REPUBLIC OF KENYA

Ministry of Agriculture, Livestock, Fisheries and Cooperatives

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Kenya National Bureau of Statistics

March 2022

Census of Commercial & Institutional Farms and Specialty Crops

KENYA VISION 2030

CENSUS OF COMMERCIAL & INSTITUTIONAL FARMS AND SPECIALTY CROPS

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ISBN: 978-9914-748-01-7.

Published 2022

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Abbreviations and Acronyms

AFA	Agriculture and Food Authority
ASTGS	Agriculture Sector Transformation and Growth Strategy
CAADP	Comprehensive Africa Agriculture Development Programme
CAPI	Computer Assisted Personal Interviews
CCIFSC	Census of Commercial & Institutional Farms and Specialty Crops
COVID-19	Coronavirus Disease
GDP	Gross Domestic Product
GoK	Government of Kenya
ISIC	International Standard of Industrial Classification
KCSAP	Kenya Climate Smart Agriculture Project
KNBS	Kenya National Bureau of Statistics
KPHC	Kenya Population and Housing Census
MOALF&C	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
MTPs	Medium Term Plans
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Statistics

Acknowledgement

This report has been prepared following the collaborative efforts of the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALF&C) and the Kenya National Bureau of Statistics (KNBS). The success of Census of Commercial & Institutional Farms and Specialty Crops (CCIFSC), 2020 was accomplished through concerted efforts of various institutions and personnel, with KNBS taking the lead role. Key to this success is the Government of Kenya (GoK) which availed funds to conduct the census and World Bank for providing technical and financial support through the Kenya Climate Smart Project (KCSAP) during the agriculture data analysis and report writing phase. Further, gratitude is extended to all other Government Officers, Research Assistants and other personnel who devoted themselves to this exercise to see the successful implementation of the CCIFSC.

I'm grateful to Mr. Robert K. Nderitu, the Director of Production Statistics, for the successful overall co-ordination of the project. I would like to thank the following other members of the Project management team for their commendable work including Patrick Mwaniki, Isaac Ndegwa, John G. Mburu, Rogers Mumo, Alphonse Orango, Sylvester M. Maingi, Benson N. Karugu and John Bore from the Bureau. Similarly, I appreciate the team from MOALF&C which played a key role including Tom Dienya, Jane Kioko, Benjamin Kibor, Juvinalis Orenge and Stephen Ndegwa, among others.

Last but not least, all respondents deserve special appreciation for their willingness to participate in this exercise by providing the requisite information.

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Foreword

The Agriculture sector is a major contributor to national food security and economic development in the country. The performance of the sector therefore directly impacts on Gross Domestic Product (GDP) performance and general food and nutrition security of Kenyans. The Government has developed various plans such as the Vision 2030, Medium Term Plans, Big 4 agenda, Agriculture Sector Transformation and Growth Strategy (ASTGS) and is signatory to the Sustainable Development Goals (SDGs) and National Food and Nutrition Security policy framework 2017-2022 which require timely monitoring and evaluation.

The 2010 Global strategy for the improvement of agriculture and rural statistics recommended the development of a Strategic Plan for Agriculture and Rural Statistics (SPARS) to guide in the improvement of the sector statistics. Consequently, a SPARS was developed covering the period (2015-2022) in line with the recommendations of the 2010 Global Strategy. One of the key recommendations in the strategy is the development of master sampling frames for agriculture in a bid to improve the quality of agriculture statistics. As part of the development of the master sampling frame, it was deemed necessary to conduct a Census of Commercial & Institutional Farms and Specialty Crops. Further, the census served to close the statistical gap left when undertaking the 2019 Kenya Population and Housing Census (KPHC). The population census had a module on agriculture that targeted only conventional farming households.

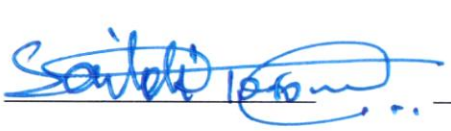
The Commercial Farms, Institutional Farms and Specialty Crops (CCIFSC) was conducted by the Bureau in conjunction with the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MOALF&C) in 2020. The overall objective of the CCIFSC was to collect data to be used in improving the quantity and quality of Agriculture statistics in line with the Global Strategy for the improvement of Agriculture and Rural Statistics. Specifically, the census was aimed at providing data that would be useful in addressing the data gaps of the agriculture sector such as number and area of all commercial farms, institutional and specialty crops in the country and by counties; Types of agricultural and livestock production by county; and Inputs and output quantities for individual farms by county.

The scope of CCIFSC was all large establishments (Household & Institutional) engaged in crop/livestock farming, aquaculture, apiculture and agroforestry. Special focus was also given to specialty crops due to their huge turnover. The CCIFSC was conducted countrywide over a period of 60 days. However, the exercise was interrupted by the Covid-19 pandemic. This was due to cessation of movement to contain the

spread of coronavirus. Covid-19 also affected the availability of respondents as many employees were required to work from home during the containment period.

The main focus of the report is on production, inputs (both material and service) and labour. The census also covered investment expenditure in the agriculture sector and assets.

It is hoped that the results of the CCIFSC will complement data collected during the Kenya Housing and Population Census of 2019. The data will also provide the establishment component of the agriculture master sampling frame. Other uses include addressing data gaps, updating the national accounts statistics, and responding to data user requests.



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Executive Summary

The 2020 Census of Commercial & Institutional Farms and Specialty Crops (CCIFSC) was aimed at collecting data for use in improving the quantity and quality of agriculture statistics in line with the 2010 Global Strategy for the improvement of Agriculture and Rural Statistics. The census mainly targeted large scale commercial farms, institutional, and specialty crops in the agricultural sector. Specifically, the census targeted all agricultural households and registered enterprises/companies/firms that engaged in agricultural production and have an area of at least 25 acres (10 ha) as well as specialty crops whose threshold was below 25 acres. The reference period for the data collected was the 2019 calendar year.

Distribution of Agricultural Holdings

According to the CCFISC, the proportion of agricultural holdings with size between 25-125 acres was 75.8 per cent, while 9.6 per cent of the holdings reported sizes within the 126 to 750 acres range. Agricultural holdings of sizes less than 25 acres accounted for 12.8 per cent of the total. The share of agricultural holdings with size 750 acres and above was 7.2 per cent of the total.

The CCFISC further established the distribution of the total area of holdings by county. This established that Uasin Gishu, Kakamega and Trans Nzoia have the highest aggregate area of holdings, respectively regardless of the type while Isiolo had the least. The results also indicate that over 82 per cent of the production system is rain-fed. This explains the vulnerability experienced by farmers. A total of 14 per cent of the farms surveyed used pure irrigation while a paltry 3.7 per cent depended on both systems.

The census categorized farms based on the type of establishment, i.e. whether it was owned by a household, or by a company or enterprise and whether the farm was owned by an institution. On this basis, 85 per cent of the agricultural holdings were owned by households. Agricultural holdings managed by companies or enterprises accounted for 12 per cent of the total while 3 per cent were owned by institutions.

Crop Production

The results indicated that 41.3 per cent of the agricultural holdings relied on rainfall for crop production with maize, wheat, sugarcane tea and dry beans topping the list in that order. Of the agricultural holdings irrigating crops, tomatoes, maize, mangoes, bananas and watermelons were the leading crops in that order at 13.3, 12.4, 11.0 and 10.3 per cent, respectively. For, agricultural holdings undertaking partial irrigation. coffee, maize and Irish potatoes were the main crops with proportions of 14.8, 12.3 and 6.6 per cent, respectively.

Food crops

Irish potatoes and pearl millet had the highest levels of post-harvest losses are 5.6 per cent and 4.2 per cent of total production respectively. Paddy rice and dry beans recorded losses at 3.4 and 2.3 per cent of total production respectively. Sorghum post-harvest losses were at 2.1 per cent while

maize was 1.2 per cent of total production, respectively. Post-harvest losses for "Other crops" was less than 1 percent of total production.

Livestock

Dairy farming: under Zero grazing system was popular in areas with high land pressure e.g. Kiambu, Nakuru, Uasin Gishu, Kakamega and Nyeri counties. On the other hand, animals are left to graze in the open field and are enclosed in a cowshed at night. This was evidenced in Uasin Gishu, Bomet and Nakuru Counties. In the ranching production system, the animals are left to graze in the open fields common in areas with large chunks of grazing fields such as in Kajiado, Machakos and Uasin Gishu Counties. The friesian and ayrshire were found to be the prefered breeds across the country, with Kiambu, Uasin Gishu and Nakuru counties being host to majority of the Friesian herds.

Beef Cattle: The Boran breed is popular among the ranchers in Kenya whereas the zebus are popular among the pastoralists and agro-pastoralists. Zebu and Boran are indigenous Kenyan breeds hence their popularity. Charolais, Galloway and Hereford are exotic beef breeds which require intensive production systems which could explain their low populations (agricultural holdings).

Meat goat and sheep: Goat production is undertyaken under all systems. However, ranching is the most common followed by rotational; and zero grazing. For meat sheep, dorper sheep was the most popular amongst farmers, followed by the Red Maasai breed. The romney marsh was reported in Nakuru County by two holdings. Samburu County had the highest number of meat sheep followed by Nakuru and Kiambu counties.

Wool sheep: Wool sheep production is practiced in cool regions of the country due to the climatic conditions that favour their rearing. The most common breeds of wool sheep are Merino, Corriedale and Hampshire down. Merino sheep was the most popular breed in the Country. West Pokot, Bomet and Meru counties reported the highest number of Merino breed of wool sheep. Corriedale wool sheep was found in Meru and Nakuru while hampshire down was in Nakuru, Nyeri and Nyandarua Counties.

Aquaculture: Commercial aquaculture holdings are dominantly at 91 per cent established in warm water while sparingly 9 per cent in the cold-water areas. In both cases, traditional earthen ponds was dominant with 75 per cent and 52.4 per cent of total aquaculture holdings in warm and cold areas, respectively. Overall, 73.0, 11.4, 6.5 and 3.3 per cent of holdings practiced fish rearing in earthen ponds, lined pond and cage system respectively. Overall, 56.9 per cent of the commercial aquaculture holdings practiced semi-intensive culture, with extensive and intensive system taking proportion of 31.7 and 11.4 per cent, respectively.

Aquaculture

Commercial aquaculture holdings are mostly established in warm water (91 per cent) while sparingly in the cold-water areas (9 per cent). In both cases, traditional earthen ponds were dominant with 73 per cent of total aquaculture holdings in warm and cold areas. Overall, 56.9 per cent of the commercial aquaculture holdings practiced semi-intensive culture, with extensive and intensive system taking proportion of 31.7 per cent and 11.4 per cent, respectively.

Chapter 1

1.1 Introduction

The agriculture sector is the backbone of Kenya's economy. It contributes nearly a quarter of the Gross Domestic Product (GDP). The sector is the source of livelihood for most of the rural population and contributes highly to the agro-processing sector. It is therefore inevitably the key to food security, wellbeing and reduction of poverty. Further, the sector is not only key to economic growth Kenya but also the determinant of equity in development, besides being fundamental to reducing poverty and hunger. It is therefore, of importance to have agriculture sector statistics that will guide the necessary monitoring, evaluation and policy interventions.

The quality and quantity of agricultural statistics in Kenya has deteriorated with time. This has been due to failure to undertake the requisite surveys and censuses. To address this challenge, a module was included in the 2019 Kenya Population and Housing Census (KPHC) which captured the basic agricultural statistics from all the conventional farming households in Kenya. However, the KPHC did not cover agricultural holdings within the establishments and institutions. To address this data gap, the Census of Commercial & Institutional Farms and Specialty Crops (CCIFSC) was conducted in the year 2020. Data collected in the CCIFSC referred to agricultural activities undertaken in the year 2019. CCIFSC is a reincarnation and further improvement of the former annual census of large farms which was discontinued in the early 1990's due to funding challenges. The large farms census used to be conducted in the former white highlands.

The information collected will inform policy formulation, monitoring and evaluation; compilation of reliable national accounts; monitor sector performance; and contribute to the decision-making process. Specifically, the statistics will inform the performance of the Agriculture Sector Transformation and Growth Strategy (ASTGS), Big Four Agenda, Medium Term Plans (MTPs), Sustainable Development Goals (SDGs) and Comprehensive Africa Agriculture Development Programme (CAADP).

The CCIFSC had the following broad components field crops, livestock and livestock products, apiculture, fishing and aquaculture, agro-forestry and fixed assets. The reference period of the census was year 2019.

1.2 Objectives of the CCIFSC 2020

The overall objective of the CCIFSC was to collect data to be used in improving the quantity and quality of Agriculture statistics in line with the Global Strategy for the improvement of Agriculture and Rural Statistics. Specifically, the census was to provide data that would be useful in informing the data needs of the agriculture sector such as:

- Number and area of all commercial farms, institutional as well as specialty farming in the country and by counties;
- Types of agricultural and livestock production by county; and
- Inputs and output quantities for by county and nationally, among others.

The data was collected under the Authority of the Statistics Act 2006 of the Laws of Kenya which empowers the Director General, Kenya National Bureau of Statistics to conduct censuses and surveys to inform planning and policy formulation.

1.3 Concepts and Definitions

1.3.1 Agricultural Holding

This consists of one or more land parcels, located in one or more separate areas or in one or more territorial or administrative units, provided the parcels are part of the same economic production unit and share the same production means, such as labour, farm buildings, machinery and draught animals.

1.3.2 Establishment

This is the smallest unit that can report the following items;

- Value of sales
- Cost of materials and supplies purchased
- Cost of energy and water utility purchased
- Opening and closing inventories
- Number of employees and their salaries and wages

An establishment can correspond to a unit such as a supermarket, a petrol station, a school, hospital etc. If the firm has more than one establishment, a separate questionnaire should be completed for each establishment. Each questionnaire should cover all the activities of the relevant establishment.

Agricultural Income: includes income in cash and/or in kind obtained from growing crops and raising livestock; it excludes income from a paid agricultural job.

1.3.3 Economic Activities

An economic activity is defined as the type of production in which a unit is engaged. The activity characteristic is the principal variable which determines whether or not a given statistical unit is included in the Agricultural sector. The kind of activity of the statistical unit is determined in terms of International Standards of Industrial Classifications of all economic activities Revision 4 (ISIC rev 4).

1.3.4 Main Activity (Principal activity)

The main activity of a producer unit is the activity whose value added exceeds that of any other activity carried out within the same unit. The main activity of the unit in general can be determined from the goods that the unit produces or the services that it renders to other units or consumers. An activity, undertaken by the unit, that contributes most to the value added of the unit, is called its main activity.

1.3.5 Total number of persons employed

The number of persons employed is defined as the total number of persons who work in or for the statistical unit, whether full-time or part time, including: working proprietors; unpaid family workers; Employees of which should include; persons working outside the unit who belong to it (e.g. sales representatives, delivery personnel, repair and maintenance teams) provided that they receive a regular salary from that unit; salaried managers and salaried directors of incorporated enterprises; persons on short-term leave (sick leave, annual leave or vacation); persons on special paid leave (educational or training leave, maternity or parental leave); persons on strike; part-time workers on the payroll; seasonal workers on the payroll; apprentices on the payroll; Outworkers on the payroll, paid for the work done.

1.3.6 Total number of persons employed excludes

Directors of incorporated enterprises and members of shareholders' committees who are paid solely for their attendance at meetings; labour made available to the unit by other units and charged for (contract workers, paid through contractor, persons carrying out repair and maintenance work in the unit on behalf of other units); persons on indefinite leave; persons on military leave; persons on pension; Outworkers paid by subcontractors (amount paid to sub-contractors in respect of outworkers are treated as cost on Agricultural purchased).

No compensation of employees is payable in respect of unpaid work undertaken voluntarily, including the work done by the non-paid family workers. Payments to working proprietors not in receipt of a regular salary should be excluded.

1.3.7 Expenditure items

This section intends to measure the value of goods and services that are consumed as inputs by a process of production during the accounting period. It does not cover the expenditures on the acquisition of fixed assets.

Wages and salaries including related labour costs (Compensation of employees); is defined as the total remuneration, in cash or in kind, payable by the establishment to an employee in return for work done by the latter during the reference period. It should be recorded on an accrual basis; i.e., it is measured by the value of the remuneration in cash or in kind which an employee becomes entitled to receive from an employer in respect of work done during the relevant period, whether paid in advance, simultaneously or in arrears of the work itself. Compensation of employees does not include any taxes payable by the employer on the wage and salary bill i.e. payroll tax. Compensation of employees has two main components: (a) wages and salaries payable in cash or in kind and (b) social insurance contributions payable by employers.

Interest paid; interest is a form of property income that is receivable by the owners of certain kinds of financial assets, namely: deposits, securities other than shares, loans and other accounts receivable.

Transport of goods (freight by rail, road, sea, air), warehousing and storage; includes expenditure on services procured for passenger or freight transport, by rail, pipeline, road, water or air and associated activities such as terminal and parking facilities, cargo handling, storage etc. Included also is the renting of transport equipment with driver or operator.

Water and electricity includes expenditure on electricity and water consumed by the establishment in their processes of production (including office lighting and other office operation).

1.3.8 Fixed assets on agricultural holding in 2019

Fixed Assets

This refers to the value of additional fixed assets (whether procured new or old), and additions and improvements to existing fixed assets, including those made by the company's own labour force for its own use. This includes installation costs, professional fees, overheads, major repairs and alterations to existing assets if capitalized, own produced tangible goods valued at production costs (include labour cost and cost of materials used during the year, capital value of assets acquired during the year through direct purchase, finance leasing or hire purchase agreement (but exclude finance charges), items bought but leased under operational leasing agreements to other establishments.

If no break-down of fixed assets is available, the total value of fixed assets at the beginning and of the last fiscal year should be recorded.

1.3.9 Land improvements

Land improvements are the result of actions that lead to major improvements in the quantity, quality or productivity of land, or prevent its deterioration, are also treated as fixed capital formation. Activities such as land clearance, land contouring, creation of wells and watering holes which are integral to the land in question are to be treated as resulting in land improvements. The value of natural land before improvement is not included. However, the costs of ownership transfer on land improvements are included.

1.3.10 Residential buildings

These are buildings that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences. Houseboats, barges, mobile homes and caravans used as principal residences of households are also included.

1.3.11 Non-residential buildings

They consist of buildings other than dwellings, including fixtures, facilities and equipment that are integral parts of the structures. For new buildings, costs of site clearance and preparation are included. Examples of non-residential buildings are warehouses and industrial buildings, and commercial buildings and structures other than buildings, including the cost of roads, sewer, etc.

1.3.12 Construction works

These include structures other than buildings, including the cost of the streets, sewer, etc. The costs of site clearance and preparation are also included. Examples are shafts, tunnels and other structures associated with mining mineral and energy reserves, and the construction of sea walls, dykes flood barriers etc. intended to improve the quality and quantity of land adjacent to them.

1.3.13 Transport equipment

They consist of equipment for moving people and objects. This includes transport equipment, such as motor vehicles, trailers and semi-trailers; ships; railway and tramway locomotives and rolling stock; aircraft and spacecraft; and motorcycles, bicycles, etc.

1.3.14 Machinery and other equipment

They consist of machinery and equipment not elsewhere classified. Examples include general purpose machinery; special purpose machinery; office, accounting and computing equipment, electrical machinery and apparatus, radio, television and communication equipment and apparatus; and medical appliances, precision and optical instruments, watches and clocks etc.

1.3.15 IT equipment

These are devices using electronic controls and also the electronic components forming part of these devises. They include computer hardware and telecommunications equipment.

1.3.16 Cost of materials for own-account fixed assets formation or major repair

This item includes the cost of raw materials and other materials purchased or received by the establishment for the production by the unit itself of capital goods for its own use (or for rental or lease) and materials and parts used for own-account major repair on its own buildings, structures, machinery and other fixed assets. Included are materials and the like for the construction of employee-occupied dwellings and other staff facilities and for the major repair of all establishment-owned or rented buildings, except housing accommodation.

Chapter 2

Census Methodology and Census Organization

2.0 Introduction

The 2020 Census of Commercial & Institutional Farms and Specialty Crops (CCIFSC) aimed at collecting data for use in improving the quantity and quality of Agriculture statistics in line with the growing data needs, both nationally and internationally. To fulfil this, the census followed well guided criteria. Specifically, the census targeted all agricultural households and registered enterprises/ companies/ cooperatives/firms that engage in agricultural production and have an area of at least 25 acres (10 ha) as well as specialty crops whose largescale threshold is less than 25 acres. The reference period for the data collected was for the 2019 calendar year. Production therefore related to the long and short rains of the year 2019. However, in the case of irrigated agriculture, respondents provided aggregated information for as many production cycles as had taken place during the reference year. For perennial crops, production data referred to crop that was in the ground for more than one year. This is the case with crops such as sisal, coffee and tea among others.

2.1 Census Frame

The purpose of a census is to enumerate all units with a defined characteristic. However, for this particular census, the goal was to cover the holdings that met the above criteria. As a basis for the census, a list of all agricultural holdings (both households and firms) developed and maintained by the Ministry of Agriculture, Livestock, Fisheries and Cooperatives and the Agencies therein. This was in line with recommendations by Food and Agriculture Organization (2020) which indicate that an ideal frame for census of agriculture should be a list of all agricultural holdings, based on the operational definition of the agricultural holding adopted by the country, identifying each unit without omission or duplication and without including any units other than agricultural holdings. In addition, establishments that were not in the list but were found during enumeration were included.

The list had a total of 3,392 farmers/proprietors and it captured details such as the names and physical location of the operators of the holdings making it possible to track, identify and administer a questionnaire. The census also facilitated updating the list of commercial farms and green-houses by allowing the enumerators to interview other farm owners that met the set criteria but were not part of the frame.

2.2 Census Instruments

The census instruments included a questionnaire and interviewers' manual. The questionnaire was organized into six modules which were as follows:

i. Crops production and inputs
ii. Livestock production and inputs
iii. Aquaculture production and inputs
iv. Agroforestry production and inputs
v. Apiculture production and inputs

An interviewers' manual was developed to ensure uniformity during training of enumerators and during data collection by standardizing concepts and definition.

2.3 Management of the Census

The census was implemented by the KNBS in collaboration with the MoALF&C; Agriculture and Food Authority (AFA) among other stakeholders. The Bureau oversaw the implementation of the census and was responsible for coordination of all aspects of the census including design, data collection, processing and analysis. At the apex were the KNBS Director General and Director Production Statistics who were responsible for policy direction and overseeing of the overall implementation of the census. The KNBS Senior Manager, Agriculture and Livestock and the Head of Statistics Unit, Ministry of Agriculture were responsible for the day-to-day administrative, logistical and technical operations of the census. Below the technical coordinators was a team of coordinators, supervisors and enumerators who played various roles.

2.3.1 Pilot Census

A pilot was undertaken to test various aspects of the census including the data collection instruments, methodology and field logistical arrangements put in place to implement the census. Specifically, the pilot tested the flow of questions in the questionnaire and the clarity of questions. This was essential as it allowed for the finalization of the questionnaire and recasting of questions to make them clearer or where necessary to update the manual to further explain unclear questions. The pilot activity was undertaken in 2016 and it covered 3 counties including Nakuru, Kajiado and Kiambu.

2.3.2 Recruitment and training

The data collection team, interviewers and supervisors, comprised of officers drawn from KNBS establishment and others recruited on a temporary basis. All supervisors were drawn from KNBS staff while all enumerators were recruited externally. A total of 48 supervisors and 144 enumerators were involved in the census.

Two levels of training were undertaken which included training of trainers and training of data collection personnel. This was done prior to the teams embarking on field data collection. The enumerators were exposed to interviewing skills which was followed by detailed explanation of the questions in the questionnaire to enable them collect high quality data.

2.3.3 Field logistics and implementation

Field data collection for the census took place for a period of 60 days. The data collection started in March 2020 but was halted midway due to outbreak of Coronavirus Disease (COVID-19) in the country. The teams resumed data collection in June 2020 and concluded field work in July 2020. There were 48 field teams, each comprising of three interviewers, one supervisor and a driver. The supervisors were responsible for field logistics and allocation of work to the interviewers while the interviewers were responsible for locating the holdings/farm operators and administering the questionnaire. On the ground to assist the teams locate the holdings of interest or that meet the threshold also were County Agriculture Extension staff.

Efforts were made to locate all the holdings/farms in the list and the questionnaire was administered to only those that met the set criteria. The method of data collection was majorly through face-to-face interviews using Computer Assisted Personal Interviews (CAPI). However, there were instances where hard copies of the questionnaires were left with respondents to fill and return to the interviewers.

2.3.4 Data processing

The questionnaire was programmed using ODK while the data collection was majorly done using CAPI. The collected data was transmitted to the KNBS central server and was also backed up in a cloud server and in the interviewers' tablets. Data security was achieved through several methods including data encryption, secure file transfer and passwords.

The collected data was analyzed using STATA and statistical Package for Social Statistics (SPSS), to produce descriptive statistics and cross-tabulations. The analysis employed International Standard of Industrial Classification (ISIC) revision 4.0. A broad categorization of the agricultural activities is as shown below:

- Growing of non-perennial crops (011)
- Growing of perennial crops (012)
- Plant propagation (013)
- Animal production (014)
- Mixed farming (015)
- Support activities to agriculture and post-harvest crop activities (016) and
- Hunting, trapping and related service activities (017)

2.4 Challenges

One of the major challenges experienced during implementation of the census was that a number of farms which were provided to the data collection teams were not covered. Reasons for under-coverage included:

- Failure of farmers to register their holding with the Ministry of Agriculture. However, the interviewers were instructed to enumerate any holding that met the set criteria for the census even if they were not part of the provided list;
- Unavailable/Incorrect physical address and telephone numbers thus making it difficult to locate the farms; and
- Refusal by some operators to respond.

The second challenge was the Covid-19 containment measures which were put in place to curb the spread that led to a temporary stoppage of data collection.

Chapter 3

Crop Farming in open fields

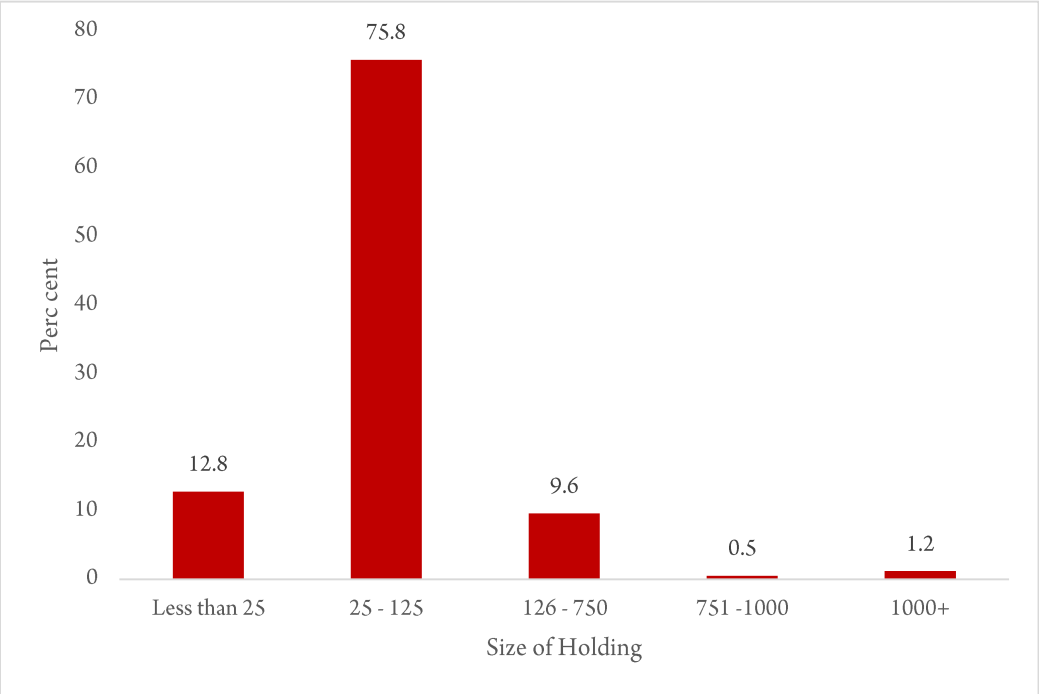
3.1 Area of Agricultural Holding

Table 3.1 and Figure 3.1 show the distribution of agricultural holdings by size. The proportion of the respondents with farms between 25-125 acres was 75.8 per cent, while 9.6 per cent owned farms with 126 to 750 acres. Thirteen per cent of the holdings had sizes less than 25 acres. The share of respondents with farm sizes greater than 750 acres was 1.7 per cent.

Table 3.1: Distribution of agricultural holdings by size, 2019

Area of agriculture holding	Number	Per cent
Total	**2,218**	**100**
Less than 25	285	12.8
25 - 125	1,681	75.8
126 - 750	214	9.6
751 -1000	11	0.5
1000+	27	1.2

Figure 3.1: Proportion of agriculture holdings by size



The census categorized farms based on the type of establishment, i.e. whether it was operated by a household, or a company or enterprise and/or an institution. On this basis, out of the total count of respondents, 85 per cent of the farms were operated by households. Farms managed by company or enterprises represent 12 per cent while 3 per cent are operated by institutions.

Figure 3.2: Percentage distribution of agricultural holdings by type of establishment

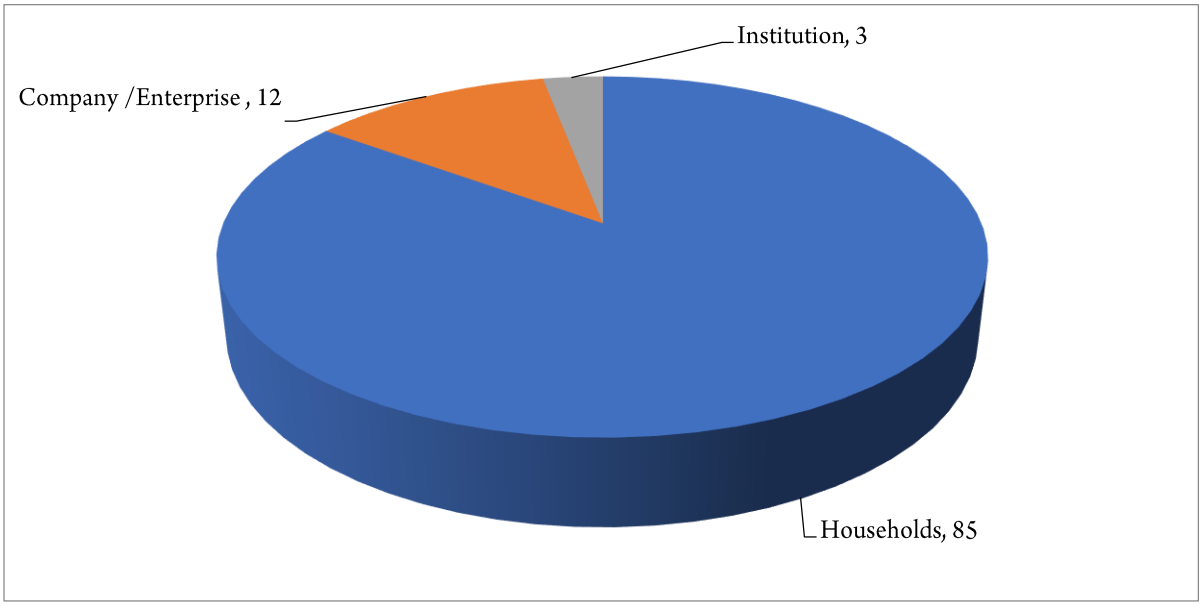


Figure 3.3 shows the distribution of agricultural holdings by county. Uasin Gishu had the highest number of agricultural holdings while Isiolo had the lowest.

Figure 3.3: Distribution of Agricultural Holdings by County

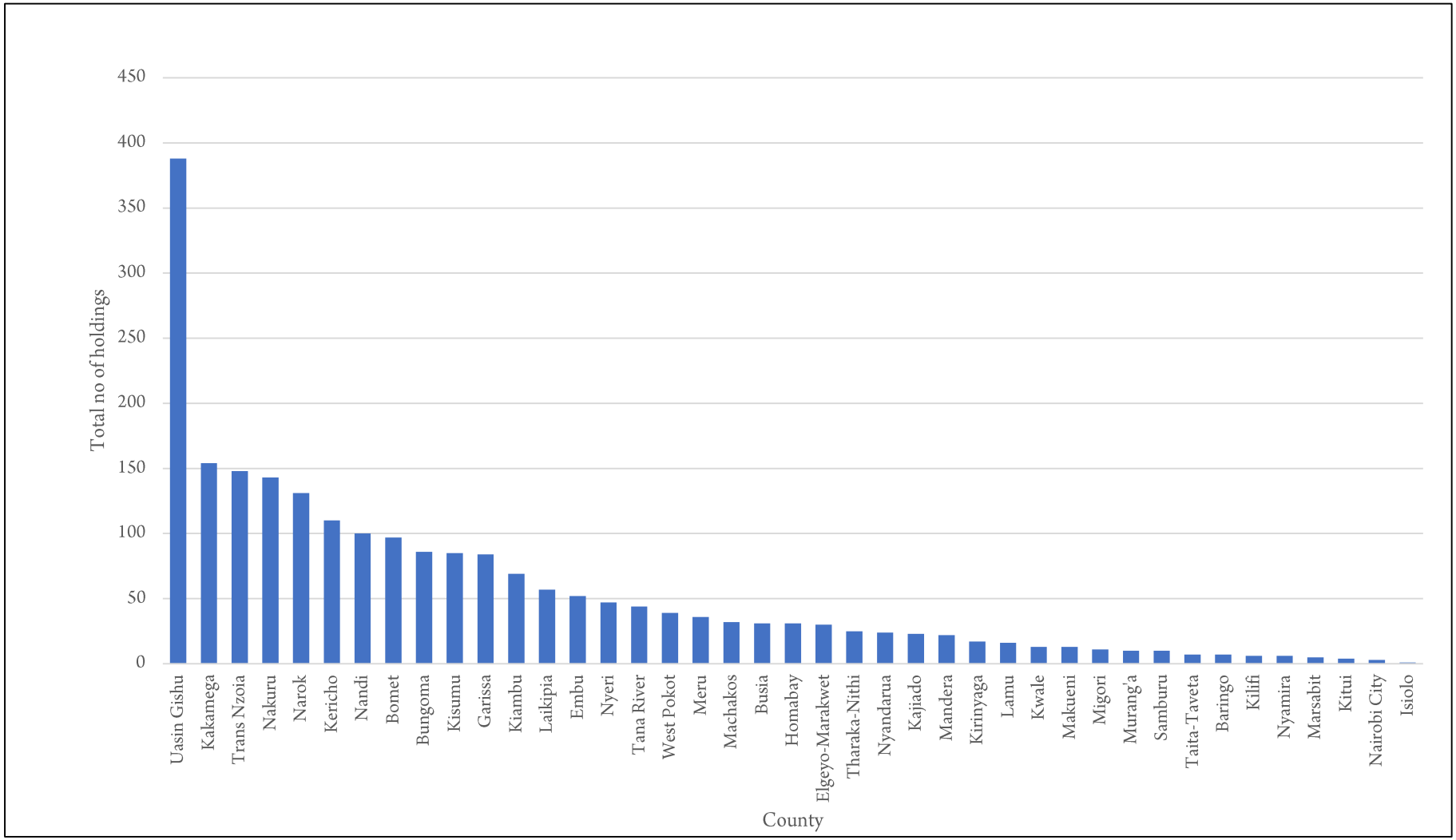


Figure 3.4 shows the distribution of total acreage by type of agricultural holdings. Households had the highest proportion of 46 per cent while the acreage of agricultural holdings operated by institutions accounted for 14 per cent. The share of area under enterprises/company was 40 per cent.

Figure 3.4: Percentage distribution of total Acreage by Tpe of Agricultural Holdings

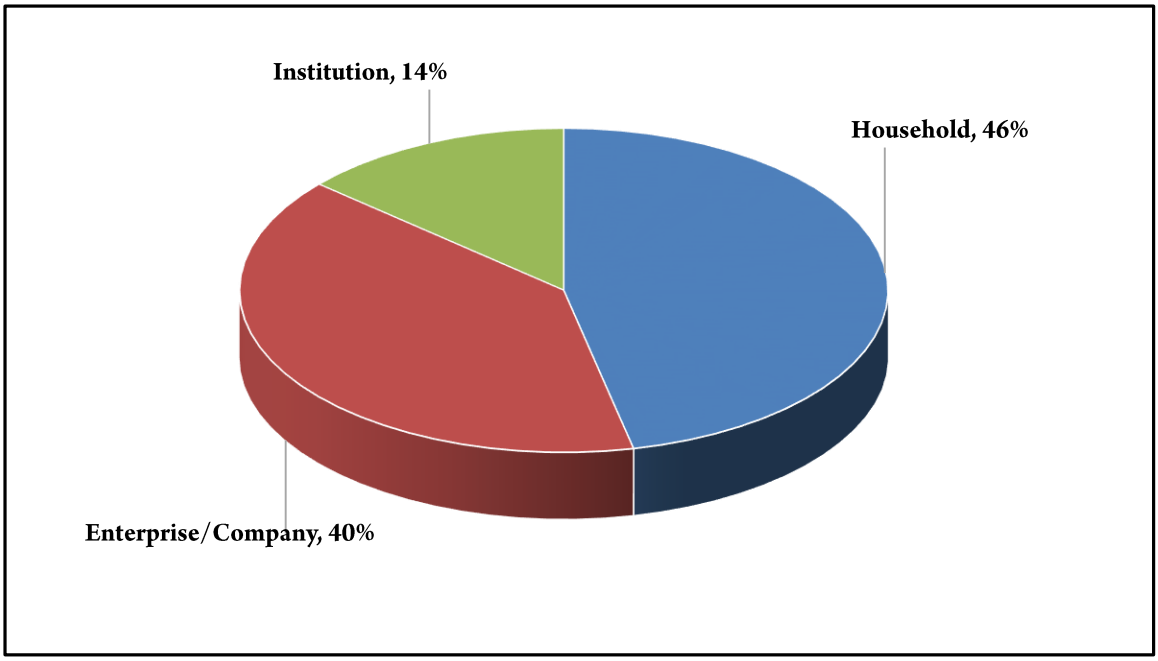


Table 3.2 shows the proportion of total area by type agricultural holdings. Household holdings with an area of between 25 -125 acres accounted for 51.5 per cent of the area under the household sector. Enterprise/company and Institutional holdings with farm sizes greater than 1000 acres accounted for 69.6 and 85.4 per cent, respectively, of the total acreage.

Table 3.2: Proportion of total area by Type of Agricultural holding Per cent

Holding Size	Total Acreage	Type of Agricultural Holding		
		Household	Enterprise/company	Institution
Total (Acres)	**265,422**	**123,557**	**105,688**	**36,177**
Less than 25	0.9	1.7	0.2	0.2
25 - 125	26.7	51.5	5.0	5.1
126 - 750	22.9	30.6	18.4	9.3
751 -1000	3.7	2.2	6.7	0.0
1000+	45.9	14.0	69.6	85.4

Figure 3.5 shows the distribution of total area of agricultural holdings by county. Taita Taveta had the highest total size of 33,155 acres. Most counties had a total acreage of less than 10,000 acres.

Figure 3.5: Distribution of Total Area of Agriculture Holdings by County

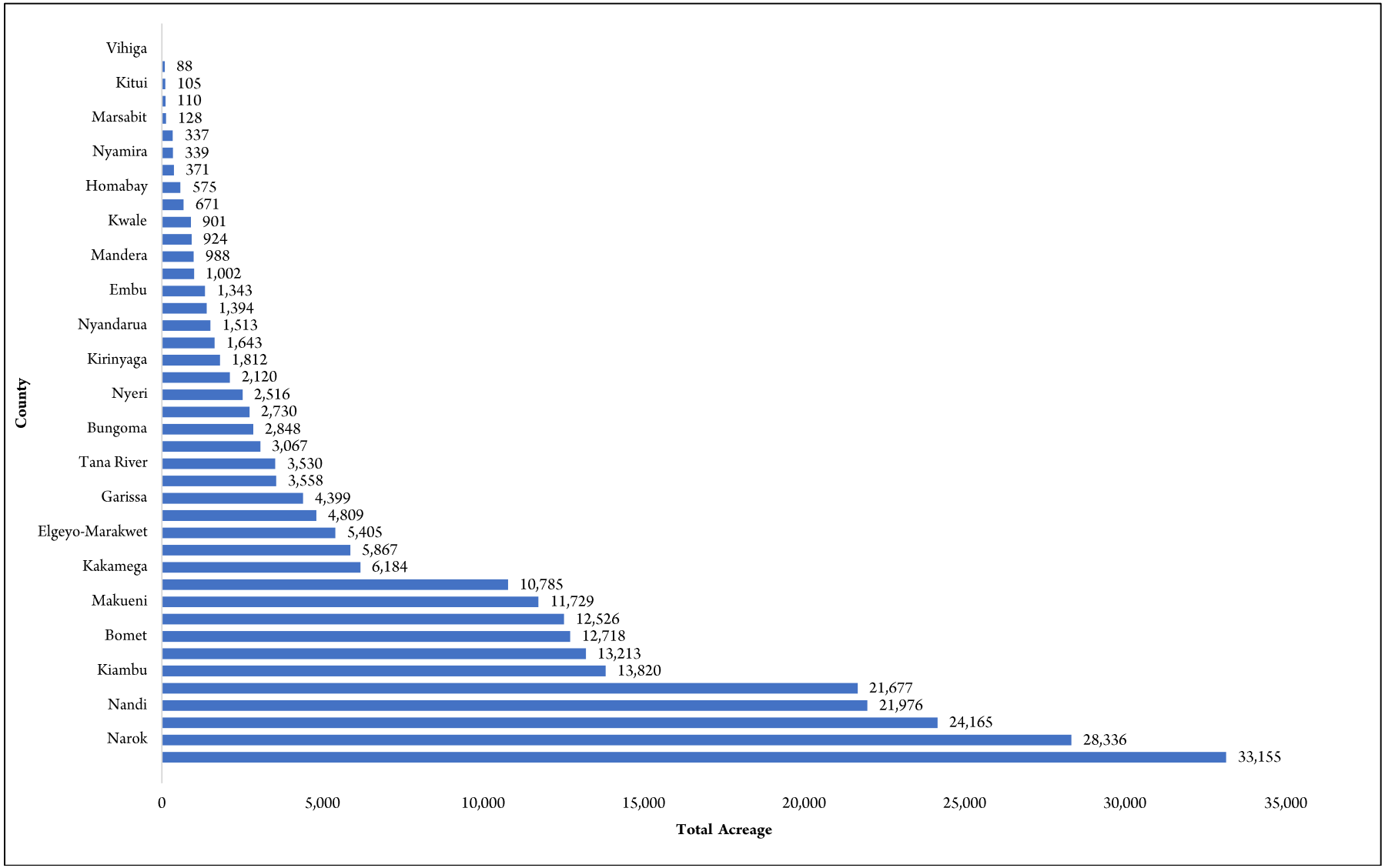


Figure 3.6 shows the proportion of total area of household agricultural holdings by county. Narok county had the highest proportion of the area of household agricultural holdings at 20.5 per cent. Uasin Gishu closely followed with a share of 16.8 per cent. Baringo county had the lowest proportion of the area of household agricultural holdings at 0.1 per cent.

Figure 3.6: Percentage Distribution of total acreage of Household Agricultural Holdings by County

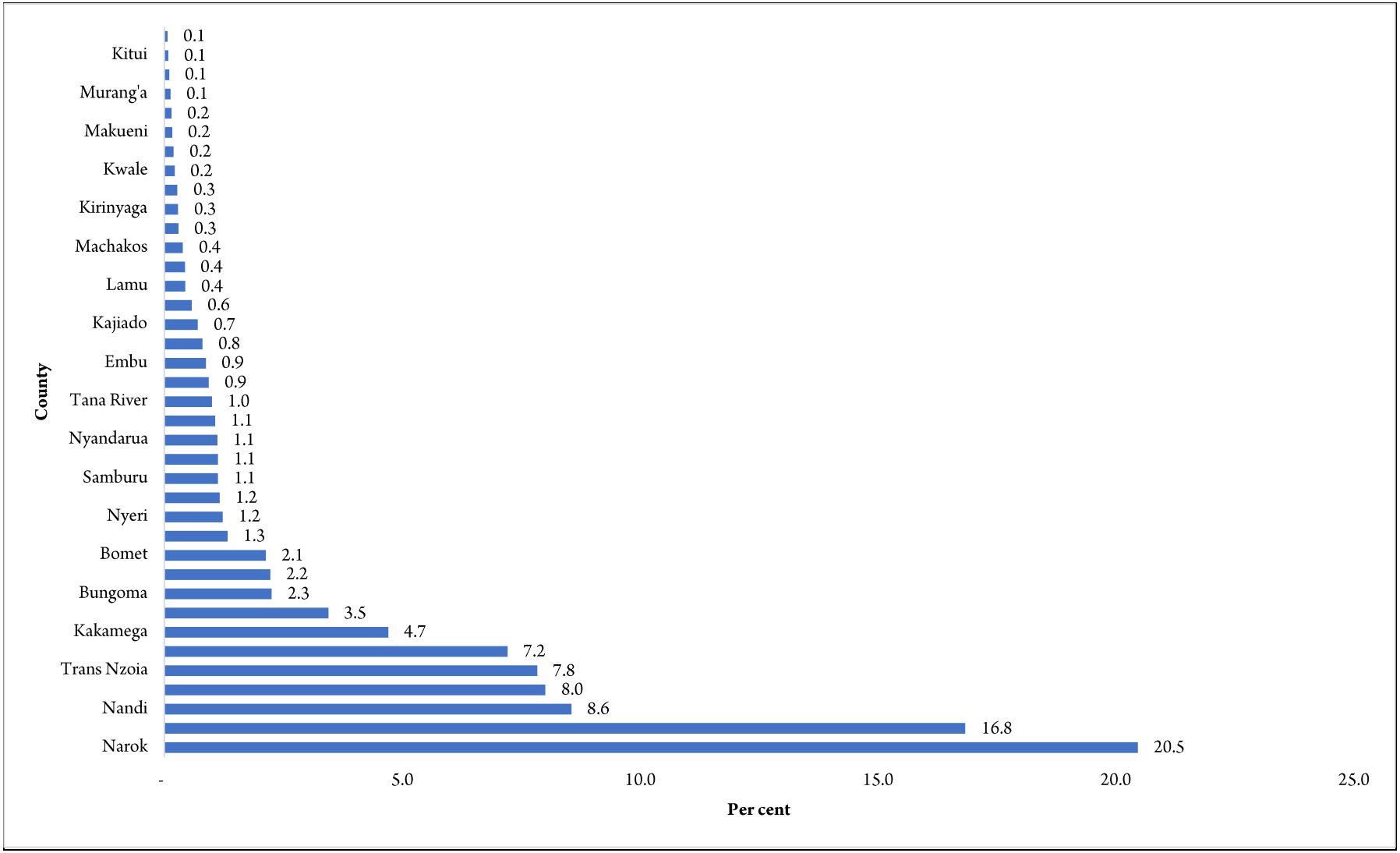


Figure 3.7 shows the proportion of total area of enterprise/company agricultural holdings by county. Kiambu county had the highest proportion of acreage of enterprise/company agricultural holdings at 12.3 per cent. Nakuru closely followed with a share of 11.7 per cent. Most counties had a share of less than five per cent.

Figure 3.7: Distribution of total acreage of Enterprise/Company Holdings by County

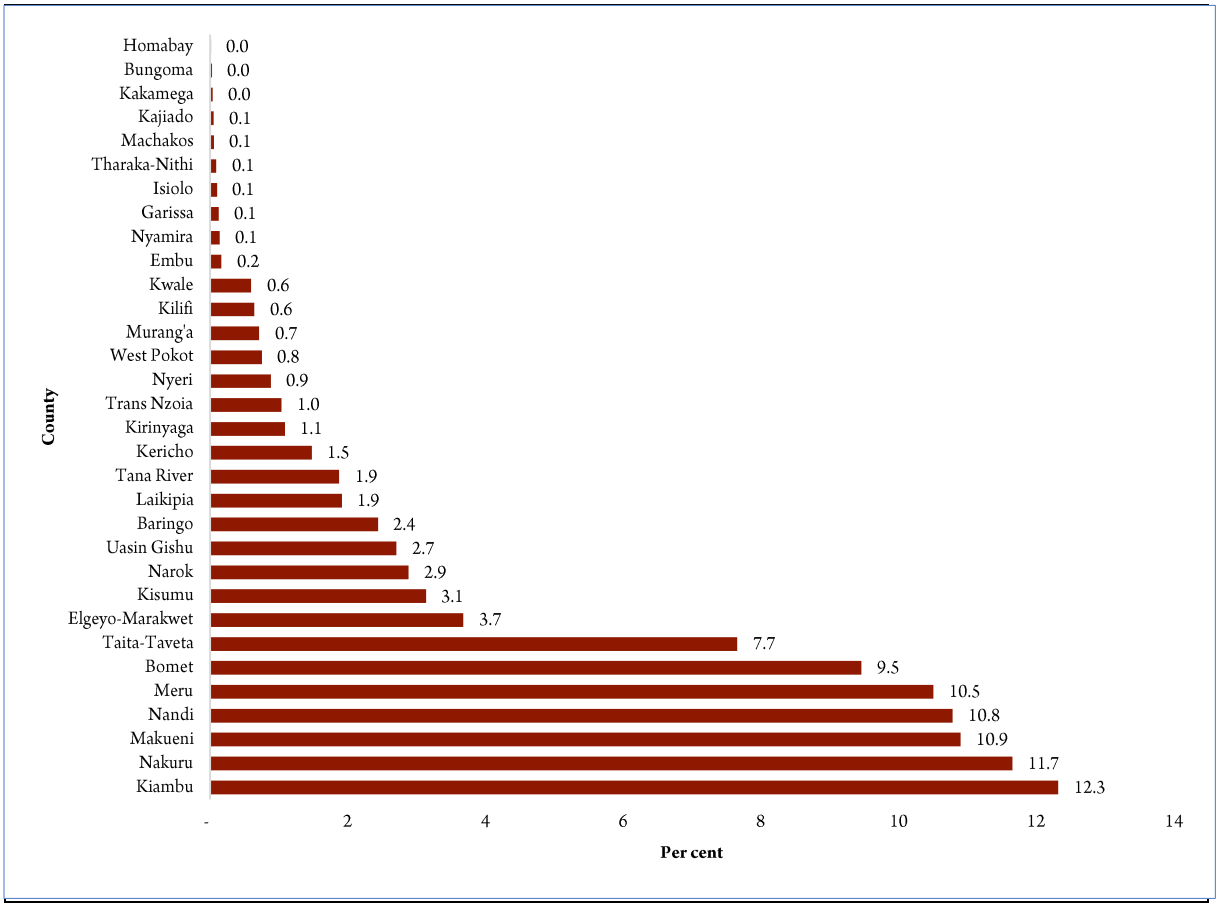


Figure 3.8 shows the the sources of water for crop production. The results indicate that over 82 per cent of the holdings depended on rain for crop production. Irrigation was practiced by 14.0 per cent of the agricultural holdings covered during the census while 3.7 per cent depended on both systems.

Figure 3.8: Distribution of System of Crop Production in Commercial Farms

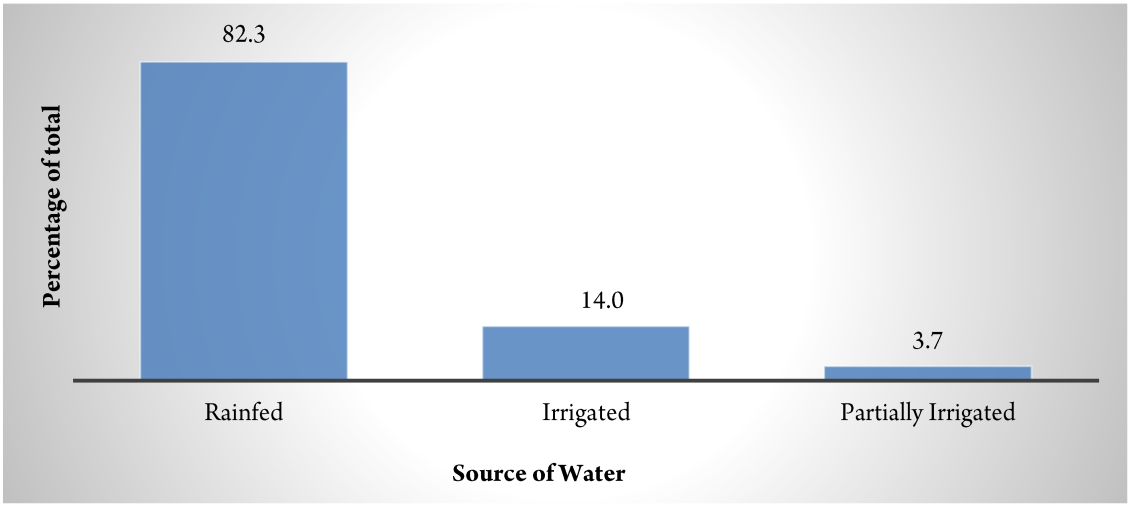


Table 3.3. presents the distribution of different crops and the corresponding source of water for crop production. Under the rain-fed production system, maize was dominant with 41.3 per cent of the agricultural holdings. Other crops that were majorly under rain-fed system of production were wheat, sugarcane, tea and dry beans at 13.4, 9.9, 5.5, and 4.0 per cent, respectively. Crops that were grown purely under irrigation system of production with a proportion of greater than 10 per cent included tomatoes, maize, mangoes and bananas at 13.3, 12.4, 11.0 and 10.3 per cent. Under the partially irrigated category, coffee and maize recorded the highest proportion of 14.8 per cent and 12.3 per cent, respectively, in 2019.

Table 3.3: Percentage distribution of the system of irrigation by crop

Per cent

Rain-fed		Irrigated		Partially Irrigated	
Maize	41.3	Tomatoes	13.3	Coffee	14.8
Wheat	13.4	Maize	12.4	Maize	12.3
Sugar cane	9.9	Mangoes	11	Irish Potatoes	6.6
Tea	5.5	Bananas	10.3	Bananas	5.7
Beans, dry	4	Water Melons	6.6	Cabbages	5.7
Rhodes Grass	2.8	Onions	5.2	Tomatoes	5.7
Irish Potatoes	2.8	Lemon	4.4	Avocados	4.1
Coffee	2.7	Cabbages	3.3	Khat/Miraa	4.1
Bananas	1.6	Kales	2.7	Tea	4.1
Barley	1.5	Rice(paddy)	2.3	French beans	3.3
Grass	1	French beans	1.5	Mangoes	3.3
Green grams	0.9	Oranges	1.5	Onions	3.3
Cabbages	0.6	Coffee	1.2	Oranges	3.3
Fodder maize	0.5	Spinach	1.2	Kales	2.5
Macadamia nuts	0.5	Cabbage	1	Wheat	2.5
Mangoes	0.5	Green grams	1	Beans, dry	1.6
Avocados	0.5	Pawpaw	1	Cabbage	1.6
Kales	0.4	Beans, dry	0.8	Canteloupeu	1.6
Others	5.2	Others	11.1	Others	13.2

Table 3.4 presents the number and proportion of agricultural holdings by crop. Maize had the highest number of agricultural holdings with a proportion of 38.0 per cent followed by wheat at 11.7 per cent. The proportion of commercial and institutional agricultural holdings that grew tea and coffe were 5.0 per cent and 3.1 per cent, respectively. .

Table 3.4: Number and proportion of agricultural holdings by crop

	Count	Per cent
Total	**3,340**	**100**
Maize	1,270	38.0
Wheat	390	11.7
Sugar cane	286	8.6
Tea	166	5.0
Coffee	103	3.1
Rhodes Grass	82	2.5
Barley	44	1.3
Sisal	6	0.2

Table 3.5 presents the distribution of the total area planted for field crops by crop. Maize accounted for 27.7 per cent of the total acreage planted with field crops followed by wheat at 20.8 per cent. Rhodes grass was the least, among the top eight field crops accounting for 1.5 per cent.

Table 3.5: Proportion of the total area planted for Field Crops (top 8)

Crop	Per cent
Maize	27.7
Wheat	20.8
Sugar cane	12.5
Sisal	10.5
Tea	8.3
Barley	5.3
Coffee	4.5
Rhodes Grass	1.5

Table 3.6 below shows the distribution of the area harvested by crop. The census established that 22.6, 20.7, 18.0 and 13.3 per cent of the total harvested area was under maize, wheat, sisal and tea, respectively. The other crops had less than 10 per cent of the total area harvested.

Table 3.6: Distribution of the total area Harvested and proportion sold

Crop	Total area harvested (acres)	Per cent of total
Maize	51,230	22.6
Wheat	46,851	20.7
Sisal	40,760	18
Tea	30,156	13.3
Barley	18,388	8.1
Sugar cane	11,733	5.2
Coffee	8,272	3.7
Rhodes Grass	3,558	1.6
Tomatoes	2,153	1
Irish Potatoes	1,653	0.7
Macadamia nuts	1,366	0.6
Grass	1,005	0.4
Beans, dry	938	0.4

Table 3.7 below shows the distribution of total production of selected permanent crops. Tea was the leading at 60.8 per cent of the total production with 189.9 million kilograms. Tomatoes production stood at 20.7 per cent of the total production with 64.6 million kilograms, Mangoes was third at 7.3 per cent with a total of 22.7 million kilograms. The production of the remaining crops was below 7 per cent of the total production.

Table 3.7: Production of selected permanent crops

Crop	Total production (Kgs)	Per cent
Tea	189,897,265	60.8
Tomatoes	64,598,250	20.7
Mangoes	22,662,500	7.3
Sisal	17,677,750	5.7
Macadamia nuts	9,558,990	3.1
Coffee	7,856,095	2.5

3.2 Proportion of the Total production sold for field crops by Category

3.2.1 Food crops

Table 3.8 shows the total production of food crops and proportion of quantity sold by type of food crop for the year 2019. The share of sales to production for sugar cane was 48.6 per cent while that of maize was 22.5 per cent.

Table 3.8: Total production of food crops and proportion sold by type of food crop

Crop	Total Production (Kgs)	Per cent
Sugar cane	322,949,770	48.6
Maize	149,637,288	22.5
Wheat	49,878,359	7.5
Barley	15,704,284	2.4
Barley	15,704,284	2.4
Irish Potatoes	15,361,968	2.3
Rhodes Grass	10,456,495	1.6
Beans, dry	8,860,047	1.3
Cabbages	8,327,601	1.3

3.2.2 Fruits

Table 3.9 shows the total distribution of quantity of fruits produced and equivalent quantity sold to the market. The census indicated that over 90 per cent of the total production of fruits grown was sold except for mangoes, oranges, pawpaw and tree tomato.

Table 3.9: Total production of fruits and proportion sold by type of fruit

Crop	Total Production (Kgs)	Percent of Quantity sold (Kgs)
Bananas	4,616,108	93
Canteloupe/Musk Melon	625,000	90
Water Melons (Hybrid)	600,920	91
Avocados	373,700	97
Mangoes	263,227	76
Oranges	126,090	84
Watermelons (Open Pollinated)	109,000	99
Pawpaw	93,400	45
Purple passion	60,200	98
Sweet Melons	52,950	98
Lemon	51,140	97
Straw berry	49,344	91
Tangerines	48,883	95
Loquats	43,400	100
Pineapples	27,960	96
Tree Tomato	1,450	79

3.2.3 Vegetables

Table 3.10 shows the distribution of vegetables produced and percentage sold to the market. Vegetable production and sale followed the same trend as fruits and food crops as shown in table below. The results show that for most vegetables, over 78 per cent of the vegetables produced in commercial farms were sold with exception of a few.

Table 3.10: Total production of vegetables and proportion sold by type of vegetable

Crop	Total Production (Kgs)	Per cent
Tomatoes	12,968,381	78
Cauliflowers/broccoli	4,344,844	49
French beans	3,038,576	85
Garden Peas	3,013,500	70
Onions	1,353,599	92
Kales	1,255,052	94
Cabbages	9,295,023	98
Carrots	130,695	87
Pea	107,800	78
Pepper	93,000	58
Khat/Miraa	87,571	83
Culinary Herbs and Spices	69,500	100
Egg Plant	64,000	84
Common pea	6,380	12
African Nightshade	4,000	88
Vegetables	2,100	76
Butter nut	1,400	93
Jute mallow/Murenda	582	49

3.2.4 Roots and Tubers

Table 3.11 presents the total production of roots and tubers and their corresponding quantity sold by type of roots and tubers. Irish potatoes produced were 85 per cent sold while 64 per cent of sweet potatoes were marketed.

Table 3.11: Total production of Roots and Tubers and quantity sold by type of Roots and Tubers

Crop	Total production (Kgs)	Percent of Quantity sold
Irish Potatoes	15,361,968	85
Sweet Potatoes	286,091	64
Cassava	7,800	84

3.2.5 Pasture and Fodder

Pasture grasses and fodder crops category experienced sales of 57 per cent and 48 per cent for the Rhodes grass and common grass, respectively, while 99% of the Sudan grass was sold. Approximately 32 per cent of the total quantity of oats produced was sold while only one per cent of the Lucerne was marketed. There were no sales recorded for the fodder maize grown.

3.3 Proportion of the Total Production of Field Crops Used as Seed

Table 3.12 shows the crops whose produce was set aside to be used as seed. From the census, the results show that pea, cotton and Irish potatoes had the highest proportion used as seed. Rhodes grass and groundnuts were at 4.2 per cent and 2.7 cent per cent, respectively. Total production of maize used as seed is below one per cent, which indicates high use of certified seed. The rest of the crops in the table were at less than 3 per cent.

Table 3.12: Proportion of the Total Production of Field Crops Used as Seed

Crop	Total production (Kgs)	Percent of Crop Output Used as Seed (Kgs)
Pea	107,800	18.6
Cotton	83,285	10.8
Irish Potatoes	15,361,968	4.6
Rhodes Grass	10,129,894	4.2
Groundnuts	4,950	2.7
Sugar cane	308,255,870	2.4
Sunflower	11,400	1.9
Wheat	49,878,359	1.4
Mangoes	263,227	1.2
Cabbages	9,270,823	1
Dolichos bean	4,500	1.1
Green grams	177,525	0.6
Sorghum/Sudan grass	263,703	0.6
Beans, dry	8,860,047	0.5
Finger Millet	6,410	0.4
Barley	15,704,284	0.3
Rice (paddy)	688,837	0.3
Oats	578,670	0.2
Onions	1,353,599	0.2
Maize	149,637,288	0.2
Grass	2,310,524	0.1
Purple passion	60,200	0.1
Others	142,112,155	0

3.4 Post-Harvest Losses versus Total Production by Category

3.4.1 Food Crops

Post-harvest losses usually start from the farm to the final destination of consumption. For food crops, the highest post-harvest losses are 5.6 per cent and 4.2 per cent for Irish potatoes and pearl millet, respectively. Paddy rice and dry beans reported losses of 3.4 and 2.3 per cent, respectively. Sorghum post-harvest losses were 2.1 per cent and maize at 1.2 per cent. The other crops were at less than one per cent. Overall post-harvest losses for food crops captured in the census were at 1.4 per cent. These details are presented in table 3.13.

Table 3.13: Proportion of the Total Production Food Crops and Post-Harvest losses by Type of Food Crop

Crop	Total production (Kgs)	Percent of Post-harvest losses
Irish Potatoes	15,361,968	5.6
Pearl Millet	44,550	4.2
Rice (paddy)	688,837	3.4
Beans, dry	8,860,047	2.3
Sorghum	232,165	2.1
Maize	149,637,288	1.2
Barley	15,704,284	1
Finger Millet	6,410	0.7
Sweet Potatoes	286,091	0.7
Wheat	49,878,359	0.5
Green grams	177,525	0.4
Spinach	744,223	0
Cassava	7,800	0
Cow pea	1,260	0
Dolichos bean	4,500	0

3.4.2 Fruits

Fruits usually experience higher rate of post-harvest losses compared to other crops. Table 3.14 presents the proportion of the total production of fruits and their post-harvest losses by type of fruit. The highest post-harvest losses for fruits were recorded in strawberry at 8.8 per cent, cantaloupe at 6.7 per cent, mangoes at 5.7 per cent and hybrid watermelons at 4.9 per cent. Losses for avocadoes were at 2.8 per cent.

Table 3.14: Proportion of the Total Production Fruits and post-harvest losses by type of Fruit

Crop	Total Production (Kgs)	Percent of Sum of Post-Harvest Losses
Strawberry	49,344	8.8
Canteloupe/Musk Melon	625,000	6.7
Mangoes	263,227	5.7
Water Melons (Hybrid)	600,920	4.9
Tree Tomato	1,450	4.1
Tangerines	48,883	4.1
Avocados	373,700	2.8
Oranges	126,090	2.3
Lemon	51,140	1.3
Bananas	4,616,108	0.9
Sweet Melons	52,950	0.8
Pineapples	27,960	0.7
Loquats	43,400	0.5
Purple passion	60,200	0.3
Pawpaw	93,400	0.1
Watermelons (Open Pollinated)	109,000	0

3.4.3 Industrial Crops

Table 3.15 shows the proportion of the total production of industrial crops and their respective post-harvest losses. The most post-harvest losses were in sugarcane at 1.3 per cent in this category. Other crops had losses of less than one per cent. No losses were reported for Sisal, Bixa and Pyrethrum.

Table 3.15: Proportion of the Total Production of Industrial Crops and post-harvest losses by type of crop

Crop	Total Production (Kgs)	Percent of Post-Harvest Losses
Sugar cane	308,255,870	1.3
Tea	71,832,351	0.6
Cotton	83,285	0.1
Coffee	7,856,095	0.1
Bixa	25	0
Pyrethrum	3,080	0
Sisal	17,677,750	0

3.4.4 Pasture and Fodder

Table 3.16 shows the proportion of the total production of pasture and fodder and the corresponding post-harvest losses. Rhodes grass and normal grass reported post-harvest losses of 1.8 per cent and 2.0 per cent, respectively. No other crop in this category reported losses.

Table 3.16: Total Production of Pasture and Fodder Crops and percentage of Post-Harvest Loses

Crop	Total production (Kgs)	Percent
Grass	2,310,524	2
Rhodes Grass	10,129,894	1.8
Fodder maize	3,700,080	0
Lucern	328,545	0
Oats	578,670	0
Sorghum/Sudan grass	263,703	0

3.4.5 Vegetables

The highest losses were reported for garden peas at 29.9 per cent, French beans at 14.7 per cent, Moringa 9.1 per cent, African Nightshade at 6.6 per cent, while the rest were below 5.0 per cent, as presented in Table 3.17.

Table 3.17: Proportion of the Total Production of Vegetables and proportion of Post-harvest losses by Type of Vegetable

Crop	Total Production (Kgs)	Percent of Post-harvest losses
Garden Peas	3,013,500	29.9
French beans	3,038,576	14.7
Moringa	5,500	9.1
Tomatoes	12,968,381	4.8
Cauliflowers/broccoli	4,344,844	4.4
Onions	1,353,599	2.3
Pea	107,800	1.6
Cabbages	9,295,023	2
Pepper	93,000	0.2
Khat/Miraa	87,571	0.1
Kales	1,255,052	0
Carrots	130,695	0
African Nightshade	6,100	6.6
Butter nut	1,400	0
Common pea	6,380	0
Culinary Herbs and Spices	69,500	0
Egg Plant	64,000	0
Jute mallow/Murenda	582	0

3.4.6 Nuts and Oil Crops

The proportion post-harvest loses to the total production of nuts and oil crops is shown in Table 3.18. The highest losses were reported in Canola at 3.5 per cent and Macadamia nuts at 3.4 per cent. No losses were reported for Simsim, Coconuts, Cashew-nuts and Groundnuts.

Table 3.18: Proportion of the Total Production of Nuts and Oil Crops and share of Post-Harvest Loses

Crop	Total production (Kgs)	Percent of Post -harvest losses
Oil seed (Canola)	142,400	3.5
Macadamia nuts	2,234,022	3.4
Sunflower	11,400	1.1
Cashew nuts	6,080	0
Coconuts	268,600	0
Groundnuts	4,950	0
Simsim	15,650	0

3.5 Proportion of Total Production in Stock by End of December 2019

3.5.1 Food Crops

The highest stocks were reported for finger millet at 43.5 per cent while dry beans stocks were at 25.5 per cent; and maize at 3.3 per cent. Paddy rice stocks were reported at 1.6 per cent, Green grams at 1.5 per cent whereas Dolichos at 1.1 per cent.

Table 3.19: Proportion of Total Production of food crops held as Stock by End of December 2019

Crop	Total production (Kgs)	Percent of Crop output in Stock
Finger Millet	6,410	43.5
Beans, dry	8,860,047	25.5
Maize	149,637,288	3.3
Cow pea	1,260	3.2
Wheat	49,878,359	2.5
Rice(paddy)	688,837	1.6
Green grams	177,525	1.5
Dolichos bean	4,500	1.1
Barley	15,704,284	0.3
Irish Potatoes	15,361,968	0.2
Cassava	7,800	0
Pearl Millet	44,550	0
Sorghum	232,165	0
Spinach	744,223	0
Sweet Potatoes	286,091	0

3.5.2 Fruits

The proportion of fruits held as stock by the end of December 2019 is shown in Table 3.20. The proportion of mangoes and pawpaws held as stock was 1.8 per cent and 1.1 per cent, respectively, in 2019. The other fruits recorded stock of less than one per cent of the quantity produced.

Table 3.20: Proportion of Total Production of fruits held as Stock by End of December 2019

Crop	Total production (Kgs)	Percent of Crop output in Stock by December 2019
Mangoes	263,227	1.8
Pawpaw	93,400	1.1
Pineapples	27,960	0.4
Bananas	4,616,108	0.1
Avocados	373,700	0
Canteloupe/Musk Melon	625,000	0
Lemon	51,140	0
Loquats	43,400	0
Oranges	126,090	0
Purple passion	60,200	0
Straw berry	49,344	0
Sweet Melons	52,950	0
Tangerines	48,883	0
Tree Tomato	1,450	0
Water Melons (Hybrid)	600,920	0
Watermelons (Open Pollinated)	109,000	0

3.5.3 Industrial Crops

The highest stocks for this category were reported for Sugarcane at 46.6 per cent and Tea at 4.6 per cent, as represented in Table 3.21. Coffee and sisal had stocks of 1.4 per cent and 1.0 per cent, respectively. Cotton stocks were at 0.4 per cent

Table 3.21: Proportion of Total Production of Industrial Crops held as Stock by End of December 2019

Crop	Total production (Kgs)	Percent of Crop output in Stock by December 2019
Sugar cane	308,255,870	46.62
Tea	71,832,351	4.62
Sisal	17,677,750	1.39
Coffee	7,856,095	1.03
Cotton	83,285	0.37
Bixa	25	0
Pyrethrum	3,080	0

3.5.4 Pasture and Fodder

The major pasture crops with stocks were the grasses at 19.7 per cent, Rhodes grass at 5.4 per cent whereas fodder maize was at 5.0 per cent. No stocks reported for Lucerne. These details are presented in Table 3.22.

Table 3.22: Proportion of Total Production of Pasture and Fodder held as Stock by End of December 2019

Crop	Total Production (Kgs)	Percent of Crop output in Stock by December 2019
Grass	2,310,524	19.7
Rhodes Grass	10,129,894	5.4
Fodder maize	3,700,080	5
Oats	578,670	1.7
Sorghum/Sudan grass	263,703	0.3
Lucerne	328,545	0

3.5.5 Root and Tubers Crops

As seen in Table 3.23, stocks were reported for sweet potatoes at 2.8 per cent while Irish potatoes were at 0.2 per cent. No stocks reported for cassava.

Table 3.23: Proportion of Total Production of Root and Tubers Crops held as Stock by End of December 2019

Category/Crop	Total production (Kgs)	Percent in stock
Roots and Tubers	**15,655,859**	**3**
Sweet Potatoes	286,091	2.8
Irish Potatoes	15,361,968	0.2
Cassava	7,800	0

3.5.6 Vegetables

In this category the highest stocks were reported for common pea at 86.5per cent, while cowpea, tomatoes and onions were at 3.2 per cent or below. All other crops in this category did not have stocks as seen in table 3.24.

Table 3.24: Proportion of Total Production of Vegetables held as Stock by End of December 2019

Category/Crop	Total production (Kgs)	Percent in stock
Tomatoes	12,968,381	2.2
Cauliflowers/Broccoli	4,344,844	0
French beans	3,038,576	0
Garden Peas	3,013,500	0
Onions	1,765,099	0.2
Kales	1,255,052	0
Cabbages	9,295,023	0
Spinach	744,223	0
Carrots	130,695	0
Pea	107,800	0
Pepper	93,000	0
Khat/Miraa	87,571	0
Culinary Herbs and Spices	69,500	0
Egg Plant	64,000	0
Common pea	6,380	86.5
Moringa	5,500	0
African Nightshade	4,000	0
Vegetables	2,100	0
Butter nut	1,400	0
Cow pea	1,260	3.2
Jute mallow/ Murenda	582	0

3.5.7 Nuts and Oils Crops

Table 3.25 depicts the proportion of total production of nuts and oils crop held as stocks by the end of December 2019. In this category, stocks were reported for groundnuts at 8.4 per cent, macadamia nuts at 1.1 per cent and sunflower at 0.4 per cent.

Table 3.25: Proportion of Total Production of Nuts and Oils crops held as Stock by End of December 2019

Crop	Total production (Kgs)	Percent of Crop output in Stock by December 2019
Groundnuts	4,950	8.4
Macadamia nuts	2,234,022	1.1
Sunflower	11,400	0.4
Cashew nuts	6,080	0
Coconuts	268,600	0
Oil seed (Canola)	142,400	0
Simsim	15,650	0

3.6 Value of Total Production and Other Utilization Categories by Crop and by Category

3.6.1 Crops

Table 3.26 and Table 3.27 show the value of the production across the various utilization stages. The highest value is for the quantities sold at KSh 25.96 billion. Produce that was fed to livestock had a value of 196.3 Million, with what was consumed valued at KSh 503 million. The output used as seed was valued at KSh 93.7 million. Industrial crops had the highest value of total production at KSh 17.3 billion, with food crops at KSh 5.4 billion and flowers at KSh 2.5 billion. This was followed by vegetables at KSh 940.5 Million. Fruits had

the lowest total value at KSh 130 million.

Table 3.26 Value of Total Production and Other Utilization stages by crop Category

COUNTY	Sum Total production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity sold (KSh)	Value of Crop output fed to livestock (KSh)	Value of Crop output used as seed (KSh)
Industrial crops	405,708,456	17,364,500,249	749,760	17,331,522,239	21,000	32,207,250
Food crops	241,635,307	5,378,140,355	465,746,475	4,743,164,184	111,888,426	57,341,269
Vegetables	35,841,502	940,460,235	19,966,219	906,564,531	10,253,885	3,675,600
Pasture and fodder	17,311,416	179,386,681	12,946,500	92,316,043	73,726,938	397,200
Fruits	8,133,832	130,039,204	3,654,535	126,274,069	7,000	103,600
Flowers	5,088,854	2,528,463,779	124,200	2,528,339,579	0	0
Nuts and oils	2,683,102	231,553,960	71,040	231,049,670	400,000	33,250
Grand Total	**716,402,469**	**26,752,544,462**	**503,258,729**	**25,959,230,315**	**196,297,249**	**93,758,169**

As shown in Table 3.27, the value from the quantities sold was highest for industrial crops at KSh 17.4 billion, second is food crops at KSh 5.4 billion and flowers and vegetables are at KSh 2.5 billion and 940 million respectively.

Table 3.27: Value of Total Production and Proportion of Other Utilization Stages by Crop Category

County	Value of Total Production (KSh)	Proportion of Value of Own Consumption	Proportion of Value of Quantity sold	Proportion of Value of Crop Output Fed to Livestock	Proportion of Value of Crop Output Used as Seed
Industrial Crops	17,364,500,249	0.00	99.81	0.00	0.19
Food Crops	5,378,140,355	8.66	88.19	2.08	1.07
Vegetables	940,460,235	2.12	96.40	1.09	0.39
Pasture and Fodder	179,386,681	7.22	51.46	41.10	0.22
Fruits	130,039,204	2.81	97.10	0.01	0.08
Flowers	2,528,463,779	0.00	100.00	-	-
Nuts and Oils	231,553,960	0.03	99.78	0.17	0.01

Table 3.28 presents other income associated with farming under field crops. The commercial farms interviewed also generated other incomes from the other crop farming activities. The total income generated from the respective activities shows that lease of machinery and equipment earned the farms KSh 82.6 million. Income from dividends/bonus was KSh 2.3 billion in 2019.

Table 3.28: Other income associated with farming under field crops

Source	Amount (KSh)
Lease of machinery and equipment	82,563,041
Interest received	42,789,308
crop insurance compensation	13,248,188
Other (specify)	9,514,616
Dividends/bonus (KSh)	2,259,914,327

3.7 Material Inputs

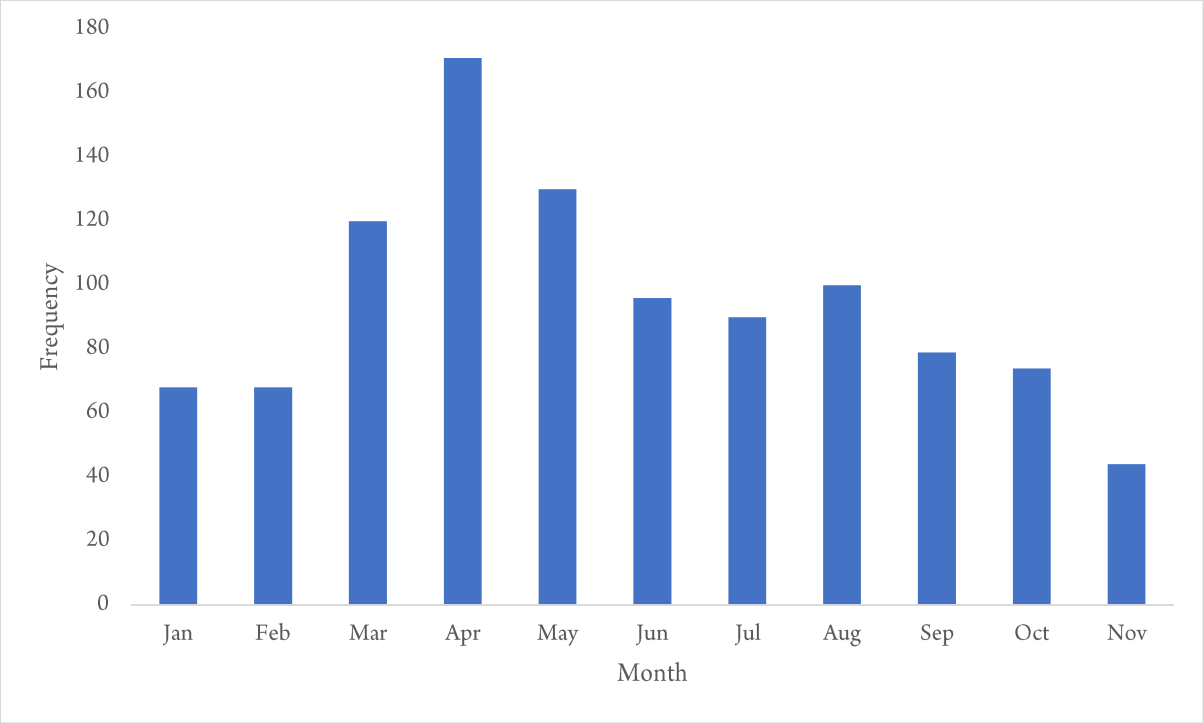
3.7.1 Fertilizer Use

Table 3.29 shows the distribution of frequency of fertilizer use during the year 2019 on all field crops. In the use of fertilizer for field crops production, fertilizer was used mainly in the months of March, April, May and June and the use declined with time with December being the month with the least use as illustrated.

Table 3.29: Distribution of frequency of Fertilizer Use during the Year 2019 on All Field Crops

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Frequency	464	522	1,321	1,264	1,191	1,025	613	517	435	472	376	286

Figure 3.9: Frequency of Fertilizer Use During the Year 2019



3.7.2 Frequency of Fertilizer Use on Food Crops

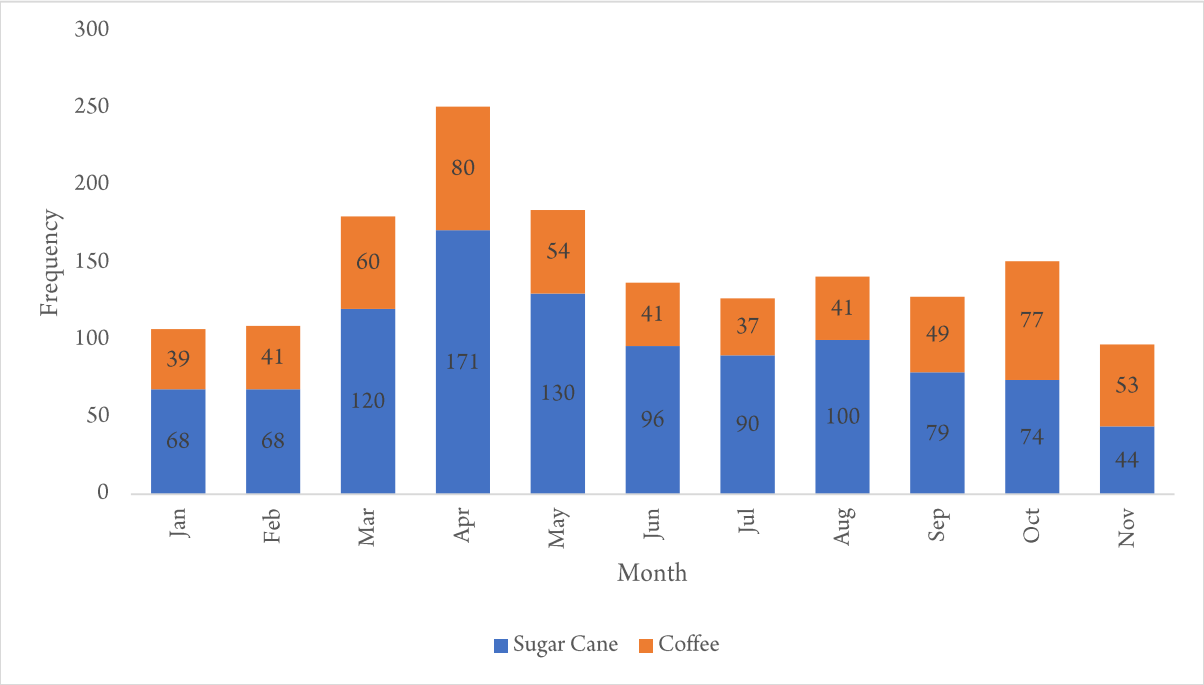
Table 3.30 presents the frequency of fertilizer use on food crops for 2019. Fertilizer used on food crops was highly used on maize, wheat and Irish potatoe crops between March and June and declined thereafter. Use of fertilizer on wheat was highest in the month of May which coincides with the main planting period.

Table 3.30: Frequency of Fertilizer Use on Food Crops

Crop	January	February	March	April	May	June	July	August	September	October	November	December
Maize	93	146	726	620	515	452	125	89	59	79	66	43
Wheat	6	29	84	60	209	158	80	17	10	9	4	2
Irish Potatoes	23	15	33	19	23	21	14	15	19	9	6	1
Beans, dry	10	5	18	21	16	16	12	12	6	4	2	1
Rice(paddy)	5	10	5	8	3	3	6	7	7	7	4	3
Others	4	6	12	12	24	16	18	8	7	6	6	4

Figure 3.10 shows the frequency of fertiliser use on food crops during the period January to December, 2019. Maize uses a lot of fertiliser the first quarter of the year compared to other food crops. This is also in line with the area it occupies on the ground. This is followed by wheat albeit at far low amount.

Figure 3.10: Frequency of Fertilizer Use on Maize and Wheat, 2019



3.7.3 Use of Fertilizer on Industrial Crops

As shown on Table 3.31 and Figure 3.11, the use of fertilizer is major in sugarcane, coffee and tea in that order. Higher fertilizer use was reported in all three crops in March and April as potrayed on Figure 3.11. There was insignificant use of fertilizer in the other crops.

Figure 3.11: Frequency of Fertilizer Use on Selected Industrial Crops, 2019

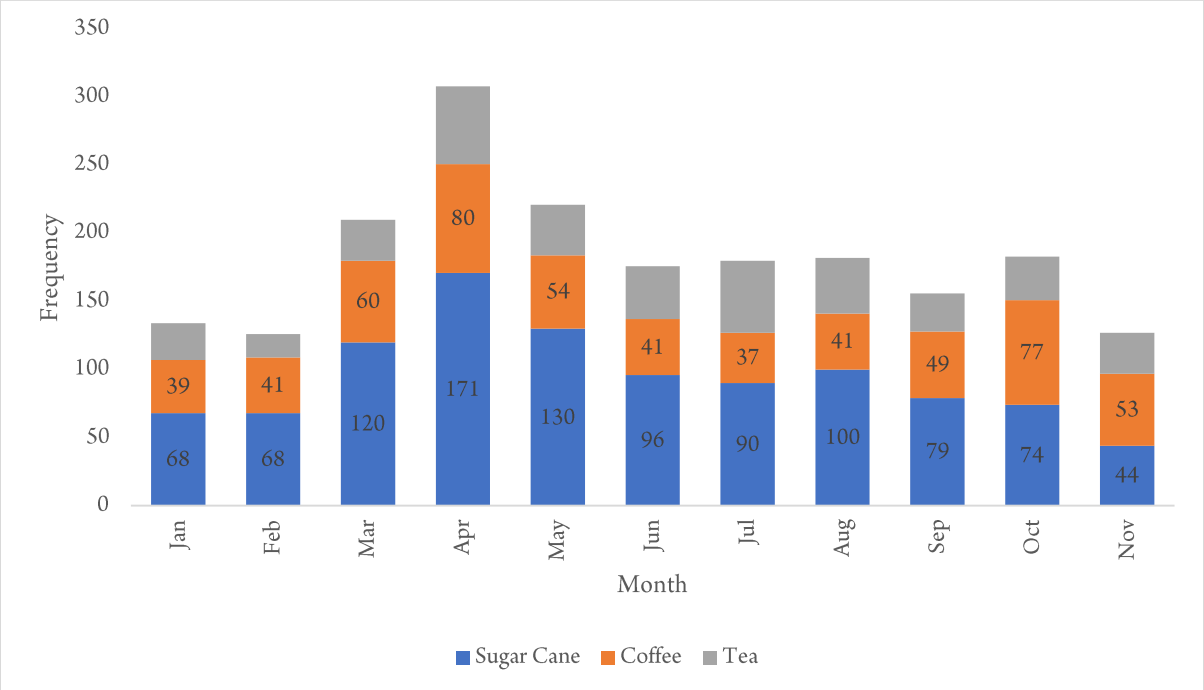


Table 3.31: Use of Fertilizer on Industrial Crops

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sugar Cane	68	68	120	171	130	96	90	100	79	74	44	48
Coffee	39	41	60	80	54	41	37	41	49	77	53	35
Tea	27	17	30	57	37	39	53	41	28	32	30	23
Khat/Miraa	0	1	7	1	0	1	0	4	3	1	0	0
Cotton	1	1	1	1	1	1	1	1	1	1	1	1
Macadamia nuts	1	0	0	3	1	1	1	1	1	0	1	1
Others	0	1	1	4	2	2	1	1	0	0	0	0

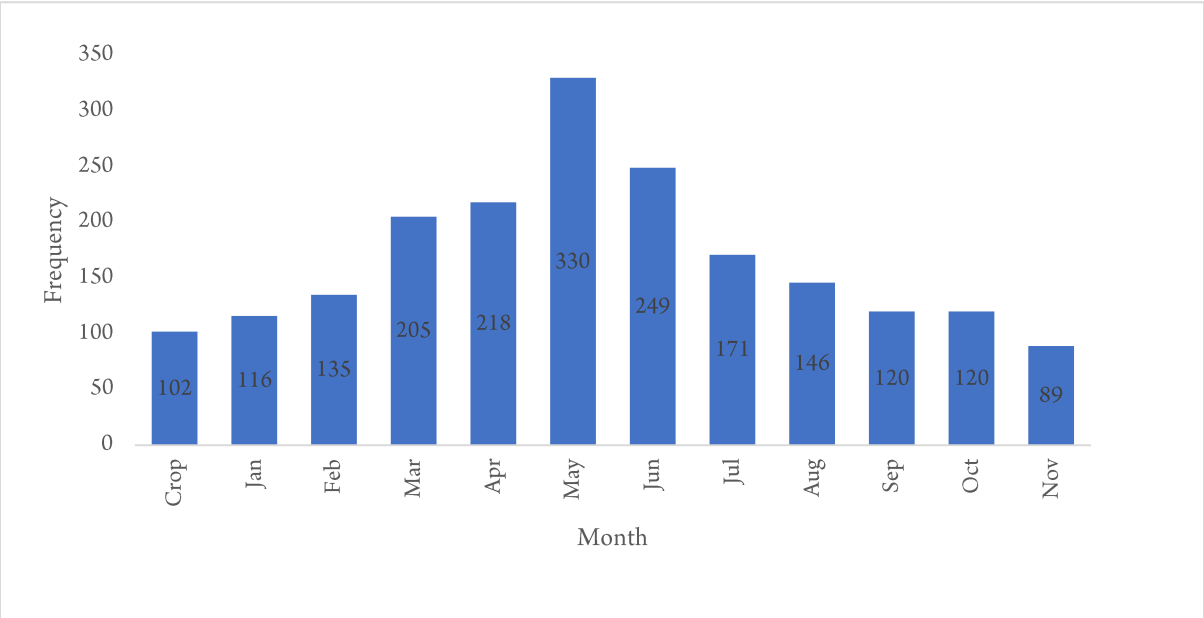
3.8 Use of Foliar Feed on Field Crops during the Year 2019

Foliar feed use in field crops is highest between the months of March and June, with June being the main peak period and thereafter July starts to decline to minimal levels as show on Table 3.32 and Figure 3.12.

Table 3.32: Frequency of Foliar Feed Use During the Year 2019 on Top 16 Crops

Crop	January		February	March	April	May	June	July	August	September	October	November	December
Wheat	2		4	11	41	54	160	10	73	71	77	5	1
Maize	9		9	20	55	61	37	24	20	15	14	17	10
Coffee	17		23	22	23	19	26	23	21	23	22	25	17
Tomatoes	19		19	19	15	10	14	12	14	13	10	11	13
Irish Potatoes	4		14	11	7	10	16	8	5	7	11	10	1
Cabbages	7		6	8	7	6	7	6	7	8	6	5	6
Beans, dry	6		4	3	10	10	9	5	9	5	8	5	3
French beans	5		5	6	6	6	6	6	5	6	5	6	5
Barley					5	3	16	18	10	8	1	2	0
Avocados	5		5	5	5	5	5	5	5	5	5	5	5
Sugar cane	5		4	4	3	4	4	3	3	4	3	4	4
Kales	4		2	2	4	2	3	4	4	3	6	3	3
Tea	3		2	4	2	3	2	3	2	3	2	3	2
Rice(paddy)	2		1	3	2	3	1	2	3	3	2	3	2
Onions	2		3	3	3	3	2	2	3	2	1	1	1
Khat/Miraa	1		2	2	2	2	1	1	1	2	2	2	2

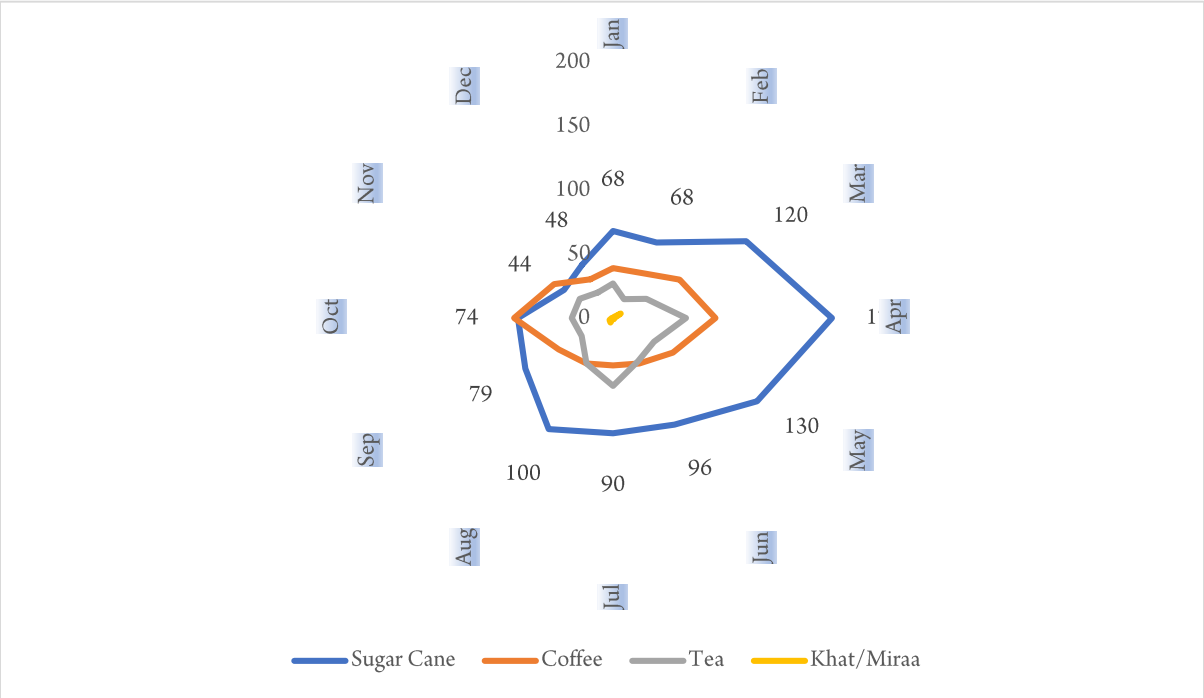
Figure 3.12: Use of Foliar Feed on Field Crops during the Year 2019



3.8.1 Frequency of Foliar Feed Use during the Year 2019 on Top 16 Crops

The use of foliar feed on specific crops shows that it is mainly used on wheat, maize, coffee, tomatoes and Irish potatoes. The peak period for use by wheat is around June and July, immediately after the crop is establishment depending on the region. In maize the main periods are April and May after the crop is a month old to boost vegetative growth. Use of foliar feed on coffee and tea is almost uniform throughout the year. These details reflected on Figures 3.13 and Table 3.32.

Figure 3.13: Frequency of Foliar Feed Use for Selected Crops, 2019



3.9 Distribution Frequency of Use of Manure on Field Crops in 2019

Table 3.33 and Figure 3.14 and 3.15 show manure use by various characteristics in 2019. Manure is mainly applied between the months of January and April after which the use starts to decline and picks up again in from July to September in line with the long and short rains season. The use is mainly on maize, sugarcane, coffee, bananas, tomatoes and kales.

Figure 3.14: Distribution Frequency of Use Manure on Field Crops, 2019

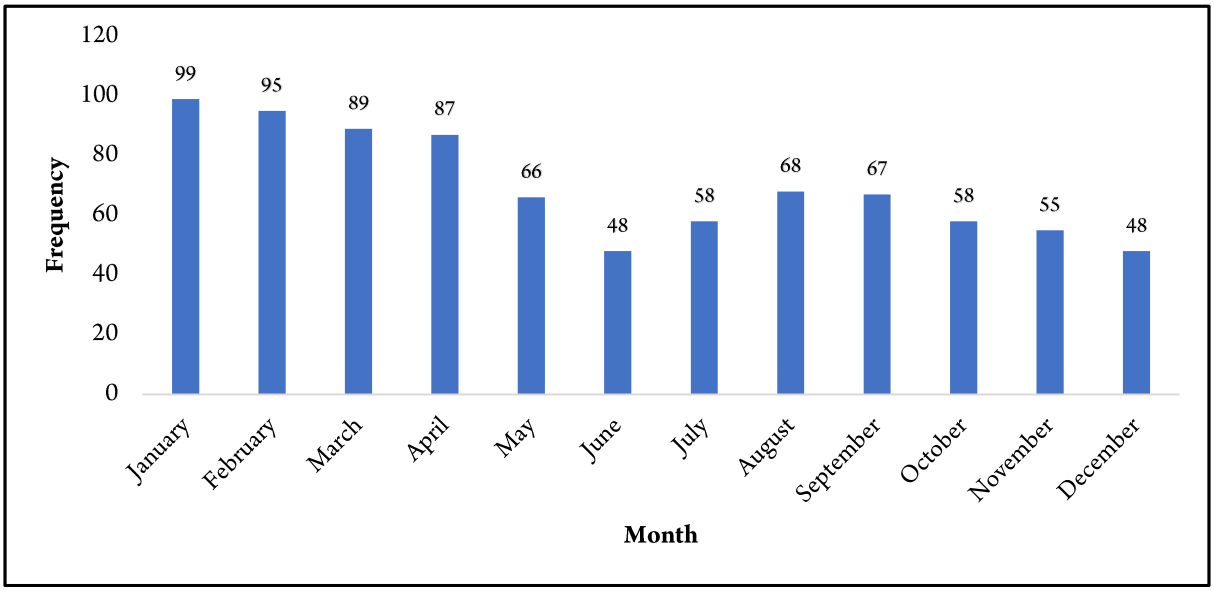


Figure 3.15: Frequency of Manure Use on Maize, Sugar Cane and Coffee, 2019

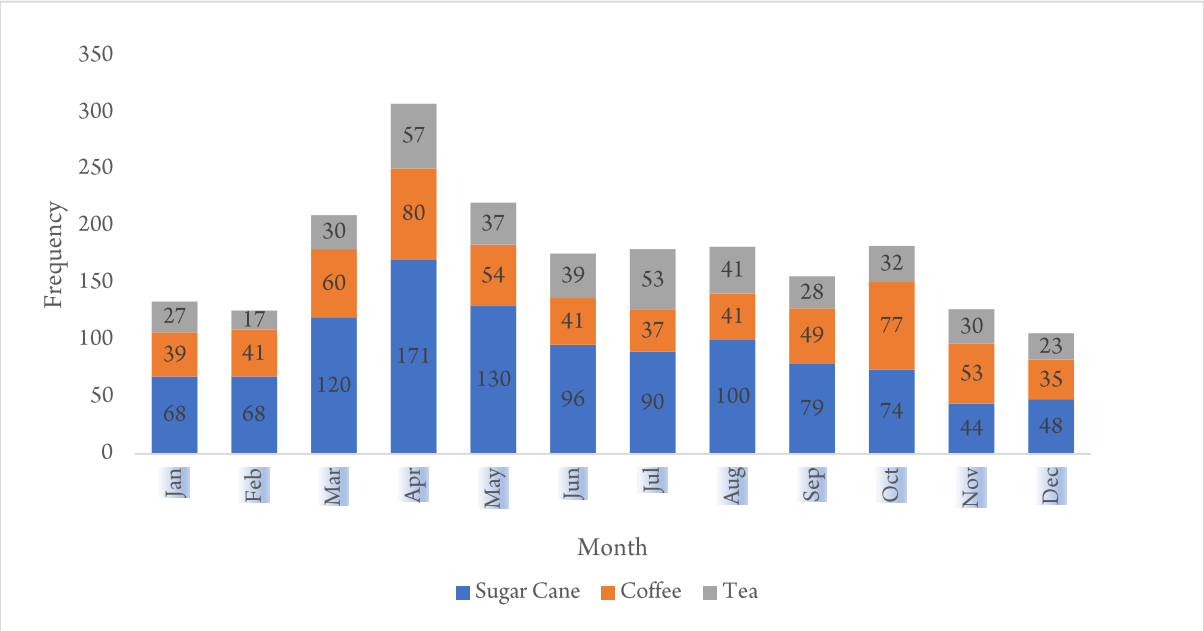


Table 3.33: Distribution Frequency of Use Manure on Field Crops in 2019

Crop	January	February	March	April	May	June	July	August	September	October	November	December
Maize	15	23	18	14	10	4	7	6	8	6	7	5
Sugar cane	10	10	10	10	7	6	6	5	6	4	6	4
Coffee	9	8	9	9	7	4	4	8	8	6	5	4
Bananas	9	4	7	8	5	3	5	5	4	8	4	5
Tomatoes	10	5	6	4	5	4	6	5	6	4	3	3
Kales	5	4	2	7	4	3	3	4	3	2	6	3
French beans	3	4	3	3	3	4	3	3	3	3	3	4
Beans, dry	4	4	4	2	2	2	2	2	4	3	2	2
Cabbage	3	5	4	6	2	3	3	3	4	3	4	2
Mangoes	2	4	2	3	3	1	1	3	3	1	1	0
Rhodes Grass	1	4	1	2	2	2	2	2	2	2	1	2
Avocados	2	2	4	2	1	1	1	1	1	1	1	1
Tea	1	1	1	3	1	2	2	2	1	1	1	2
Onions	1	2	3	1	1	1	1	2	1	1	1	1

3.10 Water Used during the year 2019 per crop

Water used in crop farming of field crops was mainly between the months of May and August. Maize, tomatoes, wheat and coffee were the main crops where water was used at 34 per cent, 10 per cent, 8 per cent and 5 per cent respectively. Other crops were ranging between 2 per cent to 4 per cent but with majority of the crops with less than 3 per cent. The distribution of water use is shown in Tables 3.34a and 3.34b.

Table 3.34a: Distribution of Frequency of Water Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
89	91	100	95	102	105	105	108	98	91	83	82

Table 3.34b: Distribution of Frequency of Water Use by Crop

Crop	Frequency	Per cent
Maize	387	34
Tomatoes	119	10
Wheat	93	8
Coffee	59	5
Bananas	51	4
Khat/Miraa	42	4
Cabbages	36	3
Rice(paddy)	34	3
Beans, dry	32	3
Irish Potatoes	29	3
French beans	28	2
Barley	24	2
Cauliflowers/broccoli	24	2
Pepper	21	2
Cantaloupe/Musk Melon	18	2
Others	152	13

3.11 Frequency of Seeds Use during the Year 2019 per Crop

Seeds used in crop farming of field crops were mainly between the months of January and October; and declined in November and December. Maize, wheat, tomatoes, and Sugarcane were the main crops at 49, 10, 6 and 5 per cent, respectively, while while others were ranging below 4 per cent. Tables 3.35a and 3.35b show these distributions.

Table 3.35a Distribution of Frequency of Seeds Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
285	247	805	403	236	152	108	117	108	107	67	60

Table 3.35b: Distribution of Frequency of Seeds Use by Crop

Crop	Frequency	Per cent
Maize	1324	49
Wheat	258	10
Tomatoes	160	6
Sugar cane	132	5
Beans, dry	119	4
Cabbages	131	5
Water Melons (Hybrid)	49	2
French beans	48	2
Irish Potatoes	48	2
Kales	45	2
Barley	39	1
Onions	37	1
Rice(paddy)	25	1
Others	280	10

3.12 Frequency of Herbicides Used

Tables 3.36a and 3.36b illustrate use of herbicides and crops by month. Herbicides used in the crop farming for control of weeds for field crops was mainly between the months of March and June and the frequency of use starts to decline from July to December. Maize, wheat, sugarcane, tea and coffee were the main crops users at 38, 15, 13 and 10 per cent, respectively.

Table 3.36a: Distribution of Frequency of Herbicides Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
123	141	386	756	452	468	354	209	165	150	140	110

Table 3.36b: Distribution of Frequency of Herbicides Use by crop

Crop	Frequency	Percentage
Maize	1296	38
Wheat	504	15
Sugar cane	437	13
Tea	339	10
Coffee	247	7
Tomatoes	79	2
Irish Potatoes	77	2
Barley	71	2
Beans, dry	59	2
Others	345	10

3.13 Frequency of Fungicides Used During the Year 2019 per Crop

Tables 3.37a and 3.37b show the distribution of frequency of fungicide use by month; crop and percentage share. Fungicides are used in the crop farming of field crops to control diseases.

Fungicide use was mainly between the months of April and September whereas declines were registered in October and November. Wheat, Coffee, tomatoes, and Irish potatoes were the main crops users at 34.6, 12.8, 9.7 and 8.7 per cent, respectively. Other main crops had contributions below 5.2 per cent.

Table 3.37a: Distribution of Frequency of Fungicides Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
85	102	116	157	196	339	324	231	151	107	102	74

Table 3.37b: Distribution of Frequency of Fungicides Use by Crop

Crop	Frequency	Percentage
Wheat	687	34.6
Coffee	254	12.8
Tomatoes	193	9.7
Irish Potatoes	173	8.7
Maize	103	5.2
Barley	80	4.0
Cabbages	102	5.1
Beans, dry	47	2.4
French beans	47	2.4
Purple passion	30	1.5
Rice(paddy)	30	1.5
Avocados	28	1.4
Mangoes	26	1.3
Onions	21	1.1
Others	163	8.2

3.14 Frequency of Pesticides Used During the Year 2019 per Crop

Pesticides are used in crop farming of field crops to control pests. Pesticide use was mainly between the months of April and September and declined in October, November and was lowest in December. The frequency of pesticide use was highest for maize, wheat, coffee, and tomatoes, respectively, at 31, 15, 8 and 8 per cent, respectively. Tables 3.38a and 3.38b present the monthly frequency of use and proportioned share by crop.

Table 3.38a: Distribution of Frequency of Pesticides Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
145	197	234	405	481	623	375	259	205	183	185	127

Table 3.38b: Distribution of Frequency of Pesticides Use by Crop

Crop	Frequency	Percentage
Maize	1043	31
Wheat	509	15
Coffee	287	8
Tomatoes	261	8
Mangoes	118	3
Khat/Miraa	112	3
Cabbages	109	3
Beans, dry	92	3
Kales	84	2
Barley	76	2
Irish Potatoes	76	2
Onions	53	2
Bananas	52	2
Water Melons(Hybrid)	47	1
Green grams	45	1
French beans	44	1
Lemon	39	1
Rice(paddy)	37	1
Others	225	7

3.15 Frequency of Plant Hormones Used During the Year 2019 per Crop

Table 3.39a and 3.39b presents the distribution of frequency of plant hormones use by month, and by proportioned share of the different crops. Plant hormones are used in crop farming of field crops to stimulate fast vegetative growth or, flowering. Plant hormones were used on a few crops during the year. The use was almost similar throughout the year. The frequency of plant hormones use was highest in Tomatoes, French beans, Irish potatoes, cabbages and coffee respectively.

Table 3.39a: Distribution of Frequency of Plant Hormones Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
17	19	18	19	22	17	20	19	15	20	15	13

Table 3.39b: Distribution of Frequency of Plant Hormones Use by Crop

Crop	Frequency	Per cent
Tomatoes	62	29
French beans	36	17
Irish Potatoes	16	7
Cabbages	17	8
Cauliflowers/broccoli	12	6
Coffee	12	6
Gypsophillla/Baby Breath Species	12	6
Straw berry	12	6
Maize	10	5
Wheat	9	4
Onions	8	4
Canteloupe/Musk Melon	4	2
Macadamia nuts	2	1
Barley	1	0
Rice(paddy)	1	0

3.16 Frequency of Fuel Used During the Year 2019 per Crop

Fuel is used in land preparation and running of other farm machinery used in crop farming of field crops. Fuel used was highest in the months of February and March; with a declining use from May. This is the start of the long rains and tractors are used mainly in land preparation for planting. The use was almost similar throughout the other months of the year as shown on Table 3.40.

Table 3.40: Distribution of Frequency of Fuel Use by Month

Month	Frequency
January	968
February	1,188
March	1,180
April	910
May	888
June	812
July	770
August	722
September	668
October	731
November	652
December	562

3.17 Frequency of Lubricants Used During the Year 2019 per Crop

Table 3.41a and 3.41b presents use of lubricants monthly and by crop. Lubricants are used on machinery and other farm equipment mainly during land preparation for crop farming of field crops. The lubricants use was highest in the months of January and April but usage starts declining from May. It is notable that usage frequency stabilizes after May for the remaining months of the year. This is the start of the long rains and tractors are prepared for land preparation in the coming months. The highest use was in maize and wheat at 46 and 21 per cent, respectively.

Table 3.41a: Distribution of Frequency of lubricants use by month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
450	489	472	345	333	313	278	268	246	247	263	214

Table 3.41b: Distribution of Frequency of Lubricants Use by Crop

Crop	Frequency	Per cent
Maize	1788	46
Wheat	836	21
Coffee	244	6
Sugar cane	223	6
Tea	136	3
Barley	120	3
Tomatoes	79	2
Rhodes Grass	76	2
Others	416	11

3.18 Frequency of Grease Used During the Year 2019 per Crop

Distribution of Frequency of grease use by month and crop is shown on Tables 3.42a and 3.42b. Grease is used alongside the lubricants on the machinery used on farm operations and other farm implements used in the crop farming of field crops. The grease use followed the same trend as lubricants. It was highest in the months of January and April. This is the start of the long rains and tractors are serviced for land preparation in the coming months. The use was almost similar throughout the other months of the year. Similarly, the use was highest on maize and wheat.

Table 3.42a: Distribution of Frequency of Grease Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
450	489	472	345	333	313	278	268	246	247	263	214

Table 3.42b: Distribution Frequency of Grease Use by Crop

Crop	Frequency	Per cent
Maize	1528	44
Wheat	765	22
Coffee	222	6
Sugar cane	201	6
Tea	125	4
Barley	114	3
Tomatoes	70	2
Rhodes Grass	69	2
Bananas	56	2
Others	318	9

3.19 Frequency of Electricity Used During the Year 2019 per Crop

Tables 3.43a and 3.43b show the distribution of electricity utilization by month and crop. Electricity is used in running some farm machinery in the farming of field crops. Utilization of electricity use was stable throughout the year. However, the use was highest for coffee, maize and tea.

Table 3.43a: Distribution Frequency of Electricity Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
152	148	149	147	143	144	149	147	150	148	148	146

Table 3.43b: Distribution Frequency of Electricity Use by Crop

Crop	Frequency	Per cent
Coffee	425	24
Maize	397	22
Tea	336	19
Wheat	84	5
Sugar cane	50	3
Bananas	48	3
Avocados	42	2
Beans, dry	36	2
Cabbages	60	3
Sisal	36	2
Tomatoes	29	2
Cauliflowers/broccoli	24	1
Grass	24	1
Macadamia nuts	24	1
Onions	24	1
Barley	23	1
Others	109	6

3.20 Packaging Material

Frequency of Cartons used during the year 2019 per crop

Cartons are some of the packing materials that are used for field crops. The cartons use was stable throughout the year. This could be a result of the production cycles of the commodities that have to be packaged. Use of cartons was highest for tomatoes and tea. Tables 3.44a and 3.44b illustrate these distributions.

Table 3.44a: Distribution Frequency of Cartons Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

31	21	22	23	24	26	29	30	28	27	31	27

Table 3.44b: Distribution Frequency of Cartons Use by Crop

Crop	Frequency	Per cent
Tomatoes	59	18
Tea	57	18
Bananas	16	5
Coffee	16	5
Beans, dry	12	4
Carthamus /Safflower/Safon	12	4
Cauliflowers/broccoli	12	4
Gypsophillla/Baby Breath Species	12	4
Rhodes Grass	12	4
Roses	12	4
Straw berry	12	4
Lucern	11	3
Wheat	10	3
Khat/Miraa	8	3
Others	32	10

3.21 Distribution of Frequency of Bags Used During the Year 2019 per Crop

Tables 3.45a and 3.45b illustrate the frequency of bags use and their respective crops. Bags are some of the packing materials that are used for grains and some industrial crops. The bags use followed a similar trend with cartons, by being stable throughout the year. Use of bags was highest for avocadoes, kales and coffee.

Table 3.45a: Distribution Frequency of Bags Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
6	8	6	6	5	5	3	5	4	6	4	3

Table 3.45b: Distribution Frequency of Bags Use by Crop

Crop	Frequency	Per cent
Avocados	15	28
Kales	11	20
Coffee	7	13
Bananas	4	7
Irish Potatoes	2	4
Oranges	2	4
Maize	1	2
Mangoes	1	2

3.22 Frequency of Mulching Material Used During the Year 2019 per Crop

Mulching is used in conservation of moisture in some field crops especially where irrigation is used. The mulch can also be used as a conservation measure to improve the soil fertility especially where mechanization is highly used as in commercial farms. The mulch use was highest from August to December and lowest between the months of January to July. Mulching use was highest for maize at 58 per cent as seen in Tables 3.46a and 3.46b.

Table 3.46a: Distribution Frequency of Mulching Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
158	142	129	125	120	145	185	255	237	594	652	319

Table 3.46b: Distribution Frequency of Mulching Use by Crop

Crop	Frequency	Per cent
Maize	1769	58
Wheat	378	12
Tea	249	8
Coffee	129	4
Beans, dry	106	3
Irish Potatoes	65	2
Lemon	43	1
Tomatoes	32	1
Rice(paddy)	31	1
Bananas	30	1
Others	229	7

3.23 Frequency of Protective Clothing Purchased for Farm Employees Used During the Year 2019

Protective clothing is used by farm workers while performing different activities in the farm especially when handling chemicals and carrying out maintenance activities. The purchase was highest in January and lowest in December but stable throughout the year. The protective clothing use is not attached to any particular crop. Table 3.47 illustrates the frequency of purchase of protective clothing.

Table 3.47: Frequency of Protective Clothing Purchased for Farm Employees Used During the Year 2019

Month	Frequency
January	832
February	613
March	578
April	559
May	499
June	484
July	468
August	482
September	455
October	437
November	412
December	394

3.24 Frequency of Office Expenses Used During the Year 2019 per Crop

Office expenses used in running the office in the farming of field crops is presented in Tables 3.48a and 3.48b. The office expenses were stable throughout the year with a slight increase in January. However, the use was highest for tea, maize, coffee and sugarcane.

Table 3.48a: Distribution Frequency of Office Expenses Use by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
208	**191**	**186**	**192**	**176**	**170**	**174**	**171**	**171**	**181**	**184**	**171**

Table 3.48b: Distribution Frequency of Office Expenses Use by Crop

Crop	Frequency	Per Cent
Tea	487	22.4
Maize	436	20.0
Coffee	395	18.2
Sugar cane	182	8.4
Wheat	133	6.1
Rhodes Grass	85	3.9
Irish Potatoes	60	2.8
Barley	48	2.2
Tomatoes	47	2.2
Beans, dry	39	1.8
Bananas	38	1.7
Fodder maize	37	1.7
Kales	24	1.1
Macadamia nuts	24	1.1
Others	140	6.4

3.25 Frequency of Purchase of Spares and Maintenance of Machinery Used During the Year 2019 per Crop

Purchase of Spares and machinery maintenance is an activity that ensures that the machinery on the farm are kept in good working condition for the farming of field crops. The purchase of spares and machine maintenance was stable throughout the year with the frequency being highest in January and declining steadily throughout the year as presented in Table 3.49a. However, the use was highest for maize while wheat followed but with a lower percentage as shown in Table 3.49b.

Table 3.49a: Distribution Frequency of Purchase of Spares and Maintenance of Machinery by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
401	374	386	316	289	281	264	250	257	252	239	232

Table 3.49b: Distribution Frequency of Purchase of Spares and Maintenance of Machinery Use by Month

Crop	Frequency	Percentage
Maize	1,793	51
Wheat	605	17
Sugar cane	232	7
Coffee	222	6
Tea	201	6
Rhodes Grass	112	3
Barley	66	2
Irish Potatoes	42	1
Tomatoes	37	1
Others	231	7

Chapter 4

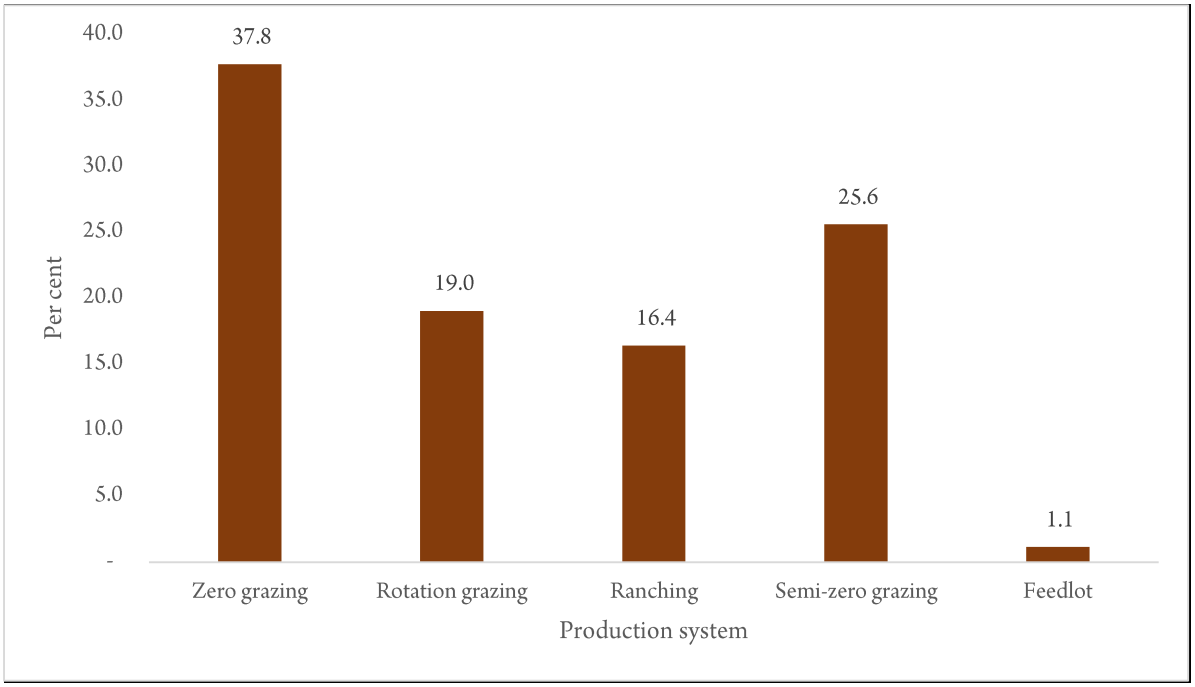
Cattle Production

4.1 Dairy Cattle

Dairy farming in Kenya is practiced under various production systems. In Zero grazing, the animals are confined and fed in stalls and is more popular in areas with high population densities e.g. Kiambu, Nakuru, Uasin Gishu, Kakamega and Nyeri. On the other hand, we have the rotational grazing where animals are left to graze in the open field and are enclosed in a cowshed at night. This was evidenced in Uasin Gishu, Bomet and Nakuru Counties. In the ranching production system, the animals are left to graze in the open fields common in areas with large chunks of grazing fields such as in Kajiado, Machakos and Uasin Gishu Counties.

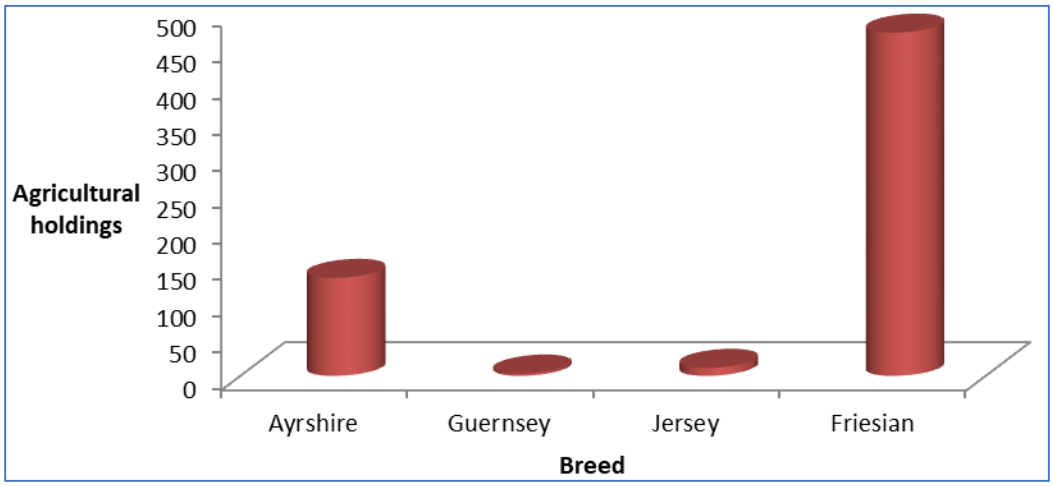
Figure 4.1 shows that commercial dairying was mostly under zero grazing which accounted for 37.8 per cent and semi zero grazing (25.6 per cent). This is probably due to the fact that dairy farmers are cognizant of the need to confine cows to reduce unnecesary energy losses occassioned by movement of animals and diseases; in addition to reduced land parcel holdings due to land fragmentation.

Figure 4.1: Distribution of Dairy Production Systems, 2019



Figures 4.2 shows the distribution of breed among the agricultural holdings. As evidenced from the figures, the friesian and ayrshire are the prefered breeds in Kenya.

Figure 4.2: Distribution of Dairy Agricultural Holdings by Breed Reared, 2019



4.1.1 Distribution of Dairy Breeds

The Ayrshire and Friesian breeds are fairly distributed across the Country as presented in Table 4.1. Kiambu, Uasin Gishu and Nakuru counties host majority of the Friesian herds representing 12.6, 8.9 and 7.4 per cent, respectively. The Friesian was reported to be the most popular dairy breed, followed by Ayrshires.

Table 4.1: Distribution of Dairy Agricultural Holdings by Breed by County

County	Breed			
	Ayrshire	Guernsey	Jersey	Friesian
Baringo	3.7	-	9.1	3.0
Bomet	3.0	-	9.1	3.6
Bungoma	2.2	-	-	1.3
Busia	2.2	-	-	1.7
Embu	2.2	-	9.1	2.1
Garissa	2.2	-	-	3.2
Homa Bay	3.0	-	-	3.0
Isiolo	-	-	-	1.1
Kajiado	0.7	-	-	1.3
Kakamega	5.9	66.7	18.2	5.9
Kericho	2.2	-	-	1.9
Kiambu	12.6	-	9.1	9.9
Kilifi	-	-	-	3.2
Kirinyaga	1.5	-	-	2.5
Kisumu	1.5	-	-	0.8
Kitui	0.7	-	-	0.4
Kwale	3.0	-	-	2.7
Laikipia	0.7	-	-	4.7
Machakos	0.7	-	-	1.3
Makueni	2.2	-	-	2.3
Meru	2.2	-	-	1.9
Murang'a	-	-	-	0.8
Nairobi	1.5	-	-	1.3
Nakuru	7.4	-	-	6.6
Nandi	3.0	-	-	2.1
Narok	2.2	-	-	3.0
Nyamira	1.5	-	-	1.7
Nyandarua	1.5	-	9.1	2.5
Nyeri	4.4	-	-	4.4
Tana River	3.0	-	-	1.3
Tharaka Nithi	3.0	-	9.1	2.7
Trans Nzoia	2.2	-	-	4.2
Uasin Gishu	8.9	33.3	18.2	7.4
Vihiga	2.2	-	-	1.3
West Pokot	6.7	-	9.1	3.0

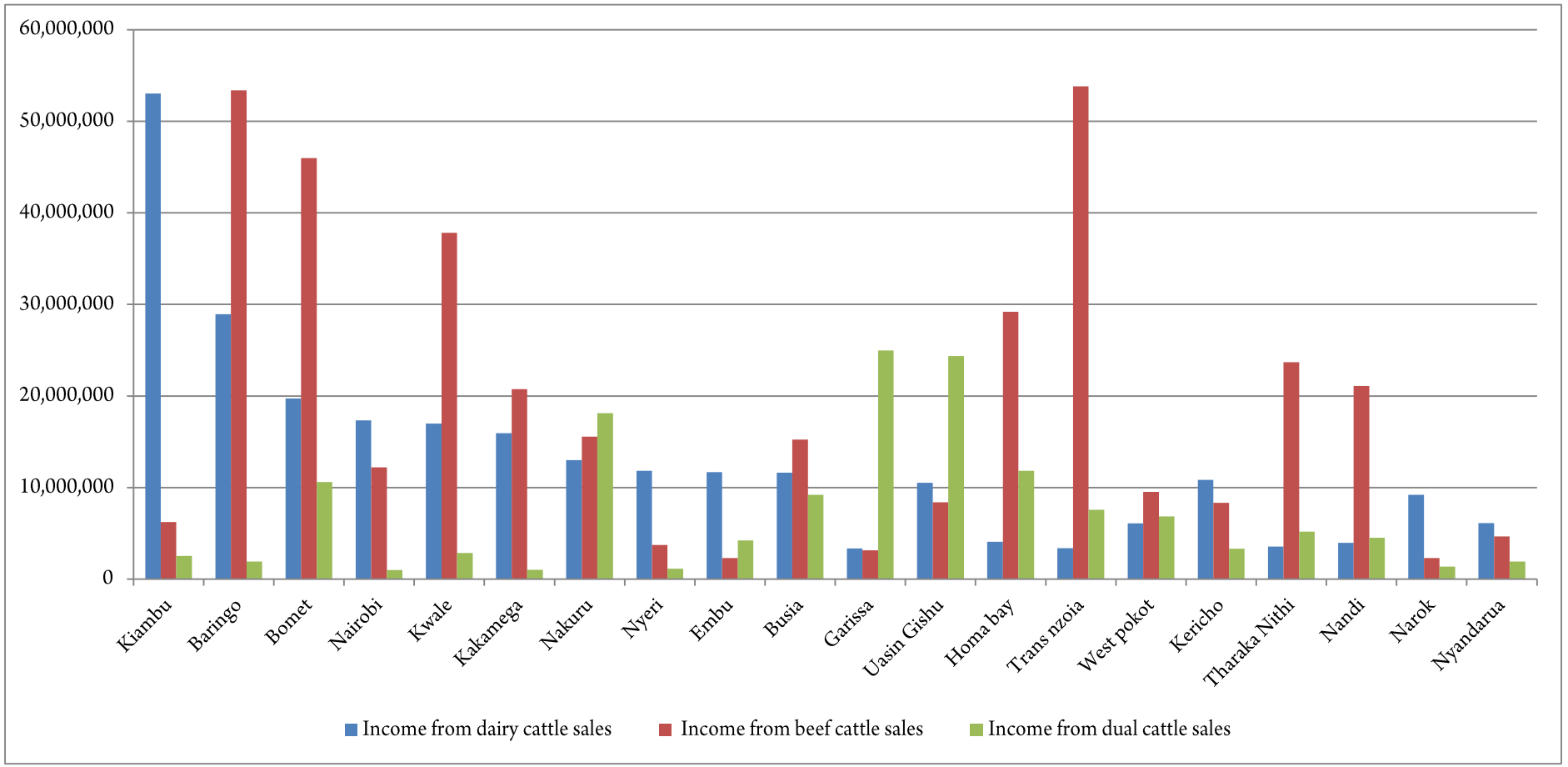
4.1.2 Dairy Revenue

Dairy cattle prices ranged from KSh 15,000 to 40,000 and KSh 80,000 to KSh 250,000 for the bulls and females, respectively as shown in Table 4.2 and Figure 4.3. A total of KSh 298 million was earned from the sales of dairy cattle with the highest sales revenue recorded in Kiambu county, which equally reported the highest mortality. High cattle losses through theft and death were reported in Kirinyaga, Laikipia, Nakuru and Uasin Gishu counties. This notwithstanding, theft of dairy cattle was not rampant in the country. This could be attributed to the fact that dairy cattle are mostly kept under intensive and semi-intensive production systems.

Table 4.2: Dairy Cattle Production and Revenue, 2019

County	Animals at beginning of 2019	Animals sold	Average price (male)	Average price (female)	Revenue (KSh) from sale of dairy cattle	Number Consumed	Deaths	Lost	Given-out	Purchased	Payment for cattle purchased	Birth
Baringo	1,905	319	20,000	100,000	28,940,000	36	153	-	26	7	378,000	556
Bomet	1,005	182	30,000	150,000	19,740,000	5	58	2	2	22	580,000	189
Bungoma	299	21	20,000	100,000	1,460,000	3	29	-	3	9	835,000	34
Busia	684	134	20,000	100,000	11,640,000	1	53	-	2	2	108,000	112
Embu	783	105	40,000	150,000	11,680,000	2	47	1	49	13	3,015,000	188
Garissa	545	60	20,000	100,000	3,360,000	2	85	-	10	1	6,000	109
Homa Bay	997	47	40,000	100,000	4,100,000	-	146	-	8	32	1,322,000	176
Isiolo	180	20	20,000	100,000	1,120,000	1	8	-	3	7	140,000	32
Kajiado	170	6	30,000	150,000	660,000	-	20	-	3	4	280,000	27
Kakamega	1,207	273	20,000	100,000	15,940,000	7	79	-	21	41	2,988,002	278
Kericho	994	74	30,000	150,000	10,860,000	4	97	-	15	14	1,780,000	327
Kiambu	2,726	339	15,000	250,000	53,025,000	5	316	2	36	130	10,337,500	572
Kilifi	598	23	20,000	100,000	1,980,000	4	15	-	2	5	75,000	91
Kirinyaga	492	31	15,000	150,000	3,030,000	2	23	8	8	33	15,000	71
Kisumu	779	13	40,000	100,000	1,300,000	10	15	-	-	11	175,000	145
Kitui	93	20	30,000	100,000	2,000,000	-	10	-	2	-	-	32
Kwale	1,095	189	70,000	100,000	16,980,000	11	158	5	18	56	6,650,000	255
Laikipia	682	70	40,000	100,000	5,260,000	6	51	8	4	10	200,000	103
Machakos	336	23	30,000	100,000	690,000	-	5	-	4	1	10,000	62
Makueni	284	10	30,000	100,000	930,000	1	30	-	1	2	400,960	50
Meru	317	48	20,000	150,000	5,900,000	1	42	-	5	2	40,000	73
Murang'a	225	56	25,000	200,000	6,475,000	-	21	5	9	10	800,000	27
Nairobi	492	142	20,000	250,000	17,330,000	2	61	3	-	-	-	109
Nakuru	1,252	146	40,000	150,000	12,990,000	1	80	10	29	12	1,218,000	202
Nandi	434	92	30,000	80,000	3,960,000	1	21	1	-	5	345,000	93
Narok	889	140	40,000	100,000	9,200,000	16	61	-	-	3	185,000	230
Nyamira	218	28	20,000	100,000	560,000	3	24	-	2	8	460,000	47
Nyandarua	785	118	25,000	80,000	6,140,000	4	35	-	9	5	250,000	174
Nyeri	1,209	124	20,000	150,000	11,840,000	9	62	1	12	33	855,000	164
Tana River	449	44	40,000	100,000	3,680,000	-	20	-	6	1	25,000	106
Tharaka Nithi	418	40	15,000	150,000	3,570,000	8	61	-	7	15	915,000	84
Trans Nzoia	479	61	20,000	100,000	3,380,000	5	36	5	2	7	553,000	96
Uasin Gishu	1,606	166	20,000	100,000	10,520,000	13	133	8	39	36	1,385,000	280
Vihiga	234	15	30,000	100,000	1,360,000	3	16	-	5	5	180,000	59
West Pokot	863	83	60,000	80,000	6,100,000	-	60	-	8	35	791,000	141
Total	**25,734**	**3,264**			**297,730,000**	**166**	**2,135**	**59**	**350**	**577**	**37,297,462**	**5,300**

Figure 4.3: Revenue (KSh) from Sales of Dairy, Beef and Dual Cattle 2019

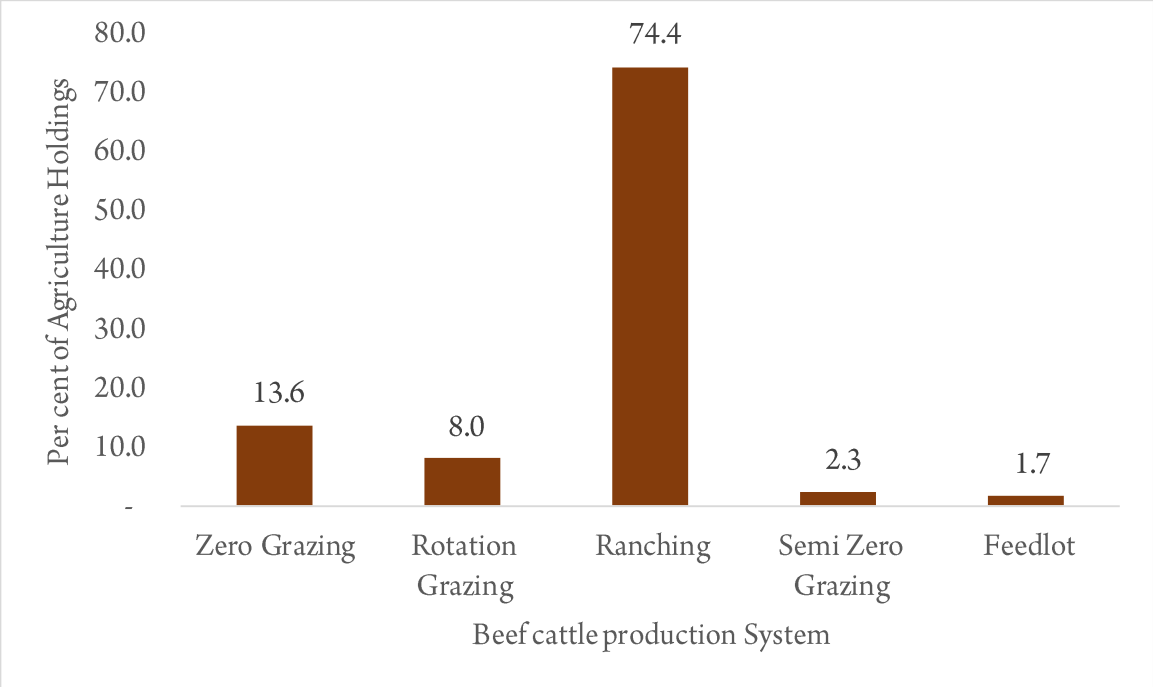


4.2 Beef Cattle

4.2.1 Beef Production Systems

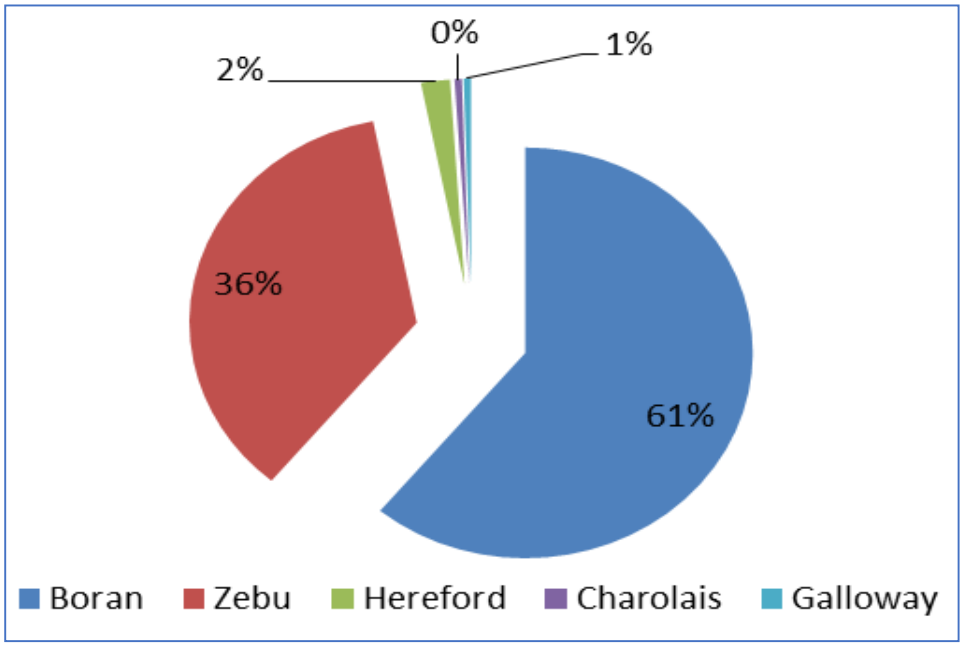
Figure 4.4 presents the proportion of agricultural holdings by type of beef production systems. Most beef cattle production was derived from ranches followed by Zero grazing. Ranches are ideal for commercial beef production in the country. This is because there exist large chunks of land involved which allows paddocking for grazing of animals inorder to produce quality meat. Ranches are managed by professional ranch managers for good management because of the number of beef cattle involved. On the other hand, feedlot is used for feeding animals which are meant to gain weight for sale.

Figure 4.4: Distribution of Agricultural Holdings by Beef Production Systems, 2019



In terms of breed preference for beef cattle, the Boran and zebu are the most popular jointly accounting for over 95 per cent of the total production. The exotic beef breeds are found in few populations as shown in Figure 4.5.

Figure 4.5: Percentage Agricultural Holdings by Type of Beef Breed

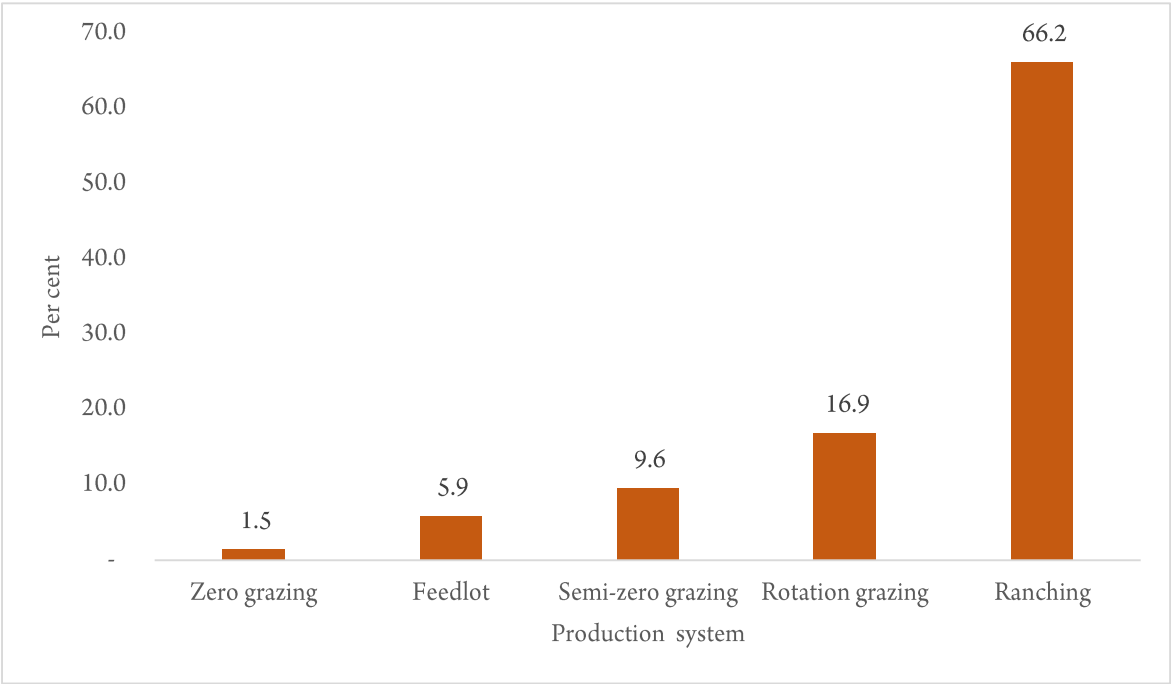


4.3 Dual Purpose Cattle

4.3.1 Production Systems

Dual purpose breeds of cattle produce both beef and milk. These breeds were mainly reared under the ranching system (66.2 per cent) as shown on Figure 4.6. Other production systems were also in place but to a less extent. Ranching for dual cattle is popular in Nakuru, Uasin Gishu and West Pokot Counties.

Figure 4.6: Dual Purpose Agricultural Holdings Production Systems

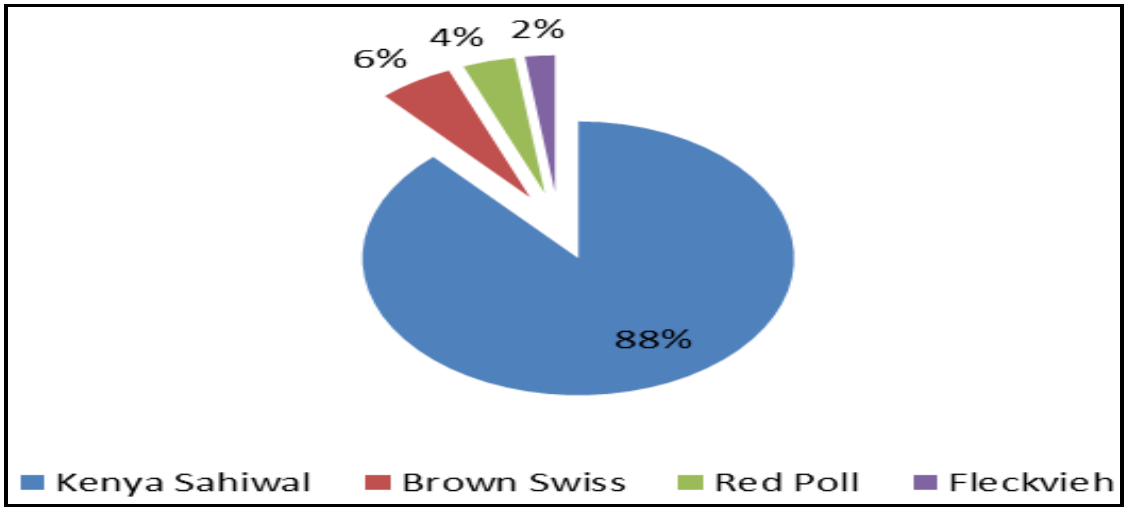


Among the dual cattle breeds, the Sahiwal (88.8 per cent) is the most common in most agricultural holdings while the Fleckvieh (1.7 per cent) is least common as shown in Table 4.3 and Figure 4.7

Table 4.3: Distribution of Dual Purpose Cattle Agricultural Holdings by Breed

Breed	Agricultural holdings	Per cent of holdings
Kenya Sahiwal	158	88.8
Brown Swiss	10	5.6
Red poll	7	3.9
Fleckvieh	3	1.7
Total	**178**	**100**

Figure 4.7: Agricultural Holdings by Dual Purpose Breed



The Kenya Sahiwal is most popular breed across the counties as shown on Table 4.4. On the other hand, Fleckvieh and Brown Swiss breeds are thinly reported the counties.

Table 4.4: Agricultural Holdings Rearing Dual Purpose Cattle by Breed by County

County	Breed			
	Brown Swiss	Kenya Sahiwal	Red Poll	Fleckvieh
Baringo	20.0	0.6		
Bomet		8.9		
Bungoma	10.0	1.3		
Busia	10.0	2.5		33.3
Embu		3.2		
Garissa		3.2		
Homa Bay	10.0	4.4		
Isiolo		0.6		
Kajiado		0.6		
Kakamega	10.0	8.2		33.3
Kericho		2.5		
Kiambu		9.5		
Kilifi		1.9		
Kirinyaga		2.5		
Kitui		1.3		
Kwale		0.6		
Laikipia		2.5		
Machakos		1.9	14.3	
Makueni		2.5		
Meru		2.5		
Nairobi		0.6		
Nakuru	10.0	5.1		
Nandi		0.6	42.9	
Narok		2.5		
Nyamira		2.5		
Nyandarua		0.6		
Nyeri		2.5	28.6	33.3
Tana River		1.9		
Tharaka Nithi		3.2		
Trans Nzoia	10.0	3.2	14.3	
Uasin Gishu	10.0	8.2		
Vihiga		1.3		
West Pokot	10.0	6.3		

4.4 Meat Goats

4.4.1 Production systems

Although all systems are practiced in Kenya for meat goats, ranching is the common meat goat production system with Kajiado County on the lead as shown in Table 4.5. Zero grazing system of meat goat production is less common and only limited to high potential (Kiambu, Kirinyaga and Meru) Counties. Most meat goats are in the ASAL counties of Kajiado, Baringo, Kilifi and Nakuru.

Table 4.5: Meat Goat Production Systems by Agricultural Holdings by County

County	Zero grazing	Rotation grazing	Ranching	Semi-Zero grazing	Feedlot
Baringo	-	-	9.3	-	45.5
Bomet	-	14.3	1.9	33.3	9.1
Elgeyo Marakwet	-	-	3.7	-	9.1
Embu	-	-	13.0	-	-
Kajiado	-	-	18.5	-	-
Kericho	-	-	-	-	9.1
Kilifi	25.0	14.3	-	-	9.1
Kirinyaga	25.0	-	-	-	-
Kitui	-	-	13.0	-	-
Kwale	25.0	-	1.9	-	-
Machakos	-	-	1.9	-	-
Makueni	-	-	1.9	-	-
Meru	25.0	-	3.7	66.7	9.1
Nakuru	-	28.6	1.9	-	-
Samburu	-	-	7.4	-	-
TaitaTaveta	-	-	5.6	-	-
Tharaka Nithi	-	-	11.1	-	9.1
Uasin Gishu	-	28.6	3.7	-	-
West Pokot	-	14.3	1.9	-	-

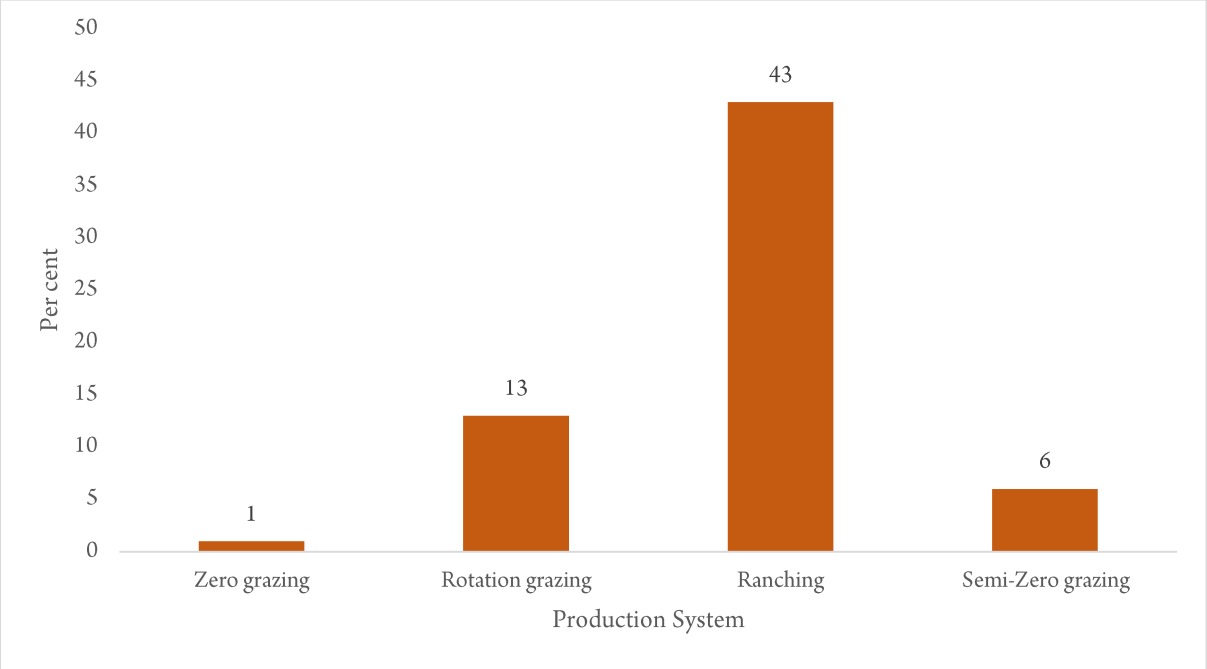
NB. *Only those counties meeting the set criteria are enlisted*

4.5 Wool Sheep

4.5.1 Wool Sheep Production Systems

As shown on Figure 4.8, rotational grazing and ranching are the common production systems for wool sheep in Kenya accounting for 45.9 per cent followed by ranching which accounted for 35.1 per cent of the wool sheep production system. The least used production system for wool sheep was semi zero greeaing(2.7 per cent).

Figure 4.8: Wool Sheep Production Systems, 2019



4.5.2 Wool Sheep Distribution

Table 4.6 presents the distribution of agricultural holdings with wool sheep by breed and by county. Wool sheep production is practiced in cool regions of the country due to the climatic conditions that favour their rearing. The most common breeds of wool sheep are Merino, Corriedale and Hampshire down. Merino sheep was the most popular breed in the Country. West Pokot, Bomet and Meru counties reported the highest number of Merino breed of wool sheep. Corriedale wool sheep was found in Meru and Nakuru while hampshire down was in Nakuru, Nyeri and Nyandarua Counties.

Table 4.6: Distribution of Agricultural Holdings with Wool Sheep Population by Breed and by County

County	Merino	Corriedale	Hampshire Down
Bomet	6	0	0
Kericho	1	0	0
Meru	4	1	0
Nakuru	0	1	1
Nyandarua	1	0	5
Nyeri	0	0	2
Uasin Gishu	2	0	0
West Pokot	13	0	0
Total	**27**	**2**	**8**

4.6 Meat Sheep

Table 4.7 presents the distribution of meat sheep agricultural holdings by breed and county. The meat sheep breeds are reared in various counties for mutton production. Table 4.7 and Figure 4.9 show that the Dorper sheep was the most popular amongst farmers, followed by the Red Maasai breed. The main reason of the popularity of Dorper sheep is its ability to adapt to many types of climatic conditions and has a higher meat yield compared to the Red Maasai.

Figure 4.9: Percentage Agricultural Holdings by Meat Sheep Breeds

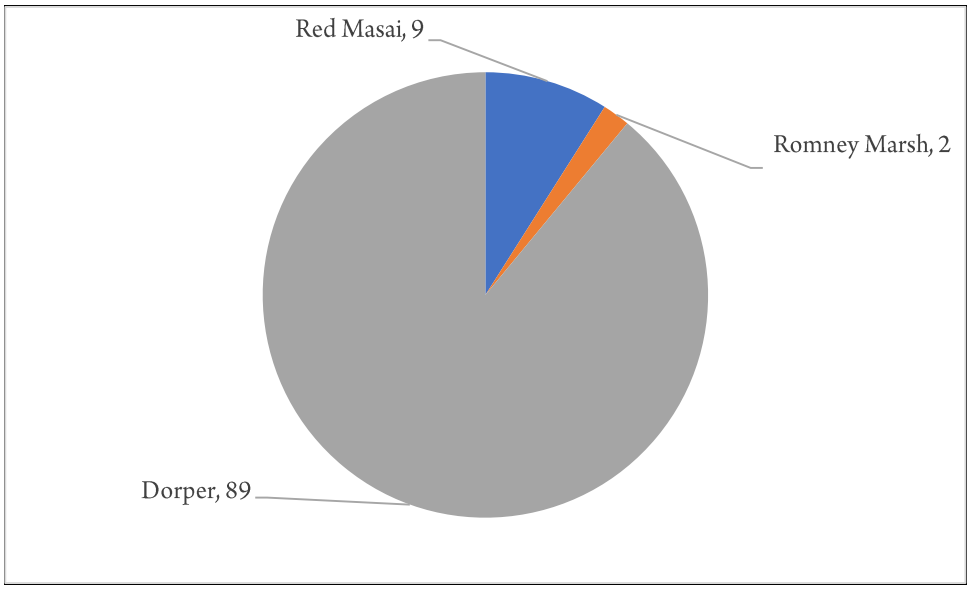


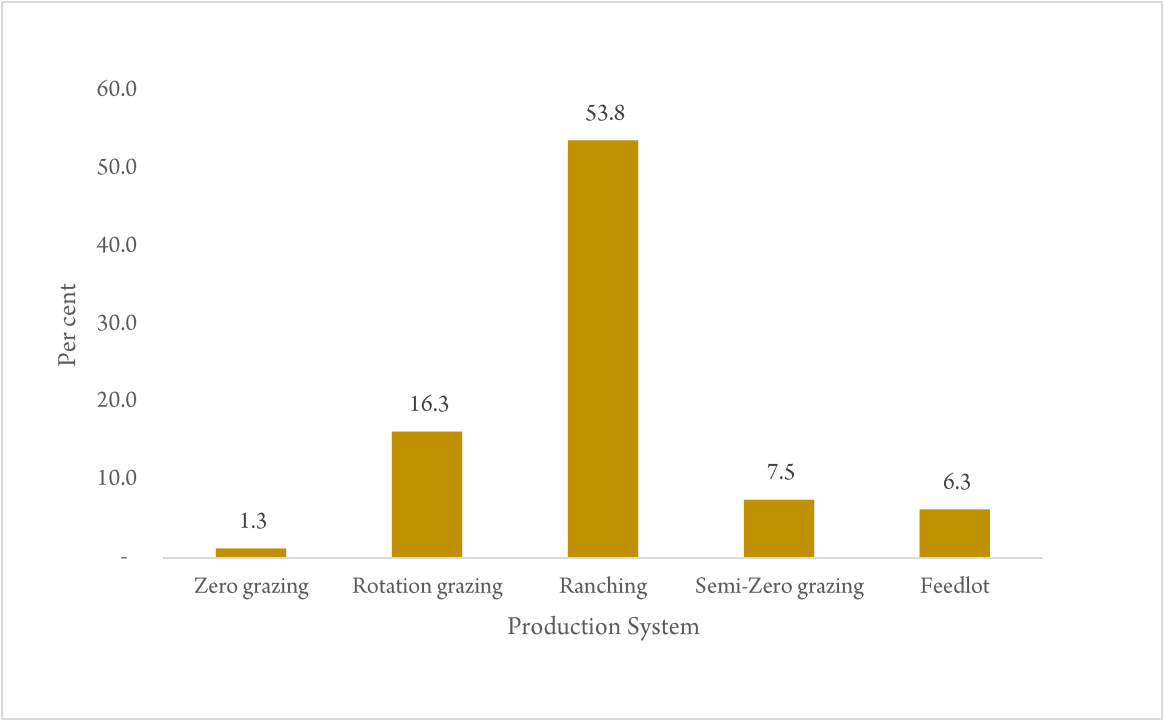
Table 4.7: Distribution of Meat Sheep Agricultural Holdings by Breed by County

	Breed		
County	**Red Maasai**	**Romney Marsh**	**Dorper**
Baringo	1	0	0
Bomet	0	0	1
Embu	1	0	0
Kajiado	0	0	4
Kakamega	0	0	6
Kiambu	0	0	7
Kirinyaga	0	0	1
Kitui	2	0	1
Laikipia	0	0	1
Machakos	1	0	3
Meru	2	0	5
Nakuru	0	2	3
Nyandarua	0	0	1
Nyeri	0	0	4
Samburu	0	0	14
TaitaTaveta	0	0	1
Uasin Gishu	0	0	17
West Pokot	0	0	2
Total	**7**	**2**	**71**

4.7.1 Meat Sheep Production Systems

Sheep are normally reared under extensive to semi-extensive conditions in the Country, as they mostly graze and are housed for the night or confined part of the day and supplemented with feeds. The most reported method of rearing the meat sheep is the ranching system of production (53.8 per cent) which is mostly grazing in well fenced fields as shown on Figure 4.10.

Figure 4.10: Percentage distribution of Mutton Sheep Production Systems in Kenya



The feedlot system of meat sheep was reported in Meru, Kakamega and Nyeri Counties as shown in Table 4.8. Wool sheep are mainly kept under rotational grazing and ranching production systems. Rotational grazing was most popular in Nyandarua, Nakuru and Bomet while ranching was common in Nyandarua, Nyeri and Meru.

Table 4.8: Distribution of Sheep Production Systems by Sheep Type by County

	Meat sheep						Wool sheep			
County Name	Zero grazing	Rotation grazing	Ranching	Semi-Zero grazing	Feedlot	Other	Rotation grazing	Ranching	Semi-Zero grazing	Other
Baringo	0	0	1	0	0	0	0	0	0	0
Bomet	0	1	0	0	0	0	5	1	0	0
Embu	0	0	1	0	0	0	0	0	0	0
Kajiado	0	0	4	0	0	0	0	0	0	0
Kakamega	0	0	1	4	1	0	0	0	0	0
Kericho	0	0	0	0	0	0	0	1	0	0
Kiambu	0	2	0	0	0	5	0	0	0	0
Kirinyaga	0	0	1	0	0	0	0	0	0	0
Kitui	0	0	3	0	0	0	0	0	0	0
Laikipia	0	0	1	0	0	0	0	0	0	0
Machakos	0	0	3	1	0	0	0	0	0	0
Meru	1	0	2	1	2	1	2	2	1	0
Nakuru	0	4	1	0	0	0	2	0	0	0
Nyandarua	0	1	0	0	0	0	4	2	0	0
Nyeri	0	0	2	0	2	0	0	2	0	0
Samburu	0	0	11	0	0	3	0	0	0	0
TaitaTaveta	0	0	0	0	0	1	0	0	0	0
Uasin Gishu	0	5	12	0	0	0	0	2	0	0
West Pokot	0	0	0	0	0	2	4	3	0	6
Total	**1**	**13**	**43**	**6**	**5**	**12**	**17**	**13**	**1**	**6**

4.8 Material Inputs in the Livestock

Table 4.8 presents material inputs in livestock production by county. Hay constitutes the bulky of conserved forage input (2.7 tonnes) to the livestock costing the farmers KSh 157.0 million followed by silage and Napier grass respectively. Nakuru county with a consumption of 2.2 million tonnes is the leading followed by Kiambu county with a consumption of 163.0 thousand tonnes. On the other hand, Green forage/natural pasture constitutes the bulky (1.5 million tonnes) of livestock feeds followed by Napier grass/fodder crops (72,000 tonnes).

Table 4.8: Material Inputs in Livestock Production

County	Hay (MT)	Hay value (KSh)	Silage (MT)	Silage value (KSh)	Napier grass/fodder (MT)	Napier grass/fodder (KSh)	Green forage (e.g. Natural Pasture, fodder trees,) (MT)	Green forage (e.g. Natural Pasture, fodder trees,) (KSh)	Water purchased (LT)
Baringo	3,250	827,500	8	96,000	15	11,000	2	20,000	538,780
Bomet	1,951	139,900			1,002	14,600			60,000
Bungoma	1,198	269,500							
Busia	100	25,000	90	87,993			1,657	46,700	
Elgeyo Marakwet	100	30,000	203	79,400			30	1,500	72,600
Embu	9,300	3,045,000	2,352	728,030	510	550,000	17	29,000	49,255
Garissa									
Homa Bay									
Isiolo							50	50,000	
Kajiado	3,364	1,054,400					255,713	6,410,500	952,910
Kakamega	52,181	11,435,700	30,659	2,392,800	52,521	1,970,750	19,113	3,794,508	354,498
Kericho	322	330,000	5	25,000	480	360,000	2	60,000	
Kiambu	163,052	39,284,168	48,703	10,017,000	5,133	50,584,700	2,435	1,204,950	4,356,547
Kilifi	22,730	489,000	7,500	18,750,000			150	15,000	10,777,940
Kirinyaga	8,258	1,588,500	59	545,000	1,040	160,000			13,772
Kisumu			500	5,000					
Kitui	178	83,400			42	42,000	102	338,000	213,348
Kwale	4,038	617,100	2,400	10,400,000	70	29,500	1,215,000	24,000,000	24,259,050
Laikipia	48,500	4,068,000							3,000
Machakos	5,049	3,136,200	794	13,162,870	110	220,000			486,800
Makueni	10,150	1,800,000	650	600,000	20	100,000			14,375
Marsabit									
Meru	4,682	1,299,000	241	950,360	222	262,500	18,194	1,793,000	3,505,189
Migori									
Murang'a	11,980	1,941,000	3,766	1,985,900	600	360,000			5,049,812
Nairobi	864	36,225	1	10,000					345,060
Nakuru	2,202,690	67,494,000	4,000	2,750,000	9,000	27,000			8,872,000
Nandi			45,150	525,000					
Narok	3,320	1,148,000			40	40,000	5	175,000	10,000
Nyamira	3,600	684,000	50	167,000	70	410,000	40	40,000	120,000
Nyandarua	1,115	239,725							1,440
Nyeri	42,600	10,404,000	65	344					2,066,001
Samburu	1,540	616,000							60,000
TaitaTaveta	102,930	982,500	28	34,000			150	0	5,128,600
Tharaka Nithi							60	9,000	192,912
Trans Nzoia	21,624	1,028,200	16,160	160,750	415	2,000	10,001	108,000	0
Uasin Gishu	56,951	2,026,600	390	3,546,080	219	73,750	3	309,500	120
Vihiga	558	135,300	30	7,500			1,555	213,600	32
West Pokot	3,470	841,500	1,378	166,200	35	37,000	233	421,000	33,000
Total	2,791,645	157,099,418	165,182	67,192,227	71,544	55,254,800	1,524,512	39,039,258	67,537,041

Table 4.8: Material Inputs in Livestock Production Contd'

County	Water purchased (KSh)	pesticides (Kg)	pesticides (KSh)	Dips, spray fluids LT)	6c Dips, spray fluids (KSh)	Vaccines (LT)	Vaccines (KSh)	Fuel (LT)	Fuel (KSh)
Baringo	250,300	1,216	57,200	284	411,800	209	139,760	7	700
Bomet	120,000	2,288	283,332	2,667	314,900	1,191	45,500	72,000	720,000
Bungoma		148	118,500	18	45,250	5	25,000		
Busia		557	265,020	83	110,000	175	108,200	8,295	878,490
Elgeyo Marakwet	138,900	170	239,200	82	93,760	35	64,500	250	25,500
Embu	122,450	308	786,000	139	191,900	255	385,450	10,313	4,328,500
Garissa		5	15,000			1	5,000		
Homa Bay				20	2,000	2,003	35,250	120	12,000
Isiolo				3	5,400	6	600		
Kajiado	5,783,000	1,127	421,350	1,595	814,166	71	254,900	8,420	784,000
Kakamega	855,150	6,700	3,010,150	36,549	2,092,040	21,173	3,485,980	40,025	1,528,034
Kericho		334	402,660	185	313,054	306	35,400	40,930	1,403,000
Kiambu	16,916,394	1,284	1,452,950	483	237,750	543,367	5,794,430	192,324	10,978,667
Kilifi	2,024,883	649	781,520	605	613,300	198	668,750	12,804	1,412,388
Kirinyaga	26,000	67	77,302	1,182	92,630	36	142,300	16,245	1,912,550
Kisumu				1	10,000	5	2,000		
Kitui	451,280	129	239,320	83	83,150	253	351,530	2,252	268,800
Kwale	1,958,000	428	393,000	217	592,414	966	1,525,400	1,350,198	19,389,360
Laikipia	15,000	5,791	10,672,720	1,506	1,962,500	4,612	1,310,250	101,137	17,595,420
Machakos	482,400	411	1,046,710	416	2,315,340	1,529	5,050,990	203,678	18,528,230
Makueni	784,750	240	36,000	289	1,029,250	118	397,269	60,938	5,984,600
Marsabit		1	3,000			300	300		
Meru	929,033	5,393	1,640,865	4,182	1,092,470	35,414	1,605,350	5,090	305,600
Migori							5,000		
Murang'a	4,051,055	578	284,750	5	15,000	1,402	463,350	37,998	764,200
Nairobi	9,010	32	76,100	12	36,000	440	446,000		
Nakuru	6,011,600	1,944	38,112,880	1,891	2,124,950	13,847	184,817,810	245,803	18,116,095
Nandi		96	206,400			200	3,600	2,390	247,900
Narok	3,000	49	233,520	257	1,081,600	16	74,050	65	6,500
Nyamira	360,000	572	124,800	6	38,800	1,087	70,500	3,404	260,240
Nyandarua	168,000	2	4,000	105	216,100	19	27,650		
Nyeri	4,377,305	165	231,665	253	191,590	4,826	494,873	15,194	1,216,600
Samburu	15,000	227	421,200	488	1,453,600	35	124,100		
TaitaTaveta	6,406,000	911	2,835,960	222	578,735	546	3,722,920	34,662	3,850,600
Tharaka Nithi	320,984	587	134,300	112	12,100	2,176	355,550	600	66,000
Trans Nzoia	0	176	571,920	420	1,530,600	3,900	110,500	12,710	1,329,720
Uasin Gishu	36,000	617	1,502,580	1,683	3,911,344	713	488,700	10,949	639,196
Vihiga	97,000	90	32,280	2,500	35,940	7	62,740	20	2,050
West Pokot	500,000	348	502,800	521	783,860	634	985,480	2,250	251,200
Total	53,212,494	33,637	67,216,954	59,063	24,433,293	642,074	213,686,932	2,491,070	112,806,140

Table 4.8: Material Inputs in Livestock Production Contd'

County	Lubricants purchased (LT)	Lubricants purchased (KSh)	grease purchased (Kg)	grease purchased (KSh)	Electricity (KWH)	Electricity (KSh)	Spares for maintenance of machinery	Spares for maintenance of machinery (KSh)
Baringo	6	1,250			14	1,062	4	3,000
Bomet			3	1,300	43,200	444,000	8	22,360
Bungoma					75,000	50,100		
Busia	1	280	1	250	2,680	59,480	1	20,000
Elgeyo Marakwet			20	5,000	250	18,750	4	32,000
Embu	130	65,000	243	196,500	849,000	4,356,000	14	897,000
Garissa	2	3,000						
Homa Bay			2	400	6,032	143,660		
Isiolo								
Kajiado	415	175,100	80	70,000	172,360	4,295,000	11	2,000,000
Kakamega	132	54,300	60	70,650	80,419	1,922,502	245	392,000
Kericho	101	42,300	23	1,600	1,100	133,000	8	55,000
Kiambu	7,717	4,458,900	51	68,050	560,933	9,693,408	39,824	6,138,100
Kilifi	105	30,200	2	4,000	20,782	2,041,900	7	624,000
Kirinyaga			26	4,000	18,360	1,501,172	46	73,600
Kisumu								
Kitui	6	1,800					13	2,600
Kwale	152	53,200	18	6,300	10,260	229,656	1	166,000
Laikipia	5,305	2,356,955	311	427,150	18,907	664,759	733	29,763,493
Machakos	223	105,850	64	33,620	520,924	9,078,240	27	1,611,000
Makueni	20	100,000			96,800	1,846,085	51	1,890,000
Marsabit								
Meru	11	3,700	13	9,400	7,651	248,000	12	36,600
Migori								
Murang'a	17	3,250			38,596	2,030,068	46	188,000
Nairobi	1	1,000	6	750	1,504	1,504		
Nakuru	14,624	674,000	250,660	244,500	10,175,410	15,699,262	40,014	5,159,000
Nandi	50	15,000	17	5,100			3	450,000
Narok	2	1,200			6,000	240,000	1	40,000
Nyamira	103	44,400	96	9,600	43,855	81,000	4	16,240
Nyandarua	5	1,250			3,200	63,000		
Nyeri	256	81,000	32	15,070	16,698	785,525	10,015	599,900
Samburu								
TaitaTaveta	1,135	129,900	214	33,100			31	793,000
Tharaka Nithi					18,080	276,500	5	50,000
Trans Nzoia	93	22,640	26	10,100	565	30,570	11	81,800
Uasin Gishu	125	67,790	25	11,750	14,476	289,745	19	189,000
Vihiga	2	600			52,255	208,100	2	12,000
West Pokot	3	1,200	1	500			2	400,000
Total	30,741	8,495,065	251,993	1,228,690	12,855,310	56,432,048	91,162	51,705,693

4.9 Labour and service inputs Value

Table 4.9 presents labour and service inputs consumption by county. Livestock spraying constitutes the most common (92 per cent) vector control method over dipping. On the other hand, livestock farmers preferred to engage private veterinary services at 82 per cent, compared to government veterinary services.

Table 4.9: Labour and Service Inputs Value

County	Livestock spraying	Livestock Dipping	Transportation	Tractor services	Private veterinary services	Government veterinary services	Government veterinary inoculation services	Insurance	Accounting, secretarial and auditing service
Baringo	104,330	65,006	23,000		389,100	48,800	27,720		
Bomet	481,100	108,350	100,700		435,100	13,690	30,690		2,000,000
Bungoma	5,000		54,000		5,000	3,000			
Busia	22,000		475,900		739,500				
Elgeyo Marakwet	96,150	194,500	105,400		383,800	13,800	22,400		
Embu	35,500		27,800		706,100	256,000	55,800		150,000
Garissa			45,000		10,000				
Homa Bay			40,000						
Isiolo						0			
Kajiado	3,200		1,800,000	300,000	219,600	305,600	150,000		240,000
Kakamega	161,050	36,900	1,508,300	220,000	741,000	84,940	15,000	48,000	12,000
Kericho	113,500	21,500	381,000	40,000	189,300	11,940	5,000	50,000	
Kiambu	110,150	98,300	19,093,610	62,000	6,919,868	1,031,260	531,930	8,493,811	510,118
Kilifi	58,000	2,000	354,000	250,000	475,700	132,750	10,000		160,000
Kirinyaga	152,280		435,190		659,600		1,800	96,000	75,000
Kitui	42,720		71,950		67,200	37,210			
Kwale	138,000	320,000	775,000		77,700	359,440	11,000	120,000	120,000
Laikipia			1,320,000	50,000	330,000	100,000		2,246,189	1,185,650
Machakos	10,800		2,017,900	30,000	1,283,700	876,000	42,000	1,364,000	
Makueni			160,000		60,000	60,000		2,030,000	405,000
Marsabit	6,000				1,000	0			
Meru	120,900		546,000	48,000	929,438	62,500	101,380	540,800	35,000
Migori					3,000				
Murang'a	113,000		1,057,400	1,000,000	509,300	36,000	5,000	5,529,000	155,000
Nairobi	57,600		107,000		11,800	22,500			
Nakuru	30,999,888	495,000	549,500		1,347,590	135,000	18,400	3,000,000	1,146,000
Nandi	196,500		4,500		605,000	7,200	5,050		
Narok	2,000		235,000	80,000	183,900	13,800	36,000		
Nyamira	147,000		31,000	6,000	15,500	44,750	61,500		1,800
Nyandarua	38,800		120,000		856,200	1,800			
Nyeri	45,000	10,000	487,400		418,000	140,000	16,500		
Samburu			56,600		32,100	62,000	15,000		
TaitaTaveta	730,400		1,697,000	150,000	615,400	367,190	97,500	471,000	1,500,000
Tharaka Nithi	40,500		499,200		170,500	500	0	100,000	
Trans Nzoia	7,200	3,000	1,800		14,000	22,000	1,750		
Uasin Gishu	142,560	1,552,320	368,580	37,500	2,163,980	597,400	424,260		42,000
Vihiga	15,500		407,850		502,917	5,700	1,900	612,000	
West Pokot		196,230	77,900		405,250	18,000	28,000		
Total	34,196,628	3,103,106	35,035,480	2,273,500	22,477,143	4,870,770	1,715,580	24,700,800	7,737,568

Table 4.9: Labour and Service Inputs Value Contd'

County	Farm planning and census services	Artificial insemination	Marketing	Research	Publicity	Bank charges	Consultant fees	Licence fees paid for vehicles, trucks, trailers, tractors, etc.	Property rates paid to municipalities
Baringo				500	3,000		600		
Bomet		464,550				500			
Bungoma			40,000	5,000				5,000	
Busia		7,000	500	10,000	2,000	60,500	500	13,500	
Elgeyo Marakwet		93,000		17,000			4,000		4,500
Embu		2,838,000						190,000	
Garissa									
Homa Bay						14,500			
Isiolo									
Kajiado		120,000					15,000	29,700	
Kakamega	32,000	316,400	697,500	69,000	5,000	243,800	18,000	68,500	13,000
Kericho		104,000	10,000	60,000		5,300	10,000	19,000	2,000
Kiambu	318,900	4,310,520	41,700	1,308,000		3,775,050	170,600	4,570,000	46,750
Kilifi	21,200	163,000	50,000		1,000	3,200		115,000	161,300
Kirinyaga		134,000			2,500	55,000	5,000	20,000	15,000
Kitui							5,000		16,500
Kwale	45,000	200,000			40,000	241,000	5,000	49,500	237,000
Laikipia		223,000	30,000			1,202,291		720,133	2,437,465
Machakos	120,000	388,000	427,500	16,000	5,000	129,500	30,000	112,000	5,000
Makueni						320,000	240,000	25,500	2,000
Marsabit									
Meru	12,000	125,400	20,000	1,000		220,000	40,000	15,000	24,000
Migori									
Murang'a	500,000	156,400				1,586,000	140,000	534,000	1,200,000
Nairobi		1,500							2,300
Nakuru	110,500	1,015,100	1,005,000			165,801		2,630,000	24,150
Nandi		325,000							
Narok		15,500				13,500		38,000	
Nyamira		84,000				2,000	500		
Nyandarua		88,200							
Nyeri	5,000	262,400		3,000		16,000		42,000	
Samburu									
TaitaTaveta	755,000	750,000	202,000	20,000	30,000	79,980	1,198,000	740,000	2,243,000
Tharaka Nithi		20,000	108,000	10,000		25,000	17,700		17,000
Trans Nzoia						5,000			
Uasin Gishu		682,600				24,200		48,000	23,000
Vihiga		52,900					105,000		
West Pokot		7,500				10,550			
Total	**1,919,600**	**12,947,970**	**2,632,200**	**1,519,500**	**88,500**	**8,198,672**	**2,004,900**	**9,984,833**	**6,473,965**

Table 4.9: Labour and Service Inputs Value Contd'

County	Payment of tax (e.g. council levies) - exclude VAT and income tax	Operating, leasing and hiring of plant, machinery, equipment and vehicles	Repairs and maintenance on farm property	Security services	Did the establishment spend on any Services rendered by contractors, cooperatives	Telecommunication services (e.g. internet charges, telephone and facsimile	Other service expenditure
Baringo		6,950	11,400			102,400	
Bomet	9,000		276,500	15,000	35,000	14,500	90,700
Bungoma			25,000	190,000		11,000	
Busia			463,350			131,150	
Elgeyo Marakwet	5,000		147,400			166,100	
Embu			350,000			18,000	1,490,000
Garissa						8,000	
Homa Bay			10,000			84,000	
Isiolo							
Kajiado			800,000	1,000,000		68,000	
Kakamega	23,000	20,000	710,800	689,000	3,600	557,450	27,350
Kericho		15,000	150,000	50,000		19,400	25,000
Kiambu	1,306,995	1,702,000	5,374,600	2,210,447	256,200	3,578,550	815,400
Kilifi	12,000	2,511,000	780,420	16,500		117,500	722,000
Kirinyaga	24,950		237,500	72,000		121,000	109,600
Kitui			3,000	36,000		60,000	11,000
Kwale	26,000	960,000				241,500	28,000
Laikipia	1,446,000		3,693,000			1,216,320	2,711,000
Machakos	52,000	140,000	955,500	126,000	320,000	1,839,000	
Makueni	110,000					342,000	435,000
Marsabit				10,000			
Meru	5,000	10,000	65,000	504,000		661,450	229,020
Migori						7,300	
Murang'a	240,000		1,004,000	974,000		504,950	3,000,000
Nairobi			24,000				
Nakuru	193,000		6,154,500			918,500	22,288,237
Nandi			200,000	82,500		5,000	
Narok	60,400		107,500			33,500	
Nyamira			75,000	120,000		17,100	
Nyandarua				7,000			36,000
Nyeri		15,000	182,000	150,000		177,600	14,000
Samburu	79,200		55,000			204,000	7,500
TaitaTaveta	4,371,661	5,070,000	90,000	6,744,000	2,475,000	726,730	
Tharaka Nithi		15,000	310,000	32,000		60,000	
Trans Nzoia			5,000	14,400		18,000	
Uasin Gishu	12,800	33,600	252,400	20,000	125,000	87,130	200
Vihiga	100,000		291,600	96,000		16,000	
West Pokot			394,200			6,600	67,000
Total	8,077,006	10,498,550	23,198,670	13,158,847	3,214,800	12,139,730	32,107,007

Chapter 5

Fisheries and Aquaculture

5.1 Aquaculture Holdings 2019

Commercial aquaculture holdings are dominantly at 91 per cent established in warm water while sparingly 9 per cent in the cold-water areas as reflected in Table 5.1. In both areas, traditional earthen ponds were dominant with 73 per cent. Overall, 73 per cent, 11.4 per cent, 6.5 per cent, 3.3 per cent of holdings practiced fish rearing in earthen ponds, lined pond, Concrete pond and cage system respectively.

Table 5.1: Distribution of type of production units by mode of aquaculture

Type of Production Unit		Mode of Aquaculture		Total	
		warm water	cold water		Percent of responses
1	Earthen Pond	168	11	179	73.06
2	Lined Pond	28	0	28	11.43
3	Concrete Pond	5	3	8	3.27
4	Raceway	2	0	2	0.82
5	Cage System	15	1	16	6.53
7	Raised	3	0	3	1.22
8	Aquaponics	1	0	1	0.41
9	Other (Specify)	2	6	8	3.27
	Total	**224**	**21**	**245**	**100**

Overall, 56.9 per cent of the commercial aquaculture holdings practiced semi-intensive culture, with extensive and intensive system taking proportion of 31.7 per cent and 11.4 per cent respectively as presented in Table 5.2. This was a response from a total of 245 households that were interviewed. Some holdings deployed more than one culture system.

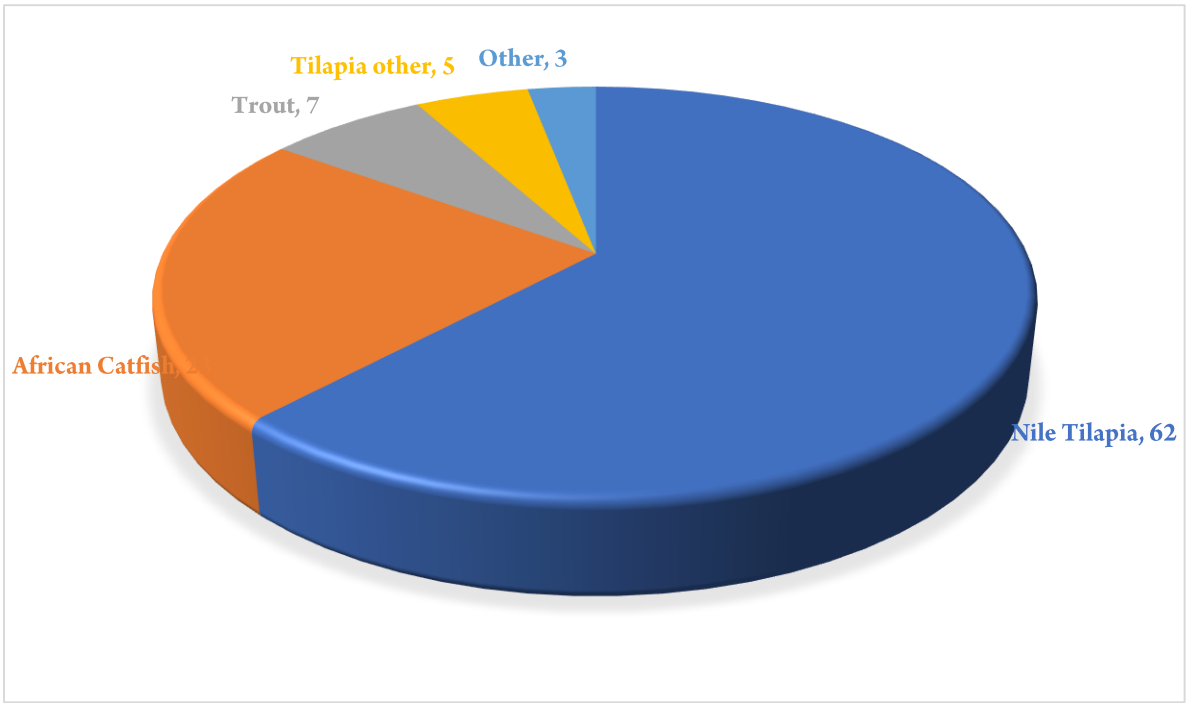
Table 5.2: Distribution of holdings by aquaculture production system and size (area/volume)

Aquaculture production system	Area(M2)	Volume(M3)	Percentage
Extensive	186,402	-	32
Semi-intensive	857,971	-	57
Intensive	-	1,098,974	11
Total	**1,044,373**	**1,098,974**	**100**

5.2 Aquaculture Species

The main species stocked by commercial aquaculture holdings are tilapia and African catfish at 62.2 per cent and 22.7 per cent,respectively. Rainbow trout was third at 6.9 per cent while the ornamental fish species; koi carp, gold fish and sword tail were least cultured as shown in Figure 5.1.

Figure 5.1: Proportions of Reared Species by Aquaculture Holdings

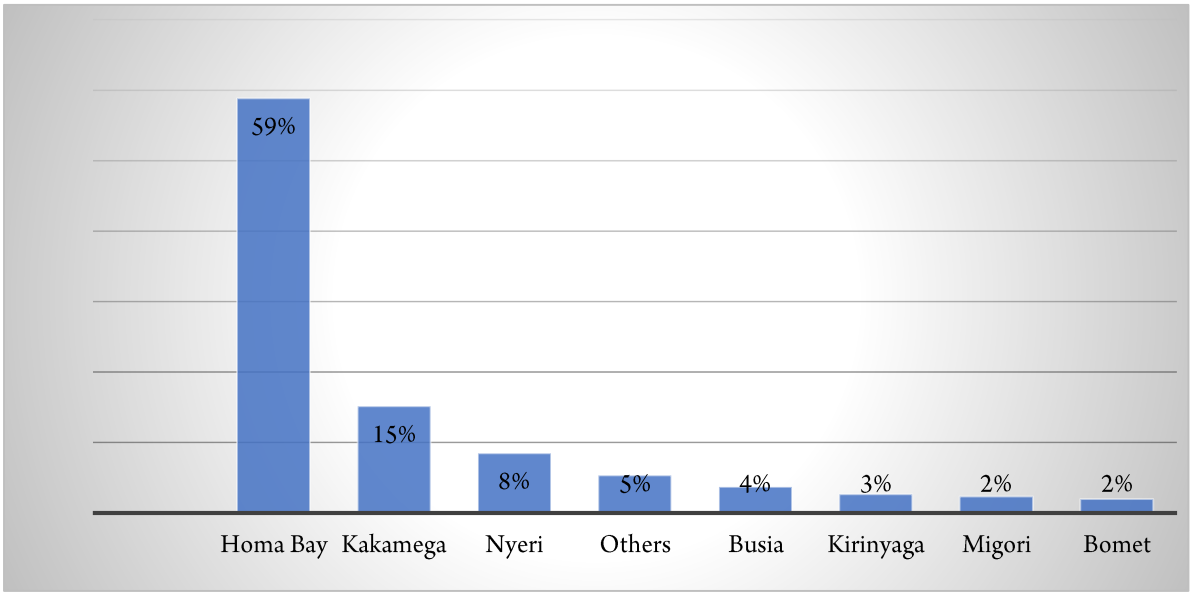


5.3 Aquaculture Holdings Stocks

At the beginning of the culture period a total of about 3 million fingerlings, 355 thousand broodstock and 1.7 million kilograms of table size fish were in stock at various commercial holdings. Homa Bay (59 per cent), Kakamega (15 per cent), Nyeri (8.5 per cent) and Kirinyaga

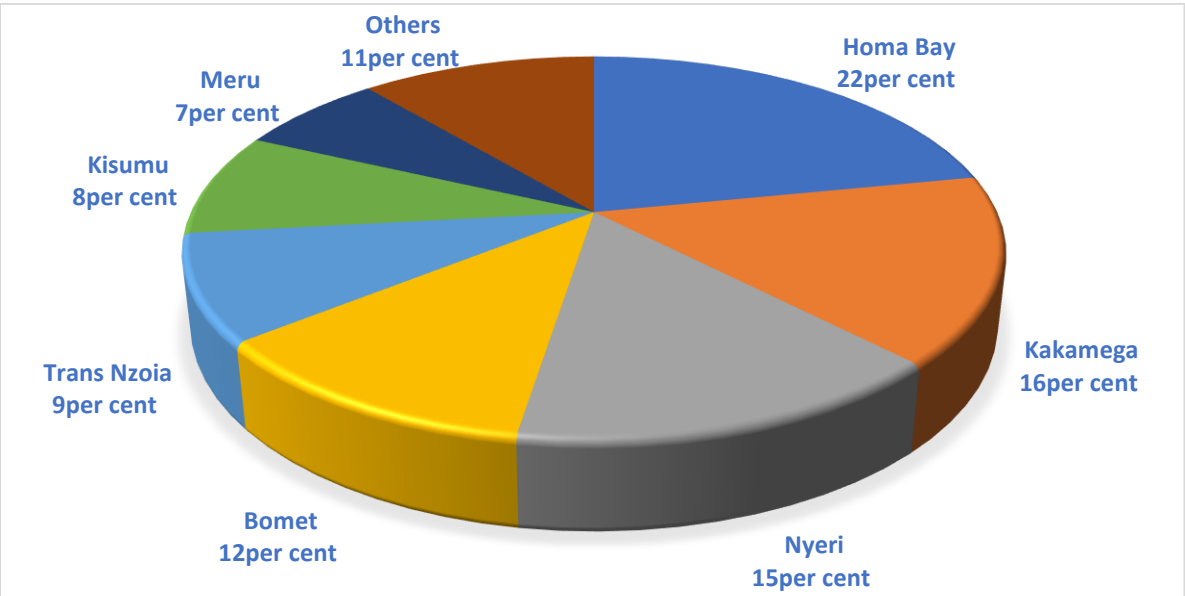
(2.7 per cent) contributed to the total fingerings stocked by aquaculture holdings while the rest of the counties contributed 14.9 per cent as shown in Figure 5.2.

Figure 5.2: Aquaculture Holdings Stocks



Similarly, Homa Bay with 21.9 per cent was leading with broodstock. Kakamega with 15.8 per cent and Nyeri 14.8 per cent were the second and third respectively, with the remaining counties contributing to 47.5 per cent of broodstock in stock at the beginning of the period.

Figure 5.3: Broodstock Holdings Stocks



The same trend is observed for holdings with table size fish stocks as shown in Figure 5.4. During the year 2019, commercial holdings across the counties purchased an assorted 797 thousand fingerlings valued at KSh 4.5 million, for production. The details of stocking and values are presented in Tables 5.3 and 5.4.

Figure 5.4: Quantity of Table size fish

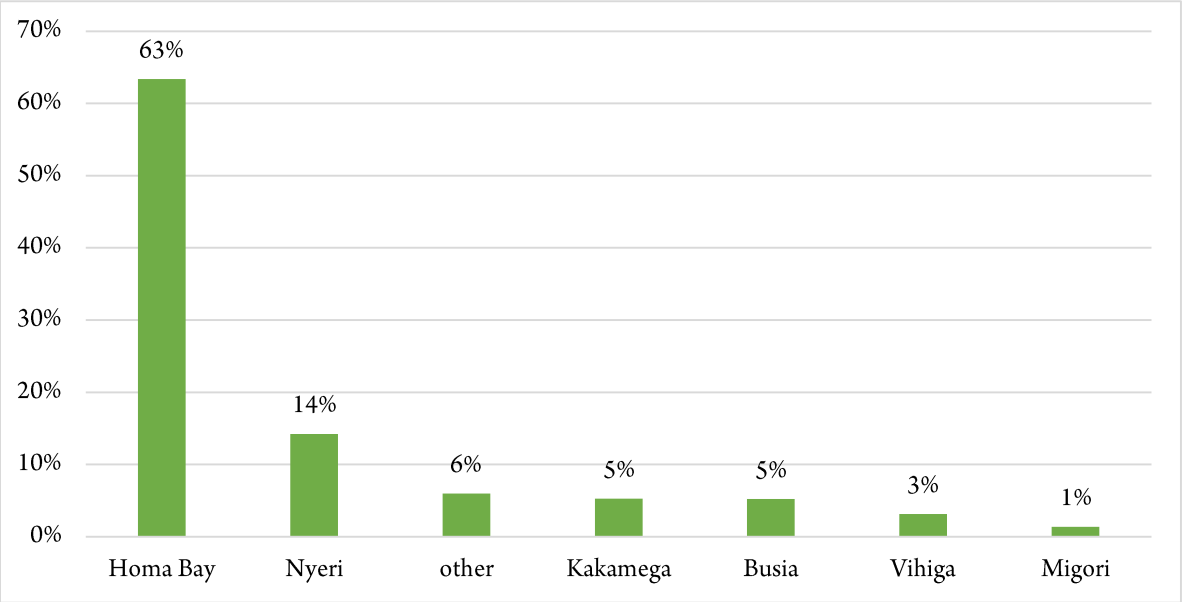


Table 5.3: Initial quantities of fish stock in commercial aquaculture holdings unit

Counties	Number of holdings with stocked units	Total stock from the fish ponds (fingerling)	Total stock from the fish ponds (table size)	Total stock from the fish ponds (brood stock)
Meru	7	18,700	2,480	12,000
Tharaka Nithi	2	14,500	1,500	300
Embu	2	3,200	555	30
Nyeri	15	221,000	210,831	25,557
Kirinyaga	6	69,500	7,374	870
Kiambu	1	500	500	1,000
West Pokot	1	-	1,800	-
Trans Nzoia	2	22,000	19,100	15,500
Nandi	1	10,000	5,000	1,000
Baringo	2	2,900	1,000	900
Laikipia	2	-	7,200	150
Nakuru	2	50	50	50
Kericho	8	25,750	13,575	6,200
Bomet	3	51,300	20,000	20,250
Kakamega	50	394,845	78,125	27,317
Vihiga	21	38,700	46,815	3,900
Bungoma	1	26,950	13,200	-
Busia	25	96,400	77,478	1,995
Kisumu	1	15,000	15,000	15,000
Homa Bay	58	1,534,650	937,755	37,760
Migori	8	61,700	20,508	2,800
Total	**218**	**2,607,645**	**1,479,846**	**172,579**

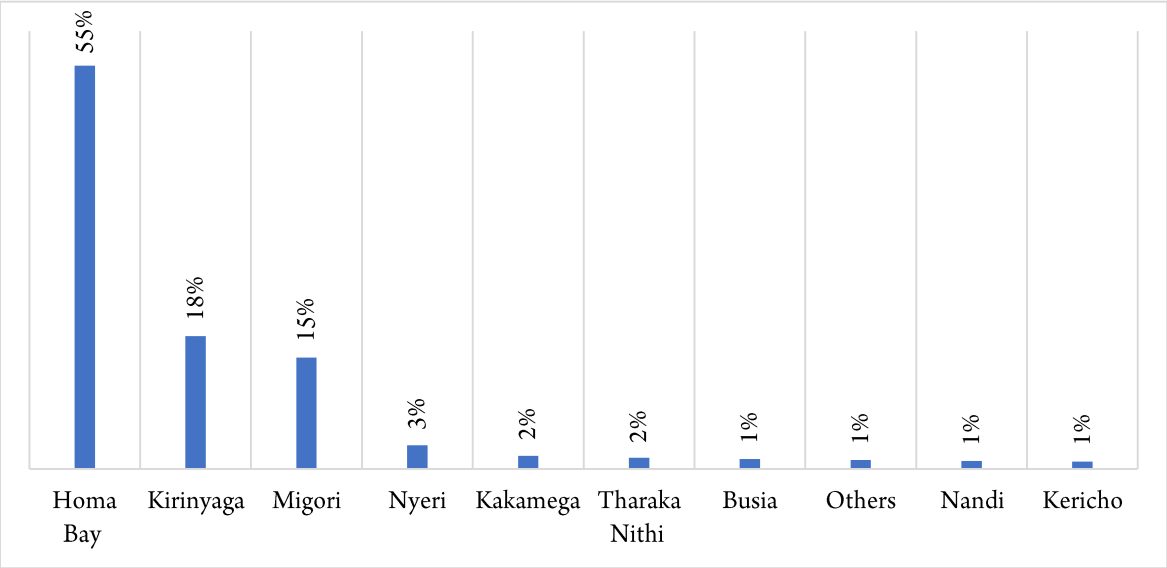
Table 5.4: Quantities and value of fish purchased for production in 2019

COUNTIES	Number of fish purchased in 2019	Quantity of fish purchased in 2019 (Kg)	Value of fish purchased in 2019 (KSh)
Meru	5	18,480	401,700
Embu	1	100	1,000
Nyeri	4	10,050	251,400
Kirinyaga	4	3,010	529,000
Kiambu	1	2,000	20,000
West Pokot	1	1,000	5,000
Nandi	1	1,000	15,000
Nakuru	1	2,000	20,000
Kakamega	15	62,190	304,700
Vihiga	9	31,400	288,200
Busia	6	17,000	126,000
Kisumu	1	40,000	240,000
Homa Bay	15	609,200	2,339,100
Total	**64**	**797,430**	**4,541,100**

5.4 Aquaculture Holdings Production

During the year 2019, a total of 64 aquaculture holdings produced approximately 11 million fingerlings valued at over KSh 76 million. As shown in Figure 5.5, the leading counties in production were Homa Bay (55 per cent), Kirinyaga (18 per cent), Migori (15 per cent), Nyeri (3 per cent) and Kakamega at 2 per cent. Kakamega (15) and Homa Bay (15) had the highest number of holdings producing fingerling during the year.

Figure 5.5: Quantities of fingerlings produced in year 2019



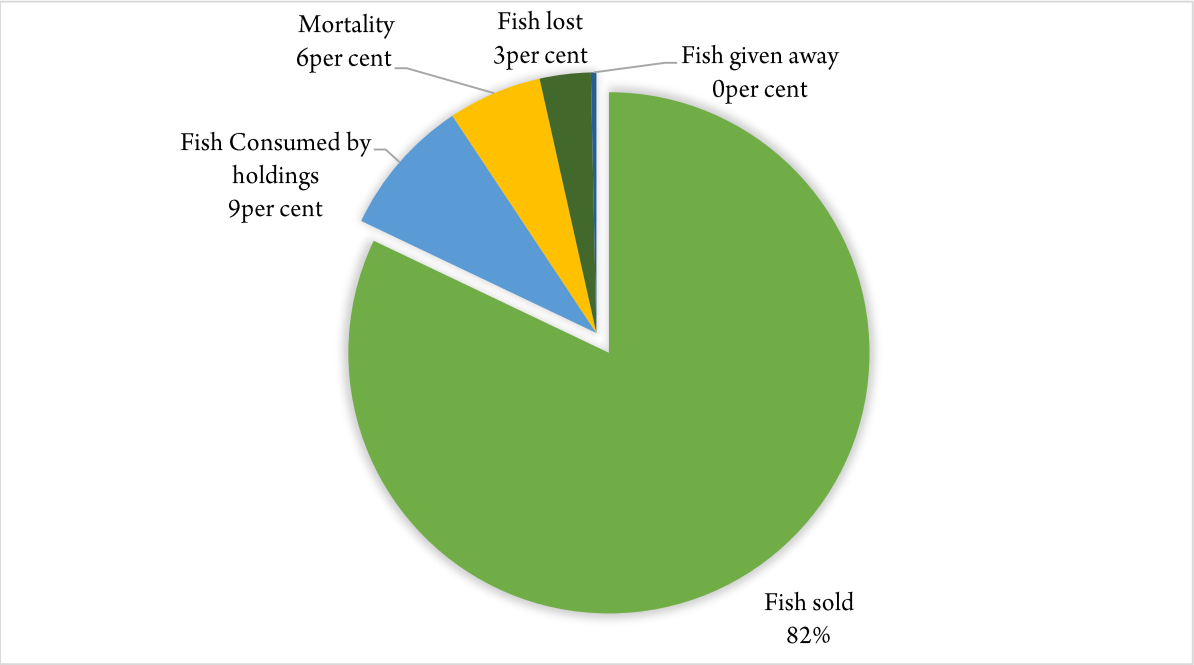
5.5 Farm Gate Prices for Output

The farm gate prices varied from one species to another; with fingerling being purchased at KSh 6.00- 10.00 per piece while the table size tilapia and catfish traded at KSh 130 -200. The ornamental fish, gold fish, koi carp and others sold at KSh 100 per gram. Rainbow trout was the highest valued at KSh 700 per kg.

5.6 Aquaculture Holdings Products Utilization

In 2019, 245 commercial holding utilized fish and fish products in various ways. The total quantity of table size fish utilized by selling in the year 2019 by aquaculture establishment was 5 thousand tonnes valued at KSh 647 million representing 82.1 per cent. A total of 11 million fingerlings were sold at KSh 76 million. The volume consumed by holding family and workers accounted for 8.6 per cent (532 tonnes) valued at KSh 8 million while only 0.3 per cent was given away as gift and donations. Most holdings recorded losses, either through natural mortalities and other losses (floods) at 5.8 per cent (359 tonnes) and 3.2 per cent (195 tonnes) respectively.

Figure 5.6: Utilization of fish and fish products by commercial holdings



At the end of the year, the holdings had 3.5 million fingerlings, 153 thousand broodstock and 1.1 thousand tonnes of table size fish. The census depicted that at the end of the period leading counties in terms available stock of fingerlings were Homa Bay (43per cent), Kirinyaga (23 per cent), Nyeri (9 per cent), Kakamega (7 per cent) and Tharaka Nithi (6 per cent). The broodstock availability was at Kisumu (29 per cent), Homa Bay (21 per cent), Busia (10 per cent) and Nyeri (7 per cent) as presented in Table 5.5.

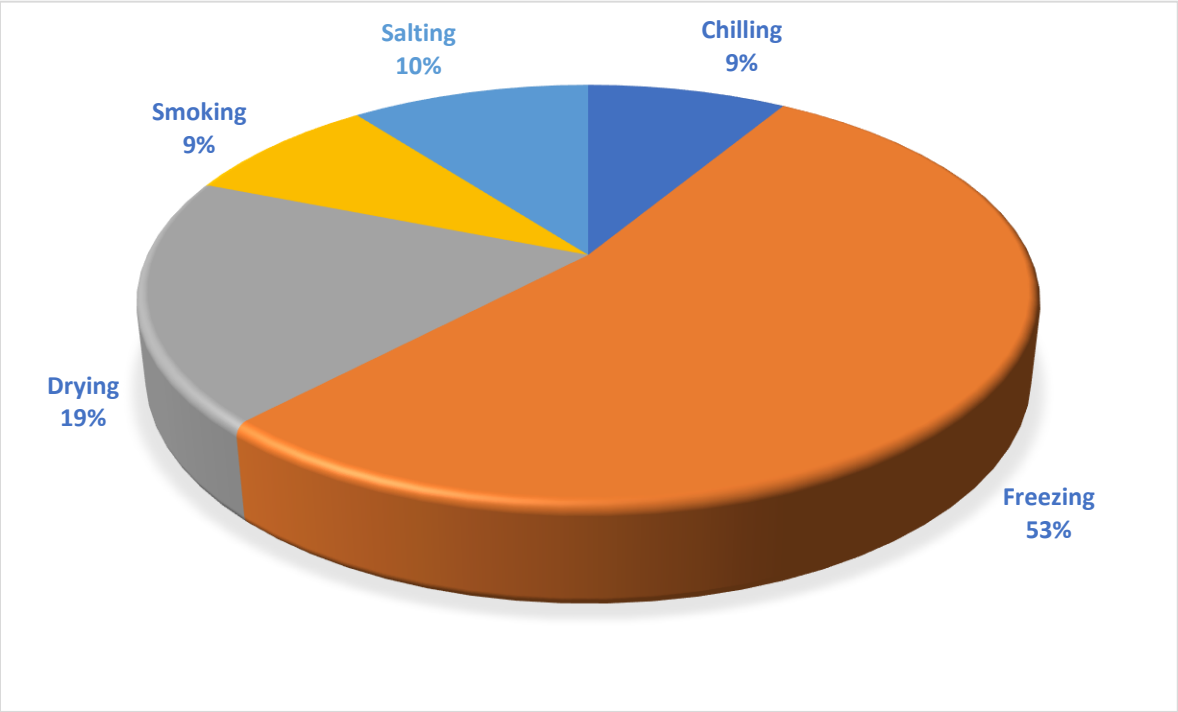
Table 5.5: Quantities of fish available in commercial holdings at January 2020

Counties	Total stock in the fish ponds (fingerling)	Total stock in the fish ponds (table size)	Total stock in the fish ponds (brood stock)
Meru	15,900	4,080	7,000
Tharaka Nithi	212,000	650	200
Embu	2,000	1,025	20
Nyeri	331,152	293,685	10,085
Kirinyaga	805,750	14,620	1,005
Kiambu	1,500	700	200
West Pokot	-	600	-
Trans Nzoia	5,500	6,500	6,500
Nandi	18,000	700	500
Baringo	995	-	-
Laikipia	12,500	3,800	150
Nakuru	5,050	5,050	2,046
Kericho	25,650	45,600	10,680
Bomet	51,300	2,080	2,040
Kakamega	259,170	72,690	10,883
Vihiga	50,900	13,100	6,600
Bungoma	-	5,000	-
Busia	130,350	69,350	15,500
Kisumu	15,000	40,000	45,000
Homa Bay	1,523,020	545,433	32,793
Migori	42,000	6,900	2,200
Total	**3,507,737**	**1,131,563**	**153,402**

5.7 Preservation Methods

Figure 5.7 shows the preservation methods by holdings. Various preservation methods were used to add value and prolong the shelve life of fish in the aquaculture holdings. Out of 245 holdings, only 58 holdings (23 per cent) indicated that they preserved fish by chilling, freezing, drying, smoking and salting.. Most holdings deployed freezing (53.4 per cent), drying (18.9 per cent) and salting (10.3 per cent). Over 67 per cent (187) of the aquaculture holdings across the country utilized and sold the yields in fresh form, without subjecting it to any mode of preservation.

Figure 5.7: Preservation methods by holdings



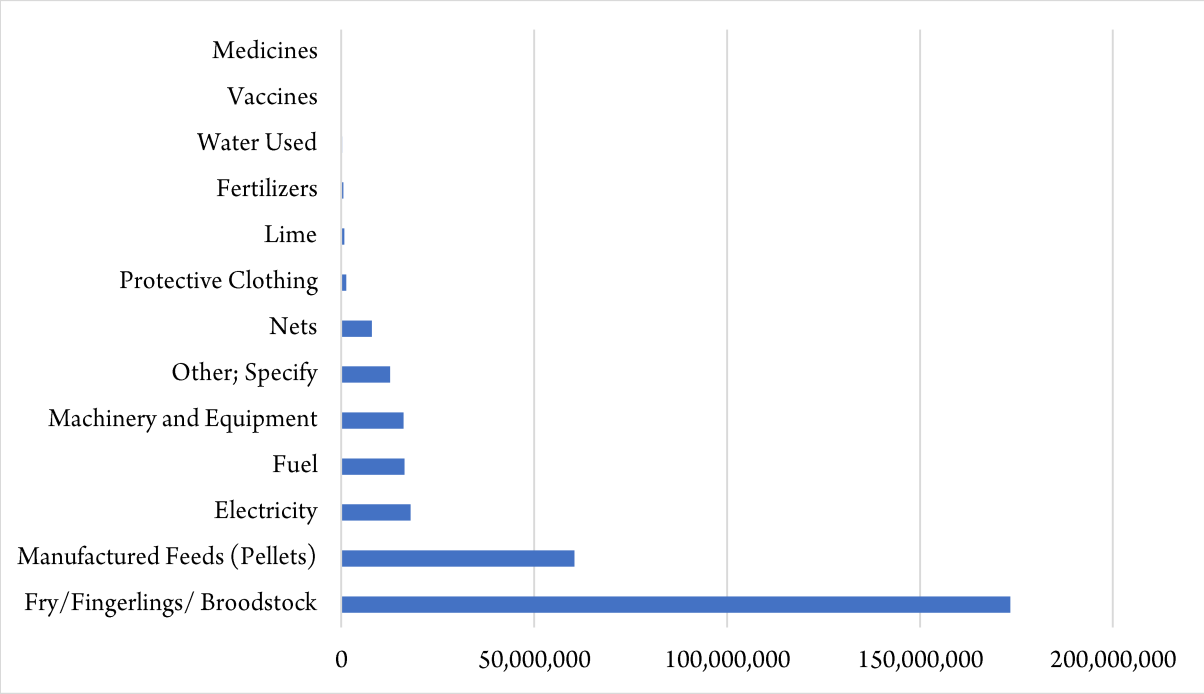
5.8 Material Inputs

Table 5.6 presents the quantities and values of material inputs in aquaculture holdings. In the 2019, the aquaculture establishments spent 56.3 per cent (fingerlings/broodstock), 19.6 per cent (feeds), 5.8 per cent (electricity) as material inputs. Figure 5.8 shows the proportion of values of material inputs utilized in commercial Holdings.

Table 5.6: Quantities and values of material inputs in aquaculture holdings 2019.

Material inputs	Unit of measures	Quantities	Values (KSh.)
Fry/Fingerlings/ Broodstock	Number	4,804,017	173,446,053
Manufactured Feeds (Pellets)	Kgs	1365380	46,590,514
Electricity	KwH	34,901	17,991,582
Fuel	Litres	224,254	16,310,005
Machinery and Equipment	No.	199	14,503,900
Other Feeds	Kgs	80130	13,868,319
Other; Specify	No.	80,127	12,668,319
Nets	No.	589	7,962,400
Spares for Maintenance of Machinery	No.	260	1,676,800
Protective Clothing	No.	3,647	1,341,791
Lime	Kgs	17531	784,765
Fertilizers	Kgs	20765	519,910
Water Used	Litres	1092224	226,274
Lubricants	Litres	313	50,360
Vaccines	No.	1	30,000
Medicines	Litres	225	29,600
Total			**308,000,592**

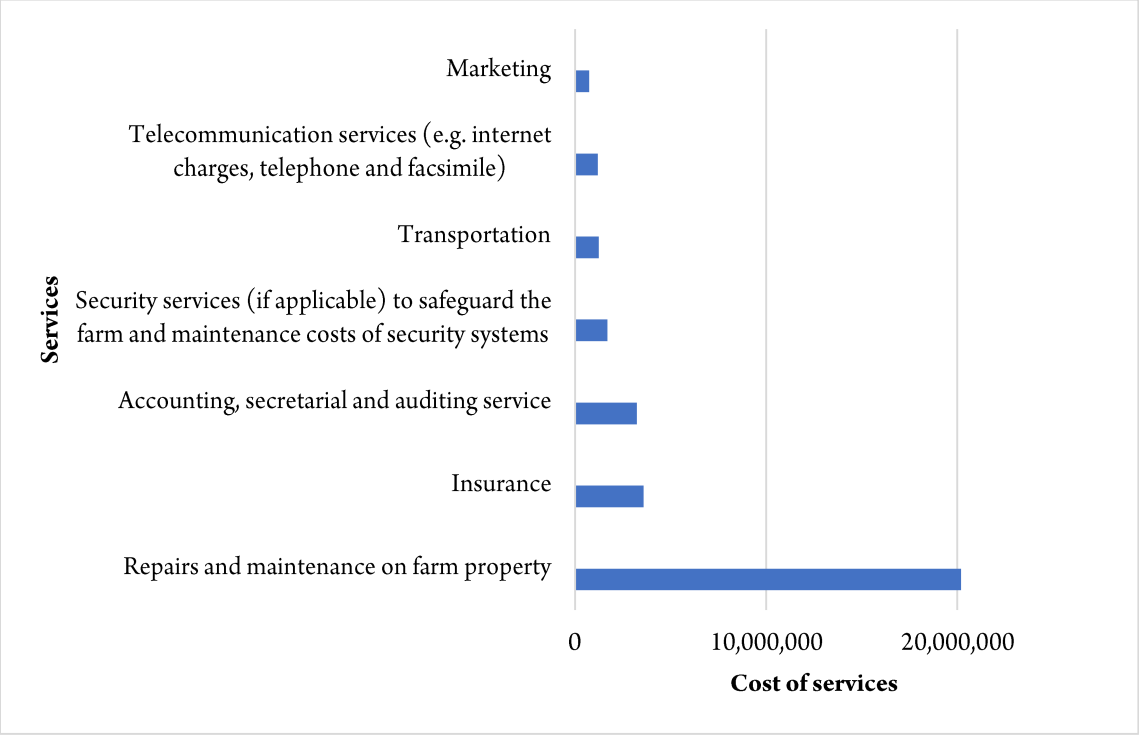
Figure 5.8: Proportion of values of material inputs utilized in commercial Holdings 2019, (KSh)



5.9 Service Inputs

The service inputs provided to the aquaculture holdings amounted to KSh 33 million as shown in Figure 5.9. The service inputs were mainly on repairs and maintenance on farm properties (60.8 per cent), insurance (10.8 per cent) and audit services (9.7 per cent). Generally, aquaculture holdings engaged least; contracted services, leasing and hiring of plant machinery and equipment and research or consultancies.

Figure 5.9: Value of service inputs utilized in aquaculture holdings.



5.10 Labour

Aquaculture holdings engaged the services of casual labourers for provision of security, feeding of fish and hatchery management throughout the year (12 moths). As shown in Figure 5.10 and 5.11, the casual labourers were engaged for pond maintenance, harvesting of fish and post harvesting processing for only 2 months (twice). Most holdings engaged only males in provision of security, while female casual laborers were engaged in feeding of fish ponds, pond maintenance, harvesting and post-harvest processing. In most holding the casual labourers wage rates ranged between KSh 250 to 300 depending on the type of work.

Figure 5.10: Casual labourers engaged period

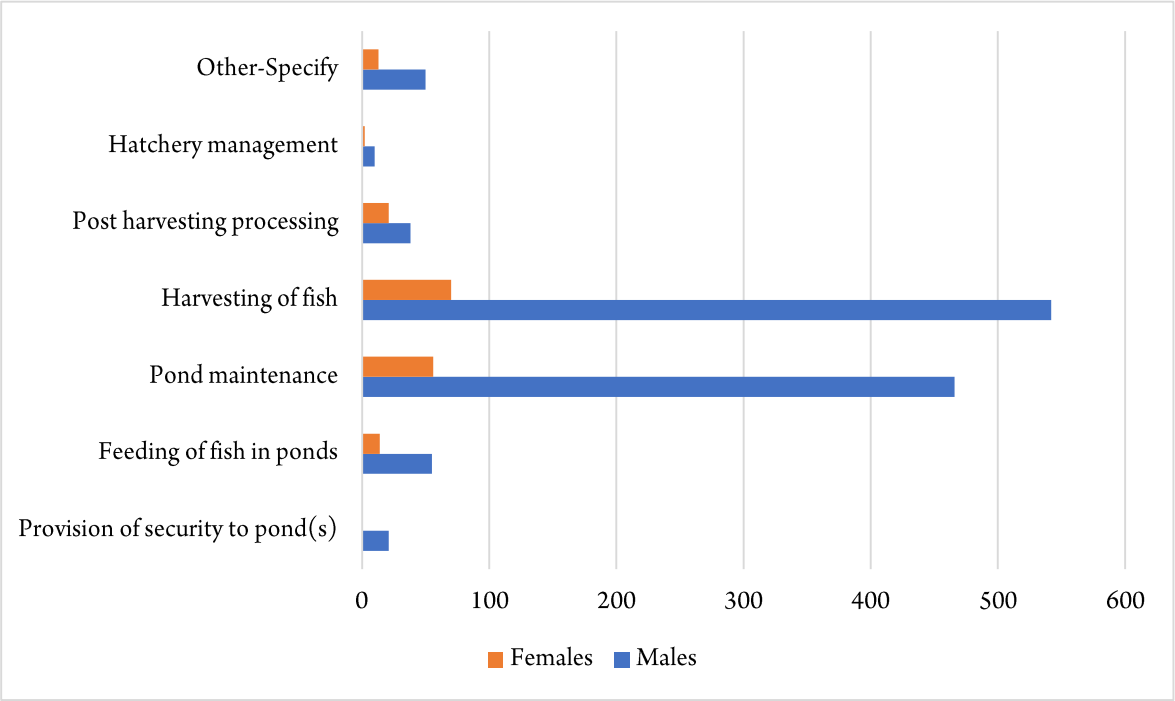
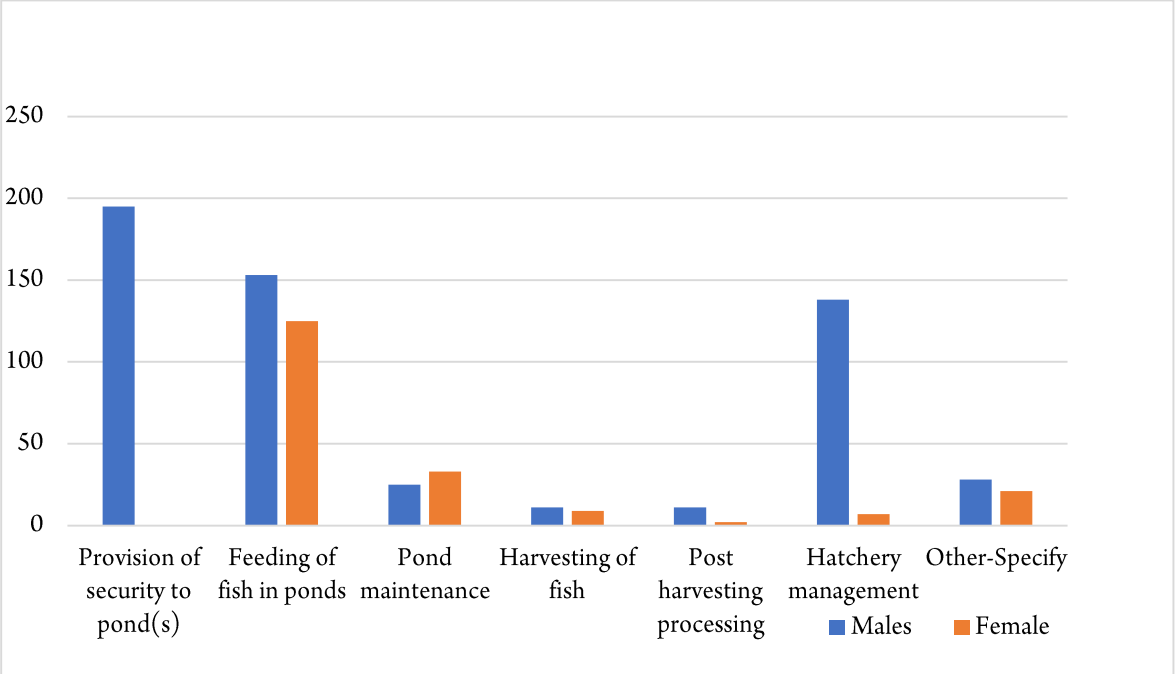


Figure 5.11: Regular laborer's engaged by gender



Annexes

Annex 1: Distribution of the Total production and utilization of Field Crops by Crop

Crop	Total Production (Kgs)	Own Consumption (Kgs)2	Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output used as seed (Kgs)	Crop output in Stock (Kgs) by December 2019	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Sugar cane	322,949,770	4,388,930	270,522,322	7,207,500	7,370,700	28,575,203	520	4,086,765	797,830
Maize	149,097,288	2,680,956	124,427,752	18,670,037	101,027	2,067,331	221,139	744,981	184,067
Tea	189,897,265	1,193	180,426,016	0	0	3,409,573	1,200	487,284	5,572,000
Wheat	49,878,359	437,196	45,888,090	1,249,374	690,755	1,264,399	75,394	270,251	2,900
Sisal	17,677,750	4,150	10,429,872	0	0	7,243,728	0	0	0
Barley	15,704,284	3,600	11,464,127	3,986,807	49,250	39,300	2,000	159,200	0
Irish Potatoes	15,361,968	175,037	13,000,915	50	705,358	31,188	7,430	857,900	584,090
Tomatoes	12,968,381	34,574	11,966,752	4,200	0	291,530	38,610	625,415	7,300
Rhodes Grass	10,456,495	265,500	6,100,196	2,865,061	420,975	581,614	43,830	177,975	1,344
Beans, dry	8,860,047	34,185	5,404,706	1,710	949,128	10,357	2,252,581	206,470	910
Cabbages	8,327,601	604,460	7,324,801	221,700	15,000	0	6,100	146,890	8,650
Coffee	7,856,095	295	7,767,078	0	0	80,622	0	5,600	2,500
Lemon	6,522,350	1,636,010	4,832,820	0	0	0	2,352	34,100	17,068
Mangoes	6,449,312	34,087	6,332,944	80	3,050	4,668	1,720	29,433	43,330
Rice(paddy)	5,769,685	103,415	333,578	5,200,000	2,152	0	6,730	27,435	96,375
Bananas	5,607,168	205,207	5,301,741	50	0	3,630	11,540	40,860	44,140
Oranges	4,576,643	17,133	4,552,163	0	0	0	4,000	2,847	500
Cauliflowers/brocoli	4,344,844	12,000	3,963,960	89,295	0	0	89,295	190,295	0
Fodder maize	3,700,080	691,000	0	2,824,193	80	184,800	0	7	0
Gypsophillla/Baby Breath Speacies	3,446,104		3,432,164	0	0	0	0	13,940	0
French beans	3,038,576	208	2,587,368	777	0	0	0	445,950	4,273
Garden Peas	3,013,500	550	2,112,650	0	100	0	0	900,200	0
Grass	2,310,524	23,000	1,336,165	432,660	3,000	454,125	3,374	45,200	13,000
Macadamia nuts	2,234,022	44	2,131,920	0	0	25,000	20	77,030	8
Onions	1,765,099	13,486	1,709,773	0	3,000	3,000	2,070	30,480	3,290
Kales	1,255,052	72,938	1,180,114	500	0	0	1,150	350	0
Cabbage	943,222	46,886	885,486	400	6,000	0	250	4,200	0
Roses	809,100	10	646,998	0	0	2,083	20	159,989	0
Spinach	744,223	2,563	741,310	200	0	0	0	100	50
Canteloupe/Musk Melon	625,000	5,390	563,500	0	0	0	14,000	42,110	0
Water Melons (Hybrid)	600,920	9,270	546,633	0	50	0	1,947	29,700	13,320
Eryngium/Sea holly/Alphine	591,000		591,000	0	0	0	0	0	0
Oats	578,670	170	240,350	323,890	1,350	10,110	2,800	0	0
Avocados	373,700	1,060	361,540	0	0	0	700	10,300	100
Lucern	328,545	100,000	61,065	167,480	0	0	0	0	0
Sweet Potatoes	286,091	1,050	182,141	11,500	80,400	8,000	850	1,990	160
Coconuts	268,600	1,550	267,050	0	0	0	0	0	0
Sorghum/Sudan grass	263,703	45	261,408	0	1,500	750	0	0	0
Sorghum	232,165	1,020	226,245	0	100	0	0	4,800	0
Green grams	177,525	2,491	169,609	0	1,015	2,611	1,019	780	0
Oil seed (Kanola)	142,400		137,400	0	0	0	0	5,000	0
Carrots	130,695	17,080	113,310	300	0	0	0	5	0

Crop	Total Production (Kgs)	Own Consumption (Kgs)2	Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output used as seed (Kgs)	Crop output in Stock (Kgs) by December 2019	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Watermelons (Open Pollinated)	109,000	1,005	107,995	0	0	0	0	0	0
Pea	107,800	810	84,480	0	20,000	0	10	1,750	750
Pepper	93,000		92,000	0	0	0	0	200	800
Khat/Miraa	87,571	397	86,844	0	0	0	140	90	100
Cotton	83,285	30	28,830	45,040	9,000	305	0	80	0
Foliage Plants	80,000	80,000	0	0	0	0	0	0	0
Cocks foot	75,150	810	23,955	0	0	50,385	0	0	0
Culinary Herbs and Spices	69,500		69,500	0	0	0	0	0	0
Egg Plant	64,000	10,000	54,000	0	0	0	0	0	0
Carthamus /Safflower/Safon	62,000		60,000	0	0	0	0	2,000	0
Purple passion	60,200	556	58,964	0	50	0	190	200	240
Sweet Melons	52,950	300	52,000	0	0	0	200	450	0
Straw berry	49,344		45,000	0	0	0	24	4,320	0
Tangerines	48,883		46,383	0	0	0	0	2,000	500
Pearl Millet	44,550	4,500	38,160	0	0	0	0	1,890	0
Loquats	43,400		43,200	0	0	0	0	200	0
Pineapples	27,960	300	27,060	0	0	100	200	200	100
Solidaster/Garden Plant	25,000		25,000	0	0	0	0	0	0
Pawpaw	24,400	390	22,830	0	0	1,000	0	130	50
Chinese Cabbage	24,200		24,000	200	0	0	0	0	0
Simsim	15,650	150	15,500	0	0	0	0	0	0
Sunflower	11,400	80	6,440	4,500	220	40	0	120	0
Cassava	7,800	1,270	6,530	0	0	0	0	0	0
Finger Millet	6,410	540	3,010	0	25	2,790	0	45	0
Common pea	6,380	65	795	0	0	5,520	0	0	0
Cashew nuts	6,080		6,080	0	0	0	0	0	0
Moringa	5,500	5,000	0	0	0	0	0	500	0
Groundnuts	4,950	570	3,730	0	135	415	100	0	0
Dolichos bean	4,500	150	4,250	0	50	50	0	0	0
Afican Nightshade	4,000	500	3,500	0	0	0	0	0	0
Pyrethrum	3,080		3,080	0	0	0	0	0	0
Vegetables	2,100		1,600	0	0	0	0	400	100
Tree Tomato	1,450		1,390	0	0	0	0	60	0
Butter nut	1,400		1,300	100	0	0	0	0	0
Cow pea	1,260	80	1,140	0	0	40	0	0	0
Jute mallow/Murenda	582	288	288	0	0	0	6	0	0
Blue stem grass	500	500	0	0	0	0	0	0	0
Bixa	25	5	20	0	0	0	0	0	0
	548,529,310	**7,347,104**	**471,051,562**	**36,100,104**	**3,062,770**	**15,779,064**	**2,792,991**	**5,793,701**	**6,602,015**

Annex 2: Distribution of the number of establishments by type and by county

	Total	Type of Establishment													
		Household					Enterprise/Company					Institution			
		Total no of establishments by category					Total no of establishments by category					Total no of establishments by			
		Less than 25	25 - 125	126 - 750	751 -1000	1000+	Less than 25	25 - 125	126 - 750	751 -1000	1000+	Less than 25	25 - 125	126 - 750	1000+
County	**2218**	**193**	**1529**	**141**	**3**	**7**	**78**	**109**	**59**	**8**	**17**	**14**	**43**	**14**	**3**
Kwale	**13**	0	5	0	0	0	0	7	1	0	0	0	0	0	0
Kilifi	**6**	0	1	1	0	0	0	1	1	0	0	0	1	0	1
Tana River	**44**	0	7	0	1	0	0	28	3	0	0	0	4	1	0
Lamu	**16**	2	11	0	0	0	0	0	0	0	0	0	3	0	0
Taita-Taveta	**7**	0	0	0	0	0	0	2	0	0	2	1	1	0	1
Garissa	**84**	3	76	3	0	0	0	2	0	0	0	0	0	0	0
Mandera	**22**	0	22	0	0	0	0	0	0	0	0	0	0	0	0
Marsabit	**5**	1	4	0	0	0	0	0	0	0	0	0	0	0	0
Isiolo	**1**	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Meru	**36**	3	20	2	0	0	0	1	1	0	1	0	8	0	0
Tharaka-Nithi	**25**	15	2	0	0	0	6	2	0	0	0	0	0	0	0
Embu	**52**	12	30	0	0	0	2	5	0	0	0	0	3	0	0
Kitui	**4**	1	3	0	0	0	0	0	0	0	0	0	0	0	0
Machakos	**32**	0	16	0	0	0	0	1	0	0	0	0	6	8	1
Makueni	**13**	7	4	0	0	0	0	1	0	0	1	0	0	0	0
Nyandarua	**24**	5	16	2	0	0	0	0	0	0	0	0	0	1	0
Nyeri	**47**	14	19	1	0	0	3	6	2	0	0	1	1	0	0
Kirinyaga	**18**	0	11	0	0	0	0	5	0	0	1	0	0	1	0
Murang'a	**10**	1	2	0	0	0	0	3	3	0	0	0	1	0	0
Kiambu	**69**	5	15	0	0	0	3	13	28	2	1	0	2	0	0
West Pokot	**39**	22	15	1	0	0	0	0	0	1	0	0	0	0	0
Samburu	**10**	0	6	4	0	0	0	0	0	0	0	0	0	0	0
Trans Nzoia	**148**	0	133	13	0	0	0	1	0	1	0	0	0	0	0
Uasin Gishu	**388**	9	344	26	1	0	0	5	1	0	1	0	0	1	0
Elgeyo-Marakwet	**30**	1	19	3	0	0	0	1	1	0	2	0	3	0	0
Nandi	**100**	12	80	4	0	1	0	0	0	1	2	0	0	0	0
Baringo	**7**	0	3	0	0	0	0	0	2	0	1	0	1	0	0
Laikipia	**57**	0	44	3	0	0	0	5	3	1	0	0	1	0	0
Nakuru	**143**	16	77	15	0	1	6	13	8	1	2	2	1	1	0
Narok	**131**	5	83	37	0	4	0	1	0	0	1	0	0	0	0
Kajiado	**23**	0	22	0	0	0	0	1	0	0	0	0	0	0	0
Kericho	**110**	4	38	1	0	0	55	2	1	1	0	7	1	0	0
Bomet	**97**	30	63	1	0	0	1	0	0	0	1	0	1	0	0
Kakamega	**154**	8	139	2	0	0	0	1	0	0	0	1	2	1	0
Bungoma	**86**	0	83	1	0	0	0	1	0	0	0	0	1	0	0
Busia	**31**	0	29	2	0	0	0	0	0	0	0	0	0	0	0
Kisumu	**85**	1	59	19	1	1	0	0	3	0	1	0	0	0	0
Homabay	**31**	12	16	0	0	0	2	0	0	0	0	0	1	0	0
Migori	**11**	4	7	0	0	0	0	0	0	0	0	0	0	0	0
Nyamira	**6**	0	5	0	0	0	0	0	1	0	0	0	0	0	0
Nairobi City	**3**	0	0	0	0	0	0	0	0	0	0	2	1	0	0

Annex 3: Distribution of establishments by county

County	Total Acreage	Type of establishment		
		Household	Enterprise/Company	Institution
		Total area under crop production(acres)	Total area under crop production(acres)	Total area under crop production (acres)
TOTAL	**265,377**	**123,557**	**105,643**	**36,177**
Kwale	901	269	632	
Kilifi	3,558	338	680	2,540
Tana River	3,530	1,238	1,984	308
Lamu	671	545		126
Taita-Taveta	33,155		8,090	25,065
Garissa	4,399	4,264	135	
Mandera	988	988		
Marsabit	128	128		
Isiolo	110		110	
Meru	12,526	1,154	11,105	268
Tharaka-Nithi	337	241	96	
Embu	1,343	1,081	173	90
Kitui	105	105		
Machakos	5,867	480	60	5,326
Makueni	11,729	207	11,522	
Nyandarua	1,513	1,377		136
Nyeri	2,516	1,517	936	63
Kirinyaga	1,812	358	1,153	301
Murang'a	1,002	161	755	86
Kiambu	13,820	714	13,021	85
West Pokot	2,120	1,320	800	
Samburu	1,394	1,394		
Trans Nzoia	10,785	9,689	1,096	
Uasin Gishu	24,165	20,807	2,863	495
Elgeyo-Marakwet	5,405	1,390	3,888	127
Nandi	21,976	10,577	11,399	
Baringo	2,730	85	2,580	65
Laikipia	4,809	2,754	2,026	30
Nakuru	21,677	8,917	12,315	445
Narok	28,336	25,286	3,050	
Kajiado	924	867	57	
Kericho	3,067	1,435	1,564	68
Bomet	12,718	2,636	10,000	82
Kakamega	6,184	5,817	40	327
Vihiga				
Bungoma	2,848	2,787	30	31
Busia	1,643	1,643		
Kisumu	13,213	9,896	3,317	
Homa Bay	575	534	16	25
Migori	371	371		
Kisii				
Nyamira	339	189	150	
Nairobi City	88			88

Annex 4: Value of Total Production and Other Utilization Categories by type of crop

Category/ Crop	Total Production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity sold (KSh)	Value of Crop Output fed to Livestock (KSh)	Value of Crop Output used as seed (KSh)
Food crops	**241,627,507**	**5,377,631,855**	**465,739,275**	**4,742,662,884**	**111,888,426**	**57,341,269**
Barley	15,704,284	270,476,728	108,000	268,594,295	169,500	1,604,933
Beans, dry	8,860,047	446,717,469	2,344,653	441,454,256	38,800	2,879,760
Cow pea	1,260	73,200	4,800	68,400	0	0
Dolichos bean	4,500	660,050	15,000	645,000	0	50
Finger Millet	6,410	563,600	47,900	513,825	0	1,875
Green grams	177,525	12,995,120	158,690	12,733,080	0	103,350
Irish Potatoes	15,361,968	254,340,544	1,294,200	239,578,060	190	13,468,094
Maize	149,637,288	2,983,772,572	427,428,596	2,427,948,593	109,743,476	18,651,907
Pearl Millet	44,550	2,277,000	23,000	2,254,000	0	0
Rice(paddy)	688,837	46,283,680	23,975,080	22,198,600	0	110,000
Sorghum	232,165	8,613,711	37,251	8,576,460	0	0
Spinach	744,223	51,615,650	75,650	51,532,000	8,000	0
Sweet Potatoes	286,091	5,672,203	27,700	5,131,503	345,000	168,000
Wheat	49,878,359	1,293,570,328	10,198,755	1,261,434,813	1,583,460	20,353,300
Cassava	7,800	508,500	7,200	501,300	0	0

Annex 5: Value of Total Production and Other Utilization Categories by type of fruit

Category/Crop	Total Production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity Sold (KSh)	Value of Crop Output Fed to Livestock (KSh)	Value of Crop Output Used as Seed (KSh)
Fruits	**8,133,832**	**130,039,204**	**3,654,535**	**126,274,069**	**7,000**	**103,600**
Avocados	373,700	35,803,500	27,500	35,776,000	0	0
Bananas	5,607,168	35,478,202	2,697,890	32,773,312	7,000	0
Canteloupe/ Musk Melon	625,000	8,820,300	67,800	8,752,500	0	0
Lemon	51,140	2,519,500	29,550	2,489,950	0	0
Loquats	43,400	648,000	0	648,000	0	0
Mangoes	263,227	7,160,655	208,755	6,851,800	0	100,100
Oranges	126,090	4,008,580	273,800	3,734,780	0	0
Pawpaw	93,400	1,136,500	20,500	1,116,000	0	0
Pineapples	27,960	834,000	9,000	825,000	0	0
Purple passion	60,200	5,030,700	45,080	4,982,120	0	3,500
Straw berry	49,344	5,400,000	0	5,400,000	0	0
Sweet Melons	52,950	2,202,400	7,400	2,195,000	0	0
Tangerines	48,883	1,391,490	0	1,391,490	0	0
Tree Tomato	1,450	119,700	0	119,700	0	0
Water Melons (Hybrid)	600,920	16,380,677	242,160	16,138,517	0	0
Watermelons (Open Pollinated)	109,000	3,105,000	25,100	3,079,900	0	0

Annex 6: Value of Total Production and Other Utilization Categories by type of industrial crop

Category/ Crop	Total Production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity Sold (KSh)	Value of Crop Output Fed to Livestock (KSh)	Value of Crop Output Used as Seed (KSh)
Industrial crops	**405,708,456**	**17,364,500,249**	**749,760**	**17,331,522,239**	**21,000**	**32,207,250**
Bixa	25	4,000	2,000	2,000	0	0
Coffee	7,856,095	728,684,882	13,800	728,671,082	0	0
Cotton	83,285	2,067,800	50,000	1,746,800	1,000	270,000
Pyrethrum	3,080	587,200	0	587,200	0	0
Sisal	17,677,750	13,634,166,030	399,500	13,633,766,530	0	0
Sugar cane	308,255,870	1,097,318,048	5,720	1,065,355,078	20,000	31,937,250
Tea	71,832,351	1,901,672,290	278,740	1,901,393,550	0	0

Annex 7: Value of Total Production and Other Utilization Categories by type of nut

Category/ Crop	Total Production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity Sold (KSh)	Value of Crop Output Fed to Livestock (KSh)	Value of Crop Output Used as Seed (KSh)
Nuts and oils	**2,683,102**	**231,553,960**	**71,040**	**231,049,670**	**400,000**	**33,250**
Cashew nuts	6,080	364,800	0	364,800	0	0
Coconuts	268,600	5,169,000	31,000	5,138,000	0	0
Groundnuts	4,950	404,000	14,000	378,750	0	11,250
Macadamia nuts	2,234,022	216,346,660	4,040	216,342,620	0	0
Oil seed (Kanola)	142,400	6,031,000	0	6,031,000	0	0
Simsim	15,650	1,532,500	10,000	1,522,500	0	0
Sunflower	11,400	1,706,000	12,000	1,272,000	400,000	22,000

Annex 8: Value of Total Production and Other Utilization Categories by type of fodder

Category/ Crop	Total Production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity sold (KSh)	Value of Crop Output Fed to Livestock (KSh)	Value of Crop Output Used as Seed (KSh)
Pasture and Fodder	**17,311,416**	**179,386,681**	**12,946,500**	**92,316,043**	**73,726,938**	**397,200**
Fodder maize	3,700,080	16,772,400	6,299,000	0	10,459,000	14,400
Grass	2,310,524	14,838,981	225,000	13,816,143	791,838	6,000
Lucern	328,545	11,552,250	300,000	3,053,250	8,199,000	0
Oats	578,670	12,115,900	202,500	4,276,000	7,595,400	42,000
Rhodes Grass	10,129,894	121,357,700	5,911,000	68,430,200	46,681,700	334,800
Sorghum/ Sudan grass	263,703	2,749,450	9,000	2,740,450	0	0

Annex 9: Value of Total Production and Other Utilization Categories by type of vegetable

Category/ Crop	Total Production (Kgs)	Value of Total Production (KSh)	Value of Own Consumption (KSh)	Value of Quantity Sold (KSh)	Value of Crop Output Fed to Livestock (KSh)	Value of Crop Output Used as Seed (KSh)
Vegetables	**35,841,502**	**940,460,235**	**19,966,219**	**906,564,531**	**10,253,885**	**3,675,600**
African Nightshade	6,100	76,000	10,000	66,000	0	0
Butter nut	1,400	56,000	0	52,000	4,000	0
Cabbage	943,222	14,911,839	616,554	13,933,285	2,000	360,000
Cabbages	8,327,601	58,714,635	4,348,043	53,055,592	1,296,000	15,000
Carrots	130,695	3,524,800	420,000	3,102,700	2,100	0
Cauliflowers/ broccoli	4,344,844	62,382,613	4,800,000	49,635,376	7,947,237	0
Chinese Cabbage	24,200	242,000	0	240,000	2,000	0
Common pea	6,380	93,165	15,000	78,165	0	0
Culinary Herbs and Spices	69,500	1,215,000	0	1,215,000	0	0
Egg Plant	64,000	3,200,000	500,000	2,700,000	0	0
French beans	3,038,576	70,244,120	2,360	70,219,760	22,000	0
Garden Peas	3,013,500	126,243,600	13,500	126,229,500	0	600
Jute mallow/ Murenda	582	76,800	38,400	38,400	0	0
Kales	1,255,052	51,597,740	3,400,880	48,158,360	38,500	0
Khat/Miraa	87571.0	22,748,750	79,700	22,669,050	0	0
Moringa	5500.0	3,570,000	3,570,000	0	0	0
Onions	1,353,599.0	73,308,675	855,065	71,553,610	0	900,000
Pea	107,800.0	8,677,100	33,350	6,243,750	0	2,400,000
Pepper	93,000	3,825,000	0	3,825,000	0	0
Tomatoes	12,968,380.5	435,752,398	1,263,367	433,548,983	940,048	0

Annex 10: Total Production Utilization by County and type of field crop

County	Total Production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	in Stock (Kgs) by December 2019	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/ losses (Kgs)
Baringo	3,218,650	25,710	3,031,520	0	15,250	26,420	1,900	30,250	51600
Bomet	1,295,350	72,888	557,590	168,080	3,670	1,800	23,670	218,793	1820
Bungoma	3,580,318	121,797	2,724,285	60,870	433,600	90	40,188	70,245	17420
Busia	5,569,533	12,250	318,627	5,200,000	189,180	1,700	7,070	22,415	270
Elgeyo-Marakwet	32,374,350	2,139,080	6,953,920	22,937,270	70,210	28,900	7,980	38,250	3240
Embu	462,355	36,516	215,503	14,900	5,766	1,005	129	0	0
Garissa	93,600	7,000	78,900	0	0	203	3,850	2,740	907
Homa Bay	236,456	28,244	178,126	0	2,402	0	58	1,308	0
Isiolo	71,100	3,630	37,050	0	2,470	495	3,640	370	0
Kajiado	8,354,110	12,663	373,507	2,070	2,690	5,400,570	2,252,973	184,400	365
Kakamega	8,201,324	221,929	3,640,967	3,137,306	505,746	731	71,400	326,386	195970
Kericho	344,800	12,120	150,810	31,680	93,500	0	7,020	3,410	370
Kiambu	1,315,000	0	1,015,000	300,000	0	0	0	0	0
Kilifi	3,014,130	6,648	2,751,370	0	200,110	192	90	50,000	0
Kirinyaga	315,943	104,625	169,565	2,150	5,500	0	2,290	31,753	220
Kisumu	56,610	4,160	20,000	0	5,750	500	1,550	20,250	250
Kitui	11,970	260	10,100	0	0	140	10	100	0
Kwale	9,900	400	9,500	0	0	0	0	0	0
Laikipia	5,731,793	116,227	4,965,825	146,526	1,290,108	168,630	49,440	142,500	11900
Lamu	39,543	5,420	34,060	8	0	5	0	0	0
Machakos	557,540	125,740	339,551	900	49,230	320	1,980	9,840	450
Makueni	37,900	2,180	35,720	0	200	0	0	0	0
Mandera	33,300	950	31,500	0	0	0	150	600	100
Marsabit	99,300	1,930	86,044	0	706	826	1,700	8,800	0
Meru	7,999,843	26,224	7,535,605	107,810	84,518	130,425	6,230	22,250	1100
Migori	141,800	1,050	38,850	0	0	0	0	5,900	96000
Murang'a	692,800	0	640,800	0	0	0	0	16,000	0
Nairobi City	21,600	2,160	0	0	900	0	0	2,020	0
Nakuru	26,536,795	165,336	22,050,319	1,282,395	159,441	744,458	15,340	1,038,978	537000
Nandi	5,891,750	184,412	3,787,267	762,630	211,080	280	48,651	145,695	102870
Narok	36,515,730	216,680	22,408,700	5,435,100	18,540	305,620	23,070	121,500	90
Nyamira	1,800	900	900	0	0	0	0	0	0
Nyandarua	982,326	98,242	769,297	9,920	32,200	13,609	350	2,570	0
Nyeri	776,366	735	655,305	250	70	31,605	526	230	0
Samburu	2,289,730	8,280	1,730,810	516,690	289,708	0	6,870	21,058	1530
Taita-Taveta	6,291,990	14,040	5,547,780	0	805,050	0	0	0	0
Tana River	9,287,158	1,491,843	6,073,010	331	9,460	353	0	75,600	1410
Tharaka-Nithi	122,420	900	104,130	17,100	17,100	90	0	200	0
Trans Nzoia	10,346,058	437,445	24,417,327	194,406,840	97,265	2,550	102,240	116,740	23150
Uasin Gishu	60,841,570	1,364,732	32,635,082	21,295,340	1,767,658	245,545	182,640	562,160	76500
Vihiga	5,850	1,150	2,970	0	0	0	0	0	0
West Pokot	2,937,894	172,085	2,575,924	3,240	0	71,040	17,730	38,970	5040
Grand Total	**246,708,355**	**7,248,581**	**158,703,116**	**255,839,406**	**6,369,078**	**7,178,102**	**2,880,735**	**3,332,281**	**1129572**

Annex 11: Total Production Utilization by County and type of fruit

COUNTY	SUM Total production (Kgs)	Own Consumption Kgs)	Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Crop output in Stock (Kgs) by December 2019	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	14,000	2,000	5,000	0	0	0	0	0	200
Bomet	560,544	118,176	437,368	0	0	0	0	5,000	0
Bungoma	15,870	1,025	14,845	0	0	0	0	0	0
Busia	33,950	600	32,200	0	0	700	0	350	100
Elgeyo-Marakwet	64,460	1,500	52,960	0	0	0	0	10,000	0
Embu	63,000	6,330	56,425	30	0	110	0	60	20
Garissa	1,765,870	34,741	1,606,209	0	0	4,320	0	65,408	55,240
Homa Bay	7,500	0	7,253	0	0	247	0	0	0
Isiolo	150	50	100	0	0	0	0	0	0
Kajiado	298,000	0	287,500	0	0	0	0	10,500	0
Kakamega	152,120	120	140,000	0	0	8,000	1,200	3,200	800
Kericho	25,600	160	25,000	0	0	0	0	200	240
Kiambu	381,241	421	380,700	20	0	0	2,000	0	100
Kilifi	251,920	3,090	209,140	0	3,000	13,240	4,600	21,730	320
Kirinyaga	2,512,450	4,955	2,487,395	0	0	250	0	150	100
Kitui	10,200	40	9,930	0	0	0	1,000	30	0
Laikipia	49,344	0	45,000	0	0	24	0	4,320	0
Lamu	8,900	0	8,900	0	0	0	0	0	0
Machakos	250,460	5,267	181,993	0	0	0	40	4,900	1,700
Makueni	41,030	500	21,732	0	0	200	0	3,598	15,000
Mandera	178,100	1,900	170,900	0	50	150	50	1,150	1,000
Marsabit	3,095	10	3,000	0	50	10	10	15	10
Meru	211,718	48,851	158,467	0	0	780	100	700	330
Murang'a	31,663	6,673	21,290	0	0	1,500	0	0	2,200
Nakuru	250	0	0	0	0	0	0	0	0
Nyandarua	20,800	0	20,740	0	0	0	0	60	0
Taita-Taveta	87,922	6,000	66,583	0	0	3,000	0	12,339	0
Tana River	3,000	0	2,500	0	0	0	0	300	20
Tharaka-Nithi	46,000	1,500	44,500	0	0	0	0	0	0
Uasin Gishu	20,000	0	15,000	0	0	0	0	5,000	0
Vihiga	4,335	360	3,945	0	0	30	390	0	0
West Pokot	29,280	1,870	26,770	0	50	590	0	0	0
Grand Total	**7,142,772**	**246,139**	**6,543,345**	**50**	**3,150**	**33,151**	**9,390**	**149,010**	**77,380**

Annex 12: Total Production Utilization by County and type of Industrial crops

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	24,000	0	15,000	0	0	9,000	0	0	0
Bomet	118,585,064	0	112,956,464	0	88,000	0	0	56,600	5,570,000
Bungoma	14,155,678	4,387,500	8,207,628	740,000	84	35,000	0	36,000	0
Busia	12,102,975	0	6,220,250	0	460,000	81,750	500	159,475	29,000
Elgeyo-Marakwet	3,012,898	0	3,012,898	0	2,214,517	0	0	0	0
Embu	1,030,152	250	1,027,072	0	2,780	0	0	50	0
Homa Bay	4,105	0	4,105	0	5	0	0	0	0
Kakamega	28,931,120	200	21,820,697	2,500	1,200,000	25,000	0	426,200	107,250
Kericho	23,842,947	0	12,134,253	6,464,000	387,200	87,000	0	408,100	2,000
Kiambu	16,146,272	25	14,163,499	0	20,400	0	0	48,510	2,500
Kilifi	300,000	2,400	297,600	0	0	0	0	0	0
Kirinyaga	259,722	0	216,304	0	1,442	0	0	0	0
Kisumu	217,734,570	0	195,581,440	1,000	141,638,350	7,136,350	20	2,252,990	609,330
Kwale	5,146,445	1,200	4,377,500	0	36,500	0	0	757,000	245
Lamu	45,125	35	50	45,040	0	0	0	0	0
Machakos	17,980	0	17,900	0	300	0	0	80	0
Makueni	7,044,500	0	0	0	217,500	0	7,038,350	0	0
Meru	1,379,987	0	1,315,522	0	0	0	0	2,620	0
Migori	1,160,000	0	1,160,000	0	0	0	0	0	0
Murang'a	1,792,141	0	1,792,111	0	0	0	0	0	0
Nakuru	9,646,776	0	9,583,776	0	56,000	0	0	7,000	0
Nandi	40,847,056	1,193	18,260,688	0	1,106,696	5,600	1,200	344,670	52,000
Narok	16,004,960	0	15,214,960	0	0	0	0	80,000	0
Nyamira	6,225,900	0	702,400	0	0	0	0	100	0
Nyeri	2,272,221	20	2,272,201	0	0	0	0	0	0
Taita-Taveta	10,279,250	1,750	9,300,700	0	11,950	0	0	0	0
Tharaka-Nithi	26,719	0	5,953	0	0	0	0	0	0
Trans Nzoia	163,867	0	162,147	0	0	0	0	0	0
Uasin Gishu	205,000	0	204,900	0	0	0	0	100	0
Vihiga	74,541	30	54,477	0	360	0	0	234	5
West Pokot	5,300	0	5,300	0	0	0	0	0	0
Grand Total	**538,467,270**	**4,394,603**	**440,087,796**	**7,252,540**	**147,442,084**	**7,379,700**	**7,040,070**	**4,579,729**	**6,372,330**

Annex 13: Total Production Utilization by County and type of nut

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bungoma	2,495	450	2,045	0	35	0	0	0	0
Embu	19,030	20	18,860	0	0	0	0	0	8
Homa Bay	400	20	0	0	380	0	0	0	0
Kiambu	2,203,732	0	2,126,732	0	25,000	0	0	77,000	0
Kirinyaga	490	20	470	0	0	0	0	0	0
Lamu	280,280	1,650	278,630	0	0	0	0	0	0
Mandera	10,050	50	10,000	0	0	0	0	0	0
Meru	63,425	100	62,960	0	0	135	120	30	0
Nakuru	17,000	0	12,000	0	0	0	0	5,000	0
Nyeri	10,800	4	10,600	0	0	0	0	0	0
Uasin Gishu	74,680	0	70,000	4,500	0	180	0	0	0
Vihiga	720	80	480	0	40	40	0	120	0
Grand Total	**2,683,102**	**2,394**	**2,592,777**	**4,500**	**25,455**	**355**	**120**	**82,150**	**8**

Annex 14: Total Production Utilization by County and type of pasture and fodder

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	203,800	0	82,400	109,400	12,000	150	50	0	0
Bomet	46,090	45	15,445	30,600	4,000	0	0	0	0
Bungoma	1,881,170	0	19,820	1,861,350	0	0	0	0	0
Embu	688,050	328,000	1,500	260,050	3,500	5,000	0	7	0
Homa Bay	28,800	0	5,200	200	23,650	0	180	0	0
Kakamega	934,967	44,250	63,163	35,810	115,705	403,000	0	1,250	0
Kiambu	1,650,091	0	957,172	368,960	203,879	0	0	41,165	13,000
Kilifi	366,000	183,000	0	183,000	183,000	0	0	0	0
Kirinyaga	586,000	288,000	0	298,000	1,800	0	0	0	0
Laikipia	765,606	0	341,200	326,456	54,000	1,350	6,174	4,200	0
Meru	500	0	0	300	0	0	0	0	0
Nakuru	7,482,183	126,100	4,567,459	1,855,105	471,400	17,325	0	167,850	0
Narok	718,000	0	557,500	84,000	0	0	0	1,950	0
Nyandarua	576,440	170	18,000	542,480	15,410	80	0	300	0
Nyeri	376,900	79,000	28,800	184,500	62,480	0	37,600	960	1,344
Samburu	228,890	0	129,590	85,300	4,200	0	5,600	2,800	0
Tharaka-Nithi	22,500	11,250	0	11,250	11,500	0	0	0	0
Trans Nzoia	30,300	10,500	6,000	11,100	1,125	0	0	2,700	0
Uasin Gishu	999,860	9,400	513,450	442,860	33,750	0	400	0	0
West Pokot	51,870	0	4,500	17,370	30,000	0	0	0	0
Grand Total	**17,638,017**	**1,079,715**	**7,311,199**	**6,708,091**	**1,231,399**	**426,905**	**50,004**	**223,182**	**14,344**

Annex 15: Total Production Utilization by County and type of root and tuber

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/ losses (Kgs)
Homa Bay	1,800	270	1,530	0	0	0	0	0	0
Kilifi	2,000	1,000	1,000	0	0	0	0	0	0
Vihiga	4,000	0	4,000	0	0	0	0	0	0
Grand Total	**7,800**	**1,270**	**6,530**	**0**	**0**	**0**	**0**	**0**	**0**

Annex 16: Total Production Utilization by County and type of vegetable

County	Total Production (Kgs)	Total Own Consumption Kgs)	Total Quantity Sold (Kgs)	Crop Output Fed to Livestock (Kgs)	Crop Output in Stock (Kgs) by December 2019	Crop Output Used as Seed (Kgs)	Crop Output Given Out (Kgs)	Post-Harvest Losses (Kgs)	Crop Output Stolen/ Losses (Kgs)
Baringo	6,480	0	960	0	5,520	0	0	0	0
Bomet	331,589	29,560	281,828	0	0	0	0	1,000	0
Bungoma	144,000	600	107,400	0	0	15,000	1,000	20,000	0
Elgeyo-Marakwet	8,500	500	8,000	0	0	0	0	0	0
Embu	2,040,900	134,400	1,903,300	500	0	0	620	240	60
Garissa	312,050	7,050	291,000	0	0	0	1,550	11,450	1,000
Homa Bay	2,080	1,555	525	0	0	0	0	0	0
Kajiado	1,438,775	18,030	1,357,500	1,900	291,500	0	1,750	31,775	300
Kakamega	46,000	100	45,400	0	0	0	0	400	100
Kiambu	3,303,800	2,410	3,237,490	200	0	0	0	20,800	4,900
Kirinyaga	2,116,145	18,846	1,921,769	2,000	15,000	0	27,100	59,080	100
Kwale	5,500	5,000	0	0	0	0	0	500	0
Laikipia	7,693,265	151,945	5,016,630	16,300	3,030	9,000	8,630	462,160	9,050
Machakos	1,179,265	41,662	1,023,183	300	0	0	500	17,280	240
Makueni	53,350	3,000	43,850	0	0	0	0	6,500	0
Mandera	735,500	5,920	697,000	0	0	0	2,800	24,730	4,150
Marsabit	14,400	300	200	0	0	0	40	60	0
Meru	448,457	76,388	341,989	3,200	0	0	140	450	290
Migori	69,050	100	59,950	0	0	0	0	9,000	0
Murang'a	273,850	0	273,750	0	0	0	100	0	0
Nakuru	9,647,805	31,666	8,250,188	0	0	20,100	0	1,342,855	0
Narok	2,000	0	2,000	0	0	0	0	0	0
Nyandarua	1,058,800	266,250	682,500	4,000	0	0	0	106,050	0
Nyeri	743,350	6,450	442,650	200,000	0	0	3,000	37,500	750
Taita-Taveta	29,500	3,300	18,750	0	0	0	1,100	4,000	100
Tana River	40	10	30	0	0	0	0	0	0
Uasin Gishu	161,226	312	158,317	0	0	0	0	600	0
Vihiga	3,582	388	3,188	0	0	0	6	0	0
West Pokot	38,900	1,500	37,400	0	0	0	0	0	0
Grand Total	**31,908,158**	**807,242**	**26,206,746**	**228,400**	**315,050**	**44,100**	**48,336**	**2,156,430**	**21,040**

Annex 17: Total Production Utilization of maize by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	3,010,150	25,210	2,875,740	0	15,250	24,200	1,900	28,250	3,600
Bomet	1,199,118	60,275	504,819	168,080	2,770	0	23,580	217,353	1,820
Bungoma	3,509,608	116,802	2,666,160	60,870	430,380	0	40,188	67,210	17,420
Busia	288,685	11,700	250,119	0	188,700	0	1,790	17,605	270
Elgeyo-Marakwet	27,490,250	2,134,680	6,202,710	18,905,270	69,210	450	6,930	34,560	3,240
Embu	410,720	34,010	168,750	14,900	3,420	680	120	0	0
Garissa	65,300	3,800	53,900	0	0	103	3,850	2,740	907
Homa Bay	134,436	28,220	77,430	0	2,402	0	58	8	0
Isiolo	46,800	3,150	36,000	0	2,450	35	2,700	360	0
Kajiado	478,410	9,220	331,500	450	2,600	0	2,972	7,230	365
Kakamega	8,159,053	219,244	3,609,831	3,137,306	498,544	50	69,730	325,841	195,810
Kericho	344,800	12,120	150,810	31,680	93,500	0	7,020	3,410	370
Kiambu	600,000	0	300,000	300,000	0	0	0	0	0
Kilifi	3,014,130	6,648	2,751,370	0	200,110	192	90	50,000	0
Kirinyaga	110,703	11,000	57,990	2,150	0	0	2,260	31,743	220
Kisumu	11,000	700	200	0	350	50	100	25	25
Laikipia	1,872,120	46,154	1,534,129	120,666	442,758	900	30,090	38,010	9,630
Lamu	38,243	5,320	32,860	8	0	5	0	0	0
Machakos	414,370	124,420	199,851	900	48,600	90	1,980	8,280	90
Makueni	14,500	1,800	12,700	0	100	0	0	0	0
Mandera	31,600	900	30,000	0	0	0	150	500	50
Marsabit	78,300	980	69,744	0	256	376	1,000	6,200	0
Meru	293,320	15,301	156,110	96,060	9,700	2,160	1,460	1,600	200
Murang'a	72,000	0	72,000	0	0	0	0	0	0
Nairobi City	21,600	2,160	0	0	900	0	0	2,020	0
Nakuru	3,866,261	110,460	2,017,118	1,276,995	102,422	109,350	6,000	77,520	1,800
Nandi	5,891,750	184,412	3,787,267	762,630	211,080	280	48,651	145,695	102,870
Narok	11,772,382	212,850	4,889,160	5,435,100	9,000	0	21,172	22,770	90
Nyamira	1,800	900	900	0	0	0	0	0	0
Nyandarua	170,026	18,650	120,077	9,920	13,050	309	0	820	0
Nyeri	5,810	550	570	160	70	0	30	0	0
Samburu	82,080	5,400	56,250	12,600	1,708	0	4,950	1,980	900
Taita-Taveta	6,291,990	14,040	5,547,780	0	805,050	0	0	0	0
Tana River	9,114,671	1,489,628	5,902,900	331	9,460	341	0	75,600	1,260
Tharaka-Nithi	35,300	900	17,100	17,100	17,100	0	0	200	0
Trans Nzoia	10,257,163	436,250	24,385,377	194,406,840	97,065	1,800	102,240	116,640	23,150
Uasin Gishu	47,982,980	968,750	23,594,020	20,382,310	1,720,958	102,920	135,990	483,680	76,500
Vihiga	5,850	1,150	2,970	0	0	0	0	0	0
West Pokot	2,450,009	165,000	2,172,104	3,240	0	0	17,730	33,570	4,500
Grand Total	**149,637,288**	**6,482,754**	**94,638,316**	**245,145,566**	**4,998,963**	**244,291**	**534,731**	**1,801,420**	**445,087**

Annex 18: Total Production Utilization of Bananas by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bomet	522,984	118,040	404,944	0	0	0	0	0	0
Bungoma	15,870	1,025	14,845	0	0	0	0	0	0
Embu	52,300	6,120	45,945	30	0	0	110	60	20
Garissa	2,169,450	21,980	1,074,850	0	0	0	2,670	36,500	42,390
Isiolo	150	50	100	0	0	0	0	0	0
Kakamega	152,120	120	140,000	0	1,200	0	8,000	3,200	800
Kiambu	40,241	421	39,700	20	2,000	0	0	0	100
Kirinyaga	2,462,450	4,950	2,437,400	0	0	0	250	150	100
Machakos	20,810	1,000	18,160	0	40	0	0	950	700
Mandera	30,300	300	30,000	0	0	0	0	0	0
Meru	78,318	46,551	29,267	0	0	0	80	0	30
Murang'a	18,360	2,040	16,320	0	0	0	0	0	0
Tharaka-Nithi	36,000	1,000	35,000	0	0	0	0	0	0
Vihiga	4,335	360	3,945	0	390	0	30	0	0
West Pokot	3,480	1,250	1,830	0	0	0	400	0	0
Grand Total	**5,607,168**	**205,207**	**4,292,306**	**50**	**3,630**	**0**	**11,540**	**40,860**	**44,140**

Annex 19: Total Production Utilization of dry beans by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bomet	42,742	10,173	30,051	0	900	450	90	1,260	0
Bungoma	66,540	4,995	54,225	0	2,950	90	0	2,945	0
Embu	8,460	925	7,000	0	535	0	0	0	0
Garissa	10,300	200	10,000	0	0	100	0	0	0
Homa Bay	720	24	696	0	0	0	0	0	0
Isiolo	21,600	30	150	0	10	10	40	10	0
Kajiado	7,875,700	3,443	5,400,570	1,620	2,250,001	42,007	90	177,170	0
Kakamega	28,260	1,625	19,260	0	4,502	656	1,170	155	0
Kirinyaga	5,000	0	5,000	0	0	0	0	0	0
Laikipia	20,160	360	19,440	0	360	0	0	360	0
Machakos	80,910	1,250	77,690	0	0	230	0	1,380	360
Marsabit	5,500	100	2,900	0	0	0	500	2,000	0
Meru	11,815	2,770	5,910	0	470	1,365	150	600	550
Murang'a	620,800	0	568,800	0	0	0	0	16,000	0
Nakuru	19,450	2,180	16,450	0	0	0	0	360	0
Narok	19,360	1,620	12,880	60	540	540	90	4,230	0
Trans Nzoia	45	45	0	0	0	0	0	0	0
Uasin Gishu	18,990	3,240	14,625	90	0	495	540	0	0
West Pokot	3,695	1,205	2,290	0	0	200	0	0	0
Grand Total	**8,860,047**	**34,185**	**6,247,937**	**1,770**	**2,260,268**	**46,143**	**2,670**	**206,470**	**910**

Annex 20: Total Production Utilization of dry beans by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/ losses (Kgs)
Elgeyo-Marakwet	4,176,000	0	4,186,640	0	0	0	0	0	0
Laikipia	183,150	0	162,000	900	6,300	3,600	0	16,650	0
Meru	4,262,000	0	4,196,000	0	33,000	22,000	2,000	9,000	0
Nakuru	1,452,234	0	1,415,534	0	0	7,000	0	0	0
Narok	3,134,250	0	2,937,240	0	0	13,500	0	93,600	0
Samburu	584,000	0	567,000	0	0	0	0	17,000	0
Uasin Gishu	1,912,650	3,600	439,950	5,650	0	3,150	0	22,950	0
Grand Total	**15,704,284**	**3,600**	**13,904,364**	**6,550**	**39,300**	**49,250**	**2,000**	**159,200**	**0**

Annex 21: Total Production Utilization of Irish Potatoes by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	154,000	500	101,280	0	0	2,220	0	2,000	48,000
Bomet	53,470	2,440	22,700	0	0	1,350	0	180	0
Elgeyo-Marakwet	138,600	350	133,350	0	0	4,900	0	0	0
Embu	490	490	0	0	0	0	0	0	0
Kiambu	40,000	0	40,000	0	0	0	0	0	0
Kirinyaga	2,020	25	1,955	0	0	0	30	10	0
Laikipia	962,700	50,000	900,000	0	0	10,000	0	2,700	0
Marsabit	3,500	500	2,500	0	300	300	100	100	0
Meru	107,080	5,200	95,900	50	78	3,700	300	450	350
Nakuru	11,846,818	31,620	9,847,620	0	30,360	562,218	7,000	795,210	535,200
Narok	354,100	1,290	332,530	0	0	20,280	0	0	0
Nyandarua	723,500	70,442	637,360	0	250	13,300	0	1,750	0
Trans Nzoia	25,850	250	24,750	0	200	750	0	100	0
Uasin Gishu	465,650	6,050	371,600	0	0	15,500	0	50,000	0
West Pokot	484,190	5,880	401,530	0	0	70,840	0	5,400	540
Grand Total	**15,361,968**	**175,037**	**12,913,075**	**50**	**31,188**	**705,358**	**7,430**	**857,900**	**584,090**

Annex 22: Total Production Utilization of Cabbages by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bomet	326,811	26,900	280,910	0	0	0	0	1,000	0
Bungoma	144,000	600	107,400	0	0	15,000	1,000	20,000	0
Elgeyo-Marakwet	8,000	500	7,500	0	0	0	0	0	0
Embu	188,100	124,600	63,000	500	0	0	0	0	0
Kajiado	21,000	9,000	9,000	0	0	0	0	3,000	0
Kiambu	646,500	1,510	644,990	0	0	0	0	0	0
Laikipia	384,000	144,150	160,650	16,000	0	6,000	5,250	13,500	8,500
Machakos	207,690	100	166,700	0	0	0	0	790	0
Makueni	48,000	3,000	42,000	0	0	0	0	3,000	0
Meru	117,222	37,035	55,987	1,600	0	0	100	350	150
Nakuru	5,420,000	30,751	5,382,603	0	0	0	0	3,650	0
Nyandarua	1,056,000	266,200	680,000	4,000	0	0	0	105,800	0
Nyeri	545,400	5,400	340,000	200,000	0	0	0	0	0
Uasin Gishu	134,700	100	134,600	0	0	0	0	0	0
West Pokot	23,400	1,500	21,900	0	0	0	0	0	0
Grand Total	**9,270,823**	**651,346**	**8,097,239**	**222,100**	**0**	**21,000**	**6,350**	**151,090**	**8,650**

Annex 23: Total Production Utilization of Coffee by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bomet	150	0	150	0	0	0	0	0	0
Bungoma	47,178	0	47,178	0	0	0	0	0	0
Embu	403,415	250	400,385	0	2,780	0	0	0	0
Kakamega	6,000	0	6,000	0	0	0	0	0	0
Kericho	345,900	0	345,900	0	0	0	0	0	0
Kiambu	4,667,563	25	2,810,823	0	20,400	0	0	500	2,500
Kirinyaga	211,722	0	168,304	0	1,442	0	0	0	0
Machakos	7,900	0	7,900	0	0	0	0	0	0
Meru	34,990	0	25,990	0	0	0	0	0	0
Murang'a	1,534,144	0	1,534,114	0	0	0	0	0	0
Nakuru	143,000	0	82,000	0	56,000	0	0	5,000	0
Nyeri	213,974	20	213,954	0	0	0	0	0	0
Tharaka-Nithi	26,719	0	5,953	0	0	0	0	0	0
Trans Nzoia	4,220	0	2,500	0	0	0	0	0	0
Uasin Gishu	205,000	0	204,900	0	0	0	0	100	0
West Pokot	4,220	0	4,220	0	0	0	0	0	0
Grand Total	**7,856,095**	**295**	**5,860,271**	**0**	**80,622**	**0**	**0**	**5,600**	**2,500**

Annex 24: Total Production Utilization of Mangoes by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	14,000	2,000	5,000	0	0	0	0	0	200
Elgeyo-Marakwet	63,500	1,500	52,000	0	0	0	0	10,000	0
Embu	100	10	80	0	0	0	0	0	0
Garissa	12,465	2,000	10,465	0	0	0	0	0	0
Kilifi	8,920	700	3,140	0	4,600	3,000	240	120	320
Lamu	6,400	0	6,400	0	0	0	0	0	0
Machakos	68,267	1,967	64,450	0	0	0	0	1,350	500
Makueni	30,030	300	11,232	0	0	0	0	3,498	15,000
Mandera	15,300	350	11,500	0	50	0	0	0	500
Marsabit	3,095	10	3,000	0	10	50	10	15	10
Meru	20,000	1,000	19,000	0	0	0	0	0	0
Murang'a	11,150	4,500	4,750	0	0	0	0	0	1,900
Tharaka-Nithi	10,000	500	9,500	0	0	0	0	0	0
Grand Total	**263,227**	**14,837**	**200,517**	**0**	**4,660**	**3,050**	**250**	**14,983**	**18,430**

Annex 25: Total Production Utilization of Rhodes Grass by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	187,000	0	74,000	101,000	12,000	150	50	0	0
Bomet	90,000	0	12,400	30,600	4,000	0	0	0	0
Bungoma	420,000	0	0	420,000	0	0	0	0	0
Embu	30,000	8,000	1,500	12,000	3,500	5,000	0	0	0
Homa Bay	27,000	0	3,600	0	23,400	0	180	0	0
Kakamega	560,918	31,750	40,463	22,750	65,705	400,000	0	250	0
Kiambu	70,091	0	7,172	48,960	9,703	0	0	4,165	0
Laikipia	262,200	0	237,600	56	0	0	0	0	0
Meru	500	0	0	500	0	0	0	0	0
Nakuru	6,183,675	126,100	4,158,575	1,409,125	306,200	15,825	0	167,850	0
Narok	643,450	0	557,500	84,000	0	0	0	1,950	0
Nyandarua	54,000	0	18,000	26,000	10,000	0	0	0	0
Nyeri	355,400	79,000	28,800	163,000	44,696	0	37,600	960	1,344
Samburu	228,890	0	129,590	85,300	5,600	0	5,600	2,800	0
Tharaka-Nithi	22,500	11,250	0	11,250	0	0	0	0	0
Uasin Gishu	942,400	9,400	465,500	433,350	33,750	0	400	0	0
West Pokot	51,870	0	4,500	17,370	30,000	0	0	0	0
Grand Total	**10,129,894**	**265,500**	**5,739,200**	**2,865,261**	**548,554**	**420,975**	**43,830**	**177,975**	**1,344**

Annex 26: Total Production Utilization of Rice (Paddy) by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Busia	200,000	150	88,500	0	0	1,500	5,200	650	0
Garissa	18,000	3,000	15,000	0	0	0	0	0	0
Kirinyaga	198,220	93,600	104,620	0	5,500	0	0	0	0
Kisumu	45,610	3,460	19,800	0	5,400	450	1,450	20,225	225
Migori	136,800	800	37,600	0	0	0	0	2,400	96,000
Tana River	90,207	2,005	88,050	0	0	2	0	0	150
Grand Total	**688,837**	**103,015**	**353,570**	**0**	**10,900**	**1,952**	**6,650**	**23,275**	**96,375**

Annex 27: Total Production Utilization of Sugar Cane by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bungoma	14,106,500	4,387,500	8,158,450	740,000	84	35,000	0	36,000	0
Busia	12,102,975	0	6,220,250	0	460,000	81,750	500	159,475	29,000
Kakamega	28,925,120	200	21,814,697	2,500	1,200,000	25,000	0	426,200	107,250
Kericho	2,059,300	0	1,500,000	0	387,200	87,000	0	85,100	0
Kisumu	217,734,570	0	195,581,440	1,000	141,638,350	7,136,350	20	2,252,990	609,330
Kwale	5,092,445	1,200	4,334,000	0	20,000	0	0	757,000	245
Migori	1,160,000	0	1,160,000	0	0	0	0	0	0
Nandi	11,290,000	0	10,820,030	0	0	5,600	0	290,000	52,000
Narok	15,764,960	0	14,974,960	0	0	0	0	80,000	0
Vihiga	20,000	30	170	0	0	0	0	0	5
Grand Total	**308,255,870**	**4,388,930**	**264,563,997**	**743,500**	**143,705,634**	**7,370,700**	**520**	**4,086,765**	**797,830**

Annex 28: Total Production Utilization of Tea by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bomet	520,000	0	518,000	0	0	0	0	0	2,000
Bungoma	2,000	0	2,000	0	0	0	0	0	0
Elgeyo-Marakwet	3,012,898	0	3,012,898	0	2,214,517	0	0	0	0
Embu	626,737	0	626,687	0	0	0	0	50	0
Kericho	6,743,847	0	4,330,028	0	0	0	0	323,000	2,000
Kiambu	11,478,709	0	11,352,676	0	0	0	0	48,010	0
Kirinyaga	48,000	0	48,000	0	0	0	0	0	0
Meru	1,344,997	0	1,289,532	0	0	0	0	2,620	0
Murang'a	257,997	0	257,997	0	0	0	0	0	0
Nakuru	9,501,776	0	9,499,776	0	0	0	0	2,000	0
Nandi	29,557,056	1,193	7,440,658	0	1,106,696	0	1,200	54,670	0
Narok	240,000	0	240,000	0	0	0	0	0	0
Nyamira	6,225,900	0	702,400	0	0	0	0	100	0
Nyeri	2,058,247	0	2,058,247	0	0	0	0	0	0
Trans Nzoia	159,647	0	159,647	0	0	0	0	0	0
Vihiga	54,541	0	54,307	0	360	0	0	234	0
Grand Total	**71,832,351**	**1,193**	**41,592,854**	**0**	**3,321,573**	**0**	**1,200**	**430,684**	**4,000**

Annex 29: Total Production Utilization of Sisal by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Kilifi	300,000	2,400	297,600	0	0	0	0	0	0
Kwale	54,000	0	43,500	0	16,500	0	0	0	0
Makueni	7,044,500	0	0	0	217,500	0	7,038,350	0	0
Taita-Taveta	10,279,250	1,750	9,300,700	0	11,950	0	0	0	0
Grand Total	**17,677,750**	**4,150**	**9,641,800**	**0**	**245,950**	**0**	**7,038,350**	**0**	**0**

Annex 30: Total Production Utilization of Wheat by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	54,500	0	54,500	0	0	0	0	0	0
Bungoma	630	0	450	0	180	0	0	45	0
Elgeyo-Marakwet	556,000	4,050	460,360	0	1,000	23,550	1,050	3,690	0
Laikipia	2,693,663	19,713	2,350,256	24,960	840,690	154,130	19,350	84,780	2,270
Meru	3,108,340	460	2,960,590	0	33,270	20,800	2,320	9,000	0
Nakuru	9,307,482	16,576	8,731,057	5,400	26,659	65,890	2,340	163,998	0
Narok	21,231,638	720	14,233,090	0	9,000	271,300	1,808	900	0
Nyandarua	59,400	8,800	11,450	0	18,900	0	0	0	0
Nyeri	770,556	185	654,735	90	0	31,605	496	230	0
Samburu	1,623,650	2,880	1,107,560	504,090	288,000	0	1,920	2,078	630
Trans Nzoia	63,000	900	7,200	0	0	0	0	0	0
Uasin Gishu	10,409,500	382,912	8,163,267	907,290	46,700	123,480	46,110	5,530	0
Grand Total	**49,878,359**	**437,196**	**38,734,515**	**1,441,830**	**1,264,399**	**690,755**	**75,394**	**270,251**	**2,900**

Annex 31: Total Production Utilization of fodder Maize by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bungoma	1,440,000	0	0	1,440,000	0	0	0	0	0
Embu	470,000	220,000	0	160,000	0	0	0	7	0
Kiambu	40,000	0	0	40,000	0	0	0	0	0
Kilifi	366,000	183,000	0	183,000	183,000	0	0	0	0
Kirinyaga	586,000	288,000	0	298,000	1,800	0	0	0	0
Nakuru	280,000	0	0	280,000	0	0	0	0	0
Nyandarua	500,080	0	0	500,000	0	80	0	0	0
Nyeri	18,000	0	0	18,000	0	0	0	0	0
Grand Total	**3,700,080**	**691,000**	**0**	**2,919,000**	**184,800**	**80**	**0**	7	**0**

Annex 32: Total Production Utilization of Macadamia Nuts by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bungoma	1,820	0	1,820	0	0	0	0	0	0
Embu	19,030	20	18,860	0	0	0	0	0	8
Kiambu	2,203,732	0	2,126,732	0	25,000	0	0	77,000	0
Kirinyaga	490	20	470	0	0	0	0	0	0
Meru	5,550	0	5,420	0	0	0	20	30	0
Nyeri	3,400	4	3,200	0	0	0	0	0	0
Grand Total	**2,234,022**	**44**	**2,156,502**	**0**	**25,000**	**0**	**20**	**77,030**	**8**

Annex 33: Total Production Utilization of Avocadoes by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bomet	14,000	0	9,000	0	0	0	0	5,000	0
Busia	3,500	500	2,200	0	0	0	500	200	100
Embu	2,400	0	2,400	0	0	0	0	0	0
Kiambu	331,000	0	331,000	0	0	0	0	0	0
Makueni	1,000	200	500	0	0	0	200	100	0
Uasin Gishu	20,000	0	15,000	0	0	0	0	5,000	0
West Pokot	1,800	360	1,440	0	0	0	0	0	0
Grand Total	**373,700**	**1,060**	**361,540**	**0**	**0**	**0**	**700**	**10,300**	**100**

Annex 34: Total Production Utilization of Coconut by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Lamu	268,600	1,550	267,050	0	0	0	0	0	0
Grand Total	**268,600**	**1,550**	**267,050**	**0**	**0**	**0**	**0**	**0**	**0**

Annex 35: Total Production Utilization of Sorghum by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Bungoma	3,270	0	3,270	0	0	0	0	0	0
Elgeyo-Marakwet	13,500	0	13,500	0	0	0	0	0	0
Homa Bay	101,300	0	100,000	0	0	0	0	1,300	0
Kwale	4,500	400	4,100	0	0	0	0	0	0
Meru	13,045	50	12,995	0	0	0	0	0	0
Migori	5,000	250	1,250	0	0	0	0	3,500	0
Narok	4,000	200	3,800	0	0	0	0	0	0
Tana River	430	120	300	0	0	10	0	0	0
Tharaka-Nithi	87,120	0	87,030	0	0	90	0	0	0
Grand Total	**232,165**	**1,020**	**226,245**	**0**	**0**	**100**	**0**	**4,800**	**0**

Annex 36: Total Production Utilization of Pyrethrum by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Nakuru	2,000	0	2,000	0	0	0	0	0	0
West Pokot	1,080	0	1,080	0	0	0	0	0	0
Grand Total	**3,080**	**0**	**3,080**	**0**	**0**	**0**	**0**	**0**	**0**

Annex 37: Total Production Utilization of Simsim by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Lamu	5,600	100	5,500	0	0	0	0	0	0
Mandera	10,050	50	10,000	0	0	0	0	0	0
Grand Total	**15,650**	**150**	**15,500**	**0**	**0**	**0**	**0**	**0**	**0**

Annex 38: Total Production Utilization of Pea by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Meru	5,750	10	5,730	0	0	0	10	0	0
Nakuru	80,000	0	60,000	0	0	20,000	0	0	0
Narok	2,000	0	2,000	0	0	0	0	0	0
Nyandarua	2,800	50	2,500	0	0	0	0	250	0
Nyeri	17,250	750	14,250	0	0	0	0	1,500	750
Grand Total	**107,800**	**810**	**84,480**	**0**	**0**	**20,000**	**10**	**1,750**	**750**

Annex 39: Total Production Utilization of Cotton by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Baringo	24,000	0	15,000	0	0	9,000	0	0	0
Homa Bay	4,105	0	4,105	0	5	0	0	0	0
Lamu	45,100	30	30	45,040	0	0	0	0	0
Machakos	10,080	0	10,000	0	300	0	0	80	0
Grand Total	**83,285**	**30**	**29,135**	**45,040**	**305**	**9,000**	**0**	**80**	**0**

Annex 40: Total Production Utilization of Cassava by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Homa Bay	1,800	270	1,530	0	0	0	0	0	0
Kilifi	2,000	1,000	1,000	0	0	0	0	0	0
Vihiga	4,000	0	4,000	0	0	0	0	0	0
Grand Total	**7,800**	**1,270**	**6,530**	**0**	**0**	**0**	**0**	**0**	**0**

Annex 41: Total Production Utilization of Sweet Potatoes by County

COUNTY	SUM Total production (Kgs)	Total Own Consumption Kgs)	Total Quantity sold (Kgs)	Crop output fed to livestock (Kgs)	Crop output in Stock (Kgs) by December 219	Crop output used as seed (Kgs)	Crop output given out (Kgs)	Post-harvest losses (Kgs)	Crop output stolen/losses (Kgs)
Kakamega	9,691	700	7,941	0	0	0	500	390	160
Meru	197,000	0	103,500	11,500		80,400	0	1,600	0
Nyandarua	29,400	350	410	0	0	0	350	0	0
Uasin Gishu	50,000	0	50,000	0	0	0	0	0	0
Grand Total	**286,091**	**1,050**	**161,851**	**11,500**	**0**	**80,400**	**850**	**1,990**	**160**

Annex 42: Distribution of Total Area Cropped by type of crop and county

County	Area Plated (Acres)								
	Barley	Coffee	Maize	Rhodes Grass	Sisal	Sugar cane	Tea	Wheat	Others
Total	**10,135**	**8,747**	**53,400**	**2,926**	**20,201**	**24,071**	**15,900**	**40,121**	**16,946**
Kwale					7,000	624			38
Kilifi			2,516		630				543
Tana River			2,134						357
Lamu			85						463
Taita-Taveta			2,625		1,012				238
Garissa			38						1,840
Mandera			18						257
Marsabit			53						59
Isiolo			40						31
Meru	3,620	53	189	3			310	3,301	409
Tharaka-Nithi		36	10	3					28
Embu		252	384	41			230		536
Kitui									107
Machakos		30	342						459
Makueni			35		11,559				158
Nyandarua			293	14				54	261
Nyeri		303	11	304			549	794	282
Kirinyaga		145	75				6		509
Murang'a		627	80				68		189
Kiambu		6,558	25	60			2,320		2,171
West Pokot		6	1,869	13					106
Samburu	400		45	69				880	
Trans Nzoia		18	6,528				71	20	29
Uasin Gishu	1,339	50	15,205	243				6,128	400
Elgeyo-Marakwet	100		3,759				765	406	318
Nandi			2,808			6,424	2,054		
Baringo			2,250	165				60	175
Laikipia	80		993	72				2,236	2,442
Nakuru	1,154	380	1,743	1,281			1,489	5,887	2,789
Narok	3,442		3,535	420		558	50	20,354	181
Kajiado			172						539
Kericho		191	208			615	1,787		3
Bomet		1	334	129			5,830		210
Kakamega		19	2,779	87		2,051			255
Vihiga			6			1	26		18
Bungoma		78	1,879	10		580	3	2	292
Busia			192			1,174			75
Kisumu			15			11,953			35
Homa Bay			121	12		20			109
Migori						72			39
Nyamira			4				342		
Nairobi City			7						

Annex 43: Total Area Harvested

County	Total Area Harvested (Acres)								
	Barley	Coffee	Maize	Rhodes Grass	Sisal	Sugar cane	Tea	Wheat	Others
Total	**18388**	**8272**	**51230**	**3558**	**40760**	**11733**	**30156**	**46851**	**15539**
Kwale					320	374			56
Kilifi			2015		400				249
Tana River			2078						357
Lamu			85						463
Taita-Taveta			2625		29217				235
Garissa			31						1477
Mandera			13						226
Marsabit			52						56
Isiolo			40						30
Meru	12620	55	162	3			309	12301	407
Tharaka-Nithi		36	10	3					27
Embu		244	384	21			228		449
Kitui									103
Machakos		30	333						441
Makueni			37		10823				140
Nyandarua			215	14				54	209
Nyeri		301	11	134			546	758	281
Kirinyaga		127	75				6		490
Murang'a		627	80				68		187
Kiambu		6142	25	60			2320		2411
West Pokot		4	1858	12					114
Samburu	350		45	69				860	
Trans Nzoia		18	6094				71	20	29
Uasin Gishu	1339	40	14795	343				5996	315
Elgeyo-Marakwet	100		3753				758	406	241
Nandi			2747			490	10131		
Baringo			2225	115				60	157
Laikipia	80		978	72				1894	2019
Nakuru	1154	383	1637	2056			1489	5768	2744
Narok	2745		3185	420		261	50	18732	150
Kajiado			172						499
Kericho		186	206			388	1697		3
Bomet		1	329	129			5814		205
Kakamega		14	2724	85		1208			219
Vihiga			6			1	5450		44
Bungoma		65	1879	10		290	3	2	290
Busia			182			517			70
Kisumu			15			8179			15
Homa Bay			121	12		0			101
Migori						26			33
Nyamira			4				1217		
Nairobi City			7						

Annex 44: Production in Kilograms of Selected Crops by County

County	Bananas	Barley	Beans, dry	Cabbage	Cauliflowers/brocoli	Coffee	Irish Potatoes	Lemon	Maize	Mangoes	Rhodes Grass	Rice(paddy)	Sisal	Sugar cane	Tea	Wheat	Others
Baringo							154,000		3,010,150	14,000	187,000					54,500	47,280
Bomet	522,984		42,742	326,811		150	53,470		1,199,118		43,000				118,584,914		554,582
Bungoma	15,870		66,540	144,000		47,178			3,509,608		420,000			14,106,500	2,000	630	1,530,253
Busia									288,685			5,280,848		12,102,975			30,450
Elgeyo-Marakwet		4,176,000		8,000			138,600		27,490,250	63,500					3,012,898	556,000	14,960
Embu	52,300		8,460	188,100		403,415	490		410,720	100	30,000				626,737		3,031,480
Garissa	2,169,450		10,300					6,514,350	65,300	6,198,550		18,000					7,458,928
Homa Bay			720						134,436		27,000						118,985
Isiolo	150		21,600						46,800								2,850
Kajiado			7,875,700	21,000					478,410								1,715,775
Kakamega	152,120		28,260			6,000			8,159,053		567,613			28,925,120			585,485
Kericho						345,900			344,800					16,753,200	6,743,847		371,500
Kiambu	40,241			646,500	120,000	4,667,563	40,000		60,000		70,091				11,478,709		11,833,336
Kilifi									3,014,130	8,920			300,000				686,150
Kirinyaga	2,462,450		5,000			211,722	2,020		110,703			198,220			48,000		5,426,807
Kisumu									11,000			45,610		217,734,570			
Kitui									0								12,970
Kwale									0				54,000	5,092,445			15,400
Laikipia		183,150	20,160	384,000	2,678,844		962,700		1,872,120		237,656					2,693,663	8,302,859
Lamu									38,243	6,400							329,205
Machakos	20,810		80,910			7,900			414,370	68,267							1,184,208
Makueni				48,000					14,500	30,030			7,044,500				38,750
Mandera	30,300							8,000	31,600	15,300							902,050
Marsabit			5,500				3,500		78,300	3,095							26,400
Meru	78,318	4,262,000	11,815	117,222		34,990	107,080		293,320	20,000	500				1,344,997	3,108,340	918,656
Migori									0			136,800		1,160,000			74,050
Murang'a	18,360		620,800			1,534,144			72,000	11,150					257,997		1,828,507
Nairobi City									21,600								
Nakuru		1,452,234	19,450	5,420,000	1,296,000	143,000	11,846,818		3,866,261		6,500,575				9,501,776	9,307,482	9,369,713
Nandi									5,891,750					11,290,000	29,557,056		
Narok		3,134,250	19,360				354,100		11,772,382		718,000			15,764,960	240,000	21,231,638	6,000
Nyamira									1,800						6,225,900		
Nyandarua				1,056,000			723,500		170,026		54,000					59,400	600,440
Nyeri				545,400	250,000	213,974			5,810		355,400				2,058,247	770,556	983,128
Samburu		584,000							82,080		228,890					1,623,650	
Taita-Taveta									6,291,990				10,279,250				117,422
Tana River									9,114,671			90,207					85,320
Tharaka-Nithi	36,000					26,719			35,300	10,000	22,500						149,839
Trans Nzoia			45			4,220	25,850		10,257,163						159,647	63,000	34,520
Uasin Gishu		1,912,650	18,990	134,700		205,000	465,650		47,982,980		942,400					10,409,500	415,466
Vihiga	4,335								5,850					20,000	54,541		12,637
West Pokot	3,480		3,695	23,400		4,220	484,190		2,450,009		51,870						44,780
Grand Total	**5,607,168**	**15,704,284**	**8,860,047**	**9,063,133**	**4,344,844**	**7,856,095**	**15,361,968**	**6,522,350**	**149,097,288**	**6,449,312**	**10,456,495**	**5,769,685**	**17,677,750**	**322,949,770**	**189,897,265**	**49,878,359**	**58,861,140**

Annex 45: Distribution of bonus dividends by county

County	Dividends/bonus (KSh)
Total	**2,259,914,327**
Kwale	771,000
Kilifi	26
Tana River	720,000
Lamu	0
Taita-Taveta	0
Garissa	12,593,586
Mandera	336,408
Marsabit	0
Isiolo	0
Meru	1,730,800
Tharaka-Nithi	0
Embu	10,723,428
Kitui	180,000
Machakos	1,981,546,840
Makueni	168,000
Nyandarua	1,855,007
Nyeri	0
Kirinyaga	2,792,000
Murang'a	0
Kiambu	16,800,000
West Pokot	4,574,000
Samburu	0
Trans Nzoia	9,877,765
Uasin Gishu	39,639,700
Elgeyo-Marakwet	0
Nandi	8,095,000
Baringo	780,000
Laikipia	18,212,704
Nakuru	9,215,937
Narok	13,647,683
Kajiado	5,194,408
Kericho	11,717,039
Bomet	7,241,160
Kakamega	83,066,336
Vihiga	2,274,000
Bungoma	10,110,500
Busia	1,859,000
Kisumu	3,966,000
Homa Bay	0
Migori	226,000
Nyamira	0

Annex 46: Changes in Fish stock, 2019

Counties	Beginning Stock			Purchased	Production	Utilization			Closing Stocks		
	Total stock from the fish ponds (fingerling)	Total stock from the fish ponds (table size)	Total stock from the fish ponds (brood stock)	Quantity of fish purchased in 2019	Quantities of fingerlings produced	Quantity of fish sold in 2019 (Kgs)	Number of fish consumed in 2019	Number of fish given away in 2019	Total stock in the fish ponds (fingerling)	Total stock in the fish ponds (table size)	Total stock in the fish ponds (brood stock)
Meru	18,700	2,480	12,000	18,480	1,000	3,492	363	605	15,900	4,080	7,000
Tharaka Nithi	14,500	1,500	300	-	170,000	10,000	200	500	212,000	650	200
Embu	3,200	555	30	100	3,000	-	-	30	2,000	1,025	20
Nyeri	221,000	210,831	25,557	10,050	357,545	39,894	8,144	1,240	331,152	293,685	10,085
Kirinyaga	69,500	7,374	870	3,010	2,002,000	1,880	530	134	805,750	14,620	1,005
Murang'a	-	-	-	-	-	-	-	-	-	-	-
Kiambu	500	500	1,000	2,000	-	10,000	20	-	1,500	700	200
West Pokot	-	1,800	-	1,000	-	9,000	3,000	-	-	600	-
Trans Nzoia	22,000	19,100	15,500	-	-	5,000	5,000	503	5,500	6,500	6,500
Nandi	10,000	5,000	1,000	1,000	120,000	1,200	240	150	18,000	700	500
Baringo	2,900	1,000	900	-	-	240	25	50	995	-	-
Laikipia	-	7,200	150	-	9,000	117	8	70	12,500	3,800	150
Nakuru	50	50	50	2,000	10,050	-	-	-	5,050	5,050	2,046
Kericho	25,750	13,575	6,200	-	112,600	11,645	1,009	2,970	25,650	45,600	10,680
Bomet	51,300	20,000	20,250	-	-	1,800	900	960	51,300	2,080	2,040
Kakamega	394,845	78,125	27,317	62,190	200,340	1,036,073	8,848	4,943	259,170	72,690	10,883
Vihiga	38,700	46,815	3,900	31,400	40,000	1,833,075	2,406	6,195	50,900	13,100	6,600
Bungoma	26,950	13,200	-	-	-	13,330	-	-	-	5,000	-
Busia	96,400	77,478	1,995	17,000	150,500	31,335	3,960	2,066	130,350	69,350	15,500
Kisumu	15,000	15,000	15,000	40,000	70,000	10,000	480,000	200	15,000	40,000	45,000
Homa Bay	1,534,650	937,755	37,760	609,200	6,084,600	2,045,918	14,880	100	1,523,020	545,433	32,793
Migori	61,700	20,508	2,800	-	1,680,000	10,272	2,502	270	42,000	6,900	2,200
Total	**2,607,645**	**1,479,846**	**172,579**	**797,430**	**11,010,635**	**5,074,271**	**532,035**	**20,986**	**3,507,737**	**1,131,563**	**153,402**