

**A STUDY ON THE INFLUENCE OF RETIRED EX-
AGRICULTURAL EXTENSIONISTS IN THE
COMMUNITY: A CASE STUDY OF THIKA DISTRICT,
KENYA**

MWIKAMBA KAIBUI

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**A Study on the Influence of Retired Ex-Agricultural Extensionists in
the Community: A Case Study of Thika District, Kenya**

Mwikamba Kaibui

**A Thesis Submitted in Fulfillment for the Degree of Doctor of
Philosophy in Development Studies in the Jomo Kenyatta University of
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2012

DECLARATION

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

Signature..... Date.....

Mwikamba Kaibui

This thesis has been submitted for examination with our approval as university Supervisors.

Signature Date.....

Dr. R.W. Gakure

JKUAT, Kenya

Signature..... Date.....

Prof. N. J. Kathuri,

Egerton University, Kenya

DEDICATION

To my beloved family- Daisy, my dear wife, and my beloved children, Faith Ncugu,
David Kaibui, Tumaini Mutugi, and Mercy Isumbi.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAO	Assistant Agricultural Officer
ADA	Assistant Director of Agriculture
ADVS	Assistant Director of Veterinary Services
ALO	Assistant Livestock Officer
AO	Agricultural Officer
CBOS	Community Based Organisations
C.I.G	Common Interest Group
DAO	District Agricultural Officer
ERS	Economic Recovery Strategy for Wealth Creation and Employment
FAO	Food and Agriculture Organisation
FEW	Frontline Extension Worker
GOK	Government of Kenya
IESP	Independent Expert Service Providers
IFPRI	International Food Policy Research Institute
IHRD	Institute of Human Resources Development
IPM	Integrated Pest Management
JAA	Junior Agricultural Assistant
JAHA	Junior Animal Health Assistant
JLHA	Junior Livestock Health Assistant
KAPP	Kenya Agricultural Productivity Project

LO	Livestock Officer
MoARD	Ministry of Agriculture and Rural Development
MoLDF	Ministry of Livestock and Fisheries Development
NALEP	National Agriculture and Livestock Project
NEF	Neighbouring Farmers
NGOs	Non Governmental Organisations
NSWCP	National Soil and Water Conservation Project
RAE	Retired Agricultural Ex-Extensionist
SAA	Senior Agricultural Assistant
SAO	Senior Agricultural Officer
SAP	Structural Adjustment Programme
SIDA	Swedish Development Agency
SRA	Strategy for Revitalization of Agriculture
SVO	Senior Veterinary Officer
T & V	Training and Visit
TAA	Technical Agricultural Assistant
TO	Technical Officer
VO	Veterinary Officer

ABSTRACT

Extension service has been identified as one of the factors that contribute to high agricultural production. Farmers have been known to seek this essential service from the extension workers or persons whom they perceive to be very knowledgeable in the field of agriculture. Lack of provision of this essential service has forced the farmers to seek for alternative sources where they would get extension service. The objective of this study was to investigate the influence of retired ex-agricultural extensionists. The study was conducted in Thika District and the population comprised of 60 Retired Ex-Agricultural Extension Workers (RAEs) and 400 farmers neighbouring them. The specific objectives of the study were; to determine what influence professional training of RAEs have on their socio-characteristics, assess what influence RAEs have in offering the extension services to the community, assess what influence RAEs involved in farming business have on agricultural productivity within the communities in which they live and to investigate the socio-economic influence in the community attributed to the presence of RAEs.

Stratified Random Sampling was used to select three samples. Questionnaires, observation and interviews were used to collect data. The statistical package for social science (SPSS) was used to analyse the data.

The results of the t-test analysis indicated that there was a significant difference between the mean scores, $t(60) = 8.122$, $P < 0.05$. This implied that the level of training of RAEs influences their socio-economic characteristics and this influenced the social characteristics in the community in which they lived in. The results further indicated that majority of the retirees were involved in leadership function, thereby influencing various issues that affected the community while, 80% of the retirees provided extension services informally. When comparison in agricultural production was done the results of the regression model $t=2.822$ indicated that the beta coefficient was significantly greater than 0.05, $p=0.07$ which was greater than $p=0.05$ the test statistic. This indicated that there was a strong difference in agricultural production between retirees and normal farmers. Noting the contribution that the RAEs are making in the community, a policy needs to be put in place on how they- RAEs can be better utilized. This is to imply that if the RAEs are involved in extension and production processes, there is a likelihood for agricultural sector to gain its' lost glory.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

In 2004, the World Bank released information which documented that, with so many poor rural residents and so many changes in the agricultural sector, enhancement in agriculture has never been more important for achieving the anti-poverty goals like it is now. Indeed, the international experience has shown that there is a direct relationship between agricultural growth and poverty reduction (World Bank, 2004). Strengthening agricultural development is vital, especially in countries where their economic backbone is agricultural-oriented. This is because it induces economic growth in that it creates employment for not only the farmers themselves but also for those working in the farms, the agro industries and other agricultural related sectors, such as the extension services providers and even operators of agrochemical businesses. Moreover, it is a sure guarantee for the country's food security, besides being a foreign exchange earner.

Kenya's economy is principally agricultural-oriented. Foreign exchange is earned mainly through sales of agricultural products. For example, by 1990, the country was ranked third World exporter of tea (GoK, 1994). Agricultural growth and development are crucial to Kenya's overall socio-economic development. The sector directly

contributes about 26% of Gross Domestic Product (GDP) and a further 27% through linkages with manufacturing, agricultural products, and agricultural oriented service delivery sectors (GoK, 2004 & 2008; Agricultural Society of Kenya, 2005.). It is estimated that 45% of Government revenue is derived from agriculture while the sub-sector further contributes over 75% industrial raw materials and 60% export earnings and provides about 60% of total employment (GoK, 2008). Moreover, over 80% of the Kenyan population live in the rural areas and depend mainly on agriculture and fisheries for livelihood (GoK, 2004 & 2008). It has been documented that to lift Kenya to a middle- income country economy, more attention must be given to agriculture (Wachira, 2009).

Statistics indicated that 50% of Kenyans are food insecure, while significant potential for increased food production remains largely unexploited. Though during the first two decades after independence the economy grew by an average 6%, with the agricultural sector playing a major role, this trend reversed during the period 1990 to 2000, when the growth declined to 1.3% (GoK, 2004). This was far below the country's population growth estimated to be 2.9% over the same period (GoK, 2004). This scenario changed momentarily between 2003 and 2007, when the economy grew up to 7.1% in 2007. Here again, statistics indicate that agriculture played a major role in the growth of the economy. However, the economy waned down to 1.7% due to post-election violence after the 2007 general election and prolonged drought of 2008 (GoK, 2008). In the

Kenyan context therefore, agricultural growth and development is of great importance and contribution to Kenya's economic and social development (GoK, 2001). The production trend in major crops grown in Kenya for the last five years between 2002 and 2007 is shown (Table 1.1).

This notwithstanding, it is worth noting that 83% of Kenya is either arid or semi arid (Ngugi, Karau & Nguyo, 1990). The remaining 17% is the only portion available for arable farming (Ngugi *et al*, 1990). In the past, cash crops such as coffee, tea, sisal, pyrethrum and cotton, used to dominate the export market. Today, this trend has changed and many farmers are engaging in horticultural farming for both local and export market (Ministry of Agriculture and Rural Development of Kenya, 2001). Judging from this trend (Table1.1) it is only horticulture and tea sectors which maintained a steady rise in production during the period under review, while other sectors of production kept fluctuating. The reason for this change to horticultural farming is the deteriorating prices being offered for the above mentioned traditional commodities in the world market.

Table 1.1: Kenya's Major Crops Production Trend for the last 5 Years

Crop	Unit	2002	2003	2004	2005	2006	2007
Coffee	000 Tons	45.5	61.2	49.9	47.7	50.5	52.3
Tea	000 Tons	287.1	293.7	324.6	328.5	310.6	369.6
Sugar	000 Tons	494.2	448.5	516.8	488.1	475.7	520.4
Wheat	000 Tons	60.1	75.6	88.3	128.7	106.1	112.9
Paddy Rice	000 Tons	18.9	19.8	26.4	34.7	38.3	32.3
Sisal	000 Tons	22.1	24.8	26.5	25.6	25.5	24.6
Cotton	000 Tons	1.1	1.7	2.2	2.7	3.2	3.3
Pyrethrum	000 Tons	174.9	106.9	41.9	16.4	10.1	13.4
Horticulture	M/tons	121.1	133.2	145.6	163.2	163.2	192.2
Maize	Million bags	26.0	30.12	27.24	32.42	36.01	32.54
Beans	Million bags	4.0	4.76	2.57	4.17	5.90	4.75
Potatoes	Million bags	0.9	1.0	1.1	1.0	0.8	1.0
Sorghum	Million bags	0.8	0.8	0.8	1.7	1.6	1.8
Millet	Million bags	0.6	0.6	0.7	0.6	0.8	0.9

Source: Economic Survey 2008 and Ministry of Agriculture

Farming land has also gradually been decreasing due to increasing population, subdivision of the farming land due to increased family households and tremendous expansion of urban areas (GoK, 2002). This has directly affected the arable land, as

most towns are located in the high potential areas. Reduction of arable land has an implication on agricultural output in the sense that, less land will be available for cultivation and for livestock production. Moreover, the cost of inputs has also affected the production in that the farmers' purchasing power is limited. To counteract this loss of production, alternative methods on how to increase the lost output will need to be applied. These methods will lead to intensification of production and increased yields per unit area.

The basic policy objective for agricultural development is to achieve self-sufficiency in food security; both for the country's ever-increasing population and for export market (International Food Policy Research Institute (IFPRI), 2002). To achieve this objective, the Kenya Government had and has to formulate, build institutional structures reflecting these policies and to ensure that they are implemented. For example, Sessional Paper No 2 of 1994 addressed the National Food Policy (GoK, 1994). This is because it has been noted that a knowledgeable and well trained personnel, as well as, effective institutions are critical necessities for achieving agricultural growth (IFPRI, 2002).

To increase agricultural production, therefore, the Kenya Government has developed policies which address various factors that influence agricultural output. The Kenya Government noted that food security is basic to the survival of any nation, not to mention any family or individual. Food security has, therefore, been given the top

priority since no meaningful development in economic, social or cultural sphere is possible without it (GoK, 1994). Furthermore, an economy based on agriculture, as it is in Kenya, must allocate sufficient resources to its agricultural sector to ensure that national food security is achieved through sufficiency, in production of basic food commodities and generation of foreign exchange which can be used for importation of other foods, and occasional importation of basic foods, when need arises (GoK, 1994).

According to the Sessional Paper No 2 (GoK, 1994), one of the areas where the Government was expected to heavily invest was public investment in roads to serve agriculture, research and extension. In matters regarding the extension, the Ministry of Agriculture, Livestock Development and Marketing (MoARD) was vested with the responsibility to undertake not only, employing extension workers but also to undertake a vigorous programme to improve the credibility of the extension service in the eyes of the farmers, improve planning, supervision of the extension workers as well as ensuring that they are well trained in various disciplines of agriculture (MoARD, 2001c).

The necessity for well trained extension workers is underscored in the Government Strategy for Revitalisation of Agriculture (SRA) which has indicated that, one of the strategies to revitalise the agricultural sector includes training of farmers, pastoralists and fisher folk so that they may be able to manage their activities in a business-oriented manner (GoK, 2004). The extension workers play a key role not only in enlightening

the farmers on modern methods of farming in various fields of agriculture but also, by offering informal training in their respective farms as they offer their technical services (Adams, 1982). The messages that the extension worker carries to the farming community are mainly meant to influence the farmers' ways of farming practices so as to increase their production, thereby raising their standard of living. The extension workers are professionally trained agriculturalists but many of them are not practicing farmers. Though, equipped with all the farming skills many working extension workers are not practicing farmers due to their official assignment.

Many of them therefore, have not put into practice what they have learnt during their working employment life but mainly focus on providing extension service to the practicing farmers. The agriculture sector is made up of many stakeholders, namely: the government, the workers/ agents, agro-industries, and the farmers, donor community, and Non-Government Organisations, among others. Each of these stakeholders influences the overall performance of the sector in one way or another (MoARD, 2001a).

Challenges have, however, continued to face the agricultural development. Among these challenges, is the provision of extension services. Furthermore, food security is often a problem for the rural poor, a large proportion of whom their livelihood is in agriculture. Food security in towns and the sustainable management of natural resources

hinges on the farmers' work. By helping to improve farming and farm yields, agricultural extension has been identified as a very powerful tool for empowerment and support to community livelihood (Neutachel, 2007a). Moreover, Olusi (2001) observes that the fact that farmers seek extension service is a clear indication that the service is useful and necessary for the development of the sector.

Agricultural extension, therefore, plays a big role in the growth of agriculture and hence very crucial in the attainment of agricultural development goals and country's overall development. The importance of extension in rural development is widely acknowledged (Neutachel, 2007a). In developing countries such as Kenya, where the majority of the population lives in the rural areas, agriculture is the main source of livelihood, agricultural extension is considered as one of the key factors of agricultural development and a vital catalyst in the rural development and cannot be ignored as it is no doubt a very powerful tool for empowerment and support to community livelihood. It is no wonder that when the agricultural production started declining, agricultural extension has been identified as one of the causes, among many other factors.

Thika District, selected for this case study, had a population of 645,713 persons according to the census conducted in Kenya by the GOK in 1999, which was composed of 83,874 small farm holdings owned by 117,874 farm families (Njoroge, 2003). The high population density puts pressure on land often leading to its subdivision into small

uneconomical units. These small farm holdings are owned by individuals and have their title deeds. Besides undertaking agricultural activities, the district is one of the leading industrial towns in Kenya. The farms range from small holdings measuring less than an acre, owned mainly by peasant farmers, to large tea, or coffee estates owned by individuals or companies. Majority of the farmers are peasants and do mixed farming. The enterprises kept are mainly dictated by agro-ecological zones (Table 1.3).

Farmers in the high potential areas grow cash crops like tea and coffee, along with cereals, potatoes and pulses mainly for subsistence. They also do horticultural farming. Besides these, they also keep livestock especially, dairy cattle. Dairy cattle are mainly kept on zero grazing system. Commercial poultry keeping is done only by a few farmers who could be referred to as progressive farmers. However, local chicken are kept by almost all families.

Farmers in the lower, medium and transition zones grow cereals, pulses, potatoes, cotton and some grow coffee as cash crops besides other crops. The livestock kept here are mainly indigenous animals especially, in Thika and Kakuzi divisions. Regardless of the agro-ecological zone, horticultural farming has also gained momentum especially, along the river banks. Many farmers do some irrigation and grow horticultural crops which have ready market either in Thika, neighbouring market centres or even sell to companies which buy horticultural produce for export. Irrigation has, however, been

identified as one of the big setbacks (GoK, 2001a). Floriculture farming is rapidly gaining momentum in this district. Despite all these, there are pockets of poverty in almost all parts of the district but the most hit areas are the slums and also the drier parts of the district where most the people rely on relief food supply (GoK, 2001b).

According to Poverty Reduction Strategy Paper, for the period 2001 to 2004, Thika District, had inadequate food stocks, inadequate extension services, lacked irrigation facilities and high cost of farm inputs. The poverty level was estimated to be 48.4% (GoK, 2001b). On crop development, the district lacked cooperatives to market their produce. Besides, the district did not have sufficient land (GoK, 2001a).

When issues regarding human resource development were considered, the district had low level of education, lacked adequate school facilities and equipment and parents were being exploited. Touching on health issues, the district had insufficient Community Based Health Care, high cost of healthcare, poor service delivery in health institutions and poor management of Primary health care (GoK, 2002). Table 1.2 summaries the socio-economic indicators of Thika District.

During the time the study was being done, Thika District had a total of 91 extension staff in all the six divisions. This includes those stationed at the district headquarters. Judging from the size and the population of the district, this number was quite small

compared to the number of farmers that they were expected to serve just as it was pointed out by the Poverty Reduction Strategy paper. Moreover, the district had poor maintenance of road as the funds allocated for maintenance had sometimes been mismanaged (GoK, 2001b). The district did not have enough transport for the extension staff. They had to rely on one vehicle per division and more often than not the vehicles were poorly maintained and hence, not readily available. Besides the vehicles, the divisions had motorcycles which were assisting but could only be used by those who knew how to ride. They were mainly used by men while few women dared to use them. These setbacks left the farmers with no option but to seek any available help in as far as extension service was concerned and this is where RAEs come in handy.

Table 1.2: Socio-economic Indicators for Thika District

Aspects	Units
Total number of household	171,569
Average household size	3.8
Female headed household	42,034
Absolute poverty (Rural and Urban)	48.4%
Contribution to National Poverty	2.1%
Average household incomes: contribution Sectoral contribution to Household income	
Agriculture	17.4%
Rural self-employment	20.3%
Wage employment	42.7%
Urban self-employment	19.6%
Number of unemployed	137,538
Agriculture sector data	
Total number of farm households	83,874
Average plot size-small	1.3 Ha
-Large	43.1 Ha
Number of people working in the Agriculture sector	229, 230 (45%)
Main cash crops	Coffee, tea, pineapples, horticultural flowers.
Total acreage under food crops	31,873 Ha
Total acreage under cash crops	49,938 Ha
Main storage facilities (on and off farm)	Inhouse and cribs, NCPB
Population working in livestock sector	229,230 (45%)
Total number of ranches	5

Source: District Statistics Office, 2001

Table 1.3: Thika District Crop Production for the Last 3 years

Crop	2005 Production	2006 Production	2007
Coffee	No figure given	No figure given	2648131.5Kgs
Tea	66,143520.5kgs	No figure given	127, 52717 Kgs
Cotton	9.45 tons	42 Tons	57.8 MT
Maize	29,1350 bags (90 kg bag)	131, 070 bags	79070 bags (90kg bags)
Cassava	187 MT	187 MT	313.4 MT
Beans	74300 bags (90Kg bag)	76,160 bags (90kg bag)	36675 bags (90kg bag)
Millet	212Kgs (90Kg bag)	105.5 bags (90kg bag)	75.6 bags (90kg bag)
Sorghum	186Kgs (90Kg bag)	187.5 bags (90kg bag)	187 bags (90kg bag)
Pigeon peas	575 bags (90Kg bag)	1517.4 bags (90kg bag)	1803 bags (90kg bag)
Cowpeas	604 bags (90kg bag)	1414 bags (90kg bag)	1144 bags (90kg bag)
Green grams	9 bags (90kg bag)	No figure given	16 bags (90kg bag)
Cabbages	2860 MT	6924 MT	6232 MT
Carrots	178MT	113 MT	2056 MT
Sweet Potatoes	654 MT	553 bags	819.9 bags
Irish Potatoes	232706 bags	48334 bags	23745 bags
French Beans	575 MT	863 MT	2695MT
Sunflower	7 MT	No figure given	1018 MT
Tobacco	62 MT	No figure given	No figure given
Kales	2110 MT	4203 MT	5031 MT
Tomatoes	3205 MT	4806 MT	2861 MT
Onions	280 MT	289 MT	124 MT
Spinach	233 MT	306 MT	159 MT

Capsicum	218 MT	218 MT	246 MT
Arrow roots	1439 MT	910 MT	529.8 MT
Brinjals	230 MT	196 MT	156 MT
Mangoes	1465 MT	1550 MT	3507 MT
Avocados	7113 MT	No figure given	No figure given
Bananas	24283 MT	14469 MT	14358 MT
Pawpaw	971 MT	887 MT	742 MT
Passion Fruit	2449 MT	3030 MT	2673 MT
Pineapples	10680 MT	5910 MT	5760 MT
Macadamia	1705 MT	No figure given	No figure given
Mobydick	4.1 Mil. Stems	4 M	5.7 M
Arabicum	3.7 Mil stem	No figure given	No figure given

Source: Ministry of Agriculture, Thika district Annual Report (2008).

NB: Production figures for 2006 and 2007 for Gatundu and Kamwangi are not included as these formed another district after the survey had been done.

1.2 Statement of the Problem

One of the key factors which has been identified as a constraint to agricultural performance is a weak and inefficient research-extension –farmer linkage (GoK, 2001a’ 2004; 2008).

This has led to partly contributing to low agricultural output, and possibly poor adoption rate of the modern farming technologies. The reasons as to why this problem has persisted despite the Government's effort are not clear. The challenges in the agricultural sector have not only caused concern to the Kenyan Government but indeed even the international community. The Government's effort in trying to correct this situation and pressure from the donor community, decided to implement the Structural Adjustment Programme (SAP). In implementing this programme, another problem seemed to have emerged as SAP implementation created a shortfall in the staff or the way the public service was being provided. Compounding the problem was the trade liberalization which put farmers from very different production backgrounds in competition with each other. Modernising farms and increasing productivity so as to make them competitive and employing substantial workforce for production was a challenge as no clear formula to achieve this was being provided. Marketing and processing became one of the most challenging issues for the farmer because of the market liberation, meaning that the farmers' product was to compete with other products globally. Consequently, farmers had to seek alternative means or personnel to assist them in facing these emerging challenges. Such alternatives include: private extension workers and knowledgeable or informed neighbouring farmers or even NGOs (GoK, 2001b).

Each year, the farming fraternity which is made up of the farming households, is joined by unknown number of trained agricultural personnel from different institutions. These include Retired Agricultural ex-extensionists (RAEs) and other graduates of agricultural sciences. As they join the farming community, the RAE may influence farming community, thereby playing a vital role in the agricultural sector and consequently influence the sector directly or indirectly. The influence created by these people needs to be investigated to establish the extent to which they influence the community in which they live in.

At the moment, there is no information that is available in Kenya on what the agricultural professionals do when they leave their paid jobs. Many of them retire during their prime age after gaining a lot of experiences and still full of energy. This study aimed at examining the influence of the RAEs in the society they live in, specifically at the services they provide, farming involvement, business and the social activities they are involved in.

1.3 Objectives of the Study

1.3.1 Overall Objective

The overall objective was to investigate the influence of the Retired Ex-Agricultural Extensionists in the Farming Community they live in.

1.3.2.1 Specific Objectives

The specific objectives were:

- a) To determine what influence professional training of RAEs have on their socio-characteristics in the community
- b) To assess the influence RAEs have in offering the extension services to the community
- c) To assess the influence RAEs involved in farming businesses have on agricultural productivity within the communities in which they live.
- d) To investigate the socio-economic influence in the community attributed to the presence of RAEs.

1.4 Hypotheses

The study sought to test the following hypothesis:

- a) RAEs professional training has no influence on the socio-economic characteristics of RAEs living in Thika District
- b) RAEs have no influence in the extension services to the community they live in

- c) RAEs involved in farming business and other business have no influence on agricultural productivity of other members in their farming activities
- d) RAEs do not have socio-economic influence that can be attributed to their presence in the communities in which they live in.

1.5 Significance of the Study

The findings of this study are significant in that they will contribute to the extension of knowledge which is currently lacking or not readily available. The study will provide vital data regarding the RAEs influence on the farming fraternity, their output in terms of agricultural productivity as a result of their farming involvement and the type of farming in which they are engaged in. The study will also provide vital information regarding the socio-economic activities that the RAEs are involved in.

The results would be especially, important in that it would contribute to the development of not only the agricultural sector, community development but also to the formulation of policies which would help the agriculture sector. Moreover, the findings of this study will be particularly useful to different stakeholders in the agricultural sector as it will provide data which would help them to understand the influence that RAEs can play in capacity building and in increasing agricultural production. These findings will therefore, help in influencing policies which will assist in addressing issues that affect the agricultural sector and enhance its effort to revive it.

The study, therefore, will be useful in that it will provide data on the RAEs who may be providing the services, the method and the approaches they use. Besides identification of the RAEs engaged in the farming work, the study will also provide data on those RAEs involved in activities such as leadership and community development. The findings of the study could have significant contribution for use by the following organisations, institutions and individuals: The Government Ministries, Research Institutions, Non-Governmental Organisations (NGOs), Farmers, RAEs, The Community and Agro-Industries.

The study would be beneficial to the Government in that it will provide information which help in formulating policies in the Agriculture sector. Moreover, this study would help the Government in estimating the agricultural production and hence aid in ensuring food security for the country. Non- Governmental Organisations stands to benefit from this study in the sense that it will make it easier for them to identify partners who would help them in development of the local areas. The study will benefit the farmers as it will help them to identify the human resources available close to them.

As for the RAEs, the study will help them to discover their roles in the community where they live which they may have not been aware of and to know how they would assist their neighbours to raise their agricultural production. Furthermore, the community stands to benefit from this study in that the stakeholder will be made aware

of the roles of RAEs and how they could benefit from their wealth of knowledge. Realisation of the roles that RAEs play in the agricultural production would be of great importance to the agro-industries in that the industries would target on the RAEs as their customers.

1.6 Limitations of the Study

There were four main limitations of this study. The first one was limited resources for the research. The resources could not allow the researcher to make as many visits as had been anticipated. To overcome this setback, a lot of information was gathered during the visits made. The visits had therefore, to be reduced depending on the availability of funds. The scope of the target group, which initially was to include the unemployed, had to be reduced so as to concentrate on the retirees only as defined in this study. Moreover, it was also noted that, the two groups had different and unique needs as well as problems which could not be handled and addressed in this limited time and limited resources.

The second limitation was due to lack of basic data of the RAEs. It was observed that most offices did not have the necessary records to facilitate the study. This insufficient information made data collection to consume more time in the field than initially expected especially during the stage of primary data collection.

The third limitation was the fear of the respondents. During the initial stages of data collection, many respondents did not want to give full information which the study sought. Although, this problem was reduced with time, it was not eliminated altogether as the respondents were reluctant to release some information especially that touching on their income, nutrition, expenditure and the like. They were however, able to release some information which was vital and useful in this study. The respondents expressed fear that this information could be used for other purposes rather than the intended, even after being assured that it would not. Nevertheless, the interviews were framed in such a manner so as to provide some of the information required.

The fourth limitation was that regarding the neighbouring farmers for the RAEs living in urban areas. It was noted that, getting neighbours who were practicing farmers for RAEs living in town was not possible as it was for those living in rural areas. This problem was particularly serious in the two municipalities of Thika and Ruiru. This problem affected 10 randomly selected RAEs, who lived in these towns. This reduced the number of the proposed NEF farmers from 480 to 400. To overcome this problem more farmers were interviewed in other divisions than in Thika and Ruiru municipalities. It was noted that majority of these RAEs were also not necessarily actively involved in farming activities and those who were, had their farms outside the Thika District. Moreover, many of them were not also involved in any extension service provision.

1.7 Operational Definition of Terms

The following terms are used as indicated against their definitions, throughout this study.

1.7.1 Agriculture

Agriculture means cultivation and use of land (whether or not covered by water) for any purpose of husbandry and includes horticulture, fruit and seed growing; dairy farming, bee keeping and breeding of livestock; conservation and keeping of game animals, game birds and protected animals, all aquatic animals; breeding game ranching, game cropping and other wildlife utilization, the use of land as grazing, meadow land, market gardens or nursery grounds and the use of land for agro-forestry (MoARD, 2001a).

1.7.2 Agricultural Output

Is the total agricultural products derived from different enterprises realized in a given unit of land at a given time or agricultural business venture in the farm (own definition).

1.7.3 Agricultural Extension

Extension is, "the conscious use of communication of information to help people form sound opinions and make good decisions" (Ban & Hawkins, 1992).

1.7.4 Extension Worker

This refers to any person who delivers extension information or messages to farmers or manages other extension agents or workers in an organization providing extension service, whether public or private (MoARD, 2001a). In this study, the information referred to is basically agricultural knowledge and skills delivered to the farmers.

1.7.5 Food Security

Food security is the adequate supply of food and availability of it (F.A.O, 1996). It is achieved when all people, at all times have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (F.A.O. 1996).

1.7.6 Impact

This can be looked at, as the direct output of an activity (Anderson & Herdt, 1990), or as the effects of the product on the ultimate user and it begins to occur only when there is a change in behaviour of the potential users (Horton, 1990). This type of impact deals with actual adoption of the output and subsequent effects on production, income, environment and/or whatever the development objective may be.

Impact assessment is a special form of evaluation that deals with effects of the project output on the target beneficiaries (also called people level impact). It attempts to look at intended and unintended effects (Anandajayeram, Martella & Rukunu, 1996).

1.7.7 Retired Person

In this study the term refers to a person who voluntarily left, or was dismissed, from regular employment with Ministry of Agriculture and Rural Development or Ministry of Livestock Development, NGOs, or Private Organisations.

1.7.8 Retrenched Person

A person who was laid off from regular employment with Government or private sector (Ministry of Agriculture and Rural Development or Ministry of Livestock Development, NGOs or Private firm) after being declared redundant.

1.7.9 Socio-Economic

This refers to issues that touch and influence the society's economic status. It includes: factors such as society's income, change of way of life as a result of change in economic status of the society such as gaining new skills and better income, change of behaviour and issues regarding the economic status of women in the society. It determines the society's standard of living (Anandajayaseram *et al*, 1996). For many years, the impact of extension has been linked or measured using several indicators. These include, increase in production, adoption of new technologies, increase in adoption rate, acceptance of new enterprises, and change of behaviour towards certain ways of doing things (Anandajayaseram *et al*, 1996).

1.7.10 Social Influence

Social influence can be described as power - the ability to influence a person/group of people to one's own will. The individual's self-esteem and perceived Persona is the critical factor in determining the amount of influence one exerts (Kelhman, 1958). Social influence occurs when an individual's thoughts or actions are affected by other people. Social influence takes many forms and can be seen in conformity, socialization, peer pressure, obedience, leadership, persuasion, sales, and marketing.

1.7.11 Extension Approach

An approach is a style, mechanism or means of organizing farmers to effectively receive and benefit from agricultural extension interventions.

1.7.12 Extension Method

This is systematic way of reaching the extension objective. It consists of techniques of communication between the extension worker and the client with the aim of motivating and enabling them to find ways of solving their problems (Hoffmann, Bentaya, Christinck & Lemma, 2009).

1.7.13 Extension Technique

This is a particular way of doing or offering extension services (Wanga & Omollo, 2010).

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This study explores the influence of the Retired Ex-Agricultural Extensionists (RAEs) on the community they live in. In this chapter relevant literature is reviewed. The chapter comprises of: introduction; RAEs, theories, concepts and practices of agricultural extension, structural adjustment; revitalization of agriculture sector, the farmer's contribution in the success of extension, and conceptual framework.

2.2 Retired Ex-Agricultural Extensionists

Oxford Advanced Learner's Dictionary (2000) defines a retiree as a person who stopped working because of age or because of some other reasons. When this definition is applied to the RAEs, it would mean that, these are persons who have stopped working and are doing nothing but out to enjoy their pension if any. However, it is a known fact that once a person retires, they get involved in other activities of nation building.

The mandatory retirement age for Kenya's civil servants has been 55 years until 2008/2009, when it was raised to 60 years. Though 55 years was considered the mandatory retirement age, the Government of Kenya (GoK) allowed persons to retire when they were even at the age of 45 years in a programme of early retirement depending on their job groups. This age bracket could be described as the middle age

and hence many persons retiring at this age could be considered strong and energetic. This age has been referred to by the psychological counselors as the stabilizing age. It is the age when many persons begin to settle down on their jobs and the desire to look for other jobs is minimal noting that they have but a few years to work. It is an age when many workers have gained a lot of experiences as they could be considered to have worked for a reasonable number of years after their tertiary education. It is assumed that once a person retires, his/her service to the public is also ended and hence not much attention is given to him/her.

In this study, RAEs are considered as the group of persons who have left working in public offices in the agricultural sector on full time basis but because they are still strong and energetic. As noted by Commander (1989), the RAEs can make substantial both social and economical contribution to the society. This study endeavours to argue that the retirees in the field of agricultural extension are still active in various aspects of life and can make good contribution in the sector. As the RAE participate in different activities, especially related to agricultural production, they could be influencing the farmers and the community at large in one way or another, more especially in their field of specialization.

2.3 Theories, Concepts and Practices of Agricultural Extension

In the recent past, globally agriculture has been regaining prominence as a vehicle for poverty reduction and sustainable development (ASARECA, 2008). However, for agriculture to bring about the desired changes in agriculture sector and development at large, it has to transform from its current form of subsistence farming to a level where it will be viewed as a business by all stakeholders. Policies and institutional structures must be put in place in order to facilitate agricultural growth and social development. Extension workers who play a key role in the farming industry are therefore, expected to be in touch with the researchers who are involved in research work and therefore, armed with the current findings, to equip them with the current farming trends. The extension workers, therefore, can be considered to work as the “middle” men in as far as transferring of the research findings to the practicing farmer in his/her farm.

This section examines theories, concepts and practices of agricultural extensions as perceived by different authors. The section covers; concepts of agricultural extension, and approaches used to offer Extension Services.

2.3.1 Theories and Concept of Agricultural Extension

In this section, different concepts of agricultural extension, its origin, meaning and perceived functions and roles of extension are covered.

2.3.1.1 Origin of Agricultural Extension

The concepts of agricultural extension can be traced to have originated in Europe during the 18th century where Agricultural Societies organised agricultural fairs, contests and shows (Wanga & Omollo, 2010). The term extension was derived from the practice of British universities of having one educational programme within the premises of the university and another away from the university buildings. The programme conducted outside the university was described as “extension education.” The expression connoted an extension of knowledge from the university to places and people far beyond. The term “Extension Education” was first introduced in 1873 by Cambridge University in England to describe a particular system dedicated to the dissemination of knowledge to rural people where they lived and worked.

These organisations conducted itinerant teachings, established farmers' institutes and introduced demonstration farms. Later, other organizations such as universities, agricultural experimental stations, rural libraries and rural churches followed. In 1880s, and 1890s many provincial and local governments in Europe and U.S.A. started to give financial assistance to these organizations. Due to its importance the administration and management of extension activities in many countries was taken over by the national governments during the First World War, the great depression and the Second World War (Wanga & Omollo, 2010). In Kenya and many developing countries, most of their

extension systems were established by colonial governments, during the latter periods of the 19th century and the early half of 20th century (Wanga & Omollo, 2010).

2.3.1.2 Effect of Globalization and Advancement in Knowledge on Agricultural Extension

Globalization and advancement in education, knowledge and technology has affected the concept and mode of operation of many disciplines including agricultural extension. For instance, during the 1980s, a heated debate developed between the agricultural stakeholders and donor communities over different views on how agricultural extension in Sub-Saharan Africa should be supported (Neutachel, 2007a). This debate led to the production of the Common Framework in Agricultural extension and also Common Framework in Financing Extension. Today, the concept, theory and management of agricultural extension should therefore, be viewed in the light of changing environment and this calls for new approaches for the service to be effective and useful to the stakeholders (Neutachel, 2007a). Due to these changes, many approaches and methods have been applied in implementing the agricultural extension services.

In Kenya, extension service has been identified as one of the factors that contribute to agricultural production in one way or another (GoK, 2004). The government has, for many years, been the sole service provider for the same. However, in the recent past and with the current, socio-economic changes and reforms in the agricultural sector, the

service has been affected, especially with the involvement of more stakeholders (GoK, 2004). In this regard, the farmer and processors as beneficiaries of the service, have a right to determine when and the kind of agricultural development they want in their area. This demand, together with Kenya's diverse agro-ecological zones therefore, requires that different extension methods and approaches be used to provide the service (GoK, 2001 & 2004) if the service has to cause any influence in the farming community.

2.3.2 The Extension Officers and their Roles

Extension officers and their functions have at times been perceived differently by individuals, institutions and organisations. This section gives some of the perceptions expressed by authors.

2.3.2.1 Agricultural Extension Officers

The meaning and practice of an Agricultural Extension Officer has at times been looked at and has meant different things to different stakeholders and probably even to the officer. The meaning and their practice has also undergone what one would call a kind of metamorphosis depending on the way one looks or views it. Different authors have hence, given their views on who they think the extension officer is and what he/ she is expected to be and do. As one looks at these views and ideas, one is tempted to think that there is no fixed definition of who an agricultural extension officer is. The

definition will depend and therefore, vary with the person or persons or even institutions defining them. For instance, according to the Ministry of Agriculture and Rural Development, an Agricultural Extension Officer, refers to any person who delivers extension information or messages to farmers or manages other extension agents or workers in an organization providing extension services, whether public or private (MoARD, 2001). To the Ministry of Agriculture, the extension worker is but a messenger, sent to deliver a message by either the Ministry of Agriculture or any other organisation. To the extension officer, this could probably mean many things, first, it would mean that as long as he/ she delivers the message, it is none of his or her business to know what the receiver of the message does with it. Secondly, it could also mean that the messenger would have to wait and get the feedback and send it back to the sender and his/her role ends there. Thirdly, it could mean, to yet another, to get the feedback and assess as to whether the message has made any influence on the way the receiver does his or her things or not. In this case, it can be taken as that indeed the messenger is not just interested in taking the message but also wants to get the message and assess its' effect. Such a messenger could be taken to have gotten the right perspective of the sending agent.

Adams (1982) thinks that Extension Officers are the change agents, meaning that the officers can take upon themselves that they are supposed to bring changes in the farming world as they are the people who are expected to carry and bring changes to the

farming community. Approaching extension from this perspective could make the extension officer to have the notion of what was observed by Chambers (1993), that outsiders are often ignorant about the rural poverty but do not want to know what they don't know. The extension workers can be considered as outsiders in the farming world in this context. Such an approach had the potential of creating a negative influence to both the recipient and sender of the message. This could have been probably the reason which made the former agricultural extension workers get the notion that the farmers are unwilling or ignorant and stubborn in refusing to take their advice and made them also lack the critical self-examination until they become real practicing farmers themselves (Chambers, 1993). It could also be why for many years, researchers and technicians have sidelined the farmers in their work. By so doing they believed that producers were hostile to the innovations that they made for them as they perceived farmers to have no or limited technologies on farming practices, ignoring and forgetting the fact that farmers are constantly innovating, in order to adapt to new climatic, agronomic and economic conditions (Spore, 2008). This school of thought has the potential to cause a negative or positive influence both to the Extension Officers and the recipient of the message, in this case the farmer and those evaluating the performance of the extension agent.

In an effort to correct this kind of misconception, the other stakeholders are now not only consulting the farmers but have started making them play an active role in

developing innovations (Spore, 2008). This implies that the researchers and the extension workers have now realized that for them to make any influence or to penetrate into the farming community and influence them, they have to change their approach. In this context, when the ex-extensionist plays the role of both the farmer and professional, he/she has the potential to influence his/her peers.

Moris (1991), on his part thinks of an agricultural extension worker as a kind of a sales or promotion agent, out there to advertise and sell his/her wares. These wares include agricultural information, technologies, innovations, new enterprises just to mention but a few. The Kenya Government on her part takes an agricultural extension worker as those persons who are delivering extension information or messages to farmers or manages other extension agents or workers in an organization, providing extension services whether public or private (MoARD, 2001a). This means that the agricultural extension worker is either given the message/ information or seeks the information through various means such as training, research, or from the media, own experiences or even from the ministry and then either transfers the same to the recipients or repackages the information before delivering it to the recipients, who in this case are the farmers. It is probably out of these deferring views that today, the Neuchatel Group (2007a), has felt that an extension officer should be seen more of a facilitator rather than a carrier of agricultural technology or information. Moreover, the advancement in education and technology demands that new meaning and roles of words and

professions be redefined to suit the changes realized in various fields or disciplines including agricultural extension.

2.3.2.2 Roles of Agricultural Extension Officers

In matters pertaining to the roles that an agricultural extension officer plays or performs, there are again many differing views. Adams (1982) sees an agricultural extension worker as a person who helps the farmers to increase productivity of their farms and improve their living standards, as a farmer's adviser, a technician, and a middleman operating between agricultural research institutions and the farm families. The author however, fails to realize that some of the agricultural extension workers have not had any contact with the researchers for many years after leaving training. The author further thinks that the extension worker should also be a teacher in non-formal set up of education who is expected to be well versed with knowledge in at least more than one area of specialisation. In other words, the extensionist's role is enormous according to this school of thought. This is to mean that the extensionist may be expected to teach more than one discipline of agriculture. This in essence is to imply that an extension worker is not expected to specialize at a very early stage in their training because in doing so, their performance or influence when it comes to service delivery may be affected. Such broad spectrum of roles is likely to confuse not only the extension officer but also the recipient of the message. Viewing it in this perspective, let's for a moment think of a scenario where an extension officer visits a farmer. The farmer may not know

what message to expect from the officer, especially, if the farmer had not contacted the said officer. The farmer is thus, at a loss of what to ask or enquire from the visiting officer. Moreover, extension is too often seen merely as a vehicle for spreading scientific and technical progress and technology (Neuchatel, 2007a).

On the other hand, the extension worker was considered to have been enriched with not only the knowledge, but also with the farming technologies (Ortiz, Ruano, Oliver, & Meneses, 1989). This is equally a narrow and highly unsatisfactory perspective (Neuchatel, 2007a). In other words, to view extensionist merely as person or persons who bring scientific and technical progress would mean that they are the ones who solely possess, the know-how in the fields of science, technology, and research, a view that would be misleading and demeaning the enormous knowledge and skill that farmers have. This could also be denying facts that have been documented that for many hundreds of years before today's national agricultural research systems were set up, farmers did their own research work. Farmers have thus, been integrating technology from different sources and continuing to adapt it on their farms, they still do so today.

The technology used by farmers is a complex product undergoing constant change (Roiling, 1989). A similar idea was held by those who thought of farmers as people who are uninformed, and perceived the idea that farmers have no or limited technologies on

farming practices. However, the truth is that farmers are not passive consumers, but active problem solvers who in fact develop for themselves most of the technologies they use (IFPRI, 2002). Working and dealing with farmers have proved the advocates of this school of thought to be wrong. For example, on-farm research pioneered in Guatemala indicated, that there was need to realise that the extension teams have a tremendous potential, and it can disseminate new technology faster and on a much wider scale when they become partners with on –farm adaptive research teams in a joint venture (Ortiz *et al*, 1989). The findings also indicated that there was necessity to identify rural leaders and farmers who could be involved so as to improve the amount and the quality of on-farm research and transfer of technology (Ortiz *et al*, 1989). Moreover, there are many scientists who do a lot of research in the field of agriculture before the findings are transferred to the farmers for utilization.

Chamala (1990) feels that extension roles for extension workers can be conceptualized to help rural communities get organized and focus on four important roles, namely, empowerment, community-organizing, human resource development and problem-solving and education roles. Empowering is an act of helping communities to build, develop, and increase their power through cooperation, sharing, and working together. This is because empowering leads to commitment and action, while community organizing roles will help leaders to plan, implement, and monitor their programmes and to perform this new role effectively.

The human resource development approach empowers people and gives new meaning to all other roles. Development of technical capabilities must be combined with management capability, meaning that the entire philosophy of human capacity building is to encourage rural communities to understand their personal and group styles of managing themselves and to improve their planning, implementation, and monitoring skills. Problem solving is achieved by helping the community to identify the problems and seek the right solutions by combining their indigenous knowledge with improved knowledge and by using their resources properly.

When one looks at the perceived definitions and roles of an agricultural extension worker, then one is tempted or prompted to view an agricultural extension worker as a multi-disciplined person in the sense that he/she is seen and expected to perform many

roles depending on whoever has deployed him or her. When viewed from these definitions and roles, and when, these roles are analysed critically the extension worker can be seen from several perspectives or angles.

First, as a professional in the field of agriculture, trained as a provider of extension services to the farmer and hence influencing the farmers to take his/her agricultural information. Depending on the way the extension worker's messages are presented, they have the potential to affect an individual's thoughts and actions, thereby causing what can be referred to as a social influence.

When a farmer adopts the messages from the extensionsist, it is a sign of positive influence. It is this professional requirement that demands that an agricultural extension worker be well trained and equipped in the agricultural science disciplines in which the officer will be expected to execute his/her duties as an authority or an expert (Adams, 1982). As a professional, one is not bound for life. He or she is free to opt out of it and do what one feels like doing. Looking at it from this perspective would probably be one of the reasons why some of the retirees did not involve themselves in offering any extension service as they had already left the profession to others altogether.

Secondly, looking at the Kenyan curriculum the extensionist undergoes in different institutions, the Agricultural extension could be regarded or viewed as a well trained

farmer either practicing or not. It is this training which empowers him/her to reach out to “other” farmers so as to share agricultural information, technologies and innovations. However, more often than not, not many agricultural extension workers are practicing farmers; nevertheless, there are a number of them, some doing well in their farming business while others not performing well. One is tempted to think it is this agricultural training background that made many retirees to turn to farming after retiring from active extension service.

Upon retirement, the agricultural extension person has a choice of either putting in practice what he/she has been telling farmers to do or not. As a practicing farmer he/she has the challenge of other farmers as his peers either knowingly or not. The other farmers and the community at large would expect his/ her farming practices to be better than that of an ordinary farmer by virtue of his/ her advanced training and would earn him/her some recognition among his/her peers. The performance in his/her practical farming has the potential to influence other farmers depending on how he/she does it and how the community takes him/her. This is because it has been documented that farmers learn more from colleagues other farmers than others and those farmers who are able and willing to help their colleagues solve their problems, become opinion leaders in their groups (Ban & Hawkins, 1992). It has also been observed that farmers are keen observers of how other farmers work and in some countries; they spend much time discussing their farm experiences with their friends and neighbours (Ban & Hawkins,

1992). Advocates of this school of thought feel that this brings socio- cultural impact and enables people change in their behaviour, thereby influencing them (Ban & Hawkins, 1992). Moreover, it has also been noted that educated farmers are more capable of making their decisions than those who are not, therefore, turning attention to the farmers with basic knowledge, or trained in agriculture would be far more useful in that, they are easier to accept changes than those who have no training at all (Ban & Hawkins, 1992).

Thirdly, the agricultural extension worker could be looked at as a social developer or community change agent as defined by Adams, (1982). When considered as a social community agent, the agricultural extension worker is expected to cause social influence in the community where he /she is an agent. As a community worker, the extension worker has to learn how to interact with people. This is why the extensionist curriculum has to embrace aspects of sociology, alongside extension methods or approaches. By studying different courses and disciplines, the extension worker is equipped in areas of dealing with the community, thereby helping the officer to cause social influence. One of the roles of a social worker is assist in community mobilization and to help them identify community needs and priorities (Kabutha, 2003). Social influence occurs when an individual's thoughts or actions are affected by other people and there is a tendency for the community to look up to the professionals for advice

(Kelman, 1958). It is no wonder that when evaluating the impact/ influence of extension, it is output of what the person's professionalism does which plays a key role. In this study, these three views deduced from what agricultural extension worker has been perceived to be by different authors have been considered. Retired ex-Agricultural extensionists (RAEs) consist of persons who underwent training in different disciplines of agricultural sciences (duration ranging from one year to several years). After the training, the persons were employed either by, the Ministry of Agriculture and Rural Development, Ministry of Livestock and Fisheries Development or even, by private firms to deal with agricultural related services/activities but have since left them for one reason or another.

2.3.3 Functions of Agricultural Extension

Following the many perceptions on what the functions of agricultural extension are and how it should be funded, implemented, and realising the important role that it plays in the agriculture sector, the Neutachel Group met in Segou in Mali in 1998 and came up with what they thought were functions of agricultural extension. The Neutachel, (2007a) felt that, the essence of agricultural extension is to facilitate interplay and nurture synergies within a total information system involving agricultural research, agricultural education and a vast complex of information –providing business. As a facilitator (extension worker) women and men, are equal partners who work together in looking for change. None has more control than the other. They all need to be

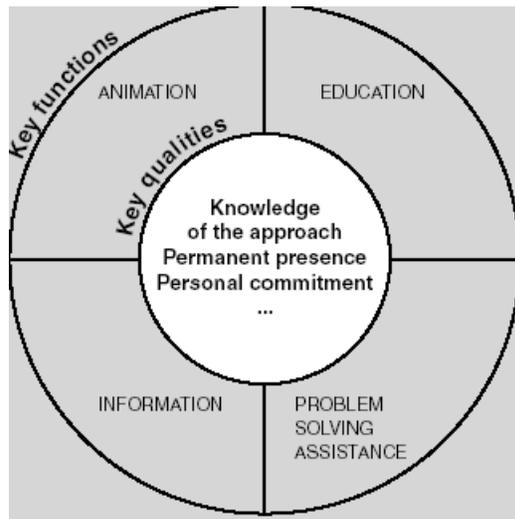
recognized in the sense that they contribute something unique and together, so as to accomplish something that none of us can do alone (Stewart, 1998).

Viewed from this perspective, agricultural extension should therefore, be seen as advisory rather than prescriptive. By building producers' capacity to take individual and collective initiatives, facilitation makes available technical solutions that are more relevant to farmers' constraints in short term, and in long term provides a framework for innovation (Neutachel, 2007a). When an extensionist is viewed from this angle, as a facilitator, the agricultural extension worker does not have the monopoly to knowledge, information, and technologies to give but will have to directly exchange between producers as away of diagnosing problems, capitalizing on existing knowledge, exchanging experiences, disseminating proven improvements and even fashioning common projects, relations between producers and service providers (including public extension services) (Neutachel, 2007a). The extensionist will therefore, go to the stakeholders not as an expert but a facilitator who will be there to help the farmers and other stakeholders. When the extensionist assumes this role, he/she is likely to influence in the learning process because it has been observed that farmers are known to learn better and to adopt new ideas when they learn from other farmers. Educated farmers are more capable of making their decisions than those who are not, therefore, turning attention to the farmers with basic, or trained in agriculture would be far more useful in that, they are easier to accept changes than those who have no training at all (Ban & Hawkins, 1992).

The retired agricultural ex-extensionist can be said to possess the qualities of professionalism, social worker and if practicing farmer, then both in the presence and absence of public agricultural extension worker has the capability of influencing his fellow farmers in one of the three broad varieties of social influence which Harvard psychologist, Herbert Kelman, (1958), identified. These include; compliance - is when people appear to agree with others, but actually keep their dissenting opinions private, identification - is when people are influenced by someone who is liked and respected, such as a famous celebrity or a favorite uncle and internalization - is when people accept a belief or behaviour and agree both publicly and privately.

In as far the work of agricultural extension workers is concerned, the extension workers must be “actors” and not “instruments of” extension. Trust must be established between the customer, small farmer and the adviser. Solid technical expertise remains essential, but abilities of extension worker must go beyond that (Neutachel, 2007a). In essence, extension worker must nowadays be adept in participatory techniques, and resourceful in drawing on mix of communication methods and technologies. They must therefore, think in terms of market opportunities, increasing producers income and total farm management (Neutachel, 2007a). Here again, one sees where different authors’ views converge and differ in terms of definitions and roles on who the extension worker is. Adams (1982), seeing the agricultural extension worker as a technician embraces the question of skill and knowledge of the extension worker.

Figure 2.1 gives a summary of what Neutachel Group perceived as the key functions and key qualities of extension.



Source: Neutachel, 2007a

Figure 2.1: Key Functions and Qualities of Agricultural Extension Service

2.3.4. Adoption Theory of Extension

Adoption of agricultural messages forms a key ingredient in agricultural extension. Indeed, it is the adoption results which show or prove whether the agricultural information or messages delivered by the extension agent had any positive influence or not. Lack of adoption has many a times been blamed on a failure of the extension communication process. This view is particularly embraced by the proponent of

adoption theory. It should however, be pointed out that adoption of any agricultural practices is determined by many factors and therefore, failure to adopt should not be wholly blamed on poor communication neither should it be construed that adoption has not taken place is the end of its process. This is because adoption is a dynamic learning process and depends on a range of personal, social, cultural and economic factors, as well as on characteristics of the innovation itself. Adoption occurs when an individual perceives that the innovation/ information in question will enhance the achievement of their personal goals (Pannell, Marshall, Barr, Vanclay & Wilkinson, 2006). If an individual does not perceive that goals are likely to be met, adoption will certainly not follow. Goals vary with individuals and this could answer the question as to why some individual farmers adopt certain technologies or innovations and refuse others while others do not. Adoption can therefore, be said to be based on subjective perceptions or expectations rather than on objective truth. These perceptions depend on three broad sets of issues: the process of learning and experience, the characteristics and circumstances of the farmer or individual within their social environment, and the characteristics of the practice (Pannell *et al*, 2006).

Abadi & Pannell (1999) sees adoption as a learning process with two distinct aspects. The first aspect is that of the collection, integration and evaluation of new information to allow better decisions about the innovation or technology being brought about by the extension agent to the farmer. Early in the process, the farmer's uncertainty about the

innovation, technology or even information is high, and the quality of decision making may be low. As the process continues, if it proceeds at all, uncertainty is reduced and better decisions can be made (Marra, Pannell, & Abadi 2003). At least for relatively simple innovations or technology, an individual's probability of making a good decision — one that best advances their goals, increases over time with increasing knowledge of, and perhaps experience with, the practice. Viewed in this light, the adoption process is never completed, in the sense of eliminating all uncertainties. All options are continuously open to question and review as new information is obtained or circumstances change.

The second aspect of learning is improvement in the individual's/farmer's skills in applying the, information, technology or even innovation to their own situation (Abadi & Pannell, 1999; Tsur, Sternberg, & Hochman, 1990). Most farming innovations require a certain level of knowledge and skill for them to be applied in practice, and there can be a wealth of choices in the method of implementation, for example; timing, sequencing, intensity, and scale. Through learning by doing, as well as by reading, listening and watching, the necessary skills can be established and enhanced.

As stated above, social, cultural and personal factors influence on adoption decisions. The significance and complexity of the decision on the information or technology being brought are important factors influencing how widely the information seeking net is

cast and the extent to which decision-making is shared. In other words, decision making on matters related to farming is often a social process. The decision-making unit can be a team, so that individual perceptions and goals influence a consensus rather than leading directly to a decision. For example, a decision to change to a new herbicide or change maize variety, is likely to be a relatively simple process but a decision with potentially significant personal impacts (such as changing farm enterprises) is likely to be a shared one (Pannell *et al*, 2006). It has been documented that weaknesses in the farmer's knowledge were remedied by seeking technical information from people who were seen by the farmer as experts. These could be other farmers, company representatives, stock agents, consultants or researchers.

Relative to the information-seeking stage, the next stage, evaluation of the worth of information, is often more socially shared. Information must be assessed against the objectives of the landholder or farmer and his/her family. The goals of landholder families or individuals are heterogeneous, and can include: material wealth and financial security; environmental protection and enhancement (beyond that related to personal financial gain); social approval and acceptance; personal integrity and high ethical standards; and balance of work and lifestyle. When the above information is obtained, it will determine whether adoption of the technology, innovation will take effect or not. When an adoption decision has a potential to threaten the higher order goals, the process of decision making is much more likely to be socially shared (Pannell

et al., 2006). It is possible that because of the time lag taken by the recipient of the agricultural information that conventional research take to reach into farmer adoption of new technology explains the adoption-decision and the timing (early or late), primarily in terms of the decision maker's perceptions and inherent characteristics, with "innovators" at one extreme and "laggards" at the other. However, farmer's decision-making is generally more complex than this implies. Farmers have multiple objectives including food security, adequate cash income, a secure asset or resource base and social security (www.idrc.ca/en/ev-).

When adoption is viewed as a social process, it becomes clear that one should expect adoption behaviour to be influenced by the personality of the decision maker, their social networks, personal circumstances and family situation. Viewing it from this angle, one is likely to see potential influence that the RAEs may likely have in the community, noting that they could be considered as professionals (experts), members of the social structure, and also for those who are practicing farmers. Moreover, it has been noted that the physical proximity of other adopters is positively related to adoption (D'Emden, Llewellyn, Burton, 2006; Hagerstrand, 1967; Ruttan, 1996). The physical distance of the property from sources of information about the innovation is important — more distant landholders/farmers are less likely to adopt, perhaps because the information appears less relevant to them than to those who are close to the information source, or perhaps because they receive less exposure to the information (Lindner, R. K,

Pardey, & Jarrett, 1982). A study done in Kenya by Tegemeo Institute of Egerton University on the relationship between households' use of hybrid maize seed, inorganic fertilizer, distance to the nearest extension service as well as maize productivity per acre showed that households closer to extension service providers used high yielding technologies and realized high yield than households far away from such services. This seem to imply that while other factors most likely contribute to these relationships, the proximity to extension services does appear to be correlated with small farmers' uptake of productivity enhancing technologies (Muyanga & Jayne 2006).

In addition, it has been observed that, a history of respectful relationships between landholders/ farmers and advocates for the innovation, including scientists, extension agents, other landholders, and private companies, is positively related to adoption, through enhanced trust in the advice of the advocates (Anderson 1981; Marshall 2004a, 2005). This notwithstanding, it has however, been also noted that ethnic and cultural divisions within a landholder/farmers population can act as significant barriers to the flow of information about environmental innovations (Stoyles, 1992). This is to imply that it can hinder or affect the adoption.

Economic factors may also be a contributor to farmer's ability to adopt a given technology, innovation or even farming techniques. This is because the decision to adopt new technology is analogous to an investment decision. The decision may involve

substantial initial fixed costs, while the benefits accrue over time. The initial costs may include the purchase of new equipment and of learning the best techniques for managing the technology on the farm. A producer may perceive the non-monetary costs of change to be very high. Thus, an individual's assessment of the new technology is subjective and may change over time as a farmer learns more about the technology from neighbours who have already adopted it, the extension service, or the media. When a technology first becomes available, uncertainty about its performance under local conditions is often high. Significant adaptation of the technology may be necessary before it performs well in the local production environment. Over time, as some farmers in an area adopt and gain experience with the new technology, the uncertainty and cost of adoption fall. Some farmers may fail to adopt the technology altogether, if they determine that it simply does not perform well under their resource conditions, or if the size or type of their farm operation is not suited to the technology in question (Griliches, 1957). However, the current economic theory of adoption is based on the assumption that the potential adopter makes a choice based on the maximization of expected utility subject to prices, policies, personal characteristics, and natural resource assets. A discrete choice of technology is made that leads to a level of input use and profit (www.ers.usda.gov/Publications).

The big challenge that faces the researchers and the extension worker is to recognize that, the problem with modern agricultural science is that farming technologies are developed and finalized before farmers get to see them. The technologies are only introduced to them at a later stage. If new technologies are appropriate and fit a particular farmer's conditions or needs, then stand a good chance of being adopted. But if they do not fit, and if farmers are unable to make changes, then they have only the one choice. They have to adapt to the technology, or reject it entirely.

Research by King & Rollins (1995) indicated that change agent's attitude, participant's economic concerns, and technical information influenced the adoption of an agricultural innovation by participants who received information from a training programme. Another study investigated factors that influence the adoption of practice and the participation in educational outreach of integrated pest management (IPM) in Utah. The study showed that characteristics that influenced farmers and producers to adopt practices or participate in educational programmes included major sources of income (on-farm or off-farm), farm size, market destination (in-state or out-of-state), diversity of crop produced, past intensity of IPM outreach efforts, and development of commodity organizations (Alston & Reding, 1998).

2.3.5. Common Framework of Agricultural Extension

For a long time, researchers believed that producers were hostile to innovations that they, in any case considered them to be their exclusive domain and forgot the fact that farmers are constantly innovating, in order to adapt to new climatic, agronomic and economic conditions. The researchers had therefore, sidelined farmers from the research process, in the belief that they knew what producers needed but the result to this kind of assumption have been disastrous. This is because the solutions offered to farmers for varieties, techniques or organizations have often turned out to be poorly suited or difficult to implement (Spore, 2008). Changing this attitude has taken a lot of time. A first step has been the recognition of better knowledge of farmers' economic and social circumstances under which they operate. Nevertheless this understanding alone is not enough as it will not identify all the factors that go towards making an innovation both relevant and useful.

This kind of situation has taken a long time to be addressed possibly because previous assumptions that researchers and scientists had regarding the farmers and could probably have contributed to the poor or slow rate of adoption of agricultural technologies, innovations or even the agricultural messages.

However, in the 1980s, and later in the 1990s, the stakeholders in the agricultural sectors felt that there was need to work together. This is because it has been recognized

that researchers need farmers to make effective inroads against rural poverty and achieve increase in output. Farmers also need researchers, public bodies and increasingly private sector, in order to improve their innovations integrate smoothly into wider context, especially economical and environmental ones which they often poorly understand (Spore, 2008; Neuchatel, 2007a). In doing, this, it looks like the definition of agricultural extension will need to be expanded to accommodate more than what it has always been assumed to be.

2.3.6. Extension Services

Broadly speaking, agricultural extension services cannot be regarded as one single service that an individual or organisation can give and assume it is complete. Indeed, the extension services consist of a range of services, ranging from information, technologies, innovations and to inputs provision, among others. When viewed from this perspective, it clearly shows that there are many players in the service; some offer the services directly and others indirectly, some doing it consciously, aware that they are offering extension service, while others unconsciously unaware that they are offering the service. It is with this in mind that one could think of it as being multi-sectoral besides being multidisciplinary. It should be noted that whether extension is effective in bringing about real improvements in agricultural production and land use systems depends also on decisions made by users to effect changes at local, farm, and even field level and on a favourable policy environment (Neutachel, 2007b).

Good quality services are therefore, a pre-condition for effectiveness of extension service but quality alone cannot guarantee effectiveness. Efficiency requires extension services to achieve the objectives of quality and utility at reasonable cost. Many current extension systems do not encourage efficiency (Neutachel 2007b). Seen from this broad perspective could possibly lead one to deduce some of the reasons as to why agricultural extension has performed below expectation in Kenya, especially when the Government was the sole provider of the service. Such reason would include the multi-sectoral aspect of the service, farmers' role and even the extension officer's commitment. Moreover, it could be upon this realization that the Kenya Government in developing the National Agricultural Extension Policy saw the need to involve other Ministries and stakeholders who, in one way or another, were involved in extension service provision.

Kenya's extension services can be said to be offered in several ways, namely; directly by the Government or indirectly by other knowledgeable personnel, like other farmers, or graduates of agricultural sciences who are not formally directly involved in extension services as full time employees and by non-governmental organisations. Indirect extension service or what one could refer to as informal extension service has not been well documented. It is sometimes assumed to be ineffective or nonexistence. This assumption has probably led the Government not to give extension service what one could call holistic approach (MoARD, 2008). Ignoring or denying the existence of this

informal extension service may not solve some of the challenges that the extension service faces. The services are sometimes through the field days organized by various organizations or even through public “baraza”, where certain issues are addressed, through provision of agricultural inputs while others do it by offering casual advises as people interact in various forum.

2.3.6.1 Extension Service Providers

In the past, provision of extension service has been the sole responsibility of the Government. This scenario has, however, changed. Besides the Government, extension service is now being provided by other stakeholders in the Agricultural Sector and other potential service providers have also been identified. A study commissioned by Strategy for Revitalization of Agriculture (SRA) conducted by a team of three consultants has identified at least 12 extension service providers. The study observed that from the main systems of view of who drives, manages and finances the delivery of extension service could be classified into; purely public sector, purely private sector or public-private partnership (MoARD, 2008). The study showed that these delivery models are currently being used in Kenya but at varying levels of magnitude. The identified service deliverer include; Independent Expert Service Providers(IESP), Professional Associations, Product Marketing Organizations, Product buying Company, Inputs Suppliers, Farmer Associations, Community Based Organizations, Fund Manager Institutions,

Cooperative Societies, Training Institutions (Colleges, Universities) and Research Institutions (MoARD, 2008).

Though, this report captures the aspect of retired civil servants under the area of independent expert service provider as extension service provider, it does not indicate from what field they retired from neither does it indicate the influence these persons have on the farming community in as far as extension service is concerned or what service they provide, noting that extension services are many and varied. Nevertheless, the study indicated that the pool of IESP has been increasing in the recent years. The study fails to recognize the RAEs as specialized farmers and potential capacity builders, whose practices in farming could be demonstrating the benefits accrued from adopting the extension messages.

A study by Gem Argwings-Kodhek (2005), indicates that the extension service at the divisional, district, provincial and headquarter levels is choked with excess staff it cannot afford to fund to do useful work. Understanding the rationale and constraints behind this de facto policy, and finding a way around it, is one of the major policy analytical tasks in Kenyan agriculture today. The author further recommends that beyond staff rationalization, analyses that inform the ministry of Agriculture Marketing and Rural Development about potential private sector and civil society contributions to extension are needed. This study tries to address this aspect.

2.4. Approaches Used to Offer Extension Services

Agricultural extension in Kenya dates back as early as 1900s (Gautam, 2000). Over the years, the provision of agricultural extension service was the monopoly of the Government until some time ago (GoK, 2001). However, the reforms and policy changes which have been sweeping the World have not spared Kenya, even in this area of provision of extension services. Failure, inadequate or poor provision of extension services by the Government may have prompted other stakeholders to undertake the task of providing extension service. Several approaches have been tried including individual visits, group methods, unified extension, farm management, integrated management and specified commodity extension programmes (Gautam, 2000). Nevertheless, the traditional system was highly successful in the dissemination of hybrid maize technology (Johnson, Byergo, Fleuret, Simmons, Wisserman, 1980). Though, many approaches have been used, not a single one can be said to be perfect or good. Indeed, one is tempted to think that many of these are trial and error.

Several methods have been used to provide extension services to farmers (Adams, 1982). Rogers (1987) mentions four methods of teaching extension, however, there is no fixed method, approach or formula for providing extension services. Some of the methods have been successful in one locality but failed in another. For example, farm management approach was used during the hybrid maize extension exercise which was very successful in Kitale (Johnson *et al*, 1980). The most frequently used method is

where the extension worker would visit the farmer in his/her farm and offer his/ her services to the client – the farmer. The following is an outline of extension approaches variously used:

2.4.1 Conventional Type of Extension Services

This is a model which was established during the 1950s by many developing countries (Wanga and Omollo 2010). It is a trainer centred or what can be referred to as top-bottom kind of method (Adams, 1982). The Extension worker (trainer) teaches the farmers (learners) and the farmers are expected to learn. The trainer is, therefore, responsible for the training. He/she can control the learning process and even stay outside the learning process, if it becomes necessary. On the other hand the learners are given knowledge and skills, which are expected to help them change their behaviour. More, often than not, the resources are supplied by the trainer.

A good example of this approach is that of an extension worker who visits a farmer in his farm and directs the farmer on what he/she should do and ignores the farmer's technologies. Another example is that which may be found in a training situation whereby the extension worker takes the role of a teacher and not of a facilitator. The extension worker assumes that the farmers know nothing and hence his /her role is to impart knowledge and skills to the farmer.

2.4.2 Participatory Rural Appraisal

Freire (1974) in South America designed participatory rural appraisal. In this approach, the farmers were to identify their needs and decide how they would want their needs met. After its' success in South America, the same technique was tried here in Kenya as a pilot project in several districts through the recommendation and support of the World Bank. In implementing this, the Ministry of Agriculture and Rural Development was heavily involved together with the Ministry of Finance.

This method is designed to help people look at their present situation, analyze it and act on it for positive change, for personal and group growth, where growth implies change and change will affect any balance of power, to bring knowledge of the few into the hands of poor farmers for their use and finally to help people respect their own knowledge and understanding. This can cause a shift in the balance of power (Stewart, 1998).

It is important to note that change is threatening for many especially those who benefit from the status quo. One of the principles of participation is to allow people to speak, yet, technical training programmes often do not encourage people to speak about what is deep inside them and most important to them (Stewart, 1998).

2.4.3 Training and Visit Method

Training and Visit (T&V) was practiced in Kenya under the National Extension Project phase I & II. It was designed by Benor and Baxter (1984) and after the programme success elsewhere, it was highly recommended by the World Bank to be tried in Kenya. It was introduced as a pilot project in two districts in Kenya in 1982. The two pilot districts were Kericho and Nandi. The failure of the conventional type of extension service to deliver the services to the farmers, despite bloated workers in the public sector, lack of relevant facilities to deliver the services, low morale of the workers and pressure from the donors, are some of the reasons which necessitated T&V to be introduced (Moris, 1991). By 1983 it was expanded to cover over 90% of Kenya's arable land (Gautam, 2000). T and V as it was commonly known, was introduced with the intent of providing competent, well informed village level extension workers, who would visit the farmers frequently and regularly with relevant technical messages and bring farmers' problems to research (Benor & Baxter, 1984).

The programme involved training of the Frontline Extension Worker (FEW) by the subject matter specialist for one week and then the extension workers were expected to go to the field, train the contact farmer and help him or her solve her problems in the farm. The neighbouring farmers were in return expected to learn from the contact farmer as the said farmer was to demonstrate what was learnt for the extensionist. After

the training, FEW would then visit the contact farmer who would also have invited his/her neighbours for the lessons from the extensionist.

This method was designed with the aim of building a professional extension service that is capable of assisting farmers in raising production, increasing incomes, and providing appropriate support of agricultural development (Benor & Baxter, 1984). The programme has features which include professionalism, concentration of effort, time bound work, field and farmer orientation, regular and continuous training and close link with the research. However, the performance of T& V has been very controversial. It has been found to be very expensive and not cost effective (Gautam, 2000). This meant that the returns realized from the service could not be covered by what was spent in implementing the programme. The controversy centres on the returns to the high level investments by the borrower countries (from the World Bank) in the T& V system and hence on its' impact on agricultural production (Purcell & Anderson, 1997).

According to the evaluation done by Gautam (2000), the overall assessment of this programme in Kenya was that the method was found to be ineffective and inefficient in delivering the needed services to farmers. The probable reason for not delivering the service could also be possibly because the Government may not have addressed the root problem ailing the extension service but took it because it seemed to have worked elsewhere and the donor community felt it would work also in Kenya. However, though

this method failed, a distinction needs to be made between the relevance of the extension services per se and the relevance of the project design. Although T&V failed in Kenya, it should be noted that the rationale for providing extension services is still relevant when other approaches which work are used (Gautam, 2000). Olusi, 2001, concurs with the same sentiment that the fact that farmers seek for extension service implies that the service is still very relevant.

2.4.4 Non-Formal Training Approach

This type of extension method involves the training of farmers. The farmers are taken to undertake courses for a number of days. The training can either be residential or for the day. In the past, the farmers would be taken to Farmers Training Centres.

The course can either be tailor made, geared towards a specific crop or a general one. Seminars are also organised for farmers as a form of training. Some of the topics covered during such training include; health, nutrition, agronomy, animal husbandry and family planning (Adams, 1982). In the recent years, the farmers training centres have not been very effective in. The poor performance by the Farmers Training Centres can be attributed to poor management and inadequate funding.

2.4.5 Other Approaches Used in Extension

Besides what has been briefly covered above, it is important to note that many agricultural concepts, approaches and models had been proposed and implemented in Kenya in an effort to address the low impact of extension and low technological adoption problems in order to achieve the agricultural development objectives (Wanga & Omolo, 2010). Attempts had been made also to classify these approaches and concepts into First generation models, Second-generation models and Third generation models (Wanga & Omolo, 2010). This attempt has led to extension being described as a topic that generates controversy and passion. These other approaches included; university based agricultural extension system, commodity development and production system, integrated agricultural development system, farming systems research and development system, farmer first extension system, beyond farmer first extension system, trickle down approach, Rapid Rural Appraisal (RRA), Farming systems approach and Research (FSA/AR), and involvement of other players in funding the extension service among others (Moris, 1991).

After the failure of T&V approach, other approaches have come up. The current one is National Agriculture and Livestock Extension Project (NALEP). This has further been scaled down to National Agriculture Sector Extension Programme (NASEP).

National Agriculture and Livestock Extension Programme is an implementation of framework for providing and facilitating extension service within the Ministry of

Agriculture and Rural Development (MoARD) and the Ministry of Livestock Development and Fisheries (MoLDF). This extension programme was supported by Swedish International Development Agency (Kabutha, 2003).

The goal of this programme was to contribute to poverty reduction through demand - driven extension services. This programme uses Participatory Rural Appraisal approach to initiate community mobilization and to identify community needs and priorities (Kabutha, 2003). The methodology was adopted from the NALEP's predecessor, the National Soil and Water Conservation Programme (NSWCP), which was also an extension approach dealing with soil conservation.

2.5 Agricultural Extension Teaching Methods

Studies have identified four methods of teaching extension. These include: discovery, expository, application and participatory (Rogers, 1987) depending on their emphasis during their application. In discovery methods, the learners find out for themselves the new knowledge and understanding they need; they discover new ways of doing things, they develop skills of their own. The role of the teacher in this method is to facilitate the learners to learn.

In expository methods, the teacher or the presenter tells the learners something or shows them something during the teaching. Expository method consists of presentation made

by the teacher/ trainer. The learners remain inactive and passive. The student's part is just to listen and watch.

In application methods, the teacher/ facilitator would want to test and know whether the learners have indeed learnt. Tests are thus set to ascertain whether the learning has taken place or not. The aim of these tests is to see whether the learners will see new relationships or they will come to understand things more as they try to use their new knowledge or skill (Rogers, 1987).

In participatory method, the learners share their knowledge, experiences and views. They work together to do something as a joint enterprise; they become a learning co-operative. The teacher's/ facilitator's role may be to set the task or join the group as a member and also share his/her knowledge and experiences (Rogers, 1987).

There are however, different approaches which have been used when applying these methods. Studies have been done on some of these approaches such as Training and Visit (T&V) and Participatory Rural Appraisal (PRA), among others. The research indicates that the approaches have mainly focused on the efficacy of the methods and how effective they are in achieving the desired objectives. However, the methods used do not seem to provide the ways by which impact of extension can be measured.

It is worth noting that no single method is perfect and hence several methods are at times combined to give effective extension service. The extension worker, as the user of these methods, is the one to select the method which is likely to bring a lasting impact. It can therefore be deduced that the performance of the extension worker plays a key role in any extension influence as it is him or her who would decide on what method to use to pass on the extension information effectively.

2.6 Performance of Extension Worker/RAE

Deutsch & Gerard, (1955) described two psychological needs that lead humans to conform to the expectations of others. These include, our need to be right (informational social influence), and our need to be liked (normative social influence). Informational influence is an influence to accept information from another as evidence about reality. Informational influence comes into play when people are uncertain, either because stimuli are intrinsically ambiguous or because there is social disagreement. Normative influence is an influence to conform to the positive expectations of others. In terms of Kelman's (1958) typology, normative influence leads to public compliance, whereas informational influence leads to private acceptance. Agricultural extension information is in essence expected to influence the recipient so as to conform to the giver's expectation. The performance of the extension agents will be determined by, among others: their level of training, agricultural knowledge, provision of service to farmers,

the number of farmers under their areas of influence, and the kinds of technologies introduced (Benor, 1984).

According to Benor & Baxter (1984), the way the Extension Worker performs his/her service will determine whether he/ she makes an influence in form of impact or not. Kelman (1958) stated that social influence occurs when an individual's thoughts or actions are affected by other people and takes many forms. Social influence can be seen in conformity, socialization, peer pressure, obedience, leadership, persuasion, sales, and marketing. These appear to be qualities that an individual needs to possess in order to influence others. When one considers an extensionist from social worker's perspective, then these qualities need to be embedded in him/her to influence his clients. This notwithstanding, there are many factors that are likely to affect the overall performance of the extension worker which determine whether the extension worker will cause what has been referred to as informational social influence or normative social influence. In this section a few of these are briefly explained. Though the RAEs are not employed by public sector per se, their direct or indirect provision of their services will also be affected by these factors. These include knowledgeability, communication skills, leadership ability, public relations skills and area of coverage, just to mention but a few.

2.6.1.1 Knowledgeability

Professional extension, tuned to the needs of the farmers and country's capabilities is a most powerful tool to attain an early impact on productivity and farmers' incomes and therefore, to improve the quality of life of millions of people on the land (Benor, *et al*, 1984). To be able to offer professional extension, therefore, one must have undergone a training which will enable him/her acquire the appropriate technical skills so as to offer the services needed (Adams, 1982). It is also necessary for an extension official to be well versed with knowledge in more than one area of specialization as he/she may be required to teach in more than one discipline. Having the necessary information is a prerequisite for an extension worker to cause what has been referred to as informational influence (Morton & Gerard, 1955). Those perceived as experts may exert social influence as a result of their perceived expertise. This involves credibility, a form of social influence from which one draws upon the notion of trust. People believe an individual to be credible for a variety of reasons, such as perceived experience and attractiveness, among other attributes. Additionally, pressure to maintain one's reputation and not be viewed as fringe may increase the tendency to agree with the group, known as groupthink (Kelman, 1958). Extension workers could be considered as experts in their own field of specialization. It could be argued out that, once one has retired it does not make one lose all his/her knowledge or credibility in one's area of expertise.

In essence, the RAE is a professionally trained extension worker but by the virtue of retirement, is not in full time employment. He/she has an unofficial/ informal extension message for the farmers and indeed, the community which in he/she lives. In addition, there is a tendency for the community to look up to the professionals for advice. This knowledge may be measured by the number of clients who do not only listen to him/her but have also seen the actual performance of the RAEs and hence applied the knowledge in their day to day activities like farming.

2.6.1.2 Communication Skills

For the agricultural information to make any meaningful influence it has to be communicated to individuals and in this case the farmer. The extension worker has no option but to be an effective communicator (Ban & Hawkins, 1992). It should be noted that, extension is the conscious effort to use communication of information to help people form sound opinion and make good decisions. This is to say, unless there is effective communication, the message or information being delivered to the farmers cannot or may not have any impact. The communication skill may be difficult to evaluate but the number of clients implementing what has been communicated to them may be a good measure or indicator that there is some impact. RAE, though an extension worker has to be a good communicator if he/she is to cause any influence either directly or indirectly.

2.6.1.3 Leadership Skills

For an extension worker to be effective, he/she needs to have leadership qualities. This is because a leader is an influencer. Leaders have been known through the influence they command among their followers. It has been noted that, the individual's self-esteem and perceived Persona is the critical factor in determining the amount of influence one exerts in a given situation (Kelman, 1958). The extensionist has a task to influence the farmers to follow his/her recommendations or message. Moris (1991) considers the extension service as a promotion and the extension worker as a promoter of the service for farmers to buy it. A good leader will convince others to follow or buy his/her ideas. He/ she is therefore, expected to give good guidance to the farmers and help them make, not only the right but also the appropriate decisions regarding their farming activities.

2.6.2 Benefits of Extension Service

Most of the studies done by agricultural scholars, by Benor & Baxter, 1984, Gerrard & Meerman, (2001), Scoones & Thompson, (2009) have mainly focused on the benefits of extension services to the end users. It is from the results of the end user, that is, the farmer and other stakeholders, upon which extension benefits have been measured or their influence has been evaluated or judged. Generally, extension has been believed to contribute towards increased agricultural production increased acreage of area under

certain products, adoption of new farming technologies, increased knowledge and skill of the user, starting and keeping of new enterprises and behavioural change, to mention but a few (Gerard & Meerman, 2001).

a) Increase in Agricultural Productivity

Studies carried out in India, Zanzibar, and even in Kenya, (Benor, Harrison and Baxter, 1984; Gerard & Meerman, 2001) have tended to associate increased agricultural productivity to a large extent, to extension service or application of the extension knowledge, besides other factors such as favourable weather, availability of inputs, good husbandry practices, good infrastructure, and adoption of new technologies. Different extension approaches have been used to achieve this. Studies have shown that extension approaches such as; Training and Visit (T&V), Participatory Rural Appraisal (PRA) and National Agricultural Livestock Extension Programme (NALEP), have been tried and have mainly focused on production (Benor & Baxter, 1984; Freire, 1974).

The development of farmers schools in South East Asia is the best known example where the impact of extension has been mainly evaluated by measuring the production output. The studies done showed that mobilizing farmers effectively in setting them for action can lead to developing feasible solutions in the farming community (Gerard & Meerman, 2001). Other studies carried out in Zanzibar by use of participatory approach

resulted in positive results in agricultural production (Gerard & Meerman, 2001). The approach which was used was Integrated Pest Management (IPM) in paddy field.

In the Poverty Reduction Strategy Paper, Kenya Government underscores the importance of education and its impact on agricultural productivity on a well educated and healthy person. These policy documents, however, fail to address the issue of what role an ex-extensionist plays if he/she practices the principles learnt as a farmer and not as an agent. Moreover, the paper seem to consider or portray the extension worker as just a service provider whose service ends up with the farmer and not as an individual who can be that farmer while in or out of active employment.

b) Adoption of New Technologies

Adoption of new technologies has also been indicated as a benefit derived from extension services. It could also be considered as a tangible evidence of positive influence. This is because adoption and application of new technology may contribute to increased production. It is upon adoption of new technologies that one can measure the extension adoption rate by the farmers (Gerard & Meerman, 2001). Nevertheless, adoption of new technology does not necessarily lead to increased production output. This is because increased production is a factor of many functions, adoption of new technique being one of the factors. Due to its' linkage with research activities, extension workers have always been viewed by farmers as channels through which new farming technologies are passed to them. The extension officer is therefore, viewed by the

farmer, not only as a messenger of agricultural information but also a technician of farming technologies. He/she is therefore, the link between the farmer and the technology developers. Literature, therefore, notes that if the extension worker is not provided with the appropriate knowledge and expertise he has little to offer to farmers for adoption (Gerard & Meerman, 2001). Suffice it to say, if the extension officers have no new technologies, then, the farmers have nothing to learn from them. It has also been documented that, in participatory programmes, extension workers and researchers should become facilitators of the process of changes while the farmers become the driving force in generating technologies and skills (Gerard & Meerman, 2001). RAEs as ex-extension workers can influence the adoption rate by farmers through, not only the teaching but by also applying what they learnt in their farming activities. As other farmers see the results of the technologies, they are likely to copy the same and apply them in their farms.

c) Starting/Keeping of Enterprises

Success of extension service has at times been gauged or judged by providers by means of how farmers or consumers have started keeping or raising new enterprises which they previously did not keep. It is assumed that the fact that farmers have started raising or keeping these new enterprises is a positive response to the extension messages brought about by the extension workers, whose part of package is to bring to the farmers new products. Proponents of this school of thought therefore, view or focus on

embracing and keeping of new agricultural enterprises as a product or measure of the success of extension service. However, they do not seem to consider application of this information when the ex-extensionist applies the information at individual level but would rather be considered as a farmer and would not attribute it to his/her training.

d) Increased Knowledge, Skill and Behavioural Change

Extension service creates awareness in the farming community and in so doing it increases the farmers' knowledge. Adams (1982) notes, that extension service is assistance to farmers which helps them to identify and analyse their production problems and become aware of the opportunities for improvement. This school of thought does not, however, indicate the exact or what role an informed extensionist farmer can play in the society. It has however, been documented that, farmers learn more from colleagues than others and those farmers who are able and willing to help their colleagues solve their problems, become opinion leaders in their groups (Ban & Hawkins, 1992). Advocates of this school of thought feel that this brings socio- cultural impact or influence and enables people change in their behaviour in the way they do things and how they see women. This leads to change in the status of women and other farmers.

e) Provision of Leadership and Guidance

Besides being workers, the extension workers, are considered and perceived as leaders. Leaders are known to influence people. Creating vision and direction towards the future of an organization is one of the primary responsibilities of leadership (Finzel, 1994). Leaders therefore, may influence many things that the community does, including the farming activities (Spore, 2005,). This is because locals have been known to cause and bring more lasting changes than strangers (Stewart, 1998). While this may be true in some cases, it does not always follow that locals can bring about desired changes in the community unless they have that capability of influencing the local community at large. Moreover, good leadership may be a prerequisite for this to happen, otherwise lack of good leadership would result to status quo being maintained.

2.7 Revitalization of Agriculture

It has been observed that the performance of the agriculture sector has been on the downward trend especially, in the last nearly three decades that is from 1970s up to around 2004. To arrest this situation, the government has tried to devise mechanisms with the hope of reviving the sector. These mechanisms can be put into three approaches; developing a National Agriculture Extension Policy (NAEP), Strategy for Revitalizing Agriculture (2004-2014), and developing a Strategic Plan (2009-2014) for the Ministry of Agriculture and Rural Development (MoARD). A brief explanation of

the history and challenges of agricultural extension is given before discussing of each of these approaches given in the following paragraphs.

2.7.1 The History and Challenges of Agricultural Extension in Kenya

The history of agricultural extension in Kenya is as old as the introduction of cash crops, food crop farming and livestock farming, which farmers practiced even before the missionaries came to East Africa, leave alone the arrival of colonialists in Kenya in 1950s. The main variations and differences were in the methodologies; the carriers and the actual transfer of the extension messages to the farming communities, the management and administration of the systems (Wanga & Omolo, 2010).

During the colonial days, the colonial administrators did the management and administration of extension by setting up agricultural offices up to the administrative divisional levels. The officers were employed to enforce both administrative and technical policies of Ministry of Agriculture. The Ministry of Agriculture was put in place to oversee the agricultural development thereby enforcing agricultural extension service in the country. The employment of agricultural instructors came into being under the Agriculture department. The colonial government extension service was characterized by coercion to get the farmers to implement the agricultural practices, which they were not used to doing. This created negative attitude although the practices were beneficial but the public never appreciated the way they were being made to practice the innovations. This stigma has remained to date, especially in the Kenyan youth.

Upon attainment of her independence, Kenya's extension service took a new turn and started being restructured to provide the needed support to both the small and large farmers. The country's farms continued to get more parceled and the small farms became a more dominant feature of Kenyan agriculture. Subdividing of farms into small parcels meant increase in the number of small scale farmers who in essence would require extension service. By this time, agricultural extension work was now required more than ever before. This was the period when the need for more staff and better-trained and well-equipped extension service was required to undertake the planned agricultural development in the country. The donors came in to assist in preparing projects and programmes within the Ministry of Agriculture, to support the farmers' initiatives. The period was characterized by intensification of extension services. The need for extension facilitation in terms of infrastructure, extension training, resources allocation and extension staff deployment criteria became necessary.

Provision of the agricultural extension service was the sole responsibility of the Government for many years and was mainly provided by the Ministry of Agriculture (MoARD, 2001a). The methodologies, approaches and strategies used to provide the said services have been dynamic and have undergone a lot of transformation just like the parent ministry which was empowered to carry out the task has. For example, the Ministry of Agriculture and Rural Development has not only changed its' name but has at times been split into two or more ministries. Many agricultural concepts, approaches

and models have been proposed and implemented in Kenya in an effort to address the low impact of extension and low technological adoption problems in order to achieve the agricultural development objectives. Some of these changes in approaches, models and strategies have at times not yielded positive impact or influence while, others have. The structures of extension services within the departments have been dynamic where the branches, sections and units within the public extension services have continued to grow and expand in their strengths and capacities to meet the changing demands in technological transfer mechanisms and management. Basically ministries dealing with extension were known to be from the former Ministry of Agriculture and Animal Husbandry. These were Ministry of Livestock and Fisheries, Ministry of Co-operatives and Marketing and the Ministry of Agriculture itself. The structural changes of these ministries concerned with extension have been more political than capacity building for extension services (Wanga & Omolo, 2010).

In as far as policy issues and training of staff are concerned; the Government of Kenya together with the parent ministries undertook these responsibilities. The Government has been funding for provision of extension service for quite some time, right from the colonial era and even during postcolonial era. In the recent past, other non-governmental organizations have developed keen interest in extension services and are involved in funding the service depending on the stakeholders' interest.

Provision of extension services have always been faced with a lot of challenges. Top among the challenges include funding (Neuchatel, 2007b). Funding extension service is an expensive exercise as, especially for a country like Kenya which is a developing country and has limited resources. Lack of funds would imply that service delivery will be affected and hence, its quality. It is possibly because of this funding element which contributed to the deterioration of the extension service provision because the staff, besides having low morale, they lacked the basic facilities to enable them to do their extension duties.

The rapid technological changes and increase in the level of knowledge could also be considered as another challenge (Spore, 2008). Today, many of agricultural information, innovations and technologies which in the past were the preserve for only a few are available in different forms and at different times. Moreover, unlike the past days where majority of the farmers were illiterate, many farmers are now enlightened, meaning that the extension personnel have to be more informed if they have to make any meaningful influence in the farmers' life. This situation implies that training of extension has to be reviewed and transformed to meet the demand of the enlightened community.

Managing the extension programmes and supervision of the staff who at times are demoralized is also a major challenge facing the extension service (Morris, 1991).

Facilities and inputs required by staff are at times not available. Lack of such items make staff feel inadequate in delivering the service especially, when they see other service providers doing better than they are.

Globalization is another challenge which also affects extension service. Liberalization and privatization of extension initiatives dawned on Kenya when the country saw conditions being placed on her for good governance (Neuchatel, 2007a). Some of these included restructuring government operations to address only the core functions and surrender the other non-core functions to private organizations.

In the late 1980's and early 1990's the World Bank advocated "Structural Adjustment Program" (Commander, 1989). In implementing the programme in Kenya, the Government requested civil servants to opt for early retirement. A few of those who retired were employees working as Extension Workers in the Ministry of Agriculture and Ministry of Livestock Development and Fisheries. The exercise indirectly increased the importance of informal sector by influencing the labour market. This is because farming is left as one of the outlets for informal employment.

It will therefore, be unwise for us to ignore the social impact brought about by the Structural Adjustment Programme (SAP). This is particularly so, because of the imminent public retrenchment of some of the employees, who are still relatively young.

The fact that they were relatively young at retirement meant that they would be able to continue being productive, if properly re-trained, to benefit from self employment opportunities that are available in the agricultural and informal sectors of the economy (Commander, 1989). This notwithstanding, the ex-extension workers were better placed in this kind of programme (retrenchment) as they had an advantage of having already undergone some formal training. It is also worthwhile noting that Agricultural, private and informal sectors are about the only occupational areas left with some employment potential for the Kenyan youth. Furthermore, there has also been less absorption into the Government, of the new graduates of agricultural sciences. The need to develop the informal sector is therefore, crucial to Kenya. This is particularly necessary because of the high level of unemployment (GoK, 1992).

The Kenyan population, especially the youth, have been known to have a negative attitude towards agriculture and majority of them come to it only if there is no other alternative (GoK, 1992), possibly because of the foresaid reason on how the colonist handled agricultural matters. This attitude needs to be changed because agriculture is not only the mainstay of the economy but also a provider of employment, food and raw materials for agro- based industries, as well as being a big foreign exchange earner (GoK, 1992).

Some of the agricultural graduates may have taken up farming as a business and hence benefited by practicing what they have trained in and may not need a lot of training. This would mean that the community would see them as living examples and hence increase the adoption rate for agricultural technologies through social influence. On the other hand, others may not venture into farming for the fear of failing or due to lack of initial capital or because of the risks involved, despite the fact that they are trained professionally. This may reflect negatively on the adoption rate and may also affect the young who may be interested in taking agriculture as a profession. Moreover, the ex-extensionist and unemployed graduates in agriculture may be offering extension services either directly or indirectly in the communities in which they live (GoK, 2001a).

After retiring or after training, the agriculture graduates become neighbours to the farmer by living in the neighbourhood. Besides being farmers, the Retired, Retrenched, and Unemployed Ex-extensionists (RAEs) have the advantage of technical knowhow and a wide range of experience in their respective fields of training in Agricultural Sciences and could have the potential to influence their peers and neighbours. Moreover the RAEs were better placed to be identified as leaders in the Agricultural sector if their farming performance was good and impressive to the community. The retirees could also be considered as experts in the field of agriculture after having undergone formal

training in agriculture. Depending on their performance, this professional training could make the retirees cause what has been referred to as informational influence.

The Retired Agricultural Ex-extensionists would therefore, need not only use new farming practices but also, demonstrate that what they have been teaching is workable and can be applied for better results. This is because Agriculture is becoming more specialized and complex (Benor *et al*, 1984). The RAEs having undergone some training would be instrumental in using the new farming techniques which they learnt and also get from their counter parts in the service. This being the case, the extension workers will need to be constantly trained to cope with such complexities. Furthermore, the training programme will help one build a vision, as established by the participants. A vision helps one to be rooted and grounded in a set of principles and values (Stewart, 1998). As the RAEs join the farming community, they become part of the community and have some potential influence which can be useful in the mobilization process to solve problems facing farmers. Community mobilization is a key element in any smallholder development and need to be considered critically (MoARD, 2004).

2.7.2 National Agriculture and Livestock Extension Policy (NALEP)

For a long time, provision of the extension service has enjoyed monopoly by the Kenya Government (MoARD, 2001a). However, with the reforms and policy changes sweeping across the World, Kenya was not spared by this wind of change and as result

of this, the effect of liberalization on the public sector, staff retrenchment has impacted heavily on the service that the country was providing. These changes have rendered the traditional methods of service delivery unsustainable and hence, made changes inevitable. The Government has therefore, developed a National Agricultural Extension Policy. This policy was prepared to guide and harmonize management and delivery of extension services in the country, with the objective to accommodate the global changes and improve service delivery. The policy supports the development of pluralistic and demand-driven agricultural extension services and calling for participatory planning and implementation of agricultural projects and programmes as well as recommending changes in resource management so as to involve the relevant stakeholders or interested parties (MoARD, 2001a). Despite this milestone in making this policy, issues have come up which may have not been addressed by the said policy. The policy and the Implementation Framework (IF) have since then been criticized on the grounds that they lack clarity on who is responsible for specific aspects particularly for initiating and coordinating linkages with other stakeholders (Ministry of Agriculture, Republic of Kenya, 2005c). The policy also is ambiguous on the specific roles of various actors in extension provision and particularly fails to specify how the private sector would be encouraged to play a stronger role in extension.

2.7.3 Strategy for Revitalizing Agriculture (SRA)

This is a National Policy document developed to steer development in the agriculture sector in Kenya for the period up to 2014. It was prepared by three key ministries, which in one way or another are involved in the agriculture sector. These ministries include, Ministry of Agriculture and Rural Development, Ministry of Livestock and Fisheries Development, and Ministry of Cooperative and Marketing.

The Strategy for Revitalizing Agriculture (SRA) is the Agriculture Sector Ministries' response towards the implementation of the Economic Recovery Strategy (ERS). Strategy for Revitalizing Agriculture proposes far-reaching policies and institutional changes that are believed to be necessary to reverse the declining trend witnessed in agriculture in the last two or so decades and position it competitively on global arena by introducing new approaches based on paradigm shift (GoK, 2004). This meant that the Government in its planning stage had to review its current policies on the production processes in the agriculture sector and not to stick to policies which were not delivering the expected services. To achieve this, the SRA has identified six fast-track interventions. These include, reviewing and harmonising the legal, regulatory and institutional framework; restructuring and privatization of non-core functions of parastatals and ministries; improvement of the delivery of research, extension and advisory support services; improving access to quality inputs and financial services;

improving access to both domestic and external markets; and formulating food security policy programmes.

The SRA has hence, tried to address how these interventions can effectively be implemented, especially after identifying the factors that have been affecting the agriculture sector. However, while the SRA document attempts to address issues affecting the extension service, farmers and other stakeholders, it does not seem to recognise or address the way it can incorporate other trained agricultural extension workers such as, the RAEs as catalyst in the process. This is despite the fact that the ministry admits that it has limited technical staff (MoARD, 2005). If the RAEs can effectively be utilised, they may assist in reviving the sector. This is because RAEs can be considered as a special group not only because they are farmers but also as potential capacity builders in the community in which they live (Stewart, 1998). As the document stands now, it has no room for the RAEs, even though it has identified that one of the constraints affecting the agriculture sector was research -extension farmer -linkage.

Unlike other farmers, RAEs are trained extension/research workers and are able to specifically identify specific problems facing other farmers and they are likely to have some solutions to those problems. In addition, the RAEs can quickly identify with other farmers, now that they are practicing farming themselves and may be more committed to handling their problems than the employed extension workers, noting that these

workers, are among other things, are likely to be outsiders as sent there to offer services and may not know the magnitude of the problem (Chambers, 1993). Moreover, they are also able to educate and enlighten the community on the government policies regarding farming activities. Furthermore, the government extension staff in the field, have progressively been declining over the last two decades. Recognising the role that RAEs can play in the agriculture sector would, therefore, be a milestone in helping the sector regain her lost glory.

2.7.4 Strategic Plan (2009-2014)

The strategic Plan for the Ministry of Agriculture and Rural Development (2009-2014) sets goals and strategies that the ministry will pursue for the specified period. Indeed, it is a commitment by the ministry to improve service delivery to the stakeholders in line with the national aspirations as articulated in the Economic Recovery Strategy (ERS), Wealth and Employment Creation (2003-2007), and Strategy for Revitalizing Agriculture (2004-2014) discussed earlier (MoARD, 2005).

The plan spells out the direction, policies and priorities of the Ministry. It is structured in such a way that it covers; the context and rationale for the plan; situational analysis in which the performance of the ministry is analysed; policy priorities are identified; goal and strategies for the ministry; organisational structures and human resource development options that are necessary for effective implementation of the plan;

resources mobilization; monitoring and evaluation, which present methodologies and indicators for monitoring the plan implementation process and implementation matrix.

In this plan, one of the areas which the ministry found necessary to implement is mobilisation and effective utilisation of the resources. However, the plan notes that the resources are in short supply and hence, the available ones need to be utilized effectively. It was noted that one of the limited resources was human resource. Though, the strategy indicated that it has highly trained technical staff, they are not adequate (MoARD, 2005). It is with this point in mind that one notes that the Government should make use of the RAEs. As stated earlier, the RAEs were also highly trained, skilled and still have a wealth of experience, beside, most of them being energetic and having the home advantage over the public extension workers.

2.7.5 The Vision 2030

Kenya vision 2030 is the new country's development blue print covering the period 2008 to 2030. The vision comes after successful implementation of the Economic Recovery Strategy for Wealth Creation and Employment (ERS), which saw the country's economy momentarily recover and grow from 0.6% to 7.1% in 2007 (GoK, 2008). It is during ERS that SRA was also implemented as it was a response towards the implementation of the Economic Recovery Strategy. The 2030 vision is based on three pillars, namely, the economic, the social and the political pillars. In implementing

this blue print, the agriculture sector has been identified as one of the key players in development of the country. The vision has hence identified what it refers to as flagship projects which are meant to steer the sector to higher heights (GoK, 2008).

2.8 Structural Adjustment

Moris (1991), states that, for Africa, the 1980s could be termed as the "Structural Adjustment Decade". This is because, from early 1980s onwards, African leaders were on great pressure by donors, particularly USAID, to re-adjust their financial and development policies (Moris, 1991).

For extension, the 1980s were years of further retrenchment to the point that in peripheral areas, few effective services continued, meaning that most public services were not being performed to the expectation of the people. During this period, extension staff was not only reduced but the Government also suspended further recruitment of new graduates in agricultural science who had completed their studies. Wiggs noted that the irony was that donors had exhorted African countries to re-emphasize production of export crops, while still imposing restrictions which further cut local extension effectiveness (Wiggs, 1988; 1989). However, the supreme irony is that, the World Bank was simultaneously promoting its Training and Visit (T&V) system, a 1960s' type of public extension at complete variance with the Structural Adjustment lending portfolio in terms of its implementation costs (Moris, 1991).

As a country, the Kenya Government was affected by Structural Adjustment Programmes (SAP) which affected mostly the developing countries. One of the areas which were affected was the extension service (Moris, 1991). It can be said that SAP came when the government was faced with other changes which faced the agriculture sector. These include increased availability of information from the mass media, NGOs, increased level of education of farmers and now the internet and the mobile phones. Whether it is as a result of implementation of this programme in Kenya or otherwise, certain changes have taken place and affected the extension service delivery in one way or another. For example, beside the gradual reduction of the extension staff and failure to recruit more, training certain categories of the extension staff have also been discontinued. The Government is no longer training Junior Agricultural Assistants/ Livestock / Health Assistants (JAA/JLHA). It is also doing minimum training for Technical Assistant (TA), whom they are not even deploying. The technical assistants who have been working with the Government are being encouraged to upgrade their level of education up to diploma level. The diploma (Assistant Agricultural Officers (AAO)/Technical Officers/ Assistant Livestock Officers (ALO)) holders are being encouraged to take degree courses. Moreover, the diploma holders who are still in the service are being sent to locational or focal areas, as they are rightly referred to. In essence what the government seems to be saying is that those whose qualifications are less than the degree level should be phased out of the extension service.

2.9. The Farmer's Role in the Success of Extension Programme

In the common Framework on Agricultural Extension, farmers are considered as key stakeholders if agricultural extension is to succeed. This Common framework developed by a group of stakeholders in 1995, notes that extension activities are more effective when farmers are directly involved in defining, managing and implementing them (Neutachel, 2007b). The retired agricultural ex-extensionists who have engaged themselves in farming can be considered as farmers who can play a key role in influencing other farmers in the farming activities and in adopting the extension messages. This is because studies have established that farmers are key players both in production and innovation. For example, a research carried out on potato innovation system and participatory research in Bolivia, Ethiopia, Peru and Uganda, to identify the factors that influence scaling up and out approaches by considering the roles of the government, private sector, and other organizations, indicated that the farmer remained central most important and relatively stable component of potato-related innovation system (Scoones & Thompson, 2009).

The findings further established that limited interactions between farmers and other stakeholders prevent an efficient development of solutions to potato-related problems. The study in addition, indicates that most of the information and knowledge farmers' manage came from internal sources such as family members and neighbours with limited participation of extension providers (Scoones & Thompson, 2009). This is a

clear indication of how the farmers can influence others. The study concludes that simulation of linkages between trained farmers and non trained farmers outside of their own community could improve information flow, knowledge development and technology adoption (Scoones &Thompson, 2009). The literature, like the one cited above, is a clear proof that the farmer can be considered as an innovator as well as an upscaler of the research findings. As an innovator therefore, he /she has the potential to cause what Cialdin (2001), calls social proof influence. Social proof influence is a situation where people will tend to do things that they see other people are doing.

This again seems to be in line with what Ban & Hawkins, (1992), have indicated, that farmers learn more from colleagues than others and those who are able and willing to help their colleagues, solve their problems and become opinion leaders in their groups.

The learning aspect from other farmers would then bring another dimension on another role of a farmer. This role is that one would consider of a capacity builder not necessarily directly but indirectly or both. Ban & Hawkins, (1992) state that, educated farmers are more capable of making their decisions than those who are not, therefore, turning attention to the farmers with basic, or trained in agriculture would be far more useful in that, they are easier to accept changes than those who have no training at all and in this case the RAEs fit here very well. Furthermore, it has been documented that farmers are overwhelmingly keen to partner with others. They outline the benefits that

motivate them to partner with “outsiders”, the desire to gain access to knowledge, experiences and resources, to learn about new technology or information and to gain status among their peers among other things (Scoones & Thompson, 2009). In other words, farmers recognize the merits of relationships with outsiders that are based on values that are important to them (on the farmers terms), including trust, honesty, empathy towards their situation, sincere recognition of their contributions to the process and respect for their culture, among others. In addition, it has been noted that most farmers articulate added value that they derive from processes of accomplishment in working with agricultural professionals, rather than pursuing agricultural experimentation or farmer to farmers in which farmer or community members seek solutions to their problems on their own (Scoones & Thompson, 2009). When we consider the retirees as farmers and professionals, they can have an added advantage and hence play a double role in influencing their peers in many ways. In addition, Studies done in Bolivia, showed that although it is often easier for an outsider expert (public extension worker) to gain respect and attention of the community members, experience shows that as livestock workers gain knowledge, experience and skills, they work more effectively with the community members and have more impressive long term results than the expert (Stewart, 1998).

Retired agricultural ex-extension workers (RAEs), are, by virtue of their training and exposure, expected to be more conversant with the farming practices and should,

therefore, act as examples from whom other farmers can learn. The RAEs have the potential of not only influencing the farming world but also becoming opinion leaders in the society and therefore, cause the social changes, which are necessary in the community in which they belong. Furthermore, the extension workers are a source of technical know-how and commands the respect of being more knowledgeable and are therefore, expected to pass the same to the farmers (Benor, & Baxter, 1984). If the target group is to take into farming as a profession, they would be expected to perform much better than the ordinary farmers, who, beside lack of technical knowhow, also lack the exposure that agricultural graduates were exposed to during their training and working life.

It has further been documented that for many hundreds of years before today's national agricultural research systems were set up, farmers did their own research work. In so doing, the farmers integrated technology from different sources and continued to adapt it on their farms, which they still do today. The technology used by farmers is a complex product undergoing constant change (Roiling, 1989). Therefore, training of any kind is not neutral. Every training can either maintain the status quo, or change it (Stewart, 1998).

For many years, people had been made to believe that technology is a new invention, however the literature cited above makes one think otherwise. Indeed, other scholars

and scientists have now recognized that farmers have a lot of technology which they have used and tested over the years. This kind of recognition could have triggered the need to involve the farmers actively in participatory research as well as innovation venture today (Scoones & Thompson 2009; Neutatchel, 2007a; Spore, 2008). A farmer can thus be considered as a technologist developer as well as user. Once a farmer, gets or develops a given technology, he/she is bound to extend the same either to his family members or neighbours, in so doing, he/she would be considered to have influenced other persons in the community. When we view the farmer from this angle, we will see them from a new perspective and see them as partners in various issues that affect the farming community. It will help us to clear the past ideas of what people thought a farmer knew or was and enable us to correct errors made regarding the farmers.

As some literature had already observed that in the past development practitioners, erroneously believed that small scale farmers were unwilling to change their traditional farming practices, studies now prove that these farmers respond to meaningful incentives (IFPRI, 2002). The development practitioners have also failed to know what farmers need. Farmers need less standard package of practices and more of a basket of choices; the role of extension is less to transfer technology and more to help the farmers adopt. The local experts are not so much researchers, as farmers themselves, but providers of ideas (Chambers et al, 1991). Furthermore, farmers are professional specialists in survival, but their skill and knowledge have yet to be fully recognised

(Chambers *et al*, 1991). Farmer's thinking is crucial and need to be considered when developing technologies for them. They do not think in terms of adoption or non-adoption, but select elements from technological complexes to suit their constantly changing circumstances. The dichotomous terms such as; adoption, non-adoption, traditional-modern, native- improved, are irrelevant and misleading from the farmers point of view (Chambers *et al*, 1991).

Studies have shown that the heterogeneous, diversified agriculture of East Africa requires more sustainable and efficient agricultural methods to sustain and increase production. This is because production problems are site specific, inputs from local knowledge systems is required to develop technical solutions and local communities need to be involved in implementing the solutions effectively (Gerard & Meerman, 2001).

2.10 Conceptual Framework

Extension service in agriculture has been studied with a bias in its effects on production beside other issues. The studies have mainly focused on the methods and approaches of extension and the benefits of the service, which could be looked at as the impact which influences the farmers to change and adopt the information and technologies (Hoffmann, Gerster-Bentaya, Christinck, Lemma, 2009).

The literature on methods and approaches focuses on the ability of extension agents who brings the messages or information of agricultural practices to the farmer with the view to change or influence his/her farming practices (Adams, 1982; Ban & Hawkins, 1992).

Besides, the extension agent, literature also focuses on the farmer as the recipient of the extension service. It is the farmer who in the final analysis seems to determine whether the message received from the extension agent made any impact or influence by what he/she does. This is because it is the farmer who will show the new technologies by adopting them, use of new farming techniques, planting new crop varieties, change of behaviour and also increased production. In other words, it is a two way communication. The reactions and outwards action to this communication seem to be a key determinant as to whether some influence has taken place or not. The studies, however, fail to realize that the duration is crucial because it is dealing with different persons in the community even though involved in the same activities of farming.

Benor *et al*, (1984), notes that there are five kinds of impacts in any effective extension. These can be evaluated from quantitative effects of such indicators as, yields and areas planted with crops in accordance with recommended practices; the impression of visitors to the field where the system is operating; farmers' reactions to the new system; the relationship of the extension staff /agent themselves to the new mode of work staff

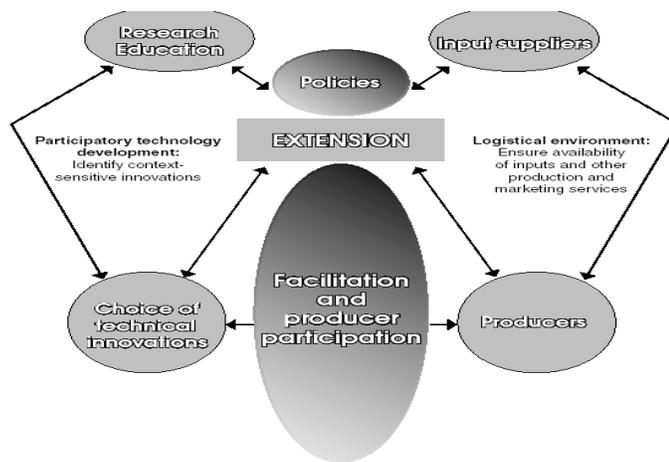
visual, farmers' reactions, extension personnel and priority impacts. However, the authors note that measuring some of the impacts is quite hard due to the many interacting factors, even though it is not impossible

Other literature by Anandajayaseram *et al*, (1996), indicates that there are five impacts of agriculture. The first one is, Production Impact which can be measured in terms of increase in yields/output or increase in acreage. The second one is economic impact measured by comparison of benefits and costs. Socio-cultural impact is the third one and could be assessed by, for example, improvement of status of women, change in knowledge and skill level of the people or job creation. Fourthly is the institutional impact.

Benor *et al* (1984) seems to focus on several aspects while the others focus on output and its effects. There seems therefore, to be no clear conceptual framework on the impact of what an individual who has been professionally trained in extension can cause after active service in an organisation and how this can be measured.

Figure 2.2 shows the perceived concept of the influence that the extensionists are said to have on the farmer and the farming community at large. The independent variables are namely, RAEs, influence, professional qualification, extension service involvement, Social involvement, and Agricultural production output. Conceptual frame is indicated

in figure 2.3 and is derived from figure 2.2. This conceptual framework has been developed from views of Benor *et al* (1984), Neutachel group, (2007a) and a study done by consultant for the Ministry of Agriculture and Rural Development, 2008.



Source: Neuchatel, 2007b

Figure 2: 2: Summary of Perceived Influence of Extension Service

This study is based on the understanding that, training in Agricultural Sciences as a profession has a long term effect that can cause a dynamic change in the farming world in terms of adoption rate, embracing of new technologies, starting of new enterprises, change of eating habits, as well as change in the farming practices.

It was also noted that the benefit of the RAEs is not limited to his/ her active role when in paid employment but also to a large extent even when out of employment

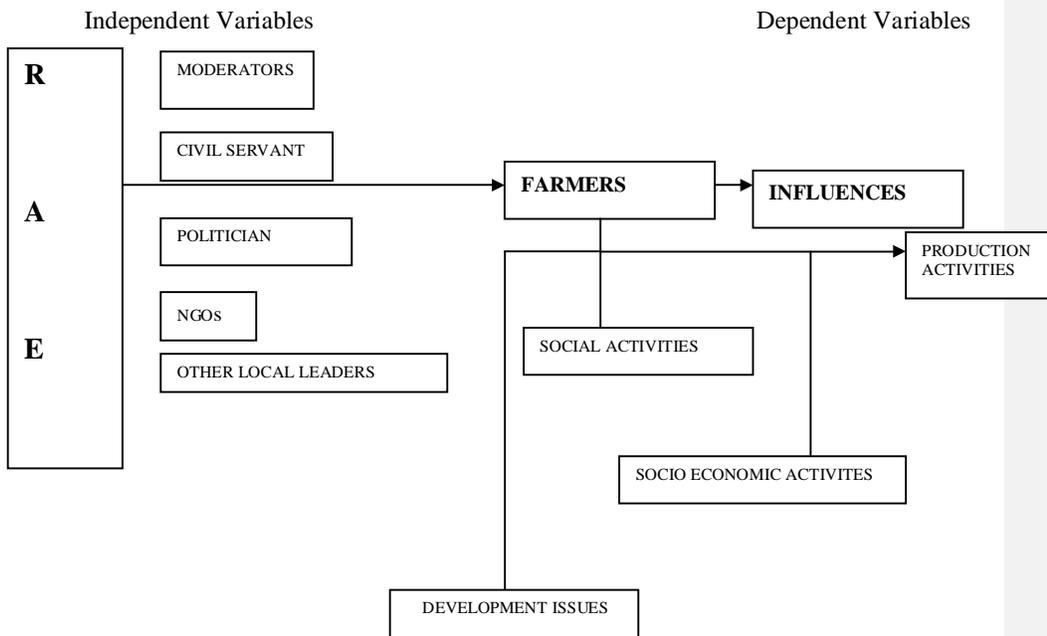


Figure 2:3: Conceptual Framework

2. 11. Summary of the Literature

Literature reviewed in this study, clearly underscores the importance of Agricultural Extension in the Agriculture Sector. In addition, the literature identifies the Agricultural Extension workers, Government and Farmers as key stakeholders among other stakeholders. The roles for each stakeholders are defined and it is clear that for

agricultural extension to succeed in achieving its' mandated goal which is transformation of the present the current low production to high production, each of the stakeholder has to play their part. However, the literature fails to clearly state what influence an Ex-extension worker who has retired from the fulltime job of extension and becomes a farmer or just lives amongst the community have.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the procedures followed in this research process. Specific aspects covered include the research design, geographical location and population, sample and sampling frame, sampling procedures used to select the study respondents, instrumentation, pilot study, data collection, measurement of variables and data analysis procedures.

3.2 Research Design

This being a social as well as a case study targeting only specific group of people in the society, descriptive design was adopted. This design was chosen because it leads to proper profile development of the situation under investigation. The study followed the “Ex-post” facto since the effects of the independent variables on the dependent variable had already taken place at the time of the study. Noting that the population under study was heterogeneous, a randomized design was employed. This is because using such a design would be able to capture all the representatives of each stratum (Kothari, 2004).

3.3 Geographical location and Population

3.3.1 Geographical Location

The study focused on Thika District in Central Province (Annex V). Thika District was specifically chosen because of central positioning and also for being a cosmopolitan district with inhabitants from many parts of Kenya. Farming activities in this district also vary from what one could refer to as subsistence, urban farming, to large scale farming. The District is situated in the southern part of Central Province. It has a surface area of 2024 km², with 1676 km² of potential Agricultural land. The District borders Machakos to the East, Nairobi to the South, Maragua to the North and Kiambu to the West (Njoroge, 2003).

Rainfall is bimodal with the long rains falling between April and May, while the short rains fall between October and November (Njoroge, 2003; Nthiga, 2004). The high potential areas receive an average rainfall between 1000 mm-2000 mm, depending on the altitude. The lower zone receives an average rainfall of about 500-900 mm annually (Njoroge, 2003; Nthiga, 2004) and many rivers transverse through the district.

The district has; 80% arable land, moderately fertile soils, favorable weather especially in the upper part of the district. The rivers provide water for both small and large-scale irrigation activities (Njoroge, 2003). Different agro-ecological zones cuts across the

district and, hence provides good comparison on the farming activities. Moreover, many of the pilot extension projects have been carried out in the district.

3.3.2 Population

Although according to 1999 census, the district had a population of 643,089 persons, the Central Bureau of Statistics, Thika (2004), showed that the population had reached 645,713. The population was made up of town and farm households. The total number of households was 171,569. The District has two municipalities, namely; Thika and Ruiru and six (6) administrative divisions; namely, Gatundu, Ruiru, Thika, Gatanga, Kamwangi, and Kakuzi. The district has 21 locations, and 89 sub-locations (MoARD, 2001). It has also quite a number of small townships such as, Gatundu, Kirwara, Gatura, Kamwangi, Gatukuyu, Kanyoni, Mataara, Ithanga and Ndunyu Chege, among others. There are many market centres where different businesses are carried out. As in many parts of Kenya, most of these people are expected to be living in the rural areas, however, in recent years; there has been a lot of immigration into the urban centres. The reasons for the movement into urban areas are varied. The RAEs, like any other group in the society live in this district and have also been involved in immigration both from within and into the district.

The study targeted retired graduates (as defined for this study) in agricultural sciences and selected farmers neighbouring them. This included their households and

homesteads. The RAEs were chosen because of the perceived role that they played in agricultural sector by providing extension services when they were involved in active full time employment. In this study, two kinds of populations were considered:

(a) Population of Farm families and Agricultural Extension Workers

There were 83,874 small farm holdings owned by 117,874 farm families (Njoroge, 2003). Among these farm families were the RAEs, who constituted the population for the study.

According to 2001 District's Agriculture Annual Report, Thika District (MoARD, 2001a) had a total of 189 staff and 35 administrative staff. Out of 189 staff, 23 agricultural extension workers were deployed at the District Agriculture Office and could be said to have been doing administrative work and not directly in contact with the farmers even though they were extension workers. Therefore, it can be deduced that only 166 Workers were directly involved with the farmers in all the six divisions of the district. This translates to a ratio of one extension staff to 623 farmers.

The 2004, District Agricultural Annual Report, indicated that the District had 174 extension workers, meaning that the district lost 15 extension workers compared to the 189 of 2003. Out of these, 23 (7 support staff and 16 technical staff) were deployed in the District Headquarters and hence not involved directly with extension work. Another,

21 (8 support staff and 13 technical staff) were deployed at Agricultural Machinery Service and Rural Technology Development Centre in Ruiru. This left a total of 130 (including seven support staff) to work in the six divisions, implying that the ratio of one extension staff to 980 farm families, meaning that the district had lost some staff.

The division background information and number of Government extension staff deployed in each of the six divisions in Thika District during the time when the survey was carried out is given (Table 4). It also indicates the background information of each division.

The data gathered during the survey (Table 3.1), indicated that the total number of extension workers in the field was actually 91 and not 130 as indicated in the 2004 Annual Report. It can therefore, be assumed that a number of the workers had either retired or transferred to other districts. Moreover, the farm families had increased to 181,908 by the time the survey was carried out

Table 3.1: Basic Background and Government Extension Workers per Division.

Item/ Basic Information	Divisions					
	Gatundu	Gatanga	Kamwangi	Kakuzi	Ruiru	Thika
Area	186km ²	262Km ²	165km ²	487 km ²	526 Km ²	272Km ²
Population	127,093	103,048	116,646	80,132	150,281	104, 787
Farm Family holdings	26400	18,000	19,330	9,953	10,297	12,880
Average farm size	0.6ha	1.5ha	0.69ha	0.8ha	1ha	0.95ha
No. of Locations	4	4	5	4	2	2
Extension staff	18	9	23	18	13	10
Staff: Farmer ratio	1:1200	1:2587	1:630	1:200	1:950	1:1288

Source: Divisional Offices, Thika District.

(b) Population of the RAEs

Lack of official records from the public offices regarding the population of the RAEs necessitated the need for a census to be done in order to get the actual population of this target group. The census method demands that, information from each individual member of the population had to be collected (Panseersavan, 2007). The result of this census indicated that the entire district by then had a total population of 165 RAEs.

3.4 Sample and Sampling

3.4.1 Sampling Frame

The study samples were derived from three sampling frames, namely; RAEs' Population, population of the study area and randomly selected Neighbouring Farmers (NEF) Population

3.4.2 Sampling

In carrying out this study, probabilistic sampling technique was adopted. This is to imply that all the members of the population stood a chance of being selected (Panneerselvan, 2007; Kothari, 2004, and Mugenda & Mugenda, 2003). This method was adopted in this study because it provides us with efficient system of capturing in small group, the variation or heterogeneity that existed in the target population.

3.4.2.1 Sampling Techniques

Stratified Random Sampling

To be able to investigate the influence of the RAEs in the society, it was important to know where they were located and what role they played in the society. An initial census was therefore, conducted to locate and determine the composition of the RAEs, actual population in the entire district and also to facilitate determination of the sampling frame after getting the actual population. Stratified random sampling technique was used to select the samples in this study because the population under

study was not homogeneous and had hence to be subdivided into several groups (Kothari, (2004) and Mugenda & Mugenda, 2003). The study targeted the 60 RAEs randomly selected (Mugenda & Mugenda 2003). This number of RAEs was selected out of the total number of 165 RAEs found in the district. In order to assess the influence that the RAEs were likely to have, 400 farmers neighbouring (NEF) them out of the entire population of the farm families in Thika District was randomly selected.

These numbers were thought to be enough to represent the specified populations. Stratified random sampling was done in all the six divisions after the census. This procedure was not only ideal for describing the characteristics of the population but also in determining the association of various variables. It was stratified in the sense that it involved selection of the population based on their level of educational training, way or mode by which the RAEs left the service and also from the farming community. The stratum was based on the administrative boundaries where RAEs who had different qualifications lived. The sampling frame comprised of 165 RAEs and the farmers population neighbouring the RAEs. The sample was chosen from the six divisions of the district. In order to ensure that representation was done fairly, location, gender, discipline and academic qualifications were put into consideration during the selection exercise.

Although Mugenda & Mugenda, (2003) recommends a 10% sample for a descriptive research such as this study, a sample of 60 RAEs representing all the divisions was drawn. In order to assess whether the RAEs were influencing their community, a sample comprising 8 farmers per selected RAEs for every division neighbouring the randomly selected RAEs, was selected randomly, except for 10 RAEs living in urban areas because their neighbours were not necessarily farmers. This gave a total of 400 neighbouring farmers instead of the anticipated 480. Another sample of 40 NEF (20 clients of RAE and 20 non clients) were randomly selected and used as the control.

The sampled RAEs were identified using two methods:

- 1) through the information provided by the Divisional Agricultural Extension Officers
- 2) through actual physical identification of the RAEs in the selected locations in the divisions. This was done by making visits to the locations and villages.

Divisional Agricultural Extension Workers are the Government agents posted to the division to provide the extension services to the farmers in the area. They are responsible for the supervision of the Frontline Extension Workers (FEW) who work in the divisional locations and sub locations. They organise all the extension services and hence are expected to know all the farmers in their area of operation. They therefore, provided the initial information regarding the actual location of the RAEs. They indeed, helped in tracing the RAEs from the information gathered from the district offices. Information gathered hence, formed a basis for compiling a sampling frame. Physical

identification of the randomly selected RAEs was done by actual visitation to the RAEs and the NEF in their homes/ residential places (for living in urban areas).

3.4.2.2 Sample size

The literature was used as a basis for determining the sample sizes in this study (Mugenda & Mugenda, 2003, Kothari, 2004). The authors recommends, that “ for correlational research, 30 cases or more are required, for descriptive studies 10% of the accessible population is enough and for experimental studies at least 30% are required per group” (Mugenda & Mugenda, 2003; Kothari, 2004). Since this study being descriptive their views were put into consideration. In this study the following formula was used to guide the selection of the sample.

$$N=Z^2pq/d^2$$

Where:

N=the desired sample (if the population is greater than 10,000)

Z=the standard normal deviate at the required confidence level

P= The population in target population estimated to have characteristics being measured

Q=1-p

D=the level of standard significance set.

However, instead of using just 10% which have yielded 17 RAEs, additional number was increased to make the sample larger. In choosing the NEF, a representative sample was taken.

Three types of samples were collected;

a) RAEs Sample

This involved, stratified random selection of specified number of RAEs from the total population per division since the target group was not homogenous. Sixty (60) RAEs from the whole district were randomly selected. It was observed that some divisions had more locations than others. For example, Kamwangi had five locations, Gatundu, Gatanga, and Kakuzi, each had four locations while, Thika and Ruiru had two locations each. Locations were used when selecting the number of RAEs as this would capture the target group population in each of the stratified area which was based on administrative boundaries. In addition, the number of RAEs also differed significantly in different divisions. The samples were hence drawn on the basis of the number of locations as follows, Gatanga 11, Gatundu 11, Kamwangi 12, Kakuzi 10, Thika 8 and Ruiru 8. Although the random selection was to put into consideration the gender, and also the group from which Retired, Retrenched, Dismissed and Resigned belonged, data gathered during the initial survey indicated that there were indeed very few cases that would warrant proportioning them. Table 3.2 gives the summary of the sample.

b) Sample of Neighbouring Farmers (NEF)

To identify and assess the socio-economic influence of the RAEs on farmers, 400 farmers neighbouring the randomly selected RAEs from 117,874 farm families, were randomly selected. The sampling of the farmers neighbouring the RAEs was done as

follows; at least 8 neighbours of each RAEs (two from the Eastern side, two from the Western side, two from the Northern side and two farmers from the Southern side) were selected, except for 10 RAEs living in Thika and Ruiru. This gave a total of 400 households to represent the farmers' population neighbouring the RAEs.

c) Sample of Neighbouring Farmers (NEF) client and Non Client of RAEs

A sample of 40 NEF farmers (20 Clients of RAEs and 20 Non clients of RAEs) was selected for comparison purposes from the NEF. Random sampling was again used to select a 10% sample from a NEF population of 400 farmers previously selected (Mugenda & Mugenda, 2003; Kothari, 2004). The non-client were got from the 10% NEF who had indicated that they were not clients of RAEs. This sample was to serve as a control.

Table 3.2 gives the details of the actual number of RAEs, farm families, and the sampled RAEs and NEF in each of the six divisions of Thika District.

Table 3.2: Population of RAEs, Farm Families, Sampled RAEs and NEF per Division

Division	RAEs Population	Sampled RAEs	Farm Families	Sampled NEF
Gatanga	44	11	103048	88
Gatundu	31	11	26400	88
Kakuzi	20	10	9953	80
Kamwangi	35	12	19330	96
Ruiru	17	8	10297	32
Thika	18	8	12880	16
Total	165	60	181,908	400

3.5 Instrumentation

Primary data was collected using three instruments. These were questionnaires, interviews schedule and observation schedule (Annexes I, II, III, and IV). These instruments were chosen because of being easy to administer, convenient, able to get the required data, besides being comparatively cheaper compared to other tools (Mugenda and Mugenda, 2003; Kothari, 2004).

3.5.1 Questionnaire

The questionnaire had structured questions and was administered to all RAEs found during the initial survey. A sample of the questionnaire is attached as Annex 1. The aim of this questionnaire was to facilitate in the selection of the random sample for the RAEs. The questionnaire was developed in such a way that it gave the basic personal

information which would be used when randomly selecting the sample and was to take into account aspects which would be considered when selecting the RAEs sample.

3.5.2 Interview Guide

Two sets of interviewing guides were developed and used during the interview as a guide (Annexes II and III). One of the interview guides was used for the RAEs while the second one was used for the NEF. Both guides had structured and unstructured questions.

3.5.3 Observation Schedule

Observation was also used as a method of collecting data, particularly on the farms in connection with production, enterprises undertaken, housing, farm layout, and behavioural change which the respondents were not willing to put in writing or during the interview was used on randomly selected RAEs and NEF (Annexe IV).

3.6 Pilot Study

The aim of doing pilot study was to enable the researcher to measure the degree to which the research instruments would yield consistency data (reliability) as well as the validity of the same (Mugenda & Mugenda, 2003).

Data collection instruments were hence pre-tested during the months of December, 2004 to April 2005 as this was the period when most agricultural activities were taking place. This was done in Thika Division which also housed the district headquarters. Questionnaires and interviews were administered to respondents. The results showed that the neighbours of the RAEs living in the urban areas were not necessarily farmers and the instruments had to be adjusted accordingly. However, there were some who were not engaged in any farming activities but had clients living outside the towns and others doing what has come to be known as the urban farming. This resulted in having less than the 480 farmers who were expected to be interviewed. The questionnaire, the interviewing guide and the observation schedule had to be adjusted accordingly.

Collecting data on income, household goods, nutrition, expenditure and also income from the neighbouring farmers proved very difficult due to lack of records and peoples' fear. Moreover, many of those interviewed did not seem to have a steady income. This aspect was therefore, left out when adjusting the research instruments. These findings necessitated change of data collection and also reduction on the number of visits which were to be done to both the RAEs and NEF. Due to these findings, the pilot study took longer than it was expected.

3.7 Data Collection

Data collection was done by use of survey method. A stratified household survey was therefore, the most applicable and was carried out in six blocks (divisions). This was because the population was not homogeneous and the design was not only ideal for describing the characteristics of the population but also in determining the association of various variables (Kothari, 2004; Mugenda and Mugenda, 2003). It was stratified in the sense that it ensured that various categories of the target groups, namely, retired, resigned, sacked, retrenched RAEs and NEF were represented. The stratification was based on the following; division where the RAEs lived, level of training (designation), gender, way or mode of RAEs leaving the service. Data relating to all the variables were collected simultaneously. The design allows room for discovery and clarification of the relationships between two or more variables.

Six (6) research assistants (trained before engaging them) in the company of the principal investigator assisted in collecting the data after getting authority to carry out the study. As part of data collection, observation carried out during the visit to the RAEs and the visit to the NEF. The observation exercise was meant to ascertain whether the information given during the administration of the questionnaire and interviews was correct. A checklist of the observations was used during the observation visit. During data collection, visits were made to the homes of the respondents and questionnaires, interviews conducted and observation done.

This was to reduce the loss of questionnaires, save time, and also to ensure that the right respondents are not only got but also to the right information is given.

3.7.1 Primary Data

Primary data was collected from two sources, namely; preliminary survey and data on randomly selected RAEs and NEF.

a) Preliminary Survey

Primary data was collected by use of questionnaires and oral interviews.

Primary data were also gathered from the Agricultural Frontline Extension Workers (FEW), working with the Ministry of Agriculture, Marketing and Rural Development (MoARD) and from the Ministry of Livestock and Fisheries Development (MoLFD). These were interviewed and were able to give names of RAEs who were either their clients, or knew area of residence or came to consult them during their working time in their area of work.

b) Data From Randomly Selected RAEs

Visits were made to the homes of the selected RAEs and detailed interview was conducted to each respondent.

c) Randomly Selected NEF

Data was collected from eight randomly selected farmers neighbouring each of the randomly selected RAEs (except neighbours for 10 RAEs living in Thika and Ruiru towns). The distance from RAEs to the neighbouring farmers was varied to avoid collecting information from the immediate relatives who would possibly serve as grateful respondents.

d) Clients and Non Clients of RAEs

Data was collected from 40 randomly selected NEF farmers previously selected who were either clients or non clients of RAEs. The word client here refers to those farmers who got agricultural information or extension service from the RAEs. This information was necessary for comparing the influence and was used as a control.

3.7.2. Secondary Data

Secondary data regarding RAEs officers from the service was collected from the following district offices: District Agricultural Office, District Livestock Office and District Veterinary Office.

3.8. Measurement of Variables

The influence in the farming community was the main independent variable. This was measured in terms of a combination of activities involvement (both qualitative and quantitative) that had taken place in the farming community in which the RAEs lived. The activities which are meant to cause positive changes in the community include; the provision of extension services, farming activities, leadership roles, provision of employment opportunities, other business ventures and involvement in research activities.

3.8.1 Activities of the RAEs

The RAEs, activities such as extension service provision, farming activities involvement, business involvement, level of education and leadership role in the community formed the other set of independent variables. This is because it is as a result of these activities that the RAEs influenced the community.

3.8.2 Provision of Extension Services

This was one of the main set of independent variables. It was measured in terms of various forms in which it was provided to the farmers. The independent variable was measured by; the level of educational training of the provider, methods used, approach used, service provided, number of clients, distance of the clients, technology introduction, fees charges and adoption of the technology.

3.8.3 Engagement in Farming Activities

This was also another set of independent variables. The variable was measured by level of educational training, enterprises kept, type of farming, technology used, average production compared to NEF and the role of farming in the society.

3.8.4 Social Involvement (leadership roles)

Social involvement formed another independent variable. This was measured by; level of educational training, positions in the community leadership, projects initiated in the community, the societal view of RAEs, conflict with the society and noticeable changes in the community.

3.8.5 Provision of Employment in the Society

This also was another independent variable and was measured by the level of educational training, number of employees, type of employment –casual /permanent, and salary given.

3.8.6 Involvement in Other Business Ventures

This was measured by the level of educational training as well as related number and type of the businesses one was engaged in.

3.8.7 Involvement in Research Activities

This was yet another independent variable and was measured by the; level of educational training and the number of the research activities one was engaged in.

3.8.8 Agricultural Productivity

This was also another independent variable that was measured by the; level of educational training, enterprises kept, type of farming adopted, and the technologies used.

3.9 Data analysis

3.9.1 Data Analysis and Process

This process consisted of editing of the raw data collected in the field to ensure that the correct data was recorded and entered well in the right place (Kothari, 2004). In order to make analysis possible, coding and classification of the collected data had to be done before the actual data analysis was done. This was based on the study objectives, research questions and analysis methods are shown (Table 3.3). The data collected was organized according to emerging themes or patterns. They were then coded and assigned numerical values which were subsequently fed to SPSS to yield descriptive statistics: mean, percentages, Analysis of Variance (ANOVA), regression, median, chi-square, cross tabulation and frequencies. In doing this, analysis was done and hence inferences were subsequently derived from the descriptive statistics.

The sources of data were from RAEs and NEF and were handled as follows,

a) Data on RAEs regarding their: extension provision, farming involvement, social activities involvement (leadership role), other business involvement besides farming and research work engagements. The gathered data was thus organised, coded, and analysed, with the aid of the computer package.

b) Data on NEF

Descriptive and inferential statistics were used to analyse the collected data. Statistical Package for Social Sciences (SPSS) was used to analysis and was done according to the study objectives. This was done because the data collected had both structured and unstructured questions which may have needed description. In examining the measures of relationships between various variables needed to be examined SPSS package was used. ANOVA, regression and chi-square analysis were done to establish whether there were any relationships between some variables (Table 6).

Table 3.3: Summary of the Research Objectives, Hypotheses and Analysis Methods

Objectives	Hypothesis	Analysis Methods
To assess what influence professional training have on the Socio-economic Characteristics of RAEs	The professional training of RAE does not influence on the socio-economic characteristics of RAEs.	ANOVA, percentages, frequencies, cross tabulation, chi-square, regression and T-test
To identify the influence RAEs have in providing Extension service in the community	The offering of extension service by RAEs has no influence in the community	ANOVA, Percentages, cross tabulation, mean and median
To asses the influence of Agricultural productivity of RAEs and Non-RAEs	RAEs involved in farming business and other business have no agricultural productivity and other related businesses influence on other members in their farming activities	ANOVA, frequencies, cross tabulation and regression were used to analyse the data.
To investigate the socio-economic influence attributed by presence of RAEs in the Community.	There are no socio-economic influences that can be attributed to Presence of RAEs in community.	ANOVA, percentages, cross tabulation, means and regression analysis.

3.9.2 Analysis of Specific Objectives

a) Objective One

To determine whether professional training of RAEs had influenced their socio-characteristics in the community

This variable yielded the following categorical data,

- i) Residence of the RAEs
- ii) Last employer and work experience of the RAEs
- iii) Clients of the RAEs
- iv) Social activities of the RAEs
- v) Other business involvement
- vi) Relation of the business to professional qualification.
- vii) The challenges faced by the RAEs.

The data were analysed by use of ANOVA, percentages, frequencies, cross tabulation, chi-square, regression and T-test.

b) Objective Two

To assess the influence RAEs has in offering the extension services to the community

The variable yielded the following categorical data;

- i) level of training
- ii) number of RAEs involved
- iii) Kinds of service offered

- iv) The stakeholder
- v) Terms of offering the service
- vi) Technology transfer.
- vii) Distance of the clients from the RAEs
- viii) Challenges of the RAEs

The data were analysed by use of ANOVA, Percentages, cross tabulation, mean and median.

c) Objective Three

To assess the influence RAEs involved in farming business have on agricultural productivity within the communities in which they live.

The main variable was agricultural output and it yielded categorical data: Frequencies, cross tabulation and Chi-square statistics were used to analyse the data. Tests were performed to determine whether or not the agricultural output of the RAEWs involved in farming, varied significantly from those of their neighbouring farmers who practiced farming and kept similar enterprises.

d) Objective Four

To investigate the socio-economic influence attributed to the presence of RAEs in the community

This variable yielded the following categorical data;

- i) Number of RAEs offering employment opportunities
- ii) Leadership role provision
- iii) Production output.
- iv) Provision of employment.

CHAPTER FOUR

4.0 RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents results of this study on the investigation of the influence of Retired Ex-Agricultural Extension (RAEs) in the Community. The chapter presents the results and discussions of the study. Agricultural production has been identified as a key player in the economy of many developing countries. However, its performance in the recent past has not been encouraging. One of the factors that has been affecting the production has been provision of extension services. Food security has, therefore, been a major concern for Food and Agriculture Organisation (FAO) and more especially, for countries in Africa, where hunger has been endemic for quite sometimes.

Due to this phenomenon, many organizations both the Government and the Non-governmental Organisations have put a lot of investments in the agriculture sector in order to help the farmers raise their production with the view of revitalising the sector. Emphasis has particularly been put on reviving of the research-extension linkage services which has been identified as one of the constraints hindering agricultural production, especially in Kenya (GoK, 2004).

In order to facilitate the analysis, statistical package for Social Science (SPSS) was used. Computation of frequencies, means, median, cross tabulation, Chi-square statistics, regression and analysis of variance (ANOVA) were done. The organization of this chapter was mainly guided by the study objectives.

Presentation of results has been categorised into four main sections.

- a) The influence of professional training on socio-economic characteristics of RAEs in Thika District.
- b) The influence RAEs have in offering the extension services to the community
- c) The agricultural productivity influence by RAEs and non RAEs who are involved in farming business within the selected communities
- d) The socio-economic influence that can be attributed to the presence of RAEs in the community.

4.2 Influence of Professional Training on the Socio-economic Characteristics of RAEs

The RAEs were composed of a group of professionals who had undergone different levels of training. Training of different kinds has been known to change the status quo of individuals (Stewart, 1998). In this section, frequencies, cross tabulations, regression, ANOVA and Chi-square were computed to determine if the professional training had any influence on socio-economic characteristics of RAEs under different categories. These categories include: gender, highest professional qualifications, their residential

areas, work experience, feeling of RAEs on their training, their monthly income while in and out of employment, business activities they are engaged in, research work, their opinion on request to go back to full time extension duties and the challenges the RAEs faced. Different variables were subjected to different analysis.

4.2.1 Gender of the RAEs

The overall results of the RAE census indicated that 2.4% were females, while, results from the sample indicated that 57 (95 %) of the sampled RAEs were males and only 3 (5%) were females.

4.2.2 Residential Area of the RAEs

Information regarding the place where the RAEs lived after retiring indicated that majority (81.7%) of the RAEs lived in the rural areas while, 8.3% lived in town and 1.7 % in both the farm and town (had residence in both places). Table 4.1 shows places where the RAEs lived. This information was important as their proximity to the other persons/ farmers in the community may give an indication of the influence they may likely have, bearing in mind that adoption has at times been observed to be higher among the persons closer to the source of information or innovation or adopters (D'Emden et al, 2006; Hagerstrand, 1967; Ruttan, 1996; Lindner et al., 1982, Muyanga & Jayne, 2006).

Table 4.1: Residence for RAEs

Residential place	Frequency	Percent (%)
Village	49	81.7
In the town	5	8.3
Both in the farm and in town	1	1.7
Live in a rented house	4	6.7
No response	1	1.7
Total	60	100

4.2.3 Professional Training

Two (2) types of results are presented, first, the overall number of all the RAEs found in Thika District during the period when the survey was conducted and secondly, the results of the sixty sampled RAEs.

In matters relating to the discipline of training, two areas of agricultural training were considered. These included, livestock oriented and general agriculture. Though, there are many disciplines in the agricultural science, they were generally grouped into two, during this study. Results from the survey indicated that the sample had 25% who had trained in livestock related orientation and 75% in general agriculture areas.

(a) Survey Results of RAEs

The number of RAEs in Thika District

The preliminary survey carried out in the entire Thika district indicated total of 165 RAEs who lived in different divisions. Almost all the RAEs (95.7%) owned farms and majority of them lived in the farms, however, a few (4.3%) of them lived in towns. The sizes of the farms ranged from less than an acre to over 20 acres. Results also indicated that out of the total 165 RAEs found, only 2.4% were women (two had retired and two had resigned). Two of these had training in livestock, one in general agriculture and one in agricultural engineering. The possible reason for this few numbers of women RAEs could be that many women were not willing to take up work in agricultural sector and had no basic education, especially immediately after the attainment of independence.

These initial results further indicated, that the highest numbers of RAEs (75%) were found in high potential lands (high altitude and productive areas) compared to the transitional (medium altitude and medium in production areas) and marginal areas (low altitude and less productive areas). The possible reason for this could be that the Government recruited more personnel from those areas in order to assist the indigenous farmers to establish the commercial crops, mainly tea and coffee. This could be the possible main reason beside other factors such as the good reliable rainfall and early educational enlightenment. However, it was also noted that, Thika, Kakuzi and Ruiru had low RAEs populations. The possible reason for the low population in the three

divisions could be that the divisions were largely covered by large farm estates and that most of the workers for these estates stayed in camps. Some of these estates have since been subdivided.

Information gathered also indicated that majority of the RAEs were those who had bias in general agriculture (58.6%). The reasons for this large difference between those who trained in general agriculture and livestock was not clear, probably it could have been due to the necessity to establish the cash crops at that particular time as earlier stated.

The RAEs found during the survey can be put into five classes when classified according to their level of education or duration of training. The groupings were: Junior/Senior Agricultural Assistants/ Junior Animal Production/Health Assistants, Technical Agricultural Assistants/Animal Health/Production Assistants, Technical Officers/Agricultural Assistant Officers, Agricultural Officers/ Senior Agricultural officers /Veterinary Officers/ Senior Veterinary officers /Animal Production Officers/ Senior Animal production officers and /Assistant Directors of Agriculture.

Results indicated that five highest level professionally trained RAEs formed the population for this study.

i) Junior Agricultural Assistants (JAA) and Junior Animal Health (JAHA)/Junior Animal Production Assistants (JAPA)

These were officers who had undergone a training of less than two years in various disciplines of agricultural science. Most of these underwent “on the job” training before undertaking formal training. The results indicated that they formed 45.45% of the total RAEs found during the survey. Majority of these were those who had undergone training in areas of general agriculture while the rest trained in areas related to animal health or production. The most probable reason for this large, low calibre of officers could be that after independence, there were very few trained personnel in the field of agriculture. The few who were recruited had to undergo some short courses to enable them cope with the work which was being left by the colonial masters. According to verbal information gathered during the survey from both the RAEs and the neighbouring farmers (NEF), these were officers who were responsible for the initial establishment of commercial crops like tea and coffee in the area of study. Indeed, most NEF interviewed acknowledged the work done by RAEs before they retired.

ii) Technical Agricultural Assistants (TAA)/ Senior Agricultural Assistant (SAA) and Animal Health (AHA)/Animal Production Assistants (APA)

The Technical Agricultural Assistants (TA) / Animal Health/Production Assistants (AHA/APA) and the Senior Agricultural Assistants (SAA) made up 25.45% of the total

RAEs population. The officers comprised of holders of certificates in either general agriculture or animal health or production. Their training was formal and took at least two years. They were therefore, more educated and were immediate supervisors of the former category.

iii) Technical Officers (TO) /Assistant Agricultural Officers (AAO)/ Assistant Livestock Officers (ALO)

The results indicated that 17.58% was made up of Agricultural Assistant Officers (AAO) or Assistant Livestock Officers (ALO) (Diploma holders). These were the officers who undertook a formal training and had obtained a diploma in various disciplines in agricultural sciences. Their training took up to three years and were awarded diploma certificates. They used to be in-charge of Divisional Agriculture Offices in the divisions, and even districts before more qualified personnel joined the Ministries of Agriculture and that of Livestock Development.

iv) Agricultural Officers (AO)/Senior Agricultural Officers (SAO) Veterinary Officers (VO)/Senior Veterinary Officers (SVO)

Field results indicated that, only 7.88% of the RAEs found had attained the level of Agricultural Officers (AO)/ Senior Agricultural Officers (SAO) or Veterinary Officers

(VO), AO/SAO/VO/SVO. These were mainly holders of Bachelor's degrees in various disciplines of agricultural sciences.

v) Assistant Directors of Agriculture (ADA)/ Directors of Veterinary Services (DVO) Assistant Directors of Veterinary Services (ADVO)

This group constituted 3.64% of the RAEs. The group was made up of officers who had attained the level of Assistant directors of Agriculture, or Veterinary Services, and were generally holders of Masters' degrees in various disciplines of Agricultural Sciences (Table 4.2).

Table 4.2: RAEs by Level of Designation

Designation	Frequency	Percentage (%)
JAA/JAHA	75	45.45
TAA/AHA/SAA	42	25.45
AO/TO/LO	29	17.58
AAO/SAO/VO/SVO	13	7.88
ADA/ADVO	6	3.64
Total	165	100

b) Sampled RAEs

This represented 36.4% of the total population of RAEs identified during the initial survey in the entire district. The results indicated that certificate holders composed 60%

of the sample and had taken an average of 1.47 years of training. The MSc holders made the least population with 6.7% but took the longest period of training averaging 5 years. Table 4.3 shows the highest level of professional training, average duration of training and number of years worked. The results further revealed that the certificate holders worked for an average of 27.8 years and the BSc holders had worked for an average of 11.9 years.

Figure 4.1 shows the percentages of the RAEs by level of their highest education qualifications.

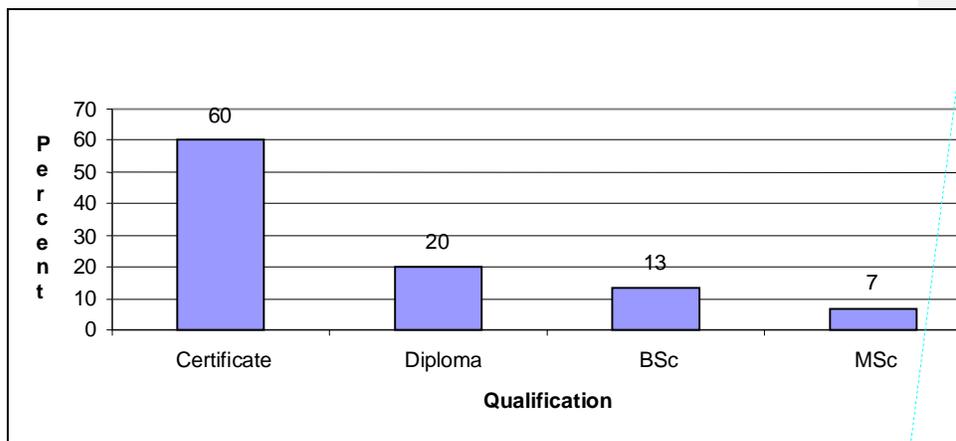


Figure 4:1 Qualification of RAEs

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Table 4.3: RAEs Qualifications, Average Years of Training and Average Years Worked

Professional Qualification	Frequency	%	Average No. of year trained	No. of year at work
Certificate	36	60	1.47	27.8
Diploma	12	20	2.92	21.5
BSc.	8	13.3	3.36	11.9
MSc.	4	6.7	5	26.8
Total	60	100	1.47	24.2

4.2.4 Work experience as an Agricultural Extensionist

In order to know whether the RAEs had any field experience, it was necessary to get first hand information from them and also to know who their last employers were and for how long they worked for that them. The results computed indicated that 96.7% of the RAEs had worked as extension workers in full time employment either with the Government, Non-governmental Organisation (NGO) or Company sector.

4.2.4.1 Extension Workers Last Employer versus Qualifications

The information gathered regarding the employment records of the RAEs indicated that there were three main employers namely, the Government, NGOs and Companies. The results further indicated that these organisations employed extensionists with different qualifications. For example, the Government had employed 56.5% certificate holders, 19.6% diploma, 15.2% BSc and 8.7% MSc holders, respectively. The NGOs had

employed 50% certificate and 50% diploma holders, respectively. The NGOs had no BSc. or MSc. holders, while the companies employed 70% certificate, 20% diploma and 10% BSc. holders (Table 4.4). The results showed that the Government was the main employer and had employed all levels of qualifications.

Table 4.4: RAEs Qualifications and last Employer

Professional Qualification	Government (%)	NGO (%)	Company (%)
Certificate	56.5	50.0	70.0
Diploma	19.6	50.0	20.0
BSc	15.2	-	10.0
MSc	8.7	-	-
Total	100.0	100.0	100.0

4.2.4.2 RAEs Qualifications and Clients

In an attempt to determine whether the qualifications of the RAEs had any relationship to the clients served during their working life, a cross tabulation was computed. The analysis indicated that certificate holders provided 87.9% extension service to farmers while working with the Government and 50% to company staff when working with the companies. The diploma holders provided 6.1% to farmers and 50% to extension staff while working with the Government, meaning that this group had very little contact with the farmers during their working life as government extension officers (Table 4.5).

Similar results were revealed in the case of the BSc. holders who provided 6.1% to farmers and 25% to extension staff while, working with the Government and similar observation was noted for them in matters pertaining to their contact with the farmers

The analysed data further, indicated that the clients of the MSc. holders were the research scientists (100%) while, working with the Government (Table 4.5).

Table 4.5: RAEs' Clients versus RAE's Qualifications

Professional Qualification	Farmers staff (%)	Extension scientists (%)	Research extension staff (%)	Farmers/ extension staff (%)	Company Staff (%)
Certificate	87.9	-	-	23.5	50.0
Diploma	6.1	50.0	-	35.3	50.0
BSc.	6.1	25.0	-	29.4	-
MSc.	-	25.0	100.0	11.8	-
Total	100.0	100.0	100.0	100.0	100.0

4.2.4.3 Reasons for RAEs Leaving the Service

To establish the reasons for RAEs leaving the employment, the analysis showed that 78.1% certificate holders retired, 9.4% certificate holders resigned, while 72.7% and 18.2% diploma holders retired and resigned, respectively (Table 4.6). The results also indicated that 28.6% and 57.1% BSc. holders retired and resigned, respectively, while

100% MSc. holders had retired. The results further showed that the BSc. holders had the highest number (14.3%) of those who were sacked from the service.

Table 4.6: RAEs Reasons for Leaving Employment

Professional qualification	Retired (%)	Retrenched (%)	Dismissed (%)	Resign (%)
Certificate	78.1	9.1	3.1	9.7
Diploma	72.7	9.1	-	18.2
BSc.	28.6	-	14.3	57.1
MSc.	100.0	-	-	-
Total	71.7	7.5	3.8	17.0

4.2.5 RAEs Social Involvement

To establish whether the RAEs were involved in any social activities in the society, frequencies and cross tabulations were computed. This data was important in that it indicated the level of the target group involvement by the community in which they lived. Moreover, it was an indicator of the trust and confidence the community had in them. The analysis revealed that 83.3% of the sampled RAEs were actively involved in social activities. Results obtained from cross tabulation of the RAEs professional qualifications versus social involvement indicated that even though all the RAEs were involved, 88.9% were mainly certificate holders while, the diploma, BSc. and MSc. qualifications indicated that 75% each were involved (Table 4.7).

Table 4.7: RAEs Social Activities Involvement

Professional qualification	Yes (%)	No (%)
Certificate	88.9	11.1
Diploma	75.0	25.0
BSc.	75.0	25.0
MSc.	75.0	25.0

4.2.5.1 Kinds of Social Activities

In order to establish the kind of social activities that the RAEs were involved in, the activities were coded and grouped into, agricultural related, savings cooperatives, development projects, church related activities, recreational and leadership roles. The computed frequency results indicated that 21.7% of the sampled RAEs were involved in development activities while 21.7% were in leadership beside other social activities (Table 4.8).

Table 4.8: Social Activities RAEs Were Involved in

Social Activity	Frequency	Percentage (%)
Development Projects	13	21.7
Leadership	13	21.7
Sacco	8	13.3
Church Activities	5	8.3
Agriculture Related	4	6.7
No Activities	10	16.7
Total	60	100.0

4.2.6 Challenges of RAEs Professional Training

In order to assess whether the RAEs were able to handle the challenges presented to them by their clients, cross tabulations were computed in order to assess, the adequacy, usefulness and the relevance of the training that the RAEs received when providing service both at their working place and at personal level. Results revealed that 66.7% certificate holders indicated that their training was inadequate while the Master of Science Degree (MSc.) holders indicated that their training was adequate. It was however, noted that the certificate holders were the ones in direct contact with the farmers who directly presented their problems to them unlike the MSc. holders, who indicated that their training was adequate and had no direct contact with the problem presenters. The certificate group was followed by the diploma holders who even though, they indicated that their training was 63.6% adequate felt that the training was 36.4% inadequate. Again this group was mildly or had little contact with the farmers as they were close to them at least at the divisional level.

On relevance and usefulness of RAEs training, analysis results indicated that 96.7% of RAEs felt that the training was not only relevant but also useful to them. However, further analysis of the same basing on the highest qualifications, indicated that the certificate holders found the training 100% useful and relevant, probably because they were making use of it on daily basis, while MSc holders found it 75% useful. This

would probably mean that there were some of the materials they learnt which they never used (Table 4.9).

Table 4:9 RAEs View on Their Training

Professional Qualification	Adequate (%)	Inadequate (%)	Not useful (%)	Very useful (%)	Not sure (%)
Certificate	33.3	66.7	-	100.0	-
Diploma	63.6	36.4	-	91.7	8.3
BSc.	87.5	12.5	-	100.0	-
MSc.	100.0	-	25	75.0	-

4.2.7 Involvement in Other Businesses

Besides farming and social activities in which the RAEs were involved in, the study sought information regarding other income generating activities that the target group was engaged in. The information also sought to know whether these activities had any relation to the profession of the RAEs.

Frequencies, Chi-square and cross tabulation, analysis results indicated that 62.9% of the certificate holders had no other business, while 58.3%, 87.5% and 66.7%, diploma, BSc, and MSc. holders had other businesses, respectively. When the Pearson Chi-square was computed to verify whether the RAEs' education had any relation with

starting other businesses, the value was 7.481 and the significance level at 5%. This is to imply that the null hypothesis that business involvement is independent of education level can be rejected and infer that business involvement is dependent on the level of education.

Regarding the relationship of the business and the profession, the cross tabulation results indicated that 56.7% did not relate in any way to the professional training that the RAEs got. The reasons for this were varied. For example, some stated, that such businesses were more profitable (20%) and lack of interest 6.7% (probably in farming) (Tables, 4.10-4.12).

Table 4.10: RAEs Involvement in Other Businesses

Professional Qualification	Yes (%)	No (%)
Certificate	37.10	62.90
Diploma	58.30	41.70
BSc.	87.50	12.50
MSc.	66.70	33.30

Table 4.11: Relationship Between the RAEs' Businesses and Profession

Related	Frequency	Percent (%)
Yes	15	25.0
No	34	56.7
N/A	11	18.3
Total	60	100.0

Table 4.12: RAEs Reasons for Running Businesses not Related to Profession

Reason	Frequency	Percent (%)
More profitable	12	20
Lack of Alternative	3	5
Lack of interest	4	6.7
Lack of Capital	1	1.7
N/A	40	66.7
Total	60	100

4.2.7 Research Involvement Among the RAEs

Results of the frequencies, cross tabulation and Chi-square of the data gathered to establish whether the RAEs were involved in research activities indicated that 96.2% were not involved in any research activities. The few involved basing on their professional qualifications included; 3.1% and 33.3% of certificate and masters holders, respectively. As noted earlier, the MSc. holders' clients were mainly research scientists. The Pearson Chi-square value was 7.962 with df of 1 and significant level of 5 %.

Therefore, the null hypothesis that involvement in research activities are independent of education level can be rejected and infer that involvement in research activities is dependent on the level of education.

4.2.8 Income of the RAEs

Analysis of the information gathered on the source of income for the RAEs indicated that RAEs income was mainly generated from two sources namely, farming (71.2%) and other business ventures (16.9%) beside other sources. This was a clear indication that most of the RAEs derive their livelihood mainly from the farming business.

Comparison of the RAEs present earnings with what they were earning before leaving the service indicated that they were better off at the present status than they were previously. For example, the MSc. holders whose average earning while, in full time employment gross averaged Ksh 19,000 rose to Ksh 56,000 per month. This group was followed by the diploma holders whose average earnings of Ksh, 14,955 per month rose to Ksh 27,145 per month.

When RAEs were asked if they would want to go back to paid employment, the results indicated that 54.3% of those who had been employed by the government would not want to go back, 60 % of those formerly employed by companies and 50% of those formerly employed by NGOs would want to go back. Table 4.13 and figure 4.2 gives

the summary. In matters regarding saving, the results indicated that 63.6% do some saving of some kind.

Table 4.13: Income for RAEs in Kenya Shillings per Month

Professional qualification	Earning when in full Employment	Ave. Earning Now
Certificate	10,450	15,222
Diploma	14,955	27,145
BSc.	21,500	26,429
MSc.	19,000	56,667

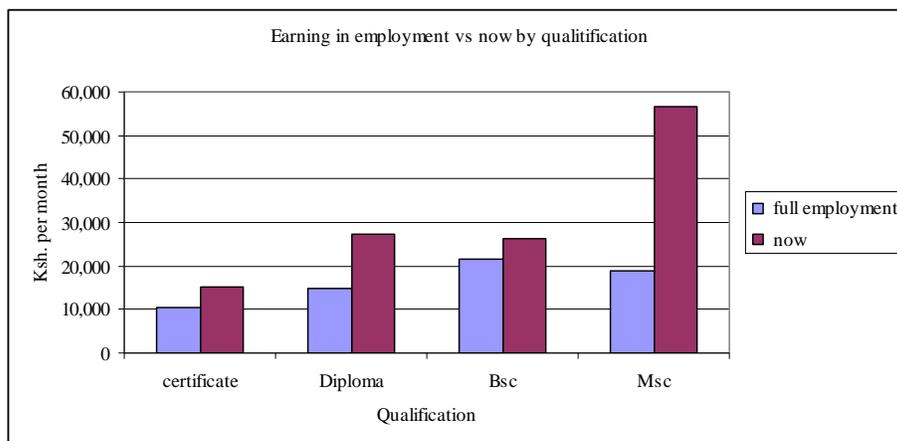


Figure 4.2: Income for RAEs in Kenya shillings per Month

4.2.9: Hypothesis Testing on the Influence of Professional Training of the RAEs on RAEs Socio-economic Characteristics

After doing cross tabulation, chi-square in some aspects of the socio-characteristics, further analysis by ANOVA on the premise that there is no significant difference in socio-economic characteristics of the RAEs based on their professional training was done. In order to establish whether there was any significant difference between professional training and socio- characteristics, a T- test was done. The result of the t- test analysis indicated that there was a significant difference between the mean scores, $t(60) = 8.122$, $P < 0.05$. The null hypothesis that RAEs professional training has no influence on socio-characteristic was rejected and it was concluded that the level of training of RAEs influences their socio economic characteristics (Table 4.14).

Table 4.14: Education Level and Socio- economic Status of RAEs

Level of training	Socio Economic characteristics		
	n	Mean	SD
Certificate	36	7.64	0.37
Diploma	12	9.94	0.84
BSc.	8	9.03	0.31
MSc.	4	8.60	0.10
Total	60	8.80	

To test whether the mean scores were significantly different, a one way analysis of variance (ANOVA) was conducted. The result of the analysis indicated that there was a

statistically significant difference among the mean scores, $F = 8.80$, $P < 0.05$. It was concluded that there was, relationship between RAEs level of training and their socio-economic characteristics.

4.2.10: Discussion on Professional Training Influence on Socio-economic Characteristic of RAEs

The ANOVA results as (indicated above) clearly indicated that there was significant difference between the RAEs ($P < 0.05$) professional and their socio –characteristics, implying that the level of training influences the socio-economic characteristics of the RAEs. It is no wonder therefore, when certain socio-economic characteristics are considered, differences are noticed. Some of these variations are indicated in the discussion below. It is probably due to the professional level of training influences that contributed to RAEs to either get more involved in socio –economic characteristics activities such as, business, determination of where they will live among other characteristics or not.

The gender balance was not addressed even during the early years of attainment of independence. There was a wide gender disparity even when it was a known fact, that over 70% of the farming work is done by women. This cannot however be attributed to the level of training. Whether this was deliberate or otherwise, it is difficult to tell. However, as pointed out earlier, it was possible that during these early years, women

either did not like the extension career or could not qualify for the training for the same. Due to the small number of female RAEs, it was difficult for this study to assess their influence alone even when three of them were included in the sample, since their number was very small (5%). Their influence could only be assessed along with the male RAEs.

Regarding residence of the RAEs after retirement, as normally expected by the wider society, 81.7% of the RAEs not only lived in the rural areas but also owned farms there. The place of residence may have determined and influenced the activities in which they were involved. For example, majority of the persons living in the rural areas are farmers, this leaves the RAEs with no option but to become farmers and earn their living through the farming activities. Moreover, the fact that they were considered as being educated among the rural folks, they were bound to be entrusted with certain responsibilities.

Giving the RAEs responsibilities in the society implied that the society not only consider them as part of their own but also as local people who could cause and bring more lasting changes rather than the strangers as stated by Stewart (1998). This notwithstanding, the analysis showed that not all the RAEs studied lived in the rural areas, meaning that it should not be expected that once someone retires, he/she would automatically move to the rural areas to live there, neither should they be expected to

offer different services to those living there. This is because they may chose to live elsewhere especially, in the urban areas as demonstrated by the findings of this study. This was clearly indicated by the results when it was noted that it was not possible to get neighbouring farmers for the 10 RAEs living in Thika and Ruiru municipalities.

Though, the majority of the RAEs lived in the rural area (81.7%), their distribution was not equal. The high potential areas had a higher RAE population compared to marginal areas. This was causing some disparity when it came to service delivery and was possibly affecting the agriculture development in those areas. The reason for this, being that the area continued to experience shortage of trained extension manpower who were readily available to assist the farmers. It was no wonder then that, the high potential areas had more agricultural activities compared to the marginal areas.

The results showed a lot of bias in as far as disciplines were concerned. The training tended to favour disciplines in general agriculture compared to livestock, a situation which seemed to influence the type of enterprises kept by the farmers, especially, in high potential areas. It was observed that though, the high potential areas were good for both crops and livestock production, a lot of land had been devoted to cash crops, especially, tea and coffee and very little attention was given to animal production. Though, this situation could not be attributed to the RAEs but policy makers, it could however, have an effect in that the RAEs would be still influencing the farmers on the

enterprises to keep, especially, bearing in mind that the RAEs were now in direct contact with the farmers, and in this case not as extension workers but as fellow farmers. Abadi *et al*, (1999) noted that adoption was a learning process and would involve data collection, integration and evaluation of new information, to allow better decision about innovation or technology brought about by extension agents. In addition, Ban & Hawkins (1992), states that farmers learn better from other farmers, it can be argued that NEF neighbouring the RAEs can easily collect data, learn faster and integrate it and therefore copy what their neighbours are doing.

It was observed that the RAEs tended to keep those enterprises which they felt were well knowledgeable about. For example, the RAEs, whose training had a livestock bias, tended to keep livestock for commercial purpose, while, those with crop bias tended to grow crops for commercial purpose, alongside other enterprises. If this trend continues there is a likelihood that the livestock sector would suffer, noting that there are less persons trained in it and less emphasis being placed on it, yet it is a major contributor to the country's economic growth. This argument was further supported by the fact that the extension service tended to be attributed to increased production and that, farmers are keen observers of what other farmers were doing and hence copy them (Gerard & Meerman, 2001; Ban & Hawkins, 1992) and noting that the RAEs performance was better than that of the Non- RAEs farmers.

Besides the bias in the discipline of training and gender, the results indicated that majority of the Non-RAEs were watching the RAEs performance and silently copying them, implying that they were generally keeping the enterprises that the RAEs were keeping.

Majority (70.9%) of RAEs were certificate holders and were the officers who were in direct contact with the farmers during their working life. The secondary data results indicated that there was a downward trend of the staff deployed, especially the certificate holders, yet, in the Government's strategy for the Revitalization of Agriculture, one of the strategies is to strengthen, the Research –Extension –Farmer linkage. The fact that there is no policy on the role of RAEs, their experience may not be utilised yet, they play a very big role. The Government does not also seem to be monitoring the trend of agricultural extension staff very well because as the staff in the Government seemed to be on reducing trend as stated, while the RAEs population may be increasing. This argument was supported by the information obtained from the 2004 Thika District Agriculture Annual Report, which indicated that the district had a total 174 extension staff, out of which only 3.4 % were of the junior class. This was an indication that the Government seemed to be in the process of phasing out the junior ranks of the Extension Workers yet, as stated earlier, these are the officers right at the grass root level and in direct contact with the farmers. Moreover, the colleges which were training the same have also been converted to training higher level except one or

two institutions. For example, Embu and Bukura Institutes were the main trainers of the certificate holders. Embu is no longer offering this training but serving as an in-service college while Bukura has been elevated to a diploma awarding institution. It was no wonder that some of the farmers interviewed indicated that they had not been visited by extension officers for a long time, a situation which had led them to seek for alternative sources of service. It is apparent that the RAEs had set a precedent that it was the responsibility of the extension officers to visit farmers in their own farms and not for farmers to look for them.

This mentality has not yet changed in the lives of many farmers as the study found out as many of them expected to be visited by the extension workers in their farm.. Furthermore, the traditional extension service delivery and even Training and Visit (T&V) approaches advocated this type of approach.

In terms of work experience, the RAEs can be said to have had accumulated a wealth of it. Many of them had worked for many years in either one or more organisations. For example, the certificate holders had worked for an average of 27 years before retiring, while, the diploma holders had worked for an average of 21 years. This notwithstanding, it could not be concluded that the less the years of training the longer one worked because when the cases of Diploma, BSc. and MSc. was considered, this case did not apply. This is because the Diploma and BSc. holders appeared to have

worked for less number of years even though, they took shorter period than the MSc. holders. It could, however, be deduced that this group was probably in high demand in the public and the private sectors. This argument can be supported by the fact that many of the diploma and BSc. holders (18.2% and 57.1%) resigned, respectively. However, the results also indicated that the BSc. holders had the highest cases of dismissal, a factor which could have possibly affected their years of service especially, when they were out of paid up employment.

The reasons for this high resignation or dismissal were not clear. Some of the reasons that could be advanced for this kind of situation could be that the BSc. Holders; a) had probably very high expectations which were not met by their initial employers, b) being among the first highly qualified graduates in agricultural sciences at that time, they had very many opportunities to choose from or alternatively their work performance was far below the expectations of their employers and hence were laid off.

The work experience and high qualifications appeared to give the RAEs confidence in handling their clients. The work experience was particularly applicable to the lowly trained RAEs, who seemed to have gained enough confidence to handle the farmers' problems.

Interesting results were observed when it came to the employers of the RAEs. Unlike the public sector (Government) which employed all the RAEs regardless of their qualifications, the private sectors (NGOs and Companies), were interested in certain groups of the RAEs. It was observed that the companies were particularly interested or preferred the certificate holders. They had employed about 70% of them. Similarly, the NGOs seemed to prefer diploma holders and certificate holders. Several theories could be raised as to why this situation occurred. First, is the payment issue. It is possible that the Companies and the NGOs found it cheaper to employ the less qualified persons because they could pay them less and hence maximise on profits. Secondly, during that time, there were less highly qualified persons who could then be employed by these companies. Thirdly, it could also be argued that unlike the public sector where there are many posts, Companies and NGOs have very few positions for management group and hence did not need many of the highly qualified RAEs. This meant that the few highly qualified RAEs were placed in management positions, which in essence were very few.

Another theory that can be advanced was that of the performance of the certificate and diploma holders. The fact that the companies and the NGOs were satisfied by the performance of these low qualified persons could also be a pointer on the quality of the training that was offered by our institutions. The fact that the employers were satisfied by the quality of service provided by this group, meant that the RAEs received good and adequate professional training which helped them handle the daily challenges of

both the public and private sector. Noting that the private sector was particularly interested with the less qualified personnel for whatever reason, and bearing in mind that the issue of Structural Adjustment Programme and the higher trainings which are being offered by our tertiary institutions, it would be informative to find out who the employers are or what the new graduates are doing.

Unlike in the public and private sector where qualifications mattered, the RAEs clients at their present status were not determined by their qualifications. This meant that what the farmers were looking for was not the qualifications, but the service and probably this was where experience came in. It was no wonder therefore, that when the farmers were asked to compare the service provided by the RAEs and that provided by the Government agents, their response was that they did not see any difference. This meant that what the farmers were looking for was not the qualifications, It was therefore, clear from the results that specialisation by the RAEs was not the big issue, but rather one's ability to resolve the challenges that were put forward to them by the farmers. Specialisation can therefore, be regarded as an added advantage, whether it comes by way of specialised training or experience. Indeed it did not matter to the farmer. Moreover, according to the theories of adoption, Panell *et al* (2006), feels that adoption has to do with personal perception of individual goals. This is to imply that an individual will adopt certain technologies only if the technology will be in line with their personal goals.

When reasons for leaving the paid employment were considered, it was noted that majority of the certificate holders remained in the job until they retired. This was unlike the BSc. holders, who had a good number dismissed while, others opted to resign. The issue here was that of stability in the job. As stated earlier, a lot of movement or change of employer was noticed with the BSc. holders. Again, as noted earlier, this appeared to have affected their work experience. The causes of such movements were not clear but many theories as already raised can be advanced and have been stated.

In matters relating to social activities involvement, as the computed results showed, the RAEs were heavily involved (83.3%). Two theories could be advanced for such kind of phenomena. First, is the societal or community demand for service. In that case, the society may have noticed the leadership abilities that were embedded in the RAEs and would have wanted to benefit from them. Such abilities may have embraced different disciplines, such as; professionalism, leadership, or touching on individual abilities to solve problems facing the communities, such as; moral issues, uniting others or even organizing others for certain projects. This probably could explain and be supported by the fact that the RAEs were involved in different social activities. The RAEs were possibly chosen to carry out certain duties in the society even when they may have no much interest in the offices.

Moreover, the society may have noted that outsiders (posted extension workers and other social workers) though, may have brought up some developmental changes but they may not bring lasting changes due to the complex technicalities in the social set up which the insiders (in this case the RAEs) were able to progressively carry forward.

Secondly, personal ambitions. In this case, the RAEs themselves may have had the feeling of wanting to get involved for selfish gains, they therefore, sought elective offices in the society with the aim of leading the community in which they lived. Such cases were in areas where the RAEs felt that they may also have some gains either financially or in kind now that they were not in full time employment.

In as far as involvement in other business ventures was concerned, the analysis results showed that, although half of RAEs were involved at the time when the survey was conducted, a number of them had and tried a hand in businesses immediately after retirement and given up, while, others were still involved in them. It was noted that many of those who retired had tried a hand in business, did so after receiving their lump sum retirement benefits. The probable reason for doing this could be that, the lump sum provided the initial capital. However, many of them did not succeed or the business never picked up, possibly because of the wrong choice of business or due to lack of business experience. This latter reason was deduced from the information gathered from them when asked on their recommendations regarding lump sum payment. They felt

that it should be paid in at least two installments. This would provide the retiree another capital in case the first business venture fails. Survey results further indicated that 50% RAEs were involved in other businesses besides farming activities and the businesses varied and did not necessarily relate or reflect their profession. However, other businesses had an indirect or even direct relation to their profession, especially, those who had trainings in livestock based courses.

Noting that 62.9% of the certificate holders did not have any business while, other RAEs with higher qualifications had, it could be deduced that those with higher education were more likely to venture into business, probably because they may have a better initial capital from their terminal benefits than those with lower qualifications. Moreover, when the Pearson Chi-square was computed to verify whether there was any relationship between RAE's education and their involvement in other businesses, the value was 7.481 with significance level at 5%. This implied that the null hypothesis that business involvement is independent of education level can be rejected and infer that business involvement is dependent on the level of education. Furthermore, they may have been preferring business to farming because the businesses were more profitable. This could probably be the reason as to why some of the businesses had no relation with the profession of the RAEs.

When it came to RAEs involvement in research activities, the percentage involved can be said to be very low. It was noted that even those who were working in the research institutions were not engaged in it at their present level. The probable reason for this could be the belief that research work requires a lot of resources, especially funds. Noting that funds could be a limiting factor, it follows that many of the RAEs could not be involved in any reasonable research activities. However, this notwithstanding, there are research activities which may not necessarily require a lot of expenses in terms of finances and therefore, this may not have required a lot of money or could have been incorporated in the farming activities with a research component but were not.

Contrary to the belief that permanent employment /paid jobs are better off when it comes to their monthly earnings, the findings of this study indicated otherwise. The results indicated that the RAEs in self employment had on average, higher income than when they were in full-time employment. It was therefore, not surprising that many of the RAEs rejected the suggestion to return back to work if requested to do so. They therefore, seemed to have discovered that their career was more rewarding when put into practical work than being in employment. However, the results also showed that there were those who would still want to go for paid up jobs rather than doing the farming work. This group consisted of those persons who were working with Companies or NGOs. The most probable reason for the ex-government workers refusal for re-appointment could probably be due to the problems and frustrations that they

encountered while working or because comparatively their salaries were low. As for those who were working for companies, the reason could possibly be because of the job security. Detailed results further revealed that those who expressed the desire to go back were mainly those who were retrenched (75 %) and earned less than Ksh 15,000 per month, while, 77.8% of those who wouldn't want to go back were those who resigned. This was an indication that they had better income than when in fulltime employment. Another possible reason could be that their current earnings were, rather small and could not meet the daily challenges in the present situations.

One area of the challenge that the RAEs faced was that of their training. The results indicated that a notable number of the RAEs (66.7%) of the certificate holders expressed that their training was inadequate even though it was useful both then and at their present status. The discovery of their inadequacy in their training could have been triggered possibly by the challenges that they encountered as they served their clients. These encounters may have put their technical know-how to test and, hence the discovery of its inadequacy. This was to imply that the challenges could not even be solved by the wide range of experience that these people had, meaning that however long an experience one had, it could not take the place of training nor can the training take the place of experience. Each of them seemed to complement the other. This is to suggest that periodical training is an essential ingredient to overcome the challenges. These findings tended to concur with the findings of Stewart, (1998), who noted that

training of any kind is not stagnant but it was bound to bring changes in one's life. Furthermore, the results appeared to indicate that the more direct one was in contact with the farmers the more likely the challenges would be.

While one group was complaining of inadequate training, another was complaining of having gotten some irrelevant or not useful training, meaning either the training had some materials which were not applicable in their day to day challenges of the RAEs. These findings appeared to suggest that every training has its' short comings, however, low or high it may be. Moreover, the longer one takes in training, the more adequate training one was likely to get in a given area of specialization, though not necessarily relevant or useful. The relevance, usefulness and possibly the adequacy of any training is determined by the challenges that an individual faces or is likely to face in the field of work.

4.3 The Influence of RAEs in Extension Service

In order to establish whether the RAEs had any influence in extension service and the level of involvement in providing the extension services to their neighbouring farmers and community at large, the data gathered were analysed through means, frequencies, ANOVA, Spearman's Correlation Coefficient and cross tabulations.

4.3.1 Involvement in Extension Services

Analysis of the sampled data indicated that 80% of the RAEs were involved in offering extension services to the farmers, either directly or indirectly. Even though, the results showed that all the 80% RAEs, regardless of their qualifications, were involved in extension activities, it was observed that basing on their highest qualifications, 88.9% of the certificate holders provided extension services while, only 58.3% of the diploma holders provided the services to the farmers (Tables 4.15 and 4.16).

Table 4.15: RAEs Involvement in Providing Extension Service

Involved	Frequency	Percentage (%)
Yes	48	80
No	12	20
Total	60	100

Table 4.16: RAEs Qualifications and Extension Involvement

Professional qualification	Yes (%)	No (%)
Certificate	88.9	11.1
Diploma	58.3	41.7
BSc.	75.0	25.0
MSc.	75.0	25.0
Total	80.0	20.0

4.3.2 Services Offered by the RAEs

Noting that the RAEs were previously working as extension workers, it was necessary to know what services they were providing to the community after leaving active government or company service. The different types of services offered were then coded and grouped into four types. These included; advisory and demonstration, clinical services, inputs provision and consultancy services.

The computed frequencies and cross tabulation results indicated that 58.3% of the RAEs provided services in form of advisory and demonstration. Further details revealed that, the services were provided by the RAEs who had undertaken either courses in general agriculture or livestock related courses. However, the 13.3% of those RAEs who provided clinical services were those who had exclusively taken courses in livestock related courses (Table 4.17).

Table 4.17: Extension Services Provided by RAEs

Services Provided	Frequency	Percent (%)
Advisory and demonstration	35	58.3
Input provision	2	3.3
Clinical services	8	13.3
Consultancy	3	5.0
N/A	12	20.0
Total	60	100.0

In addition, results showed that only 3.3% of the RAEs provided services in form of inputs and 5% in consultancy services. It was observed that those who provided input services were those who had agrovet businesses (Tables 4.18 and 4.19).

In order to determine whether there was any relationship between the highest professional qualifications and the service provided, cross tabulation was done. The analysis results indicated that certificate holders provided 71.4% advisory and demonstration services, while, MSc. holders provided 100% consultancy services.

Table 4.18: Services Offered by RAEs Versus RAEs Qualifications

Service	Professional qualification			
	Certificate (%)	Diploma (%)	BSc. (%)	MSc. (%)
Advisory& Demonstration	71.4	20.0	8.6	-
Input Provision	100.0	-	37.5	-
Clinical Services	62.5	-	-	-
Consultancy	-	-	-	100

The correlation coefficient between certificate level of education and advisory services is positive and was correlated (0.28) and significant at 5% level. In addition, the correlation coefficient between Bachelor of Science level of education and clinical

services was positive and was correlated (0.28) and significant at 5% level. There is a positive and highly correlation between Masters Level of education and engagement in consultancy services (0.86) which is significant as 5% (Table 4.19). The data does show a positive and insignificant correlation between diploma level of education and advisory services. The results from this table indicate that the higher the level of education, the more sophisticated the services offered.

Table 4.19: Spearman's Correlation Coefficient between Professional Qualification and Extension Services Provided

Professional	Correlation Coefficient/ Significance	Advisory	Inputs	Clinical	Consultancy
Certificate	Correlation				
	Coefficient	0.28	0.15	0.02	-0.28
	Sig.(2-tailed)	0.03	0.25	0.88	0.03
Diploma	Correlation				
	Coefficient	0.00	-0.09	-0.20	-0.11
	Sig.(2-tailed)	1.00	0.48	0.13	0.38
BSc.	Correlation				
	Coefficient	-0.17	-0.07	0.28	-0.09
	Sig.(2-tailed)	0.21	0.58	0.03	0.49
MSc.	Correlation				
	Coefficient	-0.32	-0.05	-0.10	0.86
	Sig.(2-tailed)	0.01	0.71	0.43	0.00
	Correlation				

Listwise N = 60

When information was sought regarding how the RAEs offered their services, the results indicated that they offered it in six ways. Results indicated that 43.8% of the service was offered through visits to the clients' farms, while 33.3% was through visits by the clients to the RAEs' farms (Table 4.20).

This looked like the RAEs were still applying what they were used to doing when they were still in active duties during the era of Training and Visit approach. However, various results were revealed when cross tabulation was done against the services provided. Further results revealed that as expected, 75% of the clinical services were provided by the RAEs visiting the farmers' farm. This was common knowledge because most of the clinical work was done on sick animals which were in the clients' homes (Table 4.20 and 4.21).

Table 4.20: Ways of Providing Services by RAEs

Ways of providing service	Frequency	Percentage (%)
Visit farmers at their farms	21	43.8
Farmers come to my farm	16	33.3
I have a demonstration plot in my farm	1	2.1
All the above	8	16.7
At my Agrovet Business	1	2.1
Meet together for Discussion	1	2.1
Total	48	10

Table 4. 21: Extension Services provided by RAEs versus way of Providing the Service

Services Provided	Advisory& Demonstration (%)	Input Provision (%)	Clinical Services (%)	Consultancy (%)
Visit farmers at their farms	34.3	100	75.0	33.3
Farmers come to my farm	40	-	12.5	33.3
I have a demonstration plot in my farm	2.9	-	-	-
All the above	17.1	-	12.5	33.3
At my Agrovet Business	2.9	-	-	-
Meet together for Discussion	2.9	-	-	-

4.3.3 Terms of Providing the Service

In order to gather insight concerning the terms by which the RAEs provided services and information, data regarding the same was gathered. In case services were charged, further information regarding the charges and terms were sought. The results revealed that 31 (63.3%) RAEs offered their services free of charge, while 18 (36.7%) RAEs charged services (Table 4.22, 4.23, and 4.24).

Table 4.22: Terms of Service Provision Versus RAEs Qualification

Professional qualification	Free Service	Charges For Service
	(%)	(%)
Certificate	65.6	34.4
Diploma	62.5	37.5
BSc.	50.0	50.0
MSc.	66.7	33.3

Table 4.23: Service Fee Charged by RAEs by Qualification

Professional qualification	Mean	Median
Certificate	604.10	300.00
Diploma	500.00	500.00
BSc.	830.33	500.00
MSc.	995.50	995.50
Total	688.93	400.00

Table 4.24: Service Fee Charged by RAEs by Qualification Versus Last Employer

Last Employer	Mean	Median
Government	424.84	300.00
Company	2000.00	2000.00
Total	537.35	300.00

4.3.4 Stake Holders

The information gathered showed that there were other stakeholders who worked along with the RAEs. These included the Government Extensionists and the Farmers.

4.3.4.1 Farmers

The results indicated that the overall mean across the board on the number of the farmers that the RAEs served was 39. This however, excluded one extreme RAE worker who claimed that he had 3,600 clients and was considered as an outlier. When the means of the numbers of clients on the services provided versus the services provided were considered, there was no significant difference on the number of clients among different qualifications (Table 4.25). The ANOVA testing was carried out to check whether there was any significant difference between the variable qualifications of the RAEs and the number of clients that each one served. Results showed an F-ratio of 0.56 and a level of significance of 0.64. Statistically, F-ratio below 2 is an indication that there is no statistical significant difference between the number of clients and professional qualifications given 3 and 44 df (Table 4.25 and 4.26).

According to T&V programme, the extension workers were expected to have at least 7 to 8 contact farmers whom they were expected to serve every week. These results suggested that the RAEs whether knowingly or otherwise, had a number which they felt was convenient for them to serve. It was not clear on whether the number of farmers the

RAEs served remained constant or varied with time. This seemed to be the case because most of them did not have a definite number of clients, but just an estimate and had no records.

Table 4.25: Number of RAEs Client¹

Extension Services	Mean	Client N
Advisory& Demonstration	40	35
Input Provision	42	2
Clinical Services	44	8
Consultancy	5	2
Total	39	47

One extensionist with 3600 clients was excluded from the mean because he was considered as an outlier

Table 4.26: ANOVA of RAEs Number of Clients and Qualification

			Sum of squares	Df	Mean square	F
			Sig.			
Number of .644 Clients	Between Groups	(Combined)	4076.380	3	1358.793	.560
Professional Qualification	Within groups		106743.600	44	2425.991	
Total			110819.979	47		

4.3.4.2 Government Extension Workers

In regard to the RAEs interaction with Government Extension Workers, information was sought and is presented hereafter.

a) Field contact with Government Extension Workers

In matters concerning field contact between the RAEs and Government Extension Workers, results revealed that 81.5% of the RAEs involved in extension had field contact or met with Government Extension Workers and 18.5% indicated that they had no field contact with the government extension workers. This was an indication that though, the RAEs had retired/ left the service, majority of them were still in touch with their former colleagues. Further, analysis revealed that these two groups were working in harmony as 73.3% indicated that they did not see each other as a threat but rather as co-workers.

Moreover, 68.3% RAE respondent had indicated that they had received positive response from the Government workers and only 5% and a mere 1.7 % had indicated that they had conflicts or sometimes had conflicts with the Government Extension Workers, respectively (Tables 4.27-4.29).

Table 4.27: Attitude of Government Extension Workers Towards RAEs

GVT Etn Response	Frequency	Percentage (%)
Positive	41	68.3
Not sure	11	18.3
Negative	1	1.7
N/A	7	11.7
Total	60	100

Table 4.28: Government Extension Workers Views by RAEs

Threat to GVT extension workers (%)	Frequency	Percentage
No	44	73.3
Yes	4	6.7
Sometimes	1	1.7
N/A	11	18.3
Total	60	100

Table 4.29: RAEs Conflict With the Government Extension Workers

Conflict with GVT ext. (%)	Frequency	Percentage
No	42	70
Yes	3	5
Sometimes	1	1.7
N/A	14	23.3
Total	60	100

b) Government Extension Workers Service to RAEs

In seeking to know whether the Government Extension Workers provided services to the RAEs, the analysis results indicated that 51.7% responded positively. Though, the results indicated that the service was across the board, yet, 63.9% were mainly the certificate holders while, MSc. holders did not receive any service at all. Moreover, the results seemed to imply that the more qualified one was, the less likelihood of that person getting service from the Government Extension worker. The reasons for this kind of behaviour were not clear. However, several theories could be advanced. First, as noted earlier, majority of those in direct contact with farmers were certificate holders and therefore, there was a possibility of them fearing to visit and correct a more qualified person than them. Secondly, there was likelihood that some of the

Government Extension Workers were being supervised by some of those highly qualified RAEs before they retired or had contact with them (Tables 4.30-4.31).

Table 4.30: Government Extension Workers Service to RAEs

Government Extension Service RAEs (%)	Frequency	Percentage
Yes	31	51.7
No	22	36.6
Sometimes	6	10.0
N/A	1	1.7
Total	60	100

Table 4.31: Government Extension Workers Service Versus RAEs Qualifications

Professional qualification	Yes (%)	No (%)	Sometimes (%)
Certificate	63.9	25.0	11.1
Diploma	25.0	66.7	8.3
BSc.	50.0	37.5	12.5
MSc.	33.3	66.7	-
Total	52.5	37.3	10.2

c) Consultation Between RAEs and Government Extension Workers

To assess the level of interaction between the RAEs and the Government Extension Workers, information regarding the consultation between the two parties was sought. The frequency results computed indicated, that 58.3% responded, positively. Cross tabulation results against the highest qualifications and consultation, indicated that the highest group of RAEs which consulted was those with MSc. qualifications (100%) and certificate holders (66.7%). The least consulted group was the diploma holders.

The results again pointed out that there seemed to be a relationship between the experience and the high qualifications. This implied that the higher the qualification and the more experience, one had, the more likely for one was to be consulted (Table 4.32-4.33).

Table 4.32: Consultation Between Government Extension Workers and RAEs

Consultation	Frequency	Percentage (%)
Yes	35	58.33
No	11	18.33
Sometimes	11	18.33
N/A	3	5.0
Total	60	100

Table 4.33: Consultation by Professional Qualifications

Professional Qualification	Yes	No	
Sometimes	(%)	(%)	(%)
Certificate	66.7	11.1	22.2
Diploma	36.4	45.5	18.2
BSc.	62.5	25.0	12.5
MSc.	100.0	-	-
Total	61.4	19.3	19.3

4.3.5 Distances of the Clients

Having established that a good number of RAEs were involved in providing extension service to a number of clients, it was necessary to know how far the clients lived from the RAEs. Results indicated that 83% of the RAEs who provided extension service lived within the radius of ten kilometres from their clients. This implied that RAEs were mainly serving the persons neighbouring them whom they were probably in contact with and whom they were mostly known to. This was unlike the services provided by the Government Extension Workers whom the farmer may or may not know. Moreover, there was a likelihood that when the farmer went to seek for help, he/she would most likely seek for specific service because they knew the RAEs very well on what he or she was good at. Furthermore, they knew and could see his/her performance even when it

came to farming. This created confidence in the farmer in that whatever advice they got and were sure that would work because it also works for the RAEs neighbour (Table 4.34).

Table 4.34: Distance of the RAEs' Clients From RAEs Residence.

Distance from Clients	Frequency	Percentage (%)
More than 1km but Less than 10 km	39	83.0
10 to 200 KM	4	8.5
Less than 1KM	2	4.3
Cannot tell	1	2.1
No response	1	2.1
Total	47	100.0

4.3.6 Technology Transfer and Adoption of the Technology

One of the roles of an Extension Worker is to transfer technology to his/her clients, who in this case were farmers. RAEs were by virtue of their training, professional extensionists, and therefore, were expected to transfer technologies to their clients. Data on the different types of technologies which the RAEs claimed had transferred were gathered and put into several categories. The frequency analysis results indicated that 37 (77.1%) of the RAEs had introduced new technologies to their clients, while 11 (22.9%) had not. The results revealed that the technologies which scored highest were;

agro-forestry and grafting of fruit trees. Each of these was transferred by 13.5% of the respondents. These were followed by feed conservation and horticultural farming technologies. Each of these indicated that 10.8% of the RAEs had transferred that technology. As one may note, horticultural farming has been on the increase since the decline of price for coffee in the market. An attempt was made to establish whether there was any relationship between the type of technology and the professional qualifications. Further analysis by cross tabulation was done.

Table 4.35: Technologies Transferred by RAEs

Technology transferred (%)	Frequency	Percentage
Agro-forestry	5	8.3
Grafting	5	8.3
Feed conservation	4	6.7
Horticulture	4	6.7
Floriculture	3	5.0
New clones/varieties	3	5.0
AI	2	3.3
Zero grazing	2	3.3
Growth regulators	2	3.3
Pesticides	2	3.3
Organic farming	2	3.3
Drip irrigation	1	1.7
Tick control	1	1.7
Commercial poultry	1	1.7
Sub-Total	37	61.7
N/A	12	20.0
None	11	18.3
Sub-Total	23	38.3
Total	60	100.0

Interestingly, the certificate holders seemed to have introduced virtually all types of technologies to their clients except drip irrigation, commercial poultry farming and tick control measures (Tables 4.35 and 4.36).

It should be noted that though 77.1% of the RAEs introduced technologies to their clients, it was not every client who adopted the technology. Adoption and introduction of technology are two different things (Pannell, *et al*, 2006). An extensionist may introduce the technology to a client who may refuse or take time to adopt that technology. This is because adoption of technology is but a process and may take time.

Table 4.36: Technology Transfer Versus Qualification

Professional qualification	Certificate (%)	Diploma (%)	BSc. (%)	MSc. (%)
AI	4.3	-	16.7	-
Agro-forestry	13.0	33.3	-	-
Zero grazing	8.7	-	-	-
Drip irrigation	-	-	16.7	-
Feeding conservation	13.0	-	16.7	-
Floriculture	8.7	16.7	-	-
Grafting	17.4	16.7	-	-
Horticulture	8.7	-	33.3	-
New clones/varieties	13.0	-	-	-
Growth regulators	4.3	-	-	50.0
Pesticide	4.3	-	-	50.0
Tick control	-	16.7	-	-
Organic farming	4.3	-	16.7	-
Commercial poultry	-	16.7	-	-
Total	100	100	100	100

4.3.7 Challenges Faced by the RAEs

Information on the challenges that the RAEs faced were collected, grouped and coded. Analysis of this information indicated that, attitude and acceptance of new ideas and finance were the top challenges that RAEs faced. Each of these scored 13.3%. These two were followed by transport and workload challenges which took 11.7% each (Table 4.37).

Table 4.37: Limitations Faced by RAEs

Limitation/Problems	Frequency	Percentage (%)
Attitude in new ideas	8	13.3
Finance	8	13.3
Too busy	7	11.7
Transport	7	11.7
Market	2	3.3
Aging	1	1.7
Competition	1	1.7
New Diseases	1	1.7
Cost of inputs	1	1.7
N/A	24	40.0
Total	60	100.0

When cross tabulation analysis was done, the results indicated that the certificate holders seemed to be most affected (55.6%) compared to MSc. holders (8.3%). Once

again it appeared like the less qualified one was the more challenges one was likely to face (Table 4.38).

Table 4.38: RAEs Limitations and Professional Qualifications

Professional qualification	Certificate	Diploma	BSc.	MSc.
	(%)	(%)	(%)	(%)
Aging	100.0	-	-	-
Attitude in new ideas	25.0	12.5	37.5	25.0
Competition	100.0	-	-	-
New Diseases	100.0	-	-	-
Finance	25.0	25.0	37.5	12.5
Cost of inputs	100.0	-	-	-
Too busy	85.7	14.3	-	-
Market	100.0	-	-	-
Transport	57.1	42.9	-	-
Total	55.6	19.5	16.7	8.3

4.3.8 Suggested ways to reduce limitations

Analysis of the data indicated that 35 (77.8%) felt that the government should compensate them for the work that they were doing while, 10 (22.2%) did not (Table 4.39).

Table 4.39: RAEs Suggested Amount for Compensation

Suggested amount	Frequency	Percentage (%)	Valid %
Determined by the service provided	11	18.3	47.8
500.00	3	5.0	13.0
1000.00	1	1.7	4.3
300.00	1	1.7	4.3
1200.00	1	1.7	4.3
2000.00	1	1.7	4.3
2300.00	1	1.7	4.3
3500.00	1	1.7	4.3
10000.00	1	1.7	4.3
Total	23	38.3	100.00
Total	60	100.00	-

4.3.9 Results Discussion on Extension Provision

Though, not all the RAEs were involved in providing extension services, the 80% involved implied that majority were still interested and wanted to keep on enlightening other farmers whether intentionally or otherwise. The training they received stating that, their primary role as extension workers was not only to enlighten the farmers on the modern farming but also to offer informal training to them (Adams, 1982), seemed to have stuck with them not only as professionals but also as an obligation for them, even after retiring or leaving the service. The RAEs role still appeared to agree with what Stewart observed, that training programmes helps one build a vision as well as being rooted in a set of principles and values (Stewart, 1998).

In addition, the results seemed to portray that RAEs looked like they had discovered (whether, during or after the service) that being knowledgeable and technical, earns them some respect and that they needed this in the society (Benor *et al*; 1984, Pannel *et al*, 2006).

However, looking at the RAEs in extension service from another angle, it may not necessarily have been voluntary as it may have appeared. It may also have been a forced one because the neighbouring farmers knew that the RAEs were knowledgeable in certain areas and hence they went to them and the RAEs had no other alternative but to offer the services as demanded by the neighbouring farmers. The requests may also have been put as a challenge to the RAEs and hence may again have forced the RAEs to act as a proof that they were knowledgeable enough as they had claimed to be, when they were active in the service. Moreover, as Ban & Hawkins (1992) stated, farmers are keen observers of how the other farmers work and they spend much time discussing their farm experiences, this new situation could also have forced the RAEs to engage themselves in this indirect extension service. Their involvement may therefore, be argued that it could proof a point that what they trained for was worth and others need to follow.

Though, the service was provided both directly and indirectly, different approaches were used. The service was also provided mostly in form of advises and

demonstrations, clinical services, inputs provision and consultancy, as indicated in the recorded analysis. This meant that more than one method or approach was used. In some cases (35%) visits were made to the homes of the clients while, in other cases, the farmers sought help from homes of the RAEs. This was to suggest that the farmers were slowly getting to what one could refer to as "demand driven service". Moreover, the farmers also were recognizing that there was "one" of their own, who was not only more knowledgeable but also willing to assist them.

The clinical services were mainly provided by the RAEs, who previously worked or trained in the veterinary and animal production departments as stated earlier. Besides the clinical services which could be considered as direct service, other direct services were mainly offered in public "*Barazas*", especially, by RAEs who held elective offices in the Cooperative Societies of Coffee, Tea sub sectors and those involved in Common Interest Group (CIG) leadership during their meetings or during the field days.

As the results indicated, out of the sixty (60) RAEs sampled from the total 165 RAE, 80 % were involved in extension services. However, when the highest professional qualifications and the number of clients served were compared, the ANOVA test did not show any significant difference when $P < 0.05$, ($F = 0.560$ significant 0.644) when qualifications were considered. The results appeared to suggest that there seemed to be a relationship between the years of experience and training when it comes to offering of

the service. This was because as noted earlier, the certificate holders had an average work experience of 27 years and even though, they trained for an average of less than two years, their experience seemed to give them confidence in continuing with the extension work. Training also seemed to have a similar effect because the MSc. and BSc. holders though, they had very little direct contact with the farmers, they looked like they were willing to handle problems presented to them by farmers.

Though, the results showed that there was a distinct role on who should meet the farmer during the period when the RAEs were in service, this was not the case for the RAEs. Each RAE had direct contact with his/her farmers and did not need other intermediaries or officers to go through them to get to the clients.

Basing on the level of training, several issues seemed to emerge when it came to extension service provision. Although extension services could be said to have been provided by RAEs across the board of educational training, there were also some unique observations. For example, majority of the services were offered by those in lower grades, specifically, certificate holders (88.9%). The response from the neighbouring farmers also, indicated that indeed the RAEs were involved in the service but, they appeared to have specific clients and not every neighbouring farmer. It was not clear how they chose the farmers whom they served. This revelation probably should act as a pointer of what has been said to happen in the field when providing the extension

service. The extension officers have been accused of being biased in choosing the type of farmers that they will serve. It can, therefore, be deduced that even in retirement they only served those whom they chose to.

The RAEs within the lower level of training that is, JAA /JLHA up to TAA and SAA provided most of the service (88.9%) while the highly trained, that is, AAO up to MSc. holders provided the least (62.5%). Two possible reasons for this kind of response could be advanced; first, the highly trained RAEs did not have a lot of social contact with the local farmers, because they had spent quite a lot of their life outside their home areas compared to the low trained persons who were mainly posted in their home areas. They could still be considered as strangers. It was noted that these RAEs came home only when on leave or after retiring. This period was not possibly enough or was inadequate to create enough social interactions and to have them accepted in their social set up. They were therefore, viewed as people belonging to another class. Secondly, results gathered from the NEF indicated that they are mostly considered as belonging to the class of the rich and hence, they may have experienced “silent” rejection by the society. This made them not to interact with the locals as their junior counterparts did, whom the community considered as part of them. This type of reaction could be taken as “successional/status rejection”. The type of alienation could be seen as a result of ones’ achievement which the society/ group considered to have separated from among them. Indeed, some of the RAEs indicated that life was rather frustrating at their present

status. Moreover, as the results indicated, most of the highly qualified RAEs were not in direct contact with the farmers during the working life and hence may have needed time to get accustomed to them. This could be another factor which may have contributed to their less involvement in extension.

The results appeared to suggest that the RAEs with higher qualifications than that of certificate holders, tended not to involve themselves in advisory and demonstration service. The reasons for this could be probably be that they may have thought that this was for those with less qualification. This notwithstanding, there were exceptional cases, where some very highly trained RAEs offered services all over.

In as far as adoption of extension services and technologies were concerned, the results gathered during the study showed that New Extension Agricultural Technologies introduced by the RAEs were adopted by some of the clients of the RAEs and not by all. In addition, technology packages presented were not taken wholesome as presented by the RAEs. The package included both technologies for both livestock and crop production. The clients (farmers) were therefore, free to chose the package they wanted. Different RAEs had different number of clients who took the whole package or part of it or rejected the package altogether. Overall, it could be deduced that at least 63.2% of the RAEs clients adopted new farming technologies which they did not seem to either use, apply or know, prior to getting into contact with the RAEs. The technologies may

have been gotten through the influence of the RAEs whether directly or indirectly in which case the clients did not only accept it in principle, but also put into practice. Such technologies included; zero grazing, use of grafted seedlings, organic farming, use of fertilizers, soil conservation and horticultural farming, just to mention but a few.

The results further revealed that the highly qualified RAEs tended not only to introduce any type of technologies but also highly technical ones such as drip irrigation, (16.7%) - introduced by BSc holders and growth regulators and pesticides, (50%) - introduced by MSc holders. These results tended to imply that the more one gets qualified, the more they tended to move away from the general to specialised technologies while, the less qualified remained to be the “jack” of all trades and a master of none, as the saying goes.

On issues of the terms for offering the services, the data gathered during this study indicated that 63.3% of the RAEs involved in extension services did not charge for the services they offered, while, 36.7% did charge what they called a “small fee”. It was observed that those who charged for the services were those who offered service in livestock related fields such as, treatment, dehorning and castration. It was not clear why some of them offered the services free. However, some theories could be advanced for this. For example, some felt that since they were doing the same during their working era, it was not necessary to charge, while others may have felt that they were

assisting their neighbours and friends. Yet, others may have felt that the farmers were not able to pay for the service due to the poverty levels in the area.

Cross tabulation results between the qualifications and the terms of providing services showed that there was no significant difference across the board. However, when it came to charges, the median showed that the higher the qualification, the higher the charges. In addition, it was also observed that those who worked last in companies charged nearly six times more compared to those who were working with the government. This looked like the charges were being pegged to how much one was earning and where one last worked. This meant that those who had worked for private firms were not used to offering free service. It was also observed that farmers were also not willing to pay for the services on crops related field as they felt that they knew. This was a wrong perception because it leads to loss or low production, because the farmers sought advice for their crops when it is rather too late to save the crop. There is therefore, need to educate farmers to seek help for their crops as early as possible just as they do in livestock.

The concept of free extension service by the Government is likely to affect extension service, especially in crop related fields when it is privatised. This was clearly reflected by the results showed by the performance of consultancy services. The 6.3% service provided was rather too low and may deter many RAEs from going for such

undertaking. The poor payment for the service, coupled with the level of poverty in the rural areas was another factor that is likely to affect private extension service. This could lead to either poor service provision or even hinder the extension professionals to shy away from venturing into private extension service, especially those in general agriculture. The long term effect in this scenario is that agricultural production is likely to drop. Furthermore, the farmers have to be convinced that the market price for their produce is good enough to warrant paid services. This hurdle, needs to be addressed before privatising the sector. The farmers also need to be educated of this paradigm shift as they still wait for extension workers in their farms as they were taught during the T&V programme.

According to the T&V extension approach, an extension officer was expected to visit at least eight farmers in a week. This was considered to be the ideal and would translate to 448 farmers in a year or a ratio of 1: 448 (Benor & Baxter, 1984). The results however, have indicated that the mean for most RAEs was 39 farmers for unspecified period of time.

Like in any profession, the RAEs, were faced with many challenges as the results had indicated. Among these include, the attitude, the aging factor and the finances. These limitations have possibly affected their overall performance. Noting that majority of RAEs were offering the services for free, an argument could be advanced that they

could probably have done better, if they were being paid for the service they offer or other forms of facilitations were provided. It was no wonder therefore, that a good number felt that the government should compensate them.

4.4. RAEs Influence on Agricultural Productivity and Neighboring Farmers (NEF)

To determine and compare the agricultural productivity influence, enterprise mix and technology transfer of RAEs and NEF, field observation, means, frequencies, cross tabulations, ANOVA, and Regression analysis were computed and the results presented. These results were put into different categories, which included: general field observations of the enterprises kept by parties, type of farming being practiced, unit productivity by both the RAEs and the NEF, technologies used and introduction of the same to the farmers by the RAEs. Comparison of the production of the RAE, NEF client and RAEs Non Clients was also done.

4.4.1 General field Observations

4.4.1.1 Farming involvement and agricultural out put

Results indicated that 54 (90%) of the RAEs were involved in the farming activities while, the rest 6 (10%) were not. The RAEs included; certificate holders, diploma holders, degree holders and MSc holders (Table 4.40).

Table 4.40: RAEs Involvement in Farming Activities

Involved	Frequency	Percentage (%)
Yes	54	90
No	6	10
Total	60	100

Although the computed frequencies showed that 90% of the RAEs were involved in farming activities, it was observed that, their farming was not uniform neither were the enterprises kept necessarily the same. This posed some complications. This is because there were certain aspects which were different. For example, the farms were not of the same size, neither were the number of livestock kept of the same breed or equal in number, respectively. A simple method was therefore, devised to help in assessing the output. This problem was solved by making a simple comparison of the average output per unit of various enterprises kept by the RAEs and that of the NEF.

The crop acreage grown ranged between less than 0.2 of a hectare to about 10 hectares, though majority of RAEs owned about 1.5 hectares. The animals kept were less than ten except, for the RAEs who kept poultry for commercial production. Crops which were grown in an area less than 0.2 of an acre (except vegetables) were treated as purely for home consumption and did not have any economic value. Indigenous livestock such as local chicken, were also treated the same and were therefore, not considered for assessment.

4.4.1.2 Type of Farming

The farming activities could generally be put into three broad types: Crops, livestock, and mixed farming. The farming could further be categorised into commercial or subsistence farming.

Crop Farming

Among the 90% RAEs involved in farming activities, fourteen percent (14.0 %) were involved purely on crop farming and they did not keep animals, except for a few poultry which were mainly for subsistence. The type of crops kept by RAEs were mainly for commercial purposes, although crops for subsistence were also cultivated alongside the commercial ones. The crops grown seemed to be dictated by the agro-ecological zones where the RAEs lived. The RAEs, who lived in tea zones, grew tea as their cash crops, those who lived in transitional zones between tea and coffee, grew both crops but gave preference to tea as it had better market prospects, while those who lived in the marginal areas like, Thika, Kakuzi and Ruiru grew cereals, fruit trees and pulses.

The other crops which were also grown by RAEs living in these marginal areas, especially in Kakuzi were the fruit trees, especially citrus and mangoes. The first citrus cultivation in Kakuzi was introduced by one of the RAEs and has now spread throughout the entire division.

Livestock Farming

Data gathered during this study indicated that 9.8 % were involved purely in livestock farming. The livestock kept were mainly dairy cattle and poultry. None seemed to keep beef cattle even when some of the NEF were keeping them. The possible reason for not keeping beef cattle was because there was ready market for the products from dairy cattle and poultry. Furthermore, the size of the farm would not allow many beef animals to be kept. Though, a few kept other types of animals like sheep and goats, none was kept in big numbers nor were they kept for any commercial purpose. It was noted that the number of dairy cattle kept was not more than 10 in number. This limitation could be attributed to the small acreage of land owned by the RAEs and the type of farming they were practicing.

Mixed Farming

Data gathered during the study indicated that 68.6 % RAEs were involved in mixed farming. While, the type of livestock kept cut across the Agro-ecological zones, the crops kept seemed to be mainly determined by the agro-ecological zones. It was noted that the RAEs from the high potential areas also kept animals which were high milk producers compared to their counterparts in marginal divisions.

Commercial and Subsistence Farming

Information collected indicated that although 90% of the RAEs were involved in farming activities, some were engaged in commercial farming, but not all were doing pure commercial farming. This aspect can therefore, be categorised into those doing pure commercial farming and those doing subsistence farming. The RAEs who are engaged in pure commercial farming comprised 21.6% while those engaged in mixed farming formed 68.6%. As already pointed out, there were cases where some RAEs had specialised in either Livestock (9.8%) or crops (14%).

4.4.2 Unit Productivity Comparison

In an attempt to establish whether there was any significant difference in the production of the RAEs and the NEF, the unit production of different enterprises kept by both parties were compared. The comparison of this nature was essential as adoption rate has at times been said to be influenced by among other factors, proximity of the practitioners of innovation and their neighbours (Muyanga & Jayne, 2006; D'Emden *et al.* 2006; Hagerstrand 1967; Ruttan 1996). Furthermore, it has been observed that people are also influenced by the action of other people especially, adopters and those whom they respect (Kelman, 1958). Being unemployed seemed to have opened the eyes of the RAEs and ushered them to the world of farming. This in essence meant that they had now to start practicing what they had been asking farmers to do. It was to put to test

their professionalism and put into practice and expose it for judgment by the other farmers. Their farms were also subject to be judged as this was where they were carrying out their practices (Table 4.41).

The results revealed several findings. In terms of the normal or traditional cash crops such as coffee and tea, there was not much difference in production between that of the RAEs and the NEF, and indeed, in some cases the NEF appeared to do better, for example in coffee (9 kg/ plant for NEF compared to RAEs (6 kg /plant). However, when it came to what one could refer to as high value enterprises such as, tomatoes, dairy goats, French beans, pineapples, oranges and maize, the RAEs were performing far better than the NEF. These results appeared to indicate enterprises where the farmers (both RAEs and NEF) lay their emphasis on. The results seemed to imply that the NEF attached a lot of importance on the traditional cash crops while, the RAEs on the other hand, even though, they keep these, much of their attention was focused on the high value enterprises. One of the reasons for this could be market opportunities. This could probably explain why the RAEs' income was better than when they were in paid employment.

Table 4.41: Productivity by Farming Enterprises and Farmer Type

Enterprise	Units	RAEs Farmer	NEF Farmer
Coffee	Kg/ tree	6	9
Dairy cow	Kg/ Animal/day	10.4	10.0
Maize	90 Kg Bags	7	5
Poultry	Kg/ Bird	1	-
Dairy goats	Kg/animal/day	3	2
Kales	Kg/unit	20	93
Passion fruit	Kg/plant	2	7
Tea	Kg/Plant	1	1
Potatoes	Kg/acre	1650	269
Sweet potatoes	Kg/acre	160	1
Beans	Kg/acre	257	219
Cassava	Kg/acre	-	417
Avocados	pieces	15	204
Banana	Bunches	100	24
Tomatoes	Kg/acre	382	280
French beans	Kg/acre	2700	226
Citrus	Kg/acre	900	94
Pigeon peas	90 Kg bags	3	2
Oranges	Kg/acre	2650	2650
Mangoes	Kg/acre	100	150
Pineapples	Dozens	215	59
Macadamia	Kg	-	90
Cabbages	Tones	25	10
Flower (arabicum)	Pieces/plant	-	16
Arrowroots	Kg	-	1
Indigenous cattle	Lt/animals	15	2
Beef cattle	Kg/Animal	-	500

[†] One outlier producing 10,000 kg of kale per acre excluded from this analysis

In trying to establish whether there was any significant difference between the retirees and the normal farmers, regression and ANOVA analysis was done.

The regression analysis carried out at 95% confidence level showed $r^2 = 0.353$ which indicates that 35.3% of the variation change/improvement in production can be explained by the on-going activities of RAEs. This relationship is not weak and can be used to explain and predict the rate of production by studying the activities of RAEs. Further on the beta coefficient of the resulting regression model $t=2.822$ indicated that the beta coefficient is significantly greater than 0.05, $p=0.07$ which is greater than $p=0.05$ the test statistic. This confirms that essentially there is a strong difference in production between retirees and normal farmers. This means that the activities of retirees (RAEs) should be aligned with the peoples/locals expectations as well as needs if production is to be achieved as the ultimate aim of the farmers since the study has established that effective activities by the RAEs are bound to result in improved living production and subsequent rural development.

Regarding the crops which were normally regarded as staple crops, such as maize, potatoes and beans, field observations indicated that few RAEs were involved in their production, however, the few who did, the results indicated that they had higher production than the NEF.

4.4.2 Enterprises Established

An attempt was made to identify the number of enterprises that both the RAEs and NEF kept (Table 4.42 and 4.43). When comparison was made, the results showed that NEF had tried to keep very many enterprises, which were low yielding, while the RAEs kept less number of enterprises. The results imply that the NEF were diversifying their production while, the RAEs were intensifying theirs. It was no wonder then that their production differed.

Table 4.42: Frequency of Enterprises Mix by all AEs.

Enterprise	No. of Reported Cases	% of Response
Maize	30	17.6
Beans	26	15.3
Dairy cattle	20	11.8
Horticultural	13	7.8
Coffee	12	7.1
Tea	10	5.9
Bananas	7	4.1
Poultry	7	4.1
Irish potatoes	5	2.9
Dairy	4	2.4
Avocado	4	2.4
Local chicken	4	2.4
Fodder	4	2.4
Macadamia	3	1.8
Improved poultry	3	1.8
Mangoes	3	1.8
Goats	3	1.8
Sheep	2	1.2
Flowers	1	0.6
Beef animals	1	0.6
Grevilla (Forestry)	1	0.6
Fish	1	0.6
Pigs	1	0.6
Sweet potatoes	1	0.6
Bee keeping	1	0.6
Cereals	1	0.6
Passion fruits	1	0.6
Pawpaws	1	0.6
Pineapples	1	0.6
Total	170	100

Table 4.43: Frequency of Enterprises Mix by all NEF Farmers

Enterprise NEF	Frequency	Percentage (%)
Coffee	88	9.6
Dairy cow	235	25.7
Maize	206	22.6
Dairy goat	17	1.9
kales	4	4
passion	10	1.1
tea	144	15.8
potatoes	6	7
sweet potatoes	1	1
beans	113	12.4
cassava	6	7
avocadoes	5	5
banana	19	2.1
tomatoes	8	9
French beans	5	5
Citrus	8	9
Pigeon peas	11	1.2
Oranges	2	2
Mangoes	1	1
Pineapple	8	9
Macadamia	1	1
Cabbage	4	4
Flowers (arabicum)	3	3
arrow root	1	1
indigenous cattle	3	3
beef cattle	3	3
spinach	1	1
Total	913	100.0

4.4.4 Use of New Technology

One of the roles of the Extension Workers is to transfer and introduce new technologies to the farmers (Gerard & Meerman, 2001). An attempt was made to establish whether the RAEs were themselves using these new technologies to boost their production and if

they were, to indicate how they got their technologies and whether they were introducing the same to their neighbouring farmers (Table 4.44).

Table 4.44: Source of RAEs Technologies

Source of Technology	Frequency	Percent
Attended a course	25	65.8
Govt. extension worker	6	15.8
Other farmers	2	5.3
Research findings	4	10.5
Heard it through and also advert in the media	1	2.6
Total	38	100.0

On the use of new technologies by RAEs in their production process, the results indicated that 34 (58.6%) used them in their production activities while 24 (41.4%) did not. This again could probably give another reason as to why their production was better than that of NEF. Yet, technology has been identified as one of the factors which may contribute to increase in production. Notably is the fact that despite having the knowledge on use of new technology, not all of them used the same for production. The results further revealed that the RAEs got these technologies from different sources, namely; course or training that they attended (65.8%), Extension Workers (15%) and adopted it through the research findings (10.5%). Some had learnt new technologies from other farmers as Chambers (1993) noted that farmers learn from others, meaning that even RAEs farmers were not exceptional. This was an indication that though they

had training in agriculture, they realized that they could also get some technologies from other farmers and that they did not have the monopoly of knowledge. This was to imply that unlike the farmers, the RAEs had a clear knowledge on where to look for any technologies that they may need for their production processes. The NEF may not have this vital information. In addition to using the technologies the results also showed that 51.8% of the RAEs introduced new technologies to their clients while 48.2% did not.

4.4.5 Comparison of Production of RAEs' Clients and RAE's Non Client production

Results on comparison were done to establish whether there was any significant difference on the production between farmers who were clients for RAE and those who were not. The regression analysis showed a weak difference $r^2= 0.091$ which shows that only 9.1% of the change/improvement in production can be attributed to the activities of RAEs/consultancy services. This relationship is very weak and can be attributed to other factors other than the consultancy received from RAEs.

Further on the beta coefficient of the resulting regression model $t=1.113$ indicated that the beta coefficient was significantly lower than 0.05, $p=0.03$ which was less than $p=0.05$ the test statistic. This confirmed that essentially there was a very weak

insignificant difference in production between farmers who were clients of RAEs and those who were not.

4.4.6 Discussion On Agricultural Productivity

The overall results showed that the RAEs regardless of their qualifications and economic status were involved in farming. The results further indicated the resulting regression model $t=2.822$ that the beta coefficient is significantly greater than 0.05, $p=0.07$ which was greater than $p=0.05$ the test statistic. This was to imply that the unit production of RAEs was also significantly higher compared to their counterpart farmers. It was however, observed that the majority of those involved were mainly certificate holders (91.7%) and diploma holders (100%). These results seemed to suggest that a smaller enlightened population involved in agricultural production would produce better results than many farmers who may not be enlightened. It is probably the same reason why in Europe only 3-4 % of the population are involved in farming and are able to feed the entire continent leave alone one country (Spore, 2005).

Notably, the results however, appeared to suggest that the higher the qualifications, the less the involvement in farming activities and this could possibly be associated with the findings in differences in socio-characteristics which indicated that socio-characteristics also were dependent on the level of professional training. An argument could yet be advanced that the lower cadre of staff are more technically trained than the higher calibre of staff and this could be a factor to consider and hence have no problem in

doing the farming work practically. This notwithstanding should not be taken as a general rule because even the highly qualified RAEs (75%) were also involved. The reasons for less involvement of the highly qualified RAEs in farming were not clear but the socio-characteristic difference could be a pointer of one the reasons.

It could only be deduced that they were involved in other business ventures as the results indicated and indeed the Pearson Chi-square ($=7.481$ at 5% significant level) results on whether involvement in other businesses was dependent on level of training indicated so. This could probably have denied them more time for doing the farming and may have considered other business ventures as better paying than farming. Another argument that could possibly be advanced is that, most of the RAEs were away for a long time working in areas outside their home areas and had just come back upon retirement and were still to locate their bearing on what they should be engaged in. In addition, the highly qualified RAEs were more involved in administration during their working life than being in the contact with farmers. This could also have given the impression that their jobs carried higher dignity or status.

Regarding the enterprises initiated, even though they can be put into two broad categories, mainly livestock and crops, not many kinds of livestock were kept for commercial purposes, except dairy and poultry. The rest were mainly for subsistence purposes. It was also observed that even when it came to poultry only very few RAEs

and NEF owned the poultry business. The few RAEs who owned poultry, were mainly those who had a training in livestock related fields.

In case of crops enterprises, as it was stated by Moris, (1991), that African farmers were conservative and tried to grow many crops varieties as a way of spreading the risk, this was clearly demonstrated. The farmers grew many kinds of crops in small quantities and what one would call uneconomical manner, but it could be referred to as diversifying their production activities. Contrary to this, the RAEs on their part did what could be referred to as intensified production. They thus, kept fewer enterprises. These results appeared to suggest that the RAEs on their part applied their educational/professional knowledge during the selection of the enterprises, while the NEF could be said to have applied what they possibly found their forefathers doing. In addition, if one considers the adoption theory as advanced by Pannell, *et al*, (2006), that adoption occurs when an individual perceives that the innovation/ information in question will enhance the achievement of their personal goals, the RAEs, could have been clear on their goals and hence made production decisions faster compared to other farmers who could be still at the valley of decision and taking time to adopt. This argument is further supported by the fact that even, when the enterprises owned by both parties were considered, the NEF tended to keep traditional crops such as tea and coffee unlike the RAEs who, besides keeping these, they kept what could be referred to as high value crops/ enterprises such as horticultural crops and dairy goats. A good example

was observed in Kakuzi Division, where the NEF insisted on keeping the indigenous cattle and believed that the exotic ones died when they reared them, yet the RAEs in the same division kept exotic dairy cattle against this belief. One general observation was that as stated earlier, the type and kinds of enterprises owned by both the NEF was mainly dictated by the agro-ecological zones.

Still on production, it was noted that not all RAEs used new technologies in their production process. This was quite interesting noting that RAEs were themselves advocating the use of new technologies when they were on full time basis as extensionists. This brings into focus what Abadi & Pannell, (1999), Tsur *et al*, (1990), noted that most farming innovations require a certain level of knowledge and skill to be applied and that there can be a wealth of choices. It therefore, looks like the RAEs had other factors to consider while doing their farming besides just adopting all the technologies that they had or knew. Such factors could have been social approval and acceptance, personal integrity, balance of work and lifestyle and economic factors to mention, but a few.

It was noted that even in areas where the RAEs were, despite their wide experience they had, did very little or failed to manipulate the environment for higher production. A classical example which could be cited is that in the high potential areas. It was noted that even though the area was good for dairy production very few RAEs exploited that

opportunity but instead, they also kept tea like the ordinary farmers. This could also be suggesting that even the RAEs could also be influenced by the NEF in one way or another when it came to enterprise keeping and this makes one to think that influence is at times not only a one way but a two way process.

Though, the Kenya Government in her strategy to reduce poverty, has underscored the fact that a well educated and healthy population is a vital factor for boosting productivity and overall performances of the economy (GoK, 2001), the results of this study showed that this fact is partially true. The results showed that though, the performance of the trained RAEs was quite impressive when compared to that of the NEF, there were incidences where the performance of the ordinary farmers was better than that of RAEs. For instance, when it came to traditional cash crops their production appeared better than that of the RAEs. However, this could also be argued to be partly true in that the RAEs may have chosen to have given these enterprises less attention noting that the returns from them was not good and having been more informed about making choices in production process, the RAEs chose what was more marketable.

This notwithstanding, the regression results, clearly indicated a strong difference $r^2=0.353$ which shows that 35.3% of the change/improvement in production can be explained by the on-going activities of RAEs. This relationship is not weak and can be used to explain/predict the rate of production by studying the activities of RAEs.

Further on the beta coefficient of the resulting regression model $t=2.822$ indicated that the beta coefficient was significantly greater than 0.05, $p=0.07$ which was greater than $p=0.05$ the test statistic. This confirmed that essentially there was a strong difference in production between retirees and normal farmers. Noting that there was no significant difference on the production of the RAEs NEF clients and Non-RAEs' NEF client, the RAEs' higher production can be probably attributed to their training, an issue which could also be thought to be influencing the other ordinary farmers who were RAEs' clients who could probably be still in the valley of decision making according to theories of adoption (Pannell *et al*, 2006).

Lack of significant difference on the production between client farmers of RAEs and Non-RAEs client has several implications. First, it could be a clear reason as to why the NEF got influenced by the production performance of RAEs. As stated earlier, people get influenced by persons whose performance was good and whom they respected (Kelman, 1958). Secondly, the fact that there was no significant difference could mean that the RAEs non-clients could be having other sources of information either from NGOs, public “*barazas*”, groups that they belong to, media, Government agents and that is why they did not bother in getting the extension service from the RAEs. Thirdly, it is possible that they could get the services from RAEs clients' by extension. Besides these, there was a probability that the RAEs clients performance did not get better than those of other farmers because production increase is a result of many factors besides

getting the information. It could also be argued that the fact that they were RAEs clients did not necessarily mean they adopted all the information given by the RAE but were still in the processes of gathering information before they could adopt the innovations introduced to them (Pannell *et al*, 2006).

Studies done by Muyanga & Jayne, (2006), of Tegemeo Institute which cited proximity of experts to the neighbours as one of the factors which influences their adoption of agricultural information besides their performance, could also be another factor which could be influencing the NEF to be clients of RAE. The better performance or variation by the RAEs could be argued from a number of adoption theories, first, following the Abadi *et al*, (1999), who sees adoption as a learning process with two distinct aspects, one of the collection, integration and the evaluation of new information to allow better decisions about the innovation or technology being brought about by the extension agent to the farmer. The RAEs have already had experiences of these and the issue of uncertainty is probably eliminated, meaning that they will take less time to make decision. Moreover, RAEs did not need to wait for the expert to come and advice them.

Furthermore, deducing from these results, in matters concerning training, training appears to play a role in helping one to choose the profitable enterprise to keep especially, when it comes to the availability of markets of the products for such enterprises. Another argument that can be advanced when it came to high productivity

was that production was not just a function of training or education, but contrary to this belief as advanced by Adams (1982), high production is a function of many factors, education and training being one of them. The fact that one has knowledge, does not necessarily guarantee higher production unless that knowledge is put into practical use. Production was a function of many other factors, and being well enlightened is not a guarantee but an added advantage.

Noting that in a nutshell, when 90% (54) of the RAEs involved in farming, unit production was compared with 400 neighbouring farmers, it clearly shows that the RAE had 66.8% higher production. This implied that 15% RAEs have better yields than their 400 neighbours even as the regression and ANOVA analysis indicated.

Basing on this argument, therefore, one is tempted to think that the slogan commonly used by Kenyan leaders that "we should go back to the rural areas to do farming", is not only misleading but also outdated and ill advised. This is because it is against the global trends of human settlement. It is common sense to note that most of the developed countries, majority of the population live in urban areas whereas, farms and farming were left to those willing, interested and have knowledge in farming.

For example, in Europe, only 3-4% of the population is involved in farming and yet they are able to feed the whole continent (Spore, 2005). Time is ripe for us to adapt

policies that will favour those not only willing and interested but also knowledgeable enough to undertake farming as a business. An enabling environment is therefore, essential to such individuals, or group of individuals. Implementing such policies will require re-examining our land and agricultural policies, with the view of encouraging those persons and group of persons willing to invest in agriculture. This will also involve thinking of the incentives which will be given to such a group so as to motivate them. Taking such a bold step will go a long way in getting the country out of net trap of food insecurity. It is pointless to talk of 80% of the population involved in farming and yet they can't feed themselves leave alone the 20% not involved in any farming at all.

On the use of technology, it was observed that the RAEs, 58% made use of it to boost their production. This implied that they embraced new changes in their farming systems and did not need to undergo the adoption theories as they had already done so when they were working and in so doing recognised the contribution of technology to agricultural production process. In addition, it is worth noting that investment in science and technology will play a larger role in the future, as agricultural sectors in all regions face increasing land and water scarcity and greater demand for quality assurance both at the national and global markets. Moreover, science, technology and knowledge based investments are important to support market-driven diversification into high value crops and livestock products, as well as development of sustainable production and marketing

systems. Such investments will also need to focus on supporting traditional research areas such as crops and livestock breeding, integrated crop management, crop/livestock systems, post-harvest technology and food security as well as provide new funding for Biotechnology.

This is because Biotechnology is likely to address production and nutritional constraints in developing commodities, important to poor producers and consumers. In short, rapid technological progress is needed both in the private and public sectors. These have important role to play in research, extension and financing.

Furthermore, the rural areas need substantial investment in education, health, and infrastructure. Education is particularly necessary as it will enlighten the society on the resources that are at their disposal. It is clear, therefore, to note that in order to make changes, the above observations are quite scientific and technical in nature. This means that such a scientific task may not be undertaken by an ordinary farmer struggling to feed himself in a small plot of land of less than 0.2 of a hectare with no basic knowledge in agriculture.

4.5. The Socio-Economic Influence Attributed to the Presence of RAEs in the Community

Frequencies, cross tabulations, means and regression analysis were computed to determine the Socio-Economic influences of the RAEs in the community in which the

RAEs lived. Data gathered from both the RAEs and NEF were computed under different categories. The RAEs categories included: social activities, provision of employment, provision of extension service, production and the role of the farm and the farming activities.

4.5.1 Involvement of RAEs in Social Activities

The computed data indicated that 83.3% of the sampled RAEs were involved in social activities in the community in which they lived. Detailed results on the type of social activities indicated that 53.3 % were involved in development related activities such as water projects, infrastructure development, health projects and school development projects.

Results further revealed that not only, were the RAEs involved in the activities but were also leaders and held leadership positions in those development projects. For instance, the results indicated that 76.6% held the position of officials, Chairperson (44.7%) or vice chair person (10.6%), treasurer (8.5%), and secretary (10.6) (Table 4.45).

Table 4.45: RAEs Involvement in Social Activities

RAEs Qualification	Yes (%)	No (%)
Certificate	88.9	11.1
Diploma	75.0	25.0
BSc.	75.0	25.0
MSc.	75.0	25.0
Total	83.3	16.7

4.5.2 Leadership

Computed results from the RAEs respondents showed that 83.3% considered themselves as opinion leaders in the community in different forums. This meant that they were consulted on issues affecting the community to give their opinions and what action they thought should be taken thereby influencing the community. Results further revealed that not only, were the RAEs involved in the activities but were also leaders and held leadership positions in those development projects. For instance, the results indicated that 76.6% held the position of officials, Chairperson (44.7%) or vice chair person (10.6%), treasurer (8.5%), and secretary (10.6) (Table 4.46).

Table 4.46: RAEs Involvement in Social Activities Leadership

RAEs Leadership Involvements (%)	Frequency	Percentages
Chairperson	21	44.7
V. Chairman	5	10.6
Treasurer	4	8.5
Director	1	2.1
Secretary	5	10.6
Committee member	8	17
Elder	3	6.4
Total	47	100

4.5.3 Extension Provision

As stated earlier, 80% of the RAEs had indicated that they were involved in providing extension services to the NEF. Detailed results indicated that RAEs were providing services to 130 farmers (32.5%) sampled along with them.

4.5.4 Provision of Employment

In order to establish whether the RAEs were providing employment opportunities to the community and the type of employment, data were gathered and computed. The analysis of the results indicated that, at least 76.7% of the RAEs employed casuals, 23.3% had none. When consideration of engaging both casual and permanent

employees were considered, the results indicated that 80% had engaged casuals and permanent workers to do some work for them and 20% had neither (Table 4.47 and 4.48).

Table 4.47: Employment Provided by RAEs Casuals

Has No / has Employees	Frequency	Percentage
No	14	23.3
Yes	46	76.7
Total	60	100

Table 4.48: Employment Provided by RAEs (Both Casuals and Permanent)

Has No / has Employees	Frequency	Percentage
No	12	20
Yes	48	80
Total	60	100

Further investigation indicated that the RAEs spent on average Ksh.20,646 per month as wages to pay their employees, who were basically locals. The results further indicated that at least 9.7 % of the respondents had worked for the RAEs and earned some payment from the RAEs (Table 4.49).

Table 4.49: Mean Amount of Wages per Month Paid by RAEs to Their Employees

No. of Employees by the RAEs	Wage per month in Ksh
1 – 4	6,512.80
5 – 10	21,900.00
Above 10	92,800.00
Total	20,646.95

4.5.5 Service of RAEs to the Neighbouring Farmers (NEF)

Information on the view of the NEF on their neighbouring RAEs was sought and the information was analysed and presented under different categories.

4.5.5.1 Clients of the RAEs

An attempt to establish whether the neighbours were in any way receiving services as clients for RAEs was made. This information was important in the sense that the number who consulted the RAEs and the responsibilities bestowed upon the RAEs could act as an indicator or a pointer of the level of influence that the RAEs command in the community. The computed results indicated that 130 (32.5%) were clients of the RAEs while, 270 (67.5%) were not. When details were sought to know when they became the RAEs clients, the results indicated that 58.5% became their clients between the year 2,000 to date (Table 4.50).

Table 4.50: Client of RAEs

Client of RAEs (%)	Frequency	Percentage
Yes	130	32.5
No	270	67.5
Total	400	100

4.5.5.2 Type of Advice Offered by RAEs

Data were gathered from the 400 farmers neighbouring the RAEs to know whether they received any advice or service from the RAEs. Information was also sought to know whether the service offered to the groups of farmers in case the NEF was a member of a farmers' group.

The analysis presented showed that 193 (48.3%) of NEF belonged to a farmers' group while, 207 (51.8%) did not. Regarding matters on whether the groups received any advice from the RAEs, the analysis indicated that, 35.2 % of the group received advice from the RAEs while 64.8% did not. This meant that the RAEs would, at times meet the group members at one point or the other to offer the service that NEF needed. In addition, the results indicated that 49% of the NEF clients received advice in crop related fields, 28.3% in livestock related fields, while 22.8% got advice on both crops and livestock from the RAEs.

Details concerning how they met the RAEs for advice, the results indicated that 54% of the RAEs' clients went to seek services in RAEs farms, while, 28% received the advice at a "Baraza" and sought for the advice occasionally (39.7%) (Probably when needs arose).

4.5.6 Views of NEF on RAEs

Various information regarding the views of the NEF on the RAEs and how they would rate them in several aspects on their role in the community were gathered. The results are presented in the following paragraphs.

a) Leadership

Information was sought to establish whether the RAEs were considered and recognised as leaders in the society. The overall results indicated that 59 % of the 400 who were respondents recognised the RAEs as leaders in the community. On the areas where they considered them as leaders, 39.5 % considered the RAEs as leaders in the social activities while, 13.3 % recognised them as very useful people in the society.

b) Resourcefulness of the RAEs in the Society

The results indicated that 56.5% of the NEF respondents recognised the RAEs as a resourceful group in the society, but 35.8 % of the same could not tell whether the RAEs were resourceful or not.

c) Farming Activities

In as far as farming was concerned, 183 (45.8%) of the respondents considered the farming activities of the RAEs as good examples. Noting that the actual clients of RAEs were 130, this was a big percentage because it looked like even those who were not RAEs' clients were envying them and copying them.

d) RAEs' Business Benefit to the Community

When information was sought to determine whether the community benefited from the businesses that the RAEs were involved in, 55.7% of the respondents indicated that the RAEs' business was of benefit to them. This implied that the business benefited even those who were not RAEs' clients.

e) Wealth status

Computed results of the NEF judgment regarding the wealth status of the RAEs indicated that 52.1% considered them as rich. This information was vital in that it could assist in assessing the ability of the RAEs to impact on the economic status of the society.

4.5.7 Views of NEF on Training in Agriculture

Information was sought from the NEF to seek their view on training in agriculture and whether they had any relative who had undergone training in agriculture. In addition,

the respondents were asked to indicate whether they would like any of their relatives to train in agriculture. This information was important as it assisted in assessing the way the society viewed farming activities of the RAEs. The computed results indicated that only 6.3% of the respondents had relatives who had undertaken training in agricultural related disciplines while 79.8% indicated that they would like to have one of their relatives undertake a training course in an agriculture related field.

Respondents were also requested to state reasons as to why they wanted one of their own to train in agriculture. Though many answers were given, 58.2% (202) felt that the training would help their relatives to be self employed, an indication that the community viewed agriculture as an alternative means of earning a living, hence, a high regard for agriculture.

4.5.8 Summary of socio- economic influence that can be attributed to the presence of RAEs

Further analysis to determine whether presence of RAEs significantly influenced the socio-economic characteristics of the community was done. Regression and ANOVA analysis was done on hypothesis that presence of RAEs does not significantly influence the socio-economic characteristics of the community.

The regression analysis showed a moderate difference $r^2 = 0.433$ which showed that 43.3% of the change/improvement in socio-economic characteristics could be explained

by the presence of RAEs. This relationship was not weak and can be used to explain/predict the improvement of the socio economic characteristics by knowing the presence of RAEs.

Further on the beta coefficient of the resulting regression model $t=2.955$ indicated that the beta coefficient was significantly greater than 0.05, $p=0.07$ which was greater than $p=0.05$ the test statistic. This confirmed that essentially presence of RAEs influences the socio economic characteristics of the local farmers meaning that the activities of retirees (RAEs) had a positive influence towards the socio economic characteristics of the local farmers. Hence the RAEs are of benefit to the local community.

4.5.9 Discussion on the Socio-Economic Influence Attributed to the Presence of the RAEs in the Community

Results from both the RAEs and NEF on the RAEs socio-economic influence attributed to the presence of RAEs in the community clearly showed that the RAEs were highly involved in social activities. The coefficient of the resulting regression model $t=2.955$ indicated that the beta coefficient was significantly greater than 0.05, $p=0.07$ which was greater than $p=0.05$ the test statistic. This confirmed that essentially presence of RAEs influences the socio economic characteristics of the local farmers. The result indicated some of the RAEs were not just as members of the society but opinion leaders and also leaders in various forums of the community activities and social structure.

Aspect of leadership may be taken to place the RAEs at position of influence as stated by Kelhman, (1958), that people are influenced by someone whom they like and respect. The fact that RAEs were involved in leadership and other social activities was an indication of the confidence and trust that the community had on them and that they are liked by the community. The RAEs have the potential to cause what Kelhman (1958) has referred to as social influence.

Furthermore, as opinion leaders in different areas, it meant that they were causing or had the power to influence many changes in the community through the groups and organizations. It has been observed that there is a tendency for the community to look up to the professionals for advice (Kelhman, 1958)). For instance, those involved in development leadership were capable of deciding on what development projects were to be undertaken or initiated in the community. Moreover, as leaders they would determine which projects to be implemented. In addition, those involved in tea production leadership, were instrumental in deciding on the expansion and management of the tea industry in the areas of their jurisdiction.

On provision of employment, the results indicated that 80% of the RAEs provided some employment to someone in the community. The results indicated that at least 9.7% of the NEF respondents were at one time or another, employees of the RAEs. The daily payment ranged from Ksh.70 (1US Dollar) to KSh. 150 (2 US Dollars). The Results

however, revealed that not many of the RAEs engaged workers on permanent basis. There were RAEs who engaged between 1-4 employees, others 5-10, and those who had more than 10 employees. Noting that the level of poverty in Kenya is about 56% and majority of the population in the rural areas live below the poverty line, the RAEs contribution to poverty reduction cannot be ignored. Moreover, considering the fact that, 52.1% of the NEF considered the RAEs as being rich, the provision of employment to just 9.7% could be considered as being rather low, even though they spent an average Ksh. 20,646.00 per month. This money was being released to the community in form of wages. Besides this, economic factors have been cited as a factor that may also be a contributor to farmer's ability to adopt a given technology, innovation or even farming techniques (Pannell *et al* 2006). Following this argument, the funds paid out to the workers cannot be ruled out that it could possibly be utilized by the recipients in doing the farming activity. Moreover, the worker's close association with the RAEs as an employer could influence them to adopting some of their farming technologies (Muyanga & Jayne, 2006), noting that through learning by-doing, as well as by reading, listening and watching, the necessary skills can be established and enhanced (Pannell *et al*, 2006).

At least the computed results showed that 55.7% had indicated the businesses benefited the community. Such businesses included; operation of agrovets shops, general shops, commercial rental houses, bars, as well as buying and selling of plots. These businesses

had social economic implications. First, there were people who were employed to assist in running these businesses and in the process they earned their living, thereby, affecting their economic status. Secondly, there were RAEs who provided market for the farm produce by the farmers.

The RAEs providing market for the farm produce implied an extra income for the NEF and other members of the community. In the ideal situation the income so gained would be channeled for the betterment of the society's standard of living. As noted by Moris, (1991), marketing of the agricultural produce was one of the main challenges which has not been adequately addressed by the extension workers as it was not considered as part of their duty, yet it has been noted to be a key problem facing the farmers. It therefore, follows that anyone who provides market or an outlet for the farmers' products was considered a blessing in the community. In so doing, they were promoting the economic activities especially, on the commodities which the RAEs had provided market.

But looking at another angle, it could also be argued that the sample which was taken had less number of persons who were employed by the RAEs as it was only a representative and not the actual entire population. Furthermore, it could also be argued that it did not matter where the employees came from but the fact remained that some employment was being offered and that the community benefited from the funds which were being released to them. In addition, the fact that the RAEs were considered as rich

and were leaders in some development projects, they must have been making financial contribution to the different projects and other social activities in which they were involved.

On provision of extension service, though the results showed that 80% of the RAEs provided service and 130 respondent acknowledged as their clients, the number could be far above this, taking into account that this was a representative and again the clients were those directly offered services or what one could refer to as regular customers, but there were those who were indirectly benefiting from the services offered to others. For example, results indicated that 183 farmers had considered the farming activities of the RAEs as good examples to follow. This implied that even though, they were not necessarily clients of the RAEs the farmers were indirectly benefiting in the sense that they were possibly copying what the RAEs were doing. In addition, another, 55.3% of the NEF indicated that the businesses in which the RAEs were doing benefited their community, implying that the community was indirectly benefiting from what the RAEs were doing. For instance, there were NEF who benefited from the inputs which some of the RAEs who had agro-vet businesses were selling even when NEF were not clients of the RAEs directly. Furthermore, other NEF farmers who were not direct beneficiaries of the RAEs advice benefited from the clients of RAEs who may have shared their ideas with the RAEs.

Provision of markets to some farmers by some RAEs could also have impacted on the community in which the RAEs lived. By the RAEs buying the produce, it meant that they were helping the community to get some income.

When results of extension services offered to NEF were compared, more attention appeared to have been directed to crops (49.3%) than livestock related services (28.3%). These results further confirm the fears stated earlier that a bias was being spread in that livestock was being given a raw deal. Such a situation could possibly lead to what Moris (1991) referred to as livestock/crops orphaned when it came to provision of extension service, meaning that very little management attention was being given to livestock and it was likely to reflect negatively on the livestock production. This has a long term economic implication.

When the clients of RAs were considered, contrary to the expectations of many that they may be tempted to serve all the NEFs, bias in the service was observed even for those who paid for the service. The results revealed that only 32.5% of the NEF acknowledged being clients of the RAEs. The results seemed to tally with the Kenya Agricultural Productivity Project (KAPP) (2006, Unpublished) which state that the extension service has only reached about 26% of the population, nationwide. In such cases, the RAEs and even the Government Extension Workers, appeared to have their own clients. This selective extensive service, as one may refer to it, which Moris,

(1991) and other literature have pointed out that it looked like it may not be easily eliminated but it may mean for those who were willing and ready to seek for it. However, when the issue of multiplier effect is applied, the RAEs clients were also bound to be many because the clients shared with other farmers the ideas received from RAEs and hence reaching them indirectly. This was to imply that the agricultural extension service normally should be considered to go beyond the provider.

The fact that the RAEs were also entrusted with other responsibilities in the society, it could be argued that they had actually more clients than those who openly declared that they were their clients. In other words their influence can be considered to be beyond the extension service. Take a case of the NEF who were not necessarily their clients may have seen their leadership qualities or their farming activities as products of their training in agriculture and hence have tried to copy them. This argument could possibly be supported by the results arrived at after analysing NEF views regarding training in agriculture. The results indicated that the farmers had very high regard for agriculture. The results revealed that they regarded it as an alternative for paid jobs after recognising that the paid jobs were currently very scarce. Furthermore, the performance of the RAEs in farming and other social activities could have contributed to NEF's positive response. However, this notwithstanding, another argument could be raised challenging the NEF positive response. It could be argued that by giving positive response they could possibly benefit, but this argument was nullified by the response received from

the respondents when they were asked to state the reasons for wanting one of their own to get training in agriculture. The results indicated that 58.2% was mainly for self employment.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions, recommendations and areas for further research of the study.

5.2 Summary

The purpose of this study was to investigate on the influence of the Retired ex-Agricultural extensionists (RAEs) in the community they live in. In this study, an attempt has been made to provide some empirical information in this line. Data was collected through interviewing of the sixty (60) RAEs, four hundred (400) NEF in Thika District and a further forty (40) NEF, Kenya, as well as through reviewing secondary data. The data collected was analysed both qualitatively and quantitatively. It was noted that though, efforts have been made to give the necessary assistance, there has been no documentation on the influence that an extension person can bring to or cause to the community at a personal level after retiring, besides the professional one by what he/she portrays to be on practical terms. This study tried to address this.

The data presented has revealed that the RAEs in Thika District play a pivotal role in the society in which they live. They were therefore, not just engaged in their own activities that could only benefit themselves but also the community at large. It can

easily be viewed as a situation where the majority of the RAEs only changed the employers and moved to another area where they were to serve in a more diverse society and with no set time. This is to imply that retirement may not necessary mean end of one's' service to the community as it has been possibly perceived. The results of this study could also be a base for which predictions of agricultural output can be done by looking at the performance of the current RAEs. This is because agriculture is becoming more complex and specialised.

The role of agricultural extension can therefore, be summarized by stating that the RAEs provided the extension services to the neighbouring farmers either directly or indirectly. Extension services help the farmers to; analyse their present and expected future situations, to become aware of the problems that arise, increase knowledge and develop insights into problems and to structure farmers' existing knowledge, acquire specific knowledge related to certain problem solutions and their consequences, so that they, can act on possible alternatives, make responsible choices which, in their opinion, are optimal for their situation, increase farmers' motivation to implement their choices, to evaluate and improve their opinion in farming and decision making skills (Ban & Hawkins, 1992). However, there is an early warning that, extension cannot solve all social problems in the rural area, only appropriate knowledge and insight can do so (Ban & Hawkins, 1992). Furthermore, extension workers should work as facilitators, advisors to the farmers by giving them early warning on undesirable events and changes

in conditions (Ban & Hawkins, 1992; Neutachel, 2007a). It is also worth noting that although many problems in agricultural production and marketing have a physical cause, they also have social causes as their root. They are often caused by the way individuals and groups which treat or act on the lives of other people (Stewart, 1998).

In this study, it has been established that much of the extension is done with a different approach. It is basically done indirectly through the influence of the RAEs. They influenced the farmers through their farming activities, which probably may be referred to as observation approach, social involvement in various fora where they shared agricultural information and provision of agricultural inputs not to mention the indirect unplanned consultancy services and others directly. This is to mean that despite their varying professional qualifications and different economic status, there was room for each RAE to contribute to the community. The areas where RAEs were influencing can be summarised as follows;

Socio-economic activities of RAEs

When social activities were considered, the RAEs were heavily involved in providing leadership in various areas. Some of these include: development projects, infrastructure and agriculture development activities, just to mention but a few. As the results indicated, over 83% of the RAEs were involved in leadership activities in the communities where they lived. The result of the analysis indicated that there was a

statistically significant difference among the mean scores, $F = 8.80, P < .05$. This meant that it can be concluded that there was a relationship between RAEs level of training and their socio-economic activities be said to be a positive influence. This made them to influence the community in various ways depending on their level of training.

Influence Played in Provision of Extension Service

On the area of provision of extension services, majority of RAEs were offering the services either directly or indirectly. Their proximity with the NEF was likely to increase the adoption rate (Muyanga & Jayne, 2006). This would therefore help the farmers make decisions faster regarding the innovations and technologies which they see the RAE use. Though, this was not without its own limitations and setbacks, their efforts appeared to have been rewarded as the results indicated that the RAEs not only had a number of clients but were also offering a number of services which included; advisory and demonstrations, clinical services, consultancy and input provision. Moreover, the RAEs also introduced new farming technologies from which their clients were able to select the package of their choice. This was evidenced by the fact that some of the NEF acknowledged that they were indeed clients (32.5%) of the RAEs, while other farmers (45.8%) saw their farms as good examples and secretly copied the technologies that the RAEs were using, hence, benefiting from the practices.

Influence of Agricultural Productivity of the RAEs

In matters concerning agricultural productivity, the results have also shown that the RAEs were actively involved in farming activities and kept different enterprises ranging from crops to livestock and, that they were using different technologies to produce. When comparison of the number of enterprises and the unit production for RAEs was done the result indicated that the unit production was also significantly higher compared to their counterpart farmers.

The regression results, clearly indicated a strong difference $r^2 = 0.353$ which showed that 35.3% of the change/improvement in production can be explained by the on-going activities of RAEs. The results further revealed that it was evident that farmers tended to diversify their production by keeping more enterprises while, the RAEs tended to intensify their production and kept less number of enterprises. Due to these differences in mode of production by the RAEs, the unit production was higher in what can be referred to as high value enterprises. This kind of situation tended to agree with what the Government of Kenya had observed in its' paper for Poverty Reduction Strategy for the period 2001 –2004 Vol.1, that, a well educated and healthy person was a prerequisite for increased production (GoK, 2001). This increased productivity was a positive sign and indicator to the Government that the RAEs contributions towards food security can be real in that they themselves were making a contribution in not just advising farmers but being engaged in the actual production process.

Socio-economic Influence Attributed to the Presence of RAEs in the Community

The Socio-economic influence that can be attributed to the presence of the RAEs, can be summarised into two areas besides other aspects stated earlier, namely provision of employment, and involvement in other businesses which helped the community. Indeed the ANOVA and regression analysis indicated that the betta coefficient was significantly greater than 0.05, $p=0.07$.the test statistic. This implied that the presence of RAEs influenced the community positively.

When the role of the RAEs in providing employment was considered, the results revealed that the combined wages paid by the RAEs each month was totaling to Ksh.20.646.00. The monies were channeled to the community, thereby helping to improve or raise their livelihood in one way or another. The results indicated that each employee was being paid not less than Ksh.70.00 per day (1US Dollar). The RAEs seemed to be impacting positively by way of creating some employment and paying them at least KSh.70.00 a day which appears to be the set standard for reducing the level of poverty.

Besides doing the farming, a good percentage of the RAEs were involved in business activities which had economic orientation. The results indicated that the businesses were of economic benefits to the community and impacted positively. Moreover, the RAEs also interacted not only with farmers but also worked closely with other

government extension workers, either as farmers, colleagues or for consultation purposes and hence assisting the Government to achieve its objective of reaching more farmers with the extension message.

5.3 Conclusions

The results of this study indicated that the RAEs influenced the community in which they live positively. Professional training influenced the RAE's socio-characteristics. Other areas where RAEs specifically influenced include the social activities involvement, provision of extension services, farming activities, and socio-economic activities. Despite the fact that individual RAEs could be said to bring about influence in the above mentioned areas, it was noted that there were cases where one RAE could only influence in one area, while, others could do so in more than one area as stated earlier. For instance, there were cases in which, some RAEs only provided extension service directly by either visiting the farmers in their farms or the farmers came to seek help in the RAEs' farm, while, there were others who were not only providing the service directly but also had leadership responsibilities in the community and hence influenced the community in matters relating to the social and agricultural issues. In addition, the RAEs who were not providing extension service directly, or were in leadership positions but their farm production and outlook of their farms was enough evidence to influence on the neighbouring farmers. This was because the neighbouring farmers saw these farms as good examples to emulate and wished to have theirs look

like those of the RAEs. Furthermore, there were those whose influence was mainly felt through economic factors such as the employment opportunities that they provided to those who lived near them. In as far as the socio-economic influence was concerned, the RAEs could be said to be persons having different levels of training, economic status, different experiences and offering varying services.

Socio-economic Activities

The RAEs influenced the communities mainly on developmental activities and also by providing leadership and by being involved in community activities. The RAEs provided 53.0% leadership in the community during which they presided over the development projects such as water projects, school developments, infrastructure, and health projects. It can therefore, be deduced that their involvement in leadership, influenced the community in one way or another. These results implied that the RAEs were highly regarded to be appointed in such positions.

Role of the RAEs on Provision of Extension service

The study clearly showed that extension provision by RAEs goes beyond the professional aspects and touched on the personal practical performance when it came to farming. Its effectiveness is thus enhanced. From the results, it can therefore, be deduced that besides advising, and demonstrating verbally, the farmers/ clients see that the RAEs messages working practically and this makes the adoption rate to increase as

many try to copy what the RAEs were doing and probably motivate other farmers to seek advice either directly or otherwise from the Extension service providers or other farmers. Furthermore, the influence of the RAEs performance was noticed to go even beyond those who are direct clients of the RAEs in that they appreciate the benefits derived from the extension training. Noting that the actual number of the RAEs carrying out the actual farming activities were only 54, and their farming activities was voted by nearly 50% of NEF (183) respondents as a success, it follows that the NEF who were silently trying to copy and be like them was a positive impact.

Furthermore, the farms' visual impact seemed to have impacted more than the actual NEF (130) who had indicated that they were clients of the RAEs. This in essence could imply that the RAEs advice could easily be adopted by farmers because they could easily see the performance of the RAEs and it was no longer theoretical as they are normally told by other extension workers. It could also be deduced that from the appearance of the farm, a group of clients (54%) used to visit the RAEs farm for advice.

Agricultural Productivity of the RAEs

The unit production of various high value enterprises was higher for the RAEs when the production of the same for the NEF was considered. RAEs participation in farming and getting better production impacted positively in at least three ways. First, the community benefits from the agricultural products from the RAEs farms. The RAEs sell these products implying that commodities are readily available to the local

community and thus easy access to the food stuff which could have taken sometimes for them to go to the markets which were possibly far from their homes. This saved time for NEF which could possibly be devoted for other economic activities. Secondly, higher production impacted positively in that it makes farmers realise that they can made more returns from their farms as they have always been advised by the Extension Officers. The RAEs farms hence, act as motivators to the farmers who see the returns realised by the RAEs colleagues as a result of their farming engagement and success in so doing. Thirdly, to the Government official, besides contributing to food security, the Extension Worker's work is in a away being simplified in that the Extension Workers could easily refer to the farmers RAEs examples in the neighbourhood.

Socio-economic influence attributed to RAEs Presence in the Community

Results also show that RAEs training extend beyond the agricultural boundaries or sphere. Such spheres include the social and leadership aspects. For example, those leading in the agricultural societies were positively influencing the agricultural production, thereby, impacting positively on the production of those commodities.

5.4 Recommendations

On the basis of the study findings, the following recommendations are made;

- 1) The Government needs to develop strategies on how the RAEs social characteristics could be utilised in capacity building of the local communities where the RAEs live.

- 2) There is need for the government to conduct refresher courses on leadership to enlighten and sensitise the RAEs on their role in the society as agents of change.
- 3) There is need for the Government to draw a policy on how the RAEs can be gainfully incorporated in the extension service at their local areas to boost agricultural production. As noted during the study, the middle level graduates are the ones mostly involved in providing the extension service but the Government seemed like it is phasing them out. There is need for the Government or other agricultural extension sponsors to reintroduce or emphasize on mid level training, noting that the current level of poverty in the rural areas, the farmers are likely not to be able to pay for the services if privatised.
- 4) There is need for the Government to conduct seminars to the farmers to enlighten them on the paradigm shift in as far as provision of extension services and the resources available is concerned.
- 5) Noting the performance of the 90% RAEs involved in agricultural production, the Government of Kenya (GoK) need to come up with a way of compensating and motivating the RAEs to enhance their agricultural productivity.
- 6) Noting that a good number of RAEs are involved in businesses, and tend to start it with a lump sum payment, paid to them should be paid in at least two installments and not once.

5.5 Areas for Further Research

Further studies need to be conducted to:

- 1) Determine the influence of extension services on the enterprises kept by the farmers.
- 2) Establish why very little of On Farm Research is taking place and how the RAEs can be incorporated into it.
- 3) Establish what the new graduates of agricultural sciences are doing and who their employers are.
- 4) Investigate why there is very poor involvement of the RAEs in research activities
- 5) Replicate this study in other parts of the country and to compare the results and enrich the body of the existing knowledge.

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APPENDICES

Appendix 1

Research Questionnaire 1 (To be filled by All RAEs)

You are kindly requested to answer the following questions or respond to the statements by ticking (✓) or providing the information needed. The information you give will be for research purposes only and will be treated with confidence.

Please indicated how you left the place of your employment by ticking one of the following options; Retired /Retrenched/ Sacked / Resigned.

(A) Area details

District..... Division-----Location----- Village-----
Town-----

B Personal details

- 1) Please indicate your highest professional qualification by ticking one?
 - i) Certificate (specify field of specialisation).....
 - ii) Diploma (specify field of specialisation).....
 - iii) BSc (specify field of specialisation).....
 - iv) MSc (specify field of specialisation).....
- 2) How long did you take to train to get to that level? (Please tick the appropriate)
1, 2, 3, 4, 5, 6, 8, 9, 10 years
- 3) Gender male/ female
- 4) Where do you live?
 - a) at home in the village
 - b) in a rented house in the shopping centre.
 - c) Have residence in both places but spend most times at-----
-
- 5) If you have a farm and do not stay/live in that farm, please indicate how far the farm is from where you live?
 - a) Less than 1 Km
 - b) More than 2 Km but less than 10 Km.
 - c) More than 10 Km but less than 30Km.
 - d) More than 30 Km.
- 6) How often do you visit your farm?
 - a) Everyday

- b) Once a week
- c) Once/twice a week
- d) Once in a fortnight
- e) Once in a month
- f) Rarely

Appendix 11

A Questionnaire for Randomly selected RAE

You are kindly requested to answer the following questions or respond to the statements by ticking (√) or providing the information needed. The information you give will be for research purposes only and will be treated with confidence.

Part 1 (Respondents details on residential area)

Name-----Division-----Location-----

-

Town-----

Gender: Male-----Female

Please indicate date Retired/ Retrenched/ Resigned/ Dismissed-----

Part II

(A) Professional Involvement

- 1) Have you ever been employed as an agricultural worker? Yes/ No
- 2) If yes, who was your last employer? Government/ NGO/ company
- 3) How long did you work for that organisation?-----
- 4) What position did you hold?-----
- 5) List the duties that you were expected to perform-----

- 6) Who were your clients farmers/ extension staff/ others (specify).-----

- -----
- 7) How often did you meet your clients?
 a) Weekly.....
 a) Fortnightly.....
 b) Monthly.....
 c) other (specify)
- 8) Please indicate where did you met them?
 a) at their farms.....,
 b) at my home.....,
 c) other places (specify)
- 9) Please the reasons for leaving the employer retired/ retrenched/ sucked/ resigned
 (Please tick appropriately)
- 10) List down the problems you encountered during your working life (for
 retired/retrenched/ dismissed).
- a) Technical-----

- b) administrative/employer.-----

- c) with the clients-----

- What areas did you find most challenging in extension service?-----

- 11) Beside your professional work, were/are you involved in any social activities? Yes/
 No
 If yes where? a) at work station / b) at home village / c) both places

List those social activities.-

Place and Position held	Activities

If no, why do you think the community failed to get involve you?-----

(B) Comment on agriculture training you received

- (i) Content of your professional training: a) adequate, b) inadequate (Please tick one)
- (ii) Usefulness during the working era/ time a) not useful technically
 b) very useful, c) just useful d) not sure
- (iii) At personal level; a) not useful, b) very useful c) not sure
- (iv) Relevancy of the training in relation to your present work/ business
 a) not relevant/ not useful
 b) relevant useful
 c) not sure

(C) Present Involvement/ Activities

1) Extension involvement

- i) Are you involved in agricultural extension activities now? Yes/ No
- ii) If yes, how do you offer the services?
 a) visit the farmers in their farm
 b) the farmers come to your farm
 c) have a demonstration plot in your farm
 d) All the above.
- (iii) how many clients do you have?-----
- (iv) How far are they from your residential home?
 a) less than a kilometer

- b) more than a kilometer but less than 10 kms
- c) Cannot tell.
- (v) how often do you meet them
 - a) once a week
 - b) fortnightly
 - c) monthly
 - d) no fixed time
- (v) What are some of the services that you offer to your client?-----

(vi) list new farming technologies that you have successfully introduced to your clients?-----

(vii) list the new enterprises that you have successfully introduced to you clients-----

(viii) Are you encountering some problems as you offer your services? Yes/ No
If yes, list them-----

(ix) What are the limitations that you encounter as you offer this indirect extension service?-----

(x) Do you offer these services free or at fee? (Please indicate)

If at a fee, how much do you charge for the service?-----

If no fee do you feel the Government should at least compensate you for such indirect service? Yes/No

If yes how much?-----

(xi) In the cause of your duty of offering service to your clients do you also meet the Government Agricultural Extension Workers? Yes/ No

If yes, what is their reaction towards you?

- a) negative
- b) positive
- c) not sure

Do these Government Agricultural Extension Workers see you as a threat to them?

Yes/ No (tick one)

(xii) Does your indirect service to the farmer conflict with that of the Government Agricultural Extension Workers? Yes/ No (Please tick one)

a) If yes, in what ways? Please list-----

b) Please list the ways you use to resolve these conflicts-----

(xiii) In your farming activities do the Government Agricultural Extension Workers offer service to you? Yes/ No)

(xiv) Do you and the Government Agricultural Extension Workers consult each other?

Yes/ No.

If yes, how often?-----

(II) Farming involvement

(i) Are you involved in farming activities? Yes/ No

(ii) list the enterprises that you keep-----

(v) Do you feel that your farming activities are helping the local community to increase the adoption rate? Yes/No

If yes, indicate in what ways-----

c) Other enterprises (specify)-

(vi) Please indicate the source of your labour?

- a) Family b) casuals c) Permanent employee d) all the above both

In case you pay your labourers please specify payment as follows;

a) Casual average pay / day/ month,-----

b) Permanent employee pay per month-----

Please indicate the number of workers that you have

a) Casuals-----

b) Permanent

(vii) Do you pay yourself and family members when they work in the farm? Yes/ No

If yes, on average how much per month

Family member-----

Yourself-----

(viii) Are you in a small way providing employment to those who work for you?

Yes/No (please tick one).

(III) Other Business Activities

Are you involved in other business activities? Yes/ No

Please list them-----

Do these businesses have any relationship in any way to your profession? Yes/No

If no give reason-----

(IV) Research Involvement

i) Are you involved in research activities? Yes/No

If yes, list those research activities and the research organisation you are collaborating with.-----

ii) Are you encountering problems now? Yes/ No
Please list them-----

iii) In your research activities, have you got new information? Yes/No
iv) If yes list them-----

v) Who funds your research activities? Self/ Organisation
vi) If certain Organisations, please list them-----

vii) Do you share your findings with your; a) Clients Yes/No b) Neighbours Yes/No
viii) If yes how? a) through seminars, b) workshops, c) field days d) other ways
(specify).

(V) **Problems/Challenges**

i) Are you encountering any problem now? Yes/No (Please tick one)

ii) Please indicate the type of problem under the following subheading

a) Technical problems

b) Economic problems

c) Others (please specify) -----

(VI) Social Involvement

(i) Please list the social activities you are involved in your in community.

Activity	Rank/ office you hold	its activities
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

ii) Are you involved in any developmental organisational activity? Yes/ No
If yes please list them-----

iii) Generally how does the society consider you?
a) a threat to their social set up
b) an opinion leader
c) just like any other person in the society
d) its' difficult to tell.

(iv) Do you hold any position in the organisation (question ii above)? Yes/ No

(v) If yes, what position?-----

Have you initiated a community based organisation yourself ? Yes /No.

If yes, what is it involved in? List the activities.....
.....

Are there any difficulties that you are facing regarding

- a) the business you are involved ? Yes/No
- b) a community you are living Yes/No

(viii) Generally what is your general feeling regarding the community you are living
In your present status? (Please tick one)

- (a) satisfactory
- (b) frustrating
- (c) no comment.
- (d) challenging

(VII) Income/gains

- (i) Please indicate how you earn your living now that you are no longer on permanent job.
 - a) through farming (commercial/ subsistence)
 - b) others (please specify)
- (ii) Kindly indicate your average annual income
 - a) When you were on full time employment-----
 - b) At your present status.-----
- (iii) Do you do any saving? Yes/No
 If yes, indicate whether it is through
 - a) Bank
 - b) cooperatives
 - c) Others (specify)-----
- (iv) If you are requested to go back to your former employment would you consider that offer?
 Yes / No.
 Please give reasons for your response.....

- (v) How would you recommend on the payment of lump sum which is paid to the retirees? Should it be paid once or twice?

Appendix 111

Interview Guide for NEF

You are kindly requested to answer the following questions or respond to the statements by ticking (√) or providing the information needed. The information you give will be for research purposes only and will be treated with confidence.

Date of interview-----

(A) Respondent Identification and stratification

Please indicate;

- 1 Name/ code of respondent-----
- 2 Location.....
- 3 Division.....
- 4 District.....
- 5 Name of house head.....
- 6 Relationship of the respondent to house head.....
 - a) self b) son c) spouse d) daughter e) other (specify) -----(Please tick appropriately).
- 7 Gender of the respondent a) female b) male (Please tick appropriately)
- 8 Gender of the household head a) female b) male (Please tick appropriately)
- 9 Please indicate your marital status a) married b) windowed c) divorced d) separated e) single d) others (specify)
- 10 Kindly indicate your age bracket in years a) below 30 b) 31-40 c) 41-50 c) 51-60 d) 61-70 e) 71- 80 f) over 80

(B) Views of the NEF on the RAEs

- 1 Please indicate if you have been a client to your RAE neighbour? Yes/ No
- 2 If yes when, when did you become his client? (Specify the year)-----
.....
.....
- 3 On which areas of agricultural advice do you get from him?
 - On crops
 - Livestock
 - Both
- 4 Do you belong to a farmer's / women's group? Yes/ No
- 5 If yes, does your group receive agricultural advice from your RAEs neighbour?
Yes/No
- 6 Where does the RAEs neighbour meet you?
 - At his field/farm/
 - At a baraza

- At a group members' farm
- Other places (specify)

7 How often do you seek your RAEs neighbours advice?

- Frequently
- Occasionally
- Rarely

8 When next do you plan to see your RAEs neighbour's for advice?-----

9 How have you found the recommendations or advice given by your RAEs neighbour?

- Highly applicable
- Of some applicability
- Of no applicability

10 Which recommendations have you found most applicable

11 Are there any other problems which you feel the RAEs has not been able to solve and you need some other help? Yes/ No

12 Yes, what are they?-----

13 Do you pay your RAEs for the service he/she offers? Yes/No

If yes, how much per unit/ piece of work done.....

If no, how do you appreciate his service?

14 Do you or any of your family members work for your RAEs neighbour? Yes/No

If Yes, how much does he pay you?-----

Do you feel that this is good pay? Yes/No

15 Do you feel your RAEs neighbour is knowledgeable enough or he need some more training? a) needs more training b) he/she is ok. C) Can't tell. (Please tick one)

16 Have you and other farmers discussed issues regarding the advice you have received from your neighbouring RAEs? Yes /No

17 If yes, in what area?-----

18 Do the Government Extension Agents hold field days for the farmers in your area? Yes/ No. (Please tick one)

19 Have you or a member of your house hold attended these field days? Yes/ No

20 How would you compare what you learnt from the field days and what you learn from your neighbouring RAEs? (Please tick appropriately)

- Better
- About the same
- Not better
- I can't tell the difference.

21 Do you find these field days useful? Yes / No

22 If useful what did find most useful?-----

23 What type of techniques are used by the Government Extension Workers when doing extension service in your farm or during field days?

- Verbal/oral
- Demonstration
- Printed material/handout
- Other techniques (specify)

24 How would you compare their method of extension with that of your RAEs neighbour?

- Better
- About the same
- Not better
- Can't tell.

25 Do you do any research work? Yes/no.

26 If yes, whom do you work with?-----

27 How would you consider your RAEs neighbour? (Please tick appropriately)

- A leader in the social activities
- Not any different from us
- Very useful
- Not very useful
- Can't tell

28 How would you consider your RAEs neighbour in the farming world?

- Successful
- Not any better than an average farmer in the area.
- Can't tell

29 Please indicate how resourceful your RAEs neighbour is?

- Very resourceful to the society
- Just resourceful
- Not resourceful
- Can't tell

30 How would you consider the RAEs neighbour when it comes to farming as a business?

- A competitor and a threat
- A good example for us to follow
- Just like any other farmer.
- Can't tell.

31 Do you consider your RAEs as a leader in your community? Yes/No

32 If yes, in what areas is he/she a leader?-----

33 If no, give reasons why-----

34 Do you have any of your children taking a training in agriculture? Yes/No

35 If No, would you like any of them take a career in agriculture? Yes/No

36 If yes, why?-----

37 In as far as you know, do you know, is your RAEWs neighbour involved in any other business besides farming? Yes/ No

38 If yes, what are they?-----

b) Livestock production system yield per unit. Average yield in the neighbourhood.

S No	Livestock Kept	Average yield in the your farm per unit livestock	RAEs Unit Production per Livestock

Appendix iv

Observation Guide for RAEs and NEF.

Date of observation-----

A Respondent Identification and stratification

Please indicate;

- 1 Name/ code of respondent-----
- 2 Location.....
- 3 Division.....
- 4 District.....
- 5 Name of house head.....
- 6 Relationship of the respondent to house head.....
b) self b) son c) spouse d) daughter e) other (specify) -----
(Please tick appropriately).
- 7 Gender of the respondent a) female b) male (Please tick appropriately).
- 8 Gender of the household head a) female b) male (please tick appropriately).
- 9 Marital status of the respondent a) married b) windowed c) divorced d) separated
e) single d) others (specify) (please tick appropriately).
- 10 Age of the respondent in years a) below 30 b) 31-40 c) 41-50 c) 51-60 d) 61-70
e) 71- 80 f) over 80

B Farm in general

1 See;

- farm layout-----
 - Size of the farm
 - Number of structures in the farm
- 2 Farm equipment (see the kind of equipment the target group have)
 - 3 Farm inputs (see the kind of inputs the target group use in the farm)
 - 4 Farm records kept
 - 5 Enterprises kept in the farm
 - Livestock
 - Crops
 - Note the systems used for raising the livestock
 - 6 Farm activities (see what activities are being carried out in the farm and labour being used)

C House hold

- 1 Water issues (see where they get water and whether available in the compound)

- 2 Furniture, state, and the kind.
- 3 Kitchen ware- the utensils, stoves used
- 4 Power (see whether it is solar, electricity from the source, lantern lamps, etc)
- 5 Transport available (whether owns bicycle, vehicle, tractor etc.)

D Nutrition

Observe the

- 1 the most common type of meal eaten
- 2 the number of meals taken in a day

E Environmental Issues

- 1 See the agro-forestry activities
- 2 See the soil and water conservation measures undertaken

F Income

Observe and see the sales being done.



Appendix vi

RAEs NEF Clients and Non-Clients

Kindly answer the following question for me.

- 1) Have you been /ever been a client for your RAE neighbour? Yes/ No (Please tick one)
- 2) In terms of farming business what area have you benefited from your RAE neighbour
 - i) advised me on farming
 - ii) treats/treated my animals
 - iii) Sells agricultural inputs to me
 - iv) Used my farm to demonstrate farming technology for other to see
 - v) None of the above
- 3) Have you gotten any new farming technology from your RAE neighbour? Yes/ No (Please tick one)
- 4) Please list the technologies that were introduced to you by your RAE neighbour

- 5) Are you using any of those technologies in your farm? Yes/No (Please tick one)
- 6) Has the RAE introduced to you any new enterprise? Yes/No (Please tick one)
- 7) List down the enterprises that were introduced to you by the RAE

 8)Production

Enterprise	RAE'S Client	Non- RAEs
	Unit yield	Unit yield

Appendix vii

Coded Variables

Raew file	
Variable	Variable name
Qnum	questionnaire number
Dist	District
Div	Division
Loc	Location
Vil	Village
Town	Town
Pqualify	highest professional qualification
Specifyq	specify qualification
Yrstrain	number of years trained
Gender	Gender
Live	where do u live
Distfarm	Distance to the farm
Oftervisit	how often do you visit your farm
Employment	ever employed as an agricultural worker?
Lastemploy	if yes, how was your last employer
Worklength	how long did you work for that employer
Position	what position did u hold
Duties	Duties
Clients	who were your clients
Meetclient	frequency of meeting clients
Reason	reason for leaving employment
Techprob	technical problems faced
Adminprob	administrative problem?
Clientprob	problems related to clients
Challenge	which areas did you find most challenging?
Socialact	are you involved in social activities
Wheresoc	where social activity
Listsocial	

Socialresp	recoded social responsibility
Nosocial	reason why the community has not involved me
Training	comment on professional training
Useful	usefulness of the training during the wk era
Personal	at personal level
Relevance	relevance of the training to your present work/business
Extension	are you involved in agri.extension now at personal level?
Extservices	what extension service I provide
Extnrecode	extension services recoded
Offerservices	how do u offer services?
Clientsnum	number of clients
Far	how far are they from your residential home
Oftenmeet	how often I meet my clients
Offer	some of the services that I offer to my clients
Technologies	new technologies that I have introduced to my clients
Enterprises	list new enterprises that you have introduced to your clients
Problems	do u encounter some problems as you offer this indirect extension?
Whichprob	problems encountered
Limitations	limitations encountered
Fee	do you offer service at a fee or free?
feeKSH	how much do you charge for the service
Nofee	if you do not charge, do you feel the government sd compensate for this service?
compensateKsh	how much compensation?
meetGOK	do u meet government extensionists
Reaction	what is their reaction towards you?
Threat	do the government workers see you as a threat?
Conflict	do you conflict with the government workers
Listconflict	list conflict
Resolve	how do you resolve these conflicts
Serveme	do the govt extension serve you?
Consult	do you and the government extension workers consult each other
Whenconsult	when do you consult?
Farmact	are u involved in farming activities?
Fenterprises	list enterprises
Newtech	new technologies in my farm
Listtechnology	list new technologies
Neighbour	have u introduced some to your neighbour?
Greason	give reason
Noreason	if no give reason
Howgot	how did u get technology?
Showclients	show clients?
Role	role played by my farming business
Adoption	do you feel that your farming activities is helping the local community to increase the

	adoption rate?
Howadoption	how?
Labour	source of labour
Casualksh	casual ksh per month
Permnum	number of permanent workers per month
Permanent	permanent ksh
Familyksh	money paid to family members
Selfksh	amount paid to self
Employ	r u providing employment to those who work 4 u?
Business	r u involved in business activity
Whichbuss	which business
Relateprof	relate to ur profession
Norelate	reason for the business not relating to your profession
Reasonnobuss	reason for not remaining in business related to profession
Research	Involved in research?
Activity	which one
Organization	which organization?
Newinform	in your research have u got new information?
Listinform	List
Fund	who funds research
Whichorgn	which org?
Shareclient	share information with clients
Shareneihg	share information with neighbours
Sharehow	how do I share the information?
Probnw	are you encountering problems now?
Listproblems	list current problems
Nowtechprob	current technical problems
Noweconom	current economic problems
Development	are you involved in development activities
Developwhich	which development activities
Consider	how does the society consider you?
Holdposition	do u hold any position in development
Whichposi	which position?
Whostarted	who started this development organization
Initiate	have u initiated any community based organization
Involve	what is it involved in?
Busssdifficult	difficulties in your business
Commddifficult	difficulties in your community
Gfeeling	general feeling on your present status?
Earn	source of income
Kshfulltime	earning when in full employment
Kshnow	earning when now
Save	do u save?

Wheresave	where save?
Back	if requested can u go back to former employment?
Pension	comment on pension
enterprise file	
Id	identification no.
Enterprise	Enterprise
Produnit	unit of production
Raewprod	raew production
Frequency	Frequency
Farp	farmer produce
Neighbours	
Qnum	number of respondent
Raewneighbour	name of raew neighbor
Resname	name of the respondent
Namehead	name of the head of household
Location	Location
Division	Division
District	District
Relhead	relationship of respondent to household head
Genderres	gender of the respondent
Genderhead	gender of the household head
Maritalres	marital status of the respondent
Agrees	age of the respondent in years
Clientneig	are you now or been a client of your neighbor
Whnyr	if yes when did you become his client (year)
Agriculturaladvice	what agricultural advice to you get from him
Farmerwomemgr	do you belong to a farmer/women group
Groupreceiveagriadv ice	if yes does your group receive agricultural advice from your RAEW neighbour
Raewneimeet	where does the RAEW neighbour meet you
Reawneiadvic e	how often do you seek your reaw neighbour advice
Nextraeadvice	when next do you plan to see your raew neighbour for advice
Recommadvic e	how have you found the recommendations or advice given by your RAEW neighbor
Recoapplicable	which recommendations have you found most applicable
Otherproblems	any other problems which you feel the raew was not able to solve and you need some other help?
Problemsys	yes, what are they
payraewservices	do you pay your raew for the service he/she offers
Yesmuchperunit	if yes, how much per unit/piece of work done
Noappreciateservic e	if no,how do you appreciate his service

familyworkraewnei	do you or any of your family member work for your raew neighbor
Goodpay	do you feel that this is good pay
Knowledgeable	do you feel your raew neighbour is knowledgeable enough or he need some more training?
Farmersdiscussed	have you and other farmers discussed on issues regarding the advice you have received from your neighbouring raew
Yesname	if yes, what are they
Gvmextension	does the government extension agents hold field days for the farmers in your area
Attendedfielddays	have you or member of your house hold attended these field days
Compare	how do you compare what you learnt from there and what you learn from your neighbouring raew
Fielddaysuseful	do you find these field days useful
Mostuseful	if useful what did find most useful
Techgvextension	what type of techniques are used by the government extension workers when doing extension service in your farm or during field days
Comparetheirmethod	how do you compare their method of extension with that of your RAEW neighbor
Researchwork	do you do any research work
Yesworkwith	if yes, whom do you work with
Considerraewnei	how do you consider your raew neighbor
Raewneifarmingworld	how do consider your raew neighbour in the farming world
Resourceful	how resourceful is your RAEW neighbor
Farmingbusiness	how do you consider the raew neighbour when it comes to farming as a business
Raewleadercommunity	do you consider your raew as a leader in your community
Arealeader	if yes, in what areas is he/she a leader
Reasonwhy	if no, give reasons why
childrentrainingagri	Do you have any of your children taking a training in agriculture
Nocareerinagri	if no, would you like any of them take a career in agriculture
Yswhy	if yes, why
Raewneiinvolved	is your raew neighbour involved in any other business besides farming
Yswhat	if yes, what are they
Benefitingcommfamily	his/her business benefiting the community or only his/her family
Commways	if helping the community, in what ways
Richperson	By the community standards, is your raew considered a rich person
Researchactivitiescarrying	are you aware of any research activities that your RAEW neighbour is carrying out
Researchactivities	if yes what are the research activities that you have seen him/her conduct in the community
listenterprisetech	list any enterprise or technology that you got from your RAEW
Housetype	type of a house you live in