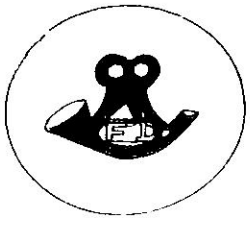
Acc. no. 2010-2000

FARM FORESTRY ESTABLISHMENT

STUDY TOUR TO RIFT VALLEY AND WESTERN KENYA

23RD-26TH MARCH, 1999

Edited by B. Muok



JICA

Authored by trip participants (See appendix 3).

1.0 Introduction

Social Forestry Extension Model development Project (SOFEM) was started in November 1997. The Project purpose is to develop a Social Forestry Extension Model for semi-arid areas through establishment of farm forest by local residents. The project funded by the Government of Japan and Kenyan Government and implemented by Japan International Cooperation Agency (JICA), Kenya Forestry Research Institute (KEFRI) and Forest Department (FD).

Several organizations are involved in forestry extension in Kenya and work with rural communities. In implementing the SOFEM it was necessary for the implementors to tour and learn what the other players in forestry extension are doing in the country, and learn from their successes and failures.

The project officers, therefore, went for a 4 day field visit to Western Kenya and visited several projects: Miti Mingi Mashambani (Nakuru, Nyandarua), Rehabilitation of Arid Environment (RAE), Baringo, VI tree planting (Kitale), Kenya Woodfuel Agroforestry Project (KWAP), Busia and AFNETA, Maseno.

The aim of the field visit was to learn from other projects' experiences on farm forestry and other field of forestry and natural resource management. The tour was conducted from 23-26/3/1999

2.0 MITI MINGI MASHAMBANI PROJECT-NAKURU-NYANDARUA

The phase 1 of the Project was started in October, 1990 and was a co-operation of the Government of Kenya and Finland. The Finland Government was to assist in finance and technology and the implementation was to be done by the Forest Department-Forest Extension Services Branch (FESB) so as to sustain the project activities when the Project was over.

Project purpose:

The project purpose was to develop an effective farm forestry extension programme to motivate farmers to plant and grow trees on their private agricultural lands.

Objective:

The main objective was to increase amount of forest products coming from agricultural land so as to improve the environment and improve the living standards of the local people.

Short term objective:

- Training of extension officers, farmers' e.t.c.
- Designing of extension methodology.
- Working logistics e.g. - transport, offices.
- Rehabilitation of existing offices.
- Collaboration with line related ministries and NGO's working in the area.

Districts Covered:

- Nakuru
- Nyandarua

Criteria for Selection:

The two districts (Nakuru and Nyandarua) were formerly white highlands and people were moving to the areas for new settlement. There was need for forest products for the settlement.

Programmes:

- Targets for the project were individual farmers, schools, groups.
- Training of teachers.
- Construction of water tanks for schools - 66 schools had been supported.

- Establishment of seed stands of desired tree species to be a bank for future planting.
- Seedstands for every district.
- Every division to have a seed stand.

Phase II of the project started in 1997- a cooperation between the Governments of Kenya and Finland, covering the same districts (Nakuru and Nyandarua). The Project was, however, canceled a year later, May 1998.

Objectives of phase II:

1) Establish farm forestry-Motivate farmers to plant trees for economic gains and environment rehabilitation.
2) Promote Private seed vendors.
3) Establish partnership between farmers, users and industries.
4) Promote Private tree nurseries.

Field Observations

Methodologies:

Catchment approach.

- Name of catchment area - Ogoshura
- Name of farmer - Joram
  - Bahati Location
  - Bahati Division.

Technologies:

1) Water conservation: Fruit tree planting in water trenches e.g. Morus alba, bananas, sugarcane, and carica papaya.

2) Boundary planting on both sides bordering farmers (purpose) windbreak, fuelwood, bundling poles, fencing poles.

3) Roof water catchment (safe clean drinking water).

4) Fodder grass and trees - animal feed.

5) Live fences and tree during the fence live purpose (protection).

6) Rotational planting of food crops.

3.0 REHABILITATION OF ARID ENVIRONMENTS (RAE)-BARINGO-PROJECT:

The Project was started in 1982.

Major problems in Baringo District

Wind Erosion
Gullies

The problems result in general poor state of the range which results in death of livestock during dry seasons.

To solve the problems, the project embarked on rehabilitation of degraded land both on private and community fields.

Purpose:

The main purpose of the project is to rehabilitate dry lands through planting of grasses and trees for the inhabitants of the area.

About 19,600 ha. of land have been rehabilitated on communal land. The fields are used for seasonal grazing. The management of the rehabilitated land are done by Community Management Committees representing each community.

The Project keeps sheep for the community where they buy some shares/pay for the sheep to be grazed. After 6-9 months, the sheep are sold and expenses deducted and then the money distributed among the share holders.

For the communal fields, the communities normally decide for a certain number of animals to be kept-These are normally the weak, milking animals and goats kids.

- Payments of 5/= per cow per day is made.
- Protection of the fields is an important exercise for the success of rehabilitated sites.
- Cactus fences are being controlled through cutting and putting the cut materials on top of the live hedge.

Benefits derived from the project

a) Planting grass inside reclaimed/protected land.
b) Communities making arrangements for dry season grazing
c) Communities making arrangements for dry season grazing
d) Women harvesting grasses for thatching from protected areas.

New programmes

Establishment of private grass fields managed by individual families.
The families graze livestock, cut thatching grass and harvested grass seeds.
The fields are cleared and fenced using either cactus, or chain link or euphorbia.
The private land owners pay for the tractor and seed, fuel 450/= and 250 for seeds (10kg). They also help to plant, manage and use the field.

Sustainability

Sustainability of the project is assured since after planting, the grasses take over and the tractor doesn't need to go back to plough again since they are managed by the communities with minimal input of the project.

FIELD OBSERVATION

RAE-Marigat Baringo.

Plot No. II

The plot was established in 1982 and covers an area of 36 ha. and divided into 3 paddocks. Here, a solar electric fence is used to keep off browsing livestock , hence allow natural regeneration to take place. The plot was also enriched through planting of *Prosopis juliflora* and broadcasting of *Cenchrus celliaris* grass. Observation reveals a very big change within the enclosure compared to the surrounding areas. The land which was initially bare with alot of rock out-crops is now covered by a good number of indigenous trees and grass species. The method of rehabilitation looked effective though very expensive for an average farmer. Willing farmers should continue to be advised to use simple and cheep fencing material.

4.0 VI-PROJECT-KITALE

This is an Agroforestry project which was started in 1993. The project is founded by NGOs from Sweden through Swedish International Development Agency (SIDA). The Projects main target is the small scale farmers. A 8m x 6m spacing for the trees is being used for intercropping. On the demonstration plot the system is used to get litter from the leaves to improve the soils. Calliandra from the intercrops is used as concentrate (3kg of *Calliandra* = 1kg of concentrates).

OBSERVATIONS:

Observation started from the office compound which has several ornamental trees such as *Spathodea nilotica, Trichilia roka, Delonix regia, Olea welweshi, Terminalia brownii.* There were also fruit trees such as *Persea americana,* jack fruit, and several high or low growing flowers.

There is a Demo plot which has been divided into several paddocks each with different agroforestry activities. One demo plot had agroforestry trees spaced at 8km x 6m to produce litter for the intercropped crops. *Calliandra calothysus* is grown on the rows to produce fodder for livestock. One paddock has trees such as *Sesbania sesban, Calliandra carothyrsus, Dombeya goetzenii, Terminalia Morris* intercropped with vegetables like cabbage, sukumawiki and some indigenous vegetables.

Another demo plot had bananas grown and managed using Uganda style whereby three stems are left to grow per hole for the purpose of producing big bunch of bananas. Also at the boundaries, *Grevillea robusta* is grown to act as wind break to the bananas.

One paddock had pineapples grown in rows with some Agroforestry trees species sparsely intercropped. Trees that were noted include: *Terminalia,* Morus, white supporter. *Leucaena leucocephala, Sesbania sesban, Croton macrostarchys, Markhamia lutea* etc.

In one paddock there were two partitions one for zero grazing cattle and another for layers. The calliandra along the paddock is used for fodder provision to both the layers and the cattle. The livestock is for the purpose of income generation through sales of eggs and milk.

Within the demos there was tomato growing paddock which is under some agroforestry trees like *Sesbania sesban, Mimosa scabrella, Croton macrostachyus* which provide sticks for supporting the tomatoes as well as addition of nutrients to the soil. Next to the livestock paddock they have dug a well to demonstrate on how to reduce time wasted on water collection when water is available.

A demo plot of nappier grass was observed where fodder was produced for the cows. The livestock provide compost manure for the Nappier grass. The project also has an aboreturm which with several tree species.

Finally next to the compound the project has a small paddock of indigenous and Exotic vegetables grown in double digging method and also some green vegetables sukumawiki grown in a gunny bag that is filled with gravel and soil to the outside and holes made at the sides of the bag and cuttings of the vegetables planted on the holes. i.e.

Farm Visit:

Name of farmer: Richard Divna Epukoit
Land size: 1.2 acres
Rainfall in the area: Around 1200mm/yr.

The farmer grows vegetables, bananas and trees and some maize for the children.

- Given initial seedlings but later established own farm nursery.
- The farmer got farmer/farmer visits training.
- The trees are grown for windbreak, fuelwood, soil improvement and seed collection.
- Bananas are planted on the channel while trees are on the embarkments (for soil & water conservation).
- Cassava is being grown for domestic use.
- Major tree species grown are *Sesbania* and *Grevillea*. *Sesbania* stems are being used for support of bananas and seeds are sold.
- The farmer has improved jiko for energy conservation (KCJ).
- Farmers teach each other (exchange ideas).

5.0 MINISTRY OF ENERGY (MoE) Busia Kenya

The Centre is currently run by Ministry of Energy who took over the running of the former Kenya woodfuel Agroforestry project (KWAP) activities after the end of the project. The Kenya woodfuel and Agroforestry Programme (KWAP) was born from the findings and recommendations of the Kenya National Fuelwood cycle study that was jointly undertaken by the Ministry of Energy and the Beijer Institute of the royal Swidish Academy of sciences in 1980/82.

It's main objective was to enhance rural Energy Supply strategies and reduction of consumption of domestic energy needs. The programme started in 1984. To date it has gone through two different implementation phases each having a different operational mandate.

Phase (1) 1984-1988 Research and development:

The main objective was to develop of agroforestry technologies for fuelwood production at the same time testing out efficient and effective extension methodologies and approaches that would enhance fuelwood production while minimizing consumption in the high potential areas of the country.

Two districts Kisii and Kakamega were selected for phase I implementation of the project.

Experiences:

- The Project was mainly dealing with Agroforestry.
- Packages used were mainly dealing with
  - Fodder production
  - Soil Conservation and soil improvement
  - Fuelwood production.
- The project used the soil & water conservation catchment approach.
- The project liased/formed the district farming team with representation of different line departments.
- The project used to facilitate farmers activities by offering financial assistance for the purchase of materials for nurseries.
  - The project also paid money for production.
  - Inputs provided included: seeds, polythene tubes but later stopped the assistance.
- The project used to purchase seeds from the farmers as a way of encouraging them to plant more trees for seed production.

KWAP 2:

Phase (11) - 1989-1992 - A Transfer phase:

Phase II of the project was the initial research and develop agroforestry

The overall objective of this phase was to develop in cooperation with the district and other relevant extension officers, a process of transfer of KWAP's development technologies on-farm improved biomass production and Extension Methods to the farmers.

During this phase the project was administered by ETC Foundation of the Netherlands which in turn registered a branch of its company in Kenya to effectively and legally implement Project.

It was a replication of whatever had been developed in phase 1 to reach other new districts:- Kericho, Eldoret, Migori.

- Agriculture farming system approach (AFSA) approach was used for extension.
- Implementation was through catchment approach.
- The Project focused on different agro-ecological zones.
- The project had established demonstration sites for suitable AF tree species.

Extension Approach:

Through the Ministry of Agriculture (soil and water conservation branch), the project selected model demonstration farmers within the catchments. One catchment has an area of 200 km^2 with an average of 90 households. The model demonstration farmers were selected by the community within the catchment. The criteria for selection was:-

- Farmers who are ready to pass knowledge to other farmers.
- Farmers willing to learn.
- Resident farmers (who do not stay in towns).
- Representative of the catchment.

- These farmers were then trained on different aspects of Agroforestry, soil conservation, soil improvement, fuelwood production, poles/timber production and fruit tree development.

- The model farmers were to choose by themselves other follow up farmers (10-14) and then train them on different aspects (Farmer to farmer extension approach)

- The farmers were to organize farmer managed field days.

- Farrner explaining to other farmers.

- Multi-displinality approach had to be used using the line departments-Ministry of Energy, Livestock, Provincial Administration, Culture and Social Services, Education, Forestry and other NGO's working in the area. e.g. Mumias Sugar Company.

Planning and implementation was organized at different levels:

- District Agroforestry Programme-charried by D.C.
- District Planning team; Divisional planning team (DPT). Chaired by the Divisional soil conservation offices
- L.I.T (Locational Implementation team).
- The success has been a well protected environment.
- Full participation of the line agencies has pulled them to work more in their areas and full use of the available resources.

Constraints:

1. Biophysical stress-termites which are being controlled by the use of indigenous knowledge.
2. Hardpans:- Species resistant to this had been called for.

3. Gender imbalance: some of the tree species are not supposed to be planted by women.
4. Poor collaboration: The cooperating agencies never had a memorandum of understanding in taking activities.
5. Few staff with some of the departments following voluntary early retirements of civil servants.

Publication was undertaken by KWAP staff to record in a series of manuals, booklets, etc. which recorded knowledge and findings and experiences gained during KWAP research and development phase. The results of the above was publication of a number of manuals and booklets in the field of Agroforestry.

e.g. - The two-way approach in Extension.

- Participatory monitoring and evaluation.

  Manual for training front-line extension staff.

- Agroforestry Field manual (Seed procurement and distribution)
- Agroforestry Field manual (Planting sites and configurations).
- Agroforestry Field manual (On-farm tree propagation methods).
- Extension Methods and Techniques
- Agroforestry Field manual (Management and use of Agroforestry trees).
- The Practice of Agroforestry (A field guide).
- Planting sites configurations and tree management in high potential areas.
- Participatory monitoring and evaluation.
- The mirror technique in Two-way Extension.
- An Agroforestry manual for Front-line Extension workers on Two-way communication techniques.
- On farm tree nurseries.
- The Two-way approach in Extension.
- The school Extension Programme.

- The utilization of Agroforestry trees.
- On-farm tree seed production.
- Mirror technique in Mass Extension.

At the same time there are many other publication and reports which are unpublished.

Implementation Approaches.

Seed Production

- Establishment of seed sources.
- Seed collection and handling.
- Germination tests and pre-treatment tests.
- Seed storage and packing
- Seed marketing and distribution.

Mass Extension Methods

- Drama
- Films
- Songs/Role plays
- Poems/Proverbs

School Extension Programme.

- Entrance to the school children.
- Entrance to the surrounding community.
- Assessment of impact.

The Two-way Extension Method:

- Two-way in individual farmer intervention.
- Two-way in group intervention.
- Two-way in mass awareness/Extension approaches.
- Two-way in training.
- Relation building.
- Effective communication skills.

On-farm tree nurseries:

- Standard versus non techniques of seedlings production.

The mirror technique use in:

- Mass extension methods
- Assessment of its effectiveness
- Development of the technique.

Participatory monitoring and evaluation using 4 modules:

- Participatory monitoring of agroforestry projects.
- Indicators, methods and tools.
- Community involvement for sustainable agroforestry development.
- Evaluation

Agroforestry practice:

- Trees in the Agroforestry practice.
- Different planting sites and the tree planting configuration.
- Tree management options.
- Concepts of Agroforestry.
- Role of trees on the farm.
- Choice of species.
- Management and use of Agroforestry trees

Other Extension Techniques:

- Case studies
- Socio cultural issues in Extension
- Gender and Environment
- Mass awareness Programme

On-Farm Tree Propagation Methods:

- From seed nursery
- From seed direct
- Cuttings
- Wildlings.

FIELD VISIT:

Area:	**Matayo Division.**
Population:	**200 households with an average of 6-8 per households.**
Farmers Name:	**Mr. Ojiambo, Engeza**
Catchment:	**Miyava**

-Establishment of woodlot using mixed Agoroforestry species.
-Calliandra being established on soil conservation sites for fodder , fuelwood production.
-Grevillea being established for poles/timber
-Harvests Agroforestry tree seeds and sells
-Sisal for rope making being established on the cropland. This is important for generally sisal are established along the boundaries and not recognized as a crop but when established on the cropland, it is recognized.
- "Tumbukiza" system of establishing nappier grass is being used and the success is okay.
-Most of the farmers are members of the catchment.
-Organic farming being carried out using vernonia and calliandra.

Sustainability

- Farmers are still educating other farmers in the catchment.

Achievements: (with the community)

- Fuelwood
- Seed selling
- Good farms
- Dairy farms.

6.0 MASENO-ICRAF/KARI/KEFRI FIELD STATION:

Maseno regional research centre is one of the KEFRI regional centre. The centre also houses the Agroforestry Research Networks for Africa (AFRENA). The centre is run by three institutions, KEFRI, KARI and ICRAF where KEFRI is the leading Institution.

Brief:

- It is the implementing centre for farm forestry.
- Forms part of AFRENA (Agroforestry Research Networks for Africa).
- Maseno Station undertakes soil fertility and trees domestication programmes while Embu Station is being headed by KARI and mainly undertake research in fodder production.
- Agroforestry is viewed as a major activity for the research/extension activities in the station.

OBJECTIVES:

1. Improved soil fertility to increase production.

   Approaches:

   Through biomass transfer.

   -Organic manure of foliage is used to improve the soil, though is labour intensive, yields of maize have been seen to increase.
   -Major spp. used is *Tithonia* which is normally cut and applied for high value crops such as sukuma wiki and tomatoes. This species decomposes very fast and releases nitrogen.

II. Improved furrow system where the furrow period is very short.

   -Nitrogen fixing species are used in this approach such as indigenous *Crotalaria grahamihana* which is highly preferred by farmers. Other species includes *Tefrozia* species.

   Advantages of the approach:-

- Mole attacks are reduced especially in areas where *tefrozia* species has been planted.
- *Tefrozia* is also used for controlling pesticides.
- *Tefrozia* is also used for fish poisoning.

III. Integration of organics and inorganics.

- Rock phosphate from Arusha (Tanzania) being applied as an inorganic fertilizer to improve levels of phosphorus in the soil.
- *Sesbania sesban* is being used for control of striger weed in improved fallow system.

IV. Effective research for effective dissemination of information.

- Village approach being used for extension systems.
- Participatory learning and research approach (PLRA) being applied.
- Farmer to farmer approach being also used.

Adjustable structure for implementing project (ASIP).

- There are different types of research activity undertaken in the station:-

1) Research designed (RD) and research managed (RM.)
2) Research designed (RD) and farmer managed (FM).
3) Farmer Designed (FD) and farmer managed (FM).

The type 2 (RD/FM) is the one highly used for the station.

- The Centre does monitoring and evaluation.

Domestication of high value trees:

The following tree species of high value trees are being tried for domestication at the centre:-

- *Vangueria infousta*
- *Prunus africana*
- *Sclerocarya birrea*
- *Adansonia digitata*
- *Grevillea robusta*
- *Waburgia ugandalensis*
- Tree tomato
- *Azadirachta indica*
- *Moringa oleifera*
- *Markhamia lutea.*

General:

The On-station trials have been tested on the farms and proved to be worth as the case was when we visited farms in Vihiga District.

Biomass transfer

Biomass transfer research focuses on intercroping of tree hedges with crops for the purpose of increasing farmers crop yields. Cut and carry system where a plot is planted with desired tree species outside crop planting area to avoid either moisture competition or shading effect has been tried. Trees are coppiced and the litter used as green manure crops.

The centre has tried several species both indigenous and exotic. Due to long term uncertainity in using exotic species, researchers together with farmers, have tried indigenous species which are already available within their farms. These species include:-

1. *Tithonia*
2. *Crotolaria*
3. *Tefrozia*

After contacting cost benefit analysis on cut and carry system, it was found that the technology was expensive for the farmer in terms of labour.

Eventually the farmers switched from applying the green mulch to Maize/ beans/millet or sorghum to more valuable crops e.g. Vegetables (Sukuma,Tomatoes . Slowly the farmers are appreciating the technologies offered to them by the centre.

Improved fallow

When the land becomes unproductive due to continuos cropping, farmers usually leave that particular land fallow for some time in order to regain nutrients. Fallow period usually range between 5-10 years . For a farmer with a small piece of land , it is difficult to fallow his/her land for that long time . Maseno research centre has tried *Sesbania sesban* which is a riverine indigenous specie to improve the land quickly (about 3 - 6 months). The species is able to tap nutrients from deep soil horizons which is then recycled through leaves. Decomposition rate of *sesbania sesban* leaves is fast thus, releases captured nutrients. *Sesbania* fixes Nitrogen which is made available death and decay.

Planting method

The area to be under fallow is ploughed and then seeds are broad casted. This can be done before the rains or soon at onset of the rains.

On-farm experiments

The Maseno research centre uses villages approach in order to achieve its objectives of technology development and transfer to farmers. There are three types of research conducted by the centre :-

1. Researcher design, researcher managed
2. Researcher design but farmer managed
3. Farmer design, farmer managed.

All the three research approaches are used parallel to achieve the same objective.

The centre is also promoting the high valued tree species (valued in terms of utility, or amenity purposes) through its tree demonstration programme.

7.0 LESSON LEARNT FROM THE TRIP

1. Catchment approach which was used both by Miti Mingi Mashambani and KWAP proved quite successful as it ensured active involvement of major stateholders-relevant government ministries/departments, project implementors, local leaders and the farmers. However, the approach also had its own problems such as funding the other departments which may not have financial backing from their line ministries.

2. Enclosure of degraded areas and introduction of grass and fodder tree species can be used both to rehabilitate degraded areas and provision of fodder in arid and semi-arid areas. Involvement of local communities in management as was the case of RAE-Baringo can ensure sustainability of such activities.

3. In Maseno clear technologies were being promoted to the local farmers which addressed farmers problem of soil fertility and weed control. Farmers were being actively involved in developing/testing the technologies. From this experience we could learn that farmers will be willing to participate in tree planting if their problems are addressed by the activities and if the technology to be passed is clear enough to be understood by them.

4. KWAP produced simple publications which could be used by extension agents. This was quite a good way of publicizing the project activities and transferring technologies developed. Such publications should be encouraged in SOFEM.

8.0 APPENDICES

Appendix I: WESTERN KENYA TOUR GERMPLASM COLLECTION:

	Materials collected	Quantity	Area of collection
1.	Soya beans (Glyane max 1)	2 kg	Nakuru
2.	Pine apple (Ananas comosus)	10 suckers	Kitale
3.	Moringa stenopetala seeds	1/2 kg	Busia
4.	Tephrosia volgelii (improved fullow)	1 kg	Maseno area
5.	Corchorus olitorius (murere) vegetable	5 grams	Kitale
6.	Crotaria brevidens (kimiro)	5 grams	Kitale
7.	Ricinus communis (castor seeds)	20 seeds	Kitale
8.	White sapota (casimiroa edulis)	5 seedlings	Busia
9.	Passiflora edulis (yellow passion)	2 seedlings	Busia
10.	Beaked heliconia (Ateliconia rostrata)	1 sucker	Busia
11.	Strelitzia reginae (Bird of paradise)	1 sucker	Busia
12.	Annona sguamosa (sugar apple)	1 sucker	Busia
13.	Annona maricata (sour sop)		Busia
14.	Leonotis mollissima (Flower wild)	few seeds	Busia
15.	Artocarpus heterophyluss (mfenesi)	5 seedlings	Busia

Appendix 2: LIST OF PUBLICATIONS

TITTLE	AUTHOR	ORGANIZATION	YEAR PUBLISHED
Participatory monitoring and Evaluation (A manual for training Front-line Extension Staff) (FLS)	Onchere N.M, Nang' M.N	KWAP	1994
Participatory monitoring and Evaluation (A manual for training Front-line Extension Staff) (FLS)	Onchere N.M, Nang' M.N	KWAP	1994
The practice of Agroforestry	Isaac E. Ekise, Humphrey K.	KWAP	1994
The practice of Agroforestry	Isaac E. Ekise, Humphrey K.	KWAP	1994
Management and use of Agroforestry Trees	Simon Kimwe, Qureish Noordin	KWAP	1994
Management and use of Agroforestry Trees	Simon Kimwe, Qureish Noordin	KWAP	1994
Extension Methods and Techniques	KWAP	KWAP	1993
Extension Methods and Techniques	KWAP	KWAP	1993
Seed Procurement and Distribution	Mary Mwangi, Isaac Ekise	KWAP	1994
Seed Procurement and Distribution	Mary Mwangi, Isaac Ekise	KWAP	1994
On-farm tree propagation methods	Francis A. Kima, Oscar A. Oyalo	KWAP	1994
On-farm tree propagation methods	Francis A. Kima, Osca A. Oyalo	KWAP	1994
Planting Sites and configurations	Catherine Wituka, Simon Kimwe	KWAP	1994
Planting Sites and configurations	Catherine	KWAP	1994

	Wituka, Simon Kimwe		
Mirror techniques in Mass Extension	Floice Adoyo, Sara K. Momanyi	KWAP	1995
Mirror techniques in Mass Extension	Floice Adoyo, Sara K. Momanyi	KWAP	1995
The utilization of Agroforestry trees	Simon Kimwe	KWAP	1993
The utilization of Agroforestry trees	Simon Kimwe	KWAP	1993
Planting sites configurations and tree management in high potential areas in Kenya	Simon Kimwe	KWAP	1993
Planting sites configurations and tree management in high potential areas in Kenya	Simon Kimwe	KWAP	1993
Participatory monitoring and evaluation	Onchere N.M, Musyoka J.M	KWAP	1993
Participatory monitoring and evaluation	Onchere N.M, Musyoka J.M	KWAP	1993
An Agroforestry manual for Front-line Extension workers on Two-way communication techniques	Catherine M.G. Wituka	KWAP	1995 May
An Agroforestry manual for Front-line Extension workers on Two-way communication techniques	Catherine M.G. Wituka	KWAP	1995 May
On-farm tree seed production	Oscar A Oyalo	KWAP	994
On-farm tree seed production	Oscar A. Oyalo	KWAP	994
The mirror technique in two-way extension	Joseph M. Wekundah, Floice Adoyo	KWAP	1993
The mirror technique in two-way extension	Joseph M. Wekundah, Floice Adoyo	KWAP	1993
The two-way approach in extension	Milcah K. Ong'ayo	KWAP	1992

The two-way approach in extension	Milcah K. Ong'ayo	KWAP	1992
The School Extension Programme	Joseph M. Wekundah	KWAP	1993
The School Extension Programme	Joseph M. Wekundah	KWAP	1993
On-farm Tree nurseries	Patrick M. Mung'ala	KWDP	1988

Appendix 3 : LIST OF PARTICIPANTS

KEFRI-KITUI

1. Mr. Benard Muok
2. Mr. Ali Abdalla
3. Mrs. Emily Kitheka
4. Mr. Osore C. Mudanya
5. Ms. Damaris Munyao
6. Mr. Ezekiel Kyalo
7. Mr. Nelson Kavoi
8. Mr. Jeremiah Nguniko
9. Ms. Rose Mbithi
10. Mr. Nathan Omambia

EXPERT

11. Mr. Hiro Miyazono

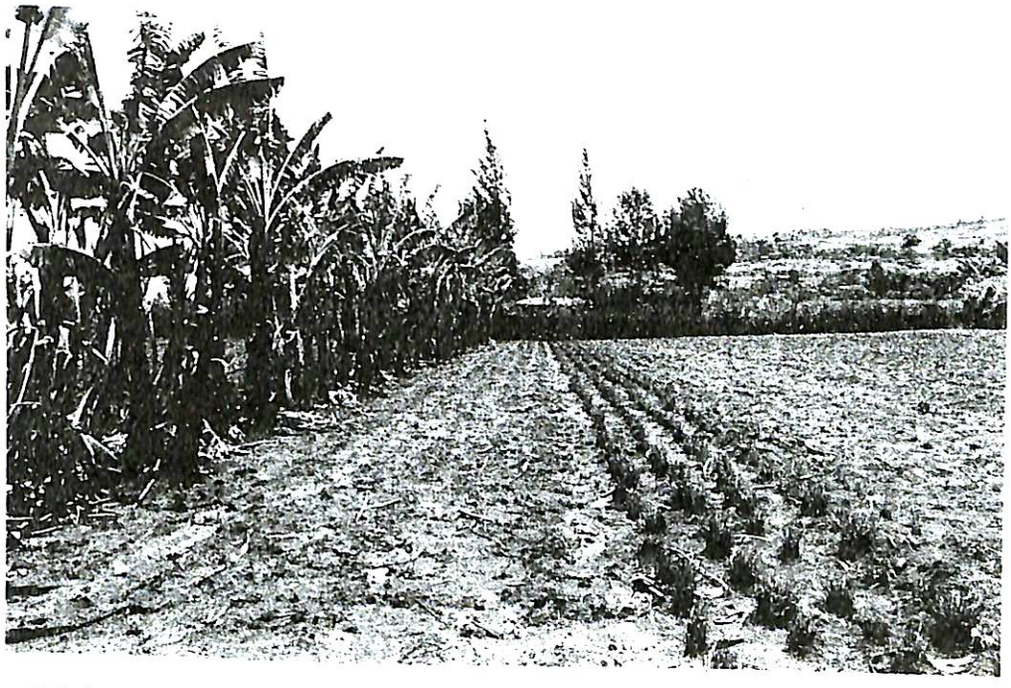
FD-KITUI

12. Mr. Nyabuti Nyambati
13. Mr. P.N. Kyenze
14. Mr. S.N. Musee
15. Mr. William Syengo

DRIVERS

16. Mr. Kalani
17. Mr. Charles Nyabuto

Appendix 4: PHOTOS

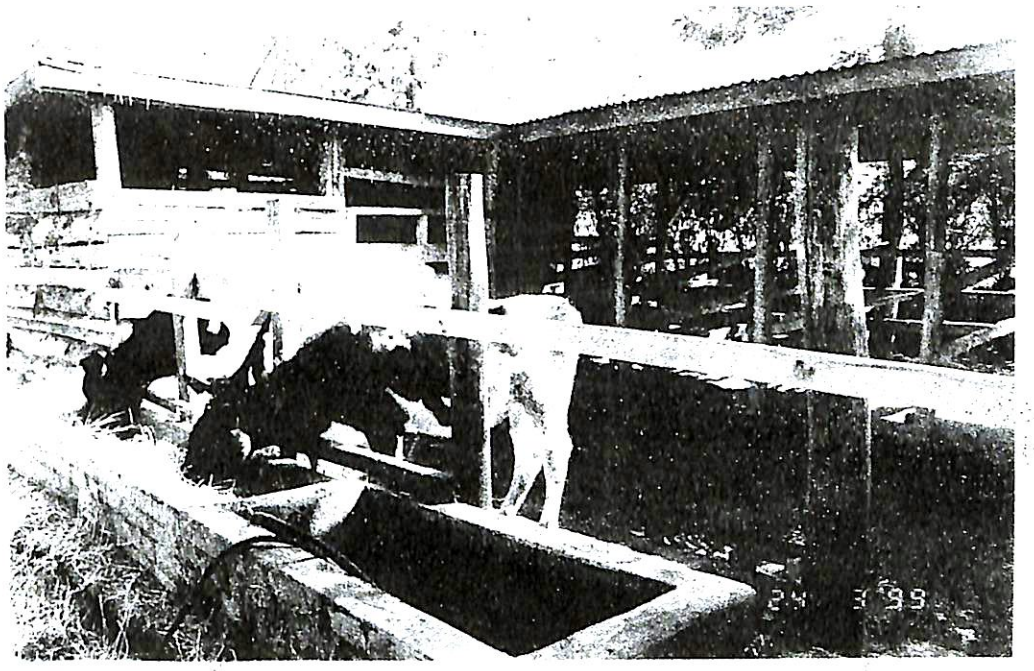


Miti Mingi Mashamni, Nakuru: Model farmer terrace planted with bananas

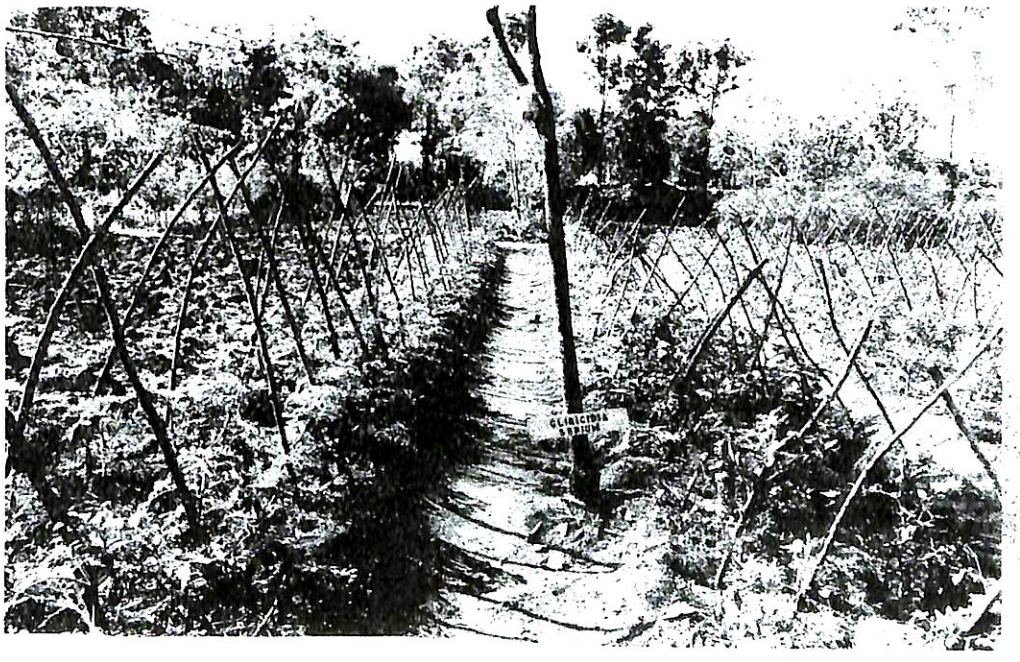
RAE Project, Baringo: Land rehabilitation with electric wire fencing.

VI Agroforestry Project: A model farmer in Kitale.

VI-Agroforestry Project: Vegetable planting



VI-Agroforestry Project: Zero grazing unit using calliandra and Nappier grass



VI-Agroforestry Project, Kitale: Tomatoes supported with Gliricidia stems.

Improved fallow with Sesbania sesban and Tithonia: KEFRI Maseno

KWAP Busia: Model farmer in Busia District