

**AN ASSESSMENT OF DIFFERENT PARTICIPATORY
DISSEMINATION APPROACHES IN AGRICULTURAL
DEVELOPMENT IN WESTERN KENYA WITH SPECIFIC
REFERENCE TO EMUHAYA DIVISION
OF VIHIGA DISTRICT //**

**BY
KETRAY OKUSI**

**THESIS SUBMITTED TO THE INSTITUTE OF AFRICAN STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARTS IN ANTHROPOLOGY OF THE
UNIVERSITY OF NAIROBI**

**UNIVERSITY OF
INST. OF AFRICAN
LIBRARY**

MAY 2002

University of NAIROBI Library



0444792 6

DECLARATION

This is my original work and has not been presented for a degree in any other university.


Ketray Okusi

24/6/02
Date

This thesis has been submitted with my approval as a university supervisor.


Prof. Simiyu Wandibha

25/06/02
Date

DEDICATION

In memory of the late Dr. Patrick Sikana,
formerly of Tropical Soil Biology and
Fertility (TSBF) programme of UNESCO
who offered me the basic foundation and
moral encouragement for this work.

TABLE OF CONTENTS

LIST OF TABLES	iv
LIST OF PLATES	v
LIST OF MAPS	v
LIST OF FIGURES	v
ACKNOWLEDGEMENTS	vi
ABSTRACT	vii
ACRONYMS AND ABBREVIATIONS	ix
CHAPTER 1: INTRODUCTION	
1.1 Introduction	1
1.2 Statement of the problem	4
1.3 Objectives	6
1.4 Rationale	6
1.5 Scope	7
1.6 Limitations	7
CHAPTER 2: LITERATURE REVIEW	
2.1 LITERATURE REVIEW	8
2.1.1 Inventory of different participatory approaches	8
2.1.2 Shared principles of participatory approaches	9
2.1.3 Evolution, development, application and drawbacks	11
2.1.4 Towards harmonization of the approaches	19
2.2 THEORETICAL FRAMEWORK	19
2.3 Assumptions	21
2.4 Definitions of key terms	21
CHAPTER 3: METHODOLOGY	
3.0 INTRODUCTION	23
3.1 RESEARCH SITE	23
3.1.1 Physical features	26

3.1.2	The people and their environment	26
3.1.3	Population	26
3.1.4	Agriculture	26
3.1.5	Infrastructure	27
3.2	SAMPLING	28
3.2.1	Population universe	28
3.2.2	Sampling procedure	28
3.2.3	Study sample	29
3.3	Methods of data collection	29
3.3.1	Structured and semi-structured interviews	29
3.3.2	Key informant interviews	30
3.3.3	Focus group discussions	31
3.3.4	Direct observation	32
3.3.5	Case studies	32
3.3.6	Secondary sources	33
3.4	Methods of data analysis	33
3.5	Problems encountered and their solutions	33
3.6	Ethical considerations	34

CHAPTER 4: DISSEMINATION APPROACHES USED IN EMUHAYA DIVISION

4.0	INTRODUCTION	35
4.1	Characteristics of sample population	35
4.2	Dissemination approaches/tools	37
4.3	Influence of approach on adoption	51
4.4	Improvement of approaches	52
4.5	Integration of approaches	52
4.6	Research	53
4.7	A summary of the approaches	54
4.8	Case studies	55

CHAPTER 5: DISSEMINATION APPROACHES

USED ELSEWHERE BY THE STAKEHOLDERS

5.0	Introduction	58
5.1	Farmer field schools (FFS)	58
5.2	Participatory learning and action research (PLAR)	64
5.3	Training resource persons in agriculture for community extension (TRACE)	67
5.4	Participatory approach to farm management (PARTIFARM)	71
5.5	Catchment approach	75
5.6	Linkages between approaches used in Emuhaya and elsewhere	77

CHAPTER 6: SUMMARY AND CONCLUSIONS

6.0	INTRODUCTION	78
6.1	Summary	78
6.2	Unification factor	82
6.3	Interrelational aspect	82
6.4	Integration of approaches	83
6.5	Conclusions	83
6.6	Recommendations	85
	Bibliography	87
	Appendices	89
	Appendix I: Farmers' Questionnaire	89
	Appendix II: Officers' Key Informant Interview Guide	94
	Appendix III: Farmers' Key Informant interview guide	95
	Appendix IV: Guide for FGDs in Emuhaya division	96
	Appendix V: Guide for FGDs in other areas	97

LIST OF TABLES

Table 4.1	Distribution of farmers by age	35
Table 4.2	Number and percentage of respondents by education	36
Table 4.3	Church denominations	37
Table 4.4	Number and percentage of respondents belonging to different community based groups	37
Table 4.5	Frequency of officers' attendance of group meetings	38
Table 4.6	Effectiveness of group approach	38
Table 4.7	Frequency of visits by research /extension officer	39
Table 4.8	Lessons learned from on-farm visits	39
Table 4.9	Effectiveness of on-farm research	40
Table 4.10	Effectiveness of training and visit approach	41
Table 4.11	Field days attendance in the last one year	41
Table 4.12	Effectiveness of field days	42
Table 4.13	Effectiveness of barazas	42
Table 4.14	Effectiveness of farmer to farmer extension	43
Table 4.15	Constraints that hinder inter farmer sharing of knowledge	44
Table 4.16	To improve effectiveness of approaches	52
Table 4.17	Integration of approaches for better results	53
Table 4.18	Reason for short/long term research	54
Table 4.19	Summary of farmers' response to various approaches	54

LIST OF PLATES

PLATE 5.1:	A farmer field school in session, FFS approach in Busia district	59
PHOTO 5.2:	A farmer (with child) identifies maize smut disease, FFS approach in Busia district	64
PLATE 5.3:	A farmer and her grandchild stand in the foreground of a healthy crop of maize, PLAR approach, in Kakamega district	67
PLATE 5.4:	A farmer stands in the foreground of a well-utilized retention ditch, catchment approach	76

LIST OF MAPS

MAP 3.1:	Location of data collection areas in Kenya	24
MAP 3.2:	Location of research site in Vihiga district	25

LIST OF FIGURES

FIGURE 2.1:	Conceptual model of the theory	21
-------------	--------------------------------	----

ACKNOWLEDGEMENTS

I acknowledge with gratitude all those who, directly or indirectly, enabled this thesis to be a success. In particular I thank the Tropical Soil Biology and Fertility (TSBF) Programme of UNESCO for offering me a scholarship to pursue further studies at the University of Nairobi.

I am greatly indebted to my supervisor, Prof. Simiyu Wandibba for his invaluable suggestions and constructive criticism during the field work and thesis writing. I am also greatly indebted to Dr. Francoise Verdeaux, of ICRAF Headquarters, who went through my proposal and offered me invaluable comments.

I wish to express my sincere gratitude to Mrs. Rachel Gomba of United Nations Environmental Programme (UNEP), Nairobi, for her continued support and encouragement through out the entire period of my studies. I am extremely grateful to my father Mr. Jairus Okusi and my late mother, Violet Okusi, for showing great interest in my work and lending me a hand whenever possible. I cannot fail to mention the unrelenting support that I have received from my husband Mr. Keizi Kisia and my children, Adrian and Audrey. You are such a source of inspiration to me.

Finally, special thanks go to all individual farmers, groups, extension officers, researchers and scientists without whose cooperation this work would never have materialized.

ABSTRACT

This study looked at seven participatory approaches which are employed by the various stakeholders in disseminating information to farmers in western Kenya. These include community based participatory approach, participatory agro-ecosystem management, catchment approach, farmer field schools and participatory learning and action research. The others are training resource persons in agriculture for community extension and participatory approach to farm management.

The study provided answers to the three major questions. The first one was, what are the participatory approaches that exist in Emuhaya division of Vihiga district in Western Kenya? The second question was, what are their strengths and weaknesses? On the other hand, the final question was, could they be harmonised to come up with the most useful ones in the context of Emuhaya division? The major objective of this study was to assess the effectiveness of the different participatory approaches in agricultural development in Emuhaya division of Vihiga district. Specifically the study inventorised the three participatory approaches used in Emuhaya division of western Kenya. The study also investigated the strengths and weaknesses of the various approaches. Finally, the study recommended and suggested approaches which that could be most useful in the context of Emuhaya division.

The main method of data collection was interviewing. The researcher used a questionnaire, which was administered to respondents. She also carried out FGDs and key informant interviews. Direct observation was used to link up knowledge and practice. The researcher also carried out four case studies. Data was presented in the form of percentages and frequencies.

The study revealed that, first, community-based groups are a good entry point for effective information dissemination. Secondly, farmers should be empowered and enlightened to learn more from station activities. Third, farmers do not actively seek for

information; therefore, they should be enabled and supported in this venture. Fourth, there is need to involve farmers in all the four stages of research, namely, problem identification, planning, implementation and evaluation. Finally, research and development agencies need to move from supply driven research to demand driven research.

The study came to the conclusion that a combination of two approaches, namely, farmer field schools and catchment approach, could be the most suitable in the dissemination of agricultural information in Emuhaya division. The strengths of the approaches could be banked on and the weaknesses addressed for effective and / or efficient information dissemination. The study thus recommends that, first, research and development agencies need approaches that can improve farmers' ability to innovate and efficiently manage their resource base. Secondly, research and development agencies should seek to appreciate and understand social relationships and structures in the society in relation to agricultural management issues. Third, there is need for publications and a communication strategy to spread information effectively and efficiently. Fourth, there is need to explore various constraints and existing opportunities and assess the farmers' resource levels with farmers' full participation. Finally, research and development agencies, should change their notion from inducing and motivating people to enabling, supporting and employing them to make decisions.

LIST OF ACRONYMS AND ABBREVIATIONS

AEA	Agro-economic Analysis
AHI	African Highlands Initiative
AESA	Agro-economic Systems Analysis
ARF	Adaptive Research Farmer
CBPA	Community-based Participatory Approach
DALEO	District Agricultural Livestock Extension Officer
FFS	Farmer Field Schools
FGDs	Focus Group Discussions
FSR	Farming Systems Research
GR	Green Revolution
GRP	Group Resource Person
ICRAF	International Centre for Research in Agroforestry
IDRC	International Development Research Centre
ISFM	Integrated Soil Fertility Management
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
LMC	Locational Management Committee
MOARD	Ministry of Agriculture and Rural development
NGO	Non -Governmental Organization
OFCOR	On-farm Client Oriented Research
OSR	On-Station Research
PAM	Participatory Agro-ecosystem Management
PLAR	Participatory Learning and Action Research
PRA	Participatory Rural Appraisal
PTD	Participatory Technology Development
RAAKS	Rapid Appraisal of Agricultural Knowledge Systems
R & D	Research and Development
RFM	Resource Flow Map

RRA	Rapid Rural Appraisal
SLMC	Sub-locational Management Committee
SRP	School Resource Person
TOT	Transfer of Technology
TRACE	Training Resource Persons in Agriculture for Community Extension
TSBF	Tropical Soil Biology and Fertility (Programme)
T & V	Training and Visit
UNCED	United Nations Commission on Environment and Development.
VAP	Village Agricultural Promoter

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study assessed the different participatory dissemination approaches in agricultural development in Western Kenya with specific reference to Emuhaya division of Vihiga district. The researcher interviewed farmers in Ebusiloli sub-location of the division. Other sites included Ebukhaya sublocation in Emuhaya division, Rachuonyo division in Homa Bay district and Shinyalu division in Kakamega district. Other sites were Sabatia division in Vihiga district and Butere division in Butere - Mumias district.

It was necessary for the researcher to collect data from other sites because the project was an evaluation study which was funded by TSBF project (UNESCO). The researcher was to evaluate seven approaches that were being employed by various stakeholders to disseminate agricultural information and techniques. Since only three approaches were being employed in Emuhaya she had to go to other areas where the other approaches were in use.

The seven approaches that were assessed include participatory agro-ecosystem management (PAM), community based participatory approach (CBPA), and catchment approach. Others are farmer field schools (FFS), participatory approach to farm management, participatory learning and action research (PLAR) and training resource persons in agriculture for community extension (TRACE).

Assessment in this study refers to the process of judging the quality, importance or worth of the various approaches. To be able to achieve this, the researcher looked at the strengths and weaknesses of the various approaches. On the other hand, participatory has to do with taking part or having a share in an activity or an event, that is, it has to do with participation. According to Guijt and Veldhuizen (1998:7) participation requires building a process of discussion, communication and conflict resolution which by necessity evolves out of the specifics of the local context. However, the term participation constitutes a vast and complex field; the concept is in itself rather general and vague, and it has come to mean different things for different individuals and institutions (Tobisson and Rudqvist, 1992: 21).

According to Schaffer 1989 (cited by Silito, 1998), participatory approaches seek a more systematic accommodation of indigenous knowledge in research on technological interventions. These approaches initially arose out of an acceptance by some agricultural professionals that their insight into local processes of analysis, decision-making and innovation in any project depends, to a high degree, on the character and methods of planning. Most development planning and programming are carried out by government agencies with none or very little participation by the people or intended beneficiaries whom the planned activities are going to affect. Silito (1998: 225) questions how people can be expected to participate when they do not know, scientifically speaking, what the alternatives are. However, Cernea (cited in Tobinsson and Rudqvist 1992) posited that popular participation in rural development programmes is more myth than reality.

According to Guijt and Veldhuizen (1998:3), many typologies of participation have sprouted in the last five years. This study recommends useful approaches that the various practitioners might wish to strive towards. This will ensure proper and effective dissemination of agricultural information and technology.

However, according to Tobinsson and Rudqvist (1992:29) participation is an absolutely necessary requirement for resource management. Local people who experience the effect of environmental degradation must be trusted to identify their needs as well as their potentials and constraints to solve their own problems.

Dissemination refers to the act of spreading widely of ideas or news. In this study the ideas are mainly concerned with agricultural technology. The information is communicated from the source to the user. This process has to be a two-way channel where all actors are involved. In this case the actors are farmers, extensionists and researchers.

Approaches refer to methods of doing something or dealing with a problem. The term approaches here is used synonymously to mean strategies, models, or methodologies. The study looked at seven approaches used to disseminate information by the various stakeholders. These include community based participatory approach, catchment approach, farmer field schools and participatory learning and action research. Others are training resource persons in agriculture for community extension and participatory approach to farm management. The researcher looked at the approaches, their strengths and weaknesses, and then recommended approaches that could be most useful in the context of Emuhaya division.

The term agriculture is used generally to mean the science of farming. It encompasses livestock rearing and crop farming. Agriculture consists of four phases, namely, crop, livestock, off-farm enterprises and household maintenance activities (Norman and Baker, 1986:40). There are three factors of production in agriculture, namely, land, labour and capital. The farm (system) is viewed in a comprehensive manner. A farming system adopted by a given farming household results from allocation by its members of the three factors of production to the four processes (above). This should be done in a manner that within the knowledge the farmers possess, they will maximize the attainment of their goals. The means of livelihood and households are intimately linked and cannot be separated (Norman and Baker, 1986:41)

The main agricultural activities in Emuhaya are cash and food crop farming, horticulture and animal husbandry. The main crops grown are French beans, maize, cassava, beans and sweet potatoes. Fruits commonly grown in the division are bananas, paw paws, mangoes, passion fruits and quavers. The livestock reared include goats, sheep and cows.

Development refers to the integration of a new technology into an already on-going process. Tobisson and Rudqvist (1992:21) observe that at present there are at least as many approaches to participation as there are agencies declaring that participation and development is on their agenda.

Guijt and Veldhuizen (1998:13) assert that many of the approaches can be and have been extremely useful in the farm based agricultural development process. However, each has its own limitations. Therefore, it is not a matter of opting for one or the other “acronym” but rather of understanding the existing approaches and constructing a good combination of methods to suit each new situation.

Stakeholders in this study refer to NGOs, government ministries, institutions, international agricultural research centres (IARCs) and other research and development agencies that may have a stake in disseminating agricultural information. The stakeholders that this study dealt with included the Kenya Agricultural Research Institute (KARI), Kenya Forestry Research Institute (KEFRI), International Centre for Research in Agro-forestry (ICRAF), Tropical Soil Biology and Fertility (TSBF) programme of UNESCO, Ministry of agriculture and rural development (MOARD) and CARE (K).

The African highlands initiative (AHI) is a partnership of research and development (R&D) agencies that are drawn together to assist communities in the intensively cultivated, diverse and

complex highlands in East Africa to improve land husbandry. The specific target are the small, resource poor families who are managing agricultural land having poor and declining productivity. One of the main tasks of AHI is to ensure that approaches developed and piloted to be used in research and development, integrate different technical and social disciplines, thereby increasing the resource users' capacity to innovate and manage their resources. In this regard the researcher carried out the study to assess the various approaches and recommend the ones that can be most useful in the context of Emuhaya division. The AHI site in Emuhaya covers one sub-location, namely, Ebusiloli that is in North-east Bunyore location. There were two approaches being employed in the research site, namely, community based participatory approach (CPBA) and the participatory agro-ecosystem management approach (PAM). Therefore, to be able to carry out a comprehensive study, which would include the other approaches applied by the other stakeholders, the researcher went to the sites where those approaches were being implemented.

1.2 Statement of the problem

This study assessed the different participatory dissemination approaches in Western Kenya with specific reference to Emuhaya division of Vihiga District. This topic was investigated because there are a multiplicity of approaches that are employed in Emuhaya division by various stakeholders. No single study has been carried out to find out exactly how many approaches are in use, what their strengths and weaknesses are and how they could be harmonised. The problem here is that the farmers have technical information but they do not adopt the technologies. It is on the basis of this argument that this study was carried out. Since the late 1950s there has been a proliferation of participatory approaches to agricultural research and development. However, Guijt and Veldhuizen (1998:1) argue that while initially providing much needed innovation, practitioners have become increasingly confused and critical about the mushrooming number of approaches claiming validity through 'participation'.

Rhoades (1989:4) asserts that the diversity of approaches gives the impression that much of agricultural research and development is cosmetic, faddish and without direction. Some of these approaches are clearly seductive in their appeal for overcoming the shortcomings of earlier approaches. Whether or not the new direction is labelled a fad seems closely tied to one's personal and disciplinary movement.

Enthusiasm for a new approach grows from its antecedents and is moulded by the broader socio-political environment. Since experience depends on socio-political environment changes, both donors and scientists make new assumptions about proper approaches in agricultural research and development (Rhoades: 1989:4).

Those who advocate for certain approaches, especially the new ones, oppose the earlier approaches. This leads to the never-ending debate of the 'old' versus the 'new'. The 'old' always argues that the 'new' is not so new while the "new" fiercely defends what it perceives to be "insurgent research" and the wave of the future.

The problem here is that, probably, agricultural researchers and developers spent too much time pointing out the shortcomings of those approaches which are of their disciplinary or topical interest. Rhoades (1989: 4) argues that much time should be spent reflecting on how much the various approaches can fit together. Abbott and Guijt (1997) assert that no single approach is convectional. They therefore advocate for increased use of combinations or merging of methodologies.

Recent critical debate about participation, what it is and is not, what it is and could be, has helped greatly in breaking down the simplicity that often accompanies its synonym for good development or equitable benefits. For example, Booth and Cornwall *et al.* (cited in Guijt and Veldhuizen, 1998) argue that only a few of the participatory approaches deal in-depth with the political, personal and institutional challenges of a 'deep and wide' participatory process.

The approaches used in Emuhaya are a problem worth investigating. This is because it is not yet clear exactly how many approaches are applied in the division by the various stakeholders. There is need to find out what has really happened on the ground since the incorporation of the various approaches, and whether the approaches have had any impact on the farmers' perceptions and practices. In addition, many research and development institutions working in western Kenya are using different approaches to disseminate information to farmers. The stakeholders that are concerned with the information dissemination in Emuhaya found that despite the information being disseminated to farmers, they (farmers) were not adopting the new techniques. The problem here had to do with the approaches that were being applied in the research area. Emuhaya division lags behind in agricultural development because there is lack of participation by local people and because of this innovations do not find appropriate channels of communication. This study, therefore, was to act as a prudent starting point by

taking an inventory of approaches that are employed by the various stakeholders in order to identify their strengths and weaknesses. The study has elaborated and implemented suitable dissemination approaches for Emuhaya. The study, therefore, intended to get answers to the following questions:

- 1) What participatory dissemination approaches exist in Emuhaya division?
- 2) What are the strengths and weaknesses of these approaches?
- 3) Could the approaches be harmonised so as to come up with the most useful in the context of the division?

1.3 Objectives

The major objective of this study was to assess the effectiveness of different participatory dissemination approaches in agricultural development in Western Kenya with specific reference to Emuhaya Division of Vihiga District. Specifically, the research attempted to:

- 1) Inventorize all the participatory approaches in Emuhaya division.
- 2) Find out the strengths and weaknesses of the various approaches.
- 3) Suggest and recommend approaches, which could be most useful in the context of Emuhaya division.

1.4 Rationale

The subject of this study should be of importance to research institutions, non-governmental organizations, government ministries and other stakeholders concerned with dissemination of agricultural information and technology. Researching on the strengths and weaknesses of various approaches could enable the study to harmonize the existing approaches and, therefore, recommend the most useful approaches for Emuhaya division. This would ensure proper and effective dissemination of agricultural information and technology and thus development. Another reason for researching on the above topic is that very little work has been done on the effectiveness of the different approaches in Vihiga district and particularly in Emuhaya Division. This study, therefore, contributed to any information that exists which future scholars could draw upon for reference.

The findings of this study will be presented to all the stakeholders: MOARD, KARI, KEFRI, ICRAF, CARE and TSBF (UNESCO). Hopefully, the recommendations will be implemented to benefit people (farmers) at the grass root level where the study was conducted.

1.5 Scope

This study is part of the Tropical Soil Biology and Fertility (TSBF) project on “Improving integrated nutrient management strategies in small scale farms in Africa”, under the auspices of the International Development Research Centre (IDRC). The main objective of TSBF, under the African highlands initiative (AHI) umbrella, is to ensure that small scale farmers improve agricultural productivity while sustaining their resource base in the intensively cultivated, complex, and diverse highlands of East Africa. In order to achieve this goal, there are a number of approaches that the various stakeholders employ in their efforts to disseminate information to the farmers. This study looked at seven approaches, their strengths and weaknesses and recommended approaches that could be most useful in the context of Emuhaya division.

1.6 Limitations

This study had two major limitations. The first one lies in the fact that the researcher was not able to collect all substantive data from the Emuhaya African highlands initiative (AHI) research site because only three of the seven approaches to be researched were in application. It was, therefore, necessary to go to other locations of Emuhaya division, other divisions and districts in western Kenya where the various stakeholders have projects so as to get comprehensive data. This was a limitation in that the researcher ended up collecting most of the data from areas, which were not initially intended to be part of the research site.

The researcher only interviewed officers and farmers concerned with the approaches relevant to the study. In addition, it was not possible to interview farmers and officers outside the project for the purposes of comparison and contrasting of responses. This was mainly due to the nature of the topic. It was necessary to get information, specifically on the seven approaches discussed in the study. This meant that responses from a farmer or officer who was not conversant with any of the seven approaches would not be really appropriate.

Secondly, the study was limited to one sub-location of Emuhaya division, namely, Ebusiloli sub-location of North-East Bunyore that is the African Highlands Initiative (AHI) research site. This was a limitation in that the findings may not be replicated in other sublocations of the location.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviews the pertinent literature on the basis of the specific objectives of the study. Apart from reviewing the literature, the chapter also discusses the theoretical framework. Finally, the chapter outlines the assumptions and defines the key terms.

2.1 Literature review

This section is divided into four parts. These are inventory of different participatory approaches, shared principles of participatory approaches, evolution, development, application and drawbacks, and towards harmonization of the approaches.

2.1.1 Inventory of different participatory approaches

There are as many approaches to participation as there are institutions. In most of these approaches, local participation is often limited to providing information to researchers and extension agents. The analysis of this information then generates solutions which farmers are expected to approve and apply. However, other participatory approaches have brought radical changes to agricultural research and extension by focussing on empowerment and adult learning. Many of the approaches have drawn on techniques developed over a four decade period of community development (Guijt and Veldhuizen, 1998:2). The approaches come with various acronyms. Guijt and Veldhuizen (1998:3) came up with a list of thirty-one participatory approaches used in agricultural research and extension that have been developed since the 1970s. In alphabetical order they are as follows: agro economic analysis (hereafter abbreviated as AEA), beneficiary assessment, citizen juries and community indicators. Others are development education leadership teams (DELTA), diagnosis and design (D & D), farmer participatory research and future search. Approaches that start with the concept participation include participatory analysis and learning methods (PALM), participatory action research (PAR) and participatory innovation development and diffusion (PIDD). Others are participatory research methodology, the famous participatory rural appraisal (PRA), participatory rural appraisal and planning (PRAP) and participatory technology development (PTD). Other approaches include planning for real and process documentation.

Approaches that start with the term rapid are as follows: rapid appraisal (RA), rapid assessment of agricultural knowledge systems (RAAKS), rapid assessment techniques (RAT), rapid catchment analysis (RCA) and rapid food security assessment (RFSA). Others are rapid multi-

perspective appraisal (RMA), rapid organizational assessment (ROA) and rapid rural appraisal (RRA). Other approaches include *samuhik brahman*, a Nepalese term which stands for joint trek and soft systems methodology (SSM). There are also the technology of participation (TOP), theatre for development training for transformation and visualization in participatory programmes (abbreviated as VIPP).

Other approaches cited elsewhere, for instance by Rhoades (1989:8), include the green revolution and sustainability approach. Merill-Sands and McAllister (1988:1) have based their book on two approaches, namely, on-farm client oriented research (OFCOR) and on-station research (OSR).

Among the approaches used for extension in Vihiga district are participatory agro-ecosystem management (PAM), catchment approach, farming systems approach and the famous training and visit (T and V) cited by the District agricultural livestock extension officer (DALEO) in the stakeholders' report (1999:12). Approaches used in other districts by the various stakeholders include training resource persons in agro-forestry for community extension (TRACE) in Homa Bay District (previously used in Siaya district), which is being implemented by CARE (Kenya), an NGO based in Nyanza Province. Other approaches are participatory learning and action research (PLAR), which is implemented by ICRAF in Kakamega district and farmer field schools which are implemented by the MOARD in Busia and KEFRI in Butere-Mumias District. Others are learning process approach and top down approach (blue print), cited by Rudqvist (1990:3).

The approaches used for extension and information dissemination in Emuhaya division include catchment approach, participatory agro-ecosystem management approach and community based participatory approach.

2.1.2 Shared principles of participatory approaches

Despite the uniqueness of the approaches and the varying degrees of farmer participation, five key principles unite them. These are as follows: a sustained learning process, different perspectives in group-based analysis, key role for facilitators, systemic and methodological basis and context specific nature (Pretty *et al.*, cited in Guijt and Veldhuizen, 1998).

2.1.2.1 Sustained learning Process

Most participatory approaches aim at enhancing cumulative learning by participants. The process of learning and action has three outputs: identifying strategies for improvement,

motivating people to undertake these strategies and enhancing their capacity for solving problems (Guijt and Veldhuizen, 1998:6). For sustained innovation, farmers have to be involved as analysts and facilitators and not just informants or at best data collectors (Shah *et al.*, 1989: 84).

2.1.2.2 Different perspectives in group-based analysis

Most participatory approaches explicitly seek insights from and needs of different individuals or groups, which may be conflicting. All participatory approaches recognise that the complexity of local institutions will only be revealed through group analysis and action that can complement individual perspectives and needs. This comes from the wide realization that to learn well and plan effectively at a collective level (be it a farmer experimentation group or the wider community) needs a diversity of perspectives.

2.1.2.3 Key role for facilitators

Most participatory approaches share the principle of key role for facilitators. This comes from the realization that to seek out different perspectives, especially those of the socially marginalized, means challenging local traditions of communication and social interaction. Creating an environment in which people can share their ideas, knowledge and needs requires the support of a facilitator. This is often an outsider but increasingly a role taken by someone with a local stake in the process (Guijt and Veldhuizen , 1998:6).

2.1.2.4 Systematic and methodological basis

The facilitator is trained to create a structured process that looks at the problems being encountered from a systematic perspective and not just focussing on a narrow side of reality. Tobisson and Rudqvist (1992:22) identify three major dimensions in participation. These range from description to analysis and action. The first dimension refers to the different phases of the project cycle, namely, planning, implementation, monitoring and evaluation. The second dimension refers to the different project functions or tasks such as construction, operation, maintenance and management. On the other hand, the last dimension relates to the level or degree of participation, implying varying degrees of decision-making and control with respect to project resources, functions and benefits.

2.1.2.5 Context specific

Participatory approaches emphasize flexibility in application. This is because of the inevitable uniqueness of social and physical conditions. Participation requires building a process of

discussion, communication and conflict resolution which evolves out of the specifics of the local context. Although methods might be similar from one situation to the next, the particular combination and sequence is not fixed. There is no set procedure to follow mechanically that can give a guaranteed outcome (Guijt and Veldhuizen, 1998:7).

2.1.3 The evolution, development, applications and drawbacks of the approaches

This section deals with components of farming systems, stages of agricultural research and development. It also focuses on evolution, development, applications and drawbacks of the various approaches.

2.1.3.1 Components of farming systems

As already mentioned in chapter one, there are four major components of farming systems. First, a farming system is comprehensive, in that it involves all the sectors of the household. Second, the environment in which the family operates determines a farming system in that the “total” environment in which the family operates includes technical and human elements. Technical elements determine what the potential farming system can be. The human element determines what the actual farming system, a subset of the potential defined by the technical element, will be. Third, the choice of priorities for research derives from an initial study of the whole farm and its environment. Finally, evaluation of research results explicitly takes into account linkages between subsystems.

2.1.3.2 Stages of agricultural research and development

Rhoades (1989:5) points out that agricultural research and development has moved through four stages each of which is characterized by its own approach. The first was the production stage (1950-75), which was characterized by the famous green revolution. The second stage was the economic stage (1975-85) characterized by the farming systems research. The third stage is the ecological stage (1985 – 95) characterized by the sustainability approach and, lastly, institutional stage which runs from 1995 to the present day and into the future, which is characterized by a multiplicity of approaches. He argues that each stage absorbs and synthesizes valuable new insights. For instance, the green revolution (GR) viewed farmers largely as recipients of the new varieties of the agro-chemical technology. Rhoades asserts that despite the shortcomings and journalistic hype that surrounded the GR, progress in increasing food output was made by breeders in both international and national programmes.

Chambers *et al.* (1989:5) argue that during the 1950s and 60s the GR was pulling India from the brink of starvation and throughout the Third World food production was rising. Despite this effort, the GR left many of the problems of resource poor farmers untouched. Part of the reason for this was that most research stations are situated on ideal land and do not represent stress situations. Therefore, technology which works well on the research station may be of no advantage to farmers on less well situated land.

2.1.3.3 Farming systems research (FSR) approach

According to Norman and Baker (1986) the farming systems approach and its subset activity farming systems research are products of the 1970s. They developed because of the partial or complete failure of other approaches to create technologies relevant for use by limited-resource farming families in relatively unfavourable environments.

Farming systems are composed of different sub-systems, namely, cereal growing, cash crop farming, horticulture and animal husbandry. The farming environment consists of larger systems of which the farm is only a part. Farming systems are particularly influenced by ecological or natural and socio-economic environment (Upton, 1987:7). Some officers from agricultural research institutions have carried out farming systems research, the prime objective of which has been to develop new improved farm level technology. There are four characteristics of farming systems research, namely, it is focussed on farm household, locale specific, holistic and is multidisciplinary.

According to Franzel *et al.* (1987: 1), farming systems research (FSR) and extension is an approach which enables agricultural research and extension to deal more effectively with the problems of agriculturists. FSR was developed in the 1970s in response to the observation that groups of small-scale farm families were not benefiting from mainstream agricultural research. It addresses the need for linkage among researchers, extension workers and farming systems. Farming systems are defined by their physical, biological and socio-economic setting and by the farm families' goals and other attributes, access to resources choice of production activities and management practices (Shaner *et al.*, cited by Franzel *et al.*, 1987:1).

Farming systems research is an approach to agricultural research and development that views the whole farm as a system. It focuses on the interdependencies between the components under control of members of the household and how these components interact with the physical, biological and socio-economic setting, not under the household control.

The major drawbacks of farming systems research are that it is costly and time consuming. The results of FSR programmes, which take several years to complete, may be out of date by the time they are produced (Upton, 1987:104). This implies that by the time such results are published they may be invalid and unreliable.

Chambers (1994b: 1442) points out that FSR faces problems because of the diversity, complexity and uncontrollability of many farming systems. There are limitations in the constitution of farming systems on the part of the researcher and extensionist and farmer involvement at planning is very low. Therefore, the concept of the farmer is not wholly embraced.

2.1.3.4 Agro-economic analysis (AEA) approach

Agro-ecosystem analysis (AEA), according to Conway (cited by Guijt and Veldhuizen, 1998), was developed in Thailand from 1978 onwards, initially at the University of Chiang Mai by Gordon Conway and his colleagues. It spread first through South-East Asia and later elsewhere. Drawing on systems and ecological thinking, it combines analysis of systems and systems properties (productivity, stability, sustainability, equitability) with analysis of space and time. The approach was further developed by Conway and others with the Aga Khan Rural Support Programme (AKRSP) for application in villages. AEA contributed much methodological innovation with its focus on visual analysis of patterns in space over time of resource flows and of decision making (Conway, cited in Guijt and Veldhuizen, 1998:1). AEA was so powerful and practical that it contributed much to PRA and RRA, for instance, transects and diagramming (Chambers, 1997:109).

2.1.3.5 Participatory rural appraisal (PRA)

Chambers (1992) defines participatory rural appraisal (PRA) as a growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions, to plan and to act. The essence of PRA, according to Chambers (1997:103) and Mascarenhas (1991:35), is changes and reversals of role behaviour, relations and learning: Outsiders do not dominate and lecture but facilitate, sit down, listen and learn. Outsiders do not transfer technology, but share methods which local people can use for their own appraisal analysis, planning action, monitoring and evaluation. They do not impose their own reality, they encourage and enable local people to express their own.

PRA was developed in the 1970s and 80s by professionals at Khon Kaen University (Khon Kaen University, 1987). In 1985, the term PRA was first applied in Kenya through the collaborative efforts of the National Environmental Secretariat of the Ministry of Environment and Natural Resources (MENR) and Clark University, USA, and in India through the work of the Aga Khan Rural Support Programme (ARSP) and the International Institute for Environment and Development (IIED) in London (McCracken, 1988).

Freire (1968) notes that PRA flows and owes much to the traditions and methods of participatory research, applied anthropology and field research on farming systems. There are several assumptions about PRA, all of which were inspired by Scoones (1995). The first one is that it is quick, easy and that anyone can do it. PRA also assumes that methods alone are enough, it has no theoretical basis and is therefore superficial. Thirdly, it is assumed to be a new invention and that older approaches are no good, that training will ensure its use. All these assumptions are, however, incorrect.

Though PRA has been adopted by hundreds of NGOs, development agencies and government departments (Rhoades, 1989), it has been criticized on several grounds. First of all the term rapid implies rushing, hence hurried rural visits by urban-based professionals. It has been used to legitimise brush and biased rural development tourism. It is insensitive to social context and hence, probably, the poorest are once again neither seen, listened to nor learnt from. This leads to misleading findings.

Pottier (1994: 61) criticizes the hurried farmer interviews conducted in Northern Zambia through PRA because farmer participation was not enhanced. Guijt and Veldhuizen (1998: 5) point out that the paradox of participation becomes clear where large groups form to create diagrams or maps. While seemingly encouraging a wider participation, most will remain on the margin and the most powerful will “participate”, not the poor, and rarely the women and children who will watch rather than speak.

PRA is not effective for examining institutional relations and change and scientifically acceptable statistical measurements (Abbot and Guijt, 1997: 27). Also, it ignores personal responsibilities, has a simplistic perception of social organization and has poor training (short-term basis). Vansteijn (1991) observes that due to these shortcomings, as PRA becomes widespread so it may degenerate. On the other hand, Sarin (1998) asserts that methods used by PRA by no means guarantee participation and open dialogue. For instance, the networks

systems, pie and impact diagrams, do not replace constructive debate and in some cases can obstruct them.

2.1.3.6 Rapid rural appraisal

The rapid rural appraisal approach became an alternative approach to analysing rural life and agricultural systems. It aimed to overcome the problems of generating much detailed data that were often of dubious quality due to non-sampling errors and obsolete by the time they were analysed (Guijt and Veldhuizen, 1998: 7).

Chambers (1994b: 1437) observes that RRA shares some of its principles with PRA. These include direct learning from local people, offsetting biases, optimising trade-offs, triangulating and seeking diversity. RRA is still used as an effective information-gathering approach for external professionals to learn about local people and conditions. Such information is an important input into planning that happens above the local level, for instance, setting national agricultural research agendas and when there is no time to engage in the more lengthy dialogue processes of PRA.

The RRA approach has also been criticized for carrying out hurried studies. Chambers (1994b) suggests that the first R of RRA and middle R of PRA would better be 'relaxed' than 'rapid'. This is due to the wide spread studies of low quality.

Despite these shortcomings, RRA is cost effective and has high validity and reliability; except when rushed, it is a good approach (Chambers, 1997: 112).

2.1.3.7 Top-down approach

The top down approach is also known as the blue print approach. It was originally developed from civil engineering. According to this approach, all important development planning decisions are made at central and regional levels. They are based on quantitative data or estimations and planning (as well as implementation), and follow a pre-conceived, fixed schedule. The targets of the plan are generally determined from the beginning of the planning process and expressed in numerical terms (Rudqvist, 1990:3). Most programmes in government and many large NGOs' have spread vertically from the top-down through central decision-making, official instructions and formal training (Chambers, 1994a: 1257).

The top-down approach is suitable for tasks such as road and bridge construction and other product-oriented activities. However, when it comes to social relations, structures and processes, its weaknesses become apparent. It has been criticized for making too extensive a use of quantitative methods and analysis into areas of investigation for which they are inappropriate. The advocates of the top-down approach tend to behave as if knowledge about reality was superficial and biased. The intended beneficiaries of projects are not involved in planning. This impedes the two-way communication between planners and people at the local level. It tends to impede any feeling of commitment and real participation on the part of the intended project beneficiaries (Rudqvist, 1990:3).

There is increasing realization that in order for agricultural innovations to succeed, the planners need to shift from top-down approach to bottom-up approach. Chambers *et al.* (1989:45) point out that recognition of farmers' knowledge and innovative capacity does not necessarily mean that they do not need extension services. Rather it points out the need to improve the interaction between the extensionists and local people to reverse and balance conventional top-down communication and to overcome gaps and miscommunication.

2.1.3.8 Transfer of technology approach

The transfer of technology (TOT) approach is based on the assumption that a large back-log of scientific information and technologies were stockpiled ready to be transferred (Chambers *et al.*, 1989:5). Farmers were treated as being not knowledgeable and, therefore, people who had to receive the technological packages from researchers and extensionists. They were not allowed to participate at any stage of the project. The strength of this approach is that it allows for staff training and so enhances their capacity to work in collaboration with researchers and farmers. However, the weaknesses of the approach are that it is rigid, does not allow for farmer participation and is not sustainable.

2.1.3.9 Learning process approach

The learning process approach is based on the principle of learning. It requires a long-term learning process involving both intended beneficiaries at the village level and project personnel. There are organizers or leaders who spent time in the project areas/sites, introducing ideas and proposals, trying them out, accepting errors and building larger organizations around what they learn. This approach has three-main stages, namely, learning to be effective, learning to be efficient and learning to expand (Rudqvist, 1990:21).

2.1.3.10 Group trek

The *Samuhik Bhraman* approach is derived from a Nepalese word which means a 'group trek'. The objective is to facilitate joint work by people from several agricultural disciplines. It also aims at interacting efficiently with local farmers in a limited target area to determine problems and constraints affecting predominant crops, livestock and forestry (Mathema *et al.*, 1986). The group trek has various advantages. These include cost-effectiveness, interdisciplinary and interdivisional nature and allowing for joint setting of site specific research priorities. The approach makes highly efficient use of scarce technical manpower and gives an equal opportunity to those who feel they should be involved in research decisions. Researchers like the technique because they enjoy the experience of combined trekking for the purpose of making farm level research more relevant. The trek places researchers and extension workers in physical contact with the reality of the farmers they are serving (Guilt and Veldhuizen, 1998:109).

2.1.3.11 Participatory approach to farm management

The approaches utilized in Vihiga district include participatory farm management and extension approach that utilizes three methodologies. These include farmer group training, exploratory survey and segmentation of enterprises. Participatory approach to farm management has several strengths, including rationalizing of farm resources at farm level, strong data collection and management. Other strengths include strong staff training and high motivation, participatory planning and implementation by stakeholders. The approach embraces whole farm concept analysis and can lead to development of commercial approach to agricultural farming. This approach is further discussed in chapter five.

2.1.3.12 Catchment approach

The catchment approach utilizes barazas, individual farmers, local leaders and farmer groups. Its major strengths lie in the fact that it targets all farmers, allows farmer participation, is very flexible and operates through a catchment team which is accountable. The approach, however, has problems of sustainability and low coverage, since it is suitable for high potential areas. The approach is further discussed in chapters four and five.

2.1.3.13 Training and visit approach (T&V) approach

The training and visit approach (T&V) is mostly used in agricultural extension by the Ministry of Agriculture, Research and Development (MOARD). It uses methodologies such as farm visits and route maps. The major advantage of T&V is that it has a wide coverage of farmers and integrates farm trials in extension. Its weaknesses are that it embraces top-bottom planning, and farmer participation is weak, as are monitoring and evaluation. The approach is not flexible and is not specific on targets.

2.1.3.14 Rapid appraisal of agricultural knowledge systems (RAAKS)

Rapid appraisal of agricultural knowledge systems (RAAKS) came up after RRA. The approach is designed to study especially the social organization of knowledge. It encompasses three stages, problem-definition, analysis of constraints and opportunities and action planning (Umans, 1997:11). The RAAKS methodology proved highly successful in bringing various actors together to discuss their problems, visions and views. The methodology allows for a creative use of tools and combines different approaches, and makes possible the analysis of power issues.

2.1.3.15 On-farm client oriented research (OFCOR)

On-farm client oriented research (OFCOR) is designed to increase the capacity of technology generation and transfer systems to respond effectively to the needs of sufficient client groups, most commonly resource poor farmers (Merill-Sands and McAllister, 1988:1). OFCOR complements and depends on on-station research. It involves a client-oriented philosophy, specific approach to research, a set of methods integrating trials and formal and informal surveys. As the principal clients of research, farmers are actively involved at various stages in the research process.

Although most strategies for incorporating or strengthening OFCOR within National Agricultural Research Systems (NARS) recognize the importance of integrating OFCOR and on-station research (OSR), this has been rarely achieved. The main drawback to OFCOR is that researchers can run into institutional and logistical problems when trying to develop a link between OFCOR and OSR. Collaboration between researchers working in OFCOR and OSR seldom occurs spontaneously. Active management is needed to develop effective and productive interaction.

The main strengths of OFCOR are that it takes a short term perspective and it strives to provide farmers with technology which they can feasibly adopt under existing conditions (Merill-Sands and McAllister, 1988:1). Farmer-farmer extension approach is increasingly being used by NGOs and government ministries. This is due to the realization that farmer-farmer interactions are as farmer to researcher interactions (Smutkupt, 1987). The role of the extensionist should be viewed as a facilitator promoting interaction between farmers, and the facilitator concept is very useful. The old idea of disseminating technology to the farmer from some island of expertise is, thus, being displaced by something more like a technology exchange with benefits on both sides.

2.1.4 Towards harmonization of the approaches

This section is concerned with how the various approaches discussed above could be harmonised for sustainability of the innovations. Having looked at their strengths and weaknesses, it is clear that no one approach can be considered as the best. The advocates of a certain approach may consider it as the most appropriate depending on the prevailing circumstances but it may not be applicable in another situation. Probably, a combination of approaches could come in handy.

Guijt and Veldhuizen (1998:26) compared PRA and PTD approaches. On their part, Merrill-Sands and McAllister (1988:60) point out that to appreciate the value of collegial interaction between OFCOR and OSR, it is necessary to increase opportunities for interaction between research officers and scientists. The effort has to be multidisciplinary or else the integration will not be possible.

It is essential to note that in all participatory approaches conflicts, disputes and tensions will be raised. Therefore, there is need to look at a way of reducing or limiting them. Today participatory approaches are characterised by rigidity, little innovation and lack of empowerment, but to be able to succeed we have to work towards the opposite of these features.

2.2 Theoretical framework

This study utilized systems theory. Systems theory is the product of a variety of scientific ideas imported into sociology from other fields, including cybernetics, information theory, operations research and economic systems (Lilienfield, cited by Ritzer, 1992:517). The concept of systems implies a holistic concern for the complex relations among many categories or

parts. A system is a conceptual construct made up of a set of categories and their mutual interrelations. Johnson (1978:22) regards a system as the description of reality, implied by a particular orientation, whether simplified or imperfect.

Systems theorists such as Bertalanffy (cited by Johnson, 1978) who use the term system write as though systems existed *per se*, awaiting discovery. They make a distinction between “real” or “natural” systems and “conceptual” systems. Johnson (1978) sees systems as only constructions of the analyst. This view is also supported by Meehan (cited by Johnson, 1978).

Dent and Anderson (1971:3) observe that the concepts of systems analysis have gradually emerged into an accepted body of theory. The systems view is a holistic one, which implies that an isolated study of parts of the system will not be adequate to understand the complete system. This is because the separate parts are linked in an interacting manner. A system implies a complex of factors that are interrelated. It implies that a conceptual boundary may be erected around the complex as a limit to its organizational autonomy.

Systems analysis is primarily involved with explaining the detailed structure and functioning of a system. In this study the whole complex of participatory approaches is viewed as a system, while the various approaches are viewed as the parts.

The main parameters of systems theory are as follows (See Figure 2.1.): first, it is a unifying process in that it is derived from the hard sciences. It is applied to all behavioural sciences. It unifies the various disciplines. Second, systems theory is multilevel, in that it can be applied equally to the largest and smallest scale, as well as to the most objective and subjective parts of the social world. Third, it is interested in the varied relations of the many aspects of the social world. The main argument of systems theory is that the intricate relations of parts cannot be treated out of the context of the whole. Fourth, the theory views all the aspects of the socio-cultural system in process terms, especially as networks of information and communication. Fifth, systems theory is inherently integrative in that it involves the integration of large-scale objective structures, symbol systems, action and interaction, consciousness and self-awareness (Buckley, cited in Ritzer, 1992:518) Finally, systems theory tends to view the social world in dynamic terms with an overriding concern for socio-cultural emergence and dynamics in general (Buckley, cited in Ritzer, 1992:519)

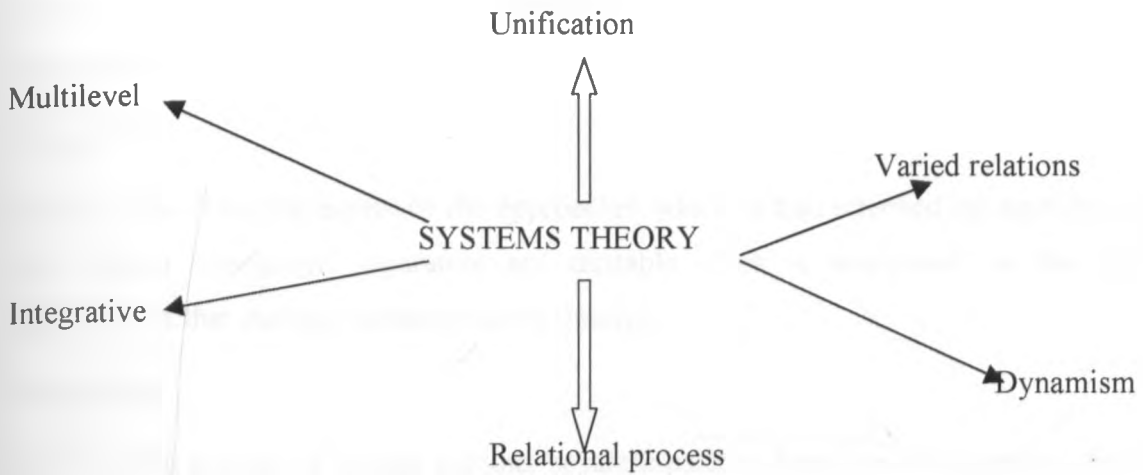


Figure 2.1: Conceptual model of systems theory

2.2.1 The relevance of systems theory to this study

Systems theory is relevant to this study because it is an integrating process. Systems analysis is conceived as an integrating framework where complex systems possibly involving several disciplines, could be studied. The approaches in this study have also been developed by various disciplines and, therefore, to harmonize them one has to study them carefully so as to find a way of integrating them. If the approaches are viewed as parts of a system then there will be joint efforts for a collective approach which will benefit all the stakeholders. The multidisciplinary and inter- disciplinary function is still of prime importance since major projects cannot be successfully handled within the confines of a single discipline.

2.3 Assumptions

This study was based on three assumptions:

- (1) The approaches provide a unifying factor to the various institutions that employ them.
- (2) The approaches are interrelated in the process of networking of information and communication.
- (3) The approaches could be integrated to come up with the most useful ones in Emuhaya.

2.4 Definitions of key terms

Some of the terms used in this study may have varied meanings and, so, by defining them, the investigator hopes to clear any confusion that might arise.

Unification

Refers to the process of causing a close and harmonious relationship between the various approaches.

Dynamism

Refers to the changing aspect of the approaches which is characterised by equilibrium of the parts which considered separately are unstable. This is evidenced in the continuous development that the approaches progress through.

Integration

Refers to the process of joining together separate parts to form a more complete, harmonious and comprehensive approach. These strengths include: participation, enablement, empowerment and sustainability.

Relational process

Refers to the aspect of viewing the various approaches as related in the process of networking of information and communication. The networking is done in a particular way to achieve specific results, which are to disseminate information and techniques to farmers. The farmers, then in turn test, adopt, implement, and sustain the learnt techniques.

Multilevel

Refers to the aspect of wide application, in that the approaches are suitable to both large scale and small-scale aspects of agriculture.

Varied relations

Refers to the fact that the intricate parts (the approaches) cannot be treated out of the whole, in that each approach is related to the other in a more or less stable way.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The focus of this chapter is on the research site, sampling techniques, methods of data collection and analysis. Problems encountered and solutions thereof and ethical considerations are also outlined.

3.1 Research site

This study was conducted in Emuhaya division of Vihiga district in Western Kenya. Other divisions in the district include Sabatia, Vihiga, Tiriki East, Tiriki West and Luanda. There are 21 sub-locations in the division. Emuhaya division borders Luanda division to the west, Vihiga division to the east, Kakamega district to the north and Kisumu district to the south (Maps 3.1 and 3.2) The division has four locations, namely, East-Bunyore, North-Bunyore, North-east Bunyore and Wekhomo location.

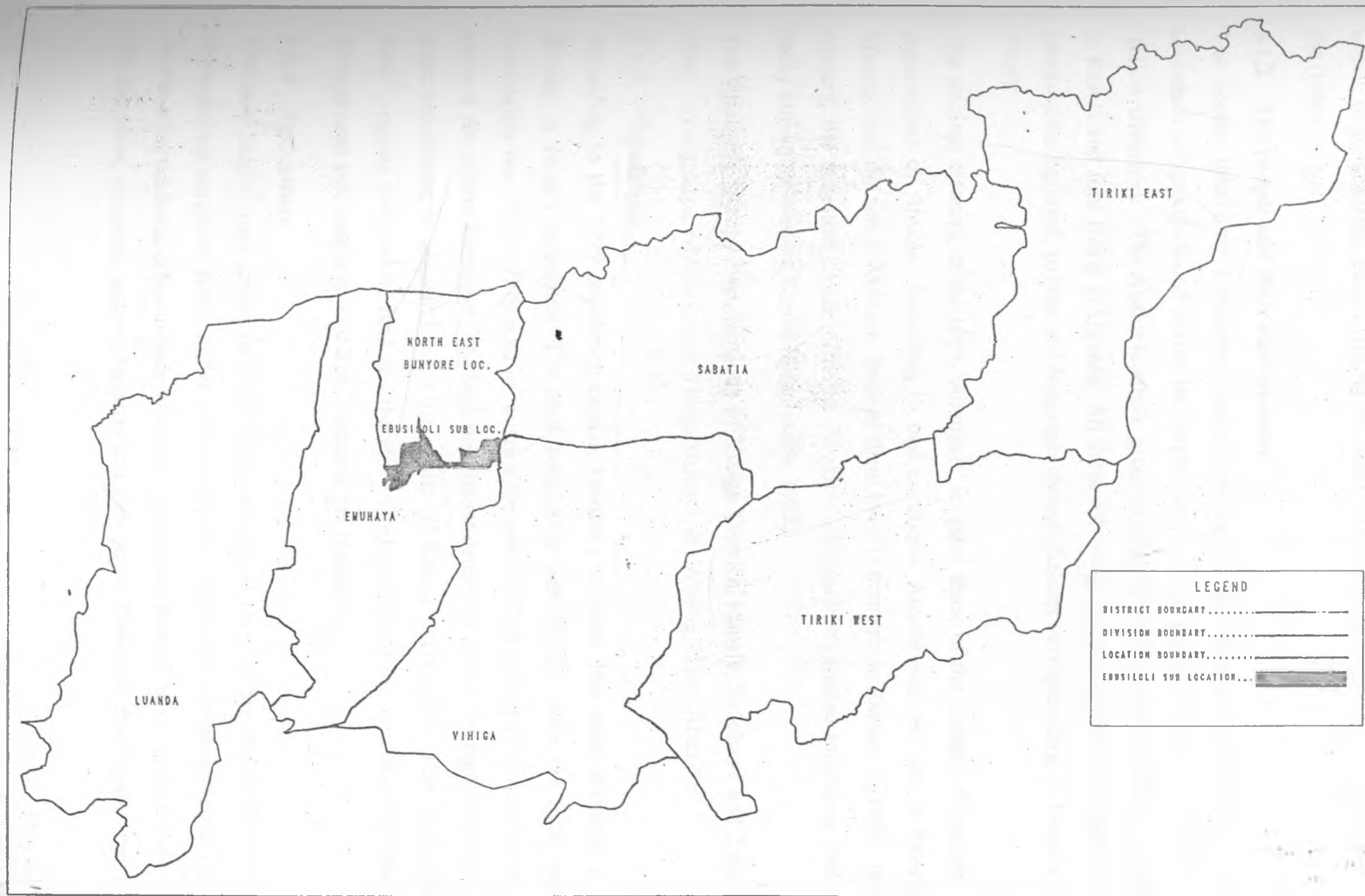
Emuhaya division was chosen as the study site because it is within the focus area for the International Development Research Centre funded project (IDRC) which sponsored this study. The sponsorship was done through the Tropical Soil Biology and Fertility (TSBF) programme of UNESCO. TSBF started its activities in Emuhaya division with one broad objective: "Improving nutrient management strategies in small-scale farms in Africa".

However, due to the fact that only two approaches were being used in the research site, namely, Community Based Participatory Approach (CBPA) and Participatory Agro-ecosystem Management (PAM), it was necessary to look at other approaches used by the various stakeholders in disseminating agricultural information in other locations of Emuhaya division, other divisions of Vihiga district and also in other districts of western Kenya. These include Matayos division in Busia district, Rachuonyo division in Homa Bay district and Shinyalu division in Kakamega district. Others were Sabatia division in Vihiga district, Butere division of Butere-Mumias district and Ebukhaya sub-location in Emuhaya division. This has enabled the study to come up with very useful data so as to elaborate and recommend a suitable dissemination strategy for Emuhaya division.



MAP 3.1: Location of data collection areas in Kenya

SOURCE: Map Consultants, Nairobi



MAP 3.2: Location of research site in Vihiga district
SOURCE: Map Consultants, Nairobi

3.1.1 Physical features

Emuhaya division is crossed by Rivers such as Watelo and Etsaba and other small rivers which, to some extent, enable fishing and sand harvesting, especially for people who live near the rivers.

3.1.2 The people and their environment

The people inhabiting Emuhaya division are known as 'Abanyole' which is one of the seventeen subgroups found within the larger Luyia ethnic group. The word Abaluyia means 'fellow tribesmen'. The Abaluyia ethnic group consists of seventeen sub-ethnic groups living in Kenya and four living in Uganda. All these sub-ethnic groups are alike in that they have a common background, culture and language, though dialects vary according to locality (Osogo, 1965).

The original meaning of the term 'Abanyole' implied those of the lineage of Anyole, that is, descendants of Anyole. According to oral traditions, Anyole was the son of Mwenje, and Mwenje was the son of Matiebo. Both of them lived in Bunyole in Eastern Uganda. In the 13th century, the ancestors of the different Abaluyia communities started migrating into what is today known as Western Kenya (Oma'asaba, 1997).

The Abanyole occupy two divisions in Vihiga District, namely, Emuhaya and Luanda. The other Luyia groups, which occupy Vihiga District, are Abalogoli and Abadiliji.

3.1.3 Population

According to the 1999 population census, Emuhaya division, like other divisions in Vihiga district, is thickly populated. The total population was 69,250 while the total number of households was 15,525. The area in square kilometres is 74.6 while population density is 928 persons per square kilometre. The high population density is due to the high birth rate and the great attachment to ancestral lands (Republic of Kenya, 2001a:235). This high population density causes pressure on land and therefore shortage of land for agricultural purposes. The average land size ranges from 0.2 to 2 hectares per household.

3.1.4 Agriculture

The main staple crops grown in the division throughout the year are maize and beans. Other crops include sorghum, finger millet, sweet potatoes, cassava and cowpeas. On the other hand, the main horticultural crops include tomatoes, onions and kales. The common fruits in the area are avocados, mangoes, guavas, bananas and paw paws. There are three cash crops grown in

the area, namely, French beans, tea and coffee. The division is not self-sufficient in food, and has to import from other growing areas of Nandi, Bungoma, Uasin Gishu and Trans Nzoia. Farmers in the area observe two planting seasons, during the long rains in February and during the short rains in September.

The division falls under the Lower Midland (LM1) agro-ecological zone. The soils in Emuhaya division are loamy sands, which have been derived from sediments and basement rocks. The soils are losing their fertility through leaching and over cultivation. This implies that there is need to undertake conservation measures to ensure sustainability of soil fertility. Gully erosion is also common in the division. This is mainly due to high rainfall and population pressure on land, which demands that any available unit of arable land be utilized for both food production and human settlement (Republic of Kenya, 1997:25). The rainfall amounts stand at around 1800 mm annually, which has a bi-modal pattern. Temperature ranges between 15 and 30 degrees Celsius.

The main livestock reared in the area are cattle, goats, sheep and poultry. These livestock provide households with meat, milk and eggs but a good percentage of them are indigenous. Cattle also have a great cultural significance in that they are used to pay bride wealth. They are also a sign of status and prestige.

According to the Republic of Kenya (1997:15) land use in Emuhaya division is limited by its size. Due to limited land sizes per household, the division does not have any extensive pasture land and most of the nappier grass fed to zero-grazed animals is grown along road reserves adjacent to individual farms. There should be emphasis on intensive production systems such as zero grazing and paddocking.

3.1.5 Infrastructure

Emuhaya division is served by the national trunk road (Nairobi-Kampala). It is also served by all-weather, special purpose and minor roads which connect the various locations and sub-locations. The division has one major post office at Esibuye and sub-post offices at Emusire and Magada. It has its own telecommunication exchange centre based at Bunyore Post Office. The major market in the division is Esibuye market. There are also small market centres, including Mwilonje, Magada, Mwichio and Mwiyekehe.

3.2 Sampling

Sampling has been a traditional technique in research design. This is because it permits a higher level of accuracy than the full enumeration of the entire population. This is explained by the fact that sampling allows for more quality research, editing and analysis of data.

Generally, samples are used to estimate true values. For quite practical reasons the coverage of samples other than the whole population saves time, labour and money (Benard, 1988).

3.2.1 Population universe

Population universe refers to all the units constituting the population that the investigator is interested in. In this study, the population universe included all the farmers in the TSBF project. The unit of analysis was the household while individual farmers acted as respondents. Farmers were interviewed in their households. This is because households, apart from being a permanent feature in the study area, show commitment to agriculture. It is at the household level that agriculture is carried out.

3.2.2 Sampling procedure

The sampling procedure adopted in this study was judgmental/purposive sampling. This sampling technique was used due to the small sample of farmers in the Emuhaya African Highlands Initiative (AHI) Project. The project has 60 farmers out of whom the researcher was able to interview 50. Three of the farmers in the project were not practising any activity during the period of data collection, four farmers had gone on trips and the other three were unavailable for interviewing. She also interviewed 10 key informants and then carried out four focus group discussions. In other divisions and districts the researcher also used purposive/judgemental sampling to obtain data. The sample for the latter was 50 respondents.

Purposive/judgmental sampling occurs when the researcher handpicks sample members to conform to some criteria. It is based on ones own judgement and purpose of the study. In purposive sampling there is no overall sampling design that tells how many of each type of informant one needs for a study. Here the researcher decides the purpose he/she wants an informant (or a community) to serve and he/she goes out to find one. In this case the informants had to be selected on judgement by virtue of their knowledge due to involvement in the projects. It was crucial to collect data in sites where the approaches were being applied.

Therefore, it would have been pointless to select a handful of people randomly from the whole population since it would not have served the research purpose. Here you select your sample on the basis of your own knowledge of the study population, its elements and your own research aims. This type of sampling is credible and useful particularly for building one's qualitative data. It is often cheaper and easier to use. The research used purposive/judgemental sampling due to the nature of the study topic. Since it was an evaluation study she had to deal with predetermined farmers (those that were already in the project). The only problem with it is that it has low external validity (Benard, 1988:97). The researcher interviewed farmers, research officers and extension personnel, with the hope of getting information concerning the research site and the approaches from these key informants.

3.2.3 Study sample

The researcher had a sample of 100 respondents. This was to minimise on the expenses and time spent in the field. This sample was considered large enough to be representative of the study population.

3.3 Methods/instruments of data collection

The main methods of data collection in this study consisted of interviews, direct observation, focus group discussions, case studies and secondary sources.

3.3.1 Structured and Semi-structured Interviews

An interview, generally, is a meeting between two or more people who face each other. During the course of the interview the interviewer asks questions and obtains answers to his or her questions.

Structured interviews were used to obtain information on the background characteristics of the respondents and their farming activities. They were also used to collect data on the approaches used by the various stakeholders in Emuhaya Division to disseminate information to farmers, the strengths and weaknesses of these approaches and how the approaches could be harmonised. The main instrument was a questionnaire (See Appendix I).

Due to the diverse nature of the study, the researcher carried out semi-structured interviews. These were administered to both individual farmers and groups. These were used to obtain data in areas not within the research site. It was necessary to interview both officers and farmers outside the research site so as to have a comprehensive analysis of most of the approaches.

This study was a crucial starting point so as to enable the various stakeholders to elaborate and implement a suitable dissemination approach for Emuhaya division.

3.3.2 Key Informant Interviews

Key informants in this study were people who were knowledgeable about the research approaches employed by the various stakeholders. These included extension officers, research officers and farmers.

The researcher came up with an interview guide consisting of questions and topics that needed to be covered in a particular order (See Appendix II). The researcher used this method of data collection to get information from key informants. The researcher interviewed 15 key informants, consisting of research officers and extension personnel. Information collected from such persons included the approaches used in disseminating information to farmers, their strengths and weaknesses and how they could be harmonised. Also, information of the research site such as agricultural activities that people in the locality engage in was collected.

The interviews administered to farmers (See Appendix III) were used to obtain data on the specific approach used in the area, its weaknesses, strengths and how it could be harmonised with others.

The advantages of this method are that if the informants are carefully selected and appropriate interviewing and reporting procedures followed, such interviewing and reporting produce relevant and timely data. They are time saving because they can be carried out quickly. They have the advantage of flexibility because they allow the interviewer to respond to individual differences, situational changes and explore newly emerging ideas. These ideas may not have been anticipated in the planning of the study. Such interviews produce in-depth information since the information comes directly from knowledgeable informants.

However, such interviews also have disadvantages. They do not generate quantitative data and so cannot be used when precise quantitative data are required. Since the samples of informants are generally small, key informant interviews are susceptible to bias in information. This is because of the inadequate selection of informants.

3.3.3 Focus group discussions (FGDs)

A focus group discussion or interview is a special type of group interview in which a small group discusses a subject freely and spontaneously. A facilitator, who has a theme (focus) considered important for investigation in mind, guides the interview.

The researcher carried out four focus group discussions with farmers in the Emuhaya division AHI site (See Appendix IV). The farmers interviewed were drawn from the fifty farmers in the project to whom the questionnaire was also administered. This enabled the researcher to gain insights into people's perceptions, attitudes and opinions on the research topic. FGDs enabled the researcher to gain insights into the various approaches used in the study area and how they could be integrated.

The second type of focus group discussions were administered to groups of farmers in areas not within Emuhaya division (See Appendix V). They were used to gather information on the specific approach in use, its strengths and weaknesses and how it could be harmonised with other approaches.

The groups consisted of 6 to 10 participants. Participation was voluntary. The advantage of FGDs is that they can be carried out quickly. A group interview with 6-10 participants may be finished within two hours. They are also relatively cheap because a few persons can carry them out during relatively short periods in the field. If the groups are homogeneous, individuals' lack of confidence can be reduced and participants can express themselves more freely. In addition, discussions stimulate new perspectives and ideas among participants, elicit complementary views and opinions and activate forgotten details.

However, FGDs also have their own limitations. They do not generate quantitative data and so cannot be used when precise quantitative data is required. The moderator of FGDs is subject to risks of interviewer bias. Also, in a group, some individuals are more articulate than others and there is always the risk that the more articulate participants adopt or are accorded group leader role. Therefore, they tend to monopolise group discussions. They influence opinions of other members and establish response patterns, which are consciously or unconsciously followed by other group members.

3.3.4 Direct Observation

Direct observation refers to accurate watching and noting of phenomena as they occur in nature with regard to cause and effect or mutual relations. Direct observation was done alongside other methods used in the study. In addition to observing activities and other phenomena going on in the field, it was necessary to observe the physical features of the study site, soil, vegetation, crops grown and housing structures.

According to Babbie (1994), direct observation enables the researcher to observe tiny communications and other events that might not be measured using any other method. Direct observation, generally, provides the researcher with information which respondents may be evasive about. It serves as a good link between knowledge and practice. It was used to obtain information on what actually happens other than what farmers say they do. Data collected using this method has been incorporated into chapter four and five.

Several photographs were taken in this study but only four have been incorporated to act as illustrations of what actually takes place in the research site (Plates 5.1 – 5.4). However, direct observation has some shortcomings. First, it yields qualitative data that cannot be used when precise quantitative data is required. In addition observation may be sketchy and transitory when the researcher (observer) does not fully appreciate what is being studied (Babbie, 1992:280). If observation is done casually it tends to be biased. In this study the researcher was careful and her observations were thorough.

3.3.5 Case Studies

The researcher carried out four case studies. Two of the case studies were carried out in the AHI research site (Ebusiloli sub-location), they were drawn from the fifty farmers in the project while the other two were done in Ebukhaya sub-location of Emuhaya division. The four case studies were based on two approaches, which are applied in Emuhaya division, namely, community-based participatory approach (CBPA) and catchment approach. Four farmers were selected, two successful ones and two who are not very successful. This was done so as to find out the reasons behind their success or failure and if this had any linkage with the approaches being applied. The information collected was concerned with the selection and participation of the farmers. In addition, approaches used in dissemination, the agricultural practices the farmer engages in, the secrets behind the success or failure and harmonization of approaches.

3.3.6 Secondary Sources

The researcher spent some time in libraries trying to find out what was available concerning the study topic. This involved going through text books, pamphlets and magazines. The researcher also had to read bulletins, brochures, articles, papers and theses that were relevant to the research topic.

The information collected using this method included the various approaches, their evolution, development, strengths and weaknesses. The advantage of secondary sources is that they enable one to know what has been done so far on the topic and on the research site. They guide one's study. The main disadvantage is the problem of validity. The data may be outdated, especially if it was written a long time ago.

3.4 Methods of data analysis

The study employed both qualitative and quantitative data analysis techniques. Data collected through questionnaires was analysed quantitatively using the Statistical Package for Social Scientists (SPSS) computer programme and presented in the form of frequencies and percentages. Non-computerized analysis was used to analyze qualitative data. Separate code sheets were created for informant interviews and focused group discussions. The responses were then interpreted by looking at emerging trends within those responses. The methods used included content analysis and selected comments from informants.

3.5 Problems encountered and their solutions

The researcher encountered the following problems. The farmers were at first suspicious. To solve such a problem, the researcher introduced herself to the farmers, clearly stating that she was carrying out research and the purpose of the research. Then she would ask them for their consent before she started the interview. The researcher established some kind of rapport with the respondents.

Another problem the researcher encountered was that of vague responses. This could come about due to impatience on the farmer's part. This led to duplication or repetition of responses or giving meaningless or ambiguous responses. To deal with such a problem, the researcher informed the respondent the duration the interview would take and then tried as much as possible to be strict with timing. She also explained to the farmers that though the purpose of the research is simply academic, the findings could help them in the long run, if they were to be implemented by the relevant agencies or institutions.

Since the research was carried out in a rural setting, the researcher faced transportation problems. This is because she depended on public means of transport, which is generally unreliable. Some parts of the research site do not have public means due to poor road conditions. To solve this problem, the researcher would start her trips early enough so as to get the earliest means to the research site. Alternatively, the researcher would persevere and trek for long distances to the places of interview.

3.6 Ethical considerations

Since social scientists often use human beings and their socio-cultural and economic attributes as the main subjects of study, people are sampled, interviewed and observed. This has led to questions concerning ethics. As an ethical consideration, the investigator asked for the consent of the respondents. She informed them that she was carrying out research and what the research involved. A social scientist has an obligation to the research subjects, not to injure the people being studied. This is regardless of whether they volunteer for the study. The investigator, therefore, kept data in confidence. The researcher used pseudo-names and code numbers to conceal the identity of the respondents, unless specific arrangements were made with the participants themselves. A social scientist has an obligation to other scientists to follow methods and techniques that are acceptable to the scientific community. The researcher followed the right procedures when carrying out this research. She gathered and analysed data using acceptable scientific methods.

CHAPTER FOUR

DISSEMINATION APPROACHES USED IN EMUHAYA DIVISION

4.0 Introduction

The focus of this chapter is on presentation and interpretation of the data. The data presented in this chapter was collected from the fifty farmers in the AHI project. The methods of data collection included interviewing, focus group discussions, direct observation and case studies.

4.1 Characteristics of the Sample Population

4.1.1 Sex

Out of the total sample of 50 farmers who participated in this survey 24 (48%) were male while 26 (52%) were female. This implies that there is no gender disparity in selection of farmers to participate in projects.

4.1.2 Age

As shown in Table 4.1 below, 56% of the respondents were below 50 years of age. According to the 1999 Kenya population census, 52% of the working (farming) population in rural areas were in age group 15-39 years (Republic of Kenya, 2001b:69). This is a relatively young working population. This is partly influenced by diminishing white collar job opportunities in urban centres, which, in turn, compelled many young people to seek opportunities in rural areas. Therefore, information dissemination approaches should target the young generation of people who are actively involved in farming. This will go a long way in ensuring sustainability of learnt techniques.

TABLE 4.1: Distribution of farmers by age

Age	Frequency	Percentage
20 – 29	5	10.0
30 – 39	7	14.0
40 – 49	16	32.0
50 – 59	15	30.0
60 – 69	7	14.0
Total	50	100.0

4.1.3 Education

Data in Table 4.2 shows that the majority of the respondents who participated in the study were literate, with up to 72% having attained secondary school level education. The total percentage of those who have been to school is 94%, well above the figure indicated in the 1999 population census (Republic of Kenya, 2001b: 69), which puts the literacy levels for western Kenya at 72%. The fact that the population is predominantly literate implies that the farmer field schools approach can be a very useful dissemination approach in the area.

Table 4.2: Number and percentage of respondents by education

Level of education	Frequency	Percentage
Nil	3	6.0
STD 1 – 4	6	12.0
STD 5 – 8	18	36.0
FORM 1 – 2	12	24.0
FORM 3 – 4	9	18.0
College	2	4.0
Total	50	100.0

4.1.4 Occupation

Out of the 50 respondents who participated in the survey, 78% were involved in farming only while 16% were involved in formal employment. Six percent reported to be involved in formal activities such as business, but they also engaged in farming. According to the 1999 population census, 83.5% of Kenya’s working population was located in rural areas, 60% of whom were engaged in agriculture on their farm holdings. This shows that farmers are in dire need of agricultural information. This is because their livelihood depends to a large extent on their success in farming. Approaches that enable and empower farmers through capacity building will have greater impact on farmer practices.

4.1.5 Denomination

Table 4.3 below indicates that a majority of the respondents, 80%, belong to a church denomination. Churches are a very good venue through which information can be channelled to a wider population.

Table 4.3: Church Denominations

Denomination	Frequency	Percentage
Church of God	22	44.0
Pentecostal	5	10.0
Salvation Army	9	18.0
New Apostolic Church	4	8.0
Other	10	20.0
Total	50	100.0

4.2 Dissemination Approaches/Tools

This section deals with the approaches/tools that are used to disseminate agricultural information by researchers/extensionists in the research site.

4.2.1 Groups

There are various kinds of community based formal and informal groups in the study area. These include church groups, women groups, youth groups, self-help groups and administrative groups. The study found that a majority of the farmers (78%) belonged to one or more of these groups (Table 4.4).

Table 4.4: Number and percentage of respondents belonging to different community based groups

Group	Frequency	Percentage
Youth group	9	18.0
Women group	15	30.0
Church group	2	4.0
Farmers group	7	14.0
Self help group	3	6.0
Administration group	1	2.0
Other	2	4.0
None	11	22.0
Total	50	100.0

Community based participatory approach CBPA, which is employed by AHI officials is targeting farmers through mobilizing the community-based groups.

As concerns the officers' (researchers, extensionists and scientists) attendance of farmer meetings the responses were varied. They are presented in Table 4.5.

Table 4.5: Frequency of officers' attendance of group meetings

Attendance	Frequency	Percentage
Occasionally	8	16.0
Never	2	4.0
On invitation	5	10.0
Other	2	4.0
Total	17	34.0
Not applicable	33	66.0
Total	50	100.0

Surprisingly, of the 50 farmers interviewed only 32% reported that officers visit their groups, 50% said they belong to groups but officers do not visit them while 18% did not belong to any group. This implies that efforts should be enhanced to exploit this area so that more farmers are accessed. Thirty-two percent of the farmers reported that they had learnt agriculture related techniques from their groups and they adopted them. Ninety-six percent of the farmers advocated for group approach. The explanation given for this preference is presented in Table 4.6 below.

Table 4.6: Effectiveness of group approach

Reason	Frequency	Percentage
Follow-up	4	8.0
Teach others	16	32.0
If there is co-operation	2	4.0
Wider dissemination	16	32.0
Other	7	14.0
No opinion	5	10.0
Total	50	100.0

4.2.2 On-Station Research

Only fourteen percent of the respondents admitted that they had gone to research stations/MOARD office to seek for information. This implies that farmers do not actively seek for information. The main explanation given was that they lacked transport and time to visit the stations. For innovativeness farmers should be enabled and supported to learn practically. Experimenting on new technologies on the station and transferring the same to farmers' plots is not sufficient. It is no wonder that 86% of the farmers advocated for on-station visits.

4.2.3 On-farm Research

All the farmers reported to have been visited by extensionists/researchers. Table 4.7 portrays the diversity in responses regarding the frequency of the visits.

Table 4.7: Frequency of visit by research/extension officer

Frequency of visits	Frequency	Percentage
Peak seasons	9	18.0
Weekly	9	18.0
Twice a week	5	10.0
Once or twice a month	23	46.0
Other	4	8.0
Total	50	100.

Eighty-eight percent of the farmers reported to have learnt various techniques from on-farm visits. These include: improved fallows (26%), farming techniques (34%), terracing (6%) and striga control (6%). The data is summarized in Table 4.8 below.

Table 4.8: Lessons learned from on-farm visits

Lessons learnt	Frequency	Percentage
Improved fallows	13	26.0
Striga control	3	6.0
Biomass transfer	1	2.0
Farming techniques	17	34.0
Terracing	3	6.0
Disease control	4	8.0
Organic manure	2	4.0
Inorganic manure	1	2.0
None	6	12.0
Total	50	100.0

Eighty-two percent of the farmers reported that on-farm visits are an effective way of disseminating information to farmers. On the other hand, ten percent noted that it is not effective. The diversity in explanation is presented in Table 4.9 below.

Table 4.9: Effectiveness of on-farm research

Effectiveness	Frequency	Percentage
Bias in selection	4	8.0
Soil erosion control	5	10.0
Consultation	11	22.0
Follow-up	9	18.0
No external learning	4	8.0
Participation	2	4.0
Others	11	22.0
None	4	8.0
Total	50	100.0

The data given above implies that a suitable dissemination approach should cater for more on-farm visits. Farmers prefer to learn practically so that sustainability of the learnt practices is enhanced.

4.2.4 Training and Visit Approach

Training and visit approach entails farmers being selected to attend seminars, where they are trained in various aspects in agriculture. They are then later on visited by the officers (extensionists / researchers / scientists) to find out whether the farmers implemented the techniques on their farms. If they did then check on their progress. If they did not then find out the possible reason(s) then how the farmers can be enabled and empowered to practise the learnt techniques.

Out of the 50 respondents, only 36% reported to have attended farmer trainings while 64% had not attended any. Of those who had attended, 16% reported to have attended on training in the last one year. Eight percent had attended twice, while 6% had attended thrice. The lessons learned included compost pit preparation (6%), dairy farming (4%) and disease control. Four percent of the trained farmers admitted to have been visited by officers later on. Eighty-eight percent of the farmers advocated for training and visit approach. The diversities in explanation for the above are presented in Table 4.10 below.

Table 4.10: Effectiveness of training and visit

Effectiveness	Frequency	Percentage
Follow-up	11	22.0
Seriousness	9	18.0
Agricultural techniques	23	46.0
Selection	1	2.0
Sustainability	2	4.0
Others	1	2.0
None	3	6.0
Total	50	100.0

Twenty two percent of the farmers advocated for training and visit approach because it enhances follow up while eighteen percent reported that the approach promotes seriousness to adopt the learnt techniques. Forty-six percent stated that a lot is learnt on agricultural techniques through farmer training. Four percent of the farmers reported that with training and visit approach it is easier to sustain the learnt techniques. On the other hand, two percent of the farmers stated that there is biasness when it comes to selection of farmers to attend the trainings and who are then visited by the officers' later on.

4.2.5 Field Days

Ninety-four percent of the farmers reported that they had attended field days, while six percent stated that they had not attended any. The frequencies of attendance are presented in Table 4.11.

Table 4.11: Field day's attendance in the last one-year

Field attendance	Frequency	Percentage
Once	9	18.0
Twice	18	36.0
Three times	7	14.0
Four times	7	14.0
More than four times	6	12.0
None	3	6.0
Total	50	100

The practices learned from field days include crop farming (46%), striga control (18%), improved farming (14%) and organic manure (12%). Ninety-eight percent of the farmers

reported that field days are effective when it comes to dissemination of agricultural techniques. The explanations given are presented in the Table 4.12 below.

TABLE 4.12: Effectiveness of field days

Effectiveness	Frequency	Percentage
Learn from other plots	16	32.0
Agricultural techniques	19	38.0
Promotes unity	1	2.0
Learn practically	4	8.0
High adoption rate	7	14.0
Participation is enhanced	3	6.0
Total	50	100

This implies that field days are very essential in wide dissemination of techniques. This is because they are open to all. The tendency of farmers learning more even when they are not in the project is quite high. They are also organized on a regular basis and they are within the farmers' vicinity so that farmers can easily access the venue. Most approaches use field days to scale up the new techniques.

4.2.5 Barazas

Out of the 50 respondents interviewed, 38% admitted that the administration officers organize meetings. The same percentage of farmers (38%) reported that extension/research officers attend such meetings. Frequency of attendance was as follows: occasionally (14%), once a month (6%), while 6% were not aware of any such meetings. However, 80% of the farmers advocated for barazas as an approach to dissemination of new techniques while 18% were apprehensive. The reasons expressed for this response are presented in Table 4.13 below.

Table. 4.13: Effectiveness of Barazas

Effectiveness	Frequency	Percentage
Chief has influence	7	14.0
Large audience	15	30.0
Agricultural techniques	11	22.0
Admin. has interest	9	18.0
Security matters	1	2.0
Others	7	14.0
Total	50	100.0

Most of the approaches use the administration as an entry point into the community. This explains the fact that when farmers were asked about incorporation into the project, 54%

mentioned an initial meeting which they attended with mobilization being done by the administration. Interestingly 18% reported to have been informed by the village elder, while 16% were visited by officers (extension / research) on their farms. Eight percent were informed by spouses/relatives while 4% learnt from their community groups. Administration officers have influence on the locals. This is partly due to the fact that they use various local venues and platforms to disseminate information. Local elders, in some instances, are at the forefront in disseminating, adopting and sustaining new techniques. Interestingly, all the five village elders from the five villages in the Emuhaya research site are members of the Farmers Research Group. When local administration officials are invited to the field days the turn-up is very good. They use their power and influence to encourage locals to adopt and sustain the techniques. However, to succeed and be good role models, they should adopt and practise the techniques.

4.2.7 Farmer-to-Farmer Extension

Ninety-eight of the farmers interviewed reported that they share agricultural information. The information farmers reported to have passed across to other farmers includes: growing of beans (38%), improved fallows (22%), biomass transfer (12%) and terracing (8%). They reported to have learnt the information from various sources. These include: extensionists (68%), researchers (16%), other farmers (10%) and experience (4%). Ninety six percent of the farmers interviewed advocated for farmer-to-farmer extension. The diversity in responses is presented in Table 4.14 below.

Table 4.14: Effectiveness of Farmer-to-Farmer extension

Effectiveness	Frequency	Percentage
Frequent interaction	6	12.0
Co-operation	8	16.0
Wider dissemination	5	10.0
More learning	25	50.0
Observation	1	2.0
Other	5	10.0
Total	50	100.0

However, there are factors that hinder inter-farmer sharing of knowledge. These are presented in Table 4.15.

Table 4.15: Constraints that hinder inter-farmer sharing of knowledge

Constraints	Frequency	Percentage
Lack of interest	12	24.0
Selfishness	12	24.0
Jealousy	13	26.0
Ignorance	4	8.0
Individualism	8	16.0
Other	1	2.0
Total	50	100.0

4.2.8 Community-based Participatory Approach (CBPA)

CBPA was developed by African highlands initiative in 1998 specifically for the Emuhaya research site. It involves mobilization of community members to participate in dissemination of agricultural information. It is participatory in nature and utilizes the community set-up. Information flows from the research and development team and other stakeholders through the site steering committee (SSC). The SSC liases with the farmer research committee (FRC). The duty of FRC is to coordinate research and extension activities within the pilot villages. Within the pilot villages there are village committees (VCs), whose role is to coordinate adaptive research and technology dissemination within the pilot villages.

In the key informant interviews it was disclosed that the major strength of community based participatory approach lies in the fact that it is all encompassing. This means that it takes into consideration all the stakeholders by involving them in the process of research. Various partners play their roles, including supply of technology and necessary resources. Farmers are allowed to participate while researchers backstop where necessary.

The approach is appropriate because it takes into consideration the fact that farmers have the need, and have to be exposed to the sources of the technology. The researchers work together to make sure farmers identify with the technologies that they are testing. Therefore, the approach creates the right environment for the farmers to assess and test technologies that they can adopt.

Community-based participatory approach is interdisciplinary and multidisciplinary in nature. This enables the researchers, scientists and extension officers from the various collaborating institutions to interact in a participatory mode. Since the approach creates an enabling environment for all the stakeholders to interact, there is a lot of brainstorming. This allows for tapping of expert knowledge from the various professions. The approach empowers the farmers to engage in the various technologies that are disseminated to them. The approach builds the capacity of farmers to manage their farming activities.

However, key informant interviews further revealed that the approach also has its own shortcomings. First, the approach requires a lot of resources, for instance, capital, to enable the stakeholders to assemble together, monitor the impact, react to the emerging issues, share experiences and seek the way forward. The fact that the approach relies heavily on farm visits is also a drawback. This is because this activity requires money. This implies that without donor funding the approach cannot be sustained.

Second, the approach is time consuming. It relies on meetings, consultations and discussions between farmers and stakeholders. This is because it borrows heavily from community mobilization. To get farmers together on some occasions is quite difficult. One has to abruptly reschedule meetings irrespective of the resources that have been put in. For instance, when there is a funeral or any other cultural (communal) activity in the village chances of getting a good quorum of farmers are very scarce.

Another weakness lies in the fact that communal participation does not always mean adoption. In as much as the stakeholders disseminate information to farmers, what is most important is for the farmers to adopt the techniques and implement them on their own farms.

The researcher observed that the feedback system is a bit complicated. First, farmers have to link up with the village committees, which liaise with the farmer research committee (FRC). The FRC links with the site steering committee, which inter-links the research and development team with the private sector and other research and development institutions.

There is bound to be a bias when it comes to the selection of farmer representatives. This is because if one is not careful, one may end up with opinion leaders, thereby missing on important characteristics such as gender.

On the other hand, the approach comes in handy for activities that need community efforts such as striga uprooting and construction of terraces. It may not be quite useful for activities that do not require consultations, discussions and persuasion such as a new bean variety. It can be quite useful in a communal society which is monolithic in culture and hence less variability in farming activities.

4.2.9 Participatory Agro-ecosystem Management (PAM)

This approach is applied in the research site by AHI officers who are based at KARI (Kakamega). An agro-ecosystem (or agricultural-socio-economic-ecological-system), is an ecological system that has been modified by humans to produce food, fibre, or other agricultural products. Agro-ecosystems are often structurally and dynamically complex. Their complexity arises from the interaction between socio-economic and ecological processes. Agro-ecosystems are arranged in a hierarchy, where systems at a lower level tend to control those below them. For instance, a plot (lowest level), might be situated in a farm (higher level), which is situated in a community (higher level). The community may be situated in a watershed (higher level), which is situated in an administrative district (highest level), and so on.

PAM focuses on increased farmer participation in the research and development process. Participation encompasses two major concepts, namely, enablement and empowerment of the farmer. Enablement aims at providing increased information, skills and resources to farmers and rural people to enable them address or solve their problems from a more informed or enabling approach. This means increasing the farmer's problem-solving capacity. On the other hand, empowerment aims to inform farmers or rural people of their rights as citizens and, subsequently, to facilitate or train them on how to operationalize their rights. This means empowering them to make demands on the formal research and development (R&D) and related sectors.

From the FGDs, most farmers were of the opinion that this is a good approach. They advocated for the idea of researchers designing the plots while farmers manage them (the plots) since the latter are knowledgeable and are the best managers. However, they raised some issues concerning limitations of the approach. The trial plots are too small for any generalization. This becomes a problem especially when dealing with techniques such as hybrid maize and application of inorganic fertilizers. One farmer in the FGD said that they are now well aware that application of fertilizer on sorghum boosts the yield but they cannot sustain the technique since they do not have money to buy the fertilizer.

Another issue raised was that it was important that both the farmer and researcher or extensionists are present right from ploughing to harvesting. Sometimes these activities are carried out in the absence of the farmer. In such cases, sustainability becomes a problem. This is because the farmer may not be aware of some practices such as proper spacing and fertilizer quantities.

Farmers also expressed the opinion that it could have been helpful if they were also allowed to design and manage their own trials. For instance, when it comes to improved fallows, they should be allowed to interchange the various tree species so that if a farmer plants *Sesbania* this season, he/she should be allowed to plant *Crotolaria* on the same plot the next season. Alternatively, they should be allowed to plant all the different species of improved fallow on the same plot so that they can be able to observe the results. This challenge comes about due to the small farm sizes.

Farmers should be allowed to participate freely in the various activities. For instance, if a farmer planted beans on his trial plot last season and this season he is interested in planting sorghum, there should be no restriction. Farmers in the FGDs were of the opinion that the experimental plots should be selected from the poorest parts of the farm so that the results can be more reliable. Farmers believe that "seeing is believing" so, if they can actually realize good harvests from a plot, which they have always considered as not fertile, then they will sustain such techniques.

The farmers were of the opinion that when the trials are carried out on individual farmer's plots, farmers are only conversant with the activities they are engaged in. They advocated for a collective trial plot where all the activities can be carried out communally so that farmers become conversant with all the project activities.

4.2.10 Catchment Approach

This approach is employed by MOARD, specifically by the soil and water conservation department. From the key informant interviews, it emerged that the core of this approach lies in involvement and participation of the various farming communities in the preparation, planning, implementation and follow up of all catchment plans through catchment conservation committees.

The approach gives farmers an opportunity to identify the problems facing them and suggest solutions. It makes concerted efforts to address the main constraints facing farmers. These include inadequate technology packages, inadequate farmer participation in development and inadequate information reaching the farmer.

The catchment committee is very essential. It is composed of elders, men and women, who are ready to coordinate conservation work among members of the community without expecting any payment. Local leaders with other official engagements serve as ex-officio members or patrons of the catchment. The main function of the catchment committee is to co-ordinate individual conservation efforts and to organize the community during communal conservation days. The committee is an effective link between the extension staff and the community.

From the FGDs, it emerged that the major strength of the catchment approach lies in the fact that it is participatory in nature. A catchment encompasses all the farmers in the area. The information is disseminated to many farmers. Therefore, it spreads far and wide. The fact that it involves the local administration in their activities is also a bonus. This is because the leaders have a lot of influence on the villagers. The approach builds the capacity of farmers by empowering them to carry out their own research.

The rate of adoption of new techniques in a catchment village is quite high. This has to do with the fact that the approach deals with a whole village.

Catchment approach encompasses a two way learning process where farmers are given a chance to participate by expressing themselves. The extensionists are ready to learn from the farmers. They instill in farmers a sense of self-confidence. Farmers feel worthy because their contribution is recognized.

Since the approach is based on the village catchment through the village committees and is implemented by the area extensionists, sustainability is assured. The village committee is very essential when it comes to the scaling up of the new techniques to other villages. The fact that the farmers are taught the new techniques from the very beginning, they take the initiative to pass across information to other farmers who may not be covered by the catchment. Therefore, chances of sustaining the learnt techniques are very high.

However, in the FGDs it was also revealed that the approach has its own weaknesses. These include the fact that in areas where the administration is dormant, take off is rarely achieved. Lack of resources such as seeds, equipment and fertilizers is a major drawback. Farmers can be provided with the knowledge but without the necessary inputs they can never be able to adopt the techniques.

From the key informant interviews it emerged that the approach leads to visible and measurable improvements. This can be seen in the terraces, retention ditches, grass strips, cut-off drains and agro-forestry species. Farmers admit that the soil fertility has really improved. Their maize is now doing well, yields have improved and now they can boast of grade and crossbreeds of cattle.

The community mobilization aspect is very essential. Farmers have been organized and this has addressed the issue of soil and water conservation. Communal efforts have really assisted farmers to improve their soil fertility. Now the whole village has various types of terraces and agro-forestry tree species. Catchment committees (CCs) play an important role in mobilizing the communities and assisting in laying out conservation strategies. The committee also

promotes interaction between the farming community, extension officers and the researchers. The approach is sustainable in that, once the farmers are taught soil conservation activities and fully appreciate their benefits they implement them, and even sustain such techniques.

Farmers admitted that it is through the catchment approach that they have been able to visit other villages, divisions and districts. These were exchange trips on which they talked to other farmers who practised conservation methods or grew crops or raised livestock differently. They had found the information extremely valuable. They even transmitted it to other farmers in the catchment who have now adopted the new techniques.

The weakness of catchment approach is that it relies heavily on community mobilization. This is not always possible to achieve. Sometimes it becomes tricky to establish whether the farmer is engaging in the soil conservation activities on his/her own will or whether he is doing it for the sake of the chief, assistant chief or the community.

4.2.11 Participatory Learning and Action Research (PLAR)

Though this approach is currently not employed in the African highlands initiative (AHI) research site, the researcher explained to the farmers until they got the main issues concerning the approach. In the FGDs, the farmers stated that they would like to have such an approach where their knowledge is considered. In their view, since researchers are outsiders, they should first seek to understand what the farmers were practising and why. Once this is done, they could then bring in techniques but which the farmers should test first. If the new techniques are compatible with the farmers' practice then it becomes easier to adopt and sustain them. The farmers pointed out activities which they used to practise before the project was initiated and after discussions with the officers, they have been able either to modify them or understand the logic behind them. One of these activities is the pouring of livestock urine on nappier grass. Initially farmers could pour urine on their nappier grass and observed that its performance improved. But now equipped with knowledge from the project they are aware of the ammonia content of the urine. Farmers used to leave *Sesbania* in their plots but now they have learnt of the nitrogen fixation aspect of this plant. They had observed that if crops are grown where *Tithonia* had grown, they do well. But now they have learnt of the nitrogen fixing aspect of *Tithonia* from the officers.

4.2.12 Training Resource Persons in Agriculture for Community Extension (TRACE)

TRACE approach is employed by CARE(K), an NGO based in Nyanza province. The approach has three pertinent components, namely, extension and training, institutional capacity building and adaptive research. The approach is further discussed in chapter five.

From FGDs it was revealed that the major strength of TRACE is that it enables and empowers the farmers to carry out their own research. The training of farmers is a very important aspect, especially when it comes to sustainability. This is because the farmers get the knowledge of the new techniques and are in a position to carry on even when the project winds up. In fact, this should be a major exit strategy for all the institutions concerned with information dissemination. The other advantage of this approach lies in the fact that scaling up is enhanced. This is because the farmers who are trained can easily pass across the information to others who are within their reach. Farmers can converse even in informal places such as funerals, water points and markets, where information dissemination takes place. Farmer to farmer extension comes in handy, especially now that extension staff are very few and they are required to cover large areas.

On the other hand, the farmers saw the main weaknesses of the approach as follows. The trained farmers need some testimonials so as to be able to convince the administration and the general public. In the absence of certificates they may not be recognized. Since farmers have their own duties to attend to, they will require some allowance to cover up for time spent in dissemination. The trained farmers will also need some written materials concerning the techniques that they are required to disseminate to other farmers. Farmers will need to be supplied with some inputs such as seeds and fertilizers and farm equipment so as to be able to inform others of the relevant techniques. In the absence of the above, the teaching tends to be more theoretical than practical.

4.3 Influence of Approach on Adoption

Sixty-two percent of the farmers reported that the approach used has no bearing on information adoption. This implies that whichever approach is used they will practise what they learn.

On the other hand, thirty-six percent of the farmers reported that the approach determines adoption rate. The explanations given were as follows: Practicality (22%), compatibility with farmers’ practice (14%) and affordability by farmers (7%). This implies that providing the farmers with technical information is the first and ultimate stage in dissemination. For any approach to have a significant impact on farmers’ practices it has to empower and enable him. On the other hand, the new technique should be affordable, compatible, practical and testable.

4.4 Improvement on Effectiveness of Approaches

Farmers had various responses as concerns how the approaches could be improved for effective and efficient information dissemination. They are presented in Table 4.16 below.

Table 4.16: Improvement on effectiveness of approaches

Improvement of approaches	Frequency	Percentage
Regular meeting	15	30.0
More on-farm visits	14	28.0
More seminars	5	10.0
Farmer training	5	10.0
More field days	5	10.0
More farm tours	1	2.0
Written materials	3	6.0
Identify contact farmers	2	4.0
Total	50	100.0

Table 4.16 indicates that farmers’ responses were varied. Thirty percent of the farmers advocated for regular meetings while 28% advocated for more on-farm visits. On the other hand, more seminars were reported by 10%, more field days by 20%, farmer training by 10% and provision of written materials by 6%.

4.5 Integration of the Approaches

Fourty-four percent (44%) of the farmers advocated for the use of all the approaches. On the contrary, fifty-six percent (56%) recommended that specific approaches should be used for better results. This information is presented in Table 4.17 below.

Table 4.17: Integration of approaches for better results

Response	Frequency	Percentage
All approaches	22	44.0
Group approach	7	14.0
Farmer to farmer extension	5	10.0
Catchment approach	5	10.0
On-farm visits	11	22.0
Total	50	100.0

Table 4.17 indicates that 44% of the farmers recommended that all the approaches should be used. On the other hand, 56% recommended specific approaches and the responses were as follows: group approach (14%), farmer-to-farmer extension (10%), catchment approach 10% and on farm visits (22%).

4.6 Research

This section deals with questions on research and innovations. Eighty-six percent of the farmers reported that they were involved in the problem identification stage of the project. They reported that this was done through the first meetings where they were asked to list the problems (agricultural-related), prioritize them and suggest possible solutions. Fourteen per cent who were not involved reported that they had joined the project later. At the evaluation stage, 96% reported to have been involved. Most of them admitted to have evaluated other farmers' plots during field days, in farmer groups or at their own initiative. This implies that the approaches used in the area allow for farmer participation in the project. Fifty-eight percent of the farmers reported that innovation should start with the officer.

On the other hand, thirty percent were of the opinion that this should be the prerogative of farmers while 12% held the view that it was a collective responsibility. Of those who sided with the officers' option, reported that officers have the expertise while 6% reasoned that it was their area of specialization. Of those who sided with the farmers option, 48% reported that farmers are conversant with their own farms and, so, are in a better position to do the initiative. However, officers should provide the initial impetus on the issue of the duration of research. Seventy-four percent the respondents advocated for long-term research, 14% advocated for short-term research while 10% advocated for both types of research. The explanations given are presented in Table 4.18 below.

Table 4.18: Reasons for short / long term research

Reason	Frequency	Percentage
Sustainability	14	28.0
Learn more	1	2.0
Evaluation	24	48.0
Land size	4	8.0
Other	6	12.0
None	1	2.0
Total	50	100.0

Contrary to the view that farmers do not readily take risks, it was evident in this study that farmers are outgoing and ready to experiment with any new technology. Farmers have the long-term expectations at heart. This implies that even if a technology takes two or more seasons farmers are determined; they want the research to go on so that they get enlightened and empowered to carry out their own research. This would then enable them to make informed decisions. The researchers/extensionists have to seek for a viable exit strategy when the project nears the end. This would go a long way in ensuring sustainability of the learnt techniques.

4.7 A summary of the Approaches

Table 4.19 below provides a summary of the seven approaches / tools that the study looked at. The responses reflect the effectiveness / ineffectiveness of the various approaches / tools.

Table 4.19: A summary of farmers' responses to various approaches

Approach	Effective	%	Ineffective	%	Count
Group Approach	48	96.0	2	4.0	50
On-station Research	43	86.0	7	14.0	50
On-farm Research	41	89.1	5	10.9	46
Training and Visit	44	91.7	4	8.3	48
Field Days	49	98.0	1	2.0	50
Barazas	40	81.6	9	18.4	49
Farmer-farmer Extn.	48	96.0	2	4.0	50

Table 4.19 indicates that the 7 approaches/tools are effective for agricultural information dissemination. A majority of the farmers (89%) advocated for them. For research and

development agencies whose main task is to disseminate information to farmers, such tools are quite essential.

This study looked at seven approaches / tools used to disseminate information to farmers in Emuhaya division. These include group approach, on station research, on farm research, training and visit, field days, barazas and farmer-to-farmer extension. The study also looked at the influence of the approach on adoption rate of new techniques. Sixty-two percent of the farmers reported that the approach has no influence on the adoption rate of new techniques. The study also looked at how the approaches could be improved and harmonised. Finally, research issues were dealt with. A majority of the farmers (74%) advocated for long-term research so that they could be fully involved in evaluation and impact assessment of the various agricultural techniques.

4.8 Case studies

The researcher carried out four case studies on the two approaches employed in Emuhaya division. The soil fertility techniques that KARI implements in Emuhaya using the community-based participatory approach (CBPA) include improved fallows, new bean varieties which are resistant to stem maggot and bean root rot, inorganic and organic manure, biomass transfer, agro-forestry tree species, and new sorghum varieties which inhibit or control striga growth. Farmers are engaged in the above activities. The activities have really boosted the soil fertility status of the farmers' gardens.

Mr. Olwamba (not his real name) is one of the trial farmers who have planted sorghum. He has 10 different plots in which he has planted five different varieties of sorghum. In the first five plots he applied fertilizer while in the other five plots he did not apply any treatment (farmers' practice). He observed that the sorghum planted with fertilizer looks very healthy, the stems are strong, the seeds are big and the plants are tall. This is a complete contrast of the sorghum planted without fertilizer. The plants are unhealthy, short and yellowish. One cannot even believe that they were planted at the same day. Mr. Olwamba says that before the initiation of the project, he had never known that fertilizers could be applied on sorghum. He only used to apply fertilizers on maize which he considers as a very important crop. Now he has realized that fertilizers when properly applied to sorghum, result in a very good harvest. He also has his own parameters for measuring the advantages of the various varieties, for instance, high yield,

fast maturity, taste, colour, preference by birds and market price. All the varieties (apart from local ones) have tremendously reduced the striga population on his farm. He wants to venture into seed multiplication of the various varieties so that he can be able to get more seeds to plant in a large area and surplus for lending to other farmers.

However, he observes that unlike the local variety, these new varieties do not have the ratooning capacity. This is a great disadvantage because he believes that it is only the second crop that performs well. Secondly, sustaining this technology is bound to be difficult due to the fact that fertilizers are costly and so only a few farmers can afford them. Lastly, due to the small land holdings, farmers will not get plots on which to grow sorghum. This is because maize is regarded as the staple crop and, therefore, given first priority.

Mr. Analo (not his real name) is a trial farmer in the project. The activity he is involved in is planting of maize and beans by use of organic and inorganic manure. However, surprisingly his crops are not doing well. The maize is retarded. The weeds are taller than the maize and the beans' leaves are yellow in colour. In fact, one can hardly tell that there are various treatments on the farm. The plot is generally pathetic. This basically has to do with the fact that the farmer never practised the required crop husbandry practices such as proper spacing, thinning and weeding. This is an extreme case, which is not encouraging at all. The researcher observed this on the farmer's plot.

The third case concerns a farmer in Ebukhaya sub-location. His name is Mr. Aswani (not his real name). He is a member of the Ebukhaya catchment project. The approach used here is the catchment approach, which is employed by the Ministry of Agriculture and Rural Development (MOARD). Mr. Aswani reported that before this catchment was initiated, there used to be a lot of soil erosion. The crops were not performing well. Therefore, the yields were very poor. There also used to be scarcity of milk in the village. However, from the time the soil conservation project was implemented, there has been a great change for the better. Among the techniques he has learnt from the catchment are terrace construction, planting of nappier strips, biomass transfer, and proper use of organic and inorganic manure. Others include animal husbandry and poultry farming. He has adopted all these techniques. He is a hard working and progressive farmer. He has a big and well-maintained dairy unit. He has two grade bulls, one

for the livestock development programme (LDP) while the other one is his own. The LDP bull serves villagers' cows at a fee of Kshs 250 per service. His own bull is still young but when it matures he will be charging Kshs 200 per service.

He is a proud owner of a poultry unit where he raises grade broilers, cockerels and layers. This is a major step forward compared with the rest of the farmers in the area who possess a few local poultry under a free-range management system. He also has a hutch. He used to rear 100 rabbits but he sold all of them. He wants to try his hand at pig farming, and has already constructed a sty. When it comes to crop farming his maize is doing extremely well. When asked about the secret behind the success, he says that he applies *Tithonia* rock phosphate and farm yard manure. He is quick to point out that he received this knowledge from the extension officers through the catchment project.

His farm layout is just wonderful. He has retention ditches, which he says were measured by extension officers. He constructed them and maintains them quite well. He has planted bananas and various kinds of vegetables on the lower side of the terrace. He even has improved fallows, which he just planted out of his own initiative. He said that he wants to cut them down in the short rains season after which he will incorporate them in the soil. Then he wants to plant maize in that plot the next (long rains) season. That is when he will be able to monitor the maize to evaluate the effect of the various species of improved fallows on soil fertility.

The last case study is of a farmer by the name of Mr. Ekhuya (not his real name). He also comes from Ebukhaya sublocation. He is a member of the catchment project. The activities he engages in include planting of agro-forestry trees such as *Sesbania* and biomass transfer where he basically uses *Tithonia* leaves. He also has nappier grass strips planted on terraces. However, unlike other farmers his maize and kales are not doing well. He attributes this poor performance to the fact that he does not have cattle and, therefore, lacks cow-dung, which he can mix with his compost manure. Since he does not have money to buy fertilizers, his soil fertility continues to decline. He admits that he has learnt a lot from the catchment but, unfortunately, has not adopted some techniques due to land scarcity and labour shortage.

CHAPTER FIVE

DISSEMINATION APPROACHES USED BY THE STAKEHOLDERS ELSEWHERE IN WESTERN KENYA

5.0 Introduction

This chapter deals with approaches that are employed by the various stakeholders in other divisions in western Kenya. The researcher looked at four approaches, the first of which was participatory learning and action research (PLAR), which is used in Shinyalu division of Kakamega district by KARI. The second approach was farmer field schools (FFS), which is applied by KEFRI in Butere division of Butere-Mumias district and by MOARD in Matayos division of Busia district. The researcher also looked at training resource persons in agriculture for community extension (TRACE). TRACE is employed by CARE (K) in Homa Bay and was previously applied in Siaya district. She also looked at participatory approach to farm management (PATFAM), which was previously employed in Sabatia division of Vihiga district by MOARD.

Data presented here was collected from 50 key informants and focus group discussions. The methods used to obtain the data were interviewing, focus group discussions and direct observation.

5.1 Farmer field schools (FFSs)

From the key informant interviews it emerged that farmer field schools (FFSs) are a participatory approach to extension which gives the farmer an opportunity to make a choice in methods of production through discovery based approach. The “field schools” are actually groups of farmers that meet regularly over the course of several growing seasons to experiment as a group with new production options.

The approach is based on adult extension methods. The name “field school” reflects the education goal; the training takes place in the field, with the field conditions defining most of the curriculum. Real field problems are observed and analyzed from planting to harvesting or from birth to birth (the whole life cycle) of an animal. Group decisions on crop or livestock management are evaluated at the end of the season by measuring the output.

A learning site is established by the farmer participants. The site is always in the community where the farmers live so that they can attend weekly sessions and maintain their field studies. The FFS starts from the assumption that farmers have a wealth of knowledge that can be improved by providing them with a basic understanding of the agro-ecological dynamics in the field. It aims at comparing farmers' practices with the recommended technologies. During the season the same farmers and facilitators attend the field school. Student farmers graduate at the end of the learning season (40 weeks). Graduation is based on attendance and learning performance. Therefore, a field school is a "school without walls" that teaches basic agro-ecological and management skills that make farmers experts in their own fields.

The researcher attended an FFS that was in session in Mwinaya village in Butere-Mumias district. She thereafter carried out an FGD with 10 farmers of Mwinaya Farmer Field School. She also interviewed two teachers of farmer-run FFSs in the same district.

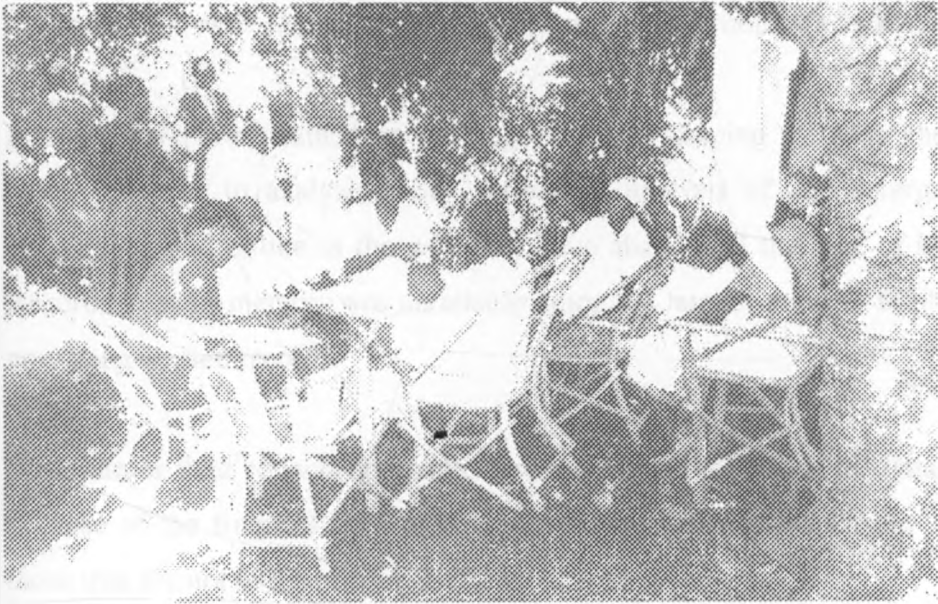


Plate 5.1 A farmer field school in session, FFS approach in Busia district.

For the purposes of comparing and contrasting the responses, the researcher also found it necessary to look at the FFS approach and how it was applied in Busia district. The researcher, therefore, interviewed the coordinator of FFS in Busia district. She also interviewed four teachers of farmer run schools and two teachers of staff run schools. She also attended one staff

run school, which was in session (Plate 5.1), and two field days organised by the FFS approach.

The farmer field schools approach has a number of strengths. These include the fact that it trains the farmers on the cycle of a plant from seed to seed and in case of an animal from birth to birth. When it comes to poultry, farmers are trained on production from chick to chick. Farmer scholars attend field classes for forty weeks after which they graduate. They then become experts in their own rights, on the activities they have been trained in.

From the key informant interviews, it emerged that the approach really empowers the farmers. Farmer graduates are allowed to teach in farmer- run schools. Surprisingly, some of the farmer run schools are more active than the staff- run ones. Farmers now carry out their own research, the results of which are presented in weekly classes. If a problem has been identified they search for a solution. They can then discuss the problem and the possible solution with the researchers or extension officers. In most cases the solutions are viable.

Farmers have been trained on the importance of keeping records. These are very important when it comes to analyzing the cost-benefit analysis of any enterprise. Farmers are now enlightened and unlike in the past they have abandoned the idea of keeping mental records. Records kept in memory are unreliable since the human mind is fallible. Therefore, farmers now keep written records.

With farmer field schools approach, new techniques are bound to spread far and wide. This is because of the frequent field days organized in which farmers from other field schools and those that are not in the project are free to attend.

The approach first ensures the training of extension staff. In so doing it enhances their capacity to work in collaboration with researchers to serve as facilitators of farmers experimental learning. The extension officers then assist farmers in testing, assessing and adopting a wide variety of options within the specific local conditions.

The fact that the approach involves the front line extension personnel from the Ministry of Agriculture and Rural Development (MOARD) in the dissemination of new agricultural techniques is an added advantage. This is very essential because these are the very people who continuously deal with farmers. These are then assisted by the farmer graduates who manage the farmer-run schools.

In key informant interviews it was revealed that the main weakness of farmer field schools approach is lack of scaling up so that graduate farmers are absorbed in new farmer-run schools. The approach requires organising adult learning classes to enable farmers to keep proper records of what they learn in the field school and carry out practical on the farms. This should be done to address the problem of illiteracy. The fact that some farmers are illiterate is a drawback in itself. This is because such farmers cannot be in a position to record various practices in the agro-economic analysis that they carry out. They are not in a position to maintain records. This is compounded by the fact that one's education level is not a criterion in selection of farmer students.

The researcher observed that there is a possibility that during the forty weeks of learning a farmer may only become an expert in the crop, animal or bird cycle that he or she learns in the school. To be able to counteract such a phenomenon, more efforts should be put in to ensure that during the forty weeks a farmer learns as many techniques as possible.

The success of a field school depends on the ability of the teacher. This implies that if the teacher is less active, the field school also becomes less active. The teacher greatly determines the performance (practical) of the farmer scholars. There is a tendency of confident teachers also producing very confident students.

Farmer field schools allow for farmer participation in the programme. FFSs offer the farmers opportunity to learn by doing, by being involved in research, discussion and decision-making. They teach farmers how to analyze their own production practices and identification of possible (location and situation specific) solutions to problems, which they encounter in their locality. In so doing, the farmers can draw assistance from external sources such as extensionists and researchers. Since a field school consists of 25 or more farmers who have

common interests (may be a particular plant cycle), the farmers can support and supplement each other's knowledge very effectively. Usually the group is sub-divided into a group of five persons so that all members can participate directly in field observations, analysis, discussion and presentations to other groups. In so doing, farmers are enlightened and empowered.

Farmer field schools approach is sustainable. This is because it can go on with minimum funding. The farmers were optimistic that they will improvise stationery in that instead of using markers and flip charts they could use a blackboard and chalk. They had proper arrangements for continuity. For instance, they had the idea of selling farm products from their communal plots to buy items like chalk and blackboards. They will be able to adopt and sustain the learnt techniques because the training makes them experts in their own farms. They are able to make critical and informed decisions affecting their farming.

The approach, after evaluation, provides graduation certificates to farmers who master the field skills. For many farmers, the farmer field school is the first opportunity that they have for receiving official recognition of their farming skills. Farmers' morale is really boosted. They really look forward to the graduation day and they feel proud and appreciate the certificates. They are grateful for the training.

The FFS training is purposefully designed to reinforce the ability for the trainees to replicate the training with other farmers. This is boosted by its principle that every learner is a potential trainer. In fact, the farmer graduates have helped reduce the farmer: extension ratio. This is because they can manage and run their own schools. These schools, apart from doing well, also require less funds for management.

The major weakness of the farmer field school approach is that the forty weeks duration is convenient for crops that take less time to mature. It even becomes worse if farmers are to learn animal cycle, for example, cow, from birth to birth. This limits the teaching to theory.

The researcher observed that caution should be taken so that in as much as farmers practise the learnt techniques on the communal plots, they should be in a position to replicate the same on their individual plots. There should be follow-up of graduate farmers to assess the impact of the training. This can only be proved evidenced in how much they have adopted and sustained.

The approach is time consuming on the part of the farmers, since they have to meet twice a week on one day to do communal work on their group's plot. On the other day they carry out the agro-economic systems analysis (AESAs). It is on this day that they learn and if there is any special topic they assign it to an agricultural staff. This was the case in Busia, where it came out clearly that some farmers turn up for work but not for classes. To address this problem work and classes should be carried out on the same day.

From the FGDs it emerged that the main advantage of this approach is capacity building on the part of the farmer. Farmers are trained to become experts on their own farms. Extension officers (Plate 5.2) only play the role of facilitation. The approach is all encompassing in that a variety of techniques is disseminated to the farmer, for instance, agriculture, home economics and sanitation. Farmers are taught on a crop (for example, soya) right from planting to utilization. The approach is participatory in that extensionists share experiences with farmers, combine the knowledge and develop strong linkages with farmers. Farmers feel appreciated when they are involved in the process of research.

One of the weaknesses of the approach is that it is time consuming. Farmers have to take a whole morning to carry out an agro-ecosystem system analysis, analyse the data, and present it. Some of the measures are too tedious. For instance, farmers have to find out the height of the plant (like in the case of kales), the number of leaves destroyed, the leaves used, the length of leaves, the breadth of leaves and the number of leaves on the whole plant. It could be important just to look at the general health of the plant, the diseases, pests and weeds, if any.

The researcher noted that where farmers are interested in investment, the zero plots are not encouraging. This is especially the case where so many treatments are being tried out in a research. Scaling up has not been achieved. The programme should put in more effort to work towards this goal.



Plate 5:2 A farmer (with child) identifies maize smut disease, FFS approach in Busia district.

5.2 Participatory learning and action research (PLAR)

From key informant interviews it emerged that PLAR is a stepwise process approach undertaken in order to diagnose and analyse current situations to plan, experiment and evaluate alternative ways of integrated soil fertility management (ISFM). ISFM has to do with managing the widest variety of possible sources of fertility in the most efficient way. ISFM emphasises strategies that make the best use of locally available resources based as much as possible on local knowledge and decision-making, including understanding that stems from research. The approach is implemented using a set of proposed order of learning tools, which are designed to stimulate and reflect on relevant issues that would eventually lead towards arriving at reasonable solutions.

The approach has four phases, namely, diagnostic or analysis, planning, testing, and evaluation. PLAR provides an alternative to the traditional linear transfer of technology approach in research and development. PLAR recognises that farmers have an intimate working knowledge of their environment which outsiders can never hope to achieve. This knowledge is accumulated over time from experience, observation and exposure to circumstances. Thus, farmers have a built-in inference framework with spatial and temporal dimensions. Therefore, it is very important for researchers (as outsiders) to observe and

question to obtain an understanding and an appreciation of indigenous knowledge (IK) as this is important in linking the local with outside (global) information.

The key informant interviews further revealed that the major strength of this approach lies in the fact that the approach empowers farmers by involving them in the process of research. This is done through the four phases, namely, diagnostic and analysis, planning, evaluation, and implementation.

The approach is also participatory in nature. It starts from where farmers are, how much they know and what can be done to uplift them in agriculture. This is done by assisting the farmers in improving their soil fertility management strategies through self-discovering and learning. This is achieved through integrated soil fertility management (ISFM).

Participatory learning and action research is of advantageous because it emphasizes collaborative learning and action, which are essential elements of development. This learning and action allows farmers to play greater roles in technology development and adaptation. PLAR allows for a quick, participatory and relatively easy analysis of farmers' soil fertility management strategies.

The major weakness of this approach lies in the fact that it requires a lot of resources. On-farm learning and experimentation by farmers requires inputs and visits by the extensionists and researchers. To organize field days, demonstrations and seminars requires time and money. Chances of sustaining such an approach without funding are very low.

From the FGDs it emerged that this approach has two strengths: First, it empowers farmers to analyze their farming situation, resource availability and production goals. Second, farmers meet once a week, and the approach provides room for carrying out innovation and testing new techniques.

The farmer involvement aspect in all the research stages is very important. Farmers are involved right from diagnosis, planning, and implementation to evaluation. In so doing

farmers learn and adopt new practices according to the resource base available. This is ultimately what counts.

Farmers are organized in integrated soil fertility management committees (ISFM) and regularly exchange information and new insights. The approach strengthens the farmer to farmer extension process. In fact, most farmers in the programme admitted to having passed across information received from the officers to friends, relatives and neighbours. The farmers who are taught new techniques easily adopt them. One old woman reported to have learnt about planting beans in lines using manure from the programme. Before that, she used to plant them haphazardly without using any kind of manure. Now equipped with this knowledge her beans do well and her yields have really improved.

Farmers reported to have gained a lot of technical knowledge from the approach. For instance, they have learnt how to prepare resource flow maps (RFMs). This term refers to simplified pictures of the farm system and elements that are crucial in managing soil fertility and of the farms resource flow pattern.

These resources include those entering the farm (inputs) and those leaving the farm (outputs). They quantify the flows in local terms and units. Most farmers expressed the view that before the initiation of the project they could not classify their soil types but now they do. They have learnt many agricultural techniques such as planting of resistant bean varieties (resistant to stem maggot and bean root rot), terracing, improved fallows, biomass transfer and agro-forestry.



Plate 5.3 A farmer and her grandchild stand in the foreground of a healthy crop of maize, PLAR approach in Kakamega district.

5.3 Training resource persons in agriculture for community extension (TRACE)

This approach is employed by CARE (K), an NGO based at Homa Bay in Nyanza province. From the key informant interviews it emerged that the approach aims at creating an environment where extension staff merely play a catalytic role in enabling the communities to analyse and modify their farming practices.

The TRACE concept recognises four interrelated principles of community management. These are, first, community members are competent in investigating, identifying and analysing their situations. Second, community groups have the capacity to design, plan, implement and monitor group as well as individual agricultural initiatives. The third principle is that within the communities there is a wealth of knowledge and experiences that can be effectively utilised to facilitate the sharing and adoption of agricultural technologies. The final principle is that field extension agents have a facilitative role in the process of community management initiatives.

There are three components that are pertinent to this approach, namely, extension and training, institutional capacity building and adaptive research.

The TRACE process aims at establishing an ongoing and community based extension process, which will enable the community groups to take advantage of their resourcefulness and associative efforts. This then enables the farmers to carry out their own needs assessment and develop appropriate agricultural interventions. The TRACE process aims at facilitating adoption of improved land use systems and improving participants' knowledge and skill levels. The process aims at experimenting and applying adaptive research technologies.

For comparison and contrast purposes the researcher interviewed three farmers in Siaya district where CARE (K) previously had projects and was also employing TRACE. From the interviews it emerged that the major strength of this approach is the fact that there is community participation in the research process. The deliberations are between the community and the project. Therefore, most solutions to problems as identified are solved together. Decisions are also reached by consensus.

The fact that the approach uses the already existing community structures is strength in itself. This is because this instills into farmers that sense of ownership of the research process. The locational management community is composed of the chief, extension officer and members of the village. Therefore, the farmers consider the project as their own.

The approach allows for close linkage with government administration. This is because locational management committees (LMCs) are sub committees of locational development committees (LDCs). The system of extension allows for a large geographical coverage, in that the entry points are schools and groups and so a location is well covered. This implies that techniques are spread far and wide.

The approach ensures capacity building through training. Among the people trained are village agricultural promoters (VAPs), group resource persons (GRPs), and adaptive research farmers (ARFs). All these farmers are trained in order to disseminate the techniques to other farmers.

However, the interviews revealed that the main weaknesses of the approach lie in the following points: there are chances of the process failing if the innovations do not flow in through LMCs as frequently as necessary. Where the LMCs are not active no much progress can be achieved.

The changes brought about ought to be motivating so that the community structures established can continue to function. Unless this is done the structures are likely to collapse.

The approach borrows heavily from voluntarism. This idea has not been popular among the community members. This is worsened by the fact that some institutions that previously worked with farmers used to give out handouts.

Difficulties often arise when there are attempts to change the particular perceptions of community members. This is because of the widely held beliefs concerning farming. For instance, when a new early maturing maize variety, named *morogoro*, was brought to the farmers, they initially rejected it. It took quite some time for them to realize its advantages over the local variety. Now the demand for the seed is so high that the supply is inadequate.

The researcher observed that the feed back system of the approach is a bit complicated. The fact that information has to be channelled from villagers through ARFs to the VMC to the SLMC and then to the LMC which has an extension officer, and vice versa, is complex. There is a case where a whole crop of kales was destroyed due to communication breakdown. This incident happened in Karachuonyo division. The crop belonged to a farmers group. The kales were invaded by a certain resistant aphid. The farmers sprayed all the insecticides that they were aware of, but the damage of the aphid on the crop persisted. They relayed the information to the area extension officer but by the time the message reached to the project officials, the damage caused on the crops was beyond repair. In this case, if there was a channel through which farmers could communicate directly with the project managers, the problem would have been addressed in time.

The strengths of TRACE include the fact that it boosts the capacity of farmers by training them. Among the categories of farmers who have been trained and assist in dissemination are group resource persons (GRPs), village agricultural promoters (VAPs), adaptive research

farmers (ARFs) and school resource persons (SRPs). CARE (K) officers collaborate with administrative officials such as chiefs and assistant chiefs. This forms a good and strong entry point into the society. It is also a good exit strategy. TRACE uses already existing groups and schools. This community mobilization aspect is very essential. Technology is bound to spread far and wide.

However, the approach has its own weaknesses. The key informant interviews disclosed that it is quite expensive to sustain. This is evident in the case of Siaya district where it was previously applied but due to lack of funding it could not be sustained. This is because it requires a great deal of resources to sustain it. This is partly due to its complex structure.

The key informant interviews further revealed that the approach does not address the socio-cultural aspect of farmers. Therefore, to change farmers' perception and attitudes becomes quite difficult. Farmers have strongly held beliefs and traditions concerning agriculture which must be addressed. To be able to have any positive impact they should be considered. It is very essential to try and find out what farmers do, how, and why they do it in that particular way. From here then the programme officers can develop on what already exists. This is very essential if there has to be any implementation.

Some resource persons expressed concern that the community members do not give them proper recognition. Farmers who are not in the targeted groups fail to attend seminars (so the attendance is poor) there is need for scaling up of the techniques to other farmers not necessarily in the project. The field days do not address this issue adequately.

Other advantages of TRACE include capacity building, the approach trains farmers on many agricultural aspects, for example, biomass transfer, improved fallows, terracing, agroforestry and striga control. It was encouraging to find that most farmers were still practising some of the techniques they were taught 2 years after the project wound up in Siaya district. The approach empowers farmers to carry out research on their farms and share the results with extensionists and other farmers. From such research, a farmer can make informed decisions. For instance, one farmer said that from the maize variety screening research trials, he now knows which maize variety performs best in his locality and has since adopted it. The

approach reaches a wider population due to the fact that its entry point into the community is in schools, existing groups and new groups where they had not previously existed. Farmers who are not in the groups are allowed to attend field days where they learn more in agriculture. The approach also promotes farmer-to-farmer extension. Schools are a very good channel for information dissemination, in that the information reaches the wider community. In fact, it is evident that once these technologies are adopted in schools they become sustainable. For instance, in Siaya most of the techniques that CARE used to disseminate are still being practised.

However, farmers expressed concern that not much can be achieved in-group dissemination, where there is lack of seriousness and interest among group members. In addition, participation in communal (group) work does not always mean adoption. Farmers may turn up in large numbers for a field day but what is most important is how much they learn and whether they adopt and sustain the technology. Lack of proper exit strategy was the main weakness of TRACE approach. It came as an after thought when the project was almost winding up. The locational agro-forestry committees (LACs) were formed to sustain the programme activities. These committees operate through the government extension system. Due to improper management of resources the programme could not be sustained. One farmer said that he has not sustained some of the activities learned because he is living in a modern world and techniques keep on changing. He learns new techniques from other information sources which he then adopts.

5.4 Participatory Approach to Farm Management (PARTIFARM)

Participatory approach to farm management was previously employed by MOARD in Sabatia division of Vihiga District. Farm management refers to the process by which the farmer decides on the allocation of his resources. The farmer does this by taking into account the various production objectives such as food production, generation of cash and income stability. Farm management extension, on the other hand, refers to the interactions between extension staff and farmers in the process of developing extension strategies that lead to improve farm resource management and decision-making in the farm. The role of extension staff here is to facilitate farmers in their decision-making process but not to attempt to make decisions for them.

From the key informant interviews it emerged that the approach takes account of the different on-farm opportunities and constraints of the various farming systems. Farmers have production objectives, constraints, needs, tastes and resource endowment on which they base their production decision. The extensionist may not have taken into account the above factors when designing and advocating new production techniques. However, while the farmer is the expert on his production techniques, extension staff can contribute significantly in providing information on new, or more appropriate practices and calculating the benefits obtainable for each option. The approach, therefore, stresses the need to segment farms according to common characteristics and then deal with each segment separately.

PARTIFARM stresses the need for participation of farmers of similar farming systems or segments. This approach emphasizes the need for in-depth professional analysis and review of the information provided by the farmers. The approach advocates that it is a combination of the synthesis of staff expertise and farmers knowledge and experience that will result in improvements in agricultural production. Either of the two in isolation has only a very limited scope.

Key informant interviews revealed that the main strength of this approach lies in the fact that farmers are given an opportunity to participate in making farm management decisions. This is possible due to the fact that they are given a chance to identify their problems, categorize, prioritize, and suggest possible solutions to them. Farmers are provided with technical information on new techniques, production, marketing and research. This empowers them to make informed decisions.

The approach relies heavily on segmentation of farms. Segmentation refers to a process in which farms are categorized or grouped according to one or more characteristics, which they have in common. Segmentation allows splitting a large number of farms with mixed characteristics into smaller sub-units where all farms in the sub-unit share one or more common characteristics. The approach segments farms on the basis of enterprise, commodities, agro-ecological zones, administrative units and resource base. The segmentation aspect of the farms is advantageous. This is because one can address a group of farmers, rather than

individual farmers. Also, one can easily target programmes to groups of farmers that actually need them.

The interviews further revealed that the approach carries out economic analysis of various enterprises which is a crucial aspect. Farmers are advised to look at a farm as an economic enterprise, calculate the cost-benefit analysis of each enterprise and find out which one is more economical. Farmers are given a variety of options to pick from. The approach stresses the idea of keeping records, which is very essential in any enterprise.

The weaknesses of the approach lie in the fact that it requires a lot of resources. When funding was suddenly withdrawn the project could not go on. This led to no follow-up and evaluation; therefore, the impact of the approach could not actually be assessed by the officers. Therefore, sustainability of the project was a problem. So there was no scaling up to other areas and no continuity.

Now that the success of the approach greatly depends on the farmers' ability to keep records, illiteracy of some farmers was a real drawback. This is because they could not be able to keep records and, therefore, cost-benefit analysis could not be done.

Segmentation has to be carefully done to avoid categorizing farmers erroneously. Segmentation that is not correctly done can leave out some really good farmers while others may tend to appear in all the segments. Therefore, if segmentation is incorrectly done there is a tendency that it will create a lot of problems for the extension programme and with subsequent farmer participation.

Farmers disclosed that the major strength of the participatory approach to farm management is that it allows for interaction between farmer and extension staff. This leads to improved farm resource management and decision making in the farm. Farmers are provided with technical information on what to produce, how to produce, where to produce, when to produce, for whom to produce and how much to produce. Farmers are also given information on cost-benefit analysis of various enterprises. They are, therefore, empowered to make informed decisions as far as farm resources are concerned.

Farmers were taught on how to keep records, which is very essential when one looks at a farm as an enterprise. However, unfortunately, very few farmers still keep records. The approach empowered farmers by building their capacity to carry out research. The farmers carried out trials on a communal plot. They adopted the techniques and implemented them on their individual plots. They still practise most of the techniques, such as agroforestry, planting of nappier, terracing and improved fallows.

Participatory approach to farm management is a holistic approach. It looks at the farm as a whole. The whole farm concept stresses the need to understand the operations of the entire farm. Only a whole farm concept allows for the drawing of realistic inferences on constraints and opportunities. To be able to achieve this goal then, one has to understand the farmers' needs and resource base.

The resource base here may include the agro-ecological zone, farm size rotational practices and land tenure system. Participatory approach to farm management addresses all the above issues. These enable the officers to give farmers options that they can adopt considering the resources that are locally available.

From the farmer interviews it emerged that weaknesses of the approach include the fact that farmers were never taught how to carry out their own cost-benefit analysis, hence no sustainability when the project wound up. Another weakness is poor exit strategy, in that funds were just withdrawn suddenly and farmers were not informed of the duration of the project. This then resulted in lack of follow-up, and therefore, no impact assessment.

The researcher observed that providing farmers with technical information is not what really ultimately counts. This is because resource poor farmers lack capital to buy the essential inputs, such as fertilizers. It would help to give them the inputs but on a credit scheme which can be refunded with farm products. This would then revolve to other needy farmers.

5.5 Catchment Approach

As already mentioned in chapter four, the major strength of the catchment approach is that it is participatory in nature. The officers work closely with farmers right from problem identification stage. In the case of Ebukhaya sub-location in Emuhaya division, the farmers identified problems and prioritized them. They then suggested possible solutions. The officers facilitated the farmers in the above task. Then the officers taught the farmers viable soil conservation techniques, including construction of terraces, planting of grass strips and agroforestry. The farmers adopted these techniques. From these they have realized great improvement in agriculture. Their crops are doing quite well and now they have plenty of milk from their animals.

From the key informant interviews it emerged that the approach has room for scaling up. This is because it covers a whole village. So the possibility of the techniques reaching far and wide is enhanced. This is made possible through the numerous field days and demonstrations that are organized in the catchment. The fact that the approach utilizes village groups (such as youth, women and self-help groups) enables the farmers to have that sense of ownership of the project. This is because there is that aspect of community mobilization.

From an FGD in Ebukhaya sub-location it emerged that the entry point of the extension officers to the village is through the administrative officers. This is a solid foundation because, in most places, such officials have a lot of influence on the locals. They can act as good role models. They are in a position to encourage farmers to adopt and sustain the learnt techniques. The officers have many favourable venues where they can reach large audiences such as at funerals and harambees. When they make announcements at such gatherings, the announcements are bound to reach far and wide.

The approach is sustainable since it empowers the farmers. In fact, most farmers have adopted the disseminated techniques, and are determined to sustain them. For instance, when it comes to improved fallows they have planted the trees and have multiplied the seeds. The retention ditches (a type of terraces) have been constructed by the majority of the farmers and they are well maintained (Plate 5.4).

However, from the key informant interviews in Ebukhaya sub-location, it was revealed that the approach has various weaknesses. First, where the administrative officers do not co-operate, or fail to have influence on the locals, the approach cannot really take root. The approach also requires a lot of resources in planning, both in terms of time and money. The field days have to be organized frequently. To get farmers, leaders and officers at the same venue and same time sometimes becomes difficult. On-farm visits have to be carried out to find out how farmers are progressing. All these do require money and time.

The researcher observed that providing farmers with the technical information is not always enough. This is because resource poor farmers lack capital to buy the real needed inputs and implements. For instance, if you provide a farmer with information on the agroforestry tree species but you do not give him or her the seeds to start with, then there is a high probability that he or she will not adopt that technique.



Plate 5.4: A farmer stands in the foreground of a well-utilized retention ditch, catchment approach in Emuhaya division.

5.6 Linkages between approaches used in Emuhaya and elsewhere

The study revealed that an effective approach should possess the following characteristics: flexibility, innovativeness, enablement and empowerment of farmers. It should be sustainable and allow for farmer participation through all the stages of the research process.

The study analysed the seven approaches, thereafter recommended that two approaches namely: farmer field schools and catchment, if harmonised could provide an effective dissemination strategy. This was done in accordance with the above characteristics. The emerging combination could then be used to disseminate information in Emuhaya division where two approaches, namely, community based participatory approach (CBPA) and participatory agro-ecosystem management (PAM), were currently being used but on a pilot basis (the approaches are new and were developed specifically for the Emuhaya AHI site).

Catchment approach is used in another location in Emuhaya; however, the study revealed that it is an effective approach which if combined with farmer field schools, could prove a suitable dissemination strategy for Emuhaya division.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

6.0 Introduction

This chapter consists of a summary of the research findings. Thereafter conclusions are drawn and some recommendations made.

6.1. Summary

This section is based on the specific objectives of the study.

6.1.1 Inventory of the approaches

The study looked at three major approaches used by various stakeholders to disseminate information to farmers in Emuhaya division, namely, participatory agro-ecosystem management (PAM), community based participatory approach (CBPA) and catchment approach. The study also looked at seven approaches/tools that are used to disseminate information to farmers in Emuhaya African Highlands Initiative (AHI) research site. These include group approach, on-station visits, on-farm visits, training and visit, field days, barazas (administration) and farmer-to-farmer extension. Furthermore, the study looked at four approaches used by various stakeholders to disseminate information to farmers in other divisions of western Kenya. These are farmer field schools (FFS), participatory learning and action research (PLAR), training resource persons in agriculture for community extension (TRACE), and participatory approach to farm management.

6.1.2 Overview of the strengths and weaknesses of the approaches

This section summarizes the strengths and weaknesses of all approaches used in both Emuhaya division and elsewhere in Western Kenya. Community-based participatory approach is participatory in nature. Second, it utilizes the community set-up through mobilization of community members. Third, it is all encompassing in that it involves all stakeholders in the research process. The approach is multi and interdisciplinary and enables capacity building through farmers' training. However, the approach requires a lot of resources in terms of both money and time. The feedback system in communication is a bit complicated and it is difficult to sustain the approach with minimum funding.

The participatory agro-ecosystem management (PAM) approach enhances enablement and empowerment of the farmer. Secondly, it increases farmer problem solving capacity. It views

the farm as an agro-ecosystem, which is an ecological system that has been modified by human beings to produce food, fibre or other agricultural products. It thus appreciates social relationships and structure in the society in relation to agricultural management issues. However, the weaknesses of PAM approach lie in poor implementation. This argument arises from the finding that farmers play a major role in managing trial activities but not designing them. Respondents argued that there is bias in frequency of on-farm visits. The trials should be carried out on nutrient-poor farms for observable results. The size of trial plots should be increased if generalization of the results has to be valid. To enhance farmer learning, communal plots should be set a side, where communal research trials can be carried out.

Catchment approach gives farmers an opportunity to identify agricultural problems that they encounter and suggest solutions on how they can be tackled. Secondly, it leads to visible and measurable improvements. The approach enhances community mobilization. This is achieved through the numerous open field days that it organizes where farmers are encouraged to attend. It enhances farmer capacity building through farm exchange visits in which farmers are given an opportunity to interact and learn from other farmers in other areas. The approach utilizes the local administration in information dissemination, which is a strong entry point in the community. The approach has room for scaling up since it encompasses a whole village set up. The approach can be sustained with minimum funding. However, the weakness of catchment approach is that it relies heavily on community mobilization, which cannot always be achieved. In cases where the administration is reluctant/inactive then chances of its failure are quite high.

Participatory learning and action research approach (PLAR) enhances farmer participation in research process. It emphasizes collaborative learning through the integrated soil fertility management (ISFM) committees. It empowers the farmers to analyze and understand the soil fertility matters, which can then be displayed in resource-flow maps. The main weakness of the approach is that it requires a lot of resources to sustain in terms of time and money. This is due to on-farm learning and experimentation by farmers, which requires inputs and visits by extensionists and researchers. To organize the numerous field days, demonstrations and seminars is very expensive and time consuming. Therefore, chances of sustaining such an approach are very low.

Training resource persons in agriculture for community extension approach (TRACE) enables and empowers farmers to carry out their own research. It enhances capacity building through farmer training. It utilizes community structures where they are already established and initiates them where they are absent. This ensures large geographical coverage, thus scaling up of new techniques. The weakness of TRACE approach is that it is time consuming and over relies on locational management committees. The approach borrows heavily from voluntarism which is not a popular idea among resource-poor farmers. It does not address socio-cultural aspects of the farmers and lacks a proper exit strategy. The approach is difficult to sustain without proper funding.

Farmer field schools (FFSs) approach empowers and enables farmers to make informed decisions regarding their farming activities. It enhances capacity building through training farmers in the farmer field schools. It appreciates farmers' indigenous knowledge (IK) and encourages farmers' participation in the research process. It has high chances of scaling up of new techniques due to the properly attended field days and seminars. The approach can go on with minimum funding. However, the major weakness of FFS is that it is time consuming and requires high literacy levels among the participating farmers.

Participatory approach to farm management views the farm as holistic in that it takes into consideration all agricultural activities that take place on the farm. It segments the farm on the basis of enterprises, commodity or agro-ecological zone. It advocates for farmer participation in the research process. It enables farmers to make informed choices by enlightening them on cost-benefit analysis of the various farming activities. It allows for greater interaction between the farmer and officers. However, the approach requires a lot of resources, and so difficult to sustain without funding. It relies heavily on the farmers' ability to keep and maintain records, which is quite difficult in case of illiteracy. Lack of a proper exit strategy is the major drawback of the approach.

The study found that community-based groups are a good entry point through which research and development agencies could channel information to farmers. The study revealed that a majority (78%) of the farmers interviewed belonged to one or more of the community-based groups. The responses were as follows: youth groups (18%), women groups (30%), church

groups (4%), farmers (14%), self-help groups (6%), and administrative groups (4%). The main setback of this channel is that most of the groups are not involved in agricultural activities. In addition, a majority of the groups are not registered, thereby making it difficult for the officers to locate them. For groups that are agriculture oriented, the frequency of meetings should increase for any sustainable impact to be realised. Farmers should be empowered and enlightened to learn more from the station activities. This could be possible if farmers were facilitated to access the experimental agricultural activities on the stations. Though on-farm visits as an approach or tool had the highest frequency (89.1%), farmers reported that it has some shortcomings. First, there is a bias in selection of farmers to be visited, secondly, it does not embrace external learning and, finally, the visits are not consistent. The training aspect has not been fully exploited. Farmers need to be trained on the essential aspects of agricultural production. Caution should be taken to ensure that all farmers have an equal opportunity to participate in the training. Probably, some follow up should be carried out to encourage farmers to test, adopt and sustain the learnt techniques.

On the other hand, field days are a very good channel of disseminating agricultural information. This is because participation is voluntary and non-selective. Also, they are accessible and are organised frequently.

It came out clearly that farmers do not actively seek for information from researchers at their stations, since only 14% had visited the stations. On the contrary, 86% of the farmers advocated for on-station research. Farmers should be enabled and supported in this venture. When it comes to capacity building and empowering farmers to carry out research, efforts have to be made in order to succeed. There is need to move from supply-driven research and extension to demand-driven research/extension. This can only be achieved if farmers are made to realize the importance of getting informed.

It is necessary to involve farmers in all the four stages of research, namely, problem identification, planning, implementation and evaluation. The findings of this study show clearly that farmers were only involved in the first (96%) and last (66%) stages. Participation embraces involvement of all the stakeholders and farmers are a component to this because they are the people at the grassroots level who the programmes target.

6.1.3 Harmonization of the approaches

The study found that no single approach can be considered as the most efficient or effective. Through an understanding of the existing approaches on the basis of strength and weaknesses the study recommended a combination of two approaches; these are the farmer field schools and the catchment approach.

6.2 Unification factor

The different approaches unify the various institutions that employ them. The approaches are multidisciplinary in nature. This is because they enable researchers, scientists and extensionists from collaborating institutions to interact in a participatory mode. When the various stakeholders meet, there is an enabling environment for interactions and brainstorming. This allows for tapping of expertise and knowledge from the various professionals. This was evident in areas where more than one approach is used and farmers failed to clearly identify the institution to which the officers disseminating information are attached. In some cases, for instance, in Butere-Mumias district, the FFS approach is used by both KEFRI and MOARD.

6.3 Interrelational aspect

The study revealed that the various approaches are interrelated in the process of dissemination of information. The main channels used to disseminate information include on-farm visits, training, seminars, group approach, administrative barazas and field days. In Emuhaya division where two approaches are used, namely, participatory agroecosystem management and community based participatory approach, farmers had varying responses on the effectiveness of the various tools/approaches. These were as follows: groups (96%), on-station research (86%), on-farm research (89.1%), and training and visit (91.7%); field days were recommended by 98%, barazas (81.6%) while farmer-to-farmer extension (96%).

6.4 Integration of approaches

Forty-four percent of the farmers advocated for the use of all the approaches/tools. On the contrary, 56% recommended that specific approaches should be used for better results. Group approach was recommended by 14%, farmer-to-farmer extension (10%), catchment approach (10%) and on-farm visits (22%). From the interviews, it was evident that an effective approach

should ensure farmer participation, enablement, empowerment, capacity building (through training) and should be sustainable. It was on the basis of the above factors that a combination of FFS and catchment approaches were recommended.

6.5 Conclusions

The study looked at the seven major approaches used to disseminate information to farmers in Western Kenya, and the seven approaches/tools employed in dissemination in Emuhaya division. It is essential at this stage to find out how the approaches could be harmonised so as to get a suitable one for Emuhaya.

Considering the responses of the farmers in Emuhaya division and the seven approaches/tools versus the responses of other farmers and informants in other areas at this point in time the researcher would like to recommend two approaches which, if combined, would be a major boost to enhancing information dissemination. The two approaches are farmer field schools and the catchment approach. The strengths of the approaches could be banked on and weaknesses addressed for effective/efficient information dissemination. When it comes to empowering and enabling farmers, the farmer field schools approach is the most appropriate. Farmers' participation is ensured. In fact, farmers were extremely appreciative of the approach. They admitted to have learnt quite a lot about various soils management and agronomic topics. With the knowledge gained, farmers have become experts on their own farms. They do make informed decisions, for instance, on use of organic and inorganic fertilizers and soil conservation practices so as to improve on management of soil productivity. FFS is a friendly approach. The farmers' ideas and knowledge are incorporated into their (farmers') learning. Farmers meet on a regular (weekly) basis and are able to follow the crop/livestock/poultry on a step-by-step basis compared to other approaches where farmers rarely meet. The extensionists and / or researchers visits to farmers are sporadic and the topic may not be a priority to them. There has been increased technical, social, marketing and research knowledge due to the farm trials and group dynamics that have led to increased group cohesion and strong relations between fellow farmers and between farmers and extension staff. This has boosted inter-and intra-farmer sharing of knowledge. Through FFS staff have gone through technological updating which is also very useful.

The approach is a great stride forward to farmers, staff, researchers and policy makers. The positive changes that have been realised are due to small technological changes gained through capacity building. Through the total participation of farmers in field operations and agro-ecosystem analysis and presentations, farmers have developed in terms of empowerment. Therefore, they make critical and informed decisions on their farms.

When it comes to community mobilization and participation, catchment approach is the most appropriate. In soil and water conservation in Emuhaya the approach has been quite successful. Farmers have been enlightened on construction of terraces, retention ditches and cut-off drains. If farmers are adequately mobilised, they fully appreciate the benefits of soil and water conservation. They continue implementing and sustaining soil conservation measures on their own. Therefore, chances of sustainability are quite high. Almost all farmers interviewed appreciated the substantial benefit from their soil conservation work. This was particularly marked for maize and beans, where farmers reported doubling of yields. Initially, the harvests were very poor but now they have greatly improved. This could be attributed to the topsoil retention together with nutrients, which the farmers incorporate into the soil. Also, there is strong benefit from increased nappier supply associated with terraces. This was said to raise milk quality and quantity. Farmers who do not have cows sell napier. Since the Livestock Development Programme (LDP) bull scheme was introduced, farmers have been prompted to change to cross/grade breeds. This increases the manure supply.

Staff training through courses and training on the job aspect is embraced by catchment approach and this is very essential. This exposure updates the officers. The staff become aware of farmers' problems and knowledge and learn better ways of interacting with them. Therefore, they are empowered to develop and recommend innovative techniques to impart on farmers. This also comes in handy for follow-up once the catchment is implemented.

The seven approaches that were studied in this research claim participation of all stakeholders in research process. Participation can only be achieved if there is room for flexibility from all the actors: farmers, researchers and extensionists. It should be noted that if there is no room for change then there is little/no sense in following a participatory process and participation is time consuming. It takes a lot of time to explain to others what one already knows. At times this may be seen as a bother. To be able to address this issue, all the participants should

discuss and be informed of the benefit of this participation. It is very important that farmers and others are aware of any benefits that could arise; in cases where this is not done, the aftermath could be detrimental. Farmers may get disappointed and disinterested if their expectations are not fulfilled. Therefore, the participation process ceases to be meaningful. This might help explain the declining numbers of farmers in some programmes.

Farmers are already well acquainted with agricultural information. An innovative approach may be more appropriate than various approaches in a field where there are already many actors. Farmers are doing a commendable job of experimenting with new agricultural techniques. There is sufficient use of expertise available from all the actors. There is need to consider farming systems and land size and tenure to ensure that work done is maintained, productive and of benefit to the farmer. Experience has shown that practices may not be sustained where a farmer uses hired land.

There are still very broken links in the chain supposed to exist between research at main stations, on-farm trials and the farmer. On the other hand, on-farm visits by extensionists and researchers are more frequent during peak activities (planting, weeding, harvesting) but sporadic during off peak seasons. This should not be the case.

6.6 Recommendations

The following recommendations have been formulated as a result of the information that was obtained from the study.

- Research and development (R&D) agencies need strategies (approaches) that can improve farmers' ability to innovate and efficiently manage their resource base. Efforts should be made to ensure that farmers use locally available materials where necessary/applicable. Effort should also be made to scale up the approaches so as to create a wide impact on the livelihood of farmers and the whole community. This can be catered for by organizing frequent field days where farmers from other areas can attend and learn from others. This can be accompanied by the following: fostering farmer innovation so that technical and management options can be derived in the context where they will be used. There is dire need to consider the indigenous knowledge that farmers possess. Efforts should be made to actively appreciate and

encourage indigenous knowledge. Farmers' knowledge should be incorporated into potential solution design.

- R&D agencies should seek to appreciate and understand social relationships and structures in the society, in relation to agricultural management issues. These social dimensions include gender, group dynamics and resource endowment. This should be better understood and the information utilized to ensure that the target group needs are addressed. Research has tended to be technology oriented, leaving aside socio-cultural issues (gender, wealth differences, traditional beliefs) and external aspects such as policy, services, and input supply.
- There is need for publications and a communications strategy to spread information and lessons. Research and development agencies should create public awareness for different audiences. Field days alone cannot fulfill this task.
- There is need to explore various constraints of the farmers and existing opportunities and assess the farmers' resource levels with farmers' full participation. This would enable the R&D agencies to come up with feasible area specific production strategies (activities) that are within the farmers' resource endowment.
- Research and development agencies should move their notion from inducing and motivating people to enabling, supporting and employing them to make decisions. There should be a proper mechanism to ensure random and fair selection of farmers when it comes to exchange trips, training and seminars.

BIBLIOGRAPHY

- Abbott, J. and I. Guijt 1997 Methodological complementary: Creativity and Compromise. PLA Notes, 28: 27-32.
- Babbie, E. 1994 The practice of social research. Belmont, CA: Wadsworth, 7th Edition.
- Benard, R.N. 1988 Research methods in Cultural Anthropology. Newbury Park, CA: Sage.
- Chambers, R. 1992 Rural Appraisal: rapid, relaxed and participatory. Institute of Development Studies. Discussion Paper No 311.
- _____ 1994a Participatory rural appraisal (PRA): Analysis of experience. World Development, 22 (9): 1253-1268.
- _____ 1994b Participatory Rural Appraisal (PRA): Challenges, potentials and paradigms. World Development, 22 (10): 1437-1454.
- _____ 1997 Whose reality counts? Putting the last first. London: IT Publications
- Chambers, R., A. Pacey and L. Thrupp (Eds.) 1989 Farmer first: Farmer innovation and agricultural research. London: IT Publications.
- Dent, J.B. and J.R. Anderson 1971 Systems analysis in agricultural management. Sydney: John Willey and Sons.
- Franzel, S., and M. Odell (Eds.) 1987 Diagnosis in farming systems research and extension Vol. 1. Gainesville: Institute of Food and Agricultural Sciences.
- Freire, P. 1968 The pedagogy of the oppressed. New York: The Seabury Press.
- Guijt, I. and L. Veldhuizen 1998 What tools? Which steps: comparing PRA and PTD. Issue Paper No. 79. London: IIED.
- Johnson, A.W. 1978 Research methods in social anthropology. London: Stanford University Press.
- Khon Kaen University 1987 Rapid rural appraisal: Proceedings of an International Conference. Bangkok: Khon Kaen University.
- Mascarenhas, J. 1991 'PRA and participatory learning methods: Recent experiences from MYRADA and South India.' RRA Notes, 13: 49-57.
- Mathema, S.B., D.L. Galt, K.C. Krishna (Eds.) 1986 Group survey and on-farm trial process. Khumaltan: Ministry of Agriculture.
- McCracken, J. 1988 Participatory rapid rural appraisal: A trial model for AKRSP (India). London: IIED.
- Merill-Sands, D. and J. McAllister 1988 Strengthening the integration of OFCOR, experiment station Research in NARS: Management lessons from nine-country case study. The Hague: ISNAR.
- Norman, D.W. and D.C. Baker 1986 Components of farming systems research, FSR credibility and experiences in Botswana. In L.W. Mook (Ed.) 1986 Understanding Africa's rural households and farming systems, pp 36-57. Colorado: Westview Press.

- Om'asaba, J.Y. 1997 Economic change in Bunyore, Kenya (1902-1963). Unpl. M.A. Thesis. Department. of History, University of Nairobi.
- Osogo, J. 1965 A history of the Abaluvia. Nairobi: Oxford University Press.
- Pottier, J. 1994 Agrarian change at the household level. In S. Preben (Ed.) Institutions, culture and change at community level. IDS Occasional Paper No.3. Copenhagen: Rosekilde University Centre.
- Republic of Kenya 1997 Vihiga District Development Plan: 1997-2000. Nairobi: Government Printer.
- Republic of Kenya 2001a Kenya Population Census, 1999 Vol.1 Nairobi: Government Printer.
- Republic of Kenya 2001b Kenya Population Census, 1999 Vol.2 Nairobi: Government Printer.
- Rhoades, R.C. 1989 Evolution of agricultural research and development since 1950. London: IIED.
- Ritzer, G. 1992 Sociological theory. New York: McGraw-Hill
- Rudqvist, A. 1990 Planning, diagnostic studies and popular participation. Working Paper No.11. Development Studies Unit, University of Stockholm.
- Sarin, M. 1998 Community forest management: Whose participation? In I. Guijt and M.K. Shah. The myth of community: Gender issues in participatory development. London: IT Publications.
- Scoones, I. 1995. PRA and anthropology: challenges and dilemmas. PLA Notes, 24: 17-20.
- Shah, P., G. Bharadwaj and R. Ambastha 1989. Farmers as analysts and facilitators in PRA and planning. Ahmedabad: Aga Khan Rural Support Programme (AKRSP).
- Silitoe, P. 1998 The development of indigenous knowledge: A new applied anthropology. Current Anthropology, 39 (2):225-227.
- Smutkupt, S. 1987 Farmers to farmers: Researchers role as facilitators. IDS Workshop Paper, Brighton.
- Stakeholders Report 1999 Kenya stakeholders workshop on 'Improving integrated nutrient management strategies in small scale farms in Africa'. Kakamega.
- Tobisson, E. and A. Rudqvist 1992 Popular participation in natural resource management. Working Paper No.11. Development Studies Unit, University of Stockholm.
- Umans, L. 1997 The rapid appraisal of a knowledge system: The health system of Guavani Indians in Bolivia. Indigenous Knowledge and Development Monitor, 5(3):14-16.
- Upton, M. 1987 African farm management. Cambridge: Cambridge University Press.
- Vansteijn, T. 1991 Rapid rural appraisal in the Phillipines: Report of a study on the application of RRA by Phillipines' NGOs and University Institutes. Quezon City: Council for People's Development.

APPENDICES

APPENDIX 1 : FARMERS' QUESTIONNAIRE BACKGROUND INFORMATION

- 1 (a) Name (Optional) _____
(b) Code number _____
(c) Date of interview _____
(d) (i) Place of interview _____
(ii) Village _____
(e) Sex _____
(f) Age _____
(g) Educational level _____
(h) Occupation _____
(i) Church denomination _____

APPROACHES

- 2 (i) When were you incorporated into this project?
Year _____ Month _____
(ii) How were you identified _____

3 (i) Do you belong to any local group?
Yes ☐ No ☐
(ii) Which one? _____
(iii) Do the officers visit your group?
Yes ☐ No ☐
(iv) How frequently do they attend your group meetings?

(v) What do they talk about in such meetings?

(vi) What do you think about group approach? Is it an efficient/effective approach.
Yes ☐ No ☐

Explain your answer.

4 (i) Do you visit research officers at the station?

Yes ☐ No ☐

(ii) How often? _____

(iii) What have you learnt from such visits?

(iv) Do you think on-station research is an effective approach to agricultural development.

Yes ☐ No ☐

Explain your answer.

5 (i) Do research/extension officers visit you on your farm?

Yes ☐ No ☐

(ii) How often? _____

(iii) What have you learnt from such visits?

(iv) Do you think on-farm research is an effective approach?

Yes ☐ No ☐

Explain your answer

6 (i) Have you ever attended any farmer training?

Yes ☐ No ☐

(ii) How many times in the last 12 months? _____

(iii) What did you learn?

(iv) Did the officers visit you later on?

Yes ☐ No ☐

(v) Do you think training and visit approach is effective?

Yes ☐

No ☐

Explain your answer.

- 7 (i) Have you ever attended field days?

Yes ☐

No ☐

- (ii) How many times in the last one year?
-

- (iii) What did you learn?
-
-

- (iv) Do you think field days are effective?

Yes ☐

No ☐

Explain your answer.

- 8 (i) Does the chief /assistant chief/village elder in your area organise barazas?

Yes ☐

No ☐

- (ii) Do the research/ extension officers attend such meetings?

Yes ☐

No ☐

How frequently?

- (iii) Do you think it is an effective approach?

Yes ☐

No ☐

Explain your answer.

- 9 (i) Do you ever share agricultural information with your neighbours, relatives or friends?

Yes ☐

No ☐

(ii). Give an example.

(ii) How did you receive the information?

(iii) Do you advocate for farmer to farmer extension?

Yes ☐

No ☐

Explain your answer.

(iv) What constraints hinder inter-farmer sharing of information?

10 Have you ever been involved in the following stages of a project?

(i) Problem Identification

Yes ☐

No ☐

Please describe how it worked.

(ii) Evaluation

Yes ☐

No ☐

Please describe how it worked.

11 Do you think innovation should start with the farmer (1) or officers (2)

Please explain your answer

12 In your opinion, how do you think research should be carried out? (Short-term (1) /long-term (2))

Please explain your answer

13 Do you think the approach used to disseminate information determines adoption.
Yes ☐ No ☐

Please explain.

14 What do you think should be done to improve on the effectiveness of the approaches?

15 Do you think the approaches should all be used for better results?
Yes ☐ No ☐

Please explain your answer.

APPENDIX II : OFFICERS' KEY INFORMANT INTERVIEW GUIDE

1. Could you please tell me the approach(es) that you use to disseminate information?
2. Tell me something about their development and when you started using them.
3. Do you think these approaches are effective, efficient and appropriate?
4. How do you rate the approaches in terms of sustainability?
5. What do you think about farmer selection and participation as far as the approaches are concerned?
6. What do you think are the major strengths of the approaches?
7. What are the drawbacks that you encounter in your efforts to use these approaches?
8. Do you think the approach used determines the farmer's adoption rate of innovations?
9. What do you think can be done to improve on their effectiveness?
10. Do you think the approaches can be integrated with others for better results? Please explain your answer.

APPENDIX III: FARMER KEY INFORMANT INTERVIEW GUIDE

- 1 Which approach is used by extensionists and/ or researchers in this area?
- 2 When were you incorporated in to the project and how?
- 3 What have you benefited from the project?
- 4 What do you think are the major strengths of the approach used to disseminate information to farmers in this area?
- 5 What do you think are the major weaknesses of the approach?
- 6 Do you think the approach is sustainable? Please explain your answer.

APPENDIX IV: GUIDE FOR FGDS IN EMUHAYA DIVISION (AHI) SITE

1. What approaches are used by the extensionists and / or researcher in the project?
2. (i) Have you ever heard of the Participatory learning and action research approach (PLAR)?
(ii) Could you please tell me some examples of agricultural practices that you have initiated on your farm?
(iii) Why did you enter into this kind of practice?
(iv) Did you inform the officers about it?
(v) How did they react?
(vi) Do you still practise it?
3. (i) Have you ever heard of participatory agro-ecosystem approach?
(ii) What do you think about the issue of researchers designing the project then the farmers manage it?
(iii) Which agricultural resources are locally available to the farmer? Are farmers aware of them? How can the farmers manage them?
4. (i) What do you think about the approach of training resource persons in agriculture for community extension?
(ii) How can farmers be trained to teach fellow farmers concerning new agricultural techniques?
(iii) What do you think hinders farmer to farmer extension?
5. What do you think about administrative barazas as an approach to information dissemination?
6. What do you think can be done to improve on the effectiveness of the approaches?
7. Which approach do you think can be most effective and/ or efficient in the context of Emuhaya division AHI research site?

UNIVERSITY OF
ST. OF AFRICA
LIBRARY

APPENDIX V: GUIDE FOR FGDs IN OTHER AREAS

- 1 Which approach is used by extensionists and / or researchers in this area?
- 2 Tell me more about its development.
- 3 What do you think are the major strengths of the approach?
- 4 What are the weaknesses of the approach?
- 5 Is the approach sustainable? Please explain your answer.