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Farmer field schools in Bungoma district of western Kenya: a rapid appraisal

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Farmer field schools in Bungoma district of western Kenya: A rapid appraisal

by

Anthony Machacha

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

Co-majors: Sociology; Sustainable Agriculture

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ABSTRACT

Africa has experienced the least socioeconomic progress in recent decades by many measures. Poverty, disease, drought, and conflict have combined to trap many nations in endless cycles of misery and plummeting quality of life. Agriculture, one potentially significant avenue out of these cycles and Africa's largest economic sector, is burdened with significant problems. Over the last five decades, various approaches to agricultural development have been introduced with some modest levels of success. The latest extension innovation in the fight against rural poverty is the Farmer Field School (FFS), introduced to Africa from South East Asia in the early 1990s. FFS are groups of people with a common interest getting together regularly to discuss, observe, understand, and practice the 'how and why' of particular topics in agriculture. FFS are specially adapted to field study where specific hands-on management skills and conceptual understanding is required. Kenya was one of the first countries in Africa where the UN-FAO set up pilot FFS projects, many of which developed into success stories. The present study was initiated to find out how the concept of the FFS has been adopted and scaled-up, and what qualitative difference this has made in the lives of the farmers involved. This researcher is personally interested in Western Kenya because he grew up there and wants to understand its development challenges and opportunities, and the region has a significant number of agencies involved in agricultural development.

The first objective is to learn more about Farmer Field Schools as organized in this region today; the second objective is to compare some elements among the FFS in order to identify the characteristics and processes that are associated with outcomes that provide members the greatest benefits in terms of learning and sustainable livelihoods.

This study may form part of a long-term study to understand the role of FFS in changing peoples' lives from a Sustainable Livelihoods perspective. It involved the collection of qualitative data through semi-structured interviews and focus groups from four FFSs that were then be compared on the basis of group development and maturity, and the groups' contribution to the sustainability of members' livelihoods. Contrary to the expectations at the beginning of the study, the groups reflected greater variation than anticipated.

While it appeared that groups with more years of experience were more independent than newer groups, the former had not yet initiated other groups. But there was evidence that the more experienced groups had helped to promote the spread of new technologies and methods to other groups and individuals. Secondly, groups that were well funded were not always more independent than those that were poorly funded or self-financed. Lastly, groups with initial high social and human capital were not necessarily more mature and independent than those that were formed for the sole purpose of the field school. This probably calls for the need to distinguish between pre-existing social capital within a community before the residents form an action group and the social capital that is created when they form the group. There is a significant role that the facilitator plays, and while group leadership influenced the perceived performance of the group, the level of literacy of the leaders was not a predictor for group performance. The style of leadership and experience in leadership roles determined how the groups responded to their leaders.

Based on these observations, group viability is largely influenced by members' other primary occupations, external facilitator skill and commitment, and proximity of the members' homes relative to each other and relative to the experimental farm.

This implies that planning for a successful field school should include a process for selection of members whose primary occupations as well as relative proximity to other potential members' farms and to the experimental farm would not keep them away from participating in the field school activities as needed, and the designation of a well-trained and committed facilitator to the group.

A more thorough analysis of such groups can help one predict the success or withering of a group with some degree of certainty, allowing that memberships within groups can always change and in turn shift the perceived trajectory of a group's fortunes.

CHAPTER ONE. OVERVIEW

Introduction

Among regions of the developing world, Africa has experienced the least progress in recent decades by many measures. Poverty, disease, drought, and conflict have combined to trap many nations in endless cycles of misery and plummeting quality of life as revealed by several recent UN Human Development Reports (UNDP 2004). Agriculture, one potentially significant avenue out of these cycles and Africa's largest economic sector, is burdened with significant problems. At the same time, the United Nations Industrial Development Organization (UNIDO) makes a sobering prediction for sub-Saharan Africa. UNIDO's Industrial Development Report for 2004 states that

...the economies of Sub-Saharan Africa (SSA) have been in decline for a quarter of a century, and unless this disturbing trend is reversed, the Millennium Development Goals (MDGs) are unattainable for Africa... SSA is not just failing to converge with other regions, its decline is absolute: per capita incomes are significantly lower now than a quarter-century ago... On present trends most of the developing world will continue to converge with the developed world, but significant parts of Africa will not merely fall behind; they will fall apart (UNIDO 2004: 29).

However, despite the seemingly dire situation, various agencies have continued to strive to revive and improve agriculture and reduce rural poverty, and their approaches and impacts continue to draw attention. Over the last five decades, various approaches to agricultural development have been introduced with some modest levels of success. The latest extension innovation in the fight against rural poverty is the Farmer Field School

(FFS), introduced to Africa from South East Asia by the United Nations-Food and Agriculture Organization (FAO) in the early 1990s. Farmer Field Schools (FFS) are groups of people with a common interest getting together regularly to discuss, observe, understand, and practice the 'how and why' of particular topics in agriculture. FFS are specially adapted to field study where specific hands-on management skills and conceptual understanding is required (Gallagher 2002). The FFS is not primarily a technology transfer system, but is an education and extension program focused on specific technologies that can help improve incomes and reduce production risk, providing a focal point for creating the wealth required to achieve personal, family, and community goals, where wealth is a means, not an end. This technology is not just what is imported into the community, but also includes knowledge and skills as well as social organizations that focus the knowledge and power on specific tasks (Mazur & Titilola 1992). The systematic experimentation, innovation, adaptation, and transformation by farmers under diverse, heterogeneous conditions characterizing FFSs are part of the creative response by the local knowledge systems that are now given an unprecedented level of recognition in the field of agricultural extension in a growing number of developing countries.

Kenya was one of the first countries in Africa where the FAO set up pilot FFS projects, many of which developed into success stories. The present study was initiated to find out how the concept of the FFS has been adopted and scaled-up, and what qualitative difference this has made in the lives of the farmers involved. This researcher is personally interested in Western Kenya because he grew up there and wants to understand its development challenges and opportunities, so it was opportune that the region offered an ideal site for this research because it has a significant number of agencies involved in

agricultural development and poverty eradication efforts (the FAO pilot FFS program had a number of projects here); it has one of the highest population density levels in the country; and the weather supports year-round rain-fed farming.

FFS are seen as a two-step process of education followed by access to livelihood assets, building toward community action and group independence. Evaluations of FFS in East Africa have shown that major outcomes include social institutions at the community level, and social trust and process skills that allow for further community driven development. It has also been suggested that livelihood benefits of FFS be evaluated for their social and financial benefits and compared with other development investment programs.

There are two objectives in this study. The first is to learn more about Farmer Field Schools as organized in this region today, their history, recent achievements, problems and what their members hope to achieve in the future. The second objective is to compare some elements among the FFS in order to identify the characteristics and processes that are associated with outcomes that provide members the greatest benefits in terms of learning and sustainable livelihoods.

This study may form part of a long-term study to understand the role of FFS in changing peoples' lives from a Sustainable Livelihoods perspective. It will involve the collection of qualitative data through semi-structured interviews and focus groups from four FFSs that shall then be compared on the basis of group development and maturity, and the groups' contribution to the sustainability of members' livelihoods.

CHAPTER 2. PERSPECTIVES FROM SOCIOLOGY AND SUSTAINABLE LIVELIHOODS

Origins of FFS

FFS are based on an innovative, participatory, and interactive learning approach which was developed by the Food and Agricultural Organization-assisted Indonesian National Integrated Pest Management (IPM) Programme in 1989 as a way for small-scale rice farmers to investigate and learn for themselves the skills and benefits of integrated pest management practices (Minjauw, Muriuki, & Romney 2002). It was inspired by partly by previous programs for literacy and primary health care, allowing the combination of local knowledge and scientific approaches.

The term ‘farmer field school’ was first used in Indonesia in 1990 (Dilts & Hate 1996) to refer to gatherings of farmers on a weekly basis throughout a cropping season to observe, analyze and develop their knowledge of field processes in order to make locally responsive field management decisions together. This approach was developed when it was realized that tropical rice pests were developing high levels of pesticide resistance and that large-area recommendations were not working due to the high variability of local ecological conditions. Thus, the early Farmer Field Schools focused on Integrated Pest Management (IPM) because of the need for farmers to develop their own effective strategies for field pest management. Much of the technical basis for IPM has long been known; for instance, Indonesian scientists articulated the principles of IPM in rice in the early 1970s (Dilts & Hate 1996), but not much progress was made then. Some of the practices that were tried with limited lasting impact were the Strategic Information Campaigns in Malaysia, Training and Visit (T&V) in the Philippines, and ‘demonstration plots’ in Thailand and Bangladesh. These

and other approaches to agricultural extension or rural development were top-down, and were found to be not effective over time. FFS activities are a response to and an evolutionary step within the T&V system — the plot is no longer managed by extension staff but by the farmer group, and the extension officer's role changes from primary knowledge source to facilitator of knowledge creation (Gallagher, 2000). Thus, FFSs are ideally participatory, changing the roles of farmers and extension agents from a one-way, top-down activity to a multidirectional, horizontal learning and teaching experience involving the whole community and even curious visitors.

The Field School approach represents a “move away from centralized extension practices” in order to “return the locus of interaction to the farmers’ fields in a process that makes people and ecology interact directly” (Dilts & Hate 1996). It emphasizes decentralized educational processes and *in situ* discovery and learning by farmers—hopefully replacing top-down, input-intensive technologies with bottom-up, knowledge-intensive processes. However, this shift to knowledge intensity may cause fatigue among farmers if it is done rapidly (Mukhwana 2004).

When Thiele et al. (2001) chronicled the experiences of Farmer Field Schools in the Andes they also found that the implementation of the FFS approach in the region was relatively intense, but had only reached a limited number of families. They recommended an improvement of the flow of information to non-participants, and working with other community groups to increase the number of FFSs, among other suggestions. However, Feder, Murgai, & Quizon (2004) caution against rushing to increase the number of FFSs based on the positive results of small pilot studies that may have been exaggerated.

After the first experiences with rice, FFSs were established with a diverse range of crops in many countries (Thiele et al. 1991). The Field School approach has since been adopted in Africa and Latin America, driven largely by the Global IPM facility. In the process, FFSs have evolved beyond IPM to Integrated Production and Pest Management (IPPM) and more, such as Farmer Field Schools whose curriculum includes livestock and special topics in nutrition, health and hygiene, HIV-AIDS, value-added processing, and marketing.

FFS aim to build farmers' capacity to analyze their production systems, to identify their main constraints, and to test possible solutions, eventually identifying and adopting the practices most suitable to their farming system with or without external assistance. Farmers are seen the fundamental resource and not as being "reticent to accept our messages and change their behavior in the way prescribed by outsiders" (Dilts & Hate 1996) – a sentiment that was voiced in frustration by one of the key informants in Kenya. The philosophy underlying the Field School approach is one that views people as intrinsically curious and creative, with a strong desire to gain control over their lives by understanding the forces and patterns affecting them.

Key activities during an FFS session are participatory technology development (PTD), in which farmers focus on solving local problems through a process of collective and collaborative inquiry using comparative studies and the special topic. PTDs are implemented to empower participants with analytical skills to investigate cause-and-effect relationships of problems in farming practices. This is also facilitated by the technique of agroecosystems analysis (AESAs) as an integral component of PTDs in recording and observing the results of PTD experiments (Minjauw, Muriuki, & Romney 2002; Asiabaka 2001). Some of the visible

characteristics of a Field School that distinguish it from conventional extension programs include:

- Farmer-generated learning materials in the form of the field and living specimens, not paper or conventional media
- Ideally, a minimal role of the facilitator
- Agroecosystem analysis and decision making by farmers in small groups, with data presented as a large diagram
- Training schedule that lasts the whole crop season and fits into the farmers' schedules
- Building of farmers' organizations by developing 'farmer experts' who in turn can serve other farmers

FFS in general have also had some challenges with regard to monitoring and evaluation, and long-term group financial sustainability. The most significant limitations have been found to be in monitoring and evaluation (M&E) and financial sustainability. Problems in M&E include lack of time, resources and FFS facilitators; lack of ownership by facilitators, granting them little control and influence over processes; little influence and capacity for M&E, which is limited to the use of quantitative indicators; little diffusion or use of findings; and negative perception of evaluations by field workers who perceive them as tools that managers use to control field workers (Groeneweg & Tafur 2003). As for financial sustainability, several FFS have innovated ways of achieving sustainability starting with the evolution of an initial grant system (partially self-financed FFS) into an educational revolving fund (self-financed FFS) (Kimani & Mafa 2003; Okoth, Khisa, & Thomas 2003). In light of these challenges, this study will involve a limited qualitative analysis with findings to be sent back to all parties involved in the study so as to make maximum possible use of the

findings in improving existing field schools, and in planning the formation and establishment of new field schools to assure success.

Assessments of the impact of organizations usually take an experimental design approach, comparing groups of people within (treatment) and outside (control) the organization(s).

Such an approach for Farmer Field School evaluation has been conducted by Feder, Murgai, & Quizon (2004) in Indonesia, focusing on whether participation in a FFS IPM program had improved the yields and reduced pesticide use among graduates, and also among neighbors who may have informally received information from the graduates of FFSs.

Farmer Field Schools in Western Kenya

The FAO initiated FFS in western Kenya in 1997, and then handed the program over to Ministry of Agriculture (MoA) Extension. The Kenya Agricultural Research Institute (KARI, a parastatal organization) joined the program together with the Legume Network, focusing on research and technology scaling-up. Currently, KARI focuses on farmers' indicators of soil quality and follow-up on effects of FFS, working only with one soil-focused FFS in Yala (Nyanza province), for the third year now. KARI planned to set up a number of FFSs in late 2004. The process would involve the Focal Area Approach (FAA) at village level, starting with Participatory Rural Appraisals (PRAs) to identify problems and constraints, and then KARI facilitators will rally people around emerging issues. This is driven by income needs and benefits of improved farming to the land, and it involves technical knowledge transfer after which a FFS is formed. The process emphasizes budgeting, but it is uncertain if any in-depth analysis and follow-up of such FFSs is done. KARI conducts single-issue focused, long-term projects (1 year or more), but the Ministry of Agriculture carries out multi-issue focused, short term projects (6 month). The success of

FFS depends in part on the pre-existing level of social networks/cohesion, but extension agents/facilitators tend to get frustrated by gender struggles on the farms. This researcher was told by key informants on multiple occasions remarks to the effect that men may not attend Field Schools, but they make the decisions on farms, and some men think that what men know is better than what women know.

After formation, local and regional FFS network representatives contact the consortium for updates and progress report at various venues, e.g., a farmer's home or administrator's office. KARI is now helping to start four field schools in one sub-location, and two others will be started later in areas of different modes of dissemination, like participatory learning and research, farmer research groups, consortium backstopping, etc. Emerging issues so far concern germplasm and soil fertility, but the use of green manure seems new to the farmers involved so far (Okuosa 2004).

Another organization working with farmers in the general region of western Kenya is VI Agroforestry (VIA). According to the director, Dr. Norman Kimanzu, this is the second year of working in Nyando and Rachuonyo districts (referred to internally as project zones) of Nyanza province that borders Western province. Each zone has more than 15 extensionists, with 2000 to 2350 households per village using the 'area of concentration approach' (three to five years at site) and group approach. This involves facilitating group formation with a farmer leader, starting with sensitization, group formation, elections, and training of other groups. VIA is also using PRA for group strategic planning (visioning) and encouraging participatory development processes involving all stakeholders. Their three components are trees, crops, and livestock. The district in which they are working was chosen based on prior work by ICRAF and guidance by the MoA, after which local demand

followed and the project spread. The Focal Areas Approach used by the MoA's National Agricultural and Livestock Extension Programme (NALEP) is easy to build upon into Areas of Concentration. VIA provides only training and starter tree seeds, then after three years they offer training for seed harvesting, as well as training on crop and livestock production. All their staff are trained in Forestry, Agriculture, and Sociology. The organization has a Seed Unit, a Training and Community Empowerment Unit, a Zone Managers (Monitoring and Evaluation) Unit, and Accounts and Personnel departments.

The Sustainable Livelihoods (SL) Approach and Framework

According to the UK Department for International Development (DFID), the Sustainable Livelihoods “approach is a way of putting people at the centre of development” to increase the effectiveness of development interventions. This approach has evolved from changing perspectives on poverty, participation, and sustainable development that now increasingly focus on people and livelihood activities while placing these concerns in a policy framework for sustainable development (Brocklesby and Fisher 2003). From a practical perspective, the SL approach acts as an operational tool to assist work in poverty reduction, which in turn is based on an “asset-vulnerability approach” to understanding poverty, i.e., a particular way of conceptualizing poverty and vulnerability that deviates from the 1980s conventional evaluation of poverty based solely on income levels or consumption.

The alternative conceptualization of poverty considers vulnerability and security, with a better understanding of seasonality and the impacts of shocks; the importance of assets as buffers, social relations, and non-monetary aspects of poverty are all included in SL approaches. It is intended to be a shift in development practice from needs-based, resource-centered solutions to a focus on people and their capability to start and maintain positive

change. Thus, this approach ought to provide a more complete, though not perfect, view of the complexities of living and surviving in less wealthy communities than measures of income, consumption and employment would provide.

This view is visualized as the Sustainable Livelihoods framework, a diagrammatic presentation of the main factors affecting people's livelihoods and typical relationships between these factors, shown below.

Figure 1. Sustainable livelihoods framework

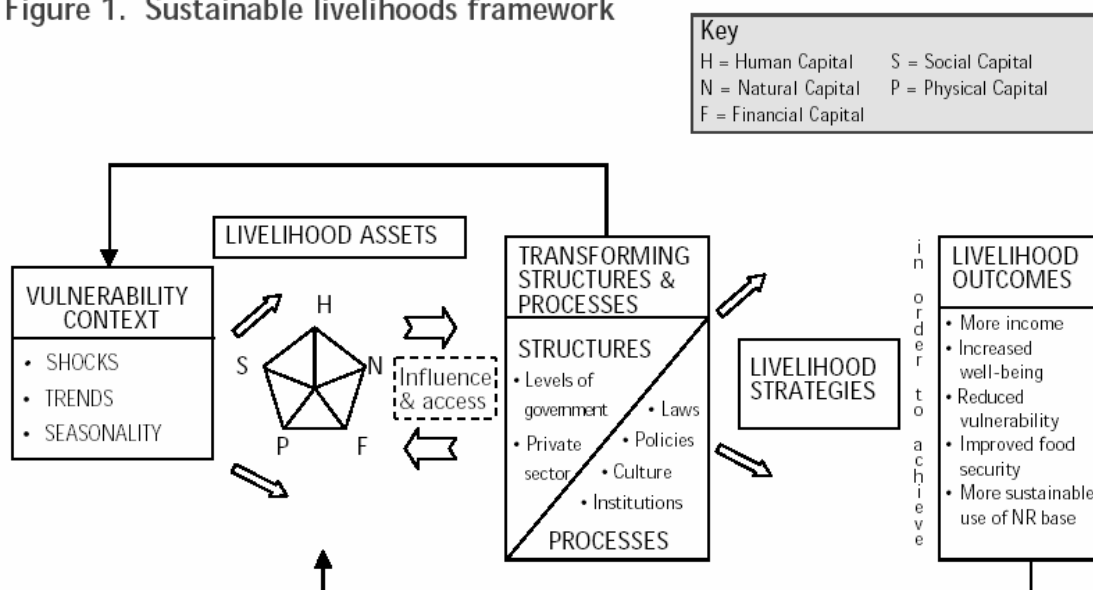


Figure 1: Sustainable Livelihoods framework (Source: Sustainable Livelihoods Guidance Sheets, DFID)

The framework can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities. It provides a checklist of important issues and sketches out the way these link to each other while drawing attention to core influences and processes as well as emphasizing the multiple interactions between the various factors that affect livelihoods. It focuses on people, and is not intended to function linearly or try to present a model of reality. Its aim is to help

stakeholders with different perspectives to engage in structured and coherent debate about the many factors that affect livelihoods, their relative importance, and the way in which they interact. This, in turn, should help in the identification of appropriate entry points for support of livelihoods.

The arrows in the schematic above are used to symbolize a variety of highly dynamic relationships; none of the arrows implies direct causality, though all imply a certain level of influence. An analysis of people's livelihoods is likely to begin with a simultaneous consideration of their assets, objectives, and the strategies adopted to achieve the objectives. It is likely that significant feedback will exist between the Transforming Structures and Processes and the Vulnerability Context on one hand, and between Livelihood Outcomes and Livelihood Assets on the other (DFID 1999: 1-2).

1. The Vulnerability Context includes the external environment in which people exist.

People's livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality over which they have limited or no control. These factors are important because they could have a positive or negative direct impact upon people's asset status and the options that are open to them in pursuit of beneficial livelihood outcomes (DFID 1999: 2-4).

2. Livelihoods assets are the resources that people draw upon to make their livelihoods.

The livelihood framework identifies five core asset categories or types of capital upon which livelihoods are built: human, social, physical, natural, and financial assets. These are represented visually as a pentagon to show schematically the variation in people's access assets. The idea is that the center point of the pentagon, where the lines meet, represents no access to assets while the outer perimeter represents maximum access to

assets. Thus different shaped pentagons can be drawn for different communities or social groups within communities, and at different points in time. Pentagons can be useful as a focus point for debate about suitable entry points, how these will serve the needs of different social groups and likely trade-offs between different assets. However, using the pentagon in this way is necessarily representative. Generally, there is no suggestion that all assets should be quantified, or that there should be a common currency to allow direct comparison between assets. But this does not rule out the development of specific, quantifiable indicators of assets where these are thought to be useful (DFID 1999: 4-7).

3. Livelihood assets are drawn on within people's livelihood strategies, i.e. their choices and activities in seeking to generate a living (livelihood outcomes) (DFID 1999: 25). Policies, institutions, and processes shape people's access to assets and livelihood activities, and the vulnerability context in which they live. The vulnerability context is the part of the framework that is furthest from people's control (DFID 1999: 3).
4. Livelihood strategies denote the range and combination of activities and choices that people undertake in order to achieve their livelihood goals (including productive activities, investment strategies, reproductive choices, etc.) Recent studies have drawn attention to the enormous diversity of livelihood strategies at every level - within geographic areas, across sectors, within households and over time. This is not a question of people moving from one form of employment or 'own-account' activity (farming, fishing) to another. Rather, it is a dynamic process in which they combine activities to meet their various needs at different times. A common manifestation of this at the household level is 'straddling' whereby different members of the household live

and work in different places, temporarily (e.g., seasonal migration) or permanently (DFID 1999: 25).

In the past, rural people were essentially viewed as farmers, foresters or fisher folk and urban people were generally considered to be wage laborers seeking employment or participants in the 'informal sector.' Development efforts sought to improve the services and opportunities available to these categories of people. The sustainable livelihoods approach, by contrast, seeks to develop an understanding of the factors that lie behind people's choice of livelihood strategy and then to reinforce the positive aspects (factors which promote choice and flexibility) and mitigate the constraints or negative influences. It does not try to promote any given livelihood strategy simply because the 'raw materials' (e.g., forests, land, employment opportunities) for this exist.

This expansion of choice and value is important because it provides people with opportunities for self-determination and the flexibility to adapt over time. It is most likely to be achieved by working to improve poor people's access to assets – the building blocks for livelihood strategies – and to make the structures and processes that 'transform' these into livelihood outcomes more responsive to their needs.

People's access to different levels and combinations of assets is probably the major influence on their choice of livelihood strategies. Some activities require, for example:

- particular skills or labor intensive effort (high levels of human capital required);
- start-up (financial) capital or good physical infrastructure for the transport of goods (physical capital);
- a certain type/level of natural capital as the basis for production; or

- access to a given group of people achievable only through existing social connections (social capital).

Different livelihood activities have different requirements, but the general principle is that those who are amply endowed with assets are more likely to be able to make positive livelihood choices. That is, they will be choosing from a range of options in order to maximize their achievement of positive livelihood outcomes, rather than being forced into any given strategy because it is their only option.

Some versions of livelihoods analysis use the term ‘adaptive strategies’ instead of ‘livelihood strategies’. Adaptive strategies are distinguished from ‘coping strategies’ adopted in times of crisis. The more choice and flexibility that people have in their livelihood strategies, the greater their ability to withstand – or adapt to – the shocks and stresses of the Vulnerability Context (DFID 1999: 25-26).

Human capital represents the skills, knowledge, ability to labor, and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives. At a household level, human capital is a factor of the amount and quality of labor available; this varies according to household size, skill levels, leadership potential, health status, etc. Human capital appears in the framework as a livelihood asset (a building block or means of achieving livelihood outcomes) but its accumulation can also be an end in itself. Besides its intrinsic value, human capital (knowledge and labor or the ability to command labor) is required in order to make use of any of the four other types of assets. It is necessary for the achievement of positive livelihood outcomes, though not sufficient by itself (DFID 1999: 7-9).

Social capital refers to the social resources upon which people draw in pursuit of their livelihood objectives. These are developed through networks and connectedness, membership of more formalized groups, and relationships of trust, reciprocity and exchanges that facilitate co-operation, reduce transaction costs and may provide the basis for informal safety nets amongst the poor. Of all the five livelihood building blocks, social capital is the most intimately connected to Transforming Structures and Processes: it is a two way relationship which can be self reinforcing. There is clearly much to learn about building social capital, including:

- how best to support groups (especially of the poor who may lack time for group activities);
- what are appropriate indicators of effective group functioning; and
- what is the relationship between various types of government structure and ideology and the ‘density’ of social capital at the community level (DFID 1999: 9-11).

Natural capital is the term used for the natural resource stocks from which resource flows and services useful for livelihoods are derived. There is a wide variation in the resources that make up natural capital, from intangible public goods such as the atmosphere and biodiversity to divisible assets used directly for production. Within the sustainable livelihoods framework, the relationship between natural capital and the Vulnerability Context is particularly close. Many of the shocks that devastate the livelihoods of the poor are themselves natural processes that destroy natural capital, and seasonality is largely due to changes in the value or productivity of natural capital over the year. Natural capital is very important to those who derive all or part of their livelihoods from resource-based activities, although everybody depends on this form of capital daily (DFID 1999: 11-14).

Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods. Infrastructure consists of changes to the physical environment that help people to meet their basic needs and to be more productive, while producer goods are the tools and equipment that people use to function more productively.

Components of infrastructure that are usually essential for sustainable livelihoods include affordable transport, secure shelter and buildings, adequate water supply and sanitation, clean, affordable energy, and access to information (communications). According to DFID, many participatory poverty assessments have found that a lack of particular types of infrastructure is considered to be a core dimension of poverty. Without adequate access to services such as water and energy, human health deteriorates and long periods are spent in non-productive activities such as the collection of water and fuel wood. The opportunity costs associated with poor infrastructure can preclude education, access to health services and income generation (DFID 1999: 14-16).

Financial capital refers to the financial resources that people use to achieve their livelihood objectives. This definition tries to capture an important livelihood building block, that is, the availability of cash or equivalent that enables people to adopt different livelihood strategies. The two main sources of financial capital are available stocks (cash on hand, credit, valuables) and regular inflows of money (earned income, pensions, and remittances). Financial capital is probably the most versatile of the five categories of assets because it can be converted into other types of capital, it can be used for direct achievement of livelihood outcomes, and it can also be transformed into political influence and can free people up. However, it is also the asset that tends to be the least available to the poor although there are

other assets or desirable outcomes that may not be achievable through the medium of money (DFID 1999: 16-18).

The FFS efforts would sustain livelihoods if they enhanced all of the five capitals. In addition, livelihood sustainability is linked to the resilience or sensitivity of the assets to changes in climate rather than the assets *per se* (Reddy et al.: 2004), and it is suggested that enhanced livelihood security be assessed on the basis of the resilience of various livelihoods assets and their improvements. It is possible that FFSs are playing an important role in enhancing and sustaining rural livelihoods, but like other efforts, they may not be sufficient on their own. The observations made from studying the field schools shall be interpreted and discussed in this framework in order to end up with a picture of the organizations in the past, the present, and where they may be headed in terms of asset enhancement and resiliency. Such a portrait may make it clearer to both the farmer members, the facilitators, and development partners what kind of assistance is needed at what point in time in order for the groups to achieve their desired goals of food self-sufficiency throughout the year and sales of surpluses to the market. FFSs are part of the overall sustainable development process because they are grounded in the empowerment and education of farmers and communities, improving people's abilities to decide for themselves how to work as individuals and in groups to achieve their self-defined objectives. In addition, FFSs have a strong educational process built in for individuals and communities to continue the process of life-long learning to improve livelihoods.

Participation, education, and empowerment

Development at the micro level of the village or district involves people of varying socio-economic status, occupations, skills, and levels of education, awareness, ambition, and

enlightenment, among many others. All these people live within a social framework consisting of social, economic, and political structures, which historically have been transformed by the development process. These processes involve the use of physical, financial, and human resources depending on who controls the resources and how decisions about their use are made (Burkey 1993: 35). Meaningful, sustainable development should be a process that involves and benefits every person affected, as well as the non-human stakeholders. However, the poor are frequently not included in much of the development process except as objects and recipients. Those who stand to gain more are those who participate as subjects in their human, economic, political, and social development. Education is a key entry point in setting off sequences of change which benefit the poorer, but this also requires changes in the control of assets and distribution of power (Chambers 1987: 165).

The most significant beginning of change involves poor people regaining confidence in themselves and in their ability to fight their way out of poverty. This confidence is acquired through positive experiences and incremental successes in a process of problem-solving education called conscientization, clearly evident in the Field School approach. This is a process in which people try to understand their present situation in terms of the prevailing social, economic, and political relationships, and their analysis of what their needs are should lead to their action against the unfavorable conditions in their reality (Burkey 1993: 53-5). In this way, those who have been considered as objects become empowered, active subjects in their own development, the essence of true participation.

Conscientization can be related to the development of (alternative) struggles for transformation in society through dialogue and reflection. There are some challenges to

participatory development, particularly relating to the likely consequences of the empowerment of a formerly relatively powerless segment of society. Empowerment could become problematic if a part of society views power in zero-sum terms, where the powerful understand that they may lose some of it if others gain it. But the Field School approach does not raise such suspicions, at least not initially. The potential for conflicts can be lower if it is generally considered that power in society is a variable sum, and everyone stands to benefit when the society pursues collective goals. Thus, the poor could become agents of their own development within the existing social order without significant negative impacts on the powerful (Craig and Mayo 1995: 5-7)

Debates on the meaning of people's participation have revolved around whether participation is a means to achieving development or an end in itself. Those who propose the former view focus on participation as a means to enhance the likely success of predetermined activities and targets by involving people to ensure their commitment, while the latter view maintains that development for the benefit of the poor cannot occur unless the poor themselves control the process by participation. Indeed, evidence over time has shown that using participation merely as a means to development has not resulted in meaningful participation by or benefit to the poor. Simply participating is not necessarily empowering, even though change may result; beneficiaries rarely identify 'empowerment' as their aim. Thus, meaningful participation is an end in itself, the unavoidable consequence of the process of empowerment and liberation. Participation can result in the enhancement of people's confidence and capability, and Farmer Field Schools take this latter view of participation by putting the running of the project completely in the hands of the participants.

Participatory development implies a collective process of self-improvement, where the poor acquire knowledge and awareness to better understand the causes of their poverty, and be in a better position to mobilize and use available resources to improve their situation. This is likely to succeed if carried out in like-minded groups, but participatory development is a complicated process with no straight routes to success.

The five basic issues that contribute to this difficulty are:

- The diverse and place-specific nature of problems faced by poor people. Well-defined objectives may hinder people's initiatives instead of helping them
- The need to approach the poor as a specific group often conflicts with other less-poor groups in differentiated rural societies;
- The delicate balance between external assistance and self-reliance, especially in situations where local initiative may be low or lacking. The aim of avoiding new dependencies poses a challenge
- Ensuring that the poor maintain power over their own organization, and
- The fact that some participatory processes are not spontaneous but initiated by a leadership whose vision may not coincide with the aspirations of the people concerned, and the process has to go beyond mobilization for an 'externally defined' cause

Burkey (1993: 58-60) thinks that self-reliant participatory development requires the resolution of these issues even as the group-based approaches are implemented to help build human and social capital. However, self-reliance may not be a desirable or acceptable objective in a society whose norms are rooted in mutual reliance and communal efforts. It

may be sufficient to build human and social capital enough to allow the communities more choices in the direction of ‘development’ however they may realize it.

Expectations

Another aspect of this study will involve an assessment of the groups in terms of their resilience and persistence — some of the factors critical for sustainability. What has happened to the groups over time, how have they changed, which ones seem likely to continue and which will disintegrate? Some groups may become very effective while others may not accomplish much in terms of their objectives. What can be said about the conditions that are likely to foster or hinder group survival? These are questions dealt with briefly by Pretty & Ward (2001), who note that although it was estimated that 1.8 million farmers had made the transition to more sustainable rice farming as a result of IPM training, only about 25 to 50 percent of the 1.8 million graduates remained in groups. Their review of the “surprisingly little empirical evidence about the differing performances of groups” (Pretty & Ward 2001: 217) from studies done in Honduras, Guatemala, the Philippines, Sri Lanka, Rajasthan in India, and Australia variously showed either normal distributions, from poor performers to mature high performers, or a very skewed distribution to either end.

Models that have been developed to describe the evolution and maturity of organizations commonly characterize the variance in performance and structure according to structures or phases. There are those that focus on the model of businesses or corporations, emphasizing group life cycles; others focus on the phases of knowing, learning, and worldviews through which members progress with time; while others focus on the types of participation that development organizations engage in interaction with their clients or partners.

Examples of the group life cycle typologies include Mooney & Reiley's five stages of emergence, growth, maturity, decline, and death; Greiner's five stages of entrepreneurial, collectivity, delegation, formalization, and collaboration; and Handy's four stages from forming to storming, to norming, and finally performing. Those that focus on the phases of learning include Argyris & Schön's four stages of learning, from propositional to single loop and double loop, to higher order epistemic; Habermas' on technical, practical, and emancipatory cognition; and Lawrence's typology of learning, from teaching, to teaching and training, adult education, adult learning, and perspective integration (ontological appreciation). Lastly, typologies that focus on participation types include Pretty's seven levels: manipulative, passive, consultative, bought, functional, interactive, and self-mobilized; Röling's four stages of extension (persuasive, informative, formative, and emancipatory); and World Neighbors' four stages in identifying the nature of the wider development process: initiation, co-management, accompaniment, and autonomy, among others (Pretty and Ward, 2001). All these models have five things in common:

1. They describe how changes happen, though not necessarily explaining why
2. They are progressive, indicating that one stage can lead to another
3. Progress is not inevitable, and other outcomes can be regression, stagnation, or extinction
4. Organizations at the later stages are seen to be more capable of resisting shocks and stresses, and are more capable of innovating, and are therefore less likely to go extinct
5. They all relate some aspect of group maturity to performance and outcomes, with the later stages being associated with greater maturity.

Pretty & Ward (2001) propose a new typology that integrates the phases of learning, life cycle, and participation approaches to describe the evolution of social and human capital manifested in groups. The authors do a better job of explaining why the groups come to exhibit the specific characteristics at each stage. Their model considers that groups can be found to be at one of three stages: Reactive-Dependence; Realization-Independence; and Awareness-Interdependence. These stages can be differentiated according to fifteen criteria clustered in five themes: worldviews of members, internal norms and trust, external linkages and networks, technologies and improvements, and group lifespan. This typology suggests important relationships between social capital and maturity, but has yet to be proven to be an accurate depiction of the discrete stages when in reality there is a continuum of steady change, probably with one or more distinct ratchets, beyond which a group is unlikely to regress (for example, at the Awareness-Interdependence stage, people's worldviews and practices have fundamentally changed, and they are unlikely to fall back compared to the Reactive-Dependence stage). Interdependence may be reflected, for instance, by a group reaching out to other groups to form federations or platforms in order to achieve higher collective aims.

Based on the explanation of conditions that are likely to contribute to a group's stage in the cycle, this researcher would expect that:

- a) groups with more years of experience would be more independent than newer groups, and would have initiated other groups and helped promote the spread of new technologies and methods
- b) groups that were well-funded would be more independent than those that were poorly funded or self-financed

- c) groups with initial high social capital (already existing as well-functioning groups of another sort) would be more mature and independent than those that were formed for the purpose of the field school

However, this being an inductive research process, it would not be appropriate to enter the field with these three pre-conceived notions as fixed yard-sticks against which to examine the farmers and their organizations. These statements will serve as an initial grounding point to enable me to formulate the first set of questions to enable some comparisons to be made in the four case studies.

CHAPTER 3. STUDY SITE AND METHODOLOGY

Site selection

After consulting with regional project personnel and learning about various locations, this researcher decided to study Field Schools from within one administrative district, among one ethnic group in the same agroecological zone, with similar potential access to markets (Stroud 2003) in order to have similar bases for comparison. This would also facilitate better communication because the researcher is fluent in all the three languages used in these communities, which are English, Swahili, and Bukusu.

Bungoma District, Western Province, Kenya

Kenya is divided into eight administrative regions known as provinces: Coast, Eastern, Northeastern, Central, Nairobi, Rift Valley, Nyanza, and Western. This study was conducted in Western Province, which is composed of seven administrative districts: Bungoma, Busia, Butere-Mumias, Teso, Kakamega, Mount Elgon, and Vihiga. All the regions from the provinces, including the villages, are administered by civil servants in the Provincial Administration office, working together with democratically elected leaders such as Members of Parliament and Ward councilors.

Bungoma District is situated on the southern slopes of Mt. Elgon. It borders the Republic of Uganda to the northwest, Trans-Nzoia District to the north, Kakamega District to the east and southeast, and Busia District to the west and southwest. It lies between latitude 00° 28' and latitude 10° 30' North of the equator, and longitude 34° 20' East and 35° 15' East of the Greenwich Meridian. The district is divided into 10 divisions, namely Kanduyi, Webuye, Sirisia, Cheptais, Kimilili, Tongaren, Central, Bumula and Chwele.

Bungoma is regarded as a district with high agricultural potential. It experiences two rainy seasons, the long and short rain seasons. The long rains normally start in March and continue into June or July, while short rains last from September to November. Most of the rain falls during the long rain season and is usually heaviest in April and May. It is also during this long rain season that most farming activities take place, such as planting, and top dressing.

On the whole, the district has both soils with moderate to high fertility and those with low fertility. Moderate to high fertility soils are found on the slopes of the mountain and have high organic content. Further west there is a zone of moderately fertile soils, but the rest of the district's soils are shallow with steep slopes and large belts prone to waterlogging, especially along rivers. The crops grown include coffee, tea, maize, millet, a variety of horticultural produce (fruits and vegetables), sugarcane, cotton, pasture, sunflower, pyrethrum, potatoes, sweet potatoes, cassava, yams, bananas, and more.

Government institutions participating in the district's development efforts include the District Development Committee, Division, Location, and Sub-Location Development Committees. Other more specific and technically oriented institutions are the District Development Committee subcommittees such as the District Agricultural Committee, District Education Board, District Joint Loan Board, the Kenya Industrial Estate Committee, District Social Development Committee, and the District Executive Committee among others.

Divisional Development Committees have the responsibility of assembling initial project ideas, sorting them out according to local priorities, and forwarding them to the District Development Committee for more formal review and assessment. The District

Community Development Committee's role includes the assessment of self-help projects for government aid, mobilization of self-help groups to fully participate in project implementation; promotion of the smooth running of the relief of distress program; and promotion of other social welfare activities such as child adoption, foster care services, and other services provided by voluntary agencies.

A number of non-governmental organizations are registered in the district and some of them effectively participate in the development programs, including CARE Kenya, Kenya-Finland Western Water supply program, Partnership for Productivity Service Foundation (PPF), the Family Helper Project, Maendeleo ya Wanawake (a national women's development organization), etc.

Collective work and volunteerism are not new concepts to Kenyans. Pre-colonial societies practiced community co-operation that was based on organized labor force in clearing land, plowing, planting and harvesting. Since independence in 1963, communal effort has been nationally recognized as the *harambee* movement, which has been a catalyst in the country's social and economic development efforts (Kenyaweb 2003).

Farmer Field Schools in Bungoma District

According to Dr. Eusebius Mukhwana, the director of rural development NGO SACRED Africa in Bungoma, the growth of FFSs in Kenya is driven by the failure of previous extension approaches to achieve tangible results. During the FAO FFS pilot project, FFS groups were given money to pay for extension services for one year, after which funding was stopped. Subsequently, the District Umbrella FFS network formed and they work with SACRED to address two main problems faced by farmers: financial survival and poor market linkages. Specific problems encountered by Field School members now involve difficult

access to money, information overload, and farmers' social lives are disrupted by regular classes, and numbers of members are dwindling. In attempting to scale up to reach beyond the FFS to whole villages, the Ministry of Agriculture uses a Focal Area Approach in which the Ministry coordinates activities with other organizations for one year in a specific focal area, and then moves on to another geographic area.

SACRED Africa focuses on three issues in Bungoma district, and these are poverty, food insecurity, and environmental degradation. Activities undertaken are in the areas of soil fertility (in seven districts in province); technology transfer for improved productivity (tissue culture bananas, disease resistant cotton and cassava); farmer to farmer extension; and improved marketing, including cereal banks and price monitoring.

Bungoma district has 154 known FFSs (of which 124 are registered with the Umbrella network) with a total of 2332 members in twelve administrative locations¹ to date. The Umbrella FFS oversees all location-level FFS Networks, and has a constitution, office holders, and a membership fee of KShs. 200 (US\$ 2.50) per FFS. The Umbrella FFS works with external collaborators as a facilitator of contacts with FFSs in the district. Duties of Umbrella FFS also include consulting with farmers in villages through the provincial administration; organizing demonstration plots at Farmers' Training Centre or at FFSs host farms, using Agroecosystem Analysis scouting by farmers themselves to identify strengths and weaknesses in the field.

According to the secretary of the Umbrella network, evidence of positive impact of FFSs in the district to date include the following: since 1997, participating farmers are no

¹ Kenya's administrative regions are structured as follows, from top down: National, Provincial, District, Divisional, Location, Sub-Location, and Village. The legislative regions are: National, Constituency, Ward, and Zone. Administrators are government-appointed employees, while legislators are all elected.

longer wholly dependent on chemical fertilizers; corn yields used to be 225 kg per acre, now yields are up to 1350 kgs per acre; farmers are realizing lower costs of production using biological and local inputs; sugarcane acreage, the dominant cash crop in the region, has declined; early plowing is increasingly common; farmers show increased knowledge of crop variety selection to suit specific farm ecology; there is more reforestation; increased gender sensitivity in families, as well as less conflict and superstition among neighbors, according to group members interviewed.

In 1997, the Kakamega office of the FAO IPPM-FFS program funded four field schools in Bungoma district on a one-year grant basis (two each in Kanduyi and Nalondo divisions). The field schools got started after outreach by the provincial administration. Currently, all field schools are required to register with the Department of Social Services of the Ministry of Gender, Sports, Culture and Social Services. The Umbrella FFS continues outreach through village meetings (*barazas*) organized by the provincial administration. One of the researcher's sources said that some of the pioneer FAO FFSs got started with the aim of accessing easy money from donors and funding agencies, and they have since collapsed. Others that got together for the purpose of gaining technical knowledge flourished, giving rise to fifteen other FFSs until FAO grants stopped in 2000 at the end of FAO's FFS first phase (involving knowledge dissemination).

This researcher couldn't determine whether there were any Field Schools that had been established primarily as a source of funds that had later discovered technical knowledge and flourished, or vice versa.

Selection Method: Four Case studies

This study is qualitative, using purposive sampling to select and compare four field schools focusing on several factors (see Key Research Foci below), using interviews and observations of members' farms and homesteads in the studies. To guard against receiving potentially biased or socially desirable responses, the author also interviewed two key non-governmental development officials in the district (SACRED-Africa, involved in agricultural development but not part of the Umbrella network), two local government officials (a division officer and village chief), and made direct observations of participants' fields and homes to corroborate their reports where possible. The direct observations yielded the most significant evidence to back-up participants' descriptions of the effects of group activity in the recent past and in the present, while conversations with the local government and non-government officials confirmed the histories and some of the past experiences detailed by the group members in the findings. Ideal triangulation, had time permitted, would also have included interviews of the local business community, and neighboring farmers who were not participants in the groups.

A list of 124 registered FFSs out of all the 154 Farmer Field Schools (FFS) in Bungoma district was compiled. These 124 were the ones deemed fully functional at the time, thus any one of them would have offered sufficient study data. This list of 124 was further stratified into two group types: FAO-assisted and non-FAO assisted. We divided them this way because records kept by the Umbrella FFS secretary indicated that there was a difference in the groups' performance depending on whether they had received initial support from a larger organization or not, though the cause of this difference was not obvious. Four Farmer Field Schools were then selected for study from the two categories of schools, ending up with two of those that were originally started by the FAO and two that were started

without FAO participation. The two FAO-sponsored groups were chosen because they were also the oldest groups around but one of them (Bembako) had experienced significant membership flux and leadership changes over time; the two non-FAO sponsored groups were selected because both had registered at approximately the same time yet their performance and fortunes had followed remarkably different trajectories over time, and we wanted to explore the likely reasons behind this divergence. All four groups were selected because they were active, and the group reports filed by the facilitators with the Umbrella FFS showed that three of the groups (Mutelani, Weyeta and Bembako) had been steadily recruiting and retaining members who were performing very well at field days; the fourth group, Lukesi, had been a good performer too, but it had lost momentum over the previous year and it was interesting to find out what had contributed to its weakening performance.

Purposive sampling would have identified all potentially good performers, but that would have resulted in a sample of undetermined size such that there would not have been the resources to conduct a study with as much depth as could be achieved by limiting the cases to only four groups. While the essence of a case study is not representativeness of outcomes but the process, the implied need to capture as much variation in the sample as possible (Neuman, 2000) had to be balanced against available resources and quality of information gathered by working with four groups and not more.

All groups are within one agroecological zone, and with easy access to markets by road. This researcher contacted the Field Schools through the district apex FFS organization, the Umbrella FFS Network. For any Farmer Field School (group) and its members who agreed to participate in the study, a focus group discussion was conducted. This was followed by individual interviews with the elected leaders of the group and six randomly selected

members of the group (from among those who are not elected leaders). In one case, more than the six selected individuals were interviewed because the other members wanted to be interviewed and could not take no for an answer.

The researcher explained the purposes of the study once to the entire group through reading the prepared Information Letter and responding to any questions that arose. The purposes of the study were explained again to any person selected for an individual interview through reading the prepared Information Letter and responding to any questions they had. Data will be analyzed qualitatively, with comparisons among the four groups. Identifiers will be removed from completed survey instruments upon completion of the study.

Key Research Foci

- The origins and motivations for formation of the respective Farmer Field Schools; history, evolution, and future of the groups. What is new and different about these groups?
- Are the groups viable and independent? What are some strategies for attaining self-sufficiency and self-financing?
- Do innovations arise from participation in these groups? Who are the innovators? In what ways are they innovative? How does that affect the group?
- How have the groups contributed to the empowerment of and control by members? What are some indicators of empowerment? Is membership inclusive of any willing participant?
- How do Farmer Field Schools intersect with efforts at Integrated Natural Resource Management, Agroforestry, etc.?

- Are Farmer Field Schools replacing or complementing any pre-existing forms of farmer organizations, e.g., cooperatives? If so, why and how?
- What are the principal lessons learnt from Farmer Field Schools and challenges ahead?

The following four Farmer Field Schools were selected for interviews:

1. Bembako FFS (registered 1997); 21 members (12 male, 9 female)
2. Weyeta FFS (registered 2000); 30 members (12 women and 18 men)
3. Mutelani FFS (registered 2003); 30 members (26 female and 4 male),
4. Lukesi Youth Group FFS (registered 2003); 18 members (10 male, 8 female)

CHAPTER 4. FINDINGS

In this chapter, the researcher presents the data gathered in interviews and focus group meetings with the members of all the four groups at different times. The data are presented thematically, covering group origins; components, procedures, and assumptions about field schools; inputs (time, money, management, etc.); roles for members; individual versus collective activities; group agenda; experiments and innovations; changes observed; group effectiveness and lessons learnt; and financial stability and independence.

Group Origins

Bembako Field School had 21 members as of July 2004 (12 male, 9 female), ranging in ages between approximately 29 and 64 years old. All have families and farms ranging between 1 and 15 acres in size, while some have small businesses or part-time jobs off the farm (two have cafes at local shopping centers and two work part-time for the area mobile clinic). Its members are the most distantly scattered,² although the group is stable and has strong leadership, a relatively narrow age distribution, and is farmer-led. In early 1997, the Ministry of Agriculture extension agents brought the message to the local administration about FAO's proposal to start field schools. The local administrators mobilized the community, and some people who heard about this initiative at the chief's meeting told others who belonged to two older self-help groups in the village: a community health group and a women's group, both founded in 1994. The two groups decided to merge in order to qualify for FAO grants because one of the project's objectives matched their desires, i.e., to

² Dispersion of members' farms was a subjective and relative measure. Generally, a walk from one member's farm to the next member's farm in under 10 minutes was considered to be close. Any walk over 10 minutes but under 20 minutes was moderately distant but bearable, and above 20 minutes was considered to be quite distant and necessitated the use of either bicycle taxis or driving to those 'distant' farms to save time.

improve their incomes from farming. Group formation was on a first-come, first-served basis: the group members heard about FAO plans, got together and acted expeditiously. The local administrators (a chief and an assistant chief, typically) and a number of area residents formed the early group in April 1997, when FAO facilitators met with the group and together decided on meeting days and venue.

A lesson plan/schedule was drawn up jointly with FAO to consist of 12 weeks of four-hour lessons on IPPM held once a week. Lunch was provided by FAO as an incentive to attract and retain students for the full session each week. After graduation, certificates were issued to each participant; the group elected office holders and registered with the District Social Development Office in the Ministry of Sports, Culture, Gender and Social Services, Department of Social Services. The group had 42 members at founding, but now has just twenty-one active members. The drop-outs occurred when FAO funding stopped, or when other individual commitments increased. Some members came from quite far (this group had most dispersed member residences of the four groups studied). The group did not exist in its present FFS form, but as two different self-help groups in which members conducted regular fundraisers for each other when a member needed a rather high amount of money to meet their family or enterprise needs.

Weyeta Field School was registered in 2000 as another FAO-grant field school, and has 30 members (12 women and 18 men) aged between approximately 20 and 70 years old. They are all small-scale farmers, were the third most scattered group of the four but had strong leadership, a broad age distribution, were stable but still facilitator-led.

The group started at about the same time as Bembako, through village meetings (*barazas*) when the Ministry of Agriculture was conducting sensitization of communities

about field schools and some of the founding members realized that people were increasingly organizing themselves into such groups to address their most pressing daily needs. So they came together and requested for a facilitator from FAO through the Ministry of Agriculture. The newly-formed group decided to focus on tackling hunger by improving maize production and poultry rearing. They started by having 30 weeks of lessons in farm production and management that covered topics like selection of the best maize seeds and fertilizer, chicken husbandry under free-range and semi-intensive systems, and gross margin analysis. After graduation, each member was awarded a certificate and encouraged to practice what they had learnt on their individual farms. However, membership dropped since some people had expected direct hand-outs of money during group formation but when this did not happen, they left the group. The group's facilitator works with FAO guidelines on FFS facilitation.

Mutelani Field School was registered in 2003 and has 30 members currently (26 female and 4 male), all of whom are small scale farmers with families, and are mostly aged between approximately 30 and 50 years old (ranging from the late 20s to early 70s). These members represented the most compact group in terms of proximity of homes and farms. It was quite easy to walk from farm to farm since they almost all neighbored each other.

The group started with 41 members; 11 have since dropped out (one passed away, and one new member joined). The group already existed as a women's mutual aid group in the village in which members helped each other with chores during funerals. One of the members, who was (and still is) the village headwoman³, heard about the proposed FAO project through the local administration offices and informed her friends in the mutual-aid group. The members decided to formally register their group as a new FFS.

³ Village administrator level of local government

Lukesi⁴ Youth Group field school was registered in 2003. There are 18 members now (ten male and eight female) in the late teens to mid-twenties in age except for the host farmer who is much older than the youth. Most of the youth are in high school, and a few are just starting work away from home. The fact that not all the members are always present due to commitments at school or work, and that those starting new careers or families move away, have contributed to operational difficulties for the group. For instance, the founding treasurer got married, creating the need for the election of a new treasurer. Its members were the second most scattered in terms of residences, it was weak organizationally with low member participation and it seemed to be struggling.

The group existed initially as a Catholic youth group. In early 2003, the youth group members went to help another group, Lurare (an FFS across the river from where Lukesi now meet), to sow beans in their demonstration plot. It was during this work event that the youth group members decided to get organized as a field school too, and they asked the members of Lurare for advice and guidance on field school formation. They subsequently registered at the district social services office in early 2003. The group had 50 members initially.

The components, procedures, and assumptions of group establishment were based on FAO definitions, just like for the other groups studied. The group was assigned a Ministry of Agriculture facilitator who worked with the group during establishment, and they were expected to organize and run their own business without prompting, although this does not seem to have been explicitly stated at any time. The group seemed to rely significantly on the facilitator, to the point of being entrusted with group finances. With regard to PRA being conducted at formation, the group was already in existence and had identified some of their

⁴ “lukesi” means “sweat” in the Bukusu language

needs, and thereafter worked with the facilitator to determine the type of project to start with - a tomato garden. The members participated extensively, although the project did not succeed because there were not enough members around to care for the plants when they needed intensive management, which is most of the time for tomatoes.

Components, procedures, and assumptions about FFS

Bembako group started with IPPM training (focusing on maize production, because FAO was concerned with reducing food shortages by improving production of the staple grain, maize) and initial grants for demonstrations, for one year. The group was free to decide on a subsequent project/plan of action. The procedures called 'ground working' involved the District Agricultural officers being contacted by FAO representatives from Kakamega (Western provincial headquarters); the district agriculture officers then spread the message to divisional and other local administration offices (chief and sub-chief) that announced the proposals to constituents during the chief's regular meetings called *barazas*. Interested people contacted each other and approached the local administration to present their intentions, then the district office was informed, and facilitators were sent out. This approach assumes that ground working will effectively reach all intended respondents, not be biased, or produce biased responses. These assumptions were laid out initially by FAO under the IPPM program that introduced the first FFSs, but the field schools have now evolved beyond IPPM issues.

This researcher learnt from some of the founding members that the FAO had expected that after initial training, graduates would be sufficiently self-motivated and educated about the issues to be able to practice them successfully, and even reach out and instruct other farmers; it was also expected that after the initial start-up grant to the group,

projects would generate sufficient income to keep the group financially viable. These expectations were derived by the FAO staff in western Kenya.

Phase 1 of the FAO project involved knowledge imparting (farm economics, gross margin analysis, record keeping, promoting the idea of 'farming as a business'), during which the group was trained and funded for one year then left alone. There was no effective institutional hand-over, thus the formation of the District Umbrella FFS network more out of necessity than design.

Participatory Rural Appraisal (PRA) was conducted, although considering the time taken from ground working to group formation, it was more of Rapid Rural Appraisal (RRA). Nevertheless, the members conveyed the sense that it was a genuine exercise since the farmers had voluntarily organized and converged based on their needs. However, the training phase was controlled more by the facilitating organization and staff (plus, the farmers had been thirsting for any kind of knowledge/skills so long as it would ultimately benefit them, so they did not object to having less control over the initial process)

As for Weyeta FFS, the Ministry of Agriculture expected that after the 30 weeks of initial training, the farmers would be sufficiently motivated to implement new practices on their own farms, and that after the initial start-up grant to the group, projects would generate sufficient income to keep the group financially viable. The first phase of the project involved 30 weeks of lessons during the production season for maize. The group has been in touch with the ministry's facilitators since then. The ministry worked using FAO guidelines on FFS establishment, and the expectations were mostly laid out by the facilitator.

The initial activities could have been more of an RRA since the group had already identified their needs and were ready to get started on specific activities. The process was

quite participatory because the farmers knew most of what they wanted, and it was just a matter of the facilitator guiding them along the learning and doing process. Presently, the facilitator is still working with the group but the meetings are definitely run by the farmers.

The first step in Mutelani FFS formation was the identification and organization of a group that held elections of office holders who then registered the group at the district offices of the Department of Social Services. This registration was acknowledged by the issuance of a certificate of registration, which allowed the group to request for facilitators from the Ministry of Agriculture. The ministry assumed that the group would manage itself without external intervention, and this has been the case. They wrote their constitution and established their guidelines for conduct of business. The group was also expected to draw up their own program of weekly classes and workdays, held at one specific farm (the host farm) that belongs to one of the members.

The Ministry of Agriculture facilitators set out a season-long lesson plan after learning from the group what they needed to learn that season regarding crop production. The group members are expected to attend the classes and participate in workdays on their group field, where they implement the lessons learnt over time on the experimental plots. The farmers are then expected to make their own observations and adopt what impresses them to their individual farms the following season, according to the facilitators.

PRA was conducted and is on going all the time, seamlessly intertwined with other learning activities each season. This seems to be a more realistic approach to addressing problems because it allows the simultaneous identification of emerging needs and formulation of solutions to previously identified needs. The farmers do not have to take special time out of their daily schedules to consult with facilitators only about their needs -

everything gets addressed in one weekly forum (this group and each member was definitely highly involved in all activities).

Inputs

At the founding of Bembako, FAO bore all the costs; currently, the group meets most of its own costs of operations (registration, farm operations). Members contribute cash for registration etc., labor for farm work, while one member donates about 1 acre of land for demonstration plots plus the homestead (not necessarily the same person or couple) for weekly lessons during which no meals are expected. Members contribute a membership fee, some of which is used to register the group with the district umbrella network, and the rest used for group operations.

At start-up, Weyeta group received a grant of US \$800 (KShs. 59,000) that was used to pay for the facilitation and the acquisition of construction materials for a chicken house and some chickens. Right now, the members meet their group operating expenses by out-of-pocket contributions when need arises and with proceeds from sales of produce from their group demonstration plots. However, the members feel that revenues from group produce sales are not high enough to allow them to expand and undertake other activities they may plan. Much as they need and want even more knowledge about diverse farming activities and processes, they all agree that their greatest constraint is the scarcity of capital for purchase of farm inputs.

The group has a constitution that specifies the roles of elected officials; in addition, the group decided to handle the chicken project in five smaller groups under free range and each group provides a weekly situation report. The weekly class meetings on Wednesdays also serve as business meetings where matters concerning group management are discussed.

For the 2003 and 2004 production seasons, Mutelani group received input grants from the FAO and KARI, respectively. The 2003 FAO grant of US\$ 260 also paid for the facilitators, stationery, and a field day. Members assigned specific roles are the elected office holders (chair, secretary, treasurer) and the host farmers at whose farm the classes and demonstration plot are located.

The group members elect their officials by show of hands every three years. Other roles are suggested as needs arise, and members volunteer to be responsible for them. Group membership is restricted to people over the age of 18 years, and requires a one-time registration fee of KShs. 100 (US\$ 1.25) that is counted as a share. The founding members also stipulated that tardiness would be given little tolerance, with a KShs. 20 (US\$ 0.25) fine for each 15 minutes late, and dismissal from the group for three unexplained late attendances. The group also requires confidentiality over matters of the group, while a three-month notice is required for intending resignations or drop-outs, involving a 10% deduction of a member's shares. The group saves its funds with the Co-operative Bank of Kenya, with three officials as account signatories. Finally, the members are expected to offer social support to each other. All this is written in the group constitution.

Lukesi group received a KShs. 5000 (US\$ 63) grant from the Ministry of Agriculture towards the first project, and they also contributed their own funds. The land was provided free of charge by one of the members' parents, and the group provided the labor with the advice of the facilitator. There are six elected officials whose roles are specified in the group's constitution: the chair, vice-chair, treasurer, secretary, organizing secretary, and a committee member. The host farmer is also a member of the group despite being much older. Other roles are allocated by members' volunteering and with consensus from the group.

Roles for members

Apart from elected officials, other Bembako members have no specific roles. The officials' roles are specified in the group's constitution. Regular once-a-week meetings for lessons also serve as business meetings where group issues are discussed by all present. The constitution provides for elections of office holders every year by registered members, and this has been done in the past. Incumbent officers have tended to change positions each year, taking on more responsibility as they gain experience with group management.

Group agenda

Ideas for Bembako's group agenda are brought up by members, with guidance and significant influence from facilitators. In the beginning, facilitators' recommendations of projects to focus on were always adopted and implemented. FAO started very strongly as a solution provider (they knew, correctly, that there was a problem of seasonal food shortage that could be addressed by improving maize production). After one year of intensive training with small grants, the group was left alone without a facilitator until the Ministry of Agriculture and FFS network came along. Currently, the Umbrella FFS network serves as a good facilitator and coordinator of other agencies interested in working with the group, e.g., the Kenya Maize Development Program (KMDP), Farm Inputs Promotion Services (FIPS–Africa),⁵ the Cereal Growers' Association (CGA), Kenya Agricultural Commodity Exchange (KACE), and independent researchers. FIPS Africa, in its first year of operation, has been offering assistance on production, matching season length with crop varieties, and post-harvest management and marketing. Umbrella network has been contributing some hybrid

⁵ Farm Inputs Promotion Services-Africa, a consortium of public and private agricultural businesses

seed and fertilizer donated by agro input corporations interested in having farmers set up trials with their products.

Weyeta FFS members reported that they have always been in control of their agenda from their foundation. There was not much time spent with the group to find out if there was any excessive influence on the agenda by any specific party, but this did not come to light during individual interviews with the randomly selected members (not even subtly). However, this group is in its fourth year of operation and if there had been any power struggles within the group, they seemed to have been settled. They viewed the ministry as a helper. In its first year of operation, FIPS-Africa⁶ has been offering technical assistance on production, matching season length with crop varieties, and post-harvest management and marketing.

Mutelani members develop the group's agenda incrementally during the weekly meetings when individuals raise issues they think need attention. The facilitator collects suggestions from the members and works to find answers while developing a schedule around those needs presented.

The members of Lukesi FFS set the agenda during the regular meetings. Dedicated members who attend regularly and would be relied upon to provide active support for their ideas are most likely to have their ideas considered and implemented. But it seemed that either the youth group is not taken seriously by facilitators and administrators, or the group itself is still experiencing start-up problems, or both. This was evidenced, for example, by the failure of the Ministry of Agriculture facilitator to attend the group's scheduled meetings during the months of May and June.

⁶ Farm Inputs Promotion Services-Africa, a consortium of public and private agricultural businesses

Experiments and innovations were not evident with Lukesi group. The group meets every Tuesday morning from 8am to noon for classes, and every Saturday for work on the farm. An advantage of the facilitator-led approach is that it allows the members to focus more on learning at the early stage of the group before they start dealing with group management; it is easier to hold members accountable for labor contributions by keeping records of attendance; a regular meeting point eliminates logistical hassles each week. But most members attend school away from home, thus attendance is not regular during the school year.

Experiments and innovations

Experiments conducted by Bembako members are designed by Ben, a trained Umbrella network facilitator, and explained to group. These are very much supported by the members, evidenced by their excitement at the process and results, and the facilitator kept stressing the importance of experimenting to them. However, they have not realized much of their own innovation on their farms.

Regular group meetings are held once a week each Wednesday from 8am to 12pm at one specific venue-under the tree shade in the home of host farmers, Sylvester and Susana. The lessons are followed by a practical on-farm work session on Saturday each week, where the group implements the concepts learnt. Some advantages mentioned included a regular location and time that really simplifies the coordination of logistics for both farmers and facilitators; the training sessions are participatory and two-way, allowing farmers to raise their own questions and contribute their observations and experiences. This has also helped individuals develop confidence in public speaking while sharing their knowledge with neighbors with whom they rarely interacted on such levels, one farmer told the researcher. A

few members also noted that the time period chosen for meetings is ideal for parents with children in school, as it allows them to see the children off in the mornings and also be present at home when they return from school in the early afternoon.

Members indicated that they can and do make suggestions over time, and these are discussed by the group. However, there haven't been any drastic recommendations resulting from these suggestions so far, as members feel satisfied with the learning arrangement. The farmers feel that they need more instruction to build on their knowledge and skills acquired or improved so far, e.g., regarding on-farm processing, value adding, market development and marketing, and raising capital for major project investments through grant writing.

Mutelani farmers have been exposed to experiments in group projects, although this season being the first maize project, the experiment was designed by the facilitator. This involves growing three different varieties of hybrid maize under different practices: the conventional tillage and fertilizer approach, minimum tillage with corn stalk mulch, an intercrop with *desmodium*⁷ as a nitrogen-fixer, and trials with a new locally-formulated fertilizer that is designed for depleted soils. While the group project moves ahead carefully, individual members have implemented replications of their experiments at different levels on their farms.

Mutelani group meets twice a week, on Tuesdays from 8am to 12 noon for classes, and on Saturdays from 9 a.m. to 12 noon for work on the group's field. Members can make arrangements to work on other days if they cannot make it on Saturdays. One key advantage of the meetings for the women is that now people in the village believe they are learning and

⁷ *desmodium* is a leguminous cover crop, with the ability to trap nitrogen from the atmosphere during its growth, contributing to a net gain in available soil nitrogen.

doing something credible, unlike previously when they had to travel to the farmers' training center and their husbands did not believe them. The group also provides a primary marketing and information network for individual members' farm produce. Members are always making suggestions that the group discusses and decides to act upon or not, and this has worked well because the group was already close-knit before it became a field school.

Changes

The farmers in Bembako mentioned noticing significant changes in their agronomic practices: many who can afford the inputs are now planting twice a year, maximizing moisture use near rivers and streams. Better income from individual farms' produce is enabling their children to get better education, as it is easier to afford good food and school supplies. In the past, farmers planted large portions of their land with sugarcane but the sugar company took too long to harvest and pay for deliveries; now, area farmers have learnt the value of diversification and cane acreage has been dropping, prompting the sugar company to be gradually more responsive to farmers' needs. On-farm diversity has resulted in more food for their families.

Initially, experiments at Weyeta group plots were designed by the facilitator but the members picked up the principles and now design and implement their own demonstration plot experiments with various varieties of hybrid maize, beans, groundnuts, and vegetables. The apparent good condition of the plots suggested that they are supported. As far as innovations, the farmers seem somewhat cautious, sticking to known experiments and adopting proven innovations, especially in low input production.

Regular group meetings are held each Wednesday morning from eight to noon, and workdays are held each Saturday morning. The meetings provide a regular location and time

that makes it easy for everybody to congregate, since the location chosen has to be easily accessible. Being able to implement the lessons on the demonstration plot each week enables a more effective, incremental way of remembering what was learnt before it is forgotten, or before new lessons add more materials to what was already taught. The members stated that they can and do make suggestions that get considered and implemented. They get informed about better production and farm management methods, better land use, and now even on processing although they do not have access to machines and markets.

Members of Mutelani Field School now understand the factors that affect the performance of their farms and no longer attribute events and outcomes to supernatural forces like witchcraft. Local leaders used to just promise handouts at election time, but now the members know how to ask for concrete contributions to their projects that go beyond handouts.

This group may be the most effective socially: they say that the community members now treat them with respect, and the married female members have managed to pressure their husbands to stop drinking alcohol for long hours. Now public intoxication of the men has drastically reduced, the members agreed. The women are spending more time out in the fields than they used to and even wake up before 7am frequently—something they hardly did before field school training. This researcher also learnt that gossiping among the women has also virtually ended, while the periods of seasonal food scarcity have almost been eliminated now that they have learnt diversified relay cropping in order to always have a mature crop in the field. Hardly two years ago there used to be almost five months of “hunger season” (April to August) when the previous year’s stock of grain would have been exhausted but the new maize crop would not have matured.

The members of Lukesi group have realized that they can make some earnings from farming without having to cultivate large amounts of land or wait to get jobs off their parents' farms. However, it has not been easy to organize effectively as members are scattered in schools and their facilitator had not been showing up as regularly as they had been meeting before May 2004. A few individuals have radically altered their attitude to farming, spearheading new farming projects on their parents' farms—although broader environmental impact of wetland and native vegetation loss needs to be addressed.

Group effectiveness and lessons learnt

The women of Bembako did not really speak up during the group discussion, but they did so later during individual interviews. Some said that they have realized the value of coming together as an organization providing a forum that 'outsiders' can use to reach them easily. This is truly amazing to them, because they had never really imagined that 'important' and wealthy people would want to meet them and listen to them. "We have also learnt that other farmers have similar problems, but solutions to these problems vary from place to place and from farm to farm," said Francis (July 7, 2004). Skills learnt have been shared by some members who visited other farmers in the village. Currently, the group is talking to other groups about coming together to seek more technical training in areas they feel deficient, especially livestock production, processing, and value adding, and marketing.

Farmers who have been in the group for some time said that they now 'work smarter'; especially regarding better sowing of maize, calculating plant population and determining ideal plant spacing, seed, and fertilizer rate; matching crop varieties with seasons and soils. The greatest returns seen by members have been from selecting from a wide variety of hybrid seed maize that is newly available on the market and finding those that perform best on each

member's farm, using various combinations of soil amendments, older and newly-introduced fertilizers. "We have a much better understanding of soil and crop needs and processes, but still need to learn about livestock, bees, and processing and marketing of our produce", said another farmer called Felix (July 6, 2004). The secretary, Ben, pointed out that "we have diversified the varieties of crops grown, unlike years past when sugar cane acreage dominated" (July 6, 2004) the landscape yet returns were poor (there were and still are long delays in payment for sugar cane delivered to the factory). Also, more members are now conserving manure and maize stalks for use in vegetable gardens to boost their biomass yields.

When discussion turned to the development of analytical abilities, one could literally see the 'lights turn on' in the participants' minds as they responded that although they had learnt some techniques for analysis, they had neither been led through a brainstorming process by a facilitator, nor done so on their own until that day. This had happened when the question of raising more capital had come up and we had engaged in some analysis of opportunities and constraints. It seems like there hadn't been much anticipation of such needs by previous facilitators to get them to introduce the concept to the group, or that the group has been content with making the best of what they have on hand and never saw the need for spending their precious time conjuring up and juggling ideas and possibilities.

The first time this occurred, almost everyone in the group admitted, was during this discussion when the issue of raising more capital to expand their group demonstration plot came up. The facilitator at this time was an official from the district Umbrella FFS network, who led the group through a process of identifying their income sources, the possibilities of

setting aside proceeds from the sales of tissue culture banana seedlings, and being able to afford leasing and cultivating a larger piece of land next season.

In 2003, Weyeta group received technical assistance from KARI and the Center for Agriculture and Biology International (CABI); the next year (2004), the new FIPS and KMDP have been strong collaborators on the improvement of crop production. The group has also trained a number of officials who have advanced to regional and provincial farmers' organizations. The group members learnt and practice farm record keeping, which has changed their orientation towards farming from subsistence to commercial.

With regard to production techniques, crop varieties, value adding and marketing, nutrition, and so on, some members said that before the project, for example, they did not realize that maize had diseases, and they watched their crops perform poorly without understanding why and what they could do. They have since learnt how to protect their maize crops and are sharing the costs of corn-borer control; they also have learnt that even beans need fertilizer to do well, they can compare varieties for maturity rates, soil suitability and performance, and yields.

On the development of group analytical abilities, the members related how they had realized that the acquisition of farm inputs was a major constraint on each one of them, and they discussed this issue and planned to develop a collective purchasing arrangement for all the members. The group had also set up experimental plots of maize (Western Seed hybrid 505) that had been identified as ideal from a previous season for different treatments of soil amendments to eventually demonstrate the various effects on yields. They had marked out six identical 10 meter by 5 meter plots side by side: the first one was the control, planted with the hybrid maize and no other soil amendments or fertilizers; the second plot had hybrid

maize with a lime treatment only (and Charles, the host farmer explained to this researcher the concept of raising the pH of acidic soils!); the third plot had hybrid maize with a lime and diammonium phosphate treatment; the fourth one had hybrid maize with a domestic fertilizer blend called Mavuno that is specifically formulated for intensively farmed East African soils; the fifth one had hybrid maize with lime, Mavuno fertilizer, and farm yard manure; and the sixth one had F2 hybrid⁸ maize selected from a previous harvest, planted in a manner that the farmers described as what many of them used to do - irregularly spaced and poorly cared for. By this time, the maize was almost mature and they could see the differences for themselves.

They have also realized that shipping produce to distant markets cut into the returns they get for their produce, and the farmers tend to miss critical windows of marketing opportunity due to untimely harvesting and transportation. They reported that the commodity exchange needs large quantities of produce that individual farmers cannot supply, so they are considering joint marketing by pooling their harvests together. The group has since presented a proposal to FAO for funds to buy a small groundnut processing machine. Finally, they know that natural disasters deplete their resources and they were thinking about approaching various organizations to develop some form of reliable production safety net in the event of disaster.

In July 2004, Mutelani group was in the 20th week of a 30-week series of lessons on maize production under the facilitation of an instructor from the Ministry of Agriculture at the district level. The group has not been in existence long enough to have significantly

⁸ F2 hybrid refers to the plant grown from the seed of hybrid plants that self-fertilized. This second generation progeny does not perform as well as its parents because in-breeding results in a loss of hybrid vigor.

interacted with other organizations or communities, but it started off very effectively and is billed by the Umbrella FFS officials as a potential model group for others in the region. Nevertheless, the greatest lesson, they agreed, has been that all crops need nutrient supplements (manure, fertilizer, etc), and poor crop performance has nothing to do with witchcraft. “We have also realized that soil needs replenishment all the time, and this is possible using many methods, not just chemical fertilizers,” said Ruth (July 6, 2004). “We have learnt of the existence of many varieties of maize seed that perform differently at different times of the year, and that timeliness of field operations has a large impact on crop performance,” added Chrispinus (July 6, 2004), another participant. This season, the group demonstration plot was sown with Western Seed 505 and Kenya Seed 515 and 623 maize varieties. They have also learnt about possibilities for irrigation, confined poultry rearing, and processing of potatoes into chips or flour, but do not know how to acquire the equipment needed.

The process of developing analytical abilities (identifying main constraints, testing possible solutions) is just starting, since the group is just over one year old. So far, they have been able to identify the common problems of low yields and have figured out the value of trying out different new seed varieties and management practices. They (Mutelani) were a very well organized and managed group.

Lukesi Youth Group officials and some members concurred that it has been quite a challenge organizing a group of youths around a farming project. The group started with many people registering, hoping that they were going to receive a lot of free things (especially money); but once the money was put into farm inputs and it was clear that the returns would be in the long-term, membership dwindled to less than twenty. Regarding

production techniques and crop varieties so far, the first tomato project has failed, and this has been attributed to late cultivation that allowed weeds to choke the crop. The late cultivation could be attributed to miscommunication among group organizers and members, as well as unreliability of a number of the initially large group - some members were reluctant to do manual labor on the field.

Financial stability and independence

In 1998, as a way to raise funds for the project, Bembako group had a chicken farm project started on the advice of Ministry of Agriculture facilitators, but the confined hens were unable to lay eggs so they were advised to go free range but lost most chickens to predators. The also had a vegetable garden (collard greens) that was highly successful, bringing in about KSh.10, 000 (US\$ 125). However, being one of the new groups attracting attention and visitors, the group was ill advised by MoA facilitators to spend money on entertaining the guests, thus losing a good amount of capital. After FAO pulled out, the group was relatively independent except for funds misspent. Now largely on their own, they have a number of income-generating ideas and prospective government development funds to apply for (selling disease-resistant tissue culture banana seedlings, and they had already sold some; hosting field days and charging admission fees). Members said they had approached the local Member of Parliament for assistance in marketing bananas and sweet potatoes, while also seeking help in writing proposals for funding from the newly-launched Constituency Development Funds (CDF) and Local Authority Trust Funds (LATF).

Group self sufficiency is attainable if income-generating projects are well-thought out (especially market/demand-driven production, evidenced by the highly successful vegetable project), planned and implemented consistently; most importantly (and fortunately for this

group) consistent member participation in working towards achieving the goals of the projects - the group's membership is stable and in harmony, and they are able to stay focused on tasks.

When asked whether they really needed a group to learn what they were being taught, Charles' response was, "Yes, we really need a group to learn these things because learning and working together keeps one from becoming complacent about attending or contributing- the group activity atmosphere just energizes us..." (July 6, 2004). An advantage of the group is that now it is easier for extension officers to reach a larger audience in one visit, as opposed to the older methods where each farmer either needed to be visited at home or make a trip to the farmers' training center. It is also easier for other organizations to reach the farmers when they can be found at a specific location on specific days and times.

When this researcher asked how they had learnt about agriculture prior to the field school, some members said that they had learnt from parents, relatives, or friends; others had attended field days at the farmers' training center nearby. No one mentioned radio or publications (and not TV - there was no evidence that anybody owned one in this group).

The FAO grant covered all of Weyeta FFS's start-up costs; currently, the group meets all its costs from members' contributions and sales of group produce. The group would be more self-supporting if they could get access to markets that offered better returns for their produce. Both the group and individual farmers find their plans for self-sufficiency to be held back by insufficient capital to invest in production expansion.

When asked whether they really needed a group to learn what they were being taught, an almost uniform response was that the group format provides a very convenient way for facilitators and organizations to give the farmers information they need. All farmers work on

their own farms individually, but they share group work on the demonstration plots by working at the same time every week. They realize that in order to get better returns they need to pool their produce, especially to meet the requirements of the new Kenya Agricultural Commodity Exchange (KACE). But there seems to be hesitancy in members working together to jointly market their produce through KACE, probably needing knowledgeable facilitation.

In 2003, Mutelani group received a US\$ 260 grant from FAO through KARI Kakamega with which they raised sweet potatoes on land that was offered free of charge by one member. In 2004, the group leased one acre of land from the host farmer and grew maize using seed and fertilizer that was obtained as a grant-in-kind from KARI. The maize project was decided upon during a needs assessment session at the group's field day in late 2003, but the leased acre was under-utilized as the group had labor shortages. The group also has a horticulture project raising cabbage, amaranth (nightshade) and collard greens. It is expected that proceeds from sales of the vegetables this year will fund next season's operations, because the demand for horticultural products is almost always high. However, the group is located in an area with difficult road access (the worst roads of the four groups visited), making it very challenging to reach markets in a timely manner. There also is no piped water system or boreholes for miles around, restricting their farming activities to rainy seasons.

On the need for a group to learn what they were being taught, the farmers responded that the group format enhances the learning experience because they remind each other of what they learnt even long after the instructor has left. In years past, most of their knowledge was acquired from programmed visits to the Farmers' Training Center field days, which were held less frequently than current field school lessons. They also learnt from family members

and friends, but some of the information they shared could have been of questionable origin and unproven.

The members of Mutelani assigned into five smaller work-groups for the weekly chores on the field to ensure verifiable contributions of labor by each individual. The group has also been asked to make a presentation during the Farmers' Training Center field days, and some members worked together on a project. Work on members' own farms is done individually, with members' respective families or other labor. It is easier to plan as a group than it is for everyone to honor their commitments and accomplish tasks they promised to do.

Individual versus collective activities

All the farmers in Bembako work on their own farms individually (primarily with their families), but they share group work on the demonstration plots by working at the same time every week. However, not everyone is always able to attend each work session on the demonstration plots. But since nobody wants to be blamed for exploiting the others, they all explain why they were not in attendance, and try to keep absences to a level accepted by most members. Others live quite far away from the group plot, and their participation has not been regular.

Development of group analytical abilities

Members of Lukesi group initially identified major needs and worked to get started on a project, but has not been able to move beyond that initial stage yet. However, members interviewed displayed the potential to rapidly develop their analytical abilities with respect to their situations. In talking about problem identification and solution development, it emerged that the group has not existed long enough as an FFS to have gone through such a process yet.

The group is not yet stable financially, but the members feel confident they can contribute their own money to fund another project. However, the membership is in constant flux, and it is difficult to make plans because the members are at a stage in life when they are not permanently situated in the immediate neighborhood. The members said that in the past, they learnt from their parents, family, neighbors, and school for those who studied agriculture. Asked if they really needed a group, they said that learning as a group makes it easier for the facilitator to pass on information compared to each member having to make a trip to the district or divisional agriculture office.

Summary of Findings

Table 1: Summary of findings				
Theme	Bembako FFS	Weyeta FFS	Lukesi FFS	Mutelani FFS
1. Origins	<ul style="list-style-type: none"> • FAO-grant FFS, founded in 1997 by 42 members. Membership: 21 (12 male, 9 female). Two mutual aid groups in same village 	<ul style="list-style-type: none"> • FAO-grant FFS, founded in 2000. 30 members (12 female, 8 male). 3rd most scattered, strong leadership, broad age distribution 	<ul style="list-style-type: none"> • Ministry of Agriculture FFS, founded 2003. Formerly a Catholic Youth Group. 	<ul style="list-style-type: none"> • Ministry of Agriculture FFS, founded 2003. 30 members (26 female, 4 male). Initially a women-only mutual aid group.
Issues	<ul style="list-style-type: none"> • Felt need to improve farm productivity; • FAO funded lessons on corn for 1 year; continued to raise chickens and vegetables. One-acre demo plot and class venue at host farm 	<ul style="list-style-type: none"> • After FAO left, membership dropped • Stable but still facilitator-led 		
Approaches adopted	<ul style="list-style-type: none"> • Farm Input Promotion Services Africa is offering assistance on production, seasonal matching of varieties, post-harvest management and marketing. KARI has offered four cattle for manure; the Tissue Culture Banana project has attracted many eager buyers of seedlings, raising income for group; palm oil project on the drawing board. 	<ul style="list-style-type: none"> • 30 weeks of classes funded by FAO. Have 1 acre of commercial corn, peanuts, and sheep as group projects. • have support from FIPS Africa, Kenya Maize Development Program, and last year had KARI and CABI support. Some members that had left are now returning too. 	<ul style="list-style-type: none"> • Started with tomato garden, not successful. 	<ul style="list-style-type: none"> • Leader heard about FAO initiative, informed members who agreed to register and act as FFS. • First full year of production, focusing on maize, sweet potato, vegetables in a multicrop approach

Table 1 (continued): Summary of Findings

Theme	Bembako FFS	Weyeta FFS	Lukesi FFS	Mutelani FFS
2. Empowerment and control	<ul style="list-style-type: none"> • Realized value of coming together as an organization providing a forum that “outsiders” can use to reach them easily. • Skills learnt have been shared by some members who visited other farmers. Group is talking to other groups about coming together to seek more technical training in areas they feel deficient, especially livestock production, processing and value adding, and marketing 	<ul style="list-style-type: none"> • Member cooperation and unity; undertaking of joint projects a new phenomenon. • Farmers that learnt veterinary care now have private practices; diversification of seed varieties; better land use (two cropping seasons instead of one); people more open to discussing HIV/AIDS in Special Topics. 	<ul style="list-style-type: none"> • Individuals have garden projects for the first time 	<ul style="list-style-type: none"> • Members now understand the factors that affect the performance of their farms - not supernatural forces like witchcraft. • Know how to ask for concrete contributions to projects beyond handouts. • Respect from community members. • Public intoxication by men drastically reduced. Women spending more time in the fields, even wake up before 7am. • Seasonal food scarcity almost eliminated
Theme	Bembako FFS	Weyeta FFS	Lukesi FFS	Mutelani FFS
3. Self sufficiency	<ul style="list-style-type: none"> • Member funded, but income at household level is still going towards consumption instead of reinvestment. • This year, "hunger season" only in May-June unlike in the past when it lasted 5 or 6 months • children getting better education 	<ul style="list-style-type: none"> • Member-funded, but limited resources constrain plans to expand activities • Family meals now more than two a day 	<ul style="list-style-type: none"> • Member-funded; Struggling, not self-sufficient but has great potential 	<ul style="list-style-type: none"> • Member funded, group resources seem to be well targeted

Table 1 (continued): Summary of findings

Theme	Bembako FFS	Weyeta FFS	Lukesi FFS	Mutelani FFS
4. Lessons learnt, challenges and strategies for future	<ul style="list-style-type: none"> • Poultry project failed, vegetables were highly successful, but were misled about entertaining visitors, losing the capital. Individual farmers also adopt the trials, but are dependent on chemicals for horticultural production. • Plans to set side income from group demo plots for expansion; value adding activities; more intensive use of land; more interaction with other FFSs to exchange ideas; seek Local Authority Transfer Funds & other funds. 	<ul style="list-style-type: none"> • Plans for collective inputs purchasing, acquisition of machines for on-farm value adding. 	<ul style="list-style-type: none"> • Very difficult to organize youths around long-term, agricultural projects 	<ul style="list-style-type: none"> • All crops need nutrient supplements and poor crop performance has nothing to do with witchcraft. Soil needs replenishment all the time. • Existence of many varieties of maize seed which perform differently at different times of the year, and that timeliness of field operations has a large impact on crop performance
Theme	Bembako FFS	Weyeta FFS	Lukesi FFS	Mutelani FFS
5. Capabilities (analytical and organizational).	<ul style="list-style-type: none"> • Although they had learnt some techniques for analysis, they had neither been led through a brainstorming process by a facilitator, nor done so on their own 	<ul style="list-style-type: none"> • Leadership developed: some officials now at regional or provincial organizations. • Farmers more business savvy now. 	<ul style="list-style-type: none"> • Organizational skills and experiences are being developed as the members struggle to keep group going 	<ul style="list-style-type: none"> • Most well organized and managed group, running quite smoothly. Not yet produced members to serve on apex organizations

CHAPTER 5. DISCUSSION AND CONCLUSION

Origins, issues, and approaches adopted

None of the groups had replaced a pre-existing farmers' group in an operational sense, although they all resulted from the merging and transformation of other local groups. The region of study is a sugar-cane growing area and many of the farmers are members of the Nzoia Outgrowers' Company (NOCO), a large organization that works with the farmers to promote sugar-cane growing while representing their interests to the company. Given that one of the effects of the field schools has been a reduction in the cane acreage, the interests of the FFSs and the sugar company may ultimately diverge.

The general impression during and after the time spent with the four groups was that the most dynamic, effective, and promising group was Mutelani. This was neither the oldest nor the largest or smallest compared to the other three groups. Its members exhibited closer association with each other than in the other three groups, probably because they had been working together before forming the field school. But they also lived very close to each other—indeed they were the most compact group in terms of location of homes as compared to the other three groups. It appeared that those two factors—pre-existence as a group and distance of members' homes from each other—accounted for much of the differences in the four groups.⁹

One group that had been in existence before formalization as an FFS was Lukesi Youth Group. This researcher could not clearly establish how effective they had been at inception, but it was evident that they were experiencing significant problems in trying to function as a field school. Lukesi was the only group whose first project had been declared a

⁹ Also see discussion under "Role of Gender" for possible reasons behind Mutelani's outstanding performance

complete failure by its members, although they had benefited from the lessons just about as much as those in the other three more successful groups, and they had tangible results to show for it. This was quite the opposite of Bembako, Weyeta, and Mutelani, whose group projects often appeared better than their individual farm plots—although the latter were quite impressive, too. The members attributed this discrepancy to the fact that the group projects never lacked attention or inputs because they had to pool whatever they could to satisfy the projects' needs, but that was not true for their farms that had to wait until supplies or labor were available. This situation frequently led to untimely operations on their individual farms while the group plots always got tended to at the right time.

The oldest group, Bembako, had its best all-round performance immediately after its founding. This group was funded by the FAO, and so did not have capitalization problems like the other two groups (Mutelani and Lukesi) that were supported partly by the Ministry of Agriculture during formation.

Empowerment and control

Farmer Field Schools in Bungoma are new in their organizational approach and mode of operation. They demonstrate an unprecedented level of local control of agenda and activities related to rural development in Kenya. Until now, previous efforts to stimulate rural development have involved plans developed either at the national, provincial, or district levels that are entrusted to officials and development partners to disseminate and attempt to implement by rallying the people around the plans. Rural development in Kenya has been heavily government driven and specialist oriented, often as a service of the government to the people who have become accustomed to 'development' being 'brought from Nairobi.' This mentality still pervades among a majority of the people encountered that are not field school

members or participants. However, a significant change evident in field schools is that most of the members have learnt not to expect every good thing to be brought in from Nairobi or abroad, but that they can plan and work to get for themselves some of the things they used to wait to be given. In addition, farmers' organizations have been more tightly regulated by the government and social elites in the past. The Field School movement does not appear to be dominated by elites, and neither has the government imposed burdensome regulations. But this may change as the organizations grow in membership, especially if they are perceived to be a source of financial and economic influence.

Mutelani members exhibited the greatest sense of empowerment. The reason for this may have sprung from the initial motives of the women's mutual support group they had formed and belonged to before turning into an FFS after they had recognized the potential for an FFS to further empower them. This group was made up almost exclusively of women who had identified the path to greater influence over their own lives. Their leader, Janet, is also a village administrator, and interacting with her during the planning and visiting sessions left a clear impression that she was a strong and determined leader. A challenging moment came when the researcher explained to the group that he would be randomly selecting individuals to interview, but Janet wanted to handpick the interviewees. The researcher carefully repeated the explanation for the idea behind random sampling, and in the end the sample had to be expanded: the researcher took her list, but also made up his random selection and interviewed people from both lists. Fortunately, there was an overlap because the membership was only twenty-one and he did not have to interview all of them.

Bembako had an almost even gender balance, but the men's attendance of the classes (which were also the focus group discussions) outnumbered the women. In addition, the

women at the group meetings hardly spoke up, unlike Mutelani women. During an individual visit later on, Rita from Bembako pointed out that although their numbers tend to be balanced, men tended to dominate group forums. When the researcher raised this issue in another individual interview with the secretary Simon, he said that it was because “men have greater initiative and follow-up” than women. (July 22, 2004) The researcher left it at that for the time being, waiting for a better time to pursue the debate on gender roles and empowerment of women specifically.

However, as mentioned in Chapter 2, education around farming had been the entry point into these communities and there definitely were sequences of change that were benefiting not only the group members but the immediate families, neighbors, and local food systems. The field schools involve people of varying socio-economic status, occupations, skills, and levels of education, awareness, ambition, and enlightenment, and many of the members had been participating in group affairs in increasing levels, while learning better methods to farm as well as realizing their organizational capabilities. This “empowerment” was not uniform: individuals within groups had different rates of gaining or enhancing their confidence in public and in dealing with their family lives, but every person mentioned how he or she had gained more confidence in daily interactions and transactions since working with the Farmer Field Schools.

Self-sufficiency

Three of the four groups were minimally self-sufficient: Bembako, Weyeta, and Mutelani had members who owned land and controlled most or some of their incomes, and so they could meet their financial obligations to the group. Since these groups had also been stable and working on group projects with the aim of marketing their produce, their

immediate future seemed assured, unlike the youth group Lukesi whose project (and likely source of next season's income) had failed.

Lukesi's members are young people who are still in school and mostly dependent on their parents, although some members are quite self-sufficient on their individual gardens. For instance, Leonard, a recent high school graduate, had cleared bush from an unused part of his parents' land and cultivated a half-acre to raise tomatoes, collard greens, and maize (which he had already begun harvesting ahead of most farms). He also has sugar cane growing elsewhere; he buys his own inputs, although he got the tomato seedlings from the group. Six other members of the same group each had a tomato or vegetable garden, and they were having moderate to high levels of success. They each attributed their confidence in gardening (especially since tomatoes are known to be a difficult crop) to the lessons and experience they had received from participating in the group project. So while the group may not have success with its projects, if the lessons were learnt and demonstrated sufficiently on the group plot the members who adopt the projects individually could benefit just as much as those whose group projects thrive.

Another farmer who demonstrated probably the greatest impact regarding sustainable farming was, ironically, also the most remote of the members of Bembako (and also the remotest of all the groups). Dinah lives about three miles away from the group meeting place, on one acre of land. She farms alone since her husband has been jailed for a while now, but she has such great success that her neighbors loudly wonder if she uses magic, she said. She saves her own seed, makes farmyard manure that she supplements with some chemical fertilizer, and preserves her harvests using an extract from the abundant wild sunflower. She earns income from selling ripe bananas and fried sweet potato chips to schoolchildren, while

sharing her knowledge with a neighbor. She has also been consulted by the local area councilor on farming matters. This raised the question of whether remoteness from the rest of the group had any negative effect in her utilizing the lessons and skills learnt from group activity. On the other hand, many other factors could account for this isolated farmer's exceptional performance. For instance, she is the head of the household and sole decision maker, and this may mean that she can choose and implement activities more efficiently than other farmers who need to discuss issues at the household level. In addition, it is likely that the time she does not spend in attending group meetings regularly is spent on improving her farm. But maybe the absence of a domestic partner to fall back on has spurred her to work extra hard to ensure her success.

Capabilities (analytical and organizational)

The groups and individuals have improved organizational capabilities. According to the Organizing Secretary, Bembako used to function haphazardly in the beginning but their experiences have taught them to allocate roles more specifically during meetings. Mutelani's most organized and active member was Oscar, who owned one and a half acres of land and had five children aged between about one to ten years old. He is the group's vice-chairman and manager of the group farm. He couldn't wait to talk about and show us around his gardens, and it was most impressive when he presented a graphical layout of his plots as he pointed to them. He explained in detail what he was growing, why he was doing that, how the various crops developed, and what he intended to do later. He remarked that he and his wife had not been in a position to do that much before because they never thought that such a small piece of land could produce so much. They have no livestock, and he used to

supplement their income working as a carpenter but now he is too busy farming to dedicate much time to carpentry.

The couple had also not developed a future planning orientation regarding production until Oscar attended the field school—this may be the greatest and most significant impact that most field school members have had on their lives. Throughout the interviews with the farmers, it was evident by what they said about the future that they were more confident now about planning, especially since they had realized the value of doing so. Almost all of them also informally shared their knowledge with their family members who helped with chores on the farm (it would be impossible to keep one's knowledge away from immediate family when they worked side-by-side and took instructions from the field school members). Thus, individual membership in the group ended up benefiting the whole family, and the farmers did not feel the need to distinguish between individual and family memberships.

While members adapted and modified many of the practices learnt on the group plots to their farms, it was evident that complete replication of group plot results was possible though difficult, which happened non-uniformly among the group members - and this is generally acknowledged among Farmer Field School agents. The main reason for non-uniformity in replication is that each farmer has unique circumstances that influence the rate and level of implementation of group plot procedures. For instance, the date of sowing particular crop seeds significantly affects growth and yield, but some farmers could not sow their seeds at the exact day that the group plot was sown because they either had to sow early when labor was available to them (on weekends before children resumed school), or had to wait for money to buy the seeds. Also, farmer access to equipment for land preparation differed, as well as amount of land available for particular uses—thus creating a variety of

adaptations of the group plot layouts, crop spacing, fencing, interval of operations, and so on. Many of the farmers had realized that the good practices carried out on the group plots very often yielded higher profits, and so they found it easy to try out what they had learnt and implemented on the group plot.

Impacts on broader (non-FFS) community

While most of the time in the field was dedicated to studying the internal workings of the group, the researcher also learnt of a number of instances where the positive impact of the field schools had been felt within the communities. For example, Silas from Weyeta group showed off his farm and a recent early harvest of maize drying on the lawn, and then mentioned that his neighbors had decided to seek advice from him on early planting. Silas' neighbors had also gone ahead and followed his farm calendar simply by observing and imitating most of what he was doing in the field. He said that his neighbors had done this after they realized that he was running his farm operations in a new way, unlike what he had been doing historically, but he was realizing better yields earlier and getting to the market earlier. This gradual spread of new farming practices was shortening the period of food scarcity in the immediate vicinity of his farm, and hopefully there would be a chain reaction as more neighbors witnessed the positive changes and followed suit. Similar interactions with neighbors were recounted to the researcher by some members of the other groups.

Lessons learnt, challenges, and strategies for future

Bembako's members seemed to have learnt the toughest lessons: their poultry project had failed, but the vegetables were highly successful until they spent their income on

entertaining guests. I interviewed 12 of the 21 ‘active’ members individually¹⁰. Felix, the group’s organizing secretary who has been a member since 1997 and a one time vice chairman, said that the group would have been rated first in the district had they not had initial financial troubles and some disagreements with the host farmer who assumed ownership of 80 percent of the group’s first yield in stead of an earlier-agreed 50 percent. This had prompted them to move their meeting place from the home of James to their present location at the farm. He has a long experience with groups, having first joined a Primary Health Care self-help association in 1989. He has attended various training sessions in planning, community health, small enterprise development, livestock development, and now FFS IPM production systems. He is an expert in matters of construction, nutrition, health care, and preventive health—he has a limited license to sell medicines, and has used his training in community-based health care to start a local dispensary.

However, another member of the same group, Rosemary, cited the change of leadership and location as a major cause of the group’s diminishing effectiveness. She remarked that over the time she had been active with the group, she had learnt that a group’s survival depends more on its leaders than on its members. Rosemary had not been participating in group activities since April 2003. Her homestead was probably the wealthiest looking of all the farmers interviewed in this study, and she shared it with a co-wife¹¹ and

¹⁰ the “active” members are the ones who had renewed their membership for this year and were participating in group activities. The initial registry had 40 names

¹¹ Bukusu culture, like many African tribal cultures, is patriarchal. Polygamy, where one man marries more than one woman, was widely accepted and practiced before contact with Europeans and the introduction of Christianity to East Africa in the late 19th century. Resources were historically controlled only by men, and ownership of large parcels of land necessitated more family labor, thus the need for more children. Also, men faced more perils and had a higher mortality rate in their warrior duties before they could qualify to marry, hence there was a higher ratio of eligible women to men. Polygamy was a way the society had met the production and reproduction needs for many generations before, and it is still lawful under Kenya’s Customary law that operates side by side with the modern Common law.

over twelve children in total. Their husband worked in town and lived off the farm, which was another issue that Rosemary wished were different because she had been excitedly intending to host an FFS in her neighborhood but her husband was unwilling to spare any land for a group demonstration plot. She thought that the situation would have been in her favor had he been living on the farm and witnessing the daily improvements her FFS training had on the farm.

Weyeta had developed the capacities of many of its members to become able leaders of apex organizations – for instance, their former secretary had joined the district umbrella FFS network as secretary. This, according to Pretty and Ward (2001: 220), is an indicator of a mature group that is at the third and final stage (awareness-interdependence). Weyeta's future plans include collective purchasing of farm inputs so members could get better deals on prices. They also intend to develop links with more external collaborating institutions that would offer technical and financial support, another indicator of a group at the awareness-interdependence stage.

General future plans for Bembako field school include setting aside income from group demonstration plots for expansion of farm activities into value adding, more intensive use of land, more interaction with other FFSs to exchange ideas, and to apply for Local Authority Transfer Funds and other development funds to finance the value adding enterprises.

Role of gender

Although the researcher observed that groups with initial high social and human capital (already existing as well-functioning groups) were not necessarily more mature or independent than those that were formed for the sole purpose of the field school, Mutelani

Field School appeared to be the most smoothly functioning and autonomous group of the four studied. This group had a majority female membership, and these women had known each other prior to the group formation when they belonged to a mutual aid group. Mutual aid groups are not new in Kenya, although women have had a lot more experience with them than men have, and it appears that the dynamics established by the women in their group have played a major role in helping them run a successful small group. But what is it about a female majority that sets the group apart from the rest? What is it that spurred the women to be more diligent and enthusiastic about their collective work and success?

Perhaps Mutelani's performance can be seen as a case of "Women Centered Development", which is "distinguished by collective and relational orientation, involving a commitment of caring and responsibility for others,...hence the calculus of women's development creation involves sharing and maximizing the payoff and potential for all" (Christiansen-Ruffman 1989: 49). The members of Mutelani definitely exhibited more connectedness to each other than the members of the other groups, and it may have been easier for Mutelani members to grow closer to each other than the others since they found it easier to build personal relationships in multiple aspects of their lives than those with mixed or mostly male memberships. Christiansen-Ruffman points out that "women expend energy networking and creating spiritual, social and cultural resources" (1989: 49), while men, in this researcher's experience, tend to network in one dimension - whether social, economic, or cultural.

Another factor contributing to the majority-women group's excellence may be explained by an analysis of the historic power of women in the village political economy dating from pre-capitalist Africa. Starting in the 1950s, land ownership in Kenya was

transferred from lineage ownership to individual male heads of households. This made the product of the land to be legally the husband's property, and women (wives) were expected to provide free labor in support of farm production of food and surplus cash crop that was appropriated by the men (husbands). Cash crop marketing organizations (like the Coffee Marketing Board, Sugar Marketing Board) facilitate the appropriation of income generated by women's labor. In this light, women who formed or joined women's groups found them to be more than places for coping with development - they are vital organizations for resistance to exploitation. Majority-female groups like Mutelani represent a variation of women's groups whose work and returns are controlled almost exclusively by the women members, remaining "the chief means by which rural women empower themselves politically and economically within the community" (Stamp 1990: 81-84). The group members seem to have grasped at this opportunity to exert their economic independence, and the importance of this option to them has driven them to take their project more seriously and to seek greater success.

Role of facilitators

The farmer field school facilitators had attended a training course that was split into two phases, consisting of a two-week course was held on-station at the Farmers' Training Center (FTC) near Bungoma followed by one week of field work with farmers' groups within 10 miles of the training center.

During the first two-week period, the participants were introduced to a range of FFS methodologies which may serve them useful for facilitating the formation of farmers' groups and for initiating learning processes related to the local diversified farming systems. These methodologies included observations, buzz groups, brainstorming, discussions, role plays,

energizers, evaluations, organization development and dynamics, 'Participatory Technology Development' (PTD) and 'Agro Eco System Analysis' (AESAs). The introduction and trying out of these methodologies were combined with training on more technically oriented issues such as livestock management, crop production, marketing, and whole farm economic analysis. During the third week, i.e. the second part of the training course, the group of course participants and resource persons left for the field to interact with FAO's field school members in order to try out what they had learned during the first two weeks at the FTC. Each day, they would prepare a training session with the farmers in the FFS groups on a specific topic. During the sessions, the trainee facilitators were split into groups of facilitators and feed-backers, the latter observing and subsequently commenting on what they had found to be good or bad in the encounter between the farmers and the trainee facilitators.

The facilitator with whom this researcher interacted the most, Ben, was quite experienced and skilled at his job. Having originated from one of the Farmer Field Schools (Weyeta), he was comfortable and familiar with all the issues that arose among the groups. He also understood the need to handle gender dynamics with due sensitivity to the local cultural norms by, for instance, diplomatically avoiding potentially embarrassing people in group situations. He favored a Socratic approach to group meeting discussions, and understood the underlying cultural norms, tactfully working with each member or group to advance their quest for success without causing undue friction among group or family members. He even mentioned that he understood the potentially role-changing nature of group activities, and he had been trained well theoretically and experientially to help individuals and groups navigate unfamiliar situations surrounding gender roles.

Conflict and malfunction

Three groups (Mutelani, Weyeta, and Bembako) showed little evidence of major functional problems or conflict between members or with their facilitators. The members of these three groups had an excellent working rapport with each other and with their facilitators, contributing to a significant part of their success. Lukesi on the other hand had its members and facilitator operating out of harmony with each other for a significant part of the time this study lasted. This was evident in the low attendance rate of meetings by its members, and the fact that at the time of study their facilitator had failed to show up for sessions lasting practically all season long. Lukesi was not functioning as well as its leaders wished it would, and some of the likely reasons for this have been explored earlier in the discussion.

Conclusions

Contrary to the expectations at the beginning of the study, the groups reflected greater variation than anticipated. Pretty and Ward (2001) prepare us for such findings, but it is not practical to locate a group at a specific stage or level of evolution; however, it could be conceived of as exhibiting characteristics of two successive stages.

First, while it appeared that groups with more years of experience were more independent than newer groups, the former had not yet initiated other groups. Nevertheless, there was evidence that the more experienced groups had helped to promote the spread of new technologies and methods to other groups and individuals. In terms of the various models of evolution and maturity, both Bembako and Weyeta would be moving closer to performing stage (Handy 1986) or in between Pretty & Ward's stages two and three

(realization-independence and awareness-interdependence). Mutelani would be characterized as rapidly moving through Handy's norming into performing stages or Pretty & Ward's stages one and two (reactive-dependence to realization-independence). Lukesi, on the other hand, would be at Handy's storming or Pretty & Ward's reactive-dependence stages.

Secondly, contrary to expectations, groups that were well funded were not always more independent than those that were poorly funded or self-financed. Mutelani is an example of a self-financed group whose members articulated its financial deficiencies well, but they did not have any more dependency on the umbrella network or other outside organizations than the previously well-funded Bembako or Weyeta groups. A minimally-funded group, Lukesi, was still dependent on grants funding. There are a set of factors contributing to this group's low performance, including its members' primary occupations (students mostly), unsteady and limited sources of income, minimal facilitator involvement relative to the other three groups, and greater distance of members' homes from each other and from the meeting location than the other groups visited.

Lastly, again contrary to expectations, groups with initial high social and human capital (already existing as well-functioning groups) were not necessarily more mature and independent than those that were formed for the sole purpose of the field school. This probably calls for the need to distinguish between pre-existing social capital within a community before the residents form an action group and the social capital that is created when they form the group. For example, Weyeta FFS was formed for the purposes of the field school, although the members had not been part of another group before that. However, the members came from one village and they had common interests that kept them working together. There is a significant role that the facilitator plays: during the focus groups, it was

evident that Weyeta's facilitator, Ben, was the most engaged and dedicated of all the facilitators encountered. He was always punctual and attentive to the farmers' needs and questions, while not stealing the limelight or shutting anybody out. Ben was an experienced facilitator who knew how to structure the learning and moderate the meetings to get participants engaged and in control, and he did this consistently throughout the season. This is in sharp contrast with Lukesi FFS, whose facilitator never showed up during the period of the study (and members said he had not shown up for about two other sessions before, held on July 6 and July 13, 2004). The effect of facilitator absence could be seen in the struggling group, a group that had initial high social capital because they had been in existence as a youth group. But Lukesi's operational difficulties could also be traced to its members' occupations as students, many of who spend significant periods of time away from home at boarding schools while others start careers or families and move away. In addition, the youth lived quite far apart, making meetings for lessons seem like a full day's commitment that required significant travel time or cost for many of them.

While group leadership influenced the perceived performance of the group, the level of literacy of the leaders was not a predictor for group performance. The style of leadership and experience in leadership roles determined how the groups responded to their leaders. For example, Weyeta's leaders fostered a highly consultative approach, and although their chairman had barely had a 5th grade education, the group was thriving under his leadership.

Based on these observations, group viability is largely influenced by:

1. members' other primary occupations,
2. external facilitator skill and commitment, and

3. proximity of the members' homes relative to each other (affecting travel time and amount of contact time between members) and relative to the experimental farm.

This implies that planning for a successful field school should include a process for selection of members whose primary occupations as well as relative proximity to other potential members' farms and to the experimental farm (ideally less than 20 minute walk) are not likely to keep them away from participating in the field school activities as needed, and the designation of a well-trained and committed facilitator to the group. These would be the three important considerations to forming a group with a high likelihood of success. While these factors directly affect the functioning of the group, they indirectly affect group learning and development of human capital.

A more thorough analysis of such groups can help one predict the success or withering of a group with some degree of certainty, allowing that memberships within groups can always change and in turn shift the perceived trajectory of a group's fortunes. For instance, if the membership of Lukesi Farmer Field School changed substantially to include a close-knit group living within a 20 minute walk of each others' farms, or if they completed school and decided to focus on farming, a subsequent study could find them to be a thriving group. Also, the farmers are ambitious people who would most likely keep setting new goals and expanding to new horizons. This researcher saw some evidence of this in Bembako and Weyeta's brainstorming over seeking grants to fund micro-processing equipment, an idea that had been growing increasingly feasible to the members as they realized smaller successes each season.

Following this field observation and analysis, this study's expectations will be revised, as stated in the Methodology outline in the beginning of this report, to reflect these lessons learnt, as follows:

Expectation #1 is refined as: Groups whose members have had more time working together as a field school would be more independent than newer groups whose members had had less time working on the field school objectives irrespective of prior work together. Groups with more time in shared experiences would have initiated other groups and helped promote the spread of new technologies and methods more than those with less shared time;

Expectation #2 refined as: The effect of quantity and source of initial funding on future independence and success of a group is in turn affected by the group's internal dynamics and continuing support by the facilitator;

Expectation #3 is reformulated as: The level of **social and human capital** created within a new farmers' group at group formation is a greater determinant of the group's rate of maturity and attainment of independence from external support than the social and human capital in an already existing, well-functioning group of another sort that transforms into a field school. An assessment of the groups' effects on livelihood sustainability is based on a set of five indicators that are inclusive enough to give a holistic picture of impacts and outcomes (Flora 2004). These are:

- Increased use of the knowledge, skills, and abilities of local people (human capital)
- Strengthened relationships and communication (social capital)
- Increased flexibility, innovation, and adaptation (social and human capital)
- Sustainable, healthy ecosystem with multiple community benefits (natural capital)
- Appropriate diverse and healthy economies (financial and physical capital)

Table 2: Levels of Sustainability Indicators (static and dynamic) observed within the Farmer Field Schools

	Field School Name			
Livelihood sustainability indicators	Bembako	Weyeta	Mutelani	Lukesi
Increased use of knowledge, skills & abilities of local people (Human capital)	High	High	High	Medium
Strengthened relationships & communication (Social capital)	High	High	High	Medium
Increased flexibility, innovation, and adaptation (Social & Human capital)	Medium	Medium	High	Low
Sustainable, healthy ecosystem with multiple community benefits (Natural capital)	Medium	Medium	Medium, improving	Low
Appropriate diverse and healthy economies (Financial and Physical capital)	Low, improving	Low, improving	Medium, improving	Low, stagnating

Overall, three groups (Mutelani, Weyeta, and Bembako) had helped most members move towards greater sustainability. The farmers had learnt and were utilizing their knowledge, acquired skills and re-awakened abilities to work better on their collective and

individual farms in order to support their families and move out of poverty and chronic hunger and scarcity. They showed that they communicated better than in the past, especially for those who used to suspect their neighbors for bewitching their land or children before they learnt the nutritional explanations for their poor health. The new knowledge had opened avenues for cooperation between neighbors who previously had no excuse to wander onto each other's farm – now they freely show their gardens to whoever asks, and they even share planting materials. That is not to say that Lukesi members had not benefited from their participation in their group, although their group project of raising tomatoes using input-intensive methods was not a good example of sustainable farming.

The field schools have demonstrated to the members the value of diversity on the farm, and for those who have implemented diversification there was a general response that they never regretted their decisions, and the different enterprises have literally saved them. There was one farmer who diversified seed maize variety and planted an early maturing variety that was already harvested, and he was glad he was not going to experience the seasonal hunger like other village residents. Many other members of the FFSs related how they made more money from marketing bananas, sweet potatoes, and vegetables during seasons when they previously would have had nothing else but maize and sugar cane growing.

It may be too early at this point to notice major agroecosystem impacts, but the major observable improvement has been the reduction in sugar cane acreage that dominated the landscape in previous years. FFS members are now practicing relay cropping, keeping their fields under different crops like sorghum, peanuts, sweet potatoes, and maize, instead of having only sugar cane. Others are growing more tree seedlings for income while supplying

tomorrow's sources of fuel. These are ways in which the agroecosystem is gradually benefiting more people instead of a few companies, contributing to both sustainable, healthy ecosystems (natural capital) as well as appropriate diverse and healthy economies (financial and physical capital). The social and human capitals enhanced by the field schools seemed resilient, except for Lukesi group whose capital base was unstable as members were liable to move away periodically or permanently.

But more importantly, it was evident that the agronomic methods learnt were resilient to adverse weather conditions. During the study, East Africa was experiencing a drought and the government of Kenya had predicted large-scale crop failure all over the country. During home and farm visits, many neighboring fields as well as control plots on FFS participants' farms showed the effects of drought. The rains had not been as regular as had been expected, at one point having nearly six weeks without a drop during the growing season. Much of the usual late maturing, late planted, unmulched maize fields were wilting while fields of early-maturing and mulched or minimally tilled maize were mature and had escaped the dry spell. In addition, all FFS members had been encouraged to develop a sweet potato field, and these were crucial in maintaining the families' sources of carbohydrates before the maize matured because established sweet potato crops do not demand much water.

These case studies show that Farmer Field Schools are contributing to sustainable rural development by renewing poor rural farmers' sense of agency in working out of hunger and poverty by developing relationships of interdependence with each other and with external organizations while enhancing their assets. The technologies and processes spread through the Field Schools are both externally and locally derived, but have been tested by the farmers in their environments and are proving to be resilient to many shocks and stresses.

However, the most significant and lasting change is in the mental skills and organizational abilities being learnt and developed by the farmers. The human development component may be less tangible and quantifiable in this study, but it needs to be quantified and monitored more closely than monetary or agronomic components because human skills and knowledge have a longer lasting impact on the livelihoods of the participants. As mentioned earlier, besides its intrinsic value, human capital (knowledge and labor or the ability to command labor) is required in order to make use of any of the four other types of assets. It is necessary for the achievement of positive livelihood outcomes, though not sufficient by itself. These field schools are contributing significantly to filling a gap in human capital enhancement.

It has also been fortunate that the policy environment in Kenya is changing, becoming more favorable to small-scale and poor farmers. While scarce financial resources remain an inhibitor to faster transformations in rural livelihoods, Farmer Field Schools are mobilizing and inspiring the people to pull themselves out of poverty in an unprecedented way in this part of Kenya.

APPENDIX

Thematic questions.

- The FFS Methodology - Are there specific components, procedures, and assumptions about FFS? What are these?
- FFS group - What is the size and composition? How were they started? Who got involved initially? What are the early steps? Were the groups pre-existing or newly-formed for the purposes of the project?
- What is/was the basis for determining which group to work with for this approach?
- What are/were the expectations of the facilitating organizations, and were there time frames? How were the expectations derived? By whom?
- Was any PRA (participatory rural appraisal) conducted? If so, was it genuine or just another product being 'sold' by the organization? How participatory were the methods throughout the cycle?
- Inputs - Who provides what (time, money, management, etc.)?
- Group dynamics - Are there specific roles for members? Who decides role allocation, and how? What are the group management processes?
- Agenda for FFS - How was/is it established, by whom, and how significant are the relative members' contributions to it? Is the organization a solution-provider or a facilitator and helper?
- Is there any cost sharing by participants, or are all costs borne by the facilitating organization? Examples?
- Are experiments and innovations part of the process? If so, who designs these? Are they supported? How much innovation/adaptation have they realized? Examples?
- Meetings - How long and how often are they held? What advantages and/or disadvantages do these (e.g., training format) have? Can members make suggestions, and are they received and acted upon? Which needs are met and/or unmet by the exercises?
- Effects - Are there any changes members have noticed? What (examples), and how do they measure/quantify these changes? How effective are they as a group? Are they making any changes? What is missing? What lessons have they learned from what they have done, from interactions with other groups and interested farmers/communities, or in terms of technical assistance? What domestic effects do they (esp. women) realize from participation?
- Capacity - Have they developed their own analytical abilities (identifying main constraints, testing possible solutions)? What problems did the group identify, and what was the process for solution identification? How did the possible solutions get eliminated and the best one picked? Examples?

- Stability - Are they financially stable and independent? How was/is capital raised? Will the group be self-supporting after the supporting institution pulls out? Under what conditions is the group self-sufficient? Evidence?
- Lessons - What has been learnt regarding production techniques, crop varieties, value adding and marketing, nutrition, etc? Is their better understanding of new techniques and crops/animals?
- Is the 'group' format really necessary? What activities are done individually versus collectively? Are there any limits to group activity? Is there any discrepancy between theoretical expectations and participants' experiences regarding the extent of collective activities? Why and how?

Semi-Structured Group Interview Questions

1. What is the group size and age/gender/occupational composition? How was the FFS group started? Who got involved initially? What were the early steps? Was the group pre-existent or newly formed for the purposes of the project?
2. Are there specific components, procedures, and assumptions about FFS? What are these? According to whose definition? How was this specific group chosen? What is/was the basis for determining which group to work with for this approach?
3. What are/were the expectations of the facilitating organizations? What are/were their time frames? How were the expectations derived? (By whom?)
4. Was any PRA conducted? If so, was it genuine or just another product being 'sold' by the organization? How participatory were the methods throughout the cycle?
5. Who provides what inputs and how much of each? (Time, money, management, etc.) Are there specific roles for members? Who decides role allocation and how? What is the process for group management?
6. How was/is the group's agenda established, by whom, and how significant are members' contributions to it? Is the facilitating organization a solution-provider or a facilitator and helper? Is there any cost sharing by participants, or are all costs borne by facilitating organization? Examples?
7. Are experiments and innovations part of the FFS group process? If so, who designs these? Are these supported? How much innovation have they realized? Examples?
8. How long and how often are group meetings held? What advantages and/or disadvantages do these (e.g., training format) have? Can members make suggestions, and are they received and acted upon? What needs are met and/or unmet by the exercises?
9. Are there any changes you have noticed? What (examples), and how do you measure/quantify these changes? How effective are you as a group? Are you making any changes? What is missing? What domestic effects do you (esp. women) realize from participation?
10. What lessons have you learned from what you have done, from interactions with other groups and interested farmers/communities, or in terms of technical assistance?
11. Have you (as a group) developed your own analytical abilities (identifying main constraints, testing possible solutions)? What problems did the group identify, and what

was the process for solution identification? How did possible solutions get eliminated and the best one picked? Examples?

12. Are you financially stable and independent as a group? How was/is capital raised? Will the group be self-supporting after the supporting institution pulls out? Under what conditions is the group self-sufficient? Evidence?
13. What has been learnt regarding production techniques, crop varieties, value adding and marketing, nutrition, etc.? Is there better understanding of new techniques and crops/animals? Examples?
14. Do you really need a group to learn what you are being taught? How did you learn before? What activities are done individually versus collectively? Are there any limits to group activity? Is there any discrepancy between theoretical expectations and participants' experiences regarding the extent of collective activities? Why and how?

Semi-Structured Individual Interview Questions

1. What is your role in the FFS group? In the community? How long have you been part of this group? Who belongs to the group - just one family member or the whole household?
2. What are/were your expectations of the facilitating organizations?
3. How much do you participate in the various aspects of the interactions with the facilitators? How participatory have their methods been throughout the cycle?
4. What inputs do you provide, and how much of each (time, money, management, etc.)? What is the process for group management? How effective and beneficial is this process?
5. How was/is the group's agenda established by whom? How significant are your contributions to it? Do you view the facilitating organization as a solution-provider or a facilitator and helper? Which costs do you bear for participating in this group? Examples?
6. Are experiments and innovations part of the FFS group process? If so, who designs them? Are your experiments supported? How much innovation have you realized on your farm? Examples?
7. How long and how often do you attend group meetings? What advantages and/or disadvantages do these (e.g., training format) have for you and your family? Can you make suggestions, and are they received and acted upon? What needs are met and/or unmet by the exercises? Who allocates roles and how?
8. Are there any changes you have noticed at the household level and beyond? Which (examples)? How would you measure/quantify these changes? How effective do you find your group to be? Are you making any changes? What is missing? What domestic effects have/do you realize (d) from participation?
9. What lessons have you learned from what you have done, from interactions with other groups and interested farmers/communities, or in terms of technical assistance?
10. Have you developed your own analytical abilities (identifying main constraints, testing possible solutions)? What problems did you identify, and what was the process for

solution identification? How did the possible solutions get eliminated and the best one picked? Examples?

11. Are you financially stable and independent as a farmer? How was/is capital raised? How does your individual farm's stability relate to the group? Will your farm be self-supporting after the supporting institution pulls away from your group? Under what conditions is your farm self-sufficient? Evidence?
12. What have you learnt regarding production techniques, crop varieties, value adding and marketing, nutrition, etc.? How do you view your understanding of new techniques and crops/animals over time before and since you joined the FFS? Examples?
13. What is the importance of a group to you? What activities do you do individually versus collectively? Are there any limits to group activity? Is there any discrepancy between theoretical expectations and your experiences regarding the extent of collective activities? Why, and how?

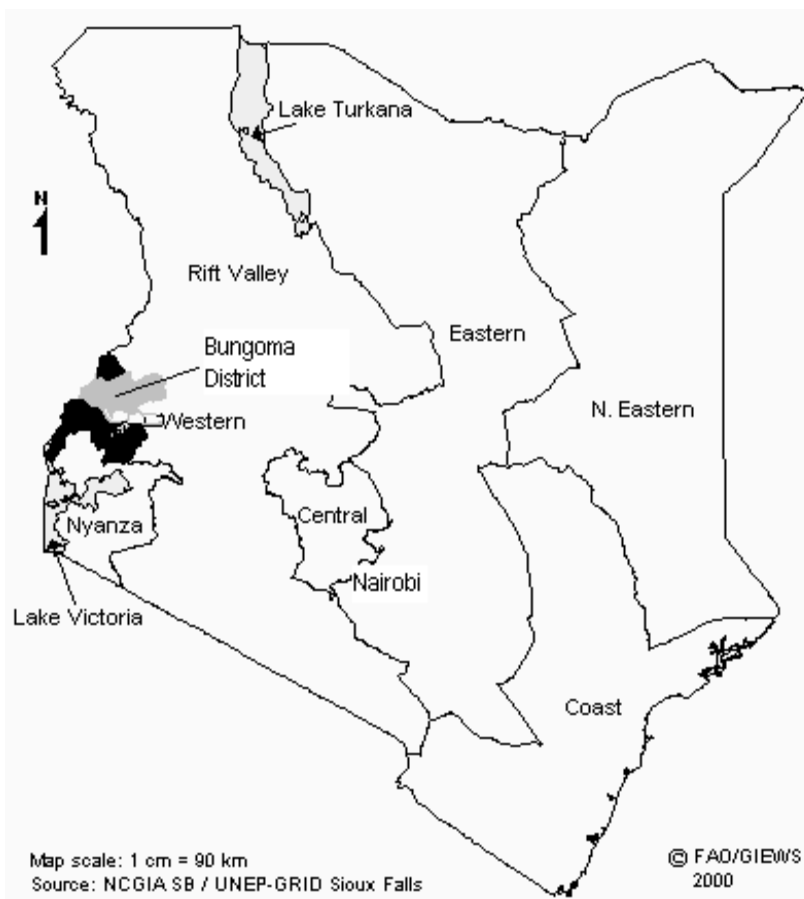


Figure 2: Map of Kenya showing Bungoma District (in gray), Western Province (in black).

Table 3: 2000 – 2004 Registered FFS in Bungoma District.

NO.	FFS NAME	ADMIN. LOCATION	YEAR STARTED	ADMIN. DIVISION
1.	LIMA FFS	SIRARE		NALONDO
2.	EMBAKO FFS	“		“
3.	KHASULE FFS	“		“
4.	SIRARE FFS	“		“
5.	LURARE FFS	“		“
6.	WALUKANA FFS	“		“
7.	AMANI FFS	“		“
8.	LUSANJELA FFS	“		“
9.	SIKATA FFS	“		“
10.	TAMBULUKHA FFS	“		“
11.	MUUNGANO FFS	“		“
12.	LUKESI FFS	“	2003	“
13.	WEYETA FFS	LUUYA	2000	NALONDO
14.	WEYONG’ONG’A FFS			NALONDO
15.	MOKA FFS			
16.	SIMANA FFS			
17.	KAZANA FFS			
18.	JITEGEMEE FFS			
19.	BEMBAKO FFS		1997	NALONDO
20.	SISIMUKHA FFS			
21.	NDILILE FFS	LUUYA		NALONDO
22.	UMOJA FFS		2002	KANDUYI
23.	MUSOKEBALU FFS			“
24.	NALUTIRI FFS			“
25.	CENTRE FFS		2003	“
26.	SIPALA FFS			“
27.	SICHEI FFS			“
28.	MABANGA FFS		2001	“
29.	MWICHEMBE FFS		2002	“
30.	MWINDALI FFS		2000	“
31.	BARAKA FFS		1999	“
32.	BIDII FFS	BUKEMBE	1999	KANDUYI
33.	YETANA FFS	“	2004	
34.	BAHATI FFS	“		
35.	TARATIBU FFS	“		
36.	MUNYOLE FFS	“		
37.	SUDI FFS	“		
38.	MUYAYI FFS	“		
39.	KHAINGA FFS	“		

Table 3. (continued): 2000 – 2004 Registered FFS in Bungoma District.

40.	MATUMBELA FFS	“		
41.	MULUKHU FFS			
42.	SILILILA FFS			
43.	MAKUTANO FFS	“		“
44.	NDENGELWA FFS	“		
45.	SAASIA FFS	“		“
46.	SITAWA FFS	“		
47.	SIIMA FFS	“		“
48.	BUNANA FFS	“		
49.	MANYANDIO FFS			
50.	TEMBA FFS			“
51.	BOKOLI / SANGO			
52.	ENDELEA FFS	BUKEMBE		
53.	KISULUNI FFS			KANDUYI
54.	RANJE SINUKO FFS	E. BUKUSU		KANDUYI
55.	NDENGELWA	“		
56.	WALUKASA	“		
57.	MABUSI	“		
58.	MUFULE	“		
59.	NABUTOLA	“		
60.	TILAKHO FFS.	“		
61.	SANGO FFS	“		
62.	MAKHUMA FFS	“		
63.	INAMA FFS	“		
64.	MUTELANI FFS	“	2003	KANDUYI
65.	SILAYI SILI MUMBAKO	E/BUKUSU		KANDUYI
66.	NALUNABU FFS	E/BUKUSU		“
67.	SINOKO FFS	E/BUKUSU		“
68.	MUKHOLI BIDII	E/BUKUSU		“
69.	TUMAINI	E/BUKUSU		“
70.	NAMOSI	KABUCHAI		NALONDO
71.	LUSANJELA			
72.	ST. MONIKA			
73.	WEYOMISIA			
74.	KITINDA FFS	E/BUKUSU		
75.	NEUNI FFS	E/BUKUSU		
76.	SUBILAFFS	S/BUKUSU		
77.	SASURI FFS	KIBABII		
78.	KABUSASI FFS	KIBABII		KANDUYI
79.	BUKANANACHI FFS	KIBABII		“
80.	MALIKI FFS	KIBABII		“
81.	TUUTI FFS	KIBABII		“

Table 3. (continued): 2000 – 2004 Registered FFS in Bungoma District.

82.	KHOLA FFS	KIBABII		“
83.	SINANI FFS	NAPARA LOC		KANDUYI
84.	YETANA FFS	NAPARA LOC		BUMULA
85.	NAPARA BIDII FFS	“		BUMULA
86.	SAWA FFS	“		BUMULA
87.	TUMAINI SILOBA	NAPARA		BUMULA
88.	SANGE FFS	NAPARA		BUMULA
89.	NAKHWANA FFS	KIMAETI LOC		BUMULA
90.	SIOMBE BIDII FFS	“		“
91.	NJETE FFS			
92.	SIHILILA FFS	“		“
93.	SIRITANYI FFS	MUSIKOMA		BUMULA
94.	MACHWENU FFS	MUSIKOMA		
95.	NAMASANDA FFS	MUSIKOMA		
96.	MULIMANI FFS	MUSIKOMA		
97.	SIKATA SOUTH FFS	MUSIKOMA		
98.	WAMUTENDE FFS	MUSIKOMA		BUMULA
99.	NAMBEBA FFS	MUSIKOMA		“
100.	WANYITIKHA FFS	MUSIKOMA		“
101.	FANYA BIDII FFS	MUSIKOMA		BUMULA
102.	KHWAMOKA FFS	N/BUKUSU		BUMULA
103.	NGOLOTI FFS	N/BUKUSU		BUMULA
104.	MIKALO FFS	N/BUKUSU		NALONDO
105.	NJETE FFS	N/BUKUSU		NALONDO
106.	NGAMILO FFS	N/BUKUSU		NALONDO
107.	YIKULAO FFS	N/BUKUSU		NALONDO
108.	NATUNDWE FFS			
109.	NAMILIMO FFS			
110.	BULALA FFS			
111.	CHEMUCHE FFS			
112.	INYOKHA FFS			
113.	NJETE FFS	BUKEMBE		KANDUYI
114.	BUSIRAKA FFS	SIRARE LOC		NALONDO
115.	KHALABA FFS			
116.	WEOYA FFS			
117.	LUMICHO FFS	N. BUKUSU		
118.	MUANDA FFS			
119.	MATEKA FFS			
120.	KHAKACHO FFS			
121.	NABWALA FFS			
122.	LUYEKHE FFS			
123.	NYOLELE FFS	MUKUYUNI	2004	CHWELE
124.	KIMAMA FFS	MUKUYUNI	2004	

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