

**" TARGETS AND BENEFICIARIES OF AGRICULTURAL EXTENSION
SERVICES: A CASE STUDY OF RURAL WOMEN IN KIRINYAGA
DISTRICT, KENYA "**

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Declaration

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

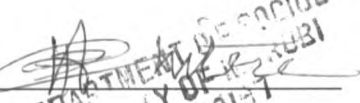


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Dedication

I would like to dedicate this work to my husband Abraham, and my Dad, Mum, Anne and George for encouraging me to pursue my education and believing in me. I am very grateful.

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Abstract

This is an exploratory study on *Targets and beneficiaries of agricultural extension services with a focus on rural women of Kirinyaga district in Kenya*. The general objective of carrying out this study was to find out the role of the present approach of the agricultural extension system in providing services to rural women in Kirinyaga district. Specific objectives were; to describe the existing approach of the agricultural extension system in the area; to document sources of information for rural women in Kirinyaga district; to analyse the difficulties encountered by extension providers in dispensing their duties in the district; and to discuss the factors affecting access of information for rural women in the district. This study relied on two sociological theories/models namely the diffusion of innovation model and the field theory, which argue that a person's socio economic status is highly related to his/her level of contact with the change agent.

Primary sources of data were rural women to whom a household survey questionnaire was administered. Key informants in the public and private sector of the extension system also provided information, which was gathered using an interview schedule. Secondary sources of data were also used. All these qualitative and quantitative data were combined, analysed and presented in the fourth chapter of this study.

Major findings indicate that contrary to popular thought, women are more educated than previously held. Secondly, levels of income and education heavily influence what sources of crop information the women farmers turn to. Thirdly, it is evident that there is an attitude/relationship problem between extension workers, who are

mostly male, and the women farmers. The back and forth visits, between these two groups of people, suggesting an interaction, register a dismal frequency.

It is recommended that the retraining of extension personnel to get rid of the biases they have towards women farmers is critical. The changes the government is already instituting in the agricultural sector, by way of introducing different extension approaches, can be lauded. However, more still needs to be done in recognition that rural women farmers in Kenya need all the support in providing food for their households and the country in general.

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CHAPTER ONE

1.0 Introduction

Agricultural extension in Kenya dates back to the early 1900s. Several approaches were tried, including individual visits, group methods, unified extension, farm management, integrated development, and specialized commodity extension programmes. Except for the last, none endured. Nevertheless, the traditional extension system was highly successful in the dissemination of hybrid maize technology (Gautam 2000:7)

Agriculture's poor performance in Kenya in recent years, the country's declining budgetary resources, and efforts to rationalize the Ministry of Agriculture have increasingly called into question the effectiveness of extension services. The Kenyan government is also wary of continuing with the large allocation of resources to extension, given agriculture's poor performance since the start of the 1980s (Gautam 2000:2). For a long time, extension service in the country has been a monopoly of the public sector. The service has been blamed for non-performance and lack of accessibility, and confidence in extension workers has been waning while budgetary allocation to the service has been on the decline. The effect of liberalization and public sector staff retrenchment are impacting heavily on the service. The traditional methods of service delivery are no longer sustainable and change is inevitable (Republic of Kenya 2001a:ix)

Donor support has been dwindling over the last 15-20 years. This has also meant reduced field staff, for example since 1989, no new frontline extension staff has been hired. Through natural attrition, retirement and death, staff have reduced leading to large extension: farmer ratio (1: 1000) (Amudavi & Gichimo 2002:29). In some areas

of Kenya the ratio is even worse, for example in Bondo district the extension officer to farmer ratio is 1:2100 (Mango et al 2002:14). The extension officers do not have the capacity to reach most farmers because they are few in number.

The majority of small-scale farmers in the country are women and they provide for well over 80% of domestic food requirements in the rural areas. Available estimates suggest that women contribute over 80% of the rural agricultural labour force (Republic of Kenya 2001a:22). Despite growing awareness of the need to reach women farmers, agricultural extension services are generally geared towards male members. This is sometimes by design, but more often by default. Bias towards male farmers is evident in the delivery of extension, which is generally provided by male extension agents to men, on the assumption that the extension message will “trickle across” to women. Unfortunately, the evidence clearly shows that it often does not. It is also evident in the message itself, which tends to focus on the activities of male members rather than the much wider range of agricultural activities of women. Such an approach ignores the unique workload, responsibilities and constraints of women farmers and results in a highly inefficient use of resources, not to mention sub-optimal levels of agricultural production (Saito and Weidemann 1990:ix)

In the past, male extension workers tended to target male farmers for their extension messages, training and even in the allocation of farm inputs. Extension messages were not prepared taking into account the target audience and it was presumed that the impact of extension messages is gender-neutral which in reality is not the case. Projects were planned without proper gender analysis and did not address the

special needs of women (Republic of Kenya 2001a:22). Research has shown that giving women farmers the same level of agricultural inputs and education as men could increase yields obtained by women by more than 20% (Saito et al 1994:x).

In rural areas, the lack of basic services – reliable water supplies, health centres, stores, woodlots, transport, and mills – adds considerably to the time women must also spend on household chores. Shortage of time constrains women's attendance at activities that benefit them, the time and attention they can pay to productive activities, and visits to health facilities. Women's obligations to work on husband's and family plots and to care for children limit their capacity to prioritise their time. Women's low levels of functional literacy, numeracy and other related management skills limit both their ability to manage their economic activities and their status in the household and community. Smallholders, in general, have difficulty in obtaining credit for the purchase of tools, equipment, raw materials and inputs. But women have more difficulty than men in obtaining credit for reasons of collateral, the linking of credit to cash commodities, and social/educational constraints (World Bank 1995).

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The African rural household is changing and traditional farming systems are breaking down. In response to evolving social and economic circumstances, particularly growing population pressure on an increasingly degraded land, men are migrating off the farm in search of more remunerative activities elsewhere, and the traditional pattern of intra-household rights and obligations is changing. The gender-specific nature of African farming is disappearing as women are growing crops (such as coffee and other cash crops), taking on tasks (such as land clearing) traditionally

performed by men, and making decisions on the daily management of the farm and household (Saito et al 1994:x).

While there is much regional variation, women in rural Africa are frequently illiterate, engaged in subsistence agriculture and unfamiliar with current technology, and are often perceived by male extension agents as being “non-adopters”. There is a lack of awareness of these constraints. Most policy makers, managers, agents and participants in agricultural support services are males who are not directly affected by the problems and needs of women farmers, and hence are not sufficiently aware of them. A number of initiatives are needed to improve awareness. These include collecting necessary information, redesigning surveys and questionnaires, improving staff knowledge and understanding of the subject, and generating feedback on progress (Saito & Weidemann 1990:x).

This study appreciates the input of extension services in agriculture as well as the role played by women. It is an exploratory study to find out whether rural women are tapping the benefits of extension services in the bigger effort of finding out who are the main agricultural information providers for rural women.

1.1 Problem Statement

Kenya is an agricultural country. Over the years the government has invested in extension services because they are easily recognised as being the halfway point between researchers and farmers and vice versa. Most farmers in Kenya will report that extension agents are their main source of agricultural information but at the same time will complain about the frequency of visits. The extension sector, like many sectors in recent years, has not been spared by the Structural Adjustment Programmes (SAPs), which necessitated cutbacks. It is reported that Kenya has not hired a Frontline Extension Worker since 1990. Thus, the number of extension staff on the ground has been steadily falling with no replacement. The result has been a very impractical farmer-to-extension worker ratio. How has this impacted on rural women farmers?

Research shows that in the past extension messages have been targeted to men, who are also the owners of the land. In fact, Food and Agricultural Organization of the United Nations (FAO) report that as late as 2001 only 5% of all agricultural extension services worldwide are targeted to women. In addition research shows that extension messages are stressed towards commercial crops rather than the domestic crops that women usually concentrate their efforts on so as to feed their household members. Therefore, what is the nature of the extension messages that designed for women, if any?

Men have the advantages of being more educated and more mobile than women who are constrained by a combination of their demanding household chores and agricultural tasks. Research shows that the illiteracy rates of women are higher than

those of men in rural areas, a factor which is a major constraint in the dissemination of agricultural knowledge by various extension providers. For example, it is reported that women represent two-thirds of all illiterate people (IFAP). Majority of rural residents are women who either chiefly work directly on the farm or indirectly sell the produce from the farm or do both and studies show that two-thirds of agricultural labour is provided by women. This includes hoeing, weeding, storage operations and processing (FAO 1996). Rural-urban migration has reduced the population of men in rural areas as they have moved to urban areas in search of employment. The International Labour Organization (ILO) reports that in Africa 78% females as compared to 64% of males are economically active in agriculture. In light of this information do the women have the necessary information to carry out their agricultural activities? Has the rural-urban migration of men been felt by the extension providers? If so, how have they tailored their messages to suit the rural woman taking into account her limited education, time and mobility? With the huge ratios between farmers and extension workers can we still say that extension is the major source of agricultural information in rural Kenya? And, at the end of the day, who/what does the individual rural woman report as being her chief source of agricultural information?

This study is an attempt to answer these questions by exploring how extension services of today are meeting the needs of the rural women by addressing the following objectives.

1.2 Objectives

1.2.1 General objective

To find out the role of the present approach of the agricultural extension system in providing services to rural women in Kirinyaga district in Kenya.

1.2.2 Specific objectives

1. To describe the existing approach of the agricultural extension system in Kenya.
2. To document sources of information for rural women in Kirinyaga district.
3. To analyse the difficulties encountered by extension providers in dispensing their duties in Kirinyaga district.
4. To discuss factors affecting the access of information for rural women in Kirinyaga district.

1.3 Justification of the study

The feminisation of agriculture has brought a considerable burden on the rural women. As males move into off-farm employment, women's farming roles are expanding and evolving. Religious, cultural and social norms constrain women's activities and rights; reproduction and household responsibilities constrain their time and mobility. Women have fewer economic options and less access to information and resources than men. Providing information to promote rural development will increasingly require a systematic approach (World Bank: 1998:15). Women are involved in every stage of food production and although there is gender-based division of labour, women do tend to shoulder the larger share. In consideration of such factors one can recognize that effective extension can lead to the

empowerment of women, enabling them to take control of their lives and participate as equals with men in promoting food security and rural development (Balit: 1999). Therefore, only by collection and analysis of gender disaggregated data will development strategies target women as active and equal partners in agricultural development.

1.4 Scope of the study

In answer to the research questions given, this study will only be concentrated in a region of Ndia division in Kirinyaga district. This is because of the limited research resources. Since this is an exploratory study, it is hoped that the results from this area, which displays two agro ecological zones, will highlight the situation of rural women farmers and thus inspire more studies and necessary action. In view of the agricultural extension services, the study will be limited to describing the present approach of the present agricultural extension system; documenting sources of information for rural women in Kirinyaga district; analysing the difficulties encountered by extension providers in dispensing their duties in the district and a discussion of factors that affect the access of information for rural women in Kirinyaga district.

This study recognizes that men are very crucial in agriculture. However, women are chiefly chosen due to their limited access to agricultural extension services when compared to their massive input in agriculture.

CHAPTER TWO

2.0 Literature Review

2.1 Introduction

The world today is an information society. Information is increasingly used in all aspects of human activity, and many technologies assist in providing information in a timely manner. Yet while information has always been indispensable in processes of political, economic, and social development, the way that information is accessed and controlled today is widely debated (Odame et al, 2002:1)

Aitkin (1998) asserts that access to information is one of the most valuable resources in agricultural development. Today, the demand for agricultural information is stronger than ever. The increased market integration that is experienced by even the most remote farming communities greatly increases the pace of change. Events and developments far away from home have profound effects on the livelihoods of farmers. Information is needed:

- a) to exploit opportunities in time – like the many emerging niche markets for organic products;
- b) to raise awareness about the potential negative impacts of current choices, e.g. embarking on the use of genetically modified crops when more and more markets do not want them;
- c) to get to know about the experiences of other farmers in order to search for better opportunities and sustainable solutions.

2.2 The present approach of the agricultural extension system in Kenya

“Extension systems” refer to extension services originating from institutions and organizations, which include the public sector such as the Ministry of Agriculture and Rural Development (MOARD) and parastatal organizations; private sector individuals or companies offering extension on a commercial basis. It also covers private commodity companies offering extension services to contracted farmers; farmer organizations and farmer groups; NGO and religious groups. The “national extension system” in this context refers to all the extension systems in the country as a whole seen as one system (Republic of Kenya 2001a:3)

Agricultural extension service is primarily concerned with effecting change through the adoption of innovations and changed practices and attitudes. Over the years, the various extension players have used varying and multiple extension approaches with varying levels of success. Such approaches have included progressive or model farmer approach, integrated agricultural rural development approach, farm management, training and visit, attachment of officers to organizations, farming system approaches, farmer field days and farmer training centres. One of the major weaknesses in all these approaches is that they have not been participatory enough (Republic of Kenya 2001a:7)

No single extension approach can be considered appropriate to address the needs of all agro-ecological zones. Specific approaches to be used in a given area will depend on, among other factors, the following: a) agro-ecological zones; b) farmer literacy level; c) enterprise mix; d) land tenure system; e) farmers’ resources; f) socio-cultural factors; and g) farmers’ needs (Republic of Kenya 2001a:11)

The extension services of the MOARD have not performed well in the past decade necessitating public concern about the future of these services. It is for this reason that the National Agricultural Extension Policy (NAEP) and the National Agricultural and Livestock Extension Programme (NALEP) implementation framework were developed towards the end of the year 2001. MOARD has reorganized to include five technical departments namely: agriculture and livestock production; veterinary; cooperative development; fisheries and land reclamation. Provision of extension services is still a core function of the new ministry. Major reforms will be instituted within the next 15 years to accommodate contributions from private sector, farmer organizations, community based organizations (CBOs) and non-governmental organizations (NGOs). Strong linkages with all stakeholders are encouraged to reduce duplication, overlaps and unnecessary competition in service provision. The role of public extension agents will gradually change from that of provider of extension services to one of facilitation, regulation and quality control (Republic of Kenya 2001b:1)

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According to Republic of Kenya (2001b:5) NALEP is an umbrella framework for implementing agricultural extension projects in Kenya using agricultural extension policy guidelines, both private sector based and public extension services. Its mission is to implement and achieve the objectives of the NAEP. The objectives of NAEP are: a) to facilitate the development of pluralism in service delivery; b) to improve the efficiency and effectiveness of extension service provision from public and private sectors; and c) put in place a regulatory system to guide service

providers and modalities of setting operational standards, quality and norms (Republic of Kenya 2001a:7)

One key feature of NALEP is that it seeks to be demand driven unlike other extension approaches which have been supply driven. It seeks to give enough consideration to socio-economic circumstances of farmers, a wider involvement of stakeholders and wider interaction between the farmers and other relevant actors (Republic of Kenya 2001b:5)

NALEP will use the participatory approach in problem diagnosis, planning, appraisal and implementation, bottom-up ownership, cost sharing and self-reliance, capacity building of communities and extension workers and support for entrepreneurship (Republic of Kenya 2001b:6). In practice this is whereby frontline extension workers (FEWs) and District subject matter specialists (SMS) engage farmers in a focal area in a participatory rural appraisal (PRA) exercise. Depending on the outputs, farmers will form common interest groups (CIGs) in the areas they feel they need assistance. Focal areas are regions virtually demarcated using physical features such as rivers or points of interests such as number of farms in relation to population.

NALEP covers all districts in the high and medium potential areas and the arid and semiarid lands (ASALs). It embraces the principle of commercialising and privatising extension services to enhance the ownership and sustainability of the services. Cost sharing will apply to extension services to subsistence farmers involved in the production of basic food crops and artisan fisher folk. It will also apply to attachments of staff to farmers groups or organizations; accommodation of

FEWs, transport costs for example in the case of artificial insemination and clinical services. Free public extension should continue in the case of resource poor farmers in all Agro-ecological zones, subsistence farmers (both food crops and livestock) and in the ASALs. Full cost recovery will apply to all commercial oriented services (floriculture, dairy, livestock, feed formulation, irrigation designs, individual coffee growers with 10 acres or more, farm planning services); supply on non-extension goods at farm level for example grafting, artificial insemination, deworming, soil sampling among others (Republic of Kenya 2001b:10)

Past and present extension methods have included contact farmers, contact groups, field days and demonstrations, tours and visits, residential farmer training, shows, on-farm trials, mass media and barazas. The group approach at frontline level will be given highest priority as an extension method under NALEP. There will also be increased use of mass media including television, video, print and Information and Communication Technologies (ICTs). (Republic of Kenya 2001b:24) The widely used acronym ICT captures a multitude of equipment and services. These range from satellite communication systems, telephone booths in rural areas, the Internet and electronic databases, to e-commerce services via the World Wide Web (Odamo et al 2002:2). Increased use of mass media will allow reduction in face-to-face communication methods, which are more expensive.

FEWs will be deployed as general extension workers at extension unit level. There will be one FEW per extension unit in the "high potential" districts. In ASALs FEWs will only be provided where irrigation schemes, cooperative ranches or settlement

schemes exist (Republic of Kenya 2001b:57). For marketing purposes farmers are encouraged to form groups and engage in collective marketing.

NALEP appreciates the role played by women farmers. To correct the gender bias, all extension providers will be encouraged to conduct socio-economic gender analysis and sociocultural studies to be inbuilt in projects and programmes. A Gender Equity and Mobilization (GEM) unit is already operational within the extension service of the MOARD to backstop and monitor the effective incorporation of gender concerns in all aspects of extension. GEM units also exist in the districts (Republic of Kenya 2001a: 22).

In a nutshell how does NALEP operate? Firstly, NALEP is a government nationwide framework for agricultural extension that is sponsored by both the Swedish Development Agency (SIDA) and the Danish Development Agency (DANIDA). The GOK – DANIDA NALEP works in Eastern and Coast provinces. The GOK-SIDA supported NALEP is more widely spread and works in 43 districts each with about 6 divisions in 5 provinces of Kenya. The project uses the shifting focal area approach whereby a focal area is identified using participatory rural appraisals (PRAs). A focal area can be said to contain about 400 farmers. Intensive planning is carried out in the focal area for a period of one year. A Frontline Extension Worker (FEW) takes the lead in assisting farmers approach farming as a business enterprise. Together, they come up with a farm specific plan. Depending on the identified needs, farmers are encouraged to form common interest groups (CIGs) addressing different enterprises. Usually, these groups have 10 to 20 farmers and since the beginning of this project more than 3,000 such groups have been formed. Focal area

development committees are formed and these handle more than just agricultural enterprises. A study is being carried out to find out how well focal area development committees and common interest groups are functioning since the mid term review of the project implied they were not being fully utilized. In a nutshell, partnership and collaboration in agricultural development with demand driven extension services are the main focus of NALEP (Swallow et al 2003b:4).

The NALEP implementation framework is well written but it fails to recognize some key constraints in the agricultural sector of Kenya. This framework is silent about the rural infrastructure, which is in dire need of development. While we encourage farmers to demand services, we should also recognize that some of them live in inaccessible areas with no roads, or access to telephones or electricity. Factors like these already contribute to the absence of extension provision in some areas of Kenya.

Secondly, the government does not invest enough into the agricultural sector. Farmers do not receive any subsidies and corruption has exposed farmers to purchasing fake seeds that are sold to them from approved organizations further impoverishing them. Most of the methods put forward in this new framework emphasize a group approach over an individual approach mainly because of costs. Taking into consideration that the country is going through hard economic times, farmers may require subsidies to jumpstart the lull being experienced in the agricultural sector. Perhaps this should be considered as a poverty alleviation strategy.

Thirdly, we are yet to see the results or the impacts of Gender Equity and Mobilization (GEM) units, which seek to incorporate the concerns of women farmers in agriculture.

2.3 Sources of information for rural women

The path of progress for women all over the world has not been easy. Women have had less access to education, jobs, information and communication and to credit. Yet it is confirmed by FAO studies that, while women are the mainstay of small-scale agriculture, of the farm labour force and of day-to-day family subsistence, they have more difficulties than men in gaining access to resources such as land, credit and productivity-enhancing inputs and services (Rodriquez 1998).

Information can be passed through three avenues namely: individual, mass and group avenues. Individual avenues include observations, demonstrations, telephone calls, extension officers, neighbours, and personal letters among others. Mass communication avenues comprise; radio, television, newspapers, magazines and libraries among others. Group avenues include; tours, workshops, conferences, drama, folk songs, group discussions, seminars among others (Ocharo 1991). All these communication avenues have their advantages and disadvantages depending on the target of the communicator as well as the resources available. Below are some documented examples showing how women farmers use these communication avenues.

2.3.1 Relatives

This is an individual channel of communication. In a study carried out to find out sources of information for livestock keepers in Bondo district, men and women ranked information sources differently. Overall women emphasised community sources, ranking neighbours, churches, community based organisations and chief barazas most frequently. Men also indicated the importance of community sources (especially family members and neighbours) but overall gave the highest priority to government extension. The same result was observed by the study in Migori and Vihiga districts (Mango et al 2002). In Vihiga district, female-headed households are more reliant on elders, neighbours, family members and agricultural extension officers respectively than male-headed households (Gichimo et al, 2003). One reason for this is that women feel the bias extension agents have toward them and naturally they turn to their neighbours and relatives for information. There is also the argument that one sees a neighbour more frequently than one sees an extension agent especially taking into account their current understaffed conditions. Again, it is likely a neighbour or a friend will speak in a language that is more understandable than the technical extension language the extension agent may choose to use.

2.3.2 Networks

Developing and maintaining a social network consists of “strong ties” with family and close friends and “weak ties” with acquaintances and institutions is known to be crucial for material and emotional support and for generation of “social capital” (meaning access to information about services, jobs and so on) (Rose & Ray 2001:1)

Women's social networks are more strongly rooted in family and close friends, whereas men's are more likely to include acquaintances. Men's social ties tend to be more diversified than those of women, giving them access to a broad range of information, which often assists their social and economic mobility (Rose & Ray 2001:1)

In rural areas, networks have become key elements in individual and household strategies for survival, accumulation and mobility. They also enable constituents address community problems on ad-hoc basis. Networks may solve individual problems but organized solidarity – a group – is needed to bring about significant changes in any system (Lee-Smith 1999). Again this is an example of an individual channel of communication.

2.3.3 Women groups

Here we focus our attention on a group communication avenue. In many countries it has been found that it is more acceptable to work with women's groups rather than with individual women, as in Nepal (Fuller 1994). This is often the only way for poor women to obtain sufficient resources (material, capital, labour) to initiate activities. The group approach has been tried in various projects including Kenya in the sheep, goats milk processing as well as dairy, and has been successful in involving women in the decision-making aspects and in giving poor women an alternative to poverty (Finney 1988).

Women groups are an important part of African society. For example, the Umoja groups in Kenya are very active in agriculture and trade (Noble and Nolan 1983a). In

1984, there were more than 16,000 registered women groups in Kenya, most of them engaged in some form of livestock production for profit. However, they face problems procuring feed as a result of shortages and high costs, and in some cases cultural prejudices against women having livestock. In some areas, women do not have grazing grounds and must depend on the goodwill of men to allow their animals to graze (Mbeo, 1989)

Women groups in Kenya date back to early independent days when the late President Jomo Kenyatta emphasized “harambee” (pull together) in the spirit of working together for national development. The women’s bureau census records that central province had 3, 783 groups with 186,918 members in 1991. Below is a case study showing how women benefit from engaging in collective action.

Case study: Uteri wa methi poultry project (MYWO 1985:18)

50 women started this project in September 1977, in Makuyu division, Murang'a district. Makuyu is a semi arid area. It has large farms owned by big companies, that is, the pineapple plantation owned by Del Monte, the sisal estates, coffee estates and many others.

The group is composed of women who work in these farms as casual labourers. In 1977 they decided to form a group with an aim of contributing money to buy small farms of their own. By the end of the year they had already raised Kshs. 8,000. This money brought them shares in one of the land buying co-operative societies.

In 1978, each of the members had a small plot of half an acre. After this they started to raise money to build houses for each other. This project was completed in 1982. The next move was to buy each other one-grade cattle for milk and for generating income. They have improved their homes by building water tanks in their houses to collect rainwater. Young mothers have taken a very keen interest in the project as it has helped some of them educate their children. The project has attracted new members; the group now has 100 members. There is need to expand the project as the group has added another five and a half acre plot to their previous two acres. On completion of the grade cattle project, they embarked on buying a plot in 1982 and also bought goats as a group project. At this stage in 1982, they had already raised and spent Kshs. 175,540. The goat project did well and they were also lucky to receive a small grant of Kshs. 8,000 from the Ministry of Culture and Social services.

Achievements of women groups

- a) Women groups are a perpetuation of African tradition of social cohesion such as the coming together of women as a work force in the provision of labour on farms and social gatherings. For this reason women groups have become instruments in sensitising women and creating awareness through their interaction where they share their thoughts on constraints, aspirations and needs.
- b) Women groups are gradually liberating the women folk from the position of economic dependency on the man, particularly those groups which have viable economic activities.
- c) Women groups form a ready forum for spearheading development in various sectors, be it in health, agriculture and formal education. The relatively enlightened members of women groups impart to others information, for example, family planning issues (Were 1990:73)

Receiving agricultural information is not seen as a direct reason for joining or forming a women group. But when the women are involved in agricultural activities such as care of livestock or the transplanting of tree seedlings, they are bound to encounter dynamics that go with these enterprises. Like any farmer, rural women are keen to want to know the best species and how to treat diseases and various pests. To get the answers they consult among themselves or use their group to access outside help. Therefore women groups provide networks and a concerted avenue to the outside world.

Although the group approach is often the best solution for most rural women, it may not be so in all cases. For example, cooperative efforts among the Rendille transhumant women, met with resistance. Women did not see the need for cooperatives, nor could they agree on leadership. In addition, they did not like the frequent arguments that ensued, something that was foreign to their culture (Abu Bodie 1979)

2.3.4 Rural Markets

This is an example of a mass communication avenue. Fuller (1994) notes that traditional rural markets are not only places to shop or sell but also places to exchange information. Women's involvement in rural markets is little understood and inadequately researched, particularly in terms of facilities that women use, their price responsiveness and their dependence on barter or cash. There are signs that women's role in the marketing of livestock produce may be eroding particularly in Latin America and the Middle East, as commercialisation increases.

As women meet in markets as buyers and sellers they are bound to exchange information about a fast crop growing variety or a weed that is proving to be a nuisance. Again, some stockists take the advantage of market days to advertise their wares, which may include farm implements and pesticides or herbicides. During this time they provide information on the use of these chemicals. Therefore, rural women benefit from rural markets as sources of information.

Women are less familiar with modern markets and feel powerless to influence them. They are hampered by cultural norms, and the lack of access to information on new

technology, prices, demand etc. Unlike their husbands, they are rarely given training in modern small business management. Also they are hampered by factors common to all: lack of adequate transport and communication services, inadequate equipment and facilities in market places (e.g. stalls) and the presence of exploitative middlemen (Fuller 1994)

In conclusion it appears that women tend to favour individual communication channels. However, in light of the current extension framework, which prioritises group methods over individual methods due to cost concerns, women farmers will have to recondition themselves so as to benefit from extension. The question is, with their high illiteracy levels, how are they to benefit from the preferred far-reaching, cost effective mass media methods?

2.4 Difficulties encountered by extension providers while dispensing their duties

Agriculture as a whole provides jobs to 70% or over two-thirds of the working population. Agricultural expenditure as a percentage of total government expenditure averaged between 9.1% between 1972 and 1980. The highest record was 11.2% in 1986/87 but between 1987/88 and 1999/2000 the figure averaged 4.7% per year. If the government is to boost the economic growth of the country or achieve the Newly Industrialized Country (NIC) status by 2020, investments should be increased as a matter of urgency (Republic of Kenya 2001b:62).

This low investment has impacted greatly on the extension providers. For example, in the era of cost cutting the farmer to extension worker ratios can be as high as

1000:1. This increases the burden for the extension worker who is not able to effectively communicate with so many farmers. Secondly, the resources may not be enough to go around. Thirdly, extension staff also suffer low morale due to their low remuneration packages. This is what has led to them being accused of sitting on information in the office whilst farmers are languishing in the fields. Looking at this problem from another angle, the profession can also be accused of not attracting the most qualified as they are out there looking for greener pastures. Fourthly, due to their wide coverage, extension workers encounter the problem of a dilapidated infrastructure, for example poor road networks that are a hindrance to their work. Fifthly, it can also be argued that extension workers experience problems of language barriers when they are posted to areas where they do not speak the ethnic languages.

The box below highlights some challenges facing extension workers under the NALEP framework:

How challenging will be extension work under NALEP? The change in approach from routine work based on a narrowly defined extension service will present one challenge to extension managers and FEWs. Another challenge will come from the need to keep abreast in terms of information on many subjects of concern to farmers. Competition from private sector providers of agricultural services will present another challenge. The need for innovative approaches and methods to satisfy changing demands from farmers and other extension clients will also put pressure on staff to

perform. The public sector will also increasingly come under pressure to set performance standards to be met by employees in view of declining resources and the drive towards greater efficiency of service delivery and effectiveness and general productivity. The electronic revolution will put still more pressure on staff to become computer literate or risk being left behind in the application of information technology (Republic of Kenya 2001b:27)

However, one of the glaring challenges for extension workers is the poverty in rural areas. How do they encourage poor women farmers to demand services?

2.5 Factors affecting the access to information by rural women

Introduction

The dissemination of public information in the rural areas has met with little success. This is as a result of such factors as illiteracy, poverty, and distance from communication avenues, to non-availability of the right communication avenues (Ocharo 1991). Despite their role as the backbone of food production and provision for family consumption in developing countries, women have limited access to critical resources and services. In most developing countries, farmers in general do not have access to adequate resources. But women's access is even more limited due to cultural, traditional and sociological factors (Rodriguez 1998)

2.5.1 Education

Two thirds of the 1,000 million illiterates in the world are women and girls. Available figures show that only 5% of extension services have been addressed to rural

women. In addition, most extension services are focussed on cash crops rather than food and subsistence crops, which are the primary concerns of women farmers and the key to food security (Rodriguez 1998)

With few women unable to read, even in their own language, books are of limited use. Radio programmes tend to be confined to political or government propaganda and religious activities. Into this isolated arena, international agencies have begun to construct telecentres as a major effort to "cross the digital divide" between those with access to information and those without. Women however, even though living and working in close proximity to the telecentres, have not been able to use them effectively due to their limited reading ability and the absence of appropriate content materials (Walker 2002)

Of greater concern is that females in sub-Saharan Africa have experienced the lowest average annual growth in total years of schooling between 1960 and 1990 of all regions (an annual increase of 0.04 years, raising the average years of schooling of the adult female population by only 1.2 years between 1960 and 1990). Moreover the female-male ratio in the growth of total years of schooling is 0.89 (higher than in South Asia, but much lower than in Eastern Europe or East Asia) meaning that females experienced a slower expansion in educational achievement than males (Blackden & Bhanu 1999:14). This lack of education is seen to be a critical barrier to agricultural information for rural women.

2.5.2 Ownership of agricultural resources

Women do not however, tend to own or control the key resources, such as land, on which their agricultural activities depend. These are usually the domains of men. Historically, women have also had less access to formal information and communication systems associated with agricultural research and extension (Odame et al 2002:3)

The ownership of and trade in livestock are usually considered to be in the male domain, even though women provide much of the labour and expertise that makes them profitable. Extension and technical training therefore is usually given to the former and not the latter. This prevailing attitude is the result of two main factors: a gender bias on the part of extensionists and rural communities, and illiteracy among women (Fuller 1994)

Some constraints women farmers face are:

- a) Land availability and tenure i.e.
 - i) Plots allocated to African women are frequently far from their villages and far from other plots the women,
 - ii) Women tend to be over represented among farmers with little land – In Kenya 40% of smallholdings are managed by women, and women provide some 75% of the labour on all smallholdings.
 - iii) Women are less likely to have secure title to land
- b) Lack of technology- especially labour saving technology
- c) Lack of credit and inputs (Saito & Weidemann 1990:5)

2.5.3 Government extension bias

Surveys show that women in all countries are interested in learning new techniques and ideas. However, they are disadvantaged because government extensionists rarely reach them, but also because they have very little access to credit and other inputs. Often the language of project documents affects the outcome: in a project in Egypt "agricultural development" is meant to target men, but not excluding women as beneficiaries, whereas "rural development" is meant to include activities that are especially target women. In both Kenya and Tanzania, a study showed that extension agents visit female-headed households less frequently (Fuller 1994). In Egypt, only one in five rural women with small holdings was able to meet a (male) extension worker directly; most often women obtained information through television or public meetings, and sometimes from their husbands (Loza 1992).

Why do extension agents tend to ignore women?

- a) The extension agent's perception that women have little decision-making authority in farming
- b) Women's heavy workload, which cuts into the time available to meet agents
- c) Socio cultural and religious factors that inhibit male extension agents' communications with women farmers (especially in the absence of a male relative)
- d) The extension agent's perception that women have physiological limitations for farming
- d) The extension agents' perception that women are less able to understand most extension messages because of their generally lower level of education (Saito & Weidemann 1990:4)

Part of the problem is that women are often illiterate and are not able to compete for training opportunities. Bolivia has a 47% rate of illiteracy among its rural populations, 60% of who are women (de Schulze & Sostres 1990). The rate of illiteracy is highest among those age cohorts where women have the greatest responsibility for household maintenance. This limits their access to training and extension.

2.5.4 Limited time and mobility

Interventions targeted at women need to consider women's available time, not just for new activities, but also for participating in meetings and committees. When asked, women often request training in sewing, nutrition and other home-based skills, rather than in animal husbandry or other production skills. But this is frequently more a result of their social conditioning than of a personal choice (Fuller 1994). Due to their household chores and responsibilities, rural women may not be available to attend agricultural meetings or seminars that are far off or those that tend to go on for many days. Women are forced to intricately balance their time between the family and the farm and this is in many cases a handful. Therefore, they may want the new agricultural information but are constrained by their responsibilities.

2.5.5 Wrong targeting

Development planners have assumed that information given to male members will be passed along to other farming members of the household. This is not often the case. Experience indicates that agricultural knowledge acquired by males often does not "trickle across" effectively to females in the family. Men are usually not

expected to share their information, especially in a polygamous household. It would be improper for a wife, especially a junior wife, to query her husband about what he learned from the extension agent that day. Men are less likely to pass information along to women when crops or tasks are gender-specific, which is the case in much of Africa (Saito & Weidemann 1990:12). Therefore, women are likely to continue with their outdated practices when new information is not targeted to them.

Conclusion

Rural women, most of whom are farmers speaking only the local language of their region, are among the most isolated groups in Africa. Having little opportunity to go to school, they are dependent on word-of-mouth or local radio for information and have had little say in what that information is all about. Yet they are in the forefront of the fight against poverty, illness and conflicts that are raging across the continent (Walker 2002)

Recognition of gender roles and the specific needs of women is key to effective and productive agriculture. It has been noted that a lack of access to agricultural resources and services, including research, poses a fundamental constraint on women farmers. Improved accesses to, and control over, all productive resources and services, such as land, labour, credit and equipment for women are required to increase their capacity to generate much-needed income and improve their production. Clearly, this calls for more attention to women's participation in decision making processes at all levels, from the community through district to national levels, and beyond as well as their improved legal rights over the use of resources (Huvio 1998)

2.6 Relevant theories

2.6.1 The Diffusion of Innovation Model

According to Everett (1983:34-36) diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Communication is a process in which participants create and share information with one another in order to reach a mutual understanding. It is the newness of the idea in the message content that gives diffusion its special character, as some degree of uncertainty is thus involved. Uncertainty is the degree to which a number of alternatives are perceived with respect to occurrence of an event and the relative probabilities of these alternatives. An individual can reduce the degree of uncertainty by obtaining information. Information is a difference in matter-energy that affects the uncertainty in a situation where a choice exists among a set of alternatives.

The main elements in the diffusion of new ideas are: 1) an innovation; 2) which is communicated through certain channels; 3) over time and 4) among the members of a social system. An innovation is an idea, practice or object perceived as new by individual or other unit of adoption. A technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome. Most technologies have two components: 1) hardware, consisting of the tool that embodies the technology as material or physical objects, and 2) software, consisting of the knowledge base for the tool. But technological innovation also creates another kind of uncertainty because of its newness to the individual, and motivates him or her seek information by means of which the new idea can be evaluated. This is known as the innovation-evaluation of information.

The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. Five attributes of innovations are: 1) relative advantage; 2) compatibility; 3) complexity; 4) trialability and 5) observability. Re-invention is the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation.

A communication channel is the means by which messages get from one individual to another. Mass media channels are more effective in creating knowledge of innovations, whereas interpersonal channels are more effective in forming and changing attitudes toward the new idea, and thus influencing the decision to adopt or reject a new idea. Most individuals evaluate an innovation, not on the basis of scientific research by experts, but through the subjective evaluations of near-peers who have adopted the innovation. These near-peers thus serve as social models.

Another distinctive aspect of diffusion as a sub field of communication is that some degree of heterophily is present. Heterophily is the degree to which pairs of individuals who interact are different in certain attributes, such as beliefs, education, social status and the like. The opposite of heterophily is homophily, the degree to which pairs of individuals who interact are similar in certain attributes. Generally, most human communication takes place between individuals who are homophilous, a situation that leads to more effective communication. Time is involved in diffusion. There are five steps of the innovation-decision process namely: 1) knowledge; 2) persuasion; 3) decision; 4) implementation and 5) confirmation. An individual seeks information at various stages in the innovation-decision process in order to decrease uncertainty about the innovation. The decision stage leads to: 1) adoption, a

decision to make full use of an innovation as the best course of action available, or 2) rejection, a decision not to adopt an innovation.

A consistent finding from past researches on the diffusion phase is that individuals' socio-economic status is highly related to their degree of change agent contact, and that status (and change agent contact) are in turn related to their degree of innovativeness.

This is an important finding when related to this study. Extension education can be defined as a two-way communication/training process involving adult learning techniques whose aim is to improve knowledge; change attitude/behaviour; lead to adoption of new technologies; and improve skills for both farmers and extension workers, with a view to increasing and improving farmers incomes and productivity on a sustainable basis (Republic of Kenya 2001a). However, for the purpose of this study we shall only consider the one-way communication from the extension agent to the rural women. As mentioned in the literature section rural women will only adopt those extension messages/innovations that are of benefit to them, for example messages on how to get the most out of subsistence crops are more appealing compared to those on commercial crops. The individual communication channel is best suited for them because rural women are usually constrained by time and mobility and thus may not be able to attend group meetings. Secondly, due to their high illiteracy rate, the print media may not reach them effectively and it is unlikely they will have time to listen to a radio. With respect to time, the innovation decision process will be determined by the socio-economic status of the rural women. It is during this crucial stage that women may be classified either as adopters or not. The

question that remains therefore is, what determines the socio-economic status of the rural women?

2.6.2 Field Theory

According to Lindzey and Aronson (1968:412-487) field theory has its roots in physics. "Field theorists" in the non physical sciences have attempted to consider the phenomena they investigate as occurring in a "field", that is, as part of a totality of coexisting facts, which are conceived as mutually interdependent. According to Kurt Lewin, "Field theory" refers to a "method of analysing causal relations of building scientific constructs". The term "field theory" in psychology has been applied primarily to the work of Gestalt psychologists and particularly characterizes the work of Kurt Lewin and his students.

There are four basic concepts of field theory namely: 1) life space; 2) structural concepts; 3) dynamic concepts and 4) psychological ecology, that is, concepts dealing with change in the psychological environment. Life space is defined as a manifold of coexisting facts, which determine the behaviour of an individual at a given environment. In other words, it is the product of interaction between a person and the environment. Lewin goes further to define the environment as the objective situation, which confronts the individual at a given moment. This can also mean the psychological environment meaning the environment is determined not only by the objective environment but also by the characteristics of the person. Lewin sees the person in three ways. Firstly, according to the properties of the individual (his needs, beliefs and values, perceptual and motoric systems) which in interaction among themselves and with the objective environment produce the life space. Secondly the

person is defined as being equivalent to the life space. Thirdly, the person is seen as the person in the life space or “behaving self”. This comes from the individual’s perceptions of his relations to the environment he perceives. Lewin defines behaviour as any change in the life space subject to psychological laws.

Structural concepts are based on topology. Topology is a branch of geometry, which investigates the properties of figures that remain unchanged under continuous transformation or “stretching”. These are qualitative relationships of connections and position. Gestalt theorists with “part-whole relationships”, with “belongingness” and “membership character” suggested the relevance of topological concepts to psychological questions.

In Lewin’s system, dynamic concepts have the function of enabling one to determine which of the possible psychological events will occur. The construct “force” characterizes, for a given point of the life space, the direction and strength of the tendency to change. Lewin distinguished between “driving” and “restraining” forces. Driving forces tend to lead to locomotion. Restraining forces do not lead to locomotion but they influence the effect of driving forces.

In Psychological ecology, the field-theoretical approach highlights the relation between psychological and non-psychological factors in the explanation of behaviour in such basic concepts as “life space” and “psychological environment”. Here Lewin confined himself to “channel theory” which attempts to characterize how the flow of events in social and economic channels may be influenced by those who control the gates in the channel (“the gatekeepers”) and to an indication that the analysis of

social interaction must follow a three step procedure, moving from a separate analysis of the life space of each individual at time 1, to the resulting “objective” interaction at time 2, and from there back to the effect on each individual life space at time 3.

This theory can be used to explain the roots of the socio-economic status of the rural women in relation and their adoption of agricultural information. Their socio-economic status is derived from the “field” they come from. Firstly the life space defines their personal characteristics such as their beliefs, values, as well as their psychological qualities. Secondly their structural concepts based on topology are qualitative relationships of connections and position, which may be influenced by their level of education, religion or status of the household head. Thirdly, the dynamic concepts that distinguish the restraining and driving forces are once again determined by how accessible they are to the information. For example, a woman may be able to afford to hire labourers thereby freeing her time to attend important workshops thereby exposing her to more information. Another factor could be that she may live in an area with good roads and can thus be easily reached by extension agents. These two factors are thus seen as driving forces as they promote locomotion for information delivery. One factor that serves as a restraining force is illiteracy because a rural woman will not benefit from the print media or from radio programmes that may be aired in non-native languages. Fourthly, in relation to psychological ecology, which focuses on the channel theory, the theory brings in the important aspect of gatekeepers. For the rural woman, male family members may serve as gatekeepers in the flow of information to them. For example, an extension agent may be forced to first speak to a woman’s husband, explain the nature of his

message, before he is granted permission to speak to the woman. In other cases, if extension agents want to hold a village meeting they must first consult the area chief.

In conclusion therefore, the diffusion of innovation theory gives us the background of factors that determine the movement of a new idea. This theory singles out the socio-economic status as an important determinant of where the recipients fall in the continuum between adopters and laggards. The field theory in turn expands what constitutes the socio-economic status of the would-be adopter or laggard. A combination of these two theories therefore gives us a good understanding of the underlying factors of the role of extension education to rural women.

2.7 Research questions

1. What is the nature of the present approach of the agricultural extension system in Kenya?
2. What are the sources of information for rural women in Kirinyaga?
3. What are the current difficulties being faced by the extension providers?
4. What socio-economic factors affect the information flow for rural women in Kirinyaga?

2.7.1 Operational definition of terms

Nature of the present approach of the agricultural extension system

This will mean a description of the environment in which the delivery of extension messages is occurring. For example the channels used are field demonstrations, chiefs' barazas, home-to-home visits, distribution of magazines, posters and through farmer groups. The officers involved are mainly those that deal with crops, livestock,

home economics and forestry. The officers also mainly come from the government or the private sector. The type of technologies they promote will also be considered for example, soil conservation, feeding methods and pest control.

Difficulties encountered by extension personnel

These will be classified as either being internal and external. External problems are the shortcomings faced by extension providers in the delivery of their services. These include low attendance to meetings they call, low education status of the clients, low resource base for the clients, a failing infrastructure in terms of roads and unwillingness of clients to listen. Internal complications can refer to lack of resources for the extension worker in terms of transport to the client or lack of seeds and inputs to demonstrate with and low remuneration affecting their attitude to work.

Sources of information on extension/information flow

Place, person or thing from which agricultural knowledge originates for example, neighbour, friend, family member, chiefs' barazas, market place, print media, television, radio, extension officer and veterinary officer.

Socio-economic factors of the respondents

These will include the following:

- Type of occupation (farm and non-farm activities),
- Farm sizes occupied/owned in acres,
- Type of crops and livestock kept (cash and food crops, local and improved breeds of animals),
- Level of education (none, primary, secondary, post-secondary),

- Levels of income (between 1,500 Kshs and >20,000 Kshs),
- Religious affiliation (Christian, Muslim, Traditional, other),
- Decision making on the farm (fully, partly or none),
- Credit access and use,
- Farm labour use (casual, permanent or family labour) and
- Women group activities (welfare, church activities, farming, business).

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CHAPTER THREE

3.0 Research Methodology

3.1 Description of study area

Kirinyaga district is one of the 7 districts of Central province and borders Nyeri and Murang'a district to the west, Mbeere district to the south and Embu district to the east. It covers a total area of 1,478 square kilometres, which is 11.2% and 0.3% respectively of Central province, and Kenya's total area respectively. It is located between latitudes $0^{\circ}1^{\circ}$ and $0^{\circ}40^{\circ}$ south and longitude 37° and 38° east (Republic of Kenya: 2002-2008:4). The table below shows the administrative units of the district:

Table 1: Administrative units in Kirinyaga district

Divisions	Area (km ²)	Locations	Sub locations
Ndia	276.4	6	24
Central	108.5	4	15
Gichugu	229.7	6	23
Mwea	512.8	5	18
Forest area	350.7	-	-
Total	1478.1	21	80

Source: District Commissioner's office, Kerugoya 2001

The landscape in the district can be divided into 3 distinct relief features. Firstly there is the lowland area that rises from 1480m to about 2000m above sea level. This area consists of gently rolling plains and isolated hills, which occupy most of Mwea division. Secondly there is the midland area rising from 2000m to about 4800m above sea level. It forms the lower parts of Ndia, Gichugu and Central divisions. Thirdly there is the highland area, which rises from 4800m above sea level to over 6800m above sea level lies in upper Gichugu, Central and Ndia divisions and the Mount Kenya area (Republic of Kenya: 2002-2008:6)

Kirinyaga district has two distinct rainfall seasons: long rains averaging 710mm occur from March to May and short rains averaging 640mm from October to November. The lowest temperature of 5⁰c occurs in the upper zones during the cold season and the highest temperature of 29⁰c in the lower zones during the hottest season. The average temperature is about 17⁰c. Major rivers in the area include Rupingazi, Nyamindi, Thiba, Rwamuthambi and Ragati, which ultimately drain into Tana river (Sagana), which forms the boundary between Murang'a and Kirinyaga district to the southwest. The presence of favourable volcanic soils in the upper zone and black cotton soils in the lower zones provide a suitable crop growing condition with the tropical kind of climate (Republic of Kenya: 2002-2008:6-7).

According to the 1999 population census, the population density was 487 persons per square kilometre. The total number of males was 237,098 and females 241,047 yielding a female: male sex ratio of 100:98. The table below shows the population projections per division:

Table 2: Population density projections

Division	1999	2002	%
Ndia	490	512	
Central	683	714	
Gichugu	530	554	
Mwea	246	257	
Total	487	509	

Source: District development office, Kerugoya, 2001

Central division has an urban type of settlement. Gichugu and Ndia divisions have almost similar population densities of 554 and 512 persons per square kilometre respectively. This is attributed to the prevalence of similar agro-ecologic environment. They are characterized by an evenly distributed rural settlement with

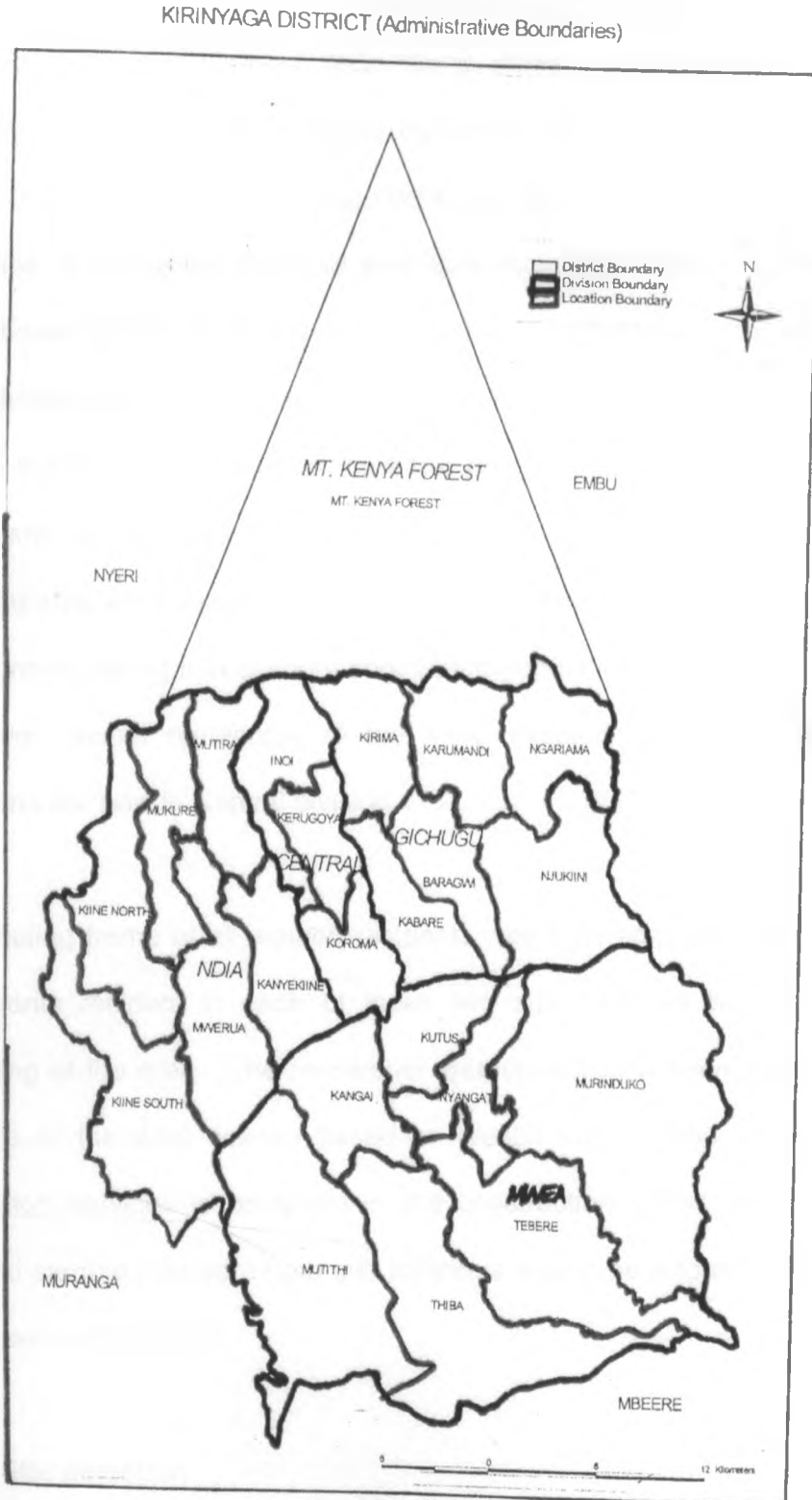
scattered villages. The rural population at the start of the plan period was 418,612 in 2002 and is projected to rise to 458,034 by 2008. There are 114,439 households in the district with the average household size being recorded as 4 persons (Republic of Kenya: 2002-2008:9,10).

Agriculture contributes 72% to household income. The average farm size (small scale) is 1.25ha. The main food crops grown are maize, beans, bananas and potatoes. The main cash crops grown are coffee, tea, rice and horticulture. The main livestock bred are Friesian, Jersey, Ashier and Guernsey. The population working in the agricultural sector is recorded as 187,955. In spite of this, the agricultural sector has been declining in the district due to high cost of certified seeds and farm inputs leading to declining soil fertility levels, high cost of drugs and animal feeds, privatisation of veterinary services, fragmentation of land parcels to uneconomical units, lack of access to credit, marketing problems and inadequate extension services due to lack of funding for the extension programmes (Republic of Kenya: 2002-2008:10,20)

Kirinyaga district records a total of 114 adult literacy classes. The enrolment by males is 304 while that of females is 789. The literacy levels by sex are male 94.4% and female 85.9% (Republic of Kenya: 2002-2008:12). According to the data given by the 1999 census report under population by sex, 5-year age groups and economic activity, 74,784 females compared to 56,572 males are working in family farms across the age groups of between 20 to 60+ years in Ndia division (Republic of Kenya: 1999b). This underscores the importance of the contribution of women to agriculture in the district. Their productivity influences the well being of the family

and by extension the district and country as a whole. The Kirinyaga district development report for the period (2002-2008:27) adds that women's contribution towards economic growth is enormous but goes unrecognised since only a few are employed in the formal sector. Efforts should be made to sensitise people right from the family level on gender issues, which affect poverty reduction and sustainable development. This can revive women's self-esteem to participate in decision making at all levels of development.

Map 1: Kirinyaga District Administrative Boundaries



1 by CBS 1999 Population Census

This map is not an authority of the administrative boundaries

3.2 Sampling procedure

Probability sampling was used, specifically purposive sampling. Central division has an urban type of settlement while Mwea division is mainly characterized by rice growing so does not really display the variety of crop interventions that extension would promote. Ndia and Gichugu divisions have more or less the same population densities, sub location numbers and agro ecological zones. Initially Ndia division was chosen for this study due to the advantage it has when it comes to accessibility. The division also displays two different agro ecological zones because one part of it lies in the midland area while the other part lies in the highland area. Using this argument, two locations namely Mutira in the highland area and Inoi location in the midland area were selected. One sub location was then sampled from each of these locations by taking into account contrasting population densities and road networks. However, recent remapping of the area revealed that these two selected sub locations are now in Central division.

A sampling frame of all women residents was then acquired from the villagers/key informants resident in each of these two sub locations by conducting a social mapping of the area. The researcher was careful to observe that a representative sample of the rural women based on wealth ranking and access to agricultural extension services is observed in the construction of the sampling frame. The desired sample size from both sub locations was to be a total of 60 women, with 30 from each sub location.

3.2.1 Site selection

Below is a short description of the study sub locations:

Kirunda sub location

It is situated in Mutira location and agro ecologically it is divided into three parts namely the upper, middle and lower zones. In the upper zone soils are quite fertile and their water retaining capacity is high. This makes the soil ideal for farming of tea and dairy farming. In the middle zone there is coffee farming. There are intervals of warm seasons and this makes it ideal for coffee farming. In the lower zone few farmers grow coffee, but they grow vegetables and fruits and keep cattle. The animals kept in the sub location include cattle, poultry, and goats. The sub location borders Kaguku sub location to the north, Kanyekini to the south, Ndimi to the east and Mwirua location to the west.

Ndimi sub location

It is situated in Inoi location and agro ecologically it is divided into two zones. The upper zone is wetter than the lower zone. This makes it ideal for coffee farming, keeping of dairy cattle, growing fruits and vegetables. The lower zone is drier thus coffee farming is minimal but farmers are involved in maize and beans' production, keeping cattle and growing fruits (especially passion fruit) and vegetables. Ndimi sub location borders Kariko sub location to the north, Ngaru sub location to the south, Kaguku to the east and Kirunda to the west.

3.3 Sources of Data

3.3.1 Primary sources

The primary source of qualitative data was a combination of a closed and open-ended questionnaire used to interview women in the two sampled sub locations.

The interview method and the questionnaire tool are preferred due to their high response rate.

3.3.2 Secondary sources

This was from literature found in books, journal articles and other credible sources of information found in libraries and the on the Internet. These have greatly contributed to the second chapter of this study.

3.3.3 Key informants

These were extension personnel in the offices of the Ministry of Agriculture and Livestock Development in Kerugoya and the identified sub locations, as well as extension staff from identified private firms that carry out agricultural extension.

3.4 Methods of data collection

A combination of a closed and open-ended questionnaire administered in a face-to-face interview was the main tool of data collection. The response rate and the proportion of people in the sample from whom completed questionnaires are obtained are typically high. A high response rate means less bias is introduced into the data as a result of non-participation of sampled persons (Singleton et al 1988:245)

3.5 Units of analysis

The units of analysis were the rural women of Central division in the two sampled sub locations.

3.6 Methods of data analysis and presentation

For objectives 2 and 4 descriptive techniques such as percentages and aggregate proportions will be used and discussed in narrative form. Some relations will also be tested using the Pearson's chi-square test. The results will be presented in various tables, graphs and pie charts. For objectives 1 and 3 qualitative data from key informant interviews will be analysed by categorizing it into themes, which will be presented alongside quantitative data.

2

CHAPTER FOUR

4.0 Research findings, presentation and analysis

4.1 Descriptive data analysis

The total number of women respondents was 63 (29 from Ndimi sub location and 34 from Kirunda sub location). Both sub locations are located in Central division of Kirinyaga district.

4.2 Data analysis and Interpretation

4.2.1 Nature of the present approach of the agricultural extension system

This information was gathered from ten key informants. Eight of these are extension personnel who work with the Ministry of Agriculture and Livestock Development (MOALD) while two belong to community based organizations. In terms of gender, six were male agricultural extension agents while four were women. Out of the four women two were home economics officers. According to those from the Ministry the services they provide in Kirinyaga in relation to crops are seedbed propagation, soil conservation and maintenance, planting, sowing, crop rotation, minimum tillage, pest control and storage. When it comes to livestock the services promoted are those that deal with feeding which essentially involves encouraging farmers to supplement using commercial feeds so as to increase production, artificial insemination, disease control, milking, dipping and dehorning. Other services from the extension agent are those that deal with home economics, which include sustainable use of fuel wood, better cooking methods and household and personal hygiene.

The extension staff reported that those technologies that are not adopted are those that are expensive, require a lot of skill and labour for example, terracing.

Technologies that are adopted are row planting, seedbed preparation, crop rotation, minimum tillage, weed control, pest control, observing animal cleanliness, and animal nutrition by using commercial feeds to increase production.

The extension personnel expressed the opinion that agricultural extension messages should be gender neutral, except those passed by the home economics officer, which deal with cookery and general household hygiene. According to Saito and Weidemann (1990:27), in many African countries, home economics constitute a large female professional cadre. Home economists are particularly common in countries influenced by United States land-grant extension models and in former British colonies. Many work in extension where they traditionally focus on women's domestic and reproductive roles, teaching nutrition, childcare, home management and income-generating skills in handicrafts. Six out of ten extension personnel admit that they pass dairy related information to men because dairy farming has replaced the farming of cash crops as a source of income thus "*men are more concerned with dairy farming than women are*" (opinion from Key informant).

All the extension personnel report that they encounter women more than men during their home-to-home visits, *women are left at home as housewives cum farmers while men opt to work outside the home* (opinion from Key informant). This supports the research finding forwarded by Saito et al (1994:ix) that the African rural household is changing and traditional farming systems are breaking down. In response to evolving social and economic circumstances, particularly growing population pressure on increasingly degraded land, men are migrating off the farm in search of more remunerative activities elsewhere.

Below are nine reported responses each from extension personnel when asked if they felt that women take a longer time to adopt extension messages.

“...women are slow learners compared to men”

“... they have limited resources and there is high illiteracy in especially women aged above 45 years”

“... they are less likely to adopt to the changing times and demands”

“... they have higher beliefs in traditional methods of farming”

“... they are mere observers (laggards) compared to men who are quick learners”

“... rely on consulting other people”

“... have to consult their husbands on what to adopt”

“... most of them rely on the little money they are given by their reluctant husbands”

Source: Key informant interviews from the study

The channels used to pass extension messages include home-to-home visits, distribution of magazines, posters, farmer field days, farm demonstrations, barazas and through farmer groups.

In delivery of their services, the extension service is partnering with 4K clubs, out of school youth, women and men groups, church organizations, self help groups and youth groups.

Out of the ten key informants, four said the extension approach is effective while the other six were of the opinion that it can be improved to especially include the needs of women.

4.2.2 Sources of information for rural women

When the respondents were asked their sources of information for crops and livestock they responded as shown by the two pie charts below

Figure 1: Ranked sources of crop information

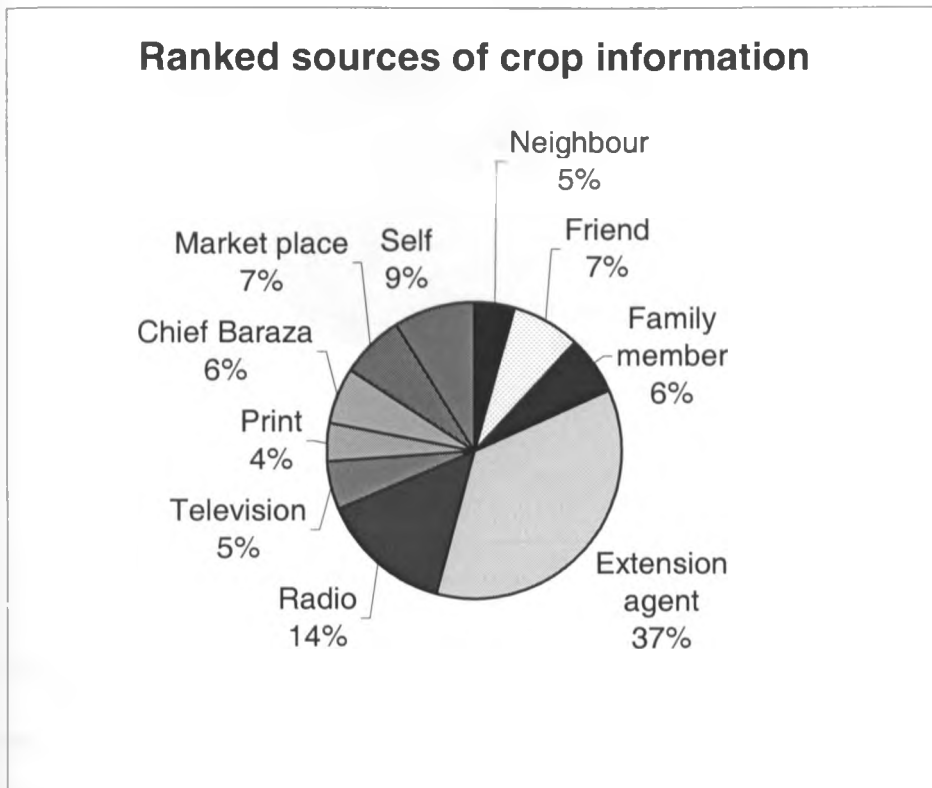
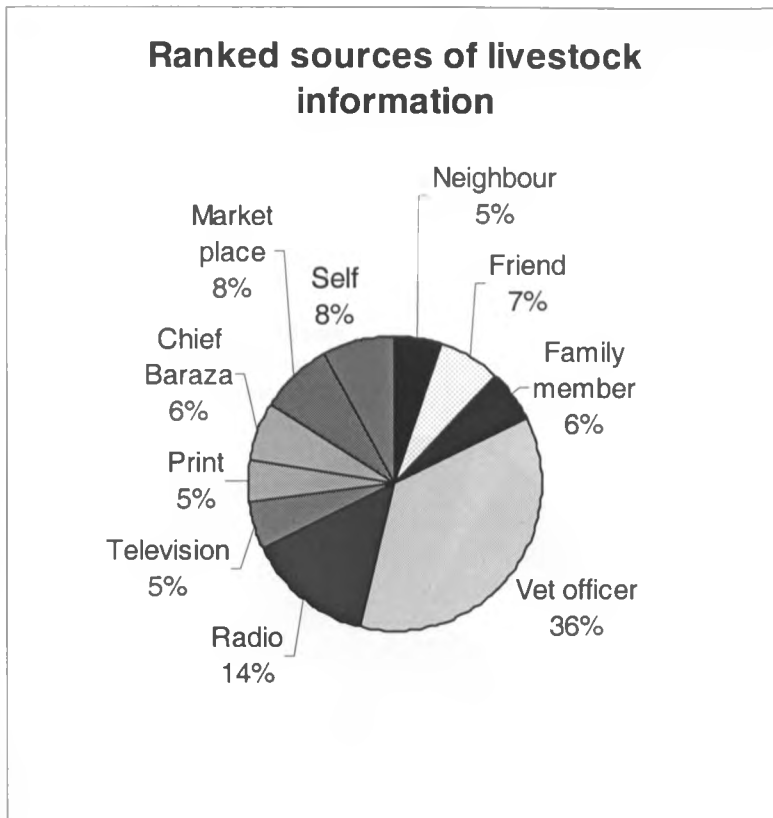


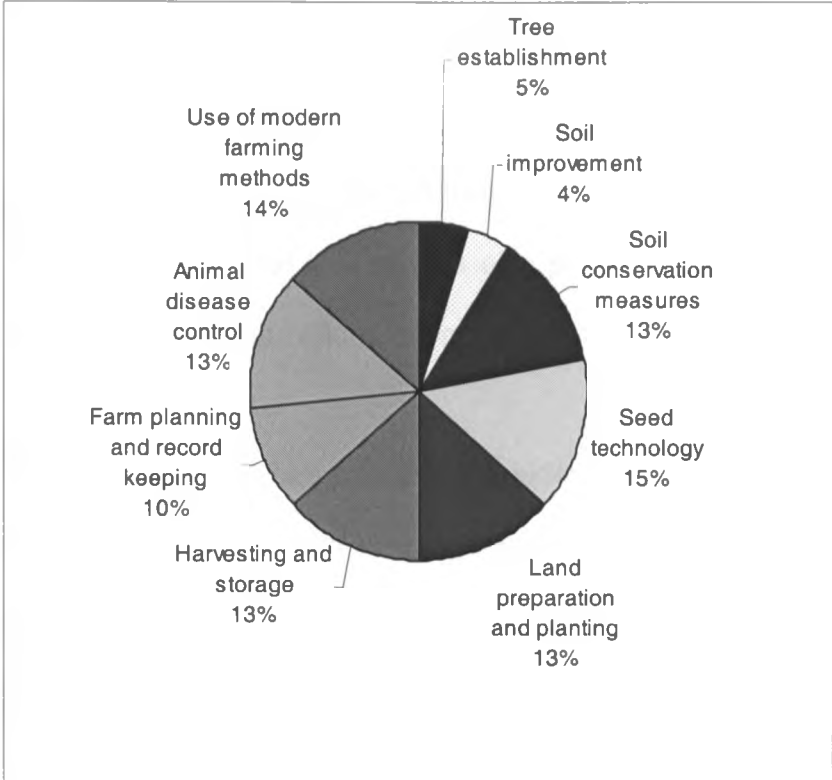
Figure 2: Ranked sources of livestock information



Extension personnel and Veterinary officers emerge as the major sources of information for crops and livestock, respectively. According to the research findings of Swallow et al (2003b:25) from Migori, Vihiga and Bondo, it is clear that a large percentage of farmers still look to the Ministry of Agriculture extension staff or veterinary officers to provide information about new livestock practices, that is, to act as retailers of information. The clear advantage of the agricultural extension service is that it is large and has staff widely distributed across the country. On the popularity of the radio, Saito and Weidemann (1990:38) report that both radio and audiocassettes can effectively convey agricultural information to many rural (often illiterate) women in Africa. Both are inexpensive, widely available and useful with illiterate audiences.

When the respondents were asked the nature of the information they received from these two key sources they responded as shown in Figure 3 below:

Figure 3: Type of information received from extension agents



2

The women respondents were then asked to rank their most frequent sources of information for crops and livestock in the last five years. Their responses are documented in table three below:

Table 3: Frequent sources of crop and livestock information in the last five years

Item	Attended	%	Did not attend	%
Farm courses/workshops attended	28	44%	35	66%
Chief barazas	59	94%	4	6%
Agricultural shows	27	43%	36	57%
Farmer magazines	34	54%	29	46%

The key determinants for attendance during these events was time availability 87% and 13% of the respondents felt these events were not given enough publicity. Karl et al (1997) says that lack of time also prevents adult women from participating in adult literacy and educational programmes.

All the respondents reported that the extension personnel communicated majorly in Kikuyu, which is the local language and occasionally in Kiswahili and English. The respondents also said that they were satisfied with the type of information that the extension personnel are disseminating. However, on the issue of frequency of visits by the extension agent in relation to crops and livestock, the results are not very encouraging as is shown in table four and five below:

Table 4: Frequency of visits by extension agent – Crops

Number of visits	Frequency	%
Frequently (e.g. weekly, monthly, twice a month)	28	44%
Rarely (e.g. 2- 6 times in a year)	6	10%
Very rarely (e.g. after a year)	29	46%
Total	63	100%

From the data above we can conclude that the extension agent visits the respondents either frequently (44%) or very rarely (46%).

On the issue of livestock visits, the respondents report to have been visited as follows:

Table 5: Frequency of visits by Veterinary officer

Number of visits	Frequency	%
Frequently (e.g. weekly, monthly, twice a month)	15	24%
Rarely (e.g. 2- 6 times in a year)	16	25%
Very rarely (e.g. after a year)	25	40%
N/A	7	11%
Total	63	100%

Focussing on the other side of the coin, the respondents were asked how many times they visited the extension agent for crop information. Their responses are recorded in the table 6 below:

Table 6: Frequency of visits to extension agent – crops

Number of visits	Frequency	%
Frequently (e.g. weekly, monthly, twice a month)	16	25%
Rarely (e.g. 2- 6 times in a year)	4	6%
Very rarely (e.g. after a year)	43	69%
Total	63	100%

Once again the majority of the respondents (69%) rarely visit the extension agent. On the issue of how many times the respondents visited the veterinary officer in search of livestock information, the respondents reported as shown in table 7 below:

Table 7: Frequency of visits to Veterinary officer

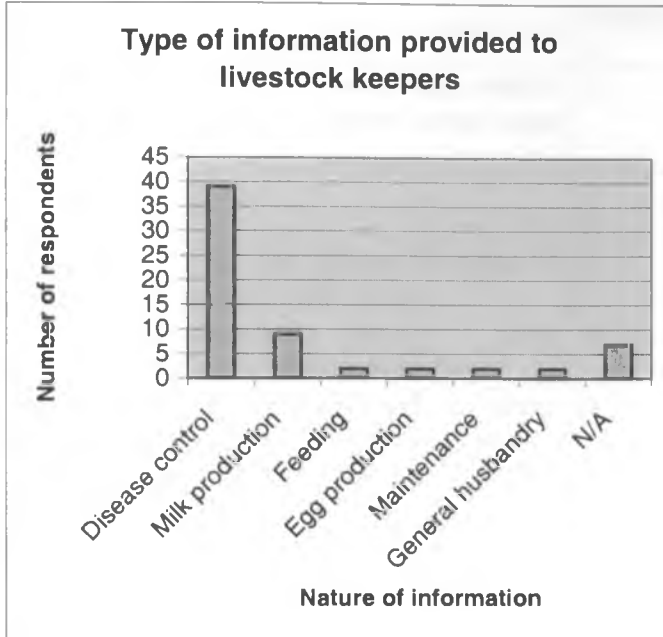
Number of visits	Frequency	%
Frequently (e.g. weekly, monthly, twice a month)	5	8%
Rarely (e.g. 2- 6 times in a year)	17	27%
Very rarely (e.g. after a year)	34	54%
N/A	7	11%
Total	63	100%

Along the gender lines, 56% of the respondents reported that the extension agents who visited them were male, 32% were women and 12% reported that they encountered both male and female extension agents. It is surprising to note that though the respondents rarely visit the extension agent or the veterinary officer or are rarely visited by these officers, they still maintain that extension is a major source of agricultural information.

Perhaps, this situation could be remedied by implementing what Saito and Weidemann (1990:26) propose when they say that evidence from a wide range of African countries demonstrate that communication with women farmers is generally enhanced when female extension agents are used. This is true even in countries with relatively few social barriers to male-female interaction.

The main information disseminated with regard to livestock is disease control 62%, milk production 14%, egg production 3%, breeding 3% and general animal husbandry 3%. The remaining 15% is for respondents who do not require livestock information mainly because they do not keep livestock. The information is presented in the figure below:

Figure 4: Type of information provided to livestock keepers



The above data can therefore be interpreted to represent a remedial situation from the fact that most of the respondents will contact the veterinary officer when they need information on disease control. Perhaps if there was more emphasis on general animal husbandry (recorded here at only 3%) then the emphasis on disease control would lessen.

2

4.2.3 Difficulties being encountered by extension personnel

The ten key informants listed the following external problems in delivering their services to the farmers:

Table 8: Difficulties encountered by extension personnel

Difficulty	Frequency	%
Adverse weather conditions	4	40%
Some farmers hide from extension staff if they have not accomplished what was agreed upon	2	20%
Ignorance	6	60%
Arrogance	8	80%
Lack of funds by the willing farmers to purchase necessary farm inputs	2	20%
Low attendance during farm demonstrations and farmer field days	6	60%
Unwillingness of some farmers to adopt new practices due to traditional beliefs	3	30%
Unwillingness of women to attend meetings	1	10%
Poor road network	2	20%

Arrogance on the part of the farmers registers the highest score suggesting an attitude/relationship problem between the extension personnel and the women respondents. This is not very surprising when we look at the answers the extension personnel gave when they were asked if they thought women took a longer time to adopt new technologies (see page 38). Saito and Weidemann (1990:4) believe that possible reasons to explain this attitude/relationship problem are:

- a) the extension agents' perception that women have little decision-making authority in farming
- b) women's heavy workload, which cuts into the time available to meet agents
- c) socio cultural and religious factors that inhibit male extension agents communications with women farmers
- d) the extension agents' perception that women have physiological limitations for farming

- e) the extension agents' perception that women are less able to understand most extension messages because of their generally lower level of education

On the part of their office (internal problems), the extension staff also reported that many times they are limited in terms of resources such that they cannot travel to their respective sub locations to meet the farmers or cannot buy trial seeds for the farmers to experiment on. They also reported that they were expected to reach too many farmers within a very short time. The end result is frustration and due to lack of resources they are forced to stay in their offices when they should be out in the field. Research findings by Swallow et al (2003:26) support this view by saying the impacts of government agricultural extension agents on the welfare of the poor are limited by

- a) limited number of staff – In Kenya, for example, no new extension staff have been employed in the last 12 years,
- b) limited resources for available staff – Extension workers are generally provided with very few resources for reaching out to their clients. Resources that are available are tied to specific projects or programmes.
- c) The Shifting Focal Area Approach adopted in Kenya – in which small areas are emphasized for only one year – may be too short term to be of any significance for dealing with either asset accumulation or disease problems faced by livestock farmers.
- d) Gender composition. Women form the majority of the farm population in East Africa. Unfortunately very few extension workers are women, with only 4 of the 70 district agricultural and livestock extension officers (DALEOs) in Kenya

being women (personal communication with John Kamau, Chief of Extension Services, Kilimo House, Nairobi).

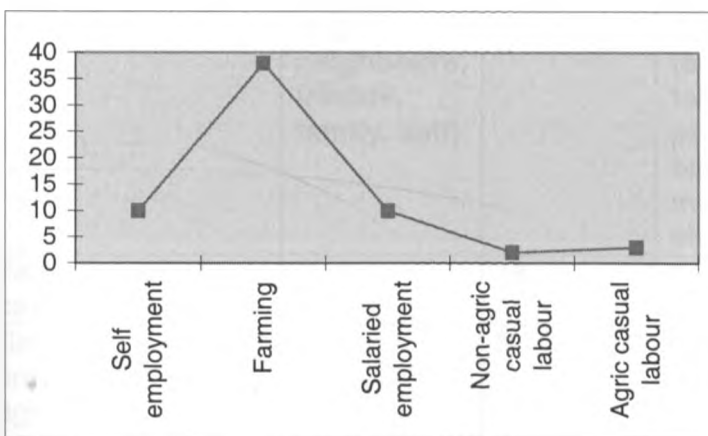
4.2.4 Socio economic characteristics of the women that affect information flow

The women in these two sub locations have settled in their respective sub locations from as early as 1940 and as recently as 2003. 42 (67%) households are male headed while 21 (33%) are female headed. The families have an average of 5 members.

a) Occupation

Close to 60% of the women in Ndimi and Kirunda sub locations are farmers, 16% are in salaried employment, 16% are self-employed, 5% are involved in agricultural casual labour while 3% are engaged in non-agricultural casual labour. This finding supports the view by Saito and Weidemann (1990:ix) that women are responsible for at least 70% of food staple production in Africa. This information is presented in the table below:

Figure 5: Major occupations of the women



The researcher sought to find out if there was any relation between the occupations of the women and their preferred sources of information for both crops and livestock.

The results are illustrated table 9 and table 10 below:

Table 9: Women's occupations and the sources of information – crops

Occupation	Community sources (e.g. neighbours, friends, family, self)	Extension agents	Media and other sources (e.g. radio, television, print, chief baraza, market place)	Total
Farmers/agricultural casual labourers	5	18	17	40
Salaried, self – employed, non-agric casual labourers	12	5	6	23
Total	17	23	23	63

$$X^2 = 11.71$$

$$DF = 2$$

Level of significance = 0.05

Table value = 5.99

Table 10: Women's occupations and sources of information - livestock

Occupation	Community sources (e.g. neighbours, friends, family, self)	Veterinary officer	Media and other sources (e.g. radio, television, print, chief baraza, market place)	Total
Farmers/agricultural casual labourers	7	18	14	39
Salaried, self – employed, non-agric casual labourers	9	5	10	24
Total	16	23	24	63

$$X^2 = 4.97$$

$$DF = 2$$

Level of significance = 0.05

Table value = 5.99

In table 9 the calculated chi-square value (11.71) is more than the critical table value (5.99). In table 10 the calculated chi-square value (4.97) is less than the critical table value (5.99). This therefore means that the type of occupation of the women respondents does not determine their source of information in relation to crops but is a determinant with regard to their source of information for livestock.

b) Farm size

Table 11: Farm sizes in the study sub locations

Farm size in acres	Frequency	%
0.5 – 1.00	8	13%
1.01 – 1.50	17	27%
1.51 – 2.00	13	21%
2.01 – 2.50	4	6%
2.51 – 3.00	3	5%
3.01 – 3.50	0	0%
3.51 – 4.00	3	5%
4.01 – 4.50	0	0%
4.51 – 5.00	4	6%
5.01 and above	11	17%
Total	63	100%

From the data represented in the table above we can conclude that 27% of the respondents in the two sub locations have an average farm size of between 1.00 to 1.50 acres. 44 (70%) of the respondents report to having title deeds for their farms while 19 (30%) do not have.

The researcher sought to find out if there was a relationship between the farm sizes and how frequently the crop extension agent visited the women respondents. This test is represented in the following table.

Table 12: Women's' farm sizes and frequency of visits by extension agent –

crops

Farm sizes in acres	Frequently (e.g. weekly, monthly, twice a month)	Rarely (e.g. 2-6 times in a year) and Very rarely (e.g. after a year)	Total
0.50 – 1.50	10	15	25
1.51 – 2.50	8	9	17
2.51 and above	10	11	21
Total	28	35	63

$$X^2 = 0.33$$

$$DF = 2$$

Level of significance = 0.05

Table value = 5.99

In table 12 the calculated chi square value (0.33) is less than the table value (5.99).

This therefore means that the farm sizes of the women respondents determine how frequently the crop extension agent visits them.

b) Types of crops and livestock kept

All the women respondents grow food crops (vegetables and fruits). The two major cash crops in this region are coffee and tea; 63% grow coffee, 2% grow tea, 13% grow both coffee and tea while 22% do not grow any cash crop.

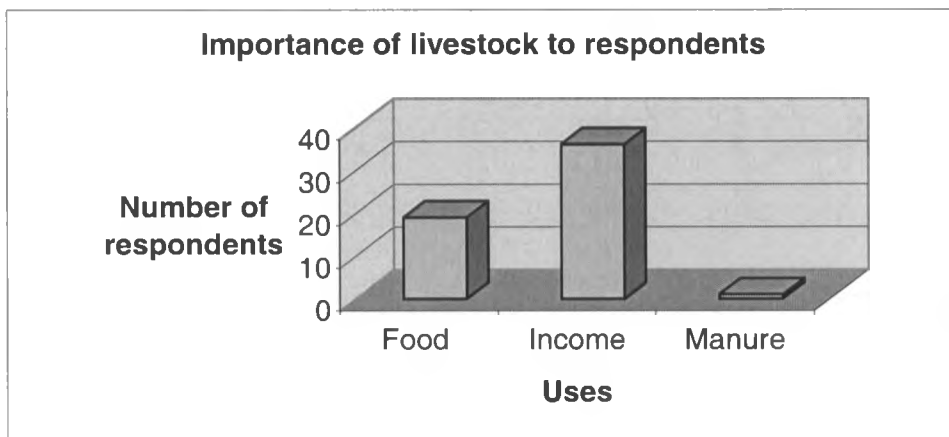
The women keep various types of livestock. This information is shown in the table below:

Table 13: Type of livestock kept in the two sub locations

Type of livestock	Keep improved	%	Do not keep improved	%	Keep local	%	Do not keep local	%
Cattle	48	76%	15	24%	31	49%	32	51%
Sheep	4	6%	59	94%	4	6%	59	94%
Goats	19	30%	44	70%	23	37%	40	63%
Poultry	34	54%	29	46%	25	40%	38	60%
Bees	0	0%	63	100%	0	0%	63	100%

Livestock is important to the respondents in many ways. 57% of the respondents reported that the major importance of livestock was that it was a source of income. The figure below shows the main uses of livestock to the respondents.

Figure 6: Importance of livestock to respondents



The researcher sought to find out if there was any relationship between the importance of livestock to the women and how frequently the veterinary officer visited them. This association is represented in the table below.

Table 14: Importance of livestock and frequency of visits by veterinary officer

Importance of livestock	Frequently (e.g. weekly, monthly, twice a month)	Rarely (e.g. 2-6 times in a year) and Very rarely (e.g. after a year)	N/A	Total
Food, manure	9	11		20
Income	6	30		36
N/A			7	7
Total	15	41	7	63

$$X^2 = 76.56$$

$$DF = 4$$

Level of significance = 0.05

Table value = 9.49

In table 14 the calculated chi square value (76.56) is more than the table value (9.49). This therefore means that the importance of livestock to the women respondents does not determine the number of times the veterinary officer visits them.

c) Income

The following table shows an estimation of monthly household incomes from the households, which the women respondents represent in Ndimi and Kirunda sub locations

Table 15: Monthly household income levels in Ndimi and Kirunda sub locations

Monthly income level (Kshs)	Frequency	%
1,500 – 2,999	9	14%
3,000 – 4,499	8	13%
4,500 – 5,999	8	13%
6,000 – 9,999	15	23%
10,000 – 14,999	6	10%
15,000 – 19,999	12	19%
>20,000	5	8%
Total	63	100%

From this data we can conclude that majority (23%) of the respondents earn between Kshs. 6,000 to 9,999 per month.

The researcher sought to find out if there was a relationship between the level of income and sources of information for the women respondents. This association is represented in the table below.

Table 16: Women's level of income and sources of information – crops

Level of income (Kshs.)	Community sources (e.g. neighbours, friends, family, self)	Veterinary officer	Media (e.g. radio, television, print) and Other (e.g. chief baraza, market place)	Total
1,500 – 5,999	6	10	9	25
6,000 and above	11	13	14	38
Total	17	23	23	63

$$X^2 = 0.26$$

$$DF = 2$$

Level of significance = 0.05

Table value = 5.99

In table 16 the calculated chi square value (0.26) is less than the table value (5.99).

This therefore means that the level of income determines the source of crop information by the women respondents.

d) Religion

All the women reported to belonging to the Christian religion.

e) Education

The levels of formal education of the women respondents differed as is shown in the table below:

Table 17: Levels of formal education of the women in Ndimi and Kirunda sub

locations

Level of formal education	Frequency	%
None	7	11%
Attended primary school	25	40%
Attended secondary school	25	40%
Post secondary	6	9%
Total	63	100%

These findings seem to disqualify the idea that extension agents have that majority of rural women are illiterate. Using the chi-square test, the researcher sought to investigate the relationship between the level of education and the ranked sources of crop information. The results are presented in the tables below.

Table 18: Women's education level and their ranked sources of crop information

Level of education	Community sources (e.g. neighbours, friends, family, self, Veterinary officer)	Media (e.g. radio, television, print) and other (e.g. chief baraza, market place)	Total
None	5	5	10
Attended primary	15	10	25
Attended secondary and post secondary	20	8	28
Total	40	23	63

$$X^2 = 1.68$$

$$DF = 2$$

Level of significance = 0.05

Table value = 5.99

In table 18 the calculated chi square value (1.68) is less than the table value (5.99). This therefore means that the level of education determines the sources of crop information by the women respondents.

The researcher further sought to find out if there was any relationship between the women's level of education and how frequently they visited the extension agent dealing with crops. This information is represented in the table below.

Table 19: Women's level of education and how frequently they visit the extension agent - crops

Level of education	Frequently (e.g. weekly, monthly, twice a month)	Rarely (e.g. 2-6 times in a year) and Very rarely (e.g. after a year)	Total
None	5	6	11
Attended primary	5	17	22
Attended secondary and post secondary	6	24	30
Total	16	47	63

$X^2 = 2.87$

DF = 2

Level of significance = 0.05

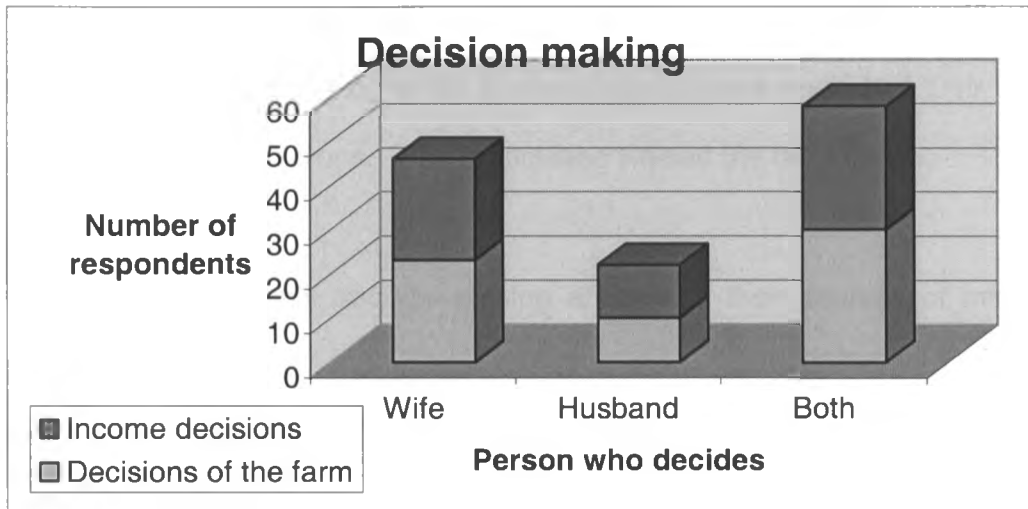
Table value = 5.99

In table 19 the calculated chi square value (2.87) is less than the table value (5.99). This therefore means that the level of education determines how frequently the women visit the extension agent in search of crop information.

f) Decision making

With regard to decision making on the farm, the women responded as shown in the figure below. For decisions on the farm, the major response (48%) decided as husband and wife. With regard to income decisions 44% of the respondents said it was a shared decision. The figure below shows the reported response.

Figure 7: Decision-making



When prodded further on the degree of decision making for agricultural produce by the women, the respondents reported as shown in the table below:

Table 20: Degree of decision making for respondents

Agricultural activity	Degree of decision making			
	Fully	Partly	Not at all	N/A
Purchase of improved seeds, fertilizers, fodder, pesticides	45%	52%	3%	0
Sale of crop produce, eggs, milk	47%	32%	5%	16%
Time to plant, harvest, weed	89%	8%	3%	0

This shared decision making process is in agreement with the findings of Saito and Weidemann (1990:2) who report that almost two decades of surveys and studies have clearly demonstrated the pivotal role of women in agriculture in developing countries. This is particularly the case in sub-Saharan Africa where women provide most of the labour and make the key decisions for many agricultural activities.

The researcher sought to find out if there was any relationship between women's ability to make decisions on when to plant, harvest and weed and their sources of information regarding crops. This association yielded the table below.

Table 21: Women's decision-making ability and their sources of information - crops

Degree of decision making on when to plant, harvest and weed	Community sources (e.g. neighbours, friends, family, self, Veterinary officer)	Media (e.g. radio, television, print) and other (e.g. chief baraza, market place)	Total
Fully	33	17	50
Partly and not at all	6	7	13
Total	39	24	63

$X^2 = 2.42$

DF = 1

Level of significance = 0.05

Table value = 3.84

In table 21 the calculated chi square value (2.42) is less than the table value (3.84).

This therefore means that the women's degree of decision-making on when to plant, harvest and weed is determined by their sources of crop information.

e) Credit access and use

On the issue of credit access, 22 women (35%) reported to receiving some while 41 (65%) did not receive any in the last three years. This finding are in agreement with the views of Saito and Weidemann (1990:8) that reveal that studies in countries as diverse as Gambia and Kenya report that few women smallholders obtain credit from the formal lending institutions. In this research, out of those who received credit, 20 received it from cooperative unions while 2 obtained credit from banks. The table below shows the various uses the credit was put to by the respondents:

Table 22: Uses of credit by the respondents

Use	Frequency
Farming	8
School fees	10
Building/business	4
Total	22

f) Farm labour use

All of the respondents report to using family labour on their farms in conjunction with hired labour either on a permanent or a casual basis especially for their cash crops. The average daily wage for a casual labourer is Kshs. 70. The responses are as reported in the table below:

Table 23: Status of labourers in the two sub locations

Status of labourer	Have	%	Do not have	%
Casual labourer	30	48%	33	52%
Permanent labourer	43	68%	20	32%

The problems with regard to farm labour as recorded in the table 20 below:

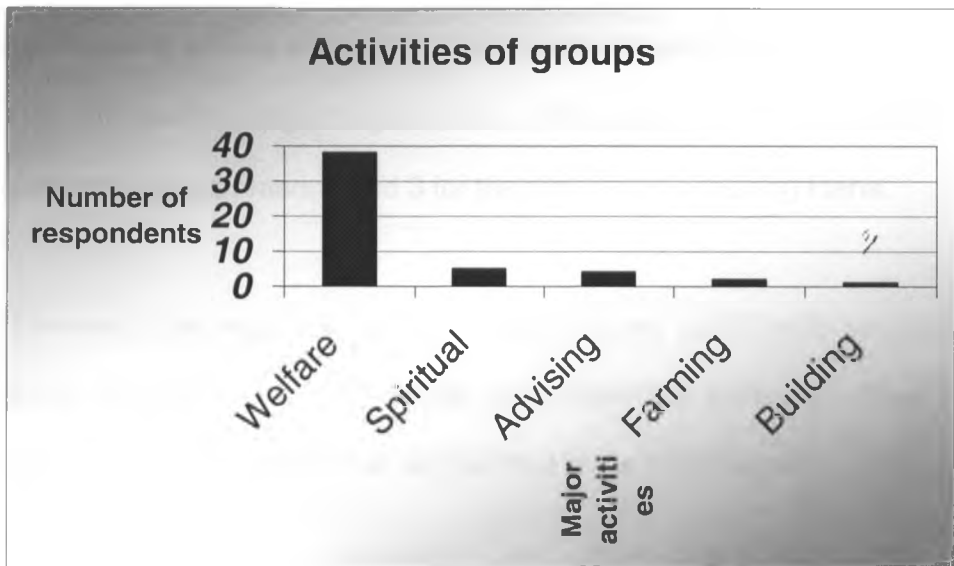
Table 24: Problems of farm labour in the two sub locations

Problem	Frequency	%
None	31	49%
Inefficiency	19	30%
Mistrust	11	17%
Cost	1	2%
Bad timing	1	2%
Total	63	100%

g) Women group activities

Close to 80% (50) of the women respondents reported to belonging to different groups for collective action. The main activities of the group are as shown in the figure below.

Figure 8: Activities of groups

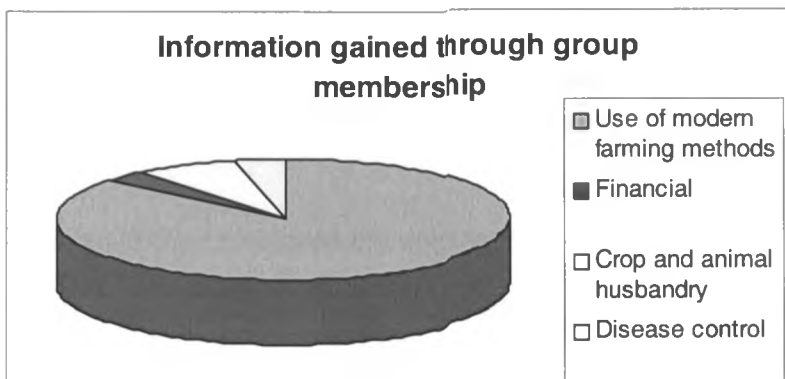


Welfare is stands out as the main activity of these women groups. According to Saito and Weidemann (1990:32) historically, African women have formed groups to exchange labour, mobilize savings and credit, and for self-help, social and ceremonial purposes. Savings/credit clubs are important sources of informal credit

for rural African women who are ineligible for formal credit or who are reluctant to approach formal financial institutions.

Out of the 50 women respondents who belong to groups, only 28 receive agricultural information by virtue of their membership. This information is presented in the figure below:

Figure 9: Information gained through group membership



Out of the 50 women respondents who each represent a group they belong to, only 5 were affiliated to larger organization. The reasons for this affiliation were, 2 for spiritual/religious reasons and 3 for the purpose of acquiring loans.

The researcher sought to find out if there was any relationship between the women's group activities and how frequently they visited the extension officer for information on crops. This association is represented in the table below.

Table 25: Women's group activities and how frequently they visit the extension agent – crops

Women's group activities	group	Frequently (e.g. weekly, monthly, twice a month)	Rarely (e.g. 2-6 times in a year) and Very rarely (e.g. after a year)	Total
None			13	13
Building/farming/getting advice/church activities		5	7	12
Welfare		11	27	38
Total		16	47	63

$$X^2 = 6.34$$

$$DF = 2$$

Level of significance = 0.05

Table value = 5.99

In table 25 the calculated chi square value (6.34) is more than the critical table value (5.99). This therefore means that the women's group activities do not determine how frequently they visit the extension officer in search of crop information.

CHAPTER FIVE

5.0 Data conclusions, policy implications and recommendations

5.1 Data conclusions

The study concludes that agricultural extension is a key service provider to women farmers in Ndimi and Kirunda sub locations of Kirinyaga district. It is mainly provided by the Ministry of Agriculture and Livestock Development (MOALD), which works in partnerships with women and men groups, youth groups and church development organizations. The channels used are mainly home-to-home visits, barazas/meetings and farm demonstrations. The technologies most adopted are those that do not require a lot of capital, skill and labour.

Apart from agricultural extension, the women in Ndimi and Kirunda sub locations also mentioned other sources of agricultural information such as chiefs' barazas, radio, market place, family members and neighbours. The print media is the least consulted source of information. Under livestock, the main information provided is disease control. When the frequency of visits is considered, the crop extension worker visits either very rarely (46%) or frequently (44%) while the veterinary officer visits either very rarely (40%) or rarely (25%). In determining how demand driven the farmers are, we can conclude they are not because when it comes to visiting the crop extension officer, the main reported responses are very rarely (69%) or frequently (25%) while the veterinary officer is visited very rarely (54%) or rarely (27%).

Extension personnel are experiencing difficulties both internally and externally. Internally, they are struggling with low resources in terms of vehicles to move

around, high numbers of farmers to cater for as well as low morale due to low remuneration. Externally, they are faced by adverse weather conditions that destroy the weak infrastructure, ignorance and arrogance of farmers and low turn out during farm demonstrations. Arrogance on the part of the farmers suggests an attitude/relationship problem, which may be construed to be an earlier reaction to the belief by extension officers that women are not as keen learners as men are.

With regard to socio-economic factors we can conclude that out of the 63 households visited, 42 households are male headed, 19 are female headed and 2 homes have single female dwellers. The average household size is 5 persons. All the women respondents belong to the Christian faith and 60% of them are farmers. 44 of the respondents have title deeds for their plots of land while 19 do not. The level of education is relatively good considering 40% have attended primary school while 40% have attended secondary school. A total of 11% do not have any formal education. Majority of the respondents (23%) have a monthly household income of between Kshs. 6,000 to Kshs. 10,000. When it comes to decision-making on the farm or over income from the farm the conclusion is that 48% and 44% respectively make these decisions jointly as husband and wife. Women are especially involved in deciding the time to plant, weed and harvest. They are rarely involved in purchase of improved seeds and fertilizers. Only 35% of all the respondents have received credit in the last three years and the major use for it has been to pay school fees. Belonging to a group for collective action is a common thing as is evidenced by the fact that 50 of the respondents belong to such groups. The main activity of these groups is welfare whereby money circulates amongst the group members under a rotating credit scheme. In terms of agricultural information only 28 respondents

report to receiving such information from their groups, which has to do with the use of modern farming methods.

From data associations the following conclusions also emerge:

- a) the type of occupation of the women respondents does not determine their sources of information in relation to crops but does for livestock;
- b) the importance of livestock to the women respondents does not determine the number of times the veterinary officer visits them;
- c) the women's group activities do not determine how frequently they visit the extension officer in search of crop information.

However,

- d) the farm sizes of the women respondents determine how frequently the crop extension agent visits them;
- e) the level of education determines how frequently the women visit the extension agent in search of crop information;
- f) the level of income determines the source of crop information by the women respondents;
- g) the level of education determines the sources of crop information by the women respondents and
- h) the women's degree of decision-making on when to plant, harvest and weed is determined by their sources of crop information.

5.2 Policy implications

The decrease in home-to-home visits suggests that there has been a drop of contact between the farmers and extension personnel even though the farmers will continue

to mention them as key service providers. Due to its prominence agricultural extension service should be encouraged and not down sized. Perhaps one way of encouraging would be the MOALD inviting more partners on board for greater collaboration and economies of scale. The extension approach is good but it is limited in resources.

More needs to be done to encourage farmers to be demand driven since as the research shows they rarely visit the extension worker for crop or livestock information. The term "demand driven farmer" is therefore a premature term to refer to these farmers in the present circumstances whereby their incomes are low and extension services are thin.

Extension personnel need retraining on how they view women farmers. Their attitudes suggest that women are laggards and slow learners. According to this research women are relatively well educated and even make time to attend chiefs' barazas (94%) and some (54%) even read magazines when in search of agricultural information. By their own admission women are the people extension staff encounter the most when they go to the farms and it is therefore important for them not to have preconceived ideas on how women take in the information they are passing on to them because women are playing a big role in terms of household food security.

It is sad that though majority (78%) of these women farmers have cash crops their monthly income is relatively low. It is reported that due to the poor coffee prices over the years, many have resorted to dairy farming in the hope of making up the

expected income from coffee farming. This idea needs further exploring as farmers need to be encouraged to invest in more than one agricultural enterprise so as to diversify their risks.

5.3 Study recommendations

- a) In order to help the women farmers diversify their risks, more credit schemes should be encouraged. This is in the hope that it will increase household incomes, which have very many demands among them buying farm inputs and paying for labour.
- b) The home economics officers should have added training so that they can also provide agricultural extension services. The advantage with this is that this profession is already recognized as being dominated by women. This can be done in conjunction with retraining the current extension workers better meet the needs of women farmers.

5.4 Areas of future research

This study gives the following suggestions as areas of study for future research in Kirinyaga district and its environs:

- a) How the extension service is partnering with youth groups
- b) What the extension agents say about the frequency of farmer visits to the offices
- c) A similar study on how men rate the agricultural extension service
- d) The outcome of turning to dairy farming in place of coffee farming
- e) Why there are such few women extension personnel

f) The mass media (radio, television and print) as a source of agricultural information in Kenya

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Appendix 1

Household questionnaire

HOUSEHOLD SURVEY

AGRICULTURAL EXTENSION SERVICES AND RURAL WOMEN: A CASE STUDY OF KIRINYAGA DISTRICT IN KENYA

Dear Respondent, my name is Rosalynn Gichimo and I am a student at the University of Nairobi and I am carrying out a study to establish the role of the agricultural extension system with regard to rural women in Kenya. Please allow me some time to ask you the following questions. Your participation is highly appreciated. Thank you.

1. PERSONAL CHARACTERISTICS

Name of Respondent _____

Sub-location _____ Division _____

a) Type of household:

1 male headed household 2 female headed, husband away
 3 child headed 4 other

b) Current total number of household members: _____

c) Highest level of formal education achieved.

None, Attended primary, Attended secondary, Post secondary

d) Main occupation

Farming, Agricultural casual labour, Non-agricultural casual labour, Self employment, Salaried employment

e) Income range per month (Kshs)

Please give the income ranges on both informal sources and formal sources
Income range per month (Kshs):

1 = <1,500 2 = 1,500 – 3,000 3 = 3,000 – 4,500
4 = 4,500 – 6,000 5 = 6,000 – 10,000 6 = 10,000 – 15,000
7 = 15,000 – 20,000 8 >20,000

Household member	Source	Estimated amount/Income range per month (Kshs)

f) Which religion do you belong to?

- a) Christian b) Muslim c) Traditional d) Other

g) In which year did the household head settle on this farm? _____

2. CROPS

a) Please indicate the number/acres of:

	Crops (Begin with the most important)	Total Acreage
Food crops	1. 2. 3. 4. 5. 6.Others (Specify)	
Cash crops	1. 2. 3. 4.	

b) Which of the following farm inputs and practices did you use in the last cropping season?

	Farm inputs/practices	Used / did not use	Amount spent (Kshs)
1	Improved maize seeds		
2	Improved seeds		
3	Chemical fertilizers		
4	Organic fertilizers		
5	Insecticides		
6	Row planting		✓
7	Early planting		
8	Clean weeding		
9	Other		

c) How much income (estimate) did you realize from the sale of farm produce in the last year?

	Farm enterprise	Yield	Amount of yield sold	Income realized
1	Food crops			
2	Cash crops			

3. LIVESTOCK

a) Indicate the number of animals for the different livestock species owned and present on the farm.

Type of livestock	No. of improved	No. of local
Cattle		
Sheep		
Goats		
Poultry		
Bees		
Other		

b) In what ways is livestock important to you?

	√	Rate* in order of importance (1, 2, 3)
1. Source of income		
2. Security		
3. Social cultural function – Bride wealth, funerals, rituals etc.		
4. Food		
5. Use of manure		
6. Draught power		
7. Others (specify)		

*Rating: 1=Most important, 2=Important, 3=not so important

c) Which of the following livestock husbandry practices do you practise on your farm?

	Livestock husbandry practices	Practice / do not practice	Amount spent (Kshs)
1	Zero Grazing		
2	Free range		
3	Tethering		
4	Paddocking		
5	Other		
6	Commercial feeds		
7	Napier		
8	Other types of fodder		

d) How much income (estimate) did you realize from your livestock enterprises in the last year?

	Livestock enterprise	Yield	Amount of yield sold	Income realized
1	Milk			

2	Meat			
3	Other			

4. DECISION MAKING

a)

	Size (acres)	Do you have a title deed? Yes or No	How is the land used?	Who makes decisions regarding its use?
Farm unit visited				
Other units				

b) Who makes decisions regarding the use of income realized from farming? _____

c) To what degree do you make decisions regarding the following? *Please tick as appropriate*

Item	Decision making (rank) on farm enterprises		
	Fully	Partly	Not at all
Purchase of improved seeds			
Purchase of fertilizers			
Sale of crop produce			
Purchase of fodder			
Purchase of pesticides			
Sale of insecticides			
Time to plant			
Time to harvest			
Time to weed			
Sale of eggs			
Sale of milk			

5. SOURCES OF INFORMATION

a) Ask the farmer what technologies he/she has learnt through extension agencies over the last three years, *(Tick as appropriate)*

Technologies learnt	
1. Tree establishment/intervention	
2. Soil improvement	
3. Soil conservation measures	
4. Seed technology	
5. Land preparation and	

planting	
6. Harvesting and storage	
7. Farm planning and record keeping	
8. Livestock production (specify)	
9 Crop production (specify)	

b) From which of these sources have you been receiving information for your farming activities? **Mark in order of importance starting with 1**

Neighbour, Friend, Family member, Extension agent, Radio, Television, Print Media, Chief baraza, Market place, Self

c) How frequently has the extension agent visited your farm to advise you on crop activities in the last year?

Weekly Twice a month
 Monthly Half yearly
 Yearly Rarely

d) Is the extension agent male or female?

e) Do you understand the language in which the extension agent communicates? Yes or No. **If No go to f.**

f) What language would you prefer him/her to use?

g) What information does he/she usually give in relation to crops?

h) What information do you feel is left out?

i) Who provides information for your livestock activities? **Mark in order of importance starting with j**

Neighbour, Friend, Family member, Veterinary officer, Radio, Television, Print Media, Chief baraza, Market place, Self

j) What information is provided in relation to livestock?

k) In what language is this information communicated to you?

l) What information do you feel is lacking?

m) How frequently were you visited by the extension agent last year in relation to livestock?

Weekly Twice a month
 Monthly Half yearly
 Yearly Rarely

n) How many times have you been visiting the extension agent's office in search of information?

Crop information	Livestock information

Weekly Twice a month

Monthly Half yearly

Yearly Rarely

o) How many times did you attend/listen/read to:

Item	No. of times in the last year
An agricultural course/workshop/seminar	
Field day	
Farm demonstrations	
Chief baraza	
Radio programmes	
Farm magazines	
Other	

p) What determines your attendance to such events (courses/workshops/field days/farm demonstrations/agricultural shows/radio programmes/chief barazas)?

q)

Item	No. of times in the last 5 years
Farm courses/workshops attended	
Chief barazas	
Agricultural shows	
Farm magazines read	

6. CREDIT

a) Did the household receive any credit during the last three years? Yes or No. *If Yes please fill in the table below*

Source	Year	Amount (Kshs)	Purpose

b) Before going for the credit, did you receive any information or training on how to use it? Yes or No.

7. LABOUR

a) How much money did you spend on labour for farm operations in the last year?

Type of labour		Amount spent daily (Kshs)	Amount spent monthly (Kshs)
1	Permanent		
2	Casuals		

b) Please list the problems you have with regard to farm labour, if any

8. GROUP MEMBERSHIP

a) Have you belonged to a group (project) or cooperative during the past 3 years? Yes or No. *If yes, go to b.*

b) Identify the group that the respondent belonged to in the last three years:

Name of group(s)	Group exists (Yes, no)	Are you still a member? (Yes, no)	Number of Members in group	Group activity

c) Does your group assist you in acquiring information for your farming operations? Yes or No, *If yes ask d*

d) What type of information do you gain from your group membership?

e) Is your group affiliated to a larger group/organization/federation? Yes or No *If yes, ask f*

f) How does that affiliation help your group?

INTERVIEW SCHEDULE

AGRICULTURAL EXTENSION SERVICES AND RURAL WOMEN: A CASE STUDY OF KIRINYAGA DISTRICT IN KENYA

1. Name of respondent
2. Which Organization do you work for?
3. Designation 4. Duty station
5. What technologies/innovations do you promote?
6. What channels/avenues do you use?
7. Are these technologies/innovations adopted? Yes or No. ***If Yes go to 8, If No go to 9***
8. Which technologies are adopted?
9. Why are the technologies/innovations not adopted?
10. Are the messages you promote divided along gender lines? ***If Yes go to 11, If No go to 12***
11. Why?
12. Why not?
13. Do you feel that women take a longer time to adopt extension messages?
14. Whom do you encounter more in your visits, men or women?
15. What difficulties do you encounter in delivering the extension messages?
16. Do you think that the current extension system is effective in reaching rural women farmers?
17. Does your Organization work in partnership with other Organizations?