

**Participatory Farm Planning of
Fruit Tree - Based Farming
Systems**

Workshop Document

October 1996

prepared by Justus Wesseler

Gesellschaft für Technische Zusammenarbeit
Dag-Hammarskjöld-Weg 1+2
Postfach 5180

6236 Eschborn, Germany

Integration of Tree Crops into Farming Systems Projects

GTZ-House
Lenana Road, Kilimani

P.O. Box 47051

Nairobi, Kenya



Published by
GTZ - Integration of Tree Crops into Farming Systems Project
ICRAF House, Gigiri
P.O. Box 47051
Nairobi

tel: +254 2 524654
fax: +254 2 524651
e-mail: Meckert@cgiar.org
internet: <http://www.treecrops.cgiar.org>

Editing Kimunya Mugo
Layout and design Kimunya Mugo

ISBN

This publication may be reproduced in whole or in part, and in any form, for educational or non-profit purposes without special permission of the publishers provided due acknowledgement of the source is made.

Document of the workshop on participatory farm planning in fruit tree based farming systems held at the Wida Highway Hotel, September 30 - October 4, Limuru, Kenya. The workshop was conducted by the Integration of Tree Crops into Farming Systems Project (ITFSP) and jointly implemented by the Farm Management Project (FMP), Horticulture Development Authority and the Sustainable Forest Management Project.

The Participants

From the left, standing: Mr. Sammy Kyeti, Mr. S.D.Mwangi, Mr. Karanja, Mrs. Monika Mangusa, Mrs. Muturi, Mr. Joseph Wanyeki Kibirag, Mr. Martin Karanja, Mr. Joshua Mburu, Mr. Joshua Olilo Miseda, Mr. Joseph Cheruiyot, Mr. Njeru Mutea, DHO Mrs. Njuguini Mwai. From the left sitting: Mr. Peter Kabwoya Isigi, Mr. Ooko Yaya, Mr. Kaburu Misheck, Mr. Mwenja Kenda.

Table of Contents

1. INTRODUCTION	1
2. OBJECTIVE OF THE WORKSHOP	1
3. CONTENTS OF THE WORKSHOP	1
3.1. Evaluation of the approach	1
3.2. Analysis and summary of farm data	2
3.3. Application of multi-period-analysis to identified problems of decision making	3
4. PLANNING OF FUTURE ACTIVITIES	5
5. EVALUATION OF THE WORKSHOP	5
6. GENERAL OBSERVATIONS	5
6.1. Participatory farm planning	5
6.2. Farm management tools	6
7. PROPOSED FURTHER ACTIVITIES	6
8. FINAL CONCLUSIONS	8
9. LITERATURE	8
10. APPENDIX	9
11 DETAILED PROCEEDINGS OF THE WORKSHOP	12
Table: Evaluation of approach.	16
Table: Planning of future activities	17
FORMS USED FOR FARM ANALYSIS	18

Abbreviations

GTZ	Gesellschaft für Technische Zusammenarbeit
ITFSP	Integration of Tree Crops into Farming Systems Project
KEFRI	Kenyan Forestry Research Institute
KIOF	Kenyan Institute of Organic Farming
HCDA	Horticulture Crop Development Authority
MoALD&M	Ministry of Agriculture, Livestock Development and Marketing
SFMP	Sustainable Forest Management Project

1. Introduction

This report documents the result of a workshop on *Participatory Farm Planning of Fruit Tree Based Farming Systems*. The workshop was the second in a sequence of three workshops where farmers, extension workers and researchers are brought together to improve their skills in farm planning with special emphasize on fruit trees and silviculture. During the first workshop, held in April 1996, the participants were familiarized with the approach of participatory farm planning as described by Waibel (1991) and Wesseler and Waibel (1995).

At the end of the first workshop the participants decided to further apply the approach learned. It was agreed upon that the farmer participants will collect data of their own farms whereas the other participants will use the approach to collect data of four to five farms in their working area. This data served as a basis for the second workshop.

2. Objective of the workshop

The objective of the workshop was to evaluate the participatory farm planning approach, to improve the application of tools for farm management and planning and to get an overview of the fruit tree production in Kenya. The participants of the workshop were composed of 9 persons from the extension service unit of the Ministry of Agriculture, two participants from the Horticulture Crop Development Authority, and 4 farmers/farm managers. Of the 15 participants 9 had attended the first workshop.

3. Contents of the workshop

3.1. Evaluation of the approach

At the first workshop the participants agreed that the farmers will provide their own farm data and the others apply the approach to 4 to 5 farms. 7 participants were able to collect data of 32

Participants analysing their farm data.

farms. On the first day the participatory farm planning approach was evaluated (see table in the appendix). It became clear during the evaluation that the approach results in valuable farm data that can be used as a basis for a particular farm plans as well as information for other farmers. The main problem stated was that the approach involves a lot of time. For some the time needed was a constraint, some also had not enough funds to conduct all five farm visits.

3.2. Analysis and summary of farm data

After a review of farm planning and management tools the participants were requested to analyze and summarize their data. The farmer participants grouped together and calculated the income from their fruit tree enterprises of the last season. They were assisted by other participants.

The presentation of the results gave useful information about the state of the art of different fruit crops in Kenya. Some problems for future development had been identified.

The overall observation was that intensive fruit tree production of avocado, oranges mango, paw paw and apples generates a high income for the farmers on an acre basis. But, this intensive production requires very high skills on production.

Summarizing the farm data for presentation.

The avocado trees were the once mainly found on the visited farm. The problem stated by the farmers' was that due to the expected decrease in prices for export fruits as well as fruits for the local market the enterprise will not be profitable anymore. The identified strategies of the farmers was either to let the fruits idle, sell the remaining yield, wait for an increase in prices and then to intensify the production again or to remove the trees and plant some other crops.

The cashew nut producers of Kilifi had neglected their orchards because of a decrease in the product price. Hence, dropped fruits germinated and the growing trees had not been removed.

The working groups on specific fruits enjoy the fresh air and the good weather.

The plantations became very dense and it is now difficult to enter them for maintenance and harvest.

Loquat trees yield a high amount of fruits but they are mainly used for home consumption. At present there is a low demand on the local markets for these fruits.

The results from farms in Kisumu and Yatta show intensive orange production can yield a high income in places where greening disease is not present.

At the moment the highest income are received from intensive mango production for export. The farmers are concerned that the prices for mango will drop in 5 to 10 years, because the acreage of mango plantations increases. This is supported by the observation of the high demand for mango seedlings from private nurseries.

Information on temperate fruits were only available from one farmer, who owns a 10 year old apple plantation in Nairobi. The problems they faced were mainly on the identification of the best management practices.

Further information on temperate fruits had been gathered during two farm visits in Limuru. It is a traditional pear and peach area where some of the trees are more than 50 years old. The production methods are simple. Manure and mineral fertilizers are applied on a regular basis, whereas pesticides are rarely used. Pruning of the trees is seldomly done. In general the farmers plant different crops like maize or beans under their trees. One farmer was successful with tree tomatoes and tried to expand his production as marketing of the fruits for the near future will be no problem. One interesting observation was that traders come to the farm, pick the fruits themselves and pay the farmer. For the pears even some traders arrange contracts with farmers and deposit the payment in advance.

3.3. Application of multi-period-analysis to identified problems of decision making

To familiarize the participants with multi-period and risk analysis specific problems related to fruit tree enterprises as identified by farmer participants had been used and discussed in working groups. As most of the participants had some knowledge on multi-period analysis this topic had shortly been discussed. An introduction to risk analysis had been given by using simple examples and games from experimental economics. For the analysis simple methods had been introduced, like:

- first year of positive income;
- pay-back period;
- switching values;
- sensitivity analysis; and
- worst case scenario.

Presentation of investment analysis for oranges and mangoes.

For the analysis it became essential to make use of computers, as the calculation of switching values and sensitivity analysis by hand requires a lot of time, is tiresome and increases the possibility of mistakes during the process.

The results of the case studies had been summarized and were presented on the last day to the group and some invited guests. The usefulness of the analysis was demonstrated by the positive feed back from the farmers, who used the results for decision making on their farms, e.g. to invest in drip irrigation, to convince creditors to give a loan, etc. (for more details see the description of the case studies in Volume IV).

4. Planning of future activities

After the analysis of the planning problems the group came together to discuss how to include the techniques acquired in their day to day work and how to proceed into the future (see table in the appendix). The results of the discussions can be summarized as:

- future training of selected participants who have access to computers on software for farm planning, e.g. excel;
- a continuous follow up for those farms where farm plans had been established;
- others (farmers and government officers) should be trained on the approach;
- information on the approach as well as on the data collected should be made available to others.

5. Evaluation of the workshop

The evaluation of the workshop was done by using a standard seminar evaluation form of GTZ. The results show that the contents and proceeding of the workshop were well balanced (see the graphs in the appendix). This again supports the success of the approach.

6. General observations

6.1. Participatory farm planning

This workshop concentrated on the use of farm management and planning tools for the income and investment analysis of specific farms. For the collection of the information the participants were

recommended to use the participatory approach trained during the first workshop. An assessment of the use of the approach was rather difficult, for obvious reasons. But analyzing the collected data, the vernacular used during the workshop and using informal discussions with the participants allowed to estimate the number of participants who had intensified the participatory approach. Out of the eight participants who provided farm data it can be said that at least 50% of them applied the participatory approach.

6.2. Farm management tools

The participants who had attended the first workshop demonstrated during the analysis of the farm data that they were able to apply the farm management tools without additional help from an outsider. As the analysis of the farm data took some time, the participants need more practice to improve their skills.

Some confusion existed about the differences between income, investment and financial analysis. This topic should be stressed in the planned handbook.

7. Proposed further activities

To widen the scope of the participatory farm planning approach of fruit tree based farming systems more farmers and farm management officers should be trained. As for selected provinces of Kenya training teams had been established by the Farm Management Project, all members of this teams should be trained on the approach. This will enable them to include it in their training workshops. The training of the trainers should be done by a team of up to five who are familiar with the approach. The team must also be well trained on the use of computers as they are needed for the application of farm management tools.

To ensure the success of the training team back stopping is needed. The team should also extend the approach to other countries.

As there are approximately 40 trainers in eight provinces, the training should be conducted in three groups. For the training of each group farmers should be invited to participate.

The results from the analyzed farms during the training's should be summarized as they can be used to extend the database on fruit tree growing in Kenya.

One person or institution identified by ITFSP should be responsible for the compilation, summarization and updating of the farm data. This data can serve as basic information for planning and management of fruit farms. There are several possibilities to ensure the success of this activity:

- ITFSP will assign one of its permanent staff. This has the advantage that ITFSP has direct control over the activity. On the other hand, as the permanent staff of ITFSP has no free resources to undertake the activity, new personal has to be hired.
- The training team will also be held responsible for compilation, summarization and updating of the farm data. This has the advantage that those who compile, summarize and update the data are close to the procedures of data collecting and close to the farms where data were collected. On the other hand it has to be insured that the training team can allocate the resources for this activity.
- A contract of cooperation will be signed between ITFSP and a university in Germany. The university will be responsible for the compilation, the summarization and the updating of the farm data. This has the advantage of using the resources and the human capital of the university. Even, the university may have an interest to further analyze the data. This may become an important aspect if the approach will be expanded to other countries.

A continuous collection of farm data from the farmers who had attended the workshop should be done. This will generate information over several years for the same fruit tree farm, which can be used to improve decision making regarding fruit trees.

ITFSP should also elaborate how they can support the development of a systematic way of farm data record keeping, particularly the development of farm data record sheets. As in Germany the use of *Schuppenkarteien* as a simple way of record keeping was quite successful, the possibility of using them for a permanent collection of data from fruit farms should be tested together with the interested farmers.

8. Final Conclusions

The results out of the workshop as well as the evaluation of the workshop by the participants demonstrate that the used approach contributes to a better understanding of fruit tree based farming systems. The collected information can be used as a basis to support farmers in their decision making.

The highly motivated participants should be further supported in applying the approach of participatory farm planning in fruit based farming systems. This should be done in the following three areas:

- All members of the provincial farm management teams should be trained on the used approach.
- At least one member of each provincial training team should be trained on the use of spreadsheet software for farm data analysis, particularly for multi-period and risk analysis.
- A simple and systematic way of farm data record keeping should be established for interested farmers of fruit tree based farming systems.

9. Literature

Griesbach, Jürgen (1992): A Guide to Propagation and Cultivation of Fruit-Trees in Kenya.

Schriftenreihe der GTZ, No. 230, Eschborn, Germany.

Waibel, Hermann (1991): Farming Systems Workshop Document. Philippine-German Fruit Tree Project, Baguio City, Philippines.

Wesseler, Justus and Hermann Waibel (1995): Participatory Farm Planning: A Guide to Fruit Tree Based Farming Systems Development. Philippine-German Fruit Tree Project, Baguio City, Philippines.

Wesseler, Justus and Workshop Participants (1996): Participatory Farm Planning of Fruit Tree Based Farming Systems. Workshop Document and Preliminary Extension Handout. Volume I. Internal ITFSP Paper No. 2. Nairobi, Kenya.

Wesseler, Justus and Workshop Participants (1996): Participatory Farm Planning of Fruit Tree Based Farming Systems. Workshop Document and Preliminary Extension Handout. Volume II, Results of the Case Studies. Internal ITFSP Paper No. 2. Nairobi, Kenya.

10. Appendix

Alphabetical List of Participants

- ANGINYAH, Jairus Tabu, Mr.; Kamurugu Project, POB 8801 Nairobi, Fruit Propagation, Nursery and Farm Manager.
- CHERUIYOT, Joseph Kipkorir, Mr.; Ministry of Agriculture, Livestock Development and Marketing, POB 50 Kericho, Farm Inputs Officer.
- ISIGI, Peter Kabwoya, Mr.; Ministry of Agriculture, Livestock Development and Marketing, D.A.O.'s Office POB 52 Kisii, Farm Management Officer.
- KARANJA, Mr., Embu-Farmer, POB 757, Thilca.
- KENDA, A. K. Mwenja, Mr.; Ministry of Agriculture, Livestock Development and Marketing, POB 19 Kilifi, Farm Management Officer.
- KIBIRAG, Joseph Wanyeki, Mr.; Division Agriculture Extension Officer, POB 199, Limuru.
- KYETI, Sammy Ngila, Mr.; Horticultural Crops Development Authority, POB 58 Kathiani, Area Technical Supervisor.
- MANGUSA, Monica Nzioki, Mrs.; private, POB 279 Matuu, Farmer.
- MISEDA, Joshua Olilo, Mr.; Ministry of Agriculture, Livestock Development and Marketing, D.A.O.'s Office POB 1958 Kisumu, Farm Management Officer.
- MISHECK, Dunstan Kaburu, Mr.; Ministry of Agriculture, Livestock Development and Marketing, POB 256 Othaya, Farm Management Officer.
- MUTURI, Mrs.; Nairobi-Farmer.
- MWAI, Njuguni, Ms.; DHO-Kiambu, POB 222, Kiambu.
- MWANGI, S.D., Mr.; Farm Management Project, POB 41607, Nairobi, Farm-Management Trainer.
- NJERU, Mutea, Mr.; POB 63, Kikuyu. Irrigation Engineer.
- WESSELER, Justus, Mr.; Institute of Horticultural Economics, University of Hannover, Germany, Workshop Moderator.
- YAYA, Titus Ooko, Mr.; Horticultural Crops Development Authority, POB 42601 Nairobi, Technical Supervisor.

Tentative proceedings of the 2nd workshop on participatory farm planning for tree crop based farming systems

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	<ul style="list-style-type: none"> • Check in. • Opening. • Discussion of experiences made. 	<ul style="list-style-type: none"> • Analysis of farm data: <ul style="list-style-type: none"> - gross margin; - gm/acre or ha; - household income; - income/head; - income from fruits; - income per tree; - yield/year; - etc. 	<ul style="list-style-type: none"> • Summarising the results for different fruits. • Introduction to risk-analysis: <ul style="list-style-type: none"> - overview; - simple tools in RA. 	<ul style="list-style-type: none"> • Multi-Period analysis of fruit trees, including risk: <ul style="list-style-type: none"> - NPV; - annuity; - opt. life-span; - pay-back; - switching values; - worst case scen; - etc. 	<ul style="list-style-type: none"> • Planning of future activities. • Presentation of results.
Afternoon	<ul style="list-style-type: none"> • Review of tools in farm-management analysis. • Analysis of farm data. 	<ul style="list-style-type: none"> • Analysis of farm data: <ul style="list-style-type: none"> - summary of results. • Presentation of results with special emphasis on fruit trees. 	<ul style="list-style-type: none"> • Visiting fruit farms of Kiambu district. 	<ul style="list-style-type: none"> • Multi-Period analysis of fruit trees: <ul style="list-style-type: none"> - continue - 	<ul style="list-style-type: none"> • Presentation of results. • Evaluation of the WS. • Closing of the WS.
Evening		<ul style="list-style-type: none"> • Slight-show: farming systems of the Philippine highlands. 	<ul style="list-style-type: none"> • Games of experimental economics. 		

11 Detailed proceedings of the workshop

Monday, September 30

- 9:00 - 10:30 Welcome and introduction to the workshop
Introduction of participants
- 10:30 - 11:00 Coffee break.
- 11:00 - 13:00 Discussions of experiences made during the application of the participatory farm planing approach.
- 13:00 - 14:00 Lunch break.
- 14:00 - 16:00 Review of tools for farm planing:
- description of farm resources;
- calculation of gross margin;
- calculation of farm household income;
- partial budget analysis;
- multi-period analysis of perennial crops;
- average income from perennial crops.
- 16:00 - 16:30 Coffee break.
- 16:30 - 18:30 Analysis of farm data:
Participants will split up in working groups and review their data collected, adjust them to comparable measures and summarise their findings.

Tuesday, October 1

- 08:00 - 10:00 Analysis of farm data:
- gross margin;
- household income;
- income/head;
- gm/acre or ha
- total income from fruits;
- income per tree;
- yield/age of tree;
- etc.
- 10:00 - 10:30 Coffee break.
- 10:30 - 12:30 Analysis of farm data: continue -
- 12:30 - 14:00 Lunch break.
- 14:00 - 16:00 Analysis of farm data: summary of results.
- 16:00 - 16:30 Coffee break.
- 16:30 - 18:30 Presentation of results with special emphasis on fruit trees.
- 20:00 - 21:30 Slight show: farming systems of the Philippine highlands.

Wednesday, October 2

- 08:00 - 10:00 Summarising the results for different fruits:
- range, mean and coefficient of variance for yields, gross income, gross margin, share on household income;
- description of different production techniques.
- 10:00 - 10:30 Coffee break.
- 10:30 - 12:30 Introduction to risk analysis:
Overview;
Terms and tools in risk analysis;
Simple methods of risk analysis;
- pay-back period;
- worst case scenarios;
- sensitivity analysis.
- 12:30 - 14:00 Lunch break.
- 14:00 - 18:30 Visiting fruits farms of Kiambu district.
- 20:00 - 21:30 Games of experimental economics.

Thursday, October 3

- 08:00 - 10:00: Multi-period analysis of fruit trees, including risk:
- NPV;
- annuity;
- optimal life span;
- pay-back;
- switching values;
- worst case scenarios.
- 10:00 - 10:30 Coffee break.
- 10:30 - 12:30 Multi-period analysis:
- continue -
- 12:30 - 14:00 Lunch break.
- 14:00 - 16:00 Multi-period analysis:
- continue -
- 16:00 - 16:30 Coffee break.
- 16:30 - 18:30 Multi-period analysis:
- continue -

Friday, October 4

- 08:00 - 09:45 Planing of future activities.
- 09:45 - 10:00 Coffee break.
- 10:00 - 12:00 Presentation of results to the group and invited guests.
- 12:00 - 13:00 Lunch break.
- 13:00 - 14:00 Presentation of results to the group and invited guests.
- 15:00 - 15:30 Closing of the workshop.
- 15:30 - 16:00 Evaluation of the workshop.

Table: Evaluation of approach.

The method gives useful data - both to the farmer and extension agent.	Analysis useful to farmers' existing and future (planned) projects.
The approach is good but it requires a group of farmers with common interests or problems.	Appreciated by farmers as they also benefit from the outcome - economic analysis.
Needed more time and funds to be able to collect complete data.	Data collection approach was okay.
Data collection boring to farmer and may not give sincere information.	Data collected useful to other farmers for planning.
For each farmer the officer needed to visit the farm at least three times, i.e.: 1st visit: make an appointment with the farmer, explain the farmer the purpose of the visit and make a check list. 2nd visit: carry out the interview. 3rd visit: review the data.	The approach creates a long-time commitment and therefore constant future follow-ups are necessary. There is the need to introduce TAs to the program.
Drawing of farm plan not easy, it has to be accurate.	Off-farm income: not easy provided as farmers don't understand its use in planning.
Farmers expect something always not only giving information. Therefore difficult.	Considering the other office activities 5 farmers were too ambitious to collect data exhaustively.
Income related issues are not frankly answered as it is considered private.	Identifying needy farmers was not easy.
The information from office was slow hence there was some rush.	The ITFSP responded very late which made the whole exercise very congested.
Allowances + fuel provided assisted in data collected, but came late.	

Table: Planning of future activities

Data collection		Training/information	Linkages
Further assistance to follow-up farmers visited.	Results of collected data distributed to farmers.	Facilitate on com-puter training for ease of data analysis.	Liase more closely with other projects involved in farm planning.
Future follow-up workshops to be held in specific districts where the farming systems analysis and farm visits are conducted.	Distribute informa-tion to other farmers not represented in the data collection.	Need for computer training.	Project to work closely with officers at divisions & locations to ensure reliable information is obtained.
Collect more data from more farmers to make conclusive recommendation.	Train farmers on record keeping.	Avail computers, manuals for computer application and/ or the MS-Excel program to districts.	Facilitate a tour to German farms to appreciate the need of good farm planning.
Incorporate other enterprises in planning (whole farm approach).	More farmers to be equipped with farm planning tools, so that they can be able to analyse and use the analysis without much assistance.	Facilitation of docu-mentation of farm mgt. analysis (guidelines) in various districts (provide computers).	Data passed to research station for research work.
A consistent follow-up on objective data collection and analysis is essential. This is to provide specific docu-mented analysis to specific areas (districts).	Identify contact farms as major sources of data for implementation of recommendations to ascertain use of analysis.	Provide technical information on fruit growing to farmers & officers.	
Collect data on all tree crops including coffee, tea, maca-damia, etc.		Pass skills acquired to other officers who are constantly in touch with farmers.	
To get accurate and reliable data monitor and collect data from the farmers for at least one year.		Train officers in problem identifica-tion and quantifica-tion. This forms the basis of data collection.	
Data collection should be based on a parti-cular objective.		Train DHO's and DAO's to facilitate.	

Forms used for farm analysis

