ACCESSIBILITY AND UTILIZATION OF WRITTEN PUBLICATIONS
FOR ENHANCING AGRICULTURAL PRODUCTIVITY IN KANDARA,
KIGUMO, MURANG’A SOUTH DISTRICTS OF
MURANG’A COUNTY, KENYA

BY

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A THESIS SUBMITTED FOR THE AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY (LIBRARY AND INFORMATION
SCIENCE) IN THE SCHOOL OF EDUCATION, KENYATTA
UNIVERSITY

SEPTEMBER 2014
DECLARATION

I confirm that this research/thesis is my original work and has not been presented in any other university for certification. The thesis has been complemented by referenced works duly acknowledged. Where text, data, graphics, pictures or tables have been borrowed from other works – including the internet, the sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

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DEDICATION

This thesis is dedicated to my wife Rachel Wambui and our children Reuben K.
Kimani, Maureen W. Kairu, Nicholas Mwaura, Joseph Muiruri and Edith
Wanjiru and also to my departed Parents with cherished memories.
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### ABBREVIATIONS AND ACRONYMS

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<tr>
<td>AEZ</td>
<td>Agro Ecological Zones</td>
</tr>
<tr>
<td>AIDC</td>
<td>Agricultural Information and Documentation Centre</td>
</tr>
<tr>
<td>CBS</td>
<td>Central Bureau of Statistics</td>
</tr>
<tr>
<td>DDC</td>
<td>District Development Committee</td>
</tr>
<tr>
<td>DIDC</td>
<td>District Information and Documentation Centre</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GoK</td>
<td>Government of Kenya</td>
</tr>
<tr>
<td>IFLA</td>
<td>International Federation of Library Associations and Institutions</td>
</tr>
<tr>
<td>KARI</td>
<td>Kenya Agricultural Research Institute</td>
</tr>
<tr>
<td>KCBS</td>
<td>Kenya Central Bureau of Statistics</td>
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<tr>
<td>KCPE</td>
<td>Kenya Certificate of Primary Education</td>
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<tr>
<td>KCSE</td>
<td>Kenya Certificate of Secondary Education</td>
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<tr>
<td>KMFP</td>
<td>Kenya Ministry of Finance and Planning</td>
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<tr>
<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
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<tr>
<td>KNLS</td>
<td>Kenya National Library Service</td>
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<tr>
<td>KRDS</td>
<td>Kenya Rural Development Strategy</td>
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<tr>
<td>NCST</td>
<td>National Council for Science and Technology</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
</tr>
<tr>
<td>PRSP</td>
<td>Poverty Reduction Strategy Paper</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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ABSTRACT

The aim of this study was to identify the challenges encountered by farmers in accessing and using written information materials in Kandara, Kigumo and Murang’a South Districts of Murang’a County. The objective of the study was to investigate the accessibility and utilization of written agricultural information materials by the farmers in the three districts where low agricultural productivity and high poverty levels continue to be experienced, despite having some high agricultural potential areas with sufficient rainfall. The study used the survey design to establish the sources of information used by farmers in their agricultural activities. The target population was 114,578 farm families in the three districts from whom 390 heads of families were sampled using systematic random sampling technique. Three agricultural officers, three veterinary officers and three livestock development officers were also included in the sample. These were purposively sampled. Two questionnaires were used for data collection - one for the farmers, and the other for the officers. Both questionnaires were pretested before they were used to collect data so as to ensure the reliability and validity of the test items. The questionnaires for farmers were hand-delivered by the researcher and collected immediately after completion, while those for the officers were also hand-delivered but collected later after completion. Collected data was analyzed both quantitatively and qualitatively as per the study objectives using the Statistical Package for Social Sciences (SPSS). Data was presented in form of Tables, Figures, Text and Percentages. The study established that relevant written agricultural information materials were not readily accessible to most farmers due to: unavailability of the materials (57.9%), illiteracy (20.4%) and lack of interest and time (8.5%) on the part of some literate farmers. The study concluded that many farmers in Kandara, Kigumo and Murang’a South Districts did not use written agricultural information materials for their farming activities. This could lead them to not making well informed decisions in their farming activities, thereby resulting to low agricultural productivity. The study suggested possible solutions to the problems encountered by the farmers relating to accessibility and utilization of relevant written agricultural information materials. One of the suggestions was establishment of Agricultural Information and Documentation Centres at several levels including district, divisional, locational, sub-locational and village levels. The centres should be stocked with relevant written agricultural materials for use by farmers. It also recommended establishment of bookshops within farmers’ neighbourhoods and stocking them with relevant written agricultural information materials which farmers could buy. To tackle the problem of illiteracy, the study recommended that Murang’a County Government embark on an ambitious adult literacy programme to empower illiterate citizens including farmers to learn how to read and write.
CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter introduces the study and covers the following sections: background to the study, statement of the problem, objectives of the study, research questions, significance of the study, scope and limitations of the study, assumptions of the study, theoretical framework, and conceptual framework.

1.2 Background to the Study

In Kenya, close to eighty per cent of the total population live in rural areas and derive their livelihood from land (Kenya. Ministry of Finance, 2001:39). But until recently, the percentage was much higher. The main reason for rural-urban migration is that urban centres tend to offer some employment opportunities and generally have better amenities than rural areas. The younger educated generation is therefore attracted to urban centres in search of salaried employment and better life. However, this rural-urban migration trend cannot be expected to continue unabated because white collar and other salaried jobs are in short supply even for those holding university degrees. Life in urban centres without a regular source of income can be very frustrating and unbearable. Indeed, it is more difficult to live in urban areas than in rural areas particularly when the prices of foodstuffs and other commodities and services are taken into account. Several years ago, it was noted that “urban dwellers
spend 25 per cent of their incomes on rent” (Kenya Ministry of Finance, 2001:15). A survey carried out in Nairobi attests to the fact that:

The rate of growth of income for the urban poor in Nairobi is lower than the rate at which prices of basic commodities have increased … The city’s poor have been living in appalling conditions and subsisting on minimal basic needs (Sittoni, 1992:3)

If the situation described above persists, we may even witness an urban-rural migration. In view of this, the Kenya Government is laying a lot of emphasis on rural development strategies including provision of and access to energy through the strengthening of the Rural Electrification Programme, provision of water and sanitation, expansion of postal and telecommunications services, and provision of public health care, among other things.

Provision of such services is likely to lead to a large proportion of Kenyans to continue living and earning their livelihood in rural areas for a long time to come. As they continue with their daily lives, they will engage themselves in various economic activities for their own fulfillment.

Kenya’s economy has depended very heavily on agriculture for many years. Although tourism has at one time in the past played an important role in Kenya’s economy as a foreign exchange earner overtaking both coffee and tea in this respect, agricultural products have continued to account for a much higher income than any other single sector nationally. It is worth noting that Rural and Agricultural Development sector contributes 80 percent of employment and 60

Currently, “The agriculture sector contributes 24 per cent of the GDP, about 75 of industrial raw materials and 60 per cent of export earnings. The sector accounts for 65 per cent of Kenya’s total exports, 18 per cent and 60 per cent of the formal and total employment respectively”. (Kenya, Ministry of Devolution and Planning, 2013:51).

Important as it is however, agriculture is adversely affected by the vagaries of weather from time to time. Tea is one agricultural crop that has been thus affected in the past by capricious weather, cutting “Kenya’s vital tea output by 12.28 per cent midway through 1992 calendar year” (Daily Nation, July 13, 1992:11). Again in 2012, it was reported that “The agricultural sector recorded a slower growth of 1.5 per cent in 2011 compared to a growth of 6.4 per cent in 2010. The decelerated growth was attributed to the rising costs of inputs” (Kenya. National Bureau of Statistics, 2012: 17). But tourism is even more vulnerable to political and other social upheavals in lands geographically far removed from each other. The Gulf crisis of the 1990s had devastating effects on tourism in Kenya and elsewhere, owing to the fear of possible acts of terrorism such as the bombing of the American Embassy in Nairobi in 1998. Negative travel advisories on Kenya by both the U.K. and the U.S. following the terrorist bombing of the Paradise Tourist Hotel in Kikambala on the Kenya
Coast in 2002 hurt the tourist industry to the extent that, a number of leading tourist hospitality destinations were already feeling the effects (Sakiti, 2003:20)

An important point to note, also, is that even if all the problems afflicting tourism were solved and a lot of foreign exchange earned from this industry, this would not directly trickle down to the rural people as does income from their agricultural produce which goes direct into their pockets. Indeed, there have been incessant clamours from communities bordering wildlife game reserves, which are great tourist attractions, for a share of proceeds from the game reserves without success. In contrast, “growth in agriculture and improved rural incomes has a significant and direct impact in reducing overall poverty. The sector also provides raw materials to the manufacturing sector and therefore stimulates large indirect growth effects in non-farm incomes and employment” (Kenya. Ministry of Finance and Planning, 2002: 23). This is to say that agriculture, which has been the mainstay of the country’s economy for many decades in the past, will remain the most important sector to be relied upon for the development of the economy for the foreseeable future.

Through Vision 2030, the Government of Kenya plans to increase value in agriculture by raising incomes in agriculture, livestock and fisheries processing and thereby adding value to her products before they reach the market. These interventions are expected to generate an additional Ksh. 80-90 billion increase in GDP mainly through better yields in key crops, increased small-holder
specialization (2-3 crops per plot). (Kenya. Ministry of Planning and National Development, 2007:13). The vision shows that agriculture will continue to contribute substantially to the welfare of the farmers.

To carry out their farming activities effectively, farmers will need information and knowledge relevant to their livelihood. One way of gaining information and knowledge is through accessing and utilizing written publications. The farmers should therefore be sensitized to the importance of utilizing relevant agricultural information contained in publications for their own good. There is no evidence that this has been happening in any wide scale in the country and Kandara, Kigumo and Murang’a South Districts in Murang’a County in particular. Hence the essence of this study.

The major concern of this study was to investigate the extent to which relevant written information materials have been accessed and used to obtain relevant information for accelerating agricultural development in selected districts of Murang’a County. This would form the basis for the development of a reading culture to be able to access the correct information and therefore gain valuable knowledge to enable rural farmers to make informed decisions in carrying out their agricultural activities. Correct decisions in any given situation can only be made if the right information is available. Any field of human endeavour either succeeds or fails depending on the possession or lack of the right information.
Unesco has consistently underscored the importance of information by arguing that:

Information has become an essential basis for the progress and civilization of society. Lack of information and of effective means of exchanging it are widely recognized as being limiting factors in the economic and social development of people (Unesco, 1977:353).

On this premise, rural people are likely to have a greater role to play in the economic development of this country. The establishment of District Information and Documentation Centres (DIDCs) in district headquarters throughout Kenya in support of the programme of District Focus for Rural Development is a point that demonstrates how crucial the Government of Kenya takes information to be in any kind of development (Kenya. Office of the President, 1984). This study intended to establish the extent to which these and other relevant offices furnish farmers in Kandara, Kigumo and Murang’a South Districts with relevant information to enhance their agricultural productivity.

In its 1988/93 national development plan, the government had the following to say on information:

At the threshold of the twenty-first century, the dawn of the information revolution promises to carry the human race to even greater heights of technological achievement. The primacy of information as a tool for development planning is increasingly becoming appreciated by planners, decision-makers, investors and the public at large (Kenya. Ministry of Finance, 1988:106).

The government is aware of the fact that of all the resources at the disposal of any nation, the human resource is the most important since the exploitation of the rest
of the resources for the benefit of the entire nation depends largely on the people themselves. At independence for instance, the Government of Kenya identified three enemies of the nation - namely: ignorance, disease and poverty. The fight against all these was therefore waged right from the outset and has continued to this day. But the fight against ignorance has been more spectacular and more successful than any of the other two. This is attested to by the annual budgetary allocation to education which rises every year in which the 1988/93 Development plan showed that:

Education continues to take the largest share of the government expenditure, absorbing nearly 33 per cent of the total recurrent budget and slightly over 75 percent of the estimated recurrent expenditure on social services in 1987/88. (Kenya. Ministry of Planning and National Development, CBS., 1988:146).

Similarly in 2003, Kenya joined the community of nations that provided free and compulsory primary education – popularly referred to as Universal Primary Education (UPE). Again in 2008, free secondary education was introduced.

The small scale farmer in the rural areas upon whom the economy of the country depends should be sensitized to modern farming methods. These methods include the selection of appropriate seeds of various crops and the application of fertilizers and crop sprays to increase farm yields. The farmer needs to know the right types of fertilizer for the different types of crops he grows (Ngeze, 1998; Muriuki and Qureshi, 2001). He/she also needs to know the most suitable seeds of various crops such as maize for his agro-ecological zone since different
climatic zones have different requirements. Not only does the farmer need to know the correct inputs for the different kinds of crops, but also the correct amounts to be applied in each case, and more importantly, when to apply what. Additionally, he/she needs to know the precautionary measures he/she must take in applying different types of sprays to avoid harming himself/herself or his/her workers in the process. On such occupational hazards, Rukangu warns that:

Some chemicals used in industrial and rural sectors may be dangerous to human life and therefore precaution against their dangers is necessary for example, appropriate clothes for wearing when spraying crops; appropriate disposal of industrial by-products to protect the environment and other ecological zones (Rukangu, 1989:16).

This indicates that farmers would need appropriate information on protective clothing such as plastic overcoats, hand gloves and face masks among others. Unfortunately, most small scale farmers rely so much on the word of mouth particularly on advice from neighbours who may not be any better informed than themselves. Some may benefit from the advice from qualified agricultural extension officers. However, Protz (1998:59) notes that women who are generally more involved in farming than men in developing countries rely more on other women particularly their family members for farming support and advice than on extension services. But we should not be oblivious to the numerous barriers to effective communication and more so when it happens to be verbal. It can be easily forgotten and at times it can be misunderstood and thereby result in a disaster.
It is therefore vitally important that rural farmers be made aware of the need to use written publications to obtain correct, relevant and first-hand information to be able to make enlightened decisions in their farming activities. The essence of this study was to find out how farmers in Kandara, Kigumo and Murang’a South Districts of Murang’a County accessed and utilized written publications for the purpose stated above.

The districts receive an annual rainfall ranging from 900mm in the lower zones towards the borders with Thika and Machakos Districts to 2,700 mm in the upper zone of high altitude towards the Aberdare Ranges. There are two main growing seasons - the long rains and the short rains seasons. The long rains are between Mid-March and June while the short rains are between Mid-October and December. Temperatures vary with altitude, and in the eastern lower areas, the annual mean temperature ranges between 26°C and 30°C while in the upper areas, it ranges between 14°C and 18°C. In the high altitude areas, temperatures can be as low as 6°C while in the medium altitude areas, temperatures are moderate. (Kenya. Ministry of Finance and Planning, 2001:6).

The major part of the three districts consists of soils of volcanic origin such as red loams. These soils are often rich in organic matter and range from high to moderate fertility. They therefore have great agricultural potential that decreases as one moves from the west towards the eastern parts of the districts. Coupled with high rainfall regime in the western parts of the districts, tea, horticultural
crops, coffee, dairy and food crops such as maize, beans, Irish potatoes do quite well. With more intensive farming activities, these are potential areas for improved agricultural productivity and hence reduction in poverty levels. The lower parts of the districts generally receive low rainfall. In these areas, drought tolerant crops like cassava, pigeon peas and sorghum do well. The soils are also good for horticultural production if irrigation is available (Ibid.).

1.3 Statement of the Problem

Kenya’s economic development is heavily dependent on agriculture. Farming is the principal activity among most rural people who form the bulk of the country’s population. They practise both crop and animal husbandry with diversified degrees of success for both economic and household subsistence needs.

In order to assist farmers in their development efforts, the Government of Kenya has established agricultural and veterinary research centres, employed agricultural, veterinary, and livestock development officers, and frequently used *barazas* to inform them of new farming methods and farm inputs. Fertilizers, crop and animal sprays are such inputs. These are manufactured with specific instructions for the farmers to read and follow in order to optimise, not only the utility of such inputs, but also to maximize agricultural productivity.

Despite these government efforts, low agricultural productivity continues to be experienced in some rural areas of the country including Kandara, Kigumo and
Murang’a South Districts. Recent records show that the population in the area under study living below poverty line by constituency/district was: Kandara 36%; Kigumo 31% and Murang’a South 36% (Kenya. Central Bureau of Statistics, 2005:35). The area’s average level of poverty can therefore be said to be 34.3%. Although this level is lower than the national level which stands at 53%, it is high enough to cause concern. At times, some of the residents of these districts have been unable to feed themselves despite the fact that the districts are endowed with some potentially productive areas for agricultural activities. Low productivity in agriculture and livestock is attributed to limited agricultural land and irregular supply of farm inputs particularly for non-cash crop growers who are not members of co-operative societies, and high prices of inputs (Kenya. Ministry of Devolution and Planning, 2013:39). However, it is the contention of this study that lack of written agricultural information resources which farmers could read to obtain information relevant to their farming activities could also be a contributory factor to low agricultural productivity in the three districts under study.

1.4 Objectives of the Study

The general objective of the study was to establish whether written agricultural information was easily accessible and utilized by farmers in Kandara, Kigumo and Murang’a South Districs in an effort to enhance their agricultural output and thereby promote their well-being.
Specific objectives of the study were to:

1. Establish the crops grown by farmers in the three districts.
2. Establish the livestock reared by farmers in the three districts.
3. Establish the sources of information that farmers in the three districts depend on to carry out their agricultural activities.
4. Find out the methods used by agricultural, veterinary and livestock development officers to disseminate agricultural information to farmers in the three districts.
5. Establish farmers’ opinions on the availability, accessibility and usefulness of the agricultural information disseminated by agricultural, veterinary and livestock development officers in the three districts.
6. Identify the challenges encountered by farmers in accessing useful information to empower them carry out their agricultural activities productively.

1.5 Research Questions

This research was guided by the following questions:

1. What crops are grown by farmers in the three districts?
2. What livestock are reared by farmers in the three districts?
3. What are the main sources of agricultural information available to farmers in the three districts?
4. To what extent are written sources of agricultural information used by farmers in the three districts?

5. Who are the main providers of written materials to farmers in the three districts?

6. What assistance do agricultural, veterinary and livestock development officers provide to farmers in the three districts?

7. What challenges are faced by farmers in accessing and using written agricultural information materials?

1.6 Significance of the Study

The findings of this study will be beneficial to the following:

1. Farmers in Kandara, Kigumo and Murang’a South Districts. The study guides them on how to improve their agricultural activities through accessing and utilizing relevant agricultural literature and thereby realize enhanced agricultural productivity.

2. Policy makers within the Government of Kenya and Murang’a County. These will find the recommendations of the study useful in the implementation of the Kenya Rural Development Strategy (KRDS) and specifically in steering development in the agricultural sector.

3. Manufacturers of agro-vet products such as fertilizers, crop and animal sprays, drugs, and mineral supplements. The study assists them on how to provide written guidelines and instructions that
can be easily comprehended by farmers who are the main consumers of their products.

4. The main players in the book industry including authors, publishers, booksellers, libraries and other documentation and information centres. These will benefit from the study in that it identifies what the rural farmers’ information needs are for their agricultural activities. The book industry players can therefore address the farmers’ written information interests appropriately.

1.7 Scope and Limitations of the Study

1.7.1 Scope

1. This study covered heads of farming families, agricultural, veterinary and livestock development officers in Kandara, Kigumo and Murang’a South Districts of Murang’a County.

2. The study was concerned with obtaining useful information for agricultural activities.

3. The study concentrated on accessibility and utilization of written agricultural information.

1.7.2 Limitations

1. Since the study covered Kandara, Kigumo and Murang’a South Districts only, its findings cannot therefore be generalized. However, they can have wide application in other parts of Murang’a County and Kenya in general.
1.8 Assumptions of the Study

The assumptions of the study were that:

1. If people are able to access and use written information on how to perform a certain activity, they are likely to perform the activity better than they would have done if they had not accessed and used written information.

2. For people to use written information materials, the materials must be readily available and accessible to them.

3. For people to use written information materials, the materials must be readily in a language or languages the people are literate in.

1.9 Theoretical Framework

This study was based on the Human Capital Theory by T.W. Shultz (1961). The theory links improvements in human capital to economic growth. Human capital corresponds to any stock of knowledge or characteristics a worker has that contribute to his/her productivity. According to Becker (1966), human capital is directly useful in the production process as it increases a worker’s productivity in various tasks, organizations, and situations. This capital is valued because it increases personal, firm, or economic sector income through the additional output.

Schultz (1963) considers human capital as the outcome of deliberate investment in the means through which that capital is created. These mechanisms include:
education and training, investments in health, migration to other jobs or regions which offer higher pay etc. These investments yield returns in the form of higher earnings to individuals, i.e. returns emanating from productivity. This theory has been applied to explain differentials in earnings in such economically productive sectors as agriculture. A study in agriculture by Lockheed, Jamison, and Lau (1980) links raising of educational levels to an enhancement of agricultural productivity within modernizing settings in Asia. Their study concluded that if a farmer had completed four years of elementary education, his/her production was on the average, 8.7% higher than that of a farmer with no education. Education may affect agricultural productivity through its cognitive and non-cognitive effects. Cognitive effects emanate from the formation of general skills such as literacy and numeracy as well as from the transmission of specific knowledge. Literacy enables one to follow written instructions for inputs and other aspects of modern farm technology (Harma, 1979). Numeracy permits one to calculate correct dosages, and may assist in making other planning decisions. These cognitive effects may increase the output produced by a given combination of inputs.

Education may also have such non-cognitive effects such as changing people’s attitudes and practices. There may be openness to new ideas and modern practices.
This theory was deemed to be relevant to this study because its focus is on the fundamental relationship between using written information which is based on education and agricultural productivity. Thus accessing and using written information by farmers would be expected to have a positive impact on agricultural productivity. Productive farms in turn enhance farming incomes and living standards.

1.10 Conceptual Framework

In general, agricultural productivity is affected by various factors. One of these factors is the various inputs into farming activities including land preparation, choice of crops and seeds to plant, determining planting time, choice and use of fertilizers and sprays. For these activities to be carried out successfully, relevant agricultural information for each activity must be used. In order for the farmers to use relevant agricultural information, they need to be sensitized on means of accessing such critical sources of information. Such an approach would probably minimize low agricultural productivity especially in Kandara, Kigumo and Murang’a South Districts which is the essence of this study. These variables and the expected output are presented in figure 1.1.
Figure 1.1: Conceptual Framework: Possible Causes of Low Agricultural Productivity, Possible Interventions and Expected Output

Key

- Dependent variable
- Independent variables
- Relationship in the direction as shown as explained below
From figure 1.1, it is observed that low agricultural productivity is the dependent variable that could be brought about by the independent variables indicated as possible causes. Interventions to counter low agricultural productivity would include among others: sensitizing farmers on the need to use written agricultural information and facilitating farmers’ access to and use of such information. The core of this tripartite structure is the need to systematically establish their interactive manner among farmers, especially in Kandara, Kigumo and Murang’a South Districts of Murang’a County which is the essence of this study.

1.11 Operational Definition of Terms

**Accessibility:** The degree to which a product, device, service or environment is available to as many people as possible.

**Agricultural Officer:** A person skilled in the science of cultivating crops.

**Agricultural Productivity:** Yields from farming activities.

**Agriculture:** The science or occupation of cultivating crops and rearing livestock. Also known as farming.

**Availability:** Presence of agricultural information sources

**Farm:** A tract of land, usually with houses and buildings cultivated as a unit or used to rear livestock.

**Farmer:** A person who operates or manages a farm.

**Human Capital** Deliberate investment in the means through which that capital is created.
Information: Data that is accurate and timely, specific and organized for a purpose. It is presented within a context that gives it meaning and relevance and can lead to an increase in understanding and decrease in uncertainty.

Knowledge: The facts, understanding, findings or experiences known by a person or group of people. Also awareness, consciousness, or familiarity gained by experience, learning or study.

Livestock: Animals such as cows, goats, sheep and birds such as chicken kept on a farm.

Livestock Officer: A person skilled in the science of feeding and caring for livestock on a farm.

Reading: An activity of obtaining or getting information from books and other written materials. Also an activity that a person uses to comprehend and respond to written information.

Utilization: To make use of something. To find practical or effective use of something.

Veterinary Officer: A person skilled in the practice of veterinary sciences or medicine. Also, a person concerned with the health of animals and treatment of injuries or diseases that affect them.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews relevant literature on accessibility and utilization of written literature in general and agriculture in particular. It covers the following sub-topics: value of information in development, importance of information in agricultural development, importance of written publications, and availability, accessibility and utilization of written agricultural publications.

2.2 Importance of Information in Agricultural Development

The importance of information in any human activity including rural community development cannot be over-emphasized. To underline this point, the founding President of Tanzania – Julius Nyerere is quoted by Agoulu (1989) as stating that “While other countries in the world aim to reach the moon, we must aim, for the time being, at any rate to reach the villages by providing them with the necessary information” Coming from such a well known and respected statesman and scholar, this statement stresses the importance of using appropriate information in any human endeavour.

McAnany is of the opinion that “for any community to function efficiently and productively, a basic minimum stock of information is essential. Every society needs to acquire, store, and exchange this basic stock of information to allow it to survive. The view that information is central to the solution of any society’s
economic and social problems and should be regarded as a factor of production is now widely accepted (1978:2). A more emphatic assertion on the importance of information to human beings is by Pradervand (1980:56) who states that “Information is the most basic of all human needs”. This can be interpreted to mean that without appropriate information, one cannot succeed in any field of human endeavour.

During the 60th International Federation of Library Associations and Institutions (IFLA) General Conference in 1994, the importance of information in the development of society was emphasized when it was observed that:

Information is an indispensable factor for promoting the development of society. It is a component of fundamental importance in the generation of knowledge, which, in turn, makes the satisfaction of the various demands of the population possible in an efficient way (Angelica do Amaral, 1994:1).

According to Christoplos and Kidd (2000) as quoted by Asenso-Okyere and Mekonmen (2012) “Knowledge and information have become the major drivers of social and economic transformation in the world. Knowledge and information are now as important, if not more, factors in development, and this trend is set to intensify.”

From observations of the authorities quoted above among others, it is necessary to appreciate the primacy of information and therefore to seek the use of appropriate information in carrying out any given activity in order for the
desired results to be achieved. This applies to all sectors of development including agricultural development activities undertaken by rural people as well. Rural people are “The people who live in rural areas, on dispersed farmsteads, and villages that usually form the centre of their activities (Theodorson, 1970:359).

In Kenya, rural development and agriculture are almost synonymous and both are quite often discussed together. They are also very vital to the economic development of the country. In this connection, it was noted that “The outcome of the PRSP consultations is that the Agriculture and Rural Development Sector is the top priority. This is expected as the sector contributes 80 per cent of employment and 60 per cent of national income” (Kenya. Ministry of Finance and Planning, 2001:39). This study however, concentrated on agricultural development activities. It is further noted that “Agriculture plays a critical role in the national economic growth and development. This role is reflected in among others, employment and foreign exchange creation and overall contribution to the Gross Domestic Product” (Kenya. Ministry of Planning, 2001:23). Fedale (1987) on his part observes that the value of information as a commodity in today’s information age cannot be overemphasized since it has contributed immensely to the stagnation or progressiveness of many farming operations. In today’s agricultural industry, survival often depends on having an edge on information related to the market, efficient allocation of available resources and use of new innovative practices.
Also commenting on the importance of information to rural farmers, Balit has the following observation:

Information and knowledge are essential for improving the productivity of farmers in Latin America. . . . Rural producers are in great need of information, knowledge and skills to improve decision-making, increase productivity and simply to survive under new market conditions (Balit, 1998:32).

The above observation is pertinent to this study as it emphasizes the importance of information and knowledge to rural producers who are mainly farmers.

Similar comments on the need for the enhancement of information and human capital in Sub-Saharan Africa have been made by Dixon and Gulliver who observed that:

The popular conception of the coming information age applies as fully to small holder agriculture as it does to other industries. By 2030, knowledge-intensive farming will be the norm in high potential farming systems in the region, just as such agriculture is prevalent in OECD countries today. (Dixon and Gulliver, 2001:75).

In order for the rural people of Kenya to carry out their agricultural activities efficiently and productively, they need to have the appropriate agricultural information. This information can be obtained through various means including the radio, television, agricultural officers, agricultural extension officers, veterinary officers, livestock development officers, chiefs’ and assistant chiefs’ barazas, neighbours, self-help groups, and written publications. Most of these means of communication are oral by nature. But it should be noted that there
are numerous barriers to effective communication, and more so, when this happens to be verbal. Information communicated this way can be easily forgotten, misunderstood or even distorted and thereby result in a disaster. Appropriate means of information communication especially for farmers is therefore crucial. Hence the need for this study.

2.3 Importance of Written Agricultural Information

A study by Shahzad (et al) on the role of agricultural publications in disseminating agricultural information among farming communities of District Faisalabad, Pakistan established that “Agricultural publications play a very pivotal role in the diffusion of innovation. These publications help to change the primitive agricultural methods in land farming.” (2011:222).

On their part, commenting on the value of written publications in information communication, Oakeshott and Bradley have this to say:

The book as an entertainer, stimulator of ideas, of use of leisure time, and as an essential educational tool, seems to have a long time ahead of it. It is cheap, convenient and often beautiful. It offers the capacity to move at your mental pace, to dwell, to read, to savour, to study, without the remorse machine interposing its own search mechanisms, its clock measuring time spent out in pounds and dollars. . . . It is not particularly subject to breakdowns or atmospheric conditions. But it will have to live with its uncomfortable partners (Oakeshott and Bradley, 1982:5)

This statement is yet another that underpins the importance of written materials as conveyers of information and knowledge as opposed to oral or verbal communication. Mohsin (1997), observes that the print media widened the
scope of communication. They are cheap and people can afford to buy and read them at their convenience. They are permanent as the messages are imprinted permanently with high storage value which makes them suitable for reference and research. Mohsin’s views are similar to those of Oakeshott and Bradley discussed above.

In recognizing the importance of written information resources, the Organization for Economic Cooperation and Development (OECD) has observed that “Despite new forms of oral and visual communication, the written word is more important than ever in economic and social interaction. As the world becomes more complex, all citizens need to use reading and writing effectively to thrive in their daily lives (OECD, 2002:1).

The print media therefore remains a dominant information carrier to this day and may remain so for many years to come. But this media is produced for reading. If it is not read, the information contained therein cannot come to life. It only becomes reactivated when read. Delaveney is quite emphatic on the importance of reading. According to her:

…It is clear that in a society in rapid technological and social evolution, non-reading not only constitutes a form of cultural abdication but entails a renunciation of action and of intellectual renewal which can have serious consequences on society as a whole. If reading is a factor in intellectual initiative and individual development, then non-reading looks remarkably like rejection of development. The non-reader stands little chance of moving with his times (Delaveney, 1974:47).
This statement emphasizes the critical role of reading in social and technological developments. Farmers in Kenya including those in the three districts of Kandara, Kigumo and Murang’a South Districts under study use modern technologies in their farming activities where information can be accessed and used. It is for this reason that the current study endeavoured to establish whether farmers in Kandara, Kigumo and Murang’a South Districts accessed and used written publications to gain relevant information for their agricultural activities.

In Kenya, as part of District focus for Rural Development Strategy, it is recognized that the people in each district should be properly informed. In this connection, it is noted that “The DDC is responsible for keeping district residents informed on development activities. Several districts already have their own local newspapers for this purpose. Others are encouraged to follow the example. The DDC should maintain a documentation centre in which members of the public can go to see the progress on various rural development projects in the district” (Kenya. Office of the President, 1984:1). Whether Kandara, Kigumo and Murang’a South Districts have established documentation centres for the purpose stated above or not, was investigated by this study.

2.4 Availability, Accessibility and Utilization of Written Publications

For a person to make use of publications to gain information and knowledge, the publications have to be available and accessible. This section reviews literature
on the importance of availability accessibility and utilization of publications by farmers.

On accessibility of agricultural information, Tire (2006) states that only a small amount of agricultural information is accessible to rural farmers despite the large body of knowledge that exists in research institutions, universities, public offices and libraries. He attributes this situation to the weak linkages between research, extension, not for profit organizations, libraries and farmers and thus these technologies have neither reached nor been adopted by their intended beneficiaries to improve their farming activities in a developing countries including Tanzania. Whether this situation obtains in Kenya or not was subject of this study.

According to a study conducted in the Central Punjab, Pakistan, it was reported that “Majority of the farmers consulted pamphlets, magazines and newspapers for getting information regarding sugarcane production technologies. These were regarded as the most suitable forms of print media for adoption of sugarcane production technologies” (Abbas, et al., 2003).

Another study by Lwoga, Stilwell and Ngulube on access and use of agricultural information and knowledge in Tanzania established that “The major sources of information for farmers were predominantly local (neighbours, friends and family), followed by public extension services. Agricultural input suppliers,
village meetings, farmer groups, cooperative unions and NGOs were important sources of agricultural knowledge in some locations. Print materials with the exception of books had low use due to their unavailability and illiteracy” (2011:395). But it should be noted that most of the above means of communication are verbal by nature which present numerous barriers to effective communication. As stated elsewhere in this chapter, information communicated this way can be easily forgotten, misunderstood or even distorted and thereby result in a disaster. Appropriate means of information communication especially for farmers is therefore crucial. Hence the need for this study.

Muhammad and Garforth (1995) are quoted by Irfan ( et al.) (2006:417) as having reported that “Research has shown that by and large, farmers’ information exposure is most likely to be an important factor influencing their adoption behaviour. Of course, greater exposure is likely to enhance awareness about the latest recommendations and to lead to farmers putting these recommendations into practice in a precise manner”

On their part, Zahedi and Zahedi concluded in their study on Role of Information and Communication Technologies in Modern Agriculture that “It is universal truth that access to information holds the key for successful development of agriculture and some dedicated and enterprising scientists and
technologists are making their best efforts to derive the benefits of IT revolution to the rural poor” (2012:1728)

In a study on gender factor in crop farmers’ access to agricultural information in rural areas of Delta State, Nigeria, Adomi, Ogbono and Inoni concluded that “Crop farmers require information to enable them to enhance their agricultural practices/yields. In spite of the enormous role of information in agriculture/national development, a variety of problems hinder male and female crop farmers in the rural Delta, Nigeria from having access to agricultural information”. (Adoni, Ogbono and Inori, 2003:391).

Yet another study on consumption of economic information in agriculture by Just (et al.) (2002:40) concluded that “The ability to access and process information and produce knowledge are increasingly recognized as critical determinants of economic performance of firms, sectors, regions and national economics”.

On availability of publications, Cornish (1998:481) states that “While total availability of all publications to all people is an unattainable ideal, every improvement in availability is nevertheless a step forward. Effective availability requires that the information needs of people and how far they can be met through publication are evaluated. This is the first and basic criterion from which all other UAP principles spring”. Without availability of
publications from which relevant information can be obtained for farming purposes, farmers’ efforts will be negatively affected.

Some of the facilities from which farmers can access agricultural publications include libraries, information and documentation centres as well as bookshops. These facilities are discussed in section 2.5.

2.5 Libraries, Information and Documentation Centres, and Bookshops

In commenting on libraries in provision of information which is the cornerstone of industrial and commercial growth, Cornish states that “Libraries in the widest sense need to be able to meet the expectations of their users in this respect, otherwise libraries will be ignored as irrelevant in the present electronic world, and users will fail to receive the information they need to stimulate growth (Ibid.). This clearly means that without meeting their users’ information needs, libraries cannot justify their existence.

On his part, Jagnayak points out a number of ways that rural libraries may play a role in economic development. One is by becoming involved in programmes that focus on various types of development such as agriculture, health, nutrition and small scale industries. He goes on to state that in rural areas and particularly those in the Third World, the most urgent economic problem is to improve the production in agriculture, adding that libraries might be useful for economic uplift (Jagnayak, 1997: 15). Similarly on the importance of library
services as providers of written information materials, Skrzeszewski and Cubberly (1997:324) suggest that “Library services can be vital to economic growth in rural areas”.

Yet another study by Dent on local economic development in Uganda and the connection to rural community libraries and literacy, established that “Rural village libraries in developing areas of the world have great potential. They are gathering places to learn, and places to interact with others. They provide reading materials and access to different types of information. On a smaller scale, these libraries may also impact local economic development, which can mean a lot in rural areas where opportunity for economic development growth is minimal” (Dent, 2007: 203).

In Kenya, a network of public library service (KNLS) has been established country wide to avail books and other publications to the Kenyan population. Two of its functions relevant to the current study are “To acquire books produced in and outside Kenya and such other materials and sources of knowledge necessary for a comprehensive national” library and “to stimulate public interest in books and to promote reading for knowledge, information and enjoyment” (Kenya. National Council for Law Reporting, 2013:6).

By June 2009, the KNLS had a total of 1,069,503 volumes of books valued at over Ksh 383,879,560 and operated a network of 54 provincial, district and
community libraries countrywide (KNLS, 2009). The network also possessed eight motorized mobile libraries and mobile camel libraries located in the expansive marginal areas of the North Eastern Province. The network’s total bookstock had reached 1,314,793 volumes by the end of 2012/2013 financial year (KNLS, 2013).

Further, as part of District Focus for Rural Development Strategy, it is recognized that the people in each district in Kenya should be properly informed. In this connection, it is noted that “The DDC is responsible for keeping district residents informed on development activities. Several districts already have their own local newspapers for this purpose. Others are encouraged to follow the example. The DDC should maintain a documentation centre in which members of the public can go to see the progress on various rural development projects in the district” (Kenya Office of the president, 1984:4).

From the literature reviewed in this section, it would appear that libraries and other information and documentation centres can play a major role in the economic development of a country including agricultural development. Whether Kandara, Kigumo and Murang’a South Districts have branches of the KNLS and have established district information and documentation centres for the purposes stated above was to be investigated by the current study. The
study also sought to establish whether bookshops from which publications could be bought were in the farmers’ neighbourhoods in the districts under study.

2.6 Summary

The literature reviewed in this chapter covers importance of information in development in general and specifically in agricultural development. It also covers the need for farmers to access and utilize written agricultural information for their farming activities in order for them to enhance their agricultural productivity as opposed to the use of verbal information communication which can be easily forgotten or misunderstood and therefore fail to lead to the realization of the desired results. The literature reviewed has, however, shown that verbal means of communication are widely used by farmers in many countries of the world.

For the farmers to access and use written publications, the latter have to be readily accessible. The reviewed literature has also shown that among facilities where written publications could be accessed are libraries, information and documentation centres as well as bookshops. Libraries and documentation centres in particular are expected to meet the information needs of their clientele or else they will be ignored as irrelevant particularly in the current electronic age.
Generally, the literature reviewed emphasises on the value of written information as opposed to verbal communication in human development and agriculture in particular. Locally the literature shows that some initiatives towards provision of written information in general have been taken mainly by the national government through the establishment of the Kenya National Library Service and District information and documentation centres. Whether these facilities have been initiated in Kandara, Kigumo and Murang’a South Districts for the benefit of the farmers was investigated by the current study.

The study investigated the information sources used by farmers in Kandara, Kigumo and Murang’a South Districts in order for them to improve their agricultural productivity. It also investigated appropriateness of information available to farmers. For farmers to access written agricultural information materials, the study investigated the presence of libraries, district information and documentation centres as well as bookshops in the districts under study.
CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the research methodology used in this study. The major areas covered are: research design, location of the study, target population, sample size and sampling procedures, research instruments, validity and reliability of the instruments, data collection procedures, data analysis, legal and ethical issues.

3.2 Research Design

According to Kumar, a research design is “a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems” (2005:84). Cresswell considers research designs as “plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis” (2009:3).

Descriptive survey method was used in this study. According to Kothari “Descriptive research studies are concerned with describing the characteristics of a particular individual or a group” (2004:37). This design was preferred for this study because of its suitability in that the study was seeking information on accessibility and utilization of written sources of information by farmers in Kandara, Kigumo and Murang’a South Districts of Murang’a County for enhanced agricultural productivity. The study also sought the farmers’ attitudes,
opinions and expectations on the topic of the study and descriptive survey method is suited for this purpose

3.3 Location of the Study

The study was conducted in Kandara, Kigumo and Murang’a South Districts of Murang’a County, Kenya. These are districts with high agricultural potential but also low agricultural productivity. They were selected for the study since they have several agro-ecological zones (AEZ) ranging from low to high altitude and corresponding rainfall ranges of low to high - a major factor in agricultural production. The zones are suitable for the growing of many different crops and for rearing of many different domestic animals. They have a high population density of 422 per square kilometer in comparison to the national average of 49, and they cover 1,025.2 square kilometer (Kenya National Bureau of Statistics, 2010:25). The districts were also selected as their agro ecological zones were replicated in other districts in Murang’a County as well as such other neighboring counties as Nyeri, Kirinyaga and Kiambu. The findings of the study might also generally apply to them.

3.4 Target Population

Mugenda and Mugenda (2012:326) define target population as “the particular entity of people, objects or units to which a researcher can reasonably generalize his or her research findings.” The target population for this study was 114,578
heads of the 114,578 households or farm families in the three districts under study.

Additionally, three district agricultural officers, three district veterinary officers and three district livestock development officers formed part of the target population. These are the top government officers at district level in charge of the three agricultural divisions of veterinary service, agriculture and livestock development. They generally interact with farmers in the course of their duties in the districts.

3.5 Sampling Procedures and Sample Size

3.5.1 Sampling Procedures

The sample for the study was drawn from the three broad agro-ecological zones namely lower, middle and upper zones from the three districts under study. The zones experience different amounts of rainfall. Systematic-Random sampling was used to select respondents from the farm families. This sampling technique is a “technique of selecting probability samples that requires a complete listing of the target population. This technique involves the direct selection of subjects or other primary sampling units from the sampling frame that is listed progressively. The sample size (n) must be known or calculated before sampling is done. The researcher then starts at a random point on the population listing and selects $k^{th}$ subject or unit” (Mugenda and Mugenda, op cit: 324). This technique was used because the study sought a representativeness of the
wider population and the technique afforded each member of the target population an equal chance of selection. However, agricultural, veterinary and livestock development officers were purposively sampled since the holders of the highest positions at district level in their respective specializations were picked. These included District Agricultural Officers, District Veterinary Officers and District Livestock Development Officers, in each district under study.

3.5.2 Sample Size

Quite often, the sample size is a matter of judgment and calculation depending on the purpose of the study and the nature of the population under scrutiny (Cohen, Manion and Morrison, 2000:93). However, the smaller the target population, the larger the proportion of that population must be which appears in the sample. The converse of this is true in that the larger the target population, the smaller the proportion of that population can be that appears in the sample.

Peter (1974:76) has shown that for a target population of 100,000, a sample size of 384 is adequate, while according to Cohen, Manion and Morrison (2000:95), for a target population of 50,000, the recommended sample size is 381 at 95% confidence level, and for a target population of 100,000, a sample size of 383 is recommended. Saunders, Lewis and Thornhill recommend a sample size of 383 for a target population of 100,000. They recommend a sample size of 384 for a target population of 1,000,000 and also the same sample size for a target
population of 10,000,000 (Saunders, Lewis and Thornhill (2009:219) See Table 3.1 which is an adaptation of Saunders, Lewis and Thornhill’s Table 7.1 on Sample sizes for different sizes of population at 95% confidence level.

**Table 3.1: Sample Sizes for Different Sizes of Population at 95% Confidence Level**

<table>
<thead>
<tr>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>44</td>
</tr>
<tr>
<td>100</td>
<td>79</td>
</tr>
<tr>
<td>150</td>
<td>108</td>
</tr>
<tr>
<td>200</td>
<td>132</td>
</tr>
<tr>
<td>250</td>
<td>151</td>
</tr>
<tr>
<td>300</td>
<td>168</td>
</tr>
<tr>
<td>400</td>
<td>196</td>
</tr>
<tr>
<td>500</td>
<td>217</td>
</tr>
<tr>
<td>750</td>
<td>254</td>
</tr>
<tr>
<td>1,000</td>
<td>278</td>
</tr>
<tr>
<td>2,000</td>
<td>322</td>
</tr>
<tr>
<td>5,000</td>
<td>357</td>
</tr>
<tr>
<td>10,000</td>
<td>370</td>
</tr>
<tr>
<td>100,000</td>
<td>383</td>
</tr>
<tr>
<td>1,000,000</td>
<td>384</td>
</tr>
<tr>
<td>10,000,000</td>
<td>384</td>
</tr>
</tbody>
</table>

Source: Adapted from Saunders, Lewis and Thornhill (2009:219)

Since the target population for the current study was 114,578 heads of farm families, a figure between 100,000 and 10,000,000, using Saunders, Lewis and Thornhill’s table, a sample of 384 would have been taken for the study. But since the study was to draw a sample from three administrative districts covering three broad agro-ecological zones, it advocated a higher and equal representation as it was not easy to draw demarcation lines for the zones. For
this reason, the study considered 390 cases. Additionally, three agricultural, three veterinary and three livestock development officers were included in the sample to make a total of 399 which were proportionately distributed.

3.6 Research Instruments

To achieve the objectives of the study, questionnaires were used to collect the required data from the respondents. Two different questionnaires were used namely: questionnaire for farmers and questionnaire for District agricultural, veterinary, and livestock development officers. The latter included questions common to all the three categories of officers as well as specific questions for either group of officers.

The choice of the questionnaire for data collection was dictated by the following factors:

(i) There is low cost even when the universe is large and is widely spread.

(ii) It is free from the bias of the interview as answers are in the respondents’ own words.

(iii) Respondents have adequate time to give well thought out answers.

(iv) Large samples can be made use of and thus the results can be made more dependable and reliable (Kothari, 2004:100-101).

Each questionnaire was accompanied by a brief but adequate, signed cover letter. The use of this letter was to explain the purpose of the research.
3.6.1 Questionnaire for Farmers

This questionnaire, containing written questions specific to the purpose of the investigation was used to gather information from the farmers on the ways or methods they obtained relevant information for their farming activities. To achieve the necessary success of the exercise, precision of the questions was ensured. The essential categories of information were properly delineated and defined. Possible sources of information used by farmers were listed including: neighbours, relatives, agricultural officers, veterinary officers, livestock development officers, chiefs’ barazas, and written sources such as books, periodicals, pamphlets, leaflets, labels on agricultural and veterinary input containers etc. Questions on sources of written information materials were also included. The questions were carefully and sequentially presented to ensure the establishment of rapport and the emergence of the truest picture of the population investigated.

3.6.2 Questionnaire for District Agricultural, Veterinary and Livestock Development Officers

This instrument was used to collect information from district agricultural, veterinary and livestock development officers in the three districts who usually interacted with farmers in the course of their duties to assist the latter to improve their farming activities. The questionnaire included questions on the kind of information the officers disseminated to farmers and also the information assistance generally sought from them by farmers.
3.7 Pilot Study

Before using the questionnaires for data collection, they were subjected to a pilot study. According to Kothari (2004:101), a pilot study “is the replica and rehearsal of the main survey”. Saunders, Lewis and Thornhill go further to state that this is “a small-scale study to test a questionnaire, interview checklist or observation schedule, to minimize the likelihood of respondents having problems in answering the questions and of data recording problems as well as to allow some assessment of the questions validity and the reliability of the data that will be collected (2009:597).

Mugenda and Mugenda (2012:240) define pilot study as a “pre-test done prior to the main study to determine the accuracy of the research instruments in obtaining the required data”.

The pilot study was carried out to ensure that the items in the data collection instruments measured what they were meant to measure. It was also meant to bring out any weaknesses of the questionnaires and therefore afford the researcher an opportunity to effect improvements where necessary. It further enabled the researcher to estimate the time the data collection exercise would take. The piloting of the instruments was done on samples similar to those in the actual study. Three districts in the northern part of Murang’a County provided a perfect area for the pilot study as they had the same characteristics and agro-ecological zones as those of the districts under study. The districts
selected for the pilot study were Kiharu, Kahuro and Mathioya. Three farmers from one village in each district, and the District Agricultural Officer, the District Veterinary Officer, and the District Livestock Development Officer from each of the three districts were included in the pilot study.

3.7.1 Reliability
Reliability is a measure of the degree to which the research instrument yields consistent results after repeated trials (Mugenda and Mugenda, 2003:95). Reliability of data collected is therefore very important, and in this study, it was ensured through the use of the pilot study as explained in section 3.7. Reliability of data collection instruments was tested using cronbach correlation coefficient which yielded alpha of between 0.722 and 0.953 which are acceptable values to show internal consistency.

3.7.2 Validity
Validity is the accuracy and meaningfulness of inferences based on the research results. It can also be said to be the degree to which results obtained from the analysis of the data collected actually represent the phenomenon under study (Mugenda and Mugenda, 2003:99). To ensure the validity of the research results, the data collection instruments were subjected to a pilot study as explained in section 3.7. Any item found to yield no useful information was removed.
3.8 Data Collection Procedures

The study mainly targeted farmers in the three districts represented by a sample of 390 farmers as noted in section 3.5.2. This sample was equally distributed among the three districts which means that each district had a sample of 130 farmers. The 130 farmers in each district were equally shared by 13 different villages in the district meaning that each sampled village had ten farmers selected for the study.

To get access to the sampled farmers, the researcher obtained a letter from the National Council for Science and Technology authorizing him to carry out the research. The letter had been copied to the respective district commissioners of the districts under study. The researcher personally called on the respective district commissioners who introduced him to their district officers who in turn introduced him to their relevant locational chiefs. The locational chiefs connected the researcher with their relevant assistant chiefs, who on their part introduced the researcher to respected village elders who were conversant with all the homesteads in their respective villages. This was for the purpose of identifying the sampled farming families and creating rapport between the researcher and the heads of these families.

The questionnaires for farmers were hand-delivered by the researcher and three research assistants specially trained for this purpose. These questionnaires were supposed to be completed by the heads of the sampled households but where the
head was not present, the spouse completed the questionnaire. Where the two were not present, a second attempt to trace them was made later the same day, and when this failed, no further attempt was made. The completed questionnaires were collected immediately after completion since it would have been both difficult and costly to trace the farmers later.

The questionnaires for the officers were personally hand-delivered by the researcher. They were likewise collected later after completion since the officers’ work stations were known.

3.9 Data Analysis
Since this was a descriptive study, it yielded both qualitative and interval data as per its objectives. Objectives 1, 2, 3, 4 and 6 generated descriptive statistics like frequency tables, means and percentages for presentation and interpretation. Objective 5 generated interval data and therefore needed the Likert scale to analyze them. Statistical Package for Social Sciences (SPSS) was used to produce tables and charts necessary for data presentation. Other presentation was in form of text, figures and percentages.

3.10 Legal and Ethical Issues
Observance of legal and ethical issues in the entire research process was ensured through the following measures:
(i) Obtaining legal authority from the relevant government agency to carry out the research – in this case the National Council for Science and Technology (NCST).

(ii) Obtaining voluntary and informed consent of the respondents in participating in the research.

(iii) Maintenance of anonymity of respondents to ensure confidentiality of the information and its source.

(iv) Disclosure to the respondents that the information given would be used for no other than research purposes only.
CHAPTER FOUR
PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter covers data analysis, presentation and discussion of the findings. Each set of data has been presented separately according to the objectives of the study followed by a discussion. The questionnaires for farmers were meant to be completed by 390 sampled respondents as stated in Section 3.5.2 while those for agricultural, veterinary, and livestock development officers were meant to be completed by nine respondents. The response rate for the officers’ questionnaire was 100% as all the nine officers completed the questionnaire.

The response to the farmers’ questionnaire was by 348 out of 390 farmers therefore recording 89.2% response rate. The 348 responses were distributed as follows: Kandara District 122, Kigumo District 111 and Murang’a South District 115.

4.2 General Information on Farming Activities in the Three Districts of Murang’a County

In order to lay the basis for discussion of information sources used by farmers in the three selected districts of Murang’a County, it was necessary to establish the different crops grown and livestock reared by farmers respectively. The responses received from the farmers on specific crops grown and livestock reared are presented in Tables 4.1- 4.6.
Table 4.1: Grain Crops Grown by Farmers in the Districts

<table>
<thead>
<tr>
<th>Specific grain</th>
<th>Frequency (n=348)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>346</td>
<td>99.4</td>
</tr>
<tr>
<td>Beans</td>
<td>343</td>
<td>98.6</td>
</tr>
<tr>
<td>Pigeon peas</td>
<td>48</td>
<td>13.8</td>
</tr>
<tr>
<td>Sorghum</td>
<td>43</td>
<td>12.4</td>
</tr>
<tr>
<td>Green grams</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Among the grain crops in Table 4.1 above, maize and beans top the list with very high frequencies and percentages. These two crops generally constitute the staple food for the majority of the residents of the districts under study and Kenya at large (Ofwona, 2013:111-113). The large number of growers is therefore not surprising since the farmers have to grow the two crops mainly to satisfy their food needs. Another type of crop grown by farmers in the districts under study is fruits as given in Table 4.2.
Table 4.2: Fruit Crops Grown by Farmers in the Districts

<table>
<thead>
<tr>
<th>Specific fruit</th>
<th>Frequency (n=348)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>342</td>
<td>98.3</td>
</tr>
<tr>
<td>Avocados</td>
<td>295</td>
<td>84.8</td>
</tr>
<tr>
<td>Mangoes</td>
<td>198</td>
<td>56.9</td>
</tr>
<tr>
<td>Macadamia nuts</td>
<td>139</td>
<td>39.9</td>
</tr>
<tr>
<td>Pawpaws</td>
<td>127</td>
<td>36.5</td>
</tr>
<tr>
<td>Passion fruits</td>
<td>89</td>
<td>25.6</td>
</tr>
<tr>
<td>Lemons</td>
<td>37</td>
<td>10.6</td>
</tr>
<tr>
<td>Oranges</td>
<td>31</td>
<td>8.9</td>
</tr>
<tr>
<td>Watermelons</td>
<td>18</td>
<td>5.2</td>
</tr>
<tr>
<td>Others</td>
<td>11</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Table 4.2 shows that bananas, avocados and mangoes are the main fruit crops grown in the three districts. As a crop, bananas are unique in that some varieties are both cooked and eaten as food and also eaten as fruit. In addition to this, they are sold on the local market thereby earning farmers financial income. These factors could have accounted for their position among fruit crops grown by the farmers in the districts under study. The fruit crops in the category labeled “others” include guavas, pears, grapes, pineapples, ribena and strawberry which were not widely grown.

A number of root crops were grown in the districts under study as summarized in Table 4.3.
Table 4.3: Root Crops Grown by Farmers in the Districts

<table>
<thead>
<tr>
<th>Specific crop</th>
<th>Frequency (n=348)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irish potatoes</td>
<td>311</td>
<td>89.4</td>
</tr>
<tr>
<td>Sweet potatoes</td>
<td>274</td>
<td>78.7</td>
</tr>
<tr>
<td>Cassava</td>
<td>205</td>
<td>58.9</td>
</tr>
<tr>
<td>Arrowroots</td>
<td>43</td>
<td>12.4</td>
</tr>
<tr>
<td>Others</td>
<td>18</td>
<td>5.2</td>
</tr>
</tbody>
</table>

From Table 4.3, it is seen that among the main root crops are Irish potatoes, sweet potatoes and cassava. These are some of the food crops eaten by the residents of the districts under study and this could be the reason why they are widely grown. The low frequency recorded for arrowroots could be that they grow in wetlands such as areas adjacent to river banks and along streams, and many of these have lately dried up in the districts under study thereby reducing areas where this crop grows. Other root crops grown by a much smaller population of farmers included yams, carrots and beetroots which accounted for 5.2%.

Several vegetable crops were grown by farmers as summarized in Table 4.4.

Table 4.4: Vegetable Crops Grown by Farmers in the Districts

<table>
<thead>
<tr>
<th>Specific crop</th>
<th>Frequency (n=348)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sukuma wiki (Kale)</td>
<td>254</td>
<td>73.0</td>
</tr>
<tr>
<td>Pumpkins</td>
<td>205</td>
<td>58.9</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>92</td>
<td>26.4</td>
</tr>
<tr>
<td>Cabbages</td>
<td>90</td>
<td>25.9</td>
</tr>
<tr>
<td>French beans</td>
<td>27</td>
<td>7.8</td>
</tr>
<tr>
<td>Others</td>
<td>22</td>
<td>6.3</td>
</tr>
</tbody>
</table>
From Table 4.4, it is observed that *sukuma wiki* or kale is the most popular vegetable crop followed by pumpkins, tomatoes, cabbages and French beans respectively. Other vegetable crops not widely grown in the category termed “others” include courgettes, peas, cucumbers, onions, spinach and broccoli.

A number of cash crops were grown in the districts under study as represented in Table 4.5.

**Table 4.5: Cash Crops Grown by Farmers in the Districts**

<table>
<thead>
<tr>
<th>Specific crop</th>
<th>Frequency (n=348)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>186</td>
<td>53.4</td>
</tr>
<tr>
<td>Tea</td>
<td>83</td>
<td>23.9</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>40</td>
<td>11.5</td>
</tr>
<tr>
<td>Miraa/Khat</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Sunflower</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

As shown in Table 4.5 above, there are only two major cash crops grown in the districts under study. These are coffee and tea. Coffee is the more widely grown cash crop since there is a much larger area suitable for coffee growing than there is for tea growing in the districts under study. Tea grows well only in the rainy highland area east of the Aberdare Mountain Range.

An important point to note from Tables 4.1 – 4.5 is that there were many different crops grown in the three districts under study. The number of crops grown in each category is shown in Figure 4.1.
From Figure 4.1, it is seen that fruit crops had the highest number of different kinds (16) followed by vegetable crops with 12, while root crops had seven. Grain crops and cash crops had five each. To grow all these crops profitably, appropriate agricultural information is necessary. One method of obtaining useful agricultural information is through reading which is addressed in this thesis.

The study also sought to establish the different kinds of livestock reared by the farmers and the results are recorded in Table 4.6.
From the Table 4.6, it is observed that a majority of respondents reared both chicken and cattle. Similarly, it is observed that less than 10.0% of the farmers reared ducks, turkeys and geese.

For the farmers in the districts under study to benefit maximally from their agricultural activities, use of appropriate agricultural information was necessary. In line with objective three of the study which was “To establish the sources of information that farmers in the three districts depend on to carry out their agricultural activities”, this study further sought to establish sources of their agricultural information. These sources are discussed in Section 4.3.

4.3 Sources of Agricultural Information

To carry out their agricultural activities profitably, farmers would be expected to use or apply appropriate information from various sources. The study therefore
sought to establish sources of agricultural information for farmers in line with objective three of the study. The respondents were requested to indicate their sources of information and the findings are summarized in Table 4.7.

Table 4.7: Sources of Agricultural Information for Farmers

<table>
<thead>
<tr>
<th>Sources of information</th>
<th>Frequency (n=348)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>277</td>
<td>79.6</td>
</tr>
<tr>
<td>Friends</td>
<td>223</td>
<td>64.1</td>
</tr>
<tr>
<td>Neighbours</td>
<td>213</td>
<td>61.2</td>
</tr>
<tr>
<td>Agricultural, veterinary &amp; livestock officers</td>
<td>206</td>
<td>59.2</td>
</tr>
<tr>
<td>Chief’s barazas</td>
<td>196</td>
<td>56.3</td>
</tr>
<tr>
<td>Relatives</td>
<td>167</td>
<td>48.0</td>
</tr>
<tr>
<td>Demonstration visits</td>
<td>96</td>
<td>27.6</td>
</tr>
<tr>
<td>Reading materials</td>
<td>73</td>
<td>21.0</td>
</tr>
<tr>
<td>Television</td>
<td>63</td>
<td>18.1</td>
</tr>
<tr>
<td>Own knowledge</td>
<td>55</td>
<td>15.8</td>
</tr>
<tr>
<td>Agricultural shows</td>
<td>33</td>
<td>9.5</td>
</tr>
<tr>
<td>Field days</td>
<td>18</td>
<td>5.2</td>
</tr>
<tr>
<td>Agricultural movies</td>
<td>13</td>
<td>3.7</td>
</tr>
<tr>
<td>Self-help groups</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td>Seminars</td>
<td>5</td>
<td>1.4</td>
</tr>
<tr>
<td>Women groups</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td>Agro vet shops</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Churches</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Coffee factory training</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Tea factory training</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

From Table 4.7, it is observed that, of the 20 sources of agricultural information cited by the farmers, radio topped the list with a frequency of 277. It is also observed from the same Table that all the sources cited except “reading materials” which came 8th in ranking with a frequency of 73 accounting for 21.0% were verbal by nature. It should, however, be noted that information
transmitted verbally can be easily forgotten and sometimes can be misunderstood and therefore not yield the desired results when applied.

It is also worth noting that information materials that could be read and re-read at the reader’s pace at the point of need scored very poorly (21.0%). This revelation appears to confirm Makenzi’s assertion that “In most parts of Africa, reading is perceived as an academic exercise and a means to pass examinations. In Kenya for example, reading was for a long time limited to text books, with reading being taught as a perfunctory skill to be employed only in school time pursuit (Makenzi, 2004:3). The findings further show that the situation has not changed much since Makenzie’s observation in 2004.

4.4 Reasons Why Written Materials Were Not One of the Sources of Agricultural Information for Some Farmers

The study sought to establish from those farmers who did not mention written materials as one of their sources of agricultural information why they did not use them. Their responses were as presented in Table 4.8.
Table 4.8: Why Written Materials Were Not Used as Sources of Agricultural Information by Some Farmers

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency (n=235)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written materials not available</td>
<td>136</td>
<td>57.9</td>
</tr>
<tr>
<td>Illiteracy</td>
<td>48</td>
<td>20.4</td>
</tr>
<tr>
<td>Poor eyesight</td>
<td>15</td>
<td>6.4</td>
</tr>
<tr>
<td>Not interested</td>
<td>15</td>
<td>6.4</td>
</tr>
<tr>
<td>Lack of time</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>Irrelevant</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>Not aware</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>Do not understand the language</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Old age</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Do not attend meetings where books are provided</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Written materials far from farmers’ reach</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>No finance to purchase</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Verbal communication needed</td>
<td>1</td>
<td>0.4</td>
</tr>
</tbody>
</table>

From Table 4.8, it can be shown that 78.3% of the respondents advanced two main reasons for not using written materials. These are: “Written materials were not available” and “Illiteracy”. These two are very crucial factors as they affect a large number of farmers in the districts under study. Unavailability of written agricultural materials denies the farmers the benefit of using reliable professional information on how best to carry out their farming activities in order to enhance their agricultural productivity. In the circumstances, such farmers continue to use less reliable sources of information and thereby continue realizing low agricultural productivity.
In order to arrest the situation, unavailability of written agricultural materials should be addressed as a matter of urgency. How this can be done is discussed later in this study.

Illiteracy is the second major factor that militates against the use of written agricultural information materials and it leaves those unable to read with no other option but to rely on verbal sources of information, which as mentioned earlier in this study may not be reliable and could lead to poor farming practices thereby resulting in low agricultural productivity. Although illiteracy was cited by 20.4% of respondents which is a lower rate than that cited by the Kenya National Bureau of Statistics (2007:267), it is nevertheless high enough to cause concern. If illiterate farmers are to benefit from written professional agricultural information materials, they must be taught how to read and write in languages they can easily understand. How this can be done in the three districts under study is discussed later in this thesis.

Poor eyesight which was cited by 6.4% of the respondents as the reason for not using written agricultural information materials may be addressed through production of some large print agricultural information materials. Some farmers who are not able to read the standard or normal print may benefit from reading large-print information materials. Another possible solution is to recommend the procurement of reading glasses on the advice of eye specialists to those whose eyesight is not too poor. This could help them benefit from using
agricultural information materials for themselves and apply the knowledge thus gained to carry out their agricultural activities profitably.

The cumulative total of those farmers who cited lack of interest, lack of time, and written materials being irrelevant, was 25 accounting for 10.6% of the total responses. Though this is a small group, it is a significant one and seems to fall in the class of people referred to by Delaveney in the following words:

...It is clear that in a society in rapid technological and social evolution, non-reading not only constitutes a form of cultural abdication but entails a renunciation of action and of intellectual renewal which can have serious consequences on society as a whole. If reading is a factor in intellectual initiative and individual development, then non-reading looks remarkably like rejection of development. The non-reader stands little chance of moving with his times (Delaveney, 1974:47).

To enable such farmers to develop an interest in reading and to appreciate the need to read for themselves to acquire relevant agricultural information in order for them to enhance their agricultural productivity, there is a need to initiate an agricultural information awareness programme directed at them. Such a programme should be professionally planned and executed for it to bear the desired results. The programme envisaged here should ideally be handled by agricultural professionals in the districts under study. How this can be carried out is given in chapter five of this study.

Those farmers who said they were not aware of agricultural information materials, those who did not attend meetings where books were provided, and those who did
not understand the language of the publications can also be catered for by the programme envisaged above.

4.5 Rating of Usefulness of Written Materials Read

The study intended to establish how important the farmers considered the materials they read. The respondents were therefore asked to indicate the importance of different written materials using scale 1-5 where 1 indicated very important; 2 – important; 3-fairly important; 4- not important; and 5- least important. The responses were as presented in Table 4.9.

<table>
<thead>
<tr>
<th>Written sources of agricultural information</th>
<th>Rating</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very important</td>
<td>Important</td>
<td>Fairly important</td>
<td>Not important</td>
<td>Least important</td>
<td>Total responses</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>(4)</td>
<td>(3)</td>
<td>(2)</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Freq</td>
<td>%</td>
<td>Freq</td>
<td>%</td>
<td>Freq</td>
<td>%</td>
</tr>
<tr>
<td>Books and pamphlets</td>
<td>26</td>
<td>55.3</td>
<td>10</td>
<td>21.3</td>
<td>6</td>
<td>12.8</td>
</tr>
<tr>
<td>Leaflets</td>
<td>14</td>
<td>36.8</td>
<td>8</td>
<td>21.1</td>
<td>10</td>
<td>26.3</td>
</tr>
<tr>
<td>Newspapers</td>
<td>11</td>
<td>39.9</td>
<td>4</td>
<td>13.8</td>
<td>3</td>
<td>10.3</td>
</tr>
<tr>
<td>Periodicals</td>
<td>9</td>
<td>34.6</td>
<td>6</td>
<td>23.6</td>
<td>3</td>
<td>11.5</td>
</tr>
<tr>
<td>Posters</td>
<td>11</td>
<td>44.0</td>
<td>3</td>
<td>12.0</td>
<td>3</td>
<td>12.0</td>
</tr>
</tbody>
</table>

From the above Table, it is observed that different written materials had different responses. Books and pamphlets recorded a total of 47 responses and were therefore the most widely used materials from which farmers obtained agricultural information. Using the Likert scale of 5-1 to calculate the mean score of importance of books and pamphlets to farmers, the mean score is 4.1. It is therefore fair to consider books and pamphlets as important and crucial to farmers.
as sources of agricultural information since their mean score is far above the neutral point which is 3.

Leaflets had the second highest response rate of 38. Again using the Likert scale of 5-1 to rate the importance of leaflets to farmers, the calculated mean score is 3.7. Though leaflets had a lower response rate and a lower mean score than books and pamphlets, they were considered fairly important by farmers as sources of agricultural information. Newspapers came third with a total of 29 responses. Using the Likert scale of 5-1 to gauge their importance to farmers as sources of agricultural information, the calculated mean is 3.3. Newspapers can therefore be said to be considered by farmers as fairly important. Periodicals were rated by 26 farmers who used them as sources of agricultural information. Again, using the Likert scale of 5-1, the calculated mean score is 3.5. This can be interpreted to mean that farmers considered periodicals as a fairly important source of agricultural information.

Considering that newspapers and periodicals usually contain the latest or the most current information long before it is concretely published in book form, more agricultural information should be channeled through these two media to reach the farmers easily. Newspapers that are usually published on a daily basis would be particularly useful to farmers who regularly read them.
Posters recorded the lowest response of 25. Using the Likert scale of 5-1, the calculated mean score is 3.5 like that for periodicals. They are therefore considered as fairly important by the farmers. Considering that posters usually contain information on specific topics, they should be widely used to disseminate agricultural information to farmers. Attractive ones have the potential to catch the eyes of many readers and this factor should be taken into consideration when posters are being produced. An effective method of distributing them should be used in order for them to reach as many farmers as they are intended to. Some could be displayed in places frequented by local people including farmers such as shopping centres, market places, churches and chiefs’ camps. This would attract farmers to read them in order to enhance their agricultural productivity.

The researcher further sought to establish how those farmers who read rated the usefulness of information they obtained from the written materials they read. The findings are given in section 4.6.

### 4.6 Rating of Usefulness of Information Obtained From Written Materials

Further to the rating of the importance of different materials read by farmers in section 4.5, the researcher sought to establish how the farmers rated the usefulness of information obtained from the written materials. The responses were as recorded in Table 4.10.
Table 4.10: Rating of Usefulness of Information Obtained From Written Materials

<table>
<thead>
<tr>
<th>Rating</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Total responses</th>
<th>Mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very useful (5)</td>
<td>24</td>
<td>34.8</td>
<td>35</td>
<td>50.7</td>
<td>9</td>
<td>13.0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>69</td>
</tr>
<tr>
<td>Useful (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.2</td>
</tr>
<tr>
<td>Fairly Useful (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not useful (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Useless (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total responses</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean score</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From Table 4.10, it is observed that there was a total of 69 responses on the rating of usefulness of information obtained from various written materials. Using the Likert scale of 5-1 to calculate the mean score of usefulness of the information obtained from written materials discussed in section 4.5, the mean score is 4.2. This mean score is far above the neutral point and this can be interpreted to mean that the farmers found the information obtained from the materials they read as useful. Everything possible should therefore be done to channel agricultural information through written materials to help the farmers in the districts under study enhance their agricultural productivity and hence their well being.

The study further sought to establish the sources of written materials for the farmers. The following section is on these sources.
4.7 Sources of Written Materials

In order to establish the availability of written materials used by the farmers, it was necessary to find out the sources of these materials. The farmers were therefore asked to indicate their sources of written agricultural information materials, and their responses were as shown in Table 4.11.

Table 4.11: Sources of Written Materials

<table>
<thead>
<tr>
<th>Sources</th>
<th>Frequency (n=140)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighbours, relatives and friends</td>
<td>39</td>
<td>27.9</td>
</tr>
<tr>
<td>Agricultural, veterinary &amp; livestock development officers</td>
<td>35</td>
<td>25.0</td>
</tr>
<tr>
<td>Purchase</td>
<td>28</td>
<td>20.0</td>
</tr>
<tr>
<td>Farm chemical and fertilizer companies</td>
<td>17</td>
<td>12.1</td>
</tr>
<tr>
<td>Coffee &amp; tea factories, Co-operative societies</td>
<td>11</td>
<td>7.9</td>
</tr>
<tr>
<td>District information &amp; documentation centres</td>
<td>3</td>
<td>2.1</td>
</tr>
<tr>
<td>Libraries</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>KARI</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Field days and seminars</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Church groups</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>140</td>
<td>100</td>
</tr>
</tbody>
</table>

From the Table 4.11, it is observed that the key sources of farmers’ written materials are neighbours and relatives; agricultural, veterinary and livestock development officers; and purchase. All these cumulatively account for 72.9% of the farmers’ reading materials.

It is also observed that purchase has a frequency of 28 accounting for 20.0% of responses. Though this is rather low, it is encouraging in that such purchased materials are always available to the farmers whenever a need arises to consult
them since they have them in their possession. It can also be said that such materials are valued by the farmers and that is why they were purchased. It is therefore important that farmers be encouraged and facilitated to buy the necessary written agricultural information materials for them to read in order to carry out their agricultural activities profitably. This can be done through the production of affordable agricultural information materials which should be made easily available to farmers. Farmers themselves should be encouraged to buy and read such materials for their own benefit.

One of the study objectives was “To find out the methods used by agricultural, veterinary and livestock development officers to disseminate agricultural information to farmers”. The farmers themselves have indicated above that they obtained written materials from the officers.

Written materials obtained from agricultural, veterinary and livestock development officers should be useful to farmers since the materials are from persons professionally trained and qualified in their respective fields of specialization. In addition, the officers are expected to be familiar with relevant written agricultural materials for use by farmers.

To underscore the above statements, the study sought to establish the professional qualifications of government officers directly concerned with provision of professional advice to farmers on crop growing and livestock
rearing in the districts under study. In order to establish the qualifications of the agricultural, veterinary and livestock development officers in the three districts, each of the officers was asked to indicate his/her professional qualifications. The officers’ responses are recorded in Table 4.12.

Table 4.12: Professional Qualifications of Officers in the Districts

<table>
<thead>
<tr>
<th>Professional Qualifications</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in agriculture</td>
<td>4</td>
<td>44.4</td>
</tr>
<tr>
<td>Degree in veterinary medicine</td>
<td>3</td>
<td>33.3</td>
</tr>
<tr>
<td>Degree in animal husbandry</td>
<td>2</td>
<td>22.2</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

From the above Table, it is observed that each of the nine officers in the districts under study has a university degree in his/her respective professional field. They are all therefore expected to give farmers useful advice on relevant written materials.

Agricultural materials obtained from the officers as noted in Table 4.11 would also be expected to be relevant and therefore useful since the officers have long post-qualification working experience that would make them well versed in the appropriate agricultural reading materials for farmers in their specialized areas. The post-qualification experience of the officers is shown in Table 4.13.
In addition to the officers having long post qualification experience, it was necessary to establish their period of service in their current stations. This was to gauge their familiarity with the farming activities in the districts under study. The officers were therefore requested to indicate their length of service in their current stations and their responses are recorded in Table 4.14.

From table 4.14 it is observed that six of the officers have been in their current working stations for between three and ten years. This long stay in their current working stations offers them the benefit of familiarity with the seasons, weather

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**Table 4.13 Officers’ Post-qualification Experience in Years**

<table>
<thead>
<tr>
<th>Post-qualification experience</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6 years</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>7-10 years</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>7</td>
<td>77.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Table 4.14: Length of Officers’ Stay in Present Station**

<table>
<thead>
<tr>
<th>Length of Stay in Present Station</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2 years</td>
<td>3</td>
<td>33.3</td>
</tr>
<tr>
<td>3 to 4 years</td>
<td>4</td>
<td>44.4</td>
</tr>
<tr>
<td>5 to 6 years</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td>9 to 10 years</td>
<td>1</td>
<td>11.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
patterns, and the crops and livestock best suited for their respective agro-ecological areas of operation. It also offers them the advantage of getting to know the farmers and their farming patterns including their information needs and information seeking behaviour for their farming activities. This familiarity should in turn translate into offering appropriate advice to farmers in order for them to gain and use appropriate agricultural information and knowledge thereby enhancing their agricultural productivity. In regard to this, it appears that the officers are helping some farmers to obtain agricultural publications as can be observed from Table 4.11 where 35 farmers cited the officers as one of their sources of agricultural reading materials. However, this appears to be at a rather low scale and a lot more needs to be done by the officers to not only supply a lot more farmers with written agricultural materials but also to encourage them to read the materials for their own benefit. This can be done during public meetings (barazas) convened by district commissioners, local chiefs and other government officers.

To establish how best the farmers could benefit from the agricultural, veterinary and livestock development officers in their districts, the study sought to know from the officers what their role and that of their departments were in the districts. This is dealt with in section 4.8.
4.8 Role of Departments and Officers Involved in Agricultural Activities

On the role of the respective departments and officers involved in agricultural activities in the districts under study, the officers gave the answers outlined in Table 4.15.

**Table 4.15: Role of Departments and Officers in the Districts**

<table>
<thead>
<tr>
<th>Role</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help farmers to be self-sufficient in food production</td>
<td>5</td>
<td>55.6</td>
</tr>
<tr>
<td>Help farmers increase cash crop output</td>
<td>3</td>
<td>33.3</td>
</tr>
<tr>
<td>Help farmers generate income from crop production</td>
<td>4</td>
<td>44.4</td>
</tr>
<tr>
<td>Help farmers improve quality of livestock</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Help farmers increase milk production</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Help farmers increase egg production</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Help farmers safeguard human &amp; livestock health</td>
<td>3</td>
<td>33.3</td>
</tr>
</tbody>
</table>

From Table 4.15, it is observed that the roles of the departments and the officers translate into a wide range of responsibilities and activities. To play their roles effectively, the officers would have to communicate with the farmers on the latters’ farming activities. To establish how the officers communicated with the farmers, a question on the methods they used was asked and the responses were as recorded in Table 4.16.
Table 4.16: Methods Used by the Officers to Communicate With the Farmers

<table>
<thead>
<tr>
<th>Methods used to communicate with farmers</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barazas</td>
<td>8</td>
<td>88.9</td>
</tr>
<tr>
<td>Churches</td>
<td>5</td>
<td>55.6</td>
</tr>
<tr>
<td>Schools</td>
<td>4</td>
<td>44.4</td>
</tr>
<tr>
<td>Demonstration plots</td>
<td>4</td>
<td>44.4</td>
</tr>
<tr>
<td>Written materials</td>
<td>7</td>
<td>77.8</td>
</tr>
<tr>
<td>Field days</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>Visits to individual farmers</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>Individual farmers visiting the officers</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>Farmers group training</td>
<td>9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

From Table 4.16, it is observed that the officers used several methods to communicate with farmers, and it is noteworthy that use of written materials was one of them. This was cited by seven of the nine officers in the districts. This information is corroborated by farmers themselves in section 4.3 and Table 4.7 where 206 of them cited agricultural, veterinary and livestock officers as sources of their agricultural information. In the same Table 4.7, written materials are given as one source of farmers’ agricultural information. Unfortunately, the number of farmers using written sources of agricultural information remains low. The officers should put more effort towards reaching out to more farmers for the latter to embrace written materials as a useful source of agricultural information. The officers can do this through distribution of such materials during chiefs’ barazas, churches, schools, field days and farmers’ group training sessions. This way, they will encourage use of written materials.
among farmers who stand to gain from their use and thereby enhance their agricultural productivity. This was the essence of this study.

4.9 Languages Used in Written Agricultural Information Materials

The researcher sought to know from the farmers the languages in which agricultural information materials were written. The responses are as presented in Figure 4.2.

![Figure 4.2: Languages Used in Written Agricultural Information Materials](image)

From the responses given in the above figure, English Language was the most widely used language in written agricultural materials recording 58.0% followed by Kiswahili with 29.0%. Kikuyu language came last with a mere 13.0%. These findings were not surprising since for many years, English has been Kenya’s official language while Kiswahili has been the national language.
Currently, according to the Constitution of Kenya “The national language of the Republic is Kiswahili, while the official languages of the Republic are Kiswahili and English.” (Kenya National Council for Law Reporting, 2010:22). A lot of agricultural materials would therefore be expected to be in either English or Kiswahili since they are generally meant to be used nationally. These two languages should pose no major problems to farmers since both have been taught in primary and secondary schools for many years. Also, English itself is the language of instruction throughout the education system in Kenya. Agricultural literature should therefore continue to be written in these two languages. Respondents were further asked to rate the languages in which agricultural literature was written and this is covered in the following section.

4.10 Rating of Languages in Which Agricultural Literature Was Written

For a person to benefit from written literature, he/she must understand the language in which the literature is written. A question as to how easy those farmers who read found the languages of the publications they read was therefore asked. Their responses are given in Table 4.17.
Table 4.17: Rating of Languages in Which Agricultural Literature Was Written

<table>
<thead>
<tr>
<th>Rating of Languages</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
<th>Freq</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy (5)</td>
<td>27</td>
<td>45.0</td>
<td>16</td>
<td>26.7</td>
<td>10</td>
<td>16.7</td>
<td>6</td>
<td>10.0</td>
</tr>
<tr>
<td>Easy (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fairly easy (3)</td>
<td>12</td>
<td>37.5</td>
<td>14</td>
<td>43.8</td>
<td>5</td>
<td>15.6</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td>Difficult (2)</td>
<td>8</td>
<td>66.7</td>
<td>4</td>
<td>33.3</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Very difficult (1)</td>
<td>8</td>
<td>66.7</td>
<td>4</td>
<td>33.3</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>4.0</td>
<td>32</td>
<td>4.2</td>
<td>12</td>
<td>4.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the responses in Table 4.17, and using the Linkert scale of 5-1 to calculate the mean score for each of the languages, it is established that the calculated mean score for English language is 4.0. This would mean that on average, the respondents understood agricultural literature written in English. The calculated mean score for Kiswahili is 4.2 which also suggests that agricultural literature written in Kiswahili is well understood by the respondents. The calculated mean score for agricultural literature written in Kikuyu language is 4.7 which is the highest among the languages. This means that the respondents had no problem reading agricultural literature written in Kikuyu language. When the three languages are put together, their mean score is 4.3. This can be interpreted to mean that all the three languages of agricultural literature are easy to read. It further means that agricultural literature written in any of the three languages will have somebody to read. The researcher, however, sought to establish the farmers’ language preference. This is covered in the following section.
4.11 Language Preference by Farmers

The farmers were asked to indicate the language they preferred agricultural literature written in, and their responses were as shown in Table 4.18.

<table>
<thead>
<tr>
<th>Language</th>
<th>Frequency (n=68)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>37</td>
<td>54.4</td>
</tr>
<tr>
<td>Kiswahili</td>
<td>25</td>
<td>36.8</td>
</tr>
<tr>
<td>Kikuyu</td>
<td>6</td>
<td>8.8</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100.0</td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.18, it is seen that English language is the most preferred language followed by Kiswahili. Kikuyu language is the least preferred even though it is the mother tongue of the majority of residents in the districts under study. The reason for both English and Kiswahili being preferred to Kikuyu could be that, as mentioned elsewhere before, both are Kenya’s official languages while Kiswahili is also the national language. A lot of written communication in most fields in Kenya is conducted in both these languages. The other reason could be that both languages have been taught for a long time in primary and secondary schools in the country and have also been examination subjects in both the Kenya Certificate of Primary Education (KCPE) and the Kenya Certificate of Secondary Education (KCSE). It is therefore not surprising that both are preferred to the Kikuyu language since they are both studied and understood by many people.
4.12 Sources and Methods of Obtaining Agricultural Publications

The study sought to establish the sources and methods used by farmers to obtain agricultural publications. The responses were as per Table 4.19.

### Table 4.19: Sources and Methods of Obtaining Agricultural Publications

<table>
<thead>
<tr>
<th>Sources and Methods</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agri, vet. and livestock development officers</td>
<td>28</td>
<td>38.9</td>
<td>22</td>
<td>30.6</td>
<td>16</td>
<td>22.2</td>
<td>6</td>
<td>8.3</td>
<td>72</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.19 shows that 28 farmers representing 38.9% of respondents obtained their agricultural literature from agricultural, veterinary and livestock development officers. The significance of this finding is that all the officers are fully qualified in their respective fields of specialization and they are therefore expected to supply to farmers only relevant publications to enable the latter to carry out their agricultural activities efficiently and profitably.

Obtaining agricultural publications by farmers through purchase came second with a frequency of 22 accounting for 30.6% of the responses. This is also commendable because when farmers buy their own reading materials, it can be reasonably assumed that they do so because they value the contents or the information contained therein. Again, purchase has benefits to farmers in that it
ensures that the farmers have the publications in their possession all the time, except when they lend or give them to other persons or even lose them. They can therefore consult them when and as the need arises.

Although borrowing from libraries and DIDCs recorded the lowest frequency of 6 which translates to 8.3%, it is a very important method of accessing agricultural publications. Libraries, information and documentation centres are established to provide information materials generally on loan and they usually acquire a lot more and varied materials than an individual person can acquire or own. Such materials are also at the disposal of a lot more persons than those personally owned by individuals. The existence of libraries and DIDCs should help to facilitate accessibility and utilization of written publications by farmers and thereby enhance their agricultural productivity. The extent to which libraries and DIDCs have been established in the districts under study is discussed later in this thesis.

Bookshops are some of the facilities where publications can be bought. The following section is on bookshops.

4.13 Information on Bookshops

As bookshops are one major source from which written materials can be purchased, the study sought information from the farmers on the availability of bookshops in their neighbourhoods.
Out of 69 respondents, 52 (75.4%) said there were bookshops in their neighbourhoods while 17 (24.6%) respondents said there were none.

Those farmers who stated there were bookshops in their neighbourhoods were further asked to indicate the distances between their farms (which were also their homesteads) and the nearest bookshops. The findings are summarized and presented in Figure 4.3.

![Figure 4.3: Distances From Farms to the Nearest Bookshops](image)

The significance of the distance between the farms and nearest bookshops is that it can either encourage or discourage farmers interested in buying a publication. A distance of over four kilometers as indicated by 18 respondents accounting for 34.6% of the respondents can be prohibitive and discouraging since a person may find walking to the bookshop and back rather tiring. It also takes quite some time which could have been spent performing a less physically challenging activity. It is therefore not surprising that the cumulative total of
those who borrowed materials from friends, libraries and DIDCs was 22 or 30.6% - the same as those who purchased agricultural materials as shown in Table 4.19.

If public transport is to be used, this amounts to extra expenses and yet a person may not be sure of finding the required publication in the bookshop. Paying for public transport can only be done by those seriously determined to own a particular publication.

Motor-cycles commonly referred to as bodabodas which have recently entered the public transport sector may be even more expensive than matatu transport since they offer a kind of individualized service. Besides, this mode of transport is not always safe as some passengers have in the past found themselves victims of bodaboda drivers who have robbed them of their property, while others have been killed by the very transport providers.

It is therefore imperative that bookshops be established within farmers’ walking distances if they have to maximally benefit from them. This would greatly help farmers wishing to purchase agricultural publications access them easily.

The following section addresses the stocking of bookshops in the districts under study.
4.14 Stocking of Bookshops With Written Agricultural Information Materials

One of the study objectives was to identify challenges encountered by farmers in accessing useful information to empower them to carry out their agricultural activities profitably. To establish whether farmers faced challenges in accessing relevant information materials from the bookshops, the researcher asked them whether bookshops in their neighbourhoods stocked written agricultural information materials. The farmers’ responses are presented in figure 4.4.

![Figure 4.4: Stocking of Bookshops With Written Agricultural Information Materials]

Out of 47 respondents, 23 representing 48.9% stated that the bookshops stocked written agricultural information materials while 24 respondents representing 51.1% stated they did not. From these findings, it can be argued that some bookshops stocked written agricultural information materials while others did
not. It can also be concluded that farmers in the areas where neighbourhood bookshops did not stock written agricultural information materials cannot therefore benefit from the bookshops since agricultural materials of their interest are not stocked. Lack of such materials in bookshops does not facilitate and encourage farmers to purchase and own publications they are in need of. For farmers to benefit from their neighbourhood bookshops, the latter should stock relevant written agricultural information materials. On their part, the farmers could request the bookshops to order agricultural information materials of their interest from publishers or other producers when they find them not stocked in the bookshops. This kind of approach would be of mutual benefit to the bookshops and the farmers alike. The bookshops would procure information materials whose market is assured and therefore benefit from their sales while the farmers would purchase agricultural materials of their interest and read them in order to gain relevant agricultural information and knowledge for application in their agricultural activities, thereby enhancing their agricultural productivity.

4.15 Newspaper Sellers

Since newspapers were cited by some farmers as one of their sources of agricultural information and their importance was mean rated 3.3 in the Likert scale as shown earlier in Table 4.9, the researcher sought to establish from the farmers whether there were newspaper sellers in their neighbourhoods. Forty-seven (47) farmers out of 71 representing 66.2% answered in the affirmative while twenty four (24) representing 33.8% answered in the negative. It would
therefore appear that newspaper sellers were more in the farmers’ neighbourhoods than bookshops. To enable interested farmers to access newspapers easily, efforts should be made to have newspapers within farmers’ easy and convenient reach. If this is done, it might encourage more farmers to read newspapers and gain knowledge on how to enhance their agricultural productivity.

In order for the farmers to buy written agricultural information materials, they should be able to afford them. The study therefore sought to establish from the farmers how they gauged the cost of written information materials. This is discussed in the following section.

4.16 Farmers’ Gauging of Cost of Written Agricultural Materials

Those farmers who cited purchase as one of their methods of obtaining agricultural reading materials were further asked to state how expensive they considered the materials to be. Their responses are recorded in Table 4.20.

Table 4.20: Farmers’ Gauging of Cost of Written Agricultural Materials

<table>
<thead>
<tr>
<th>Affordable</th>
<th>Not expensive</th>
<th>Fairly expensive</th>
<th>Expensive</th>
<th>Very expensive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>26</td>
</tr>
</tbody>
</table>

Out of the 26 respondents to the question on how expensive they found the materials, ten considered the materials affordable and not expensive. Four
considered the materials as fairly expensive while 12 considered them as expensive and very expensive.

By calculation, those farmers who considered the materials affordable and not expensive accounted for 38.5% while those who considered the materials fairly expensive accounted for 15.4%. Those who considered the materials expensive and very expensive accounted for 46.2%. From these findings, it can be reasonably argued that the 46.2% of farmers cannot afford to buy the materials. This is a matter of concern since this percentage is close to half of the respondents to the question. Purchased agricultural publications are highly valued. A farmer who buys published materials does so because he/she seriously wants to make use of them for a given purpose. If a farmer is unable to buy a publication that he/she needs on account of its high cost, he/she cannot benefit from the information contained therein. Written agricultural materials should therefore be made affordable to the average farmer so as to encourage many farmers to buy and own them. Murang’a County Government should address this issue since agriculture is one of the sectors that were recently devolved to counties. If this is done, many farmers will be in a position to buy and read the publications and thereby make use of the knowledge gained in an effort to enhance their agricultural productivity.

Libraries and DIDCs are some of the sources of information for farmers in the districts under study. These are discussed in the following section.
4.17 Libraries and DIDCs

To establish whether libraries and DIDCs were easily accessible to the farmers, the researcher asked the farmers whether there was a library or DIDC in their neighbourhoods. Sixteen (16) respondents answered in the affirmative while fifty – four (54) said there were none. This finding can be interpreted to mean that only 22.9% of the respondents to the question had libraries and DIDCs in their neighbourhoods while 77.1% did not have any of these facilities. This further means that the latter group would not benefit from written agricultural information materials from libraries and DIDCs since there were none in their neighbourhoods.

When those who answered in the affirmative were asked about the distances between their farms and the nearest of these facilities, 13 gave responses as recorded in Figure 4.5.

![Figure 4.5: Distance From Farms to Nearest Library or DIDC](image)

83
From the above Figure, it is observed that four of the 13 respondents representing 30.8% said the nearest library or DIDC was less than two kilometers while another four, also representing 30.8% said the nearest library or DIDC was between two and four kilometers. Five respondents representing 38.5% said the nearest library or DIDC was over four kilometers from their farms. As was the case with bookshops discussed earlier in section 4.13, it can be said that a distance of more than four kilometers could discourage a farmer interested to visit a library or information and documentation centre to read or borrow agricultural information materials. For farmers to be encouraged to read agricultural information materials in order for them to gain relevant agricultural information and knowledge to be able to enhance their agricultural productivity, libraries, information and documentation centres should be established in the farmers’ neighbourhoods. This can be done by the Murang’a County Government since agriculture is one of its priority areas from which it aims to raise funds for its development projects. Furthermore, these facilities should be stocked with relevant written agricultural information materials for them to be of benefit to farmers.

**4.18 Stocking of Libraries and DIDCs With Written Agricultural Materials**

The researcher sought to establish from the farmers whether the libraries and DIDCs in the districts under study stocked agricultural information materials. Ten out of 13 farmers representing 76.9% stated that the information facilities stocked agricultural publications while three farmers representing 23.1% said
agricultural information materials were not stocked. It can therefore be concluded from these findings that some of the libraries and DIDCs stocked written agricultural information materials while others did not. For the libraries and DIDCs to be of use to the farmers in the districts under study, they should be well stocked with publications relevant to the farmers in the different agricultural ecological zones. While some crops like maize and beans are universally grown in almost all the areas of the districts under study, other crops grow well only in specific agricultural ecological zones. Tea is one such crop that grows in the rainy western highland areas of the districts only. Stocking of the information facilities should therefore take into consideration the different crops grown and livestock reared in the areas meant to be served by a given library or information and documentation centre. This would avoid stocking the facilities with irrelevant publications.

The study further sought to establish how easy the farmers found it to obtain written agricultural literature. The farmers were therefore asked to state how easy it was for them to obtain written agricultural information materials from whatever source. Their responses are as recorded in Table 4.21.
Table 4.21: Ease of Obtaining Written Agricultural Materials by Farmers

<table>
<thead>
<tr>
<th>Ease of Obtaining Agricultural Materials</th>
<th>Very easy (5)</th>
<th>Easy (4)</th>
<th>Fairly easy (3)</th>
<th>Difficult (2)</th>
<th>Very difficult (1)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq. %</td>
<td>Freq. %</td>
<td>Freq. %</td>
<td>Freq. %</td>
<td>Freq. %</td>
<td>Freq. %</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.5</td>
<td>23</td>
<td>33.8</td>
<td>13</td>
<td>19.1</td>
<td>68</td>
</tr>
<tr>
<td>18</td>
<td>26.5</td>
<td>13</td>
<td>19.1</td>
<td>13</td>
<td>19.1</td>
<td>68</td>
</tr>
<tr>
<td>13</td>
<td>19.1</td>
<td>23</td>
<td>33.8</td>
<td>18</td>
<td>26.5</td>
<td>68</td>
</tr>
<tr>
<td>1</td>
<td>1.5</td>
<td>23</td>
<td>33.8</td>
<td>18</td>
<td>26.5</td>
<td>68</td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.21, it is observed that a cumulative total of 24 respondents found it very easy and easy to obtain written agricultural information materials while 13 respondents found it fairly easy to obtain the materials. Another cumulative total of 31 respondents found it difficult and very difficult to obtain the materials.

Using the Likert scale of 5-1 to calculate the mean score on ease of obtaining written agricultural materials by farmers, the calculated mean score is 2.7. This mean score is below the neutral mean score of 3. This means that in general, the farmers did not find obtaining written agricultural materials easy. This is likely to militate against utilization of such materials for the enhancement of their agricultural productivity.

4.19 Use of Fertilizers For Crop Growing

To boost crop production, farmers are known to use several inputs including processed fertilizers (Ngeze, 1998). The researcher sought to establish whether the farmers in the
districts under study applied fertilizers in their farming activities or not. A total of 345 farmers responded to the question on fertilizer use out of whom 331, representing 95.9% said they applied processed fertilizers, while 14 representing 4.1% said they did not. It is evident from the above findings that fertilizer use for crop growing in the districts under study is widespread.

The farmers who said they used fertilizers for crop growing were further asked to indicate the crops on which they applied fertilizers. Their responses on fertilizer application on the different crops grown are recorded in Tables 4.22 – 4.26.

Responses on fertilizer application on grain crops are given in Table 4.22.

**Table 4.22: Use of Fertilizers on Grain Crops**

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of Farmers</th>
<th>Use Fertilizers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>346</td>
<td>321</td>
<td>92.8</td>
</tr>
<tr>
<td>Beans</td>
<td>343</td>
<td>117</td>
<td>34.1</td>
</tr>
<tr>
<td>Sorghum</td>
<td>43</td>
<td>8</td>
<td>18.6</td>
</tr>
<tr>
<td>Pigeon Peas</td>
<td>48</td>
<td>3</td>
<td>6.3</td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.22, it is seen that among the grain crops on which fertilizers were used, maize had the highest number of growers totaling 321 out of 346 accounting for 92.8% followed by beans with 117 farmers out of a total of 343 accounting for 34.1%. The two crops constitute the principal staple food for the majority of residents of the districts under study and
this may account for the wide use of fertilizer to grow them in order for the farmers to boost output.

Sorghum and pigeon peas are the other grain crops on which farmers applied fertilizers and as can be observed from Table 4.2, a lot fewer farmers applied fertilizers to grow them compared to those who applied fertilizers for growing both maize and beans. Fertilizers were also used to grow fruit crops, and a question on the different fruit crops on which they were used was asked the farmers. The farmers’ responses are recorded in Table 4.23.

**Table 4.23: Use of Fertilizers on Fruit Crops**

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of Farmers</th>
<th>Use Fertilizers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macadamia nuts</td>
<td>139</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>Oranges</td>
<td>31</td>
<td>16</td>
<td>51.6</td>
</tr>
<tr>
<td>Bananas</td>
<td>342</td>
<td>9</td>
<td>2.6</td>
</tr>
<tr>
<td>Passion fruits</td>
<td>89</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Avocados</td>
<td>295</td>
<td>6</td>
<td>2.0</td>
</tr>
<tr>
<td>Watermelons</td>
<td>18</td>
<td>4</td>
<td>22.2</td>
</tr>
<tr>
<td>Lemons</td>
<td>37</td>
<td>2</td>
<td>5.4</td>
</tr>
<tr>
<td>Mangoes</td>
<td>198</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Pawpaws</td>
<td>127</td>
<td>2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

From the responses presented in Table 4.23, it is observed that fertilizer use for fruit growing was not widespread. Apart from oranges on which 16 out of 31
farmers applied fertilizers representing 51.6%, all other crops recorded much lower percentages of fertilizer use.

The study also sought to establish whether farmers used fertilizers for growing root crops. To establish this, the farmers were asked a question on the root crops they used fertilizers to grow. Their responses are recorded in Table 4.2.

**Table 4.2: Use of Fertilizers on Root Crops**

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of Farmers</th>
<th>Use Fertilizers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irish potatoes</td>
<td>311</td>
<td>228</td>
<td>73.3</td>
</tr>
<tr>
<td>Sweet potatoes</td>
<td>274</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Cassava</td>
<td>205</td>
<td>2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

As can be observed from Table 4.2, Irish potatoes had the highest number of farmers applying fertilizers to grow them. Out of 311 farmers, 228 representing 73.3% used fertilizers to grow Irish potatoes. It is further observed that very few farmers used fertilizers to grow the other root crops.

Various kinds of vegetables were grown by the farmers in the districts under study, and the researcher set out to establish whether fertilizers were used to grow them. To establish this, the farmers were asked to indicate the vegetable crops on which they used fertilizers to grow. Their responses are as recorded in Table 4.25.
Table 4.25: Use of Fertilizers on Vegetable Crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of Farmers</th>
<th>Use Fertilizers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sukumawiki (Kale)</td>
<td>254</td>
<td>168</td>
<td>66.1</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>92</td>
<td>63</td>
<td>68.5</td>
</tr>
<tr>
<td>Cabbages</td>
<td>90</td>
<td>63</td>
<td>70.0</td>
</tr>
<tr>
<td>French beans</td>
<td>27</td>
<td>13</td>
<td>48.1</td>
</tr>
<tr>
<td>Pumpkins</td>
<td>205</td>
<td>8</td>
<td>3.9</td>
</tr>
</tbody>
</table>

From the responses reflected in Table 4.25, it is seen that there is widespread use of fertilizers in growing various vegetable crops. Apart from pumpkins and French beans, the other vegetable crops recorded high numbers and percentages of farmers who applied fertilizers to grow them.

Two cash crops were grown in the districts under study and the researcher sought to find out whether fertilizers were used to grow them. The farmers who grew the cash crops were therefore asked whether they used fertilizers on them and their responses are presented in Table 4.26.

Table 4.26: Use of Fertilizers on Cash Crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of Farmers</th>
<th>Use Fertilizers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>186</td>
<td>146</td>
<td>78.5</td>
</tr>
<tr>
<td>Tea</td>
<td>83</td>
<td>67</td>
<td>80.7</td>
</tr>
</tbody>
</table>
From Table 4.2, it is observed that 146 out of 186 coffee farmers accounting for 78.5% used fertilizers to grow coffee. On the other hand, 67 out of 83 farmers accounting for 80.7% used fertilizers to grow tea. The large numbers and percentages of farmers who used fertilizers on their cash crops could be accounted for by the fact that such fertilizers were supplied to the growers on credit through their respective factories. The cost of the fertilizers was later recovered from the respective farmers’ earnings from the sale of their crops.

The farmers who did not apply fertilizers on their crops were asked to give reasons for not using fertilizers. Ten of them said fertilizers were expensive to buy while two said fertilizers were not good for farming. Yet another two stated that fertilizers hardened the soil. It would therefore appear that the major reason for not using fertilizers is their cost which the farmers could not afford particularly where credit facilities were not available.

From the findings on fertilizer use for crop growing, it is observed that fertilizers were used to grow 23 out of a total of 30 crops grown in the districts under study.

To reap maximum benefits from fertilizer use, understanding by the farmers of the appropriate fertilizers for use on different crops, understanding of instructions on fertilizer application including the amounts to be applied and the appropriate time for application are necessary. This means that the instructions
must be read, understood and carefully followed. Information concerning instructions on fertilizer application is covered in section 4.20.

4.20 Instructions on Fertilizer Use

The researcher sought to establish from those farmers who used fertilizers whether there were written instructions on fertilizer use on fertilizer packages. A total of 277 farmers out of 310 representing 89.4% said there were no written instructions while 33 farmers representing 10.6% said there were instructions on fertilizer use.

From these responses, it would appear that there were no instructions on fertilizer use on fertilizer packages. The reason for this could be that one specific type of fertilizer may be applicable to several different crops and the amount of fertilizer to be used depends on the specific crop as well as the texture and organic fertility of the soil in which the crop is grown. However, it is vitally important for the farmers to be appropriately guided to the relevant literature on the use of various types of fertilizers for the growing of various crops. The agricultural officers who are knowledgeable on the growing of different crops in their districts are in the best position to guide the farmers appropriately. Also, agricultural extension officers who work under agricultural officers are generally in close touch with farmers as they are in-charge of much smaller geographical units like locations and sub-locations, should be fully utilized to assist the farmers in the choice of appropriate fertilizers, proper timing of
fertilizer application for different crops, and also the amount to be used on different crops. All these are very important in that if any of them is not properly observed, then the farmers will not realize the large crop yields that are expected from fertilizer application.

More importantly, provision of farmers with relevant written agricultural materials that they can read for themselves would lead them to know suitable fertilizers for specific crops. This would further lead them to follow instructions on usage of each type of fertilizer on each type of crop. It would also lead to the farmer getting to know the dangers of applying the wrong fertilizer to crops it is not meant for. This could ultimately lead to the realization of enhanced agricultural productivity in the districts under study. This was the essence of this study.

The study further sought to establish the languages that farmers would prefer instructions on fertilizer use written in. Farmers’ language preference is discussed in section 4.21.

4.21 Preferred Language of Instructions on Fertilizer Use

Farmers were asked to state the language they preferred instructions on fertilizer use written in. Their responses are presented in Figure 4.6.
From the findings presented in Figure 4.6, it is observed that 25 farmers responded to the question on fertilizer use instructions language preference. Out of the 25 farmers, 11 accounting for 44.0% preferred Kikuyu language to other languages. Kiswahili was preferred by eight respondents accounting for 32.0% while English was preferred by eight respondents accounting for 24.0%.

Though Kikuyu language was the most preferred language, it is worth noting that the cumulative total for both Kiswahili and English languages was 14 respondents accounting for 56.0% which is much higher than that for Kikuyu language. The importance of this is that, as mentioned elsewhere in this thesis, Kiswahili is both Kenya’s official and national language while English is Kenya’s second official language. The two languages are therefore widely used throughout Kenya in both official and business communication. Manufactured fertilizers are meant for use nationally and for this reason, instructions on their
use should preferably be written in both Kiswahili and English. Simple language should be used on instruction manuals that should be placed in fertilizer packages with information on all the crops each fertilizer type can be used. The appropriate time for fertilizer application is crucial and this too should be indicated in the instructions.

Many crops are prone to insect and mould attacks and therefore pesticidal sprays are used on a variety of crops to protect them from the injurious effects of such pests. Pesticidal spray application on crops in the districts under study is discussed in the following section.

4.22 Pesticidal Spray Application on Crops

To establish the use or non-use of insecticidal sprays, the researcher asked farmers whether or not they used such sprays on their crops. A total of 343 responses were received out of which 238 accounting for 69.4% were in the affirmative while 105 responses accounting for 30.6% were in the negative. These responses can be interpreted to mean that insecticidal sprays were widely used by farmers in the districts under study.

However, the researcher considered the figure of 105 accounting for 30.6% of farmers who did not use crop sprays as fairly high and therefore asked these farmers their reasons for not using crop sprays. The farmers’ responses are recorded in Table 4.27.
### Table 4.27: Reasons for Not Using Crop Sprays

<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprays are expensive to buy</td>
<td>40</td>
<td>48.8%</td>
</tr>
<tr>
<td>Ignorance of need for spray use</td>
<td>17</td>
<td>20.7%</td>
</tr>
<tr>
<td>Sprays are useless</td>
<td>9</td>
<td>11.0%</td>
</tr>
<tr>
<td>Sprays are harmful to human health</td>
<td>8</td>
<td>9.8%</td>
</tr>
<tr>
<td>Lack of labour</td>
<td>3</td>
<td>3.7%</td>
</tr>
<tr>
<td>Sprays are difficult to obtain</td>
<td>3</td>
<td>3.7%</td>
</tr>
<tr>
<td>Other reasons</td>
<td>2</td>
<td>2.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>82</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

From the 82 responses recorded in Table 4.27, it is seen that 40 farmers representing 48.8% said that sprays were expensive to buy. It would therefore appear that the cost of the various crop sprays was the biggest hindrance to farmers using them since they could not afford to buy them. The second most important reason for farmers not using crop sprays was that they were ignorant of the need to use crop sprays. This reason was given by 17 farmers accounting from 20.7%. Another nine farmers accounting for 11.0% said they did not use crop sprays because sprays were useless, while another eight accounting for 9.8% said sprays were harmful to human health. These three categories of farmers cumulatively numbering 34 and accounting for 41.5% can all be considered as being ignorant of the benefits that accrue from appropriate application of pesticidal sprays on crops. It is therefore likely that this ignorance leads to the farmers losing some of their crops due to insect and mould attack.
(Mbure, et al). One way of tackling farmers’ ignorance is to provide them with appropriate written information materials on crop sprays and encourage them to read them.

Agricultural personnel in the districts under study should therefore embark on a campaign to educate farmers on how to deal with the problem of insects and other injurious infestations to save their crops. If this is done, it would lead to the farmers gaining knowledge on the appropriate crop sprays for different crops and apply them appropriately. This is likely to result in the realization of enhanced agricultural productivity and increased income to the farmers.

In order for the farmers to use crop sprays appropriately, they need to follow instructions on spray use carefully. The following section is on instructions on crop spray use.

4.23 Instructions on Crop Spray Use

Those farmers who used crop sprays were asked whether instructions on spray use were found on spray containers. A total of 291 farmers responded to the question of whom 160 (55.0%) said instructions were found on container labels, while 131 (45.0%) said they were on accompanying leaflets. It is therefore likely that some sprays had some instructions on their use on container labels while others had them on accompanying leaflets. The important point to note here is that there were instructions in one form or another on the use of crop
sprays. If the farmers read the instructions and follow them carefully, they are likely to reap benefits in form of enhanced agricultural productivity from spray application. The farmers should therefore be encouraged to always read crop spray application instructions before using them on their crops. This could ideally be done by agricultural officers and crop spray vendors in the districts under study.

Languages in which instructions on spray use were written are discussed in section 4.24.

4.24 Languages of Instructions on Crop Spray Use

A question was asked the farmers on the languages in which the instructions on crop spray use were written. The responses were as recorded in Table 4.28.

Table 4.28: Languages of Instructions on Spray Use

<table>
<thead>
<tr>
<th>Language</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>171</td>
<td>63.6</td>
</tr>
<tr>
<td>Kiswahili</td>
<td>92</td>
<td>34.2</td>
</tr>
<tr>
<td>Kikuyu</td>
<td>6</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>269</td>
<td>100</td>
</tr>
</tbody>
</table>

The responses recorded in Table 4.28 show English language as the predominantly used language in which instructions on crop spray use were written followed by Kiswahili. This is not surprising as the two languages are widely used in the country for official and general communication. Kikuyu language cannot therefore rival the two languages and it is not surprising it came
far behind English and Kiswahili with a very low frequency of six only, accounting for 2.2%.

In order for instructions on crop spray use to be fully understood and appropriately applied, they must be easy to understand by the farmers. Section 4.25 is on easiness of instructions on crop sprays.

**4.25 Easiness of Instructions on Crop Spray Use**

Farmers stand to gain if the instructions on crop spray use are easy to comprehend. Therefore, farmers were asked to state how easy they found the instructions on crop sprays they used and responses were as shown in Table 4.29.

**Table 4.29: Easiness of Instructions on Crop Spray Use**

<table>
<thead>
<tr>
<th>Easiness of Instructions</th>
<th>Very easy (5)</th>
<th>Easy (4)</th>
<th>Fairly easy (3)</th>
<th>Difficult (2)</th>
<th>Very difficult (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
</tr>
<tr>
<td>45</td>
<td>25.4</td>
<td>104</td>
<td>58.8</td>
<td>22</td>
<td>12.4</td>
</tr>
</tbody>
</table>

From Table 4.29, it is observed that a total of 177 responses to the question were received. Using the Likert scale of 5-1 to calculate the mean from the responses, a mean score of 4.1 is obtained. This mean score is very high and it can be interpreted to mean that the instructions were easily understood by the majority of the respondents. It can therefore be assumed that if instructions on the
amount of spray and appropriate time to do the spraying are well read, understood and followed by the farmers, then they stand to benefit from their spray input. This is because the applied spray is likely to be effective and therefore yield the desired results. In comparison with fertilizers in which no instructions on their use were found in their packages, including the crops on which to use a particular type of fertilizer, guidelines on the amount to apply as well as the appropriate time to apply, it would appear that spray manufacturers are sensitive to the needs of farmers.

Relating to the question on easiness of the instructions on crop spray use discussed above, farmers were further asked to state the reasons for the answers they had given. Their responses were as recorded in figure 4.7.

Figure 4.7: Reasons for the Answers in Table 4.29
From the responses in figure 4.7, 40 farmers said the language used in the instructions was very easy while 103 said it was easy. Eighteen farmers said the language was fairly easy. However, four farmers said the language was difficult while two others said it was very difficult. It would appear from the responses that the reasons given by the farmers were based on their competence in the languages in which the instructions were written. But it is gratifying to note that an overwhelming majority found the language either very easy or easy.

Application of crop sprays requires certain precautions to be taken. Section 4.26 is on precautions taken when crops are being sprayed.

4.26 Precautions Taken When Spraying Crops

Although crop sprays are of benefit to farmers in that when properly applied, they protect crops from insect and fungal attack, if not properly handled, they can be injurious to the farmers themselves or their workers when applying them. The researcher therefore sought to establish from the farmers the precautions taken when crops were sprayed. The responses were as recorded in figure 4.8.
The figures in the above pie chart represent actual responses for each of the precautions taken by farmers. It is observed from the above responses that some farmers took precautions when spraying their crops. It is possible from the responses that some farmers used all the protective items mentioned above while others used only some. Surprisingly, 60 farmers said they took no precautions at all when spraying their crops. This is a worrying revelation in that it is well known that some of the crop sprays have adverse effects on the health of those who do the spraying. Lack of use of protective clothing, or use of only some of the items mentioned above is a definite exposure to ill health and particularly when it is done over a long period of time.

Farmers should therefore be sensitized on the need to adequately protect themselves and their workers whenever they spray their crops. They should be clearly told the kind of protective attire appropriate for use when different kinds
of spray are being applied. The dangers of not protecting oneself appropriately should also be drawn to the farmers’ attention. Ideally, this information should be contained in the crop spray packages or in leaflets attached to spray containers. The farmers themselves should be encouraged to read the instructions on the recommended protective attire to use when a person is spraying crops.

4.27 Information on Animal Feeds

Farmers who reported rearing livestock in section 4.2, Table 4.6 were asked whether they used processed animal feeds to feed their livestock. A total of 299 said they did while 37 said they did not.

Those who did not use processed animal feeds were asked to state the reasons for not using the feeds. Their responses were as recorded in Figure 4.9.

Figure 4.9: Reasons for Not Using Processed Animal Feeds
From the responses recorded in figure 4.9, it is observed that 21 farmers could not afford processed animal feeds while four other farmers said processed animal feeds were not useful but did not say why they were not useful. It could be that the farmers had used such feeds before but never got the results they expected. Another six said they fed their livestock on locally available feeds which could be grass, maize, nappier grass among others. It would therefore appear that the cost of processed animal feeds was the main reason for the farmers not using them leaving the farmers with no option than to turn to locally available unprocessed feeds.

For the farmers who use animal feeds to benefit from their use, they need to follow instructions on their use. The following section is about instructions on animal feeds.

4.28 Ease of Obtaining Instructions on Quantity of Feed and Feeding Times

For farmers to benefit maximally from their livestock, they not only need to know the proper feeds to use, but also the right quantity of feed to use and the appropriate feeding times. The farmers were therefore asked to state how easy it was for them to obtain instructions on quantity of feed and appropriate feeding times. Responses were as given in Table 4.30.
Table 4.30: Ease of Obtaining Instructions on Quantity of Feed and Feeding Times

<table>
<thead>
<tr>
<th>Ease of Obtaining Instructions on Quantity of Feed and Feeding Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy (5)</td>
</tr>
<tr>
<td>13</td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.30, it is observed that a total of 150 responses were received. Using the Likert scale of 5-1 to calculate the mean from the responses, a mean score of 3.5 is obtained. This is positive as it shows that most of the respondents found obtaining instructions fairly easy. However, the rest of respondents who stated that obtaining such instructions was either difficult or very difficult may not apply the correct amounts of feed while the appropriate feeding times may also not be observed. The consequence of this is that the farmers may not reap maximally from their livestock which was a major concern of the current study.

4.29 Easiness of Instructions on Quantity of Feed and Feeding Times

Obtaining instructions is one thing and understanding them is quite another. The study therefore sought to establish how easy the respondents found the instructions. The responses to this are summarized in table 4.31.
Table 4.31: Easiness of Instructions on Quantity of Feed and Feeding Times

<table>
<thead>
<tr>
<th>Easiness of Instructions on Quantity of Feed and Feeding Times</th>
<th>Very easy (5)</th>
<th>Easy (4)</th>
<th>Fairly easy (3)</th>
<th>Difficult (2)</th>
<th>Very difficult (1)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>89</td>
<td>10</td>
<td>8</td>
<td>1</td>
<td>123</td>
</tr>
</tbody>
</table>

From the 123 responses, using the Likert scale of 5-1, the calculated mean score is 3.9 which means the instructions were found easy. If the instructions were therefore carefully read and followed, the farmers would be expected to achieve positive results from their livestock. They should therefore be encouraged to carefully read and follow such instructions for them to enhance benefits from their livestock investment.

However, the nine respondents who said they found the instructions difficult or very difficult should cause concern in that if they were unable to understand the instructions, then they would not be expected to follow them. The possibility is that they may not use the right quantities of feed, and the correct feeding times may not be observed. The trickle effect of all this is that the desired benefits expected from livestock investment may not be realized.

The researcher wanted to know the reasons for the answers given in Table 4.31 based on language of instructions. This is covered in section 4.30.
4.30 Reasons for Answers on Instructions on Quantity of Feed and Feeding Times

The study further sought to establish the reasons for the answers given in the foregoing section on instructions on quantity of feed and feeding times. The responses were as tabulated below.

Table 4.32: Reasons for Answers on Instructions on Quantity of Feed and Feeding Times

| Reasons For Answers on Instructions on Quantity of Feed and Feeding Times |
|-----------------|----------------|----------------|----------------|----------------|----------------|
| Language used very easy | Language used easy | Language used fairly easy | Language used difficult | Language used very difficult | Total |
| (5)                | (4)             | (3)             | (2)             | (1)             | 108             |

A total of 108 farmers responded to the question. The calculated mean score obtained from use of Likert scale of 5-1 is 4.0 which is very high. Three of the respondents however, said the language used was difficult. This may be as a result of their level of education. It would appear that the command of the language used in the instructions is the most important factor in either understanding or not understanding the instructions. Animal feed manufacturers or processors can be said to be using languages understood by the majority of the farmers who use their feeds which is commendable.

The following section is on the specific languages in which the instructions were written.
4.31 Specific Languages in Which the Instructions Were Written

The researcher further sought to establish the specific languages in which the instructions were written. The responses were as recorded in figure 4.10

![Specific Languages of Instructions](image)

**Figure 4.10: Specific Languages of Instructions**

From figure 4.10, it is observed that 75 responses to the question on the specific languages in which the instructions were written were received. Twenty seven respondents said the instructions were written in Kikuyu language, 13 said Kiswahili, while 35 gave English as the language of instructions. It is possible that all the three languages were used on one feed or another but there is also a likelihood that both English and Kiswahili were used together on some feeds to cater for those who understood either of the languages or both since most feeds were meant for consumption throughout the country. A good example of such feeds are those from Unga Feeds Ltd.
To be of maximum benefit to the farmers, it is necessary for instructions on amounts of feed and appropriate feeding times to be in languages preferred by the farmers themselves since the feeds are meant to be used by them. Section 4.32 is on language preference by farmers.

### 4.32 Preferred Language of Instructions

A question was asked the farmers on the language they would prefer instructions to be written in. Their responses are recorded in Figure 4.11.

![Figure 4.11: Preferred Language of Instructions](image)

**Figure 4.11: Preferred Language of Instructions**

From responses recorded in figure 4.11, it is seen that a total of 66 farmers answered the question on language preference. Twenty nine respondents preferred Kikuyu language while 17 preferred Kiswahili, and 20 preferred English language. It is not surprising that a large number of respondents preferred the Kikuyu language since a majority of residents of the districts under study are Kikuyu by tribe.
However, the cumulative total for both Kiswahili and English languages which is 37 is encouraging in that the two languages are the official languages of Kenya while Kiswahili is also the national language. But with the establishment of county governments which are expected to focus much on the overall development of the county concerned, its economic mainstay must be taken very seriously. Agriculture is undoubtedly the economic mainstay of Murang’a County of which Kandara, Kigumo and Murang’a South Districts are part. In promoting agricultural development, the language of the majority of the people of the County should not be ignored and therefore the Kikuyu language which was preferred by 43.9% of the respondents cannot be easily dismissed. However, the most important point to note here is that farmers must be encouraged to carefully read and follow such instructions whatever language they are written in. If this is done, they will most likely be able to reap maximum benefits from their livestock investment.

In addition to proper feeding of livestock, it is necessary to protect them from parasitic infestation to ensure good returns from the animals. The following section is on spray use against such infestations.

4.33 Use of Sprays on Livestock

The animals reared by farmers are prone to parasitic infestations in the form of ticks and lice among others, which reduce their productivity or lead to their
death. A question on whether livestock farmers used animal sprays on their livestock was asked and the responses are recorded in Figure 4.12

![Figure 4.12: Use of Sprays on Livestock](image)

From Figure 4.12, it is observed that a total of 333 farmers answered the question, of whom 164 accounting for 49.2% said they used animal sprays while 169 farmers accounting for 50.8% said they did not. It can be said that the 169 farmers who did not use animal sprays on their livestock exposed their animals to the risk of parasitic infestation which could lead to great loss including death of the animals. To avoid the loss, it is necessary to sensitize livestock farmers on the need to use appropriate animal sprays on their livestock. This can be done by livestock development officers and veterinary officers in the districts under study. The farmers themselves should be encouraged to read for themselves publications on animal husbandry and apply the knowledge gained
from such literature including appropriate use of animal sprays for maximum productivity.

The study further sought to establish from those farmers who did not use animal sprays why they did not. A total of 137 farmers responded as shown in figure 4.13.

Figure 4.13: Farmers’ Reasons for Not Using Animal Sprays

From the responses recorded in Figure 4.13, it is observed that 39 respondents representing 28.5% did not use animal sprays because they did not know their value, while 34 respondents representing 24.8% said animal sprays were expensive. Another 30 respondents representing 21.9% said they practised zero grazing and there was therefore no need for using animal sprays, while another 26 representing 19.0% said their livestock got no infestation and therefore there was no need to use animal sprays. Eight respondents representing 5.8% said sprays were not useful. All the reasons advanced by the farmers for not using
animal sprays seem to arise from ignorance on the part of the farmers, of the importance of using animal sprays. Lack of use of animal sprays for whatever reason puts the animals at risk of infestation by such insects as ticks, lice and tsetse flies among others which could lead to eventual death of the animals which are a useful source of farmers’ income and livelihood. One method of dealing with this ignorance is facilitating access and use of appropriate written publications by the farming community in the districts under study. This can be done by livestock development officers and veterinary officers. If this is done, the farmers would read relevant literature to know the dangers they expose their livestock to when they do not spray them on a regular basis. They may start using animal sprays on their livestock and thereby reap maximum benefits from their livestock investment which is the essence of this study.

In order for animal sprays to be appropriately applied by the farmers, there should be instructions on their use. Section 4.34 is on instructions on spray use.

4.34 Ease of Obtaining Instructions on Use of Animal Sprays

The farmers who said they used animal sprays were asked to state how easy they found it to obtain instructions on use of the sprays. Their responses were as recorded in Table 4.33.
Table 4.33:  Ease of Obtaining Instructions on Use of Animal Sprays

<table>
<thead>
<tr>
<th>Ease of Obtaining Instructions on Use of Animal Sprays</th>
<th>Very easy</th>
<th>Easy</th>
<th>Fairly easy</th>
<th>Difficult</th>
<th>Very difficult</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(5)</td>
<td>(4)</td>
<td>(3)</td>
<td>(2)</td>
<td>(1)</td>
<td></td>
<td>148</td>
</tr>
<tr>
<td>25</td>
<td>102</td>
<td>16</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From table 4.33, it is observed that 148 farmers responded to the question. Using the Likert scale of 5-1, the calculated mean score is 4.0 which is high and encouraging in that, a majority of farmers would not be expected to encounter problems in the use of animal sprays since instructions on their use are readily available. However, five respondents representing 3.4% said it was either difficult or very difficult to obtain instructions on animal spray use. Although the number of these farmers is small, their plight needs to be addressed urgently to avoid possible loss of their livestock. If low quantities of animal spray are used, the spray will not have the intended effects and therefore the problem it was meant to solve would still persist. For instance, a weak spray intended to eliminate ticks on livestock will not protect the livestock from being affected by East Coast Fever which is transmitted by ticks. The death of a mature grade cow for instance, which a farmer depends on for milk production that he/she sells for his/her family’s livelihood is a great loss to the farmer. Instructions on animal spray use should therefore be made easily available to livestock farmers for them to be able to read and apply the sprays appropriately to benefit from their use.
4.35 Easiness of Instructions on Animal Spray Use

The study further sought to establish how easy the farmers found it to follow the instructions on the use of animal sprays. The reason for this is that if the instructions are not easy to follow, then they may not be of much use to the farmer. The responses to the question on easiness of instructions on animal spray use were as presented in Table 4.34.

<table>
<thead>
<tr>
<th>Easiness of Instructions on Animal Spray Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy (5)</td>
</tr>
<tr>
<td>19</td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.34, it is seen that 145 farmers responded to the question on how easy they found the instructions on animal spray use. Nineteen respondents said the instructions were very easy to follow, 106 said they were easy, while 15 said they were fairly easy to follow. Three said the instructions were difficult to follow, while two said they were very difficult to follow. Using the Likert scale of 5-1, the calculated mean score is 3.9 which is encouraging in that the majority of the farmers found the instructions easy to follow. The farmers would therefore be expected to apply the animal sprays appropriately. However, this would only happen if the farmers read the instructions carefully before applying the sprays. Livestock farmers should
therefore be constantly sensitized on the need to read instructions on animal
spray use and carefully follow them in order for them to reap maximum benefits
from their livestock investment. This can be done by animal spray vendors,
livestock development officers and veterinary officers in the districts under
study.

Farm animals are bound to get sick from time to time even when precautions
against diseases are taken. Section 4.36 is on livestock treatment.

4.36 Information on Livestock Treatment

The farmers who kept livestock were asked whether their livestock ever got
sick. Two hundred forty-three farmers representing 73.0% of the 333
respondents to this question said sometimes their livestock got sick.
Surprisingly, 90 farmers representing 27.0% of the respondents stated that their
livestock never got sick.

Those who said their livestock got sick were further asked to state the actions
they took when their animals got sick. Their responses were as shown in table
4.35.

Table 4.35: Actions Taken by Farmers When Their Animals Got Sick

<table>
<thead>
<tr>
<th>Call veterinary officer</th>
<th>Treat the animal myself</th>
<th>Read veterinary literature to identify disease</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>212</td>
<td>56</td>
<td>2</td>
<td>270</td>
</tr>
</tbody>
</table>
As observed from Table 4.35, 212 farmers out of a total of 270 respondents to this question representing 78.5% said they called a veterinary officer when their animals got sick. It can be said that these farmers took the appropriate action since most farmers are not qualified in veterinary medicine to be able to diagnose and treat sick animals effectively. Fifty-six farmers representing 20.7%, however, said they treated their animals themselves. Though this may sound strange, it is true that some farmers gained practical experience in diagnosing and treating sick animals after observing the actions of veterinary surgeons over time and their claim cannot be dismissed outright. Others have gained experience that has been passed from generation to generation. Two farmers stated that they read veterinary literature to identify the disease the animal suffered from. The best course of action that should, however, be taken by such farmers would be to give the sick animal first-aid treatment and then call a veterinary surgeon to professionally diagnose the disease the animal is suffering from in order to prescribe the kind of treatment to be given to the sick animal.

Veterinary services are provided by the government in the districts under study and qualified veterinary officers provide these services. The farmers should therefore make use of these professional services rather than depend on their own knowledge and experience to treat their animals.
Those farmers who treated their animals were further asked to give the symptoms that helped them to conclude the disease the animal was suffering from. The responses were as presented in Table 4.36.

**Table 4.36: Animal Disease Symptoms**

<table>
<thead>
<tr>
<th>Animal Disease Symptoms</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
</tr>
<tr>
<td>Coughing</td>
<td>17</td>
<td>18.1</td>
<td>11</td>
<td>11.7</td>
<td>11</td>
<td>11.7</td>
<td>33</td>
</tr>
</tbody>
</table>

From Table 4.36, it is observed that six disease symptoms led the farmers to conclude the disease the animal was suffering from. These disease symptoms may or may not lead to the correct diagnosis. If the diagnosis is wrong, the treatment is likely to be wrong and it may not save the animal from dying. If the diagnosis were to be based on veterinary literature, which the farmers could read as was done by two respondents and the instructions on prescribed treatment carefully followed, the treatment would most likely be both appropriate and effective. It is imperative that farmers be sensitized on the need to make use of advice from veterinary officers who are stationed in the districts under study to provide veterinary services to the farmers. On their part, veterinary officers could produce simple literature in form of pamphlets or leaflets on the common animal diseases in the districts under study. The literature should ideally include basic diagnosis of these diseases and treatment which the farmers could administer as a first aid measure while they wait for qualified veterinary
surgeons to treat the sick animal. This way, the farmers may be able to save their animals from dying.

The study further sought to establish how the farmers who treated their sick animals themselves decided on the type of treatment to give a sick animal. The following section is on this topic.

4.37 Deciding on Type of Treatment

The farmers who treated their animals themselves were asked how they decided on the type of treatment to give a sick animal. The farmers’ responses were as presented in Table 4.37.

### Table 4.37: Farmers’ Decision to Use Certain Type of Treatment

<table>
<thead>
<tr>
<th>Farmer’s Decision on the Type of Treatment</th>
<th>Past experience</th>
<th>Advice from vet. officer</th>
<th>Advice from neighbours</th>
<th>Trial and error</th>
<th>Reading vet. literature</th>
<th>Advice from vet. Drug sellers</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq</td>
<td>%</td>
<td>Freq</td>
<td>%</td>
<td>Freq</td>
</tr>
<tr>
<td>37</td>
<td>41.6</td>
<td>26</td>
<td>29.2</td>
<td>16</td>
<td>18.0</td>
<td>3</td>
<td>3.4</td>
<td>2</td>
</tr>
</tbody>
</table>

From Table 4.37, it is observed that a total of 89 responses to the question on how farmers decided the type of treatment to give a sick animal were recorded. Thirty seven (37) farmers representing 41.6% based their decisions on past experience which may or may not yield the desired results in that some animal diseases that have similar symptoms call for different types of treatment. It may therefore be risky to depend on past experience alone. If the wrong type of treatment is given, the sick animal may eventually die since the disease it is
suffering from is really not the one treated. The death of the animal is a loss to the farmer and will work against enhanced agricultural productivity which is the essence of this study. Use of past experience alone to decide on the type of treatment to give should therefore be discouraged. Instead, professional advice from veterinary officers should be sought. Also, reading of professional veterinary literature should be encouraged among the farmers in order for them to take the right action to save their sick animals.

Sixteen (16) farmers accounting for 18.0% said they got advice from neighbours. This method, like the one discussed above, may not be reliable in that neighbours themselves may not be better informed than the one seeking advice. Such advice may lead to the farmer giving the wrong treatment which may result in the death of the sick animal, and therefore loss to the farmer. This method should be discouraged and farmers should be advised to always seek advice from professional veterinary surgeons and using of professional veterinary literature to be able to make the correct decisions on the type of treatment to be given their sick animals.

Three (3) farmers representing 3.4% said they used trial and error methods. These methods should not be used since they can lead to the use of wrong treatment with the result that the animal eventually dies.
Advice from veterinary drug sellers was cited by two respondents accounting for 2.2%. This method of deciding the type of treatment to be given to the sick animal may be risky and may not lead to the desired results. The veterinary drug seller will depend on the explanation given by the farmer on the condition of the animal to sell what he considers the right veterinary drug to the farmer. If the farmer’s diagnosis is wrong, the veterinary drug seller will base his prescription on the wrong diagnosis. The veterinary drug prescribed by the veterinary drug seller may not work on the sick animal and this may lead to the death of the animal resulting to a great loss to the farmer thus working against enhanced agricultural productivity.

Twenty-six (26) farmers accounting for 29.2% got advice from veterinary officers while two (2) farmers representing 2.2% read veterinary literature to be able to decide on the type of treatment to give the sick animal. These two methods are commendable as they are based on professionalism. The information obtained from the two sources originates from professionals best suited to give the most appropriate prescription for a sick animal. The farmers should be sensitized to the need to make use of veterinary officers for advice on the appropriate type of treatment of their sick animals for them to reap maximum benefit from their livestock farming. As already mentioned, veterinary officers could produce simple veterinary literature that could help farmers in the diagnosis and treatment of animal diseases that are not complicated. For the farmers to benefit maximally from their livestock
investment, they should be encouraged to read such literature to be able to diagnose and treat the sick animals effectively. This may lead to farmers enhancing agricultural productivity for their own benefit in the districts under study. This was the essence of this study.

For the farmers to utilize written literature, publications have to be available to them. Section 4.38 is on availability of written literature to farmers.

4.38 Availability of Written Veterinary Literature

The farmers were asked to state how easy it was for them to obtain written veterinary materials. Farmers’ responses are as recorded in Table 4.38.

<table>
<thead>
<tr>
<th>Availability of Written Veterinary Materials</th>
<th>Very easy (5)</th>
<th>Easy (4)</th>
<th>Fairly easy (3)</th>
<th>Difficult (2)</th>
<th>Very difficult (1)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(1)</td>
<td>(3)</td>
<td>(1)</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

It is seen from Table 4.38 that seven farmers responded to the question. Using the Likert scale of 5-1 to calculate the mean from the responses, a mean score of 3.1 is obtained. Based on this mean score, it can be said that written veterinary materials are not easily available to most farmers. This can be interpreted to mean that most farmers may not be in a position to use veterinary literature since the materials are not easily available. In order for the farmers to use veterinary literature in the course of carrying out their livestock farming activities, relevant
written materials should be made easily available to them. Efforts should therefore be made to produce simple veterinary literature on the animal diseases common in the districts under study. The materials should be widely distributed to livestock farmers who should be encouraged to read them regularly. This way, the farmers are likely to benefit from the written literature and save their animals from death by taking precautionary measures against possible disease attacks or taking the appropriate action whenever their animals get sick.

The study further sought to establish the languages the publications were written in. This is discussed in section 4.39.

### 4.39 Languages in Which Veterinary Publications Were Written

The farmers were asked to state the languages veterinary literature was written in, and seven responses were given. Four (4) respondents cited English language, while two (2) cited Kiswahili. One of the respondents cited Kikuyu as the language veterinary publications were written in. From the responses, it is observed that English language was prevalent followed by Kiswahili. As mentioned elsewhere in this thesis, the prevalence of the two languages is normal since both are the official and national languages of Kenya.

For the farmers to benefit from instructions given in written veterinary publications, the instructions should be easy to understand. Section 4.40 is on instructions in veterinary publications.
4.40 Easiness of Instructions in Written Veterinary Publications

A question as to how easy the farmers found instructions in veterinary publications was asked and the farmers’ responses were as presented in Table 4.39.

Table 4.39: Easiness of Instructions in Written Veterinary Publications

<table>
<thead>
<tr>
<th>Language</th>
<th>Very easy</th>
<th>Easy</th>
<th>Fairly easy</th>
<th>Difficult</th>
<th>Very difficult</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Kiswahili</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Kikuyu</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

It is observed from Table 4.39 that seven (7) farmers responded to the question asked. Instructions written in English language were found very easy by two respondents, easy by one respondent and fairly easy by one respondent. Instructions written in Kiswahili were found easy by one respondent and difficult by one respondent. Instructions written in Kikuyu language were rated by one respondent only who found them very difficult. It is further observed that responses on instructions found very easy, easy and fairly easy in all three languages combined added up to five while those rated difficult and very difficult added up to two. From these observations, it can be said that the majority of respondents found the instructions easy. The important point to make here is that whatever language is used in veterinary publications meant for
use by farmers should be reasonably simple in order for the farmers who read
the instructions to understand them, apply them appropriately and ultimately
benefit from their application. This will lead to the enhancement of agricultural
productivity for the farmers.

Advice from agricultural, veterinary and livestock development officers is
important for the enhancement of agricultural productivity in the districts under
study. The following section is on advice from these professionals to the
farmers.

4.41 Advice From Agricultural, Veterinary and Livestock Development
Officers

The farmers were asked to state whether they received advice from agricultural,
veterinary and livestock development officers. Farmers’ responses were as
recorded in figure 4.14.

Figure 4.14: Advice From Agricultural, Veterinary and Livestock
Development Officers
From the responses presented in figure 4.14, it is observed that a total of 340 farmers responded to the question. Two hundred forty-nine (249) farmers accounting for 73.2% said they received advice from the officers while 91 farmers representing 26.8% stated that they did not receive advice from the officers. What was said by those who received advice from the officers was corroborated by eight (8) out of the nine (9) officers in the districts under study who said that, one of the ways they assisted farmers was through giving advice on how to increase agricultural production. The large number of farmers who received advice from the professional officers is encouraging since such farmers are likely to benefit from the advice particularly when they put it into practice. However, the 91 farmers who got no advice from the officers are a cause for concern since they cannot benefit from such advice. Everything possible should be done to enable the farmers seek advice from the officers in order for them to make use of it to enhance their agricultural productivity. The officers themselves could also assist farmers by recommending certain publications to be read by farmers in order for them to gain knowledge on how to carry out their farming activities thereby enhancing their agricultural productivity.

The study further sought to establish when farmers received advice from the officers. This is discussed in section 4.42.
4.42 When Advice From the Officers Was Received

The farmers who said they received advice from agricultural, veterinary and livestock development officers were asked to state when the advice was given. Their responses were as recorded in Table 4.40.

Table 4.40: When Advice From Officers Was Received

<table>
<thead>
<tr>
<th>When officers are invited by farmers</th>
<th>During chief’s barazas Freq.</th>
<th>%</th>
<th>During officers’ visits to farmers Freq.</th>
<th>%</th>
<th>During field days Freq.</th>
<th>%</th>
<th>During local agricultural shows Freq.</th>
<th>%</th>
<th>Total Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>77</td>
<td>32.1</td>
<td>76</td>
<td>31.7</td>
<td>45</td>
<td>18.8</td>
<td>38</td>
<td>15.8</td>
<td>4</td>
<td>1.7</td>
<td>240</td>
</tr>
</tbody>
</table>

It is seen from the responses recorded in Table 4.40 that a total of 240 farmers answered the question. From this total, 77 farmers accounting for 32.1% received advice from the officers when the latter visited the farms on invitation by the farmers. Another 45 farmers accounting for 18.8% received advice when the officers made voluntary visits to the farms. The farmers’ responses were corroborated by all the nine officers who said they visited individual farmers themselves. The two types of visit to the farms by the officers are an indication that both the farmers and the officers have at one time or another taken the initiative to come together which is laudable since the two are partners and main players in agricultural development. The farmers stand to benefit from advice received from the officers during the visits since it is given at the time of need, and it is likely to bear positive results if carefully followed by the farmer. During the visits, the officers could buttress their advice to the farmers by
distributing to them relevant agricultural publications and encouraging them to read the publications. Such publications are bound to be appreciated by the farmers and the knowledge gained from reading them will be used for the enhancement of agricultural productivity in the districts under discussion.

Chiefs’ barazas, during which 76 farmers obtained advice from the officers were also important forums for farmers to obtain advice from the officers. This finding was corroborated by eight of the nine officers representing 88.9%, who mentioned barazas as one of the forums they used to communicate agricultural information to farmers. (see Table 4.16). During the barazas, the officers should take the opportunity to advise the farmers on the need for, and the value of utilizing written agricultural information materials in order for them to understand and apply the best agricultural practices for them to enhance their agricultural productivity. They could also use the opportunity to distribute relevant agricultural publications to the farmers thereby facilitating access to the publication and utilization of such publications. This is one way that farmers could enhance their agricultural productivity.

Field days provided another forum during which advice was given by the officers to farmers. This was stated by 38 farmers representing 15.8% of the total responses of 240. All the nine officers in the districts under study also mentioned field days as one of the occasions they used to give advice to farmers – thus corroborating the farmers’ responses (see table 4.16).
The importance of field days is that farmers go to see the best managed farms and to learn from their fellow farmers. The farmers’ interest is therefore captivated by what they see having been achieved in practice. They are therefore motivated to learn how their fellow farmers have achieved best results from their farming activities. During such occasions, the officers could take the opportunity to distribute relevant agricultural publications to the farmers and encourage them to read such literature for themselves to be able to apply the knowledge gained from reading to enhance their agricultural productivity.

The study further sought to establish the regularity at which the farmers received advice from the officers. This is discussed in section 4.43.

4.43 Regularity of Advice Received From Agricultural, Veterinary and Livestock Development Officers

The farmers who received advice on their farming activities from agricultural, veterinary and livestock development officers were asked to state how often they received advice. Their responses were as presented in Table 4.41.

<table>
<thead>
<tr>
<th>Table 4.41</th>
<th>Regularity of Advice Received From Officers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regularity of Advice</td>
<td></td>
</tr>
<tr>
<td>Monthly</td>
<td>Quarterly</td>
</tr>
<tr>
<td>22</td>
<td>62</td>
</tr>
</tbody>
</table>

It is observed from Table 4.41 above that a total of 187 farmers responded to the
question as to how often they received advice from the agricultural, veterinary and livestock development officers. Twenty-two farmers representing 11.8% said they received advice once a month while 62 farmers representing 33.2% stated receiving advice once in three months. Fifty-nine farmers representing 31.6% said they received advice once in six months while 44 farmers representing 23.5% said they received advice once every year. It is further observed that those who received advice between one month and six months totalled 143 representing 76.5%. This regularity is fair for crop farmers since the districts under study have two rainy seasons and it would appear that the majority of respondents stood to benefit from the officers’ advice every season. However, the other 44 who received advice once a year need to seek advice more regularly in order for them to benefit every season from such advice. Advice from the officers may be useful or not useful to the farmer. Usefulness of advice from the officers is discussed in section 4.44.

### 4.44 Usefulness of Advice From the Officers

Receiving advice from the officers is one thing while the usefulness of the advice is quite another. The farmers were therefore asked to state how useful they found the advice received from the officers. Their responses are presented in table 4.42.
Table 4.42: Usefulness of Advice From the Officers

<table>
<thead>
<tr>
<th>Usefulness of Officers’ Advice</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very useful</td>
<td>79</td>
<td>33.6</td>
<td>140</td>
<td>59.6</td>
<td>13</td>
<td>5.5</td>
<td>2</td>
<td>0.9</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fairly useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Useless</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>235</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A total of 235 responses were received. Using the Likert scale of 5-1, the calculated mean score from the responses is 4.3. This therefore shows that the advice received from the agricultural, veterinary and livestock development officers was useful to farmers. The farmers should therefore be encouraged to always seek advice from the officers whenever need arises. On their part, the officers should seize every available opportunity to offer their much valued advice. In the course of advising the farmers, they should also distribute relevant written agricultural literature to the farmers for home use. The officers should further encourage the farmers to read the publications at their point of need in order for them to gain and apply the knowledge they acquire from their reading to their farming activities. By so doing, the officers would facilitate accessibility and utilization of written publications by the farmers who are likely to enhance their agricultural productivity. This was the essence of this study.

The farmers who said the advice received from the officers was either useless or not useful were further asked to state the reasons for their answers. Out of the three in this category, only one responded by saying that the officers did not understand the problems of farmers. It is possible that such farmers were not
able to articulate their problems to the officers for the latter to give appropriate advice. Alternatively, they may have received appropriate advice but never followed it carefully, thereby ending with unsatisfactory results, hence their claim.

The researcher sought to establish why some farmers did not receive advice from the officers. This is discussed in section 4.45.

4.45 Reasons For Some Farmers Not Receiving Advice From Agricultural, Veterinary and Livestock Development Officers

The farmers who said they did not receive advice from the officers were asked why they did not, and their responses were as presented in Table 4.43.

Table 4.43: Reasons For Farmers Not Receiving Advice From the Officers

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Freq.</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers never available to give advice</td>
<td>53</td>
<td>88.3</td>
<td>5</td>
<td>8.3</td>
<td>2</td>
<td>3.3</td>
<td>60</td>
</tr>
<tr>
<td>Officers’ stations far away from farms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expensive to receive advice from the officers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.43, it is seen that sixty farmers answered the question out of whom 53 representing 88.3% gave the reason for not receiving advice that officers were never available to give them advice. Another five farmers gave the reason that officers’ stations were far away from their farms, while another two gave the reason that it was expensive to receive advice from the officers.
All the reasons given by the 60 respondents are untenable since the information recorded in Table 40.40 shows that the officers were available when called by farmers to their farms; during chiefs’ barazas; during field days; and during agricultural shows. It is possible that those who did not receive advice from the officers never attended the occasions during which advice was given by the officers.

In order for all the farmers in the districts under study to benefit from advice from agricultural, veterinary and livestock development officers, it is important that all members of the community be sensitized to the need to attend meetings convened by government officers at all levels from the County Governor to the Assistant Chief. During such meetings, government officers from different sectors of development are generally given an opportunity to advise the members of the community on various activities of interest to them including agriculture which is the mainstay of the three districts under study.

In order for the farmers to benefit from written agricultural information materials, the materials must be available. Farmers’ suggestions on how the materials could be availed are discussed in section 4.46.
4.46 Suggestions by Farmers on Provision of Written Agricultural Information Materials

Farmers were asked to offer suggestions on how written agricultural information materials could be made available to them. Their suggestions were as presented in Table 4.44.

Table 4.44: Farmers’ Suggestions on Provision of Written Agricultural Information Materials

<table>
<thead>
<tr>
<th>Farmers’ Suggestions</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution of materials free and establishment of libraries</td>
<td>199</td>
<td>87.3</td>
</tr>
<tr>
<td>Regular holding of field days and seminars by the officers</td>
<td>29</td>
<td>12.7</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td>100</td>
</tr>
</tbody>
</table>

From the responses recorded in Table 4.44, it is observed that a large proportion of farmers (87.3%) would want written agricultural information materials distributed free, and that libraries be established. The second suggestion related to the officers’ involvement in the education and training of farmers through holding of field days and seminars on a regular basis. This was made by 29 respondents accounting for 12.7%.

The establishment of libraries would lead to easy access to written agricultural information materials by the farmers. To be of benefit to the farmers, however, the libraries should be established within easy reach of the farmers. They should also be adequately stocked with relevant written agricultural information.
materials. Additionally, the farmers should be offered easy access and borrowing terms so that they can read the materials in the library and also at home.

Holding of regular field days and seminars offers the officers an opportunity to educate and advise farmers on various farming activities relevant to them. The farmers attend these occasions on their own volition which can be interpreted to mean that they attend because they are motivated to learn. During such occasions, the officers usually buttress their instruction with written agricultural information materials which they distribute to the participants free.

The two suggestions by the farmers on the establishment of libraries and regular holding of field days and seminars are complementary and no doubt progressive suggestions. They should be properly implemented by the Murang’a County Government as they will facilitate accessibility and utilization of written agricultural materials by the farmers. The knowledge the farmers gain from reading relevant agricultural literature and the application of the same in their farming activities is likely to enhance their agricultural productivity which was the essence of this study.

The study also sought suggestions from District Agricultural, District Veterinary, and District Livestock Development Officers on how accessibility and utilization of written agricultural materials could be fostered among the
farmers in order for them to benefit from their agricultural activities. This is discussed in section 4.47.

4.47 Officers’ Suggestions on How Accessibility and Utilization of Written Agricultural Information Materials Could be Achieved For the Farmers to Enhance Their Agricultural Productivity

The nine government officers directly concerned with agricultural activities in the districts under study were asked to give suggestions on how accessibility and utilization of written agricultural information materials by the farmers could be achieved in order for them to enhance their agricultural productivity. The officers’ suggestions were as recorded in Table 4.45.

Table 4.45: Officers’ Suggestions on How Accessibility and Utilization of Written Agricultural Information Materials by the Farmers Could be Achieved For the Farmers to Enhance Their Agricultural Productivity

<table>
<thead>
<tr>
<th>Officers’ Suggestions</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitization of farmers on benefits of reading agricultural publications</td>
<td>9</td>
<td>100.0</td>
</tr>
<tr>
<td>Agricultural and veterinary publications be published in languages easy to understand by farmers</td>
<td>7</td>
<td>77.8</td>
</tr>
<tr>
<td>Publications be produced regularly and distributed free to farmers</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Publications be produced and sold at affordable prices</td>
<td>5</td>
<td>55.6</td>
</tr>
<tr>
<td>Libraries and agricultural information and documentation centres be established and stocked with relevant information materials</td>
<td>5</td>
<td>55.6</td>
</tr>
<tr>
<td>Bookshops should be established</td>
<td>1</td>
<td>11.1</td>
</tr>
</tbody>
</table>

Note: Multiple answers and therefore each response scored out of 100.0%.
As can be observed from responses recorded in Table 4.45, all the nine officers in the districts under study suggested sensitization of farmers on the benefits that accrue from reading agricultural publications. This is an important suggestion in that unless the farmers understand and appreciate the benefits of reading, they will not be motivated to read. Sensitization is therefore the first step towards creating interest in reading among farmers and it should be carried out consciously and purposefully. It should be carried out by the officers themselves through the use of available forums including chiefs’ barazas, field days, seminars, and when they visit farmers in their farms by invitation or voluntarily. If this is done effectively, it could lead to farmers developing the urge to read relevant agricultural literature before embarking on a certain agricultural activity in order for the activity to be carried out correctly. By doing this, the farmers would gain knowledge which, if correctly applied, would lead to enhanced agricultural productivity being realized.

The second suggestion by seven officers accounting for 77.8% is that agricultural and veterinary publications be published in languages easy to understand by farmers. This is a good suggestion in that literature published in languages not easily understood by the target audience will not be read and therefore will not benefit the farmers. This suggestion is directed to all those who write and publish agricultural literature meant to be read by farmers. The writers include organizations such as Kenya Agricultural Research Institute
(KARI), veterinary research institutes and laboratories, and individual professionals among others.

Six officers representing 66.7% suggested that publications be produced regularly and distributed free to farmers. The first part of the suggestion that agricultural literature be published regularly is reasonable in that new developments are taking place in all fields of human endeavour including agriculture. New varieties of different crops are being developed throughout the world and new drugs to deal with some animal diseases are also being developed. These developments, among others, can be easily brought to the attention of farmers through regular production of new publications.

The second part of the suggestion that such publications be distributed free might be more complicated to implement than the first part. The reason for this is that agricultural literature is originated by individuals and organizations among others. Some of these are not public entities and would not be expected to produce and distribute their publications free. However, public organizations might be in a position to produce and distribute their publications since they are financed by the Government from tax money paid by members of the public including farmers.

The fourth suggestion that publications be produced and sold at affordable prices was given by five officers accounting for 55.6%. This suggestion is good
in that a person can only buy what he/she can afford. If the cost of agricultural publications is beyond what an average farmer can afford, many farmers in the districts under study will not buy them and will therefore not benefit from the information contained in the publications. Affordability of agricultural publications is therefore crucial to the farmers.

Establishment of libraries and agricultural information and documentation centres that are stocked with relevant information materials was suggested by five officers accounting for 55.6%. This suggestion has merit in that, if it is implemented, it would afford many farmers an equal opportunity of accessing and borrowing relevant agricultural information materials stocked in these facilities. The suggestion should be taken up seriously by Murang’a County Government. Such facilities should be strategically situated and within easy reach of the farmers for the latter to benefit fully from them.

Lastly, a suggestion on the establishment of bookshops in the districts under study was made by one respondent representing 11.1%. This suggestion has merit in that those persons interested to buy books and other published information materials would benefit from the establishment of such bookshops in their neighborhoods. But according to the farmers, there are some bookshops in the districts under study as discussed in sections 4.13 and 4.14 of this thesis. However, some of the bookshops were reported to be more than four kilometers from some farmers' homesteads while others were reported to stock no agricultural publications. These two factors can be demotivating to a farmer
interested to buy a publication. If more bookshops could be established within the farmers’ neighbourhoods and stocked with relevant agricultural literature, some farmers could buy some publications from them. The benefit of owning a publication is that the owner can read or refer to it any time since the publication is always in his possession unless he has loaned it to someone else.

In order for the suggestion to establish bookshops within farmers’ neighborhoods to materialize, Murang’a County Government would have to play a key role since it is the custodian of all public plots in all market centres where such bookshops can be established.

If all the suggestions discussed above are successfully implemented, and all other means of facilitating accessibility and utilization of written agricultural information materials by farmers are taken, these could lead to the farmers in the three districts under study reaping some benefits in form of enhanced agricultural productivity. This was the essence of this study.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of the study was to establish the extent to which written agricultural information resources have been accessible to and used by farmers in selected districts of Murang’a County namely Kandara, Kigumo and Murang’a South. This is for the farmers to gain useful information and knowledge in order to improve, not only agricultural productivity, but also develop reading habits.

This chapter summarizes the major findings recorded and discussed in chapter four, makes conclusions from the findings and presents recommendations. It also includes suggestions for further study.

5.2 Summary of the Findings

5.2.1 Crops Grown and Livestock Reared by the Farmers

The study established that more than 25 different crops including grains, fruits, vegetables, root crops and cash crops were grown by the farmers. It also established that nine different kinds of animals were reared by the farmers.

5.2.2 Sources of Agricultural Information for Farmers

Twenty-two different sources of information were cited by farmers with different frequencies. Radio recorded the highest frequency of 277 while reading materials had a frequency of 73. Most of the 22 sources cited are verbal
by nature. Unfortunately, verbally communicated information can be easily forgotten or misunderstood, meaning that the desired results may not be achieved especially in the production activities.

5.2.3 Reasons Why Written Materials Were Not a Source of Information for Some Farmers

From 235 farmers who did not use written materials as a source of agricultural information, unavailability of such materials was cited by 136 or 57.9% of the respondents as the reason for not using the materials. The implication here is that without availability and accessibility of written agricultural information materials, farmers will continue using other sources of information that may not be as dependable as written materials and therefore not benefit much from their agricultural activities.

Illiteracy was another reason cited by 20.4% of respondents. This is an indication that there is a fairly high rate of illiteracy in the three districts under study and if this is not addressed, a lot of farmers will not benefit from written sources of agricultural information, and may not therefore be in a position to enhance their agricultural productivity.
5.2.4 Rating of Written Information Materials Read by Farmers

The study established from the farmers who read agricultural information materials that books and pamphlets were the most widely read publications, followed by leaflets, newspapers, periodicals and posters, in that order. All these information materials were highly rated by their users. However, a point of concern as established by the study is that the number of those who used written information media was very low. The implication here is that the lower the number of those who read, the lower the number of those who stand to benefit from such publications.

5.2.5 Sources of Written Materials

Three broad sources of written materials were identified as the main ones including: neighbours, relatives and friends; agricultural, veterinary and livestock development officers; and purchase, in that order. Materials provided by the officers mentioned above would be expected to be relevant to the farmers since all the officers are qualified in their respective professional fields and are in their stations to assist farmers in their agricultural activities.

Purchase is another credible source in that it demonstrates a real need felt by the farmer as well as seriousness in his/her farming activities and that is why he/she will go out of the way to buy a particular publication. The findings here imply that if written materials were made readily available by the government officers in the districts under study and also in bookshops, the farmers could readily
acquire and use them to gain relevant agricultural information and thereby enhance their agricultural productivity.

5.2.6 Languages of Written Agricultural Materials and Farmers’ Language Preference

It was established by the study that agricultural information materials were written in English, Kiswahili and Kikuyu languages. English led as 58.0% of the reading materials were said to be in the English language. Kiswahili had 29.0% and Kikuyu 13.0%. Farmers also indicated their language preference with English scoring 54.4%, Kiswahili 36.8% and Kikuyu 8.8%. These findings imply that agricultural information materials written in English or Kiswahili will have many readers while those written in Kikuyu will have very few readers.

5.2.7 Information on Bookshops

The study established that there were bookshops in all the three districts under study. Many bookshops, however, were more than four kilometers away from many farms. This means that many farmers could be deterred by the distance and transport cost incurred going to and from the bookshops. They may also not be sure to find needed publications from the bookshops. This implies that needed agricultural information would not be accessed by the farmers, hence affecting productivity in this sector.
5.2.8 Stocking of Written Agricultural Information Materials by the Bookshops

The study established from more than 51.0% of respondents to a question on stocking of bookshops with written agricultural information materials that the bookshops did not stock such materials. This means that the majority of the respondents could therefore not find agricultural publications in the bookshops. This has the implication that without written agricultural information materials in the bookshops, farmers cannot buy publications of their choice which they can read at home and apply the knowledge acquired to their farming activities. It further implies that low agricultural productivity may continue to be experienced in the districts under study which this study sought to address.

5.2.9 Cost of Written Agricultural Information Materials

The study established that 61.5% of respondents considered written agricultural information materials as fairly expensive, expensive or very expensive. This means that most of the farmers could not afford to buy the materials. Inability to buy the materials implies that the farmers cannot benefit from the use of the information contained therein for the purpose of enhancing their agricultural productivity.

5.2.10 Libraries and District Information and Documentation Centres (DIDCs)

The study established that there were very few libraries and D.I.D.Cs in the three districts under study, and that those present were far away from the
farmers’ homesteads. This means that most of many farmers did not have easy access to written agricultural information materials they could borrow from such facilities and return after use. It further implies that many farmers did not benefit from these facilities for the purpose of enhancing their agricultural productivity.

5.2.11 Use of Fertilizers for Crop Growing and Instructions on Their Use

It was established by the study that some farmers used fertilizers to grow 19 different crops. However, 277 of the farmers stated that there were no written instructions on fertilizer use in their packages while 33 said there were written instructions. A few farmers stated that they obtained verbal instructions on fertilizer use from fertilizer vendors and this would appear to confirm that there were no written instructions on fertilizer use on their packages.

The absence of written instructions on fertilizer use means that farmers may not apply fertilizers appropriately as they may not know the exact amount to apply on different types of crops and also the appropriate time to apply the fertilizer. This implies that farmers may not benefit maximally from their fertilizer application, and yet fertilizers are generally expensive agricultural inputs.

5.2.12 Pesticidal Spay Use and Instructions on Their Use

The study established that 238 out of 343 farmers representing 69.4% applied pesticidal sprays on different crops while 105 farmers representing 30.6% said they did not. Of the 238 who applied pesticidal sprays, 160 representing 67.2%
said there were written instructions on spray use to be found on spray container accompanying leaflets or on container spray labels, or both. The presence of written instructions on spray use in one form or another is commendable. It implies that farmers stand to benefit from spray application on their crops and more so if they read and follow the instructions carefully.

5.2.13 Precautions Taken When Spraying Crops

The study established that, of the 238 farmers who applied sprays on their crops, 178 representing 74.8% took precautions by use of some or all of the following: protective overcoats, hand gloves, face masks, and gum boots. However, 60 farmers representing 25.2% said they took no precautions at all. This is dangerous as the implication is that spraying crops without using protective clothing may lead to ill health on the part of those doing the spraying.

5.2.14 Information on Processed Animal Feeds and Instructions on Quantity of Feed and Appropriate Feeding Times

The study established that 299 farmers used processed animal feeds on their livestock while 37 farmers did not. All those who used the feeds learnt about them from one or several sources. One hundred thirty-eight (138) of them learnt about processed animal feeds from animal feed sellers and animal feed processing companies; 132 from neighbours, relatives and friends; 121 from radio; and 69 from livestock development, veterinary and agricultural officers. Those who learnt about animal feeds from written publications were only 14.
On ease of obtaining instructions on quantity of feed and appropriate feeding times, the responses were encouraging in that 120 out of 150 farmers found it very easy, easy or fairly easy. As for ease of understanding the instructions on quantity of feed and appropriate feeding times, 114 out of 123 found them either very easy, easy or fairly easy. This means that the majority understood the instructions. The implication is that these farmers stood to benefit from using processed animal feeds if they followed the instructions carefully.

Nine respondents, however, found the instructions either difficult or very difficult to understand. This means that these farmers could easily feed their livestock with less or more quantities of feed than required while also not observing the appropriate feeding times. This implies that these farmers were not likely to benefit fully from the use of processed animal feeds.

5.2.15 Use of Sprays on Livestock

It was established from the study that 164 farmers out of 333 accounting for 49.2% used animal sprays on their livestock while 169 farmers accounting for 50.8% did not. This means that 49.2% of the farmers protected their livestock from possible animal diseases and therefore stood to benefit from their livestock investment.
The 169 (50.8%) farmers who did not use animal sprays on their livestock exposed their animals to possible infestation by such parasites as ticks that cause east coast fever. The implication of this is that such livestock could eventually die thus causing a loss to the farmers.

5.2.16 Information on Livestock Treatment

The study established that 243 out of 333 farmers representing 73.0% had their livestock sick from time to time. Surprisingly, 90 farmers said their animals never got sick. Whenever their livestock got sick, 212 of the 243 farmers representing 87.2% called veterinary officers to treat the sick animals. This means that these farmers made the right decision since professionally qualified veterinary surgeons were in the best position to diagnose the disease an animal was suffering from and to prescribe the right kind of treatment to be given to the sick animal. The implication here is that the farmers’ sick animals are treated by qualified professionals and have a chance to get well and survive and this is of benefit to the farmers.

The study further established that 56 farmers treated their sick animals themselves while two read veterinary literature to identify the disease. The farmers may or may not treat their sick animals effectively and the sick animals may eventually die. The death of an animal is a loss to the farmer.
5.2.17 Advice From Agricultural, Veterinary and Livestock Development Officers

It was established by the study that farmers received advice from agricultural, veterinary and livestock development officers from time to time. Out of 340 respondents, 249 representing 73.2% said they received advice from the officers. These results are encouraging since advice from professionally qualified officers is likely to lead to enhancement of agricultural productivity, if it is carefully followed. The farmers’ responses were corroborated by eight of the nine government officers themselves who clearly stated that they were in their work stations to assist farmers through advice on how to increase their agricultural production. The implication is that when farmers receive advice on how to perform a certain agricultural activity and they follow that advice appropriately, they are bound to benefit from enhanced agricultural productivity.

5.2.18 When Advice From Officers Was Given

The study established the occasions during which advice from the officers was given. These included: when officers were invited by farmers – 77 (32.1%); during chiefs’ barazas – 76 (31.7%); during officers’ voluntary visits to farmers – 45 (18.8%); during field days – 38 (15.8%); and during local agricultural shows – 4 (1.4%). All these occasions are very important in that they facilitate personal interaction between farmers and officers and therefore provide an effective means of communication between the farmers and the officers. Relevant questions can be asked by the farmers and answered by the officers on the spot. The implication here is that farmers receive useful advice from the
officers and especially when it is buttressed by written information materials that farmers can read for themselves. On their part, the farmers clearly stated that the advice given by the officers was of great value to them. If the advice is carefully followed by the farmers, they would enhance their agricultural productivity.

5.2.19 Suggestions by Farmers on Provision of Written Agricultural Information Materials

The study elicited suggestions from the farmers on how written agricultural information materials could be made available to them. The farmers’ suggestions included: distribution of written materials to them free and establishment of libraries – 199 (87.3%), and regular holding of field days and seminars by the officers – 29 (12.7%). The establishment of libraries would offer the farmers free access to written information materials. But for the farmers to benefit from the libraries, the latter should be established within the farmers’ neighbourhoods where they can be accessed easily. Further, they should be adequately stocked with relevant agricultural publications.

Regular holding of field days and seminars by the officers would offer the farmers an opportunity for face to face interaction during which agricultural publications relevant to the topics of discussion could be distributed to the farmers. If this is done, the implication is that the farmers would read the agricultural materials and use the knowledge gained from their reading to carry
out their agricultural activities. This would in turn lead to enhanced agricultural productivity.

#### 5.2.20 Officers’ Suggestions on How Farmers Could be Helped to Benefit From Accessing and Using Agricultural and Veterinary Literature

Among the suggestions given by most of the nine agricultural, veterinary and livestock development officers included: publication of agricultural and veterinary literature in languages easy to understand by farmers – 7 (77.8%); regular and free distribution of agricultural and veterinary publications to farmers – 6 (66.7%); publications be sold to farmers at affordable prices – 5 (55.6%); and libraries and agricultural information and documentation centres be established and stocked with relevant written information materials – 5 (55.6%). The implication of these suggestions is that if they are all implemented and farmers encouraged to read agricultural information materials for themselves and carefully follow the instructions given in the publications, they would stand to realize enhanced agricultural productivity.

#### 5.3 Conclusion

The purpose of the study was to establish the extent to which written sources of agricultural information were accessible to, and used by farmers in Kandara, Kigumo and Murang’a South Districts of Murang’a County in their agricultural activities. The study established that there were more than 25 different crops grown by the farmers and more than nine (9) different kinds of livestock reared by the farmers in the three districts. To reap maximum benefits from the crops
grown and the livestock reared, the farmers needed to access and use relevant information to carry out their farming activities. However, the study found that most farmers used verbal advice for their farming activities, which could be easily forgotten or misunderstood and therefore not yield the desired results. The study further established that a few farmers used information from written sources such as books, pamphlets, periodicals and newspapers due to illiteracy among the farmers who could not make sense out of written information in order to enhance their agricultural productivity.

It was also established that some literate farmers lacked interest to read written information materials which can be interpreted to mean that they had a negative attitude towards reading. Many other farmers cited unavailability of written materials as their reason for not reading, while bookshops, libraries and district information and documentation centres were reported to be out of reach of most farmers.

From these scenarios, it is concluded that farmers in Kandara, Kigumo and Murang’a South Districts rarely used written agricultural materials to get information for their farming activities. This could lead them to not making well informed decisions in their farming activities. To address this shortcoming, the following is recommended in Section 5.4.
5.4 Recommendations

The study has established that there are more than 25 different crops grown and nine different kinds of animals reared by the farmers in the districts under study. In order for the farmers to be able to enhance their agricultural productivity and in turn improve their economic and social well-being, they need to access and use relevant agricultural information in their farming activities. The study, however, established that there was lack of widespread reading among the farmers, with 57.9% of those who never read citing unavailability of written agricultural information materials as their reason for not reading. This study therefore makes the following recommendations:

1. That relevant written agricultural materials be made readily available for farmers to use. This can be done in the following ways:

   (i) Agricultural information and documentation centres (AIDCs) be established in the districts under study and be stocked with relevant agricultural information materials, easily accessible to the farmers. Such AIDCs should be established at several levels including: district, divisional, locational, sub-locational and finally village level. This is one way of ensuring that relevant agricultural information is taken to the farmers’ doorsteps in order to empower them to enhance their agricultural productivity and thereby improve their economic and social well-being. The establishment of AIDCs should be facilitated by the
Murang’a County Government since agricultural development services have been devolved to the counties. Further, the County Government has identified agriculture and rural development as the main sectors in the County. (Kenya. Ministry of Devolution and Planning, 2013:59).

(ii) In order for the agricultural information and documentation centres envisaged in (i) above to be effective, they should be managed by professionally qualified persons in the field of information science. This is to ensure that execution of such essential functions as selection, acquisition, organization, storage, retrieval and dissemination of relevant written agricultural information materials are carried out professionally for the benefit of the farmers. These information science professionals should work closely with Agricultural, Veterinary and Livestock Development Officers in the Districts.

2. Illiteracy in the districts under study was given as one of the reasons why some farmers never used written information materials as a source of their agricultural information, with 20.4% of those who did not read citing it. To equip such farmers with reading skills, it is recommended that Murang’a County Government embark on an ambitious adult literacy programme so as to empower willing citizens including farmers to learn how to read and write to a level of understanding agricultural literature written in simple language. If this is done, it is likely to
encourage farmers to use written agricultural materials for the enhancement of their agricultural productivity. This will be of paramount importance to both the farmers and the County Government since agriculture is the economic backbone of Murang’a County as a whole.

3. The study further established that 33 out of 235 farmers accounting for 14.0% did not read agricultural information materials for reasons other than illiteracy. The reasons included: lack of interest; lack of time; irrelevant materials; and lack of awareness. For such farmers to benefit from using written agricultural information materials through reading, it is recommended that Reading Campaigns be mounted at regular intervals in the districts under study so as to raise farmers’ awareness of the need to read for themselves. The campaigns can be held once every year for a whole week to be known as “Reading Campaign Week”. During this reading campaign week, the benefits of reading as a means of acquiring useful information and knowledge, particularly for agricultural productivity should be emphasized and exalted. Ideally, the campaigns should be organized by district agricultural, veterinary and livestock development officers in cooperation with staff running the agricultural information and documentation centres at district level, but to be operationalized at divisional level so as to reach many people at the grassroots. In order for the campaigns to be successful, the facilitators
should go to one location per day thereby taking the services to the farmers’ doorsteps. During such campaigns, relevant written agricultural materials can be given either free or sold to the farmers at subsidized prices.

4. For one to understand the contents of a given publication, one has to be competent in the language the publication is written in. The study established that a small percentage of farmers (0.8) did not read due to the language used in the agricultural publications. This study recommends that agricultural literature be written in simple enough language for the farmers to benefit from it. From the findings of the study, English language was preferred by 37 farmers accounting for 54.4% followed by Kiswahili preferred by 25 farmers representing 36.8%. Kikuyu language came last with six farmers representing 8.8% preferring it.

This study further recommends that authors use simple English and Kiswahili to write publications meant for use by the farmers. If this is done, it is likely that many more farmers would use such publications and thereby benefit from information and knowledge gained from reading such literature to enhance their agricultural productivity.
5. The study established that purchase was one of the methods used by farmers to access and own agricultural publications. Twenty eight (28) out of 140 farmers representing 20.0% obtained written materials through purchase. However, for the farmers to buy agricultural publications, books which are one form of published materials have to be within easy reach, otherwise very few farmers, if any, will travel a long distance to look for and buy a given publication. The study established from 18 out of 52 farmers representing 34.6% that bookshops were more than four kilometres away from their farms. A distance of more than four kilometres can be prohibitive and discouraging since a person may find walking to and from the bookshop rather tiring and time consuming. Using public transport may be costly and yet the farmer may not be sure of finding the title he/she wants to buy from the bookshop. This study therefore recommends that bookshops be established within farmers’ neighbourhoods in order for the farmers to access them easily. Murang’a County Government which owns building plots in all designated trading centres in the County can easily woo investors to establish bookshops and allocate them plots for this purpose. Further, the bookshops should be stocked with relevant agricultural publications among others.

5.5 Contribution of the Study

The findings of this study are a major contribution to knowledge in general and literature on accessibility and utilization of written agricultural materials in
Kenya in particular. The study has established that unavailability and inaccessibility of written agricultural information materials are a major problem for many farmers in the districts under study. It has established that out of 348 responding farmers, only 73 accounting for 21.0% used written agricultural information publications. This left 275 farmers representing 79.0% using other sources of information which were predominantly verbal. The main reason given by farmers for not using written agricultural publications was unavailability of such information materials. This reason was given by 136 out of 235 respondents accounting for 57.9%. This finding is in agreement with another one by Tire (2006) who observed that only a small amount of agricultural information is accessible to rural farmers despite the large body of knowledge that exists in research institutions, universities, public offices and libraries. The finding is also similar to another by Lwoga, Stilwell and Ngulumbe on access and use of agricultural information and knowledge in Tanzania who observed that “print media with the exception of books had low use due to unavailability and illiteracy (2011:395).

The current study findings show that agricultural information publications are generally not disseminated to farmers. It is for this reason that the study recommends the establishment of Agricultural Information and Documentation Centres (AIDCs) at different levels to disseminate agricultural information publications to the farmers.
5.6 Recommendations for Further Study

1. It is a recommendation of this study that a study on “Marketing of Agricultural Produce in Murang’a County” be carried out. Such a study would complement the current study since enhanced agricultural productivity would be of little benefit to the farmers without marketability of the enhanced produce.

2. Another recommendation of the study is that a study on “Value Addition to Agricultural Produce in Murang’a County” be conducted. If such a study is carried out, it would be of great benefit to the farmers as they stand to gain from value addition to their produce as it would earn them more financial income.
REFERENCES


APPENDIX A: INTRODUCTORY LETTER TO FARMERS

Dear Sir/Madam,

RE: QUESTIONNAIRE TO ESTABLISH HOW “ACCESSIBILITY AND UTILIZATION OF WRITTEN PUBLICATIONS CAN ENHANCE AGRICULTURAL PRODUCTIVITY IN KANDARA, KIGUMO AND MURANG’A SOUTH DISTRICTS OF MURANG’A COUNTY, KENYA”

I am a lecturer in the Department of Library and Information Sciences at Kenyatta University. Currently, I am carrying out a research on the above topic. To this end, I have formulated a questionnaire to enable me gather relevant information on ways the farming community in the above Districts obtain relevant information for their agricultural activities.

Being a farmer, you have been selected as one of the respondents to the attached questionnaire. I consider your responses to the questions invaluable to the success of this study whose eventual recommendations are expected to be of benefit to the farming community in the Districts under study in particular, and Kenya in general.

The questionnaire is in nine sections covering: information on respondents locality; general information on crops and livestock; sources of agricultural information; fertilizers; crop sprays; animal feeds; animal sprays; information on livestock feeding and treatment; and advice from Agricultural, Veterinary and Livestock Development Officers.

Please respond to the questions as instructed in each of the sections and as honestly as possible.

I would like to assure you that all the information you provide will be treated with utmost confidentiality and will be used for research purposes only.

Thanking you for your co-operation.

Yours faithfully,

JOSHUA R. NJUGUNA
APPENDIX B: QUESTIONNAIRE FOR FARMERS

SECTION A: INFORMATION ON RESPONDENT’S LOCALITY

Name of District: ....................................................................................................................

Name of Sub-Location: ..........................................................................................................

Name of Village: .....................................................................................................................

SECTION B: GENERAL INFORMATION ON CROPS AND LIVESTOCK

1. Which of the following crops do you grow? (Tick (√) as appropriate).
   (i) Maize  □
   (ii) Beans  □
   (iii) French beans (Miciri)  □
   (iv) Pigeon peas (Njugu)  □
   (v) Sorghum (Muhia)  □
   (vi) Irish potatoes (Waru)  □
   (vii) Sweet potatoes (Ngwaci)  □
   (viii) Bananas  □
   (ix) Tomatoes  □
   (x) Cabbages  □
   (xi) Watermelons  □
   (xii) Pumpkins  □
   (xiii) Sukuma wiki  □
   (xiv) Cassava  □
   (xv) Coffee  □
   (xvi) Tea  □
   (xvii) Avocados  □
   (xviii) Lemons  □

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(xix) Oranges
(xx) Passion fruit
(xxi) Mangoes
(xxii) Pawpaws
(xxiii) Macadamia
(xxiv) Others (Specify) ............................................................

2. Which of the following livestock do you keep? (Tick (√) as appropriate)
   (i) Cattle (Cows and bulls) ..............................................
   (ii) Goats ....................................................................
   (iii) Sheep ..................................................................
   (iv) Pigs ....................................................................
   (v) Chicken .............................................................
   (vi) Ducks ................................................................
   (vii) Turkeys ...........................................................
   (viii) Rabbits .........................................................
   (ix) Others (Specify)......................................................

SECTION C: SOURCES OF AGRICULTURAL INFORMATION

3.(a) Which of the following are the main sources of agricultural information available to you? (Tick (√) as appropriate).
   (i) Neighbours .............................................................
   (ii) Relatives ............................................................
   (iii) Friends ............................................................
   (iv) Chief’s barazas .............................................
   (v) Reading materials ........................................
   (vi) Agricultural, veterinary and livestock development officers ................................
   (vii) Radio ................................................................
   (viii) Television ....................................................

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(ix) Demonstration visits ☐
(x) Agricultural shows ☐
(xi) Agricultural movies ☐
(xii) Others (Specify)……………………………………

(b) If written materials are not one of your sources of agricultural information, give reasons ((Tick (√ ) as appropriate).

(i) Written materials not available ☐
(ii) Poor eyesight ☐
(iii) Materials not relevant ☐
(iv) Illiteracy ☐
(v) Materials out of reach ☐
(vi) Not interested in reading ☐
(vii) Not aware of written agricultural materials ☐
(viii) Lack of time ☐
(ix) Cannot afford to buy ☐
(x) Others (Specify).........................................................

4. If written materials are one source of agricultural information for you, indicate below the media you use in order of importance using scale  1-5 where (1) is the most important and (5) the least important.

(Mark as appropriate).

(i) Newspapers ☐ ☐ ☐ ☐ ☐
(ii) Books and pamphlets ☐ ☐ ☐ ☐ ☐
(iii) Leaflets ☐ ☐ ☐ ☐ ☐
(iv) Periodicals (Magazines and Journals) ☐ ☐ ☐ ☐ ☐
(v) Posters ☐ ☐ ☐ ☐ ☐
(vi) Others (Specify)………………………….. ☐ ☐ ☐ ☐ ☐

5. How useful do you find information obtained from the media you have marked 1-5 above in improving your farming?

(Tick (√) as appropriate).
(i) Very useful  
(ii) Useful  
(iii) Fairly useful  
(iv) Not useful  
(v) Useless  

6. From where do you obtain written materials specified in question 4 above? (Tick (√) as appropriate).
   (i) Purchase/Buying  
   (ii) Library  
   (iii) District Information and Documentation Centre (DIDC)  
   (iv) Neighbours  
   (v) Relatives  
   (vi) Friends  
   (vii) Agricultural, veterinary and livestock development officers  
   (viii) Farm chemicals and fertilizer companies  
   (ix) Others (Specify)………………………………………

7. In what languages are the publications written? (Tick (√) as appropriate)
   (i) Kikuyu  
   (ii) Kiswahili  
   (iii) English  
   (iv) Others (Specify)…………………………………………….

8. How easy do you find the languages used in the publications?  
   (Tick (√) as appropriate)
   
<table>
<thead>
<tr>
<th>Language</th>
<th>Very easy</th>
<th>Easy</th>
<th>Fairly easy</th>
<th>Difficult</th>
<th>Very difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kikuyu</td>
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<tr>
<td>Kiswahili</td>
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<tr>
<td>English</td>
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<td></td>
</tr>
<tr>
<td>Others (Specify)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
9. Which of the following methods do you use to obtain agricultural literature? (Tick (√) as appropriate).
   (i) Buying
   (ii) Borrowing from library
   (iii) Borrowing from District Information and Documentation Centre
   (iv) Borrowing from friends
   (v) Supplied by agricultural, veterinary and livestock development officers
   (vi) Others (Specify) .................................................................

10. Of the languages listed in question 7 above, name the one you would prefer agricultural literature presented in..................

11. Is there a bookshop in your neighbourhood?
    (Tick (✓) as appropriate)
    (i) Yes
    (ii) No

12. If the answer to question 11 above is yes, how far is the bookshop from your farm?
    (i) Less than 2 kilometres
    (ii) 2 to 4 kilometres
    (iii) More than 4 kilometres

13. Does the bookshop stock information materials on agriculture and animal husbandry? (Tick (✓) as appropriate)
    (i) Yes
    (ii) No

14. Is there a newspaper seller in your neighbourhood?
    (Tick (✓) as appropriate).
    (i) Yes
    (ii) No
15. If the answer to question 14 above is yes, how far is the nearest newspaper seller from your farm? (Tick (√) as appropriate).

(i) Less than 2 kilometres ☐
(ii) 2 to 4 kilometres ☐
(iii) More than 4 kilometres ☐

16. Is there a library or DIDC in your neighbourhood? (Tick(√) as appropriate)

(i) Yes ☐
(ii) No ☐

17. If the answer to question 16 above is yes, how far is the nearest library or DIDC from your farm? (Tick(√) as appropriate).

(i) Less than 2 kilometres ☐
(ii) 2 to 4 kilometres ☐
(iii) More than 4 kilometres ☐

18. Does the library or DIDC stock information materials on agriculture and animal husbandry? (Tick(√) as appropriate).

(i) Yes ☐
(ii) No ☐

19. How easy is it for you to obtain written materials? (Tick(√) as appropriate).

(i) Very easy ☐
(ii) Easy ☐
(iii) Fairly easy ☐
(iv) Difficult ☐
(v) Very difficult ☐

20. Give reasons for your answer to question 19 above.

......................................................................................................
......................................................................................................
......................................................................................................
21. If buying is one method of obtaining written materials, how expensive do you find the materials? (Tick (√) as appropriate).
   (i) Cheap/affordable
   (ii) Not expensive
   (iii) Fairly expensive
   (iv) Expensive
   (v) Very expensive

SECTION D: INFORMATION ON AGRICULTURAL FERTILIZERS

22. Do you use fertilizers for growing crops? (Tick (√) as appropriate)
   (i) Yes
   (ii) No

23. If the answer to question 22 above is yes, indicate below the crops you grow using fertilizers. (Tick (√) as appropriate)
   (i) Maize
   (ii) Beans
   (iii) French beans (Miciri)
   (iv) Pigeon peas (Njugu)
   (v) Sorghum (Muhia)
   (vi) Irish potatoes (Waru)
   (vii) Sweet potatoes (Ngwaci)
   (viii) Tomatoes
   (ix) Bananas
   (x) Watermelons
   (xi) Cabbages
   (xii) Pumpkins
   (xiii) Cassava
   (xiv) Sukuma wiki
   (xv) Coffee
   (xvi) Tea
(xvii) Macadamia
(xviii) Avocados
(xix) Lemons
(xx) Oranges
(xxi) Passion fruits
(xxii) Mangoes
(xxiii) Pawpaws
(xxiv) Others (Specify)…………………………………………

24. If the answer to question 22 above is no, give reasons for not using fertilizer. (Tick (√ ) as appropriate)
   (i) Fertilizers are expensive
   (ii) Fertilizers are difficult to obtain
   (iii) Fertilizers are not good for farming
   (iv) I do not understand their use
   (v) Fertilizers harden the soil
   (vi) Fertilizers are harmful to human health
   (vii) Others (Specify)………………………………………………..

25. Are there instructions on fertilizer packages on the amount of fertilizer to use and when to apply it? (Tick (√ ) as appropriate).
   (i) Yes
   (ii) No

26. If the answer to question 25 is yes, in what languages are the instructions written? (Tick (√ ) as appropriate)
   (i) Kikuyu
   (ii) Kiswahili
   (iii) English
   (iv) Others (specify)………………………………………………..
27. How easy do you find the instructions? (Tick (√ ) as appropriate)
   (i) Very easy
   (ii) Easy
   (iii) Fairly easy
   (iv) Difficult
   (v) Very difficult

28. Give reasons for your answer to question 27 above.
   (Tick(√ ) as appropriate).
   (i) The language used is very easy
   (ii) The language used is easy
   (iii) The language used is fairly easy
   (iv) The language used is difficult
   (v) The language used is very difficult

29. Of the languages listed in question 26 above, in which one would you prefer instructions written? (Tick (√ ) as appropriate)
   (i) Kikuyu
   (ii) Kiswahili
   (iii) English
   (iv) Others (Specify)………………………………………

SECTION E: INFORMATION ON CROP SPRAYS

30. Do you apply sprays on your crops? (Tick (√ ) as appropriate)
   (i) Yes
   (ii) No

31 If the answer to question 30 above is no, what are your reasons for not using crop sprays? (Tick (√ ) as appropriate).
   (i) Sprays are expensive to buy
   (ii) Sprays are difficult to obtain
   (iii) I do not understand their use
   (iv) Sprays are useless
(v) Sprays are harmful to crops
(vi) Sprays are harmful to human health
(vii) Others (Specify)…………………………………………

32. If the answer to question 30 above is yes, from where do you find instructions on the use of sprays? (Tick (√ ) as appropriate).
   (i) Spray container labels
   (ii) Spray accompanying leaflets
   (iii) Others (Specify)…………………………………….

33. In what languages are the instructions written? (Tick (√ ) as appropriate)
   (i) Kikuyu
   (ii) Kiswahili
   (iii) English
   (iv) Others (Specify)…………………………………….

34. How easy do you find the instructions? (Tick(√ ) as appropriate)
   (i) Very easy
   (ii) Easy
   (iii) Fairly easy
   (iv) Difficult
   (v) Very difficult

35. Give reasons for your answer to question 34 above
   (Tick (√ )as appropriate)
   (i) The language used is very easy
   (ii) The language used is easy
   (iii) The language used is fairly easy
   (iv) The language used is difficult
   (v) The language used is very difficult.
   (vi) Others (Specify)…………………………………….
36. What precautions do you take to avoid being harmed when using crop sprays? (Tick (√ ) as appropriate)
   (i) Use of protective overcoats
   (ii) Use of hand gloves
   (iii) Use of gum boots
   (iv) Use of face masks
   (v) I take no precautions
   (vi) Others (Specify)…………………………………………………

SECTION F: INFORMATION ON ANIMAL FEEDS

37. If you rear livestock as asked in question 2, do you use processed animal feeds to feed the animals? (Tick(√ ) as appropriate).
   (i) Yes
   (ii) No

38. If the answer to question 37 above is no, what are the reasons for not using processed animal feeds? (Tick (√ ) as appropriate)
   (i) Not aware of such feeds
   (ii) Aware but cannot afford to buy the feeds
   (iii) Such feeds are not useful
   (iv) Others (Specify)…………………………………………………

39. If the answer to question 37 is yes, how do you get to know the appropriate feeds to use? (Tick (√ ) as appropriate)
   (i) From neighbours, relatives or friends
   (ii) From livestock development officers
   (iii) From written publications
   (iv) From animal feed sellers
   (v) From Chief’s barazas
   (vi) From radio
   (vii) From television
   (viii) Others (Specify)…………………………………………………
40. How easy to obtain are instructions on the quantity of feed and feeding times? (Tick(√ ) as appropriate).
   (i) Very easy
   (ii) Easy
   (iii) Fairly easy
   (iv) Difficult
   (v) Very difficult

41. How easy are instructions on quantity of feed and feeding times? (Tick (√ ) as appropriate)
   (i) Very easy
   (ii) Easy
   (iii) Fairly easy
   (iv) Difficult
   (v) Very difficult

42. Give reasons for your answer to question 41 above (Tick(√ ) as appropriate).
   (i) Language used is very easy
   (ii) Language used is easy
   (iii) Language used is fairly easy
   (iv) Language used is difficult
   (v) Language used is very difficult

43. In what languages are the instructions written? (Tick(√ ) as appropriate)
   (i) Kikuyu
   (ii) Kiswahili
   (iii) English
   (iv) Others (Specify)……………………………………
44. In what one language would you prefer the instructions written? (Tick (√ )as appropriate)
   (i) Kikuyu  
   (ii) Kiswahili  
   (iii) English  
   (iv) Others (Specify)………………………………….

SECTION G : INFORMATION ON ANIMAL SPRAYS
45. Do you use animal sprays on your livestock? (Tick (√ ) as appropriate)
   (i) Yes  
   (ii) No  

46. If the answer to question 45 above is no, give your reasons for not using animal sprays. (Tick (√ ) as appropriate).
   (i) I do not know the value of animal sprays  
   (ii) Animal sprays are not useful  
   (iii) Animal sprays are expensive  
   (iv) Animal sprays are harmful to livestock  
   (v) Animal sprays are harmful to human beings  
   (vi) Others (Specify)………………………………….

47. If the answer to question 45 is yes, are instructions on the use of animal sprays easy to obtain? (Tick (√ ) as appropriate).
   (i) Very easy  
   (ii) Easy  
   (iii) Fairly easy  
   (iv) Difficult  
   (v) Very difficult  

48. Are instructions on the use of animal sprays easy to follow? (Tick (√ ) as appropriate).
   (i) Very easy  
   (ii) Easy
SECTION H: INFORMATION ON LIVESTOCK TREATMENT

49. If you keep livestock as asked in question 2, do they ever get sick? (Tick (√) as appropriate)
   (i) Yes
   (ii) No

50. If your answer to question 49 is yes, which of the following actions do you take? (Tick (√) as appropriate)
   (i) Call the local veterinary officer
   (ii) Read veterinary literature to identify the disease the animal is suffering from
   (iii) Treat the animal myself
   (iv) Others (Specify).....................................................

51. If you treat the animal yourself, which of the following symptoms help you to conclude the disease the animal is suffering from?
   (i) Coughing
   (ii) Watering eyes
   (iii) Mucous from the nose
   (iv) Dull skin
   (v) Constipation
   (vi) Limping
   (vii) Others (Specify).....................................................

52. How do you determine the type of treatment to give the animal? (Tick (√) as appropriate).
   (i) From past experience
   (ii) Reading veterinary literature
(iii) Advice from neighbouring farmers  
(iv) Advice from local veterinary officer  
(v) Others (Specify)  

53. If reading is one of the methods of determining appropriate treatment, how available is written literature? (Tick (√) as appropriate).

(i) Very easily available  
(ii) Easily available  
(iii) Fairly easily available  
(iv) Difficult to obtain  
(v) Very difficult to obtain  

54. In what languages are the publications written? (Tick (√) as appropriate).

(i) Kikuyu  
(ii) Kiswahili  
(iii) English  
(iv) Others (Specify)  

55. How easy do you find the instructions in the publications? (Tick (√) as appropriate).

<table>
<thead>
<tr>
<th>Very easy</th>
<th>Easy</th>
<th>Fairly Easy</th>
<th>Difficult</th>
<th>Very Difficult</th>
</tr>
</thead>
</table>
(i) Kikuyu |      |             |           |                |                |
(ii) Kiswahili |      |             |           |                |                |
(iii) English |      |             |           |                |                |
(iv) Others |      |             |           |                |                |

(Specify)  

56. Of the languages listed in question 54, name the one you would prefer veterinary literature presented in (Tick (√) as appropriate).

(i) Kikuyu  
(ii) Kiswahili
SECTION I: ADVICE FROM AGRICULTURAL, VETERINARY AND LIVESTOCK DEVELOPMENT OFFICERS

57. Do you receive advice on farming from local agricultural, veterinary and livestock development officers? (Tick (✓) as appropriate).
   (i) Yes
   (ii) No

58. If the answer to question 57 above is yes, when do you receive the advice? (Tick (✓) as appropriate).
   (i) During field days
   (ii) During the officers’ visits to farms
   (iii) During chief’s barazas
   (iv) When I call the officers to my farm
   (v) During local agricultural shows
   (vi) Others (Specify).............................................................

59. How often do you receive advice from agricultural, veterinary and livestock development officers? (Tick (✓) as appropriate).
   (i) Once a month
   (ii) Once in three months
   (iii) Once in six months
   (iv) Once a year
   (v) Others (Specify).............................................................

60. How useful do you find the advice from agricultural, veterinary and livestock development officers? (Tick (✓) as appropriate).
   (i) Very useful
   (ii) Useful
61. If the answer to question 60 above is either “Not useful” or “Useless”, which of the following could be the reason? (Tick (√) as appropriate).

(i) The language they use is very difficult to understand
(ii) The officers do not understand problems of farmers
(iii) The officers do not appear to know their work
(iv) Others (Specify)

62. If the answer to question 57 is “no”, what are the reasons for not receiving advice from the officers? (Tick (√) as appropriate).

(i) The officers are never available to give advice
(ii) The officers’ stations are far away from my farm
(iii) It is expensive to receive advice from the officers
(iv) Others (Specify)

63. If you have any suggestions in regard to the role Libraries and District Information and Documentation Centres can play in providing written materials on agriculture and animal husbandry, please write them in the space provided below.

………………………………………………………………………
………………………………………………………………………
………………………………………………………………………

Thank you.
Dear Sir/Madam,

RE: QUESTIONNAIRE TO ESTABLISH HOW “ACCESSIBILITY AND UTILIZATION OF WRITTEN PUBLICATIONS CAN ENHANCE AGRICULTURAL PRODUCTIVITY IN KANDARA, KIGUMO AND MURANG’A SOUTH DISTRICTS OF MURANG’A COUNTY, KENYA

I am a lecturer in the Department of Library and Information Sciences at Kenyatta University and I am currently engaged in a research project on the above topic. To this end, I have formulated a questionnaire to enable me gather relevant information on ways the farming community in the above districts obtain relevant information for their agricultural activities.

Being a government officer in the Agricultural, Veterinary or Livestock Development Sector in your District, you have been selected as one of the respondents to the attached questionnaire. I consider your responses to the questions invaluable to the success of this research project whose findings and eventual recommendations are expected to be of benefit, especially to the farming community in the districts under study, and Kenya in general.

The questionnaire is in six sections covering: General information; Departmental activities; Channels and forms of communication; Availability and accessibility of written materials; Language of agricultural, veterinary and animal husbandry literature; and D.I.D.Cs and other resource centres.

I am therefore kindly requesting you to complete the questionnaire as fully and truthfully as possible. Please leave out those questions that do not touch on your professional area.

I would like to assure you that all the information you provide will be treated with utmost confidentiality and will be used for research purposes only.

Thanking you for your co-operation.

Yours faithfully,

JOSHUA R. NJUGUNA
APPENDIX D: QUESTIONNAIRE FOR DISTRICT AGRICULTURAL, VETERINARY AND LIVESTOCK DEVELOPMENT OFFICERS

SECTION A: GENERAL INFORMATION

1. Name and address of your department……………………………………

………………………………………………………………………………

………………………………………………………………………………

2. Your designation ……………………………………………………………

3. Your highest professional qualifications? (Tick (√ ) as appropriate).

   (i) Degree in Agriculture ☐
   (ii) Degree in Veterinary Medicine ☐
   (iii) Degree in Animal Husbandry ☐
   (iv) Diploma in Agriculture ☐
   (v) Diploma in Veterinary Medicine ☐
   (vi) Diploma in Animal Husbandry ☐
   (vii) Other (Specify)……………………………………………………

4. How long is your post-qualification practical experience?
   (Tick (√ ) as appropriate)

   (i) Less than 1 year ☐
   (ii) 1 – 2 years ☐
   (iii) 2 – 4 years ☐
   (iv) 4 – 6 years ☐
   (v) 6 – 8 years ☐
   (vi) 8 – 10 years ☐
   (vii) Over 10 years ☐

5.
5. How long have you been in your present station? (Tick (√) as appropriate).
   (i) Less than 1 year
   (ii) 1 – 2 years
   (iii) 2 – 4 years
   (iv) 4 – 6 years
   (v) 6 – 8 years
   (vi) 8 – 10 years
   (vii) Over 10 years

SECTION B: DEPARTMENTAL ACTIVITIES
6. What is the role of your department in the District? (Tick (√) as appropriate).
   (i) To help farmers be self-sufficient in food production
   (ii) To help farmers increase their cash crop output
   (iii) To help farmers improve quality of their livestock
   (iv) To help farmers increase milk production
   (v) To help farmers increase egg production
   (vi) Others (Specify) ..........................................................

7. In trying to assist your department play its role effectively, which of the following activities do you undertake? (Tick (√) as appropriate).
   (i) Advising farmers on how to increase production
   (ii) Holding field days for farmers
   (iii) Undertaking pilot agricultural projects
   (iv) Others (Specify) ..........................................................

SECTION C: CHANNELS & FORMS OF COMMUNICATION
8. Which of the following methods do you use to communicate information to farmers? (Tick (√) as appropriate)
(i) Barazas
(ii) Churches
(iii) Demonstration plots
(iv) Written publications
(v) Field days
(vi) Taking them to successful farmers’ farms
(vii) Others (Specify).................................

9. If written publications are used, which of the following media do you use? (Tick(✓) as appropriate).
(i) Books
(ii) Periodicals (Magazines and journals)
(iii) Pamphlets
(iv) Leaflets
(v) Brochures
(vi) Others (Specify).................................

10. Of the media you have ticked in question 9 indicate, in the order of usefulness to you, using scale 1-5, where 1 is the most useful and 5 is the least useful.
(i) Books
(ii) Periodicals (Magazines and journals)
(iii) Pamphlets
(iv) Leaflets
(v) Brochures
(vi) Others (Specify).................................

11. Why do you consider the medium you have marked 1 as the most useful? (Tick(✓) as appropriate).
(i) It contains useful information
(ii) The information contained is easily communicated to farmers.
(iii) Others (Specify).................................

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12. Why do you consider the medium you have marked 5 in question 10 the least useful? (Tick (√) as appropriate).
   (i) It does not contain useful information
   (ii) Information contained is difficult to communicate to farmers.
   (iii) Others (Specify) ………………………………………………………

13. From your experience, do farmers make use of written sources of information? (Tick (√) as appropriate).
   (i) Yes
   (ii) No

SECTION D: AVAILABILITY AND ACCESSIBILITY OF WRITTEN MATERIALS

14. Where do you obtain publications for yourself? (Tick (√) as appropriate)
   (i) Ministry of Agriculture
   (ii) Ministry of Livestock Development
   (iii) Other Government Ministries and Departments
   (iv) Bookshops
   (v) District Information and Documentation Centre
   (vi) Others (Specify) ………………………………………………………

15. How easy is it for you to obtain relevant publications? (Tick (√) as appropriate)
   (i) Very easy
   (ii) Easy
   (iii) Fairly easy
   (iv) Difficult
   (v) Very difficult
16. What are the reasons for your answer to question 15 above? (Tick(✓) as appropriate).
   (i) Relevant publications are provided free
   (ii) Relevant publications are affordable
   (iii) Relevant publications are available in libraries and DIDC
   (iv) Others (Specify)……………………………………

17. In your opinion, how easy is it for farmers to access and use relevant publications? (Tick(✓) as appropriate).
   (i) Very easy
   (ii) Easy
   (iii) Fairly easy
   (iv) Difficult
   (v) Very difficult

18. What is the reason for your answer to question 17 above? (Tick(✓) as appropriate).
   (i) Relevant publications are distributed free
   (ii) Relevant publications are affordable
   (iii) Relevant publications are expensive
   (iv) Farmers have to travel long distances to access relevant publications
   (v) Others (Specify)……………………………………

SECTION E: LANGUAGE OF AGRICULTURAL, VETERINARY AND ANIMAL HUSBANDRY LITERATURE

19. In what languages is agricultural, veterinary and animal husbandry literature meant for farmers written? (Tick(✓) as appropriate).
   (i) English
   (ii) Kiswahili
   (iii) Kikuyu
20. How easy do farmers find the agricultural, veterinary and animal husbandry literature they access? (Tick (✓) as appropriate).

(i) Very easy
(ii) Easy
(iii) Fairly easy
(iv) Difficult
(v) Very difficult

21. If the answer to question 20 is either very difficult or difficult, what are the reasons? (Tick (✓) as appropriate).

(i) The level of the vocabulary used is far above the understanding of the average farmer
(ii) The level of the vocabulary is above the ability of the average farmer
(iii) The language used is not easily understood by the average farmer
(iv) Others (Specify)……………………………………

SECTION F: INFORMATION ON DISTRICT INFORMATION AND DOCUMENTATION CENTRES (DIDC) AND OTHER RESOURCE CENTRES

22. Is there a District Information and Documentation Centre (DIDC) in your District? (Tick (✓) as appropriate).

(i) Yes
(ii) No

23. If the answer to question 22 is yes, what is the role of the DIDC in the agricultural, veterinary and animal husbandry sectors? (Tick (✓) as appropriate)

(i) To assist farmers be self-sufficient in food production
(ii) To help farmers boost their cash crop production
(iii) To assist farmers improve quality and productivity of their livestock
(iv) Others (Specify)  

24. How does the DIDC play its role in agricultural, veterinary and livestock development? (Tick (√ ) as appropriate).

(i) It produces publications on agriculture for farmers’ use

(ii) It acquires publications on agriculture, veterinary and animal husbandry for use by farmers.

(iii) It distributes agricultural, veterinary and animal husbandry literature to farmers

(iv) Others (Specify)  

25. What suggestions would you give to help farmers in your district benefit from accessing and using of relevant agricultural, veterinary and livestock development literature? (Tick(√ ) as appropriate).

(i) Relevant agricultural, veterinary and livestock development publications should be produced regularly and distributed to farmers free

(ii) Relevant agricultural, veterinary and livestock development publications should be produced regularly in languages the average farmer understands

(iii) Relevant agricultural, veterinary and livestock development publications should be produced and sold at affordable prices

(iv) Libraries should be established and stocked with relevant agricultural, veterinary and livestock development publications in various parts of the district

(v) Establishment of bookshops in trading centres should be encouraged and facilitated
26. If you have any other suggestions with regard to written information on agriculture, veterinary and livestock development to assist farmers, please write them in the space provided below.

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Thank you.
## APPENDIX F: RESPONDENTS’ DISTRICTS, LOCATIONS, SUB-LOCATIONS AND VILLAGES AS PER 2009 POPULATION AND HOUSING CENSUS

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<th>SUB-LOCATION</th>
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