participants also sought a few answers from the ISAAA project presenter:

- How do you intend to sustain the regional project efforts?
- Some groups working with Uganda Gatsby Charity packed banana juice in plastic bottles - the ISAAA project could borrow from this.
- Different banana products were being made from different places - why is there no uniformity?

Responses on value-addition, marketing and micro-credit.

Faith Nguthi on behalf of ISAAA explained that sustainability of the project was dependent on the linkages that are being formed in the project. "These are the TC laboratories providing materials and the extension service providers," she added.

Regarding the UGT and the use of plastic bottles for packaging banana juice, the presenter informed participants that Jakana Foods, a fruit juice processing company based in Uganda, was also doing the same. "The company is looking at accessing bigger international markets. They are therefore looking for packages that can be placed in supermarkets," she explained.

Regarding the lack of uniformity in the project across the countries, she explained that the project was looking at the comparative advantages in each country. "For example in Tanzania, there was a person already producing banana juice and wine while in Uganda, there was already banana wine known as waragi," she clarified. In Kenya, the project facilitated one entrepreneur who was ready to take up the banana drying and flour production for mixing and fortifying with other products.

Tissue culture produces clean planting materials for any variety. She explained that the banana flour in Kenya was derived from different dried banana varieties. "Nutritional profiles of the flour had shown that there was hardly any differences between the varieties," she added.

The project presenter noted that in Uganda, Kainja was the most commonly used banana variety in extracting banana juice. She further informed participants that Jakana Foods were exploring the possibility of extracting banana juice from other varieties.

Commenting on the issue of sustainability, KREP representative Augustine Cheruiyot informed participants that KREP had worked with KARI-Kisii in the same TC banana project. "We worked with some farmers to finance TC banana hardening nurseries," he explained.

The micro-finance institution had also funded farmers to acquire 1000 seedlings in Kisii District. "This was a continuation of the MATF funded project," he concluded.

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Augustine Cheruiyot

Panel Chair

“The greatest challenge is at the level of management. If this is left to individuals, there is a risk of misappropriation.”

*Augustine Cheruiyot, K-REP
sharing on their work with
Village Banks*

Two opportunities had been created during the workshop to discuss participants' experiences with micro-credit; there was a plenary discussion after the presentations of SANA, Horti, VEDCO and ISAAA, and there was a special working group session on micro-credit. Augustine Cheruiyot of KREP provided professional guidance during both sessions, while an Advisory Panel member, a KGT representative, SUA and LZARDI also contributed.

Augustine Cheruiyot noted that the projects had used different approaches in implementing their micro-credit systems. An overview of the micro-finance components from various projects was presented.

1. Informal systems such as:
 - Rotating Savings and Credit Associations (ROSCA).
 - Accumulating Savings and Credit Associations (ASCA).
 - Group Lending.
2. Implementing agency working with a partner specialised partner in micro-finance, such as:
 - For example ISAAA working with K-Rep.
 - SANA project working with RECA, issuing credit for farm inputs.
 - Village banks.
3. Sometimes, the lead agency of a project would take on the responsibility of providing micro-credit services, such as:
 - LZARDI, where the project implementers make follow-up.
 - VEDCO rice project, where there is a specialised micro-finance arm.
4. A fourth approach involves graduating from a formal MFI system to a group revolving fund, for example:
 - In the CDA project, Choice Humanitarian helped groups to be registered as a ROSCA after handover.
 - SUA with Tanzania Gatsby Trust.

Challenges

Some of the challenges identified in projects with micro-credit operations involved questions such as:

- How was the credit performance and can we say that at the end of the project it will be able to sustain itself?
- Who follows up and monitors credit in the case where the lead agency is offering the service?
- Who carries the cost of the micro-finance intermediary in a new area of operation?
- More financing required to build group capacities in financial management. Groups may not have capacity to manage the money and revolve it after the project period.
- Most micro-finance institutions (MFI) do not offer credit to farmers. How can this be addressed?

K-REP's Cheruiyot shared briefly from their experience working with the village banks. “The greatest challenge is at the level of management. If this is left to individuals, there is a risk of misappropriation,” he began. “Boards have been constituted to supervise the village bank managers. Therefore we've looked at the long term stability of the institution so that farmers continue to benefit,” he added.

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“Under the MATF funding, we have now gone to 100 per cent cost recovery,” he continued. “The same money will be ploughed back to finance future farm inputs.”

*Alfred Adongo,
SANA presenter*

CDA experiences on credit management by groups

The CDA project coordinator Josephine Rondo, commented that an NGO known as Choice Humanitarian was managing the micro-credit component in their project. Towards the end of the project, the implementers began preparing the farmers to take over the micro-credit system in order to sustain it.

“We encouraged the farmers to set up an umbrella organization with a constitution,” she explained. “In Taita Taveta and Malindi Districts, we have two umbrella groups,” she added. The Taita Taveta farmer organisation was known as “Mwamoto”.

In Malindi, the umbrella group was known as the Malindi AIV Village Bank. “By the end of the project, these groups not only had constitutions but they were also registered with the department of Social Services,” she continued.

CDA asked Choice Humanitarian to close the accounts and transfer funds to the farmer organisations’ accounts in Kenya Commercial Bank local branches. “This has already been done,” she added. “All indications show that the groups are determined to succeed with these funds and to continue with plans to establish a village bank in Malindi,” she concluded.

SANA experiences on repayment

Responding on behalf of SANA, Alfred Adongo explained that the farm input beneficiaries were expected to pay within 6 months at an interest of 9 per cent. For loans that exceeded 6 months to 12 months, such as for the water tanks, the interest was levied at 18 per cent.

“There is a grace period of three months for farmers accessing farm inputs while for the farmers accessing the tank construction, the grace period is six months,” he clarified.

In terms of repayment, Alfred informed participants that the project had achieved a 90 per cent compliance rate. There was less compliance by the farmers who received the tank loans. “This was caused by the delay in completing the tanks. There was an attempt to start loan recovery but this proved to be a challenge,” he explained.

The SANA presenter explained that for the project to recover the loans within the initial stipulated period, the monthly payments would have been too high at Ksh 4000/= per month. The project therefore went back to the original monthly payments of Ksh 2000/=.

“We are sure that if payments continue at the same trend, then we should be able to continue. About Ksh 700,000/= has been paid back (editor: out of 2.3 m) to date and this is a good sign that the scheme will perform the purpose of sustaining the credit system,” he explained.

He informed workshop participants that the first phase of the project was a grant where the beneficiaries had received 70 per cent credit for tank construction. This later changed to the beneficiaries paying 70 per cent with SANA supporting with the remaining 30 per cent.

“Under the MATF funding, we have now gone to 100 per cent cost recovery,” he continued. “The same money will be ploughed back to finance future farm inputs.” He added that the project was in its 4th round of lending. For example, this meant that if initial amount lent was Ksh 10,000/=, the project was now lending Ksh 30,000/= and above.

ISAAA experiences on social issues related to micro-credit

The ISAAA presenter, Faith Nguthi, also shared their experience with the micro-credit component. “One of the most important issues to come up was the cultural issue,” she began. The farmers in the different countries held different ideas about what micro-credit meant.

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“Participants recommended that farmer associations or village banks be established to maintain revolving funds so that farmers can continue to benefit.”

“Some beneficiaries believed the money was free and was not meant to be repaid,” she explained.

Faith was of the view that groups only become cohesive at a later stage, often after the project. During the project life, the lack of cohesiveness impacts negatively on their ability to pay back loans. There are no clear guidelines on what would happen if members don't pay up the loans.

“For micro-credit to work, the groups need to have by-laws before they can be given credit. This ensures group cohesion and guarantee to members,” she explained.

The ISAAA presenter informed participants that the regional project experienced different approaches by micro-finance institutions in the three countries. “There were no funds to conduct a proper follow-up of repayments in Tanzania and Uganda. There is need to establish a common approach,” she explained.

KGT experiences on market factors influencing micro-credit

Jane Mung'oma thereafter shared the experience of the Kenya Gatsby Trust. She explained to workshop participants that micro-credit was made a component of the project designs.

Funds would then be allocated for specific purposes such credit to aid in the production of certain products targeted at the markets. “If this products were not able to sell in the market, the beneficiaries would find it difficult to repay back the credit,” she added.

In cases where micro-credit was meant for market products, Kenya Gatsby learnt that it was important to first assess the potential of sales before issuing the credit. “KGT has a specialized component of credit known as factoring. This looks at the entrepreneur rather than the farmer,” she explained.

“If the entrepreneur says that they cannot go to the market with the product, then the farmers are stuck because the credit will not be forthcoming,” she added.

The question of micro-credit sustainability was addressed at this juncture. Participants recommended that farmer associations or village banks be established to maintain revolving funds so that farmers can continue to benefit.

It seemed that many projects have not taken this direction.

NAADS and Horti-Tengeru experiences with informal micro-credit systems

Sharing the experience from Uganda's NAADS, AP member Dr Oryokot was of the opinion that the concept of farmer empowerment was critical in decision making. He mentioned that the different farmer saving schemes such as ROSCA and ASCA were examples of schemes which farmer groups should first learn to manage, before handling micro-credit.

“In Uganda, groups are supported to register as legal entities through a minimum criteria of clear internal governing structures. This has helped to influence the conviction of group members when it comes to management of funds,” he explained.

The Horti-Tengeru presenter Nancy Kaaya shared their experience from Tanzania, on groups that were managing their own funds.

“Before we issued the farmer groups with credit, the members underwent capacity building on managing funds,” she began. The groups also had to be registered with their constitutions and committees, and also commence saving.

“Loan applicants were expected to contribute some savings in the group account. In addition, other members were to act as guarantors for the applicant. This worked very well,” she explained. With 12 groups practising this system, a merger was soon

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“Micro-leasing or asset financing offers a number of advantages – it minimizes funds diversion and there is a grace period to enable proper exploitation of the asset.”

proposed for these groups to form an umbrella association.

Other approaches of micro-credit

Some other approaches that could be of interest to MATF projects and beneficiaries were also presented:

- Factoring – The provision of credit for advance payments, transport, market levies etc. For this to work, it's important to have a viable product and to look at the seasonality of the product.
- Micro-leasing or asset financing offers a number of advantages – it minimizes funds diversion and there is a grace period to enable proper exploitation of the asset. The asset remains property of the lender, while the borrower has exclusive user rights. Sometimes the borrower can buy the asset after the contract expires, at a reduced price.

Experiences and lessons with repayment

In micro-finance, industry best practice advocates repayment rate of 95% as acceptable. The reasons behind this are:

- It is the best practice for maintaining the portfolio (the loan fund)
- If below 95%, revenue from interest is lower hence the MFIs operations are affected negatively.

Practice has shown that SUA through the Tanzania Gatsby Trust achieved 60 – 70% repayment in the project's micro-credit component. SUA was involved in designing the terms and conditions, which enhanced repayment.

On the other hand, K-REP has achieved averages of 98 – 100% because they took the lead in designing the product and conditions of the micro-credit.

Participants suggested the following recommendations to improve the practice of repayment:

1. There is need to involve an external MFI in setting the credit conditions. Rationalise the conditions for asset financing based on when the equipment becomes productive.
2. Partner with and MFI who understands the agricultural sector, especially small-scale producers. For example in Kenya, there is K-REP, KADET, and SISDO.
3. The MFI partner must get involved in proposal development so that they easily take responsibility in case of poor performance.

Role of the donor

It was suggested that donors such as MATF should give guidelines about micro-finance regarding interest or market forces. MATF should have an MoU with MFIs on governance of the credit component during and after the project.

A tripartite MoU was suggested between donor, lead agency and the MFI, operational during implementation period. In addition, a post project MoU was suggested for an agreed duration after the project period between the MFI and the donor.

The MATF manager Ralph Roothaert, however, explained that MATF was not going to interfere with industry practice and would prefer an MFI to manage the micro-credit component in partnership with a grantee.

“Money may come from MATF but the MFI is expected to take the lead in managing the micro-credit operations,” he added.

A participant asked for clarification between donor grants and loans to partner organisations. He suggested that grants should not be given directly to an MFI for the business of micro-credit. Instead, such grants should be given directly to groups, and then to individuals as credit.

The group, however, differentiated between money given by MATF for project implementation and money given for the establishment of revolving funds. It was suggested that MATF and grantee draw an agreement where such revolving funds can

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be paid back to MATF.

Lessons from the MATF projects and recommendations on effective management of micro-credit components

Externalising the credit component is preferred – this means that the groups have access to other forms of credit, which can sustain their operations. This approach is self-sustaining because it is managed as a business, hence providing opportunities to access wider markets.

Formal micro-finance institutions (MFI) and village banks are able to continue running even when the project is not. A system needs to be in place to monitor their management and performance.

There is a need to have flexible products to meet cash flow of the farmers or small producers. The MFI sector is now becoming more competitive, which results in more competitive and flexible products.

To guarantee repayments, there has to be an income generating activity for the borrowers, a ready market for their products, and the products have to be saleable.

In many places, especially parts of Tanzania, MFIs do not offer credit to farmers. In those cases one needs to work with MF experts to build capacity of project staff to be able to implement micro-credit. Develop appropriate credit products and link credit to outputs and markets.

It was learnt that sociocultural disposition and problems of perceptions persist within projects: the issues of grant versus credit. Projects should separate the roles and make the micro-finance approach commercial right from the start. All stakeholders need to be sensitised on the commercial nature of the credit component.

Field Trip

Workshop participants visit two MATF projects.

Feedback and discussion

A visit to the mango and indigenous vegetable projects.

On the third day, the participants split into two groups: one group visited the mango production and marketing project by KARI in Malindi District, while the second group visited the African Indigenous Vegetable project by CDA in Kilifi District.

Feedback from the KARI-Mtwapa Mango field trip to Malindi District

During a plenary session the next day, participants shared several observations:

1. It was seen that 10% of the mangoes harvested were retained for value addition while the rest were sold fresh. Marketing and sales was done through the Kilifi Malindi Agricultural Products (KIMAP), a farmer marketing association which retained 20% of all sales profits. The quantities of value-addition products, however, were not adequate to meet the market demands, and threatened sustainability of the project. Someone suggested: "Maybe we should consider bringing many groups together from a wider geographical area to build the production capacity."
2. Participants observed that packets of Mango chips were sold at Ksh 200. There was no clear explanation from the project implementers or farmers on how this price was arrived at, considering that the inputs were sugar, labour, and around three mangoes.
3. Farmers in the mango project produced pickles, dried fruits, chutney and jam. But which one did the market want in greater quantities?



Participants at a mango plantlets demo plot in Msabaha village, Malindi District.

Feedback from the CDA African vegetable field trip to Kilifi District

The first group visited was known as the Gandini women self help group with 40 members, some being HIV affected. It was involved in the growing of popular AIV varieties such as nightshade, amaranth, spider, ochra and cowpea. They also produce AIV seeds for selling and farm use. The other group visited is known as the Msamarini self help group. The group members comprised 5 men and 10 women.

Some observations:

1. The Gandini group's activities are difficult to sustain and up scale due to the fact that they do not own their land.
2. The biggest challenge to the Msamarini group was the lack of a ready market for the AIVs and the lack of water for farming purposes, especially during dry seasons.
3. Beneficiaries should not be encouraged to take loans when there's no guarantee of markets. "This might leave them worse off than they were before the project," someone explained.

Workshop Working Groups

Thematic Group I - Dissemination

Presented by Dr Shamilah Namusisi

FARM-Africa, Uganda

Introduction

Representatives from Caritas Kasanaensis, ISAAA, CRS and FARM-Africa were given the task to discuss and compare different approaches used by grantees to disseminate their technologies.

The group members looked at which approach worked best under which circumstances; what are the challenges; guidelines for use; how to scale-up for wider impact; and the important lessons learnt regarding the various approaches. Group members contributed to the topic in a plenary session.

I. Trainers Of Trainers (TOTs)

TOTs in the communities were mainly used in circumstances where there were differences in literacy levels and in order to tone down differences in information and understanding. They also assisted where practical experiences needed to be provided, where projects were working with limited budgets, where the projects were big and large areas needed to be covered and to complement extension services.

Challenges while using the TOT approach

These were identified as follows:

- Inadequate skills to convey project information;
- Poor selection of the trainees - Often, this is not done based on the capability to train others. There is also variation in quality because some TOTs will perform better than others;
- Low literacy levels;
- Motivating the trainers to be able to handle their responsibilities well;
- Community perception of the trainers - At times the TOTs are not taken seriously by members of the community because of familiarity; and,
- Monitoring of the TOTs.

Guidelines

It was suggested that for the effective use of TOTs, it would involve coming up with a set criteria or standards for selection. TOTs also require some incentives. Sustainability is enhanced by commercialisation and encouraging the payment for services by community members.

A good example is found in animal health service delivery where farmers pay. Incentives can also be given in kind, such as a bicycle to facilitate the movement of the TOT when doing his or her job. In addition, trainers should not be left in the field without facilitation such as fuel or transport expenses.

In order to avoid resentment towards TOTs by other farmers, it is advised to involve the community when selecting people for the positions of TOTs. One should take caution though not to select based only on popularity, as this would erode quality.

There was also an observation that TOTs work best in environments where there has been clear institutional building in the communities. "These are groups which make it easier for TOTs to penetrate communities and offer their services," someone explained.

Issuing certificates of recognition can enhance motivation for the trainees. In the African Highland Initiative (AHI) of Lushoto District, senior government officers were involved such as the District Commissioner, who came for the ceremony.

"It was suggested that for the effective use of TOTs, it would involve coming up with a set criteria or standards for selection."

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Thematic Discussions

“Projects have used groups to efficiently reach many people in the community and to encourage sharing of information and experiences during implementation.”



Members of the group discuss dissemination processes.

“Even when it's not financial, the mere appearance of appreciation is a motivating factor with the TOTs. In addition, the District has started an initiative which provides work for different categories of trainees,” Juma Wickama of ARI-Mlingano explained.

2. Demonstration sites

Demonstration plots or sites are usually established where there's a new technology, limited awareness and to emphasis on practical learning.

In addition, demonstration plots are used where feasibility of a technology needs to be demonstrated and when literacy levels are low.

Challenges

These were identified as follows:

- Selection of the host farmer and the site;
- Variation among farmers who manage the demonstration plots in terms of management levels;
- Cost of inputs (affordability);
- Lack of ownership by target farmers; and,
- Sustainability of the technology.

Guidelines

It was suggested that:

- Farmers manage with the available resources to ensure least cost;
- Participatory selection of the sites and host farmers;
- Some level of cost sharing should be introduced to enhance ownership; and,
- Increase the understanding about why demos are being set up and managed by the community.

3. Groups

Projects have used groups to efficiently reach many people in the community and to encourage sharing of information and experiences during implementation. The approach promotes experiential learning. Groups ensure cohesion in the community and that common interests are taken care of. Groups are also critical when it comes to resource mobilisation.

Challenges

These were identified as follows:

- Exclusion of vulnerable members;
- Empowering the groups;
- Resource driven groups are not sustainable because they are often formed for a given task linked to an incidental budget;
- Project time frames; and,
- Poor leadership.

Guidelines

Recommendations for the proper working of groups involves the identification of the right target group, continuous capacity building, and a systematic approach in engaging the groups.

4. Exposure visits

These are normally conducted when beneficiaries are being introduced to a new technology. They help to facilitate farmer to farmer learning, which has incentives for both parties. Exposure visits are also useful and cost effective when there are no

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“Printed materials should be compiled in a simple, clear, catchy and visual style using appropriate language.”

local demonstration sites. In addition, they help to show visitors the feasibility of the technology because 'seeing is believing'.

Challenges

These were identified as follows:

- Tendency to select the best performing farmers as a show case - Focusing on success rather than failures or challenges. This might not give an accurate picture of what it takes for visiting farmers to achieve the same success;
- The lack of resources limits the number of farmers who can be taken for exposure visits. Selection of the participants is tricky;
- Visited farmers may also feel fatigued by the role of hosting, especially if they have to do that regularly; and,
- Poor follow-up of when it comes to implementation by visiting farmers.

Guidelines

There is need to select the best and the challenged among the farmers to be visited. In the exercise, there should be clarity in the objectives and outcomes. Participants should be representatives of the beneficiary community. Appropriate time for the visits should be determined. In order to increase the outputs of the exercise, the lessons learnt need to be documented.

5. Farmer Field Schools (FFS)

These are often used to learn about the whole cycle of production. It is a 'hands-on', learning by doing approach. Stages of technological development are usually documented. It involves farmer centered learning where dissemination takes place automatically.

Challenges

These were identified as follows:

- Facilitation;
- Community cohesion;
- Negative pressure from the non-performing members; and,
- The approach is technology and weather dependant.

Guidelines

It was proposed that facilitators should work with community interest groups. The technologies or innovations in an FFS curriculum should be simple, adaptable, appropriate and relevant.

6. Printed materials

These are often used for large audiences with high literacy levels. They contain instructions for technology use.

Challenges

These were identified as follows:

- Expensive;
- Limited to literate people;
- Tendency to only communicate the positive aspects;
- Omission of measure of impacts;
- It can backfire if instructions are not followed; and,
- Confusion about intellectual property rights

Guidelines

Printed materials should be compiled in a simple, clear, catchy and visual style using appropriate language. Dissemination channels need to be thought through in advance.

Scaling up for wider impact

The following practices can enhance scaling-out:

- Define the needs of the likely adopters. The relevancy of the project should be rooted in the community;
- Institutionalise community structures;
- Build strong partnerships and linkages;

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- Influence policy
- Support the adopters.

Important lessons learnt

It was seen that implementers were not fully prepared for dissemination beyond the project area and lifetime. There is also a multiplicity of approaches across the different grantees. One should learn and reflect on the approach used during the course of the project.

Creating partnerships was seen to be a crucial component of effective dissemination. It was important for implementers to forge partnerships with organisations that would bring on board skills for effective communication.

Funding is always a constraint. Members agreed that there was need for responsive documentation to show the impact of dissemination.

Thematic Group 2 - Gender

Presented by Pamela Marinda

Prolinnova

Introduction

A group consisting of members from C-MAD, ARI-Uyole, CPDA and CDA, lead by Prolinnova and FARM-Africa, formed a work group on gender issues.

Definitions

Gender - refers to the roles and responsibilities of men and women that are created in our families, our societies and our cultures.

Gender Equality - means that women and men have equal conditions for realizing their full human rights and for contributing to, and benefiting from, economic, social, cultural and political development.

Gender equality is therefore the equal valuing by society of the similarities and the differences of men and women, and the roles they play. It is based on women and men being full partners in their home, their community and their society.

Gender equity is the process of being fair to men and women. To ensure fairness, measures must be put in place to ensure that women and men operate on a level playing field.



Thematic group discussion at the workshop.

Advantages of gender focus in a project

Working with a homogenous group, that is, women with common interests, contributes to the success of the project. The gender in focus is empowered and given the opportunity to participate in the project. Gender focus enhances access to factors of production by women in cases where women are disadvantaged. These factors may be land, finances and human capital.

For heterogeneous groups, the project is able to address the needs of both men and women in the project, which increases the success of technology dissemination. Sharing of roles between men and women also enhances the success of the project.

“Gender focus enhances access to factors of production by women in cases where women are disadvantaged. These factors may be land, finances and human capital.”

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Gender

through. It also strengthens family relations due to the extra income coming to the family and when the family is encouraged to work together.

Set backs in achieving gender equity in project design, implementation, outcomes, challenges and how to overcome them

Set backs	Suggestions
Cultural factors – For example where women cannot articulate ideas in the presence of their in-laws in a group meeting. At other times, women and men may not feel comfortable discussing certain issues within a meeting.	Sensitize the community on gender issues through opinion leaders, administrators and other influential members of the community.
Conflicting gender roles – This happens when women may have to leave meetings early to attend to other household production activities. This may hamper their full participation in a project activity.	Encourage active participation of both men and women even when the project targets only women. Inclusion of men increases its chances of success.
Low or varying levels of education - This may affect the participation of members in the project. For example, an illiterate woman may feel intimidated by more literate members and therefore may not contribute ideas during group meetings.	Promote education of girls in areas where women have low levels of literacy. Elderly women can also be encouraged to attend some informal class opportunities. This will improve active participation in the projects.
Lack of access to factors of production also hinders women participation in projects and achieving gender equity.	Incorporate gender issues in policy formulation, lobbying and advocacy. This involves covering aspects such as access to education and micro-credit.
Lack of gender sensitivity on the part of the people designing the project; and,	Consciously taking gender aspects into consideration when designing and implementing projects.
Targeted group is misplaced once the benefits are realised. This often happens when the women beneficiaries are compelled to pass on the income gains to their husbands. At times, men may take over the project once it is established and fully functional.	Conduct a gender analysis before the project starts. Sensitise the community; involve men and women in design and implementation phases.
There are instances where projects, by focusing on women we have increased their workload without benefits. In one dairy goat project, there is case of a woman who did all the work but the husband came to take all the money whenever the milk or goats were sold.	On the other hand, women benefited immensely from the weeding implements introduced by the ARI-Uyole project. By having a gender focus, the project was able to considerably reduce the farm labour for women.

Impact of the project on livelihoods of HIV/AIDS affected households

This is seen in a project when community members pool their labour to work on each other's farms on rotational basis, which enables households affected by HIV/AIDS to benefit. Extra income from the project is often used to pay fees for HIV/AIDS orphans, buy food and meet medical bills.

In some projects, those affected by HIV/AIDS get some money to pay for transportation to collect ARV drugs from group kitties. In addition, participation of children in the project (especially boys) enables continuation of production when parents are sick. For instance, children were able to weed using oxen and maintain production for two group members in the ARI-Uyole labour productivity project in Tanzania. The boys were able to maintain production for three years.

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“Implementers are advised to promote joint planning, encourage collective action and adopt flexible project designs which can easily be updated or modified.”

Important lessons

1. When the technology has a direct and positive impact on the household members, it is easy to adopt the technology.
2. Involving young people or children within the family to participate in the project, contributes to sustainability of the project.

Thematic Group 3 - Integrated Natural Resource Management (INRM)

Presented by Juma Wickama

ARI-Mlingano, Tanzania

Introduction

The workshop thematic group consisted of members from ARI-Mulingano, MARI, KDFA and VEDCO, while representatives of FARM-Africa and KARI provided leadership. What follows here are the issues which they were requested to discuss.

Approaches used to enhance the natural resource base of farming communities:

- On-farm research for technology development before dissemination, as seen in the project on reclamation of salt affected soils by ARI-Mlingano, or as a means of verification, such as in the MARI project on organic vegetable production for;
- Conducting participatory action research, for example, the KDFA Kenya project on soil conservation measures; and,
- Carrying out on-farm demonstrations of the technology, for dissemination purposes. This was observed in the VEDCO project for the Naric III rice variety trials.

Challenges in enhancing NR base, and recommendations

Challenge	Recommended action
Different understanding between researchers and farmers on project implementation protocols.	Implementers should strive to conduct joint planning and implementation activities with the target groups.
Passive participation in project implementation and low adoption of the technologies by target communities.	Spend time on joint planning.
NRM benefits are usually not obvious in the short run for farmers.	Arrange for farmers to visit other areas where they can see and hear testimonies from fellow farmers on how the technology works.
Most of the NRM based technologies that are being disseminated are labour intensive.	Implementers are advised to promote joint planning, encourage collective action and adopt flexible project designs which can easily be updated or modified.
Some technologies are gender biased.	Conduct gender and stakeholder analysis at project inception to identify specific gender needs of certain gender groups.
Implementation of most NRM technologies is prone to dependence syndrome in the form of direct requests by farmers for assistance.	<ul style="list-style-type: none"> ■ Promote joint project planning with target communities; ■ Have clear responsibilities and roles for all parties in the project; and, ■ Encourage cost sharing or collective action with target communities.

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Integrating Natural Resources

Relevance of market focus

Presentations across the projects show that if market demand is present, then adoption is stimulated. There is need for farmers to know issues related to market procedures, standards, contacts, seasonality of market demands and the diversification needed to avoid market failures.

INRM and organic agriculture

Farmers were often trained in the use of artificial nutrient fertilizers especially in INRM projects. This may not be good for the crops. The implementers' task is often quite delicate because they may not be sure what to promote between organic agricultural practices and the mineral fertilizers.

Fears expressed of soil damage from these fertilizers can sometimes confuse the farmers. Training the farmers in NRM approaches was seen to be the key in tackling the issue of depleted soil nutrients.

Organic certification is a prerequisite to tap formal and lucrative markets for organics products. It was observed, however, that most farmers don't have money to be licensed. There was therefore a suggestion that farmers should be guided to organize themselves as several groups so as to afford the certification fees.

Other recommendations on fertility improvement and INRM

The group members suggested that project implementers should encourage crop rotations, practice intercropping, cover cropping and fallowing the land. They should also promote organic and inorganic nutrient application practices and train farmers in integrated soil fertility management technologies. There is a need to integrate animal and crop keeping at the household level. In addition, soil conservation techniques should be adopted together with agro-forestry.

There was a comment that NRM often went beyond individuals to become community focused initiatives. It was suggested that there should be incentives to encourage this at the proposal writing stage and at project inception.

Thematic Group 4 - Group Dynamics

Presented by Edward Kilonzo

KARI-Mtwapa, Kenya

Introduction

The workshop thematic group consisted of members of Horti-Tengeru, MANREC, KGT, NADIFA and KARI, while members of the MATF Advisory Panel guided the discussion. They were asked to discuss experiences on farmer group dynamics and the implications for success of MATF projects.

What is a strong group?

- A strong group has members with common interests and goals;
- It has strong leadership structures and good governance;
- It must also be registered and hence be a legal entity;
- It must be cohesive;
- The membership must have internal capacity to mobilize resources; and,
- Active participation of members in group activities must be evident through group register or records.

What is the relevance of strong farmer groups in MATF projects?

- It contributes to sustainability of the project;
- It enhances negotiation capacity of the groups;
- It enables the group to articulate demands and engage in advocacy;
- It enhances dissemination and adoption of technologies, ensuring project

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Group Dynamics

“Groups need to develop a constitution, obtain registration and open group bank accounts. Often there is a need for capacity building in all these aspects.”

- success; and,
- It allows faster realization of project objectives and goals.

Approaches to building leadership skills in groups

This can be done through training or capacity building of groups on aspects such as group dynamics, leadership skills, project management, team building and participatory monitoring and evaluation. Other methodologies include organizing exchange visits and encouraging regular meetings amongst group members. In addition, role definition of group members should be encouraged (role differentiation).

Partnerships used for building leadership skills in groups

- These partnerships took the following form in projects:
 - Co-operatives for group dynamics as seen in the MALE/MANREC project (Urea Molasses);
 - Micro-finance organisations for financial management as seen in the Horti-Tengeru mushroom project;
 - Community Development Institute for team building and dynamics, similarly in the Horti-Tengeru mushroom project;
 - Farmers Associations for group dynamics, micro-finance, enterprise development and marketing – NADIFA cassava project; and,
 - NGOs for market linkages and business planning (Horti-Tengeru and KARI Mango project).

Challenges to building leadership skills

- Synchronization of time between trainers and the farmers;
- Low literacy levels;
- Attitudes – community perceptions and perspectives can be problematic in short-term projects;
- Members internal conflicts;
- Lack of adherence to laid down rules, usually in the form of favors;
- Lack of understanding of given roles or rules by members; and,
- The lack of transparency, accountability and trust.

Guidelines for forming an ideal group

The discussants suggested that implementers identify a grass-root organisation that deals with a community and can mobilize them. These may be government bodies, opinion leaders, village leaders, social development workers and church leaders. Implementers can then form partnerships with these.

There was a recommendation that implementers needed to do an analysis of existing groups in a project area before commencing their work. This is important so as to establish the common interests among their members, and whether these interests can match with the project goals. “Some groups are based on religion and this may be a problem during project implementation,” the participant clarified.

Implementers can form the groups and establish the leadership structures. Groups need to develop a constitution, obtain registration and open group bank accounts. Often there is a need for capacity building in all these aspects.

What to do with groups that seem not to be working

The first step would be to diagnose the source of the problem, then design an intervention strategy or plan and implement it. If it does not work, implementers should drop it because of project time limitations.

Groups management of loans: Project experiences

The thematic discussants observed from the project presentations that the groups involved had the capacity to manage the loans. They were legal entities (criteria for strong group already given) that had committees to manage the loan scheme.

The groups also had a collective marketing structure, hence automatic deductions after the sales. Co-guaranteeing was also a common occurrence within the groups as a method of member collateral for the loans.

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Group Dynamics

KREP's Augustine Cheruyiot cited the successful case of the Gremlin Bank of Bangladesh in providing small loans to poor people, the Kenya Women Finance Trust (KWFT) and KREP as examples of institutions that had done well in lending small loans to groups in Kenya.

From KREP's experience, Augustine informed participants that big groups are often more problematic in handling such loans. It is therefore prudent to break them down into well-organised, democratic and cohesive smaller groups that can be easily trained in financial management.

Another participant observed that group savings are very critical in mobilizing resources for bigger and lucrative investments. "This creates group enterprise which should be encouraged because it cements and adds to group cohesion," he clarified.

Member attitudes were seen to be a major obstacle towards achieving group objectives, especially when it comes to the management of revolving funds. Group constitutions were seen to be very important in setting out penalties for members who defaulted on loans. Without this clarity, the groups cannot be run harmoniously.

Addressing concerns raised by workshop participants on the question of co-guarantees, clarification was offered by one of the thematic discussants. He explained that the practice was important in holding the group together and increasing member accountability. He emphasized that co-guaranteeing does not overburden group members but it brings on board valuable benefits to members.

Relevance of groups and group dynamics for exit strategies

Well-organized groups ensure sustainability of the project. They ensure ownership of the project by the community, enhance access to markets and the continuous up scaling of the project. They improve savings and members' financial security. This eventually ensures improved livelihoods.

Policy Issues

Presented by Ali Hassan

FARM-Africa, Kenya

Introduction

Ali Hassan, FARM-Africa Programme Manager, was given the responsibility to identify relevant policy issues from the various presentations made by grantees during the week. He commenced by defining policy.

Definitions of Policy:

- A deliberate plan of action to guide and achieve rational outcomes.
- It includes the identification of programmes and spending.
- Policies can be political, management related, financial, or related to administrative mechanisms for reaching explicit goals.

Observations from Presentations

Rationale

Policy affects farmers, but policy matters were not previously incorporated in the design of projects.

Extension Approaches

- There is a need to harmonise or standardise extension work by different development agents.
- Policy implications on the use of community based trainers, actors or contact farmers should be clarified.
- By-laws at various levels governing special interest group formation and functioning in providing extension services were not very clear and they need further deliberations. In the NADIFA project, there is a data collection to write by-laws for special interest groups and extension systems. This could lead to a more conducive environment.

Lobby and Advocacy skills

Such skills are necessary and required by implementers. For example:

- VEDCO rice project advocating for brand certification of the Luweero upland rice;
- NADIFA project in Nakasongola advocating for rural electrification, to enable their factory run efficiently and increase productivity;
- CMAD officials had met with the Member of Parliament to officially request to improve the water access for the Homabay sweet potato project beneficiaries. He promised that more funding would be allocated towards the water project, to open up dams so that water can be made available for irrigation;
- Lobby for favourable policy in crop financing;
- Lobby for up scaling of proven technologies; and,
- Political visibility important to attract political attention.

General comments

Policy influencing is a process rather than a one-off event. It requires deliberate effort to plan and budget for; and should be based on facts. Evidence-based arguments are more effective in policy advocacy.

Project implementers with strong research background have an advantage because they are effective in data collection and analysis. Grantees from farmers' associations lacked this advantage but were good in qualitative narratives. Many projects would benefit from linkages with researchers who can influence policy.

Farmers need to be at the forefront. Project coordinators and partners should facilitate farmers to engage policy makers rather doing it for them. In addition, they need to facilitate policy makers to visit the grass roots where possible, to see for themselves what is going on with particular projects.

“Policy influencing is a process rather than a one-off event. It requires deliberate effort to plan and budget for, and should be based on facts.”

Policy Issues

“Training of farmers in lobbying and advocacy skills needs to be considered by grantees. Grantees also need to collaborate with other development agents with skills and experience in policy influencing.”

For instance in Uganda where there is a local government comprising, counties, sub-counties and parishes, it's important to invite politicians to events such as a launch, opening or closing ceremonies.

Training of farmers in lobbying and advocacy skills needs to be considered by grantees. Grantees also need to collaborate with other development agents with skills and experience in policy influencing.

The ARI-Uyole project was able to influence policy makers through an ox-weeding competition in the District. “The director of the mechanical and technical services (MOA) was invited to give prizes and see how the farmers were doing it in the field,” the project coordinator explained.

As a result of the interest created at that level, the Ministry supported inputs for 11 new villages at the end of the project. “Trainers of trainers were able to run the new farmer field schools. This increased the number of project beneficiaries,” he added.

The success of an innovative project can also be affected by the institutionalisation of a new approach. KGT illustrated this point with a negative experience, when a private extension approach that worked out with the previous official was not institutionalised, and it was later not followed by a new person: “The Malindi mango project suffered when a new agriculture official who did not view the project in the same way came in,” she explained.

On the other hand, she explained that KGT had worked with the Kenya Bureau of Standards (KBS) to standardize and certify fresh juice processors. “This was institutionalized such that when a new director took over the KBS two years ago, this policy continued,” she added.

The SANA coordinator agreed that similar experiences had at times, weighed down their project. “Where the head of a department is involved in a project, and the involvement is documented through a signed MOU, project activities are likely to move smoothly even if the head is transferred,” he explained.

CDA also involved the Coast Provincial Director of Agriculture who signed an MOU with the implementers. In addition, District Development Committees (DDCs), which comprised members of parliament and the provincial administration, got involved in the project.

Prof Lekule from SUA informed participants that their project had involved the Regional Commissioner (RC). “The RC declared that each farmer in the Coast region should plant at least an acre of cassava. District officials were instructed to facilitate farmers to obtain seeds and other inputs,” he explained.

Closing Remarks

Vote of Thanks

Ralph Roothaert

MATF Manager

The MATF Fund manager thanked the workshop participants for their high quality presentations and contributions to the workshop. He explained that the workshop had been structured in a way that would allow a balance between presentations and discussions.

“I would like to express my gratitude to Kilimo Trust for their continued funding of MATF projects, the Advisory Panel members for their valuable advice along the lines of project implementation, FARM-Africa Country Directors in East Africa for their support to MATF projects in their countries, invited stakeholders who contributed immensely, and the MATF staff members who have worked hard to ensure the success of this workshop,” he remarked as he concluded the proceedings.

The 4th MATF Experience Sharing Workshop Participants

3rd - 6th September 2007, Mombasa, Kenya



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