



# Marketing of Smallholder Produce

A synthesis of case studies in  
the highlands of central Kenya



**Stachys N. Muturi (ed.)**

Julius K. Kilungo  
Kavoi M. Muendo  
Zacharia Mairura  
Joseph G. Kariuki



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Top: Processing of farm produce adds value. Sun drying of grains in eastern Kenya.  
Bottom: Kale is a staple vegetable whose supply often falls short of demand, especially in the  
dry season. It fetches a good price in the off-season market if irrigated. Central  
Kenya.

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# FOREWORD

Over the last four decades, the Swedish International Development Cooperation Agency (Sida) has supported governments in eastern and southern Africa in implementing rural development programmes to contribute to increased food security. The Regional Soil Conservation Unit (RSCU), RELMA's predecessor, promoted increased agricultural production mainly through soil and water conservation. It has, however, become clear that increased agricultural production alone does not ensure food security. The actors in the food-market chain in Kenya, and in particular the small-scale farmers, face problems in adjusting to the situation created by liberalized economic policies. The immediate result has sometimes created disincentives to commercial production. Farmers should be able to sell their produce at prices that create an incentive for increased and improved food production. This means that the crops chosen for cultivation are not just determined by local farm conditions, but also by market forces. To contribute towards this goal, Sida, in 1998, included agricultural economics and marketing in RELMA's mandate: *"To contribute towards improved livelihoods and enhanced food security among small-scale land users in the region"*.

Marketing of agricultural produce is crucial for increasing available money in the farming sector, and thus achieving food security. Unfortunately, there is little information and experience on the dynamics of smallholder marketing, in Kenya as well as in the whole region. In order to increase the knowledge base on agricultural economics and marketing, RELMA initiated a market study in Kenya. The objectives were to identify how the marketing of agricultural products affects food production, food availability and farmers' welfare, and to identify opportunities and constraints in agricultural marketing. This report is based on the study entitled "The Role of Agricultural Marketing for Smallholder Farmers in Kenya: Economic Analysis of Farm Level Marketing".

RELMA believes that the results of this Kenyan study are of interest not only to specialists in agricultural economics, but also to a wider audience involved in rural development. Therefore, RELMA decided to publish this research study in its series of technical reports in order to share this example of experience in Kenya with our collaborators in other countries<sup>1</sup> in the region and beyond.

RELMA's former and current Economic Advisors, Katarina Renström and Louise Prytz, were responsible from the initiation of the study in October 1999 to this printable technical report.

*Åke Barklund*  
Director, RELMA



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This report is based on the study *The Role of Agricultural Marketing for Smallholder Farmers in Kenya: Economic Analysis of Farm Level Marketing*. The study was carried out by a team of four experts:

- Mr Julius K. Kilungo of the Department of Agricultural Economics, University of Nairobi.
- Mr Kavoi M. Muendo of the Institute for Human Resource Development, Jomo Kenyatta University of Agriculture and Technology.
- Mr Zacharia Mairura of the Farm Planning Branch, Ministry of Agriculture.
- Dr Joseph G. Kariuki of Agrisystems (EA) Ltd.

Many other people have also contributed. RELMA funded the study, as well as the publication of this report. Mr Mats Denninger, former RELMA Director, contributed with ideas on design of the study and content of the report. Ms Katarina Renström, RELMA Economic Advisor, guided the study and assisted in the transformation of the original research report to this technical report.

Others who assisted were Headquarters and field staff in the Ministry of Agriculture, Mr F. Mbote, Head of the Soil and Water Conservation Branch, and Ms Lotta Nycander, Socio-Economic Advisor. Mr Bo Tegnäs made detailed comments on drafts of the study report. Mr Alex Oduor, RELMA Information Officer, provided field support and assisted in editing of the document. Other staff at RELMA provided assistance in many forms. The crucial role played by computer analysts in data entry and analysis is appreciated. Last but not least, I would like to thank the farmers who provided the information, and also the enumerators are to be acknowledged.

The information contained in the research report was supplemented by secondary information from other sources when producing this technical report. Any errors in interpretation should be attributed to the editor.

*Stachys N. Muturi*

Research and Development Consultant

# 1 AN OVERVIEW OF KENYA'S AGRICULTURE

## 1.1 Potential of agricultural land

### Broad classification

Kenya has a total area of 580,367 km<sup>2</sup>, comprising 569,137 km<sup>2</sup> of land and 11,230 km<sup>2</sup> of water surface. Using a variety of physical and biological criteria such as vegetative ecology, annual and seasonal rainfall amount and reliability, potential evaporation, soil quality and annual water balance, the agricultural potential of the land can be classified as shown in Table 1.1. Agricultural potential refers to the ability of the land to support rainfed agriculture.

**Table 1.1**      *Agricultural potential of land in Kenya*

Land category	Hectares	% of total
High-potential areas	6,785,000	12
Medium-potential areas	3,157,000	6
Low-potential areas	42,105,000	74
All other land	4,867,000	8
<b>Total land area</b>	<b>56,914,000</b>	<b>100</b>

*Source:* National Council for Science and Technology, Report No. 4, 1981.

The main environmental factors limiting crop and livestock production are the amount, duration and reliability of rainfall. Less than 20% of agricultural land (high and medium potential) can support rainfed agriculture and it is on this land that the country relies for much of its foodstuffs, cash crops and grade dairy cattle. Per capita availability of good agricultural land is estimated at 0.4 hectares (one acre). Owing to the importance of the high- and medium-potential areas, these areas have in the past been accorded high priority for development.

The remaining 80% of land (low-potential areas) cannot support crop production without irrigation and normally supports extensive livestock production. These areas accommodate 60% of the cattle, 75% of sheep and goats, and virtually all the camels in Kenya. The areas supply most of the red meat consumed in the country and therefore play an important role in the production of animal proteins.

## Agro-ecological zones

The above categorization of land potential is too broad for planning of agricultural development. Using the criteria developed by Food and Agriculture Organization (FAO) in 1978, the Ministry of Agriculture classified most of the areas into agro-ecological zones (AEZ). They range from humid (1) to arid (7) conditions as indicated in Table 1.2.

**Table 1.2** *Agro-ecological zones of Kenya*

Main zones	1 Humid	2 Sub- humid	3 Semi- humid	4 Sub- humid to semi-arid	5 Semi- arid	6 Arid	7 Very arid
UH: Upper Highland Annual mean 10–15°C Seasonal night frosts	Sheep– dairy zone	Pyrethrum –wheat zone	Wheat– barley zone	U H ranching zone			
LH: Lower Highland Annual mean 15–18°C Normally no frosts	Tea– dairy zone	Wheat– maize– pyrethrum zone	Wheat– maize– barley zone	Cattle– sheep– barley zone	LH ranching zone		
UM: Upper Midland Annual mean 18–21°C Mean min. 11–14°C	Coffee– tea zone	Main coffee zone	Marginal coffee zone	Sunflower– maize zone	Livestock– sorghum zone	U M ranching zone	U M nomadic zone
LM: Lower Midland Annual mean 21–24°C Mean min. over 14°C	LM sugarcane zone	Marginal sugarcane zone	LM cotton zone	Marginal Cotton Zone	LM livestock– millet zone	LM ranching zone	LM nomadic zone
IL: Inter Lowland Annual mean over 24°C Mean max. over 31°C					Lowland livestock– millet zone	Lowland nomadic zone	Lowland ranching zone
CL: Coastal Lowland Annual mean over 24°C Mean max. over 31°C		Lowland sugarcane zone	Coconut– cassava zone	Cashewnut– cassava zone	Lowland livestock– millet zone	Lowland ranching zone	Lowland nomadic zone

*Notes:* The very wet (per-humid) zones, which are under forest are excluded. Nomadism includes semi-nomadism and other forms of shifting grazing. Approximate elevation (m): UH 2,200/2,400 – 3,000/3,200; LH 1,800/1,900 – 2,200/2,400; LM 1,300/1,500 – 1,800/1,900; LM 1,800/1,300 in eastern Kenya or 1,800 in western Kenya; IL/CL 0–800 at Coast or 0–1,000 in Rift Valley.

*Source:* Jaetzold and Schmidt. *Farm Management Handbook of Kenya*. Ministry of Agriculture. 1983.

## 1.2 Demographic trends

### Rural population

Kenya's population was estimated at 29 million in 1998 and is projected to reach 30 million in 2001. The population growth rate is projected to decline from 2.6% in 1996

to 2.5% by 2001 and to 1.3% by 2010, by which date the population will be about 45 million. Approximately 80% of the population is located in rural areas and the bulk of it is dependent on agriculture. There are approximately 3.5 million smallholdings, 80% of which are less than 2 hectares in size.

Population distribution bears a close relation to the productive potential of land. Approximately 75% of the rural population live in the high- and medium-potential areas comprising 20% of the agricultural land, while the remaining 25% live in the low-potential areas. Migration to marginal lands has increased in the last three decades due to shortage of good agricultural land in the high- and medium-potential areas.

## Urbanization

There has also been a substantial migration to urban centres. Urban population was estimated at 0.8, 2.7 and 7.7 million in 1965, 1980 and 1995 respectively, equivalent to 8.6%, 16.1%, and 27.7% of the prevailing total population. The urban population derived their food either from urban agriculture, transfers from the rural areas, or imports.

## 1.3 Importance of agriculture

### Contribution to the economy

The long-term goals of the agricultural sector are:

- Food production to contribute to national and household food security
- Provision of raw materials for local agro-industries
- Generation of foreign exchange through exports
- Generation of farm incomes
- Employment
- Stimulation of off-farm activities in rural areas to create jobs.

Although the sectoral Gross Domestic Product (GDP) contribution of agriculture declined from 36% in the decade 1964–1973 to the current 26%, agriculture still remains the engine of growth for Kenya's economy and is expected to remain so in the foreseeable future. The contribution of the manufacturing sector during the same periods was 10% and 13.6%, respectively, and is expected to rise to 18% by 2001. Tourism, transport and communications, power, services, etc. account for the remaining 60% of GDP.

The dominance of the agricultural sector is shown by such important indicators as:

- Contribution of about 26% of GDP
- Generation of over 60% of foreign exchange earnings
- Provision of employment to over 70% of the population
- Provision of raw materials for agro-industries which account for about 70% of all industries
- Contribution of over 45% of the government budget.

There is a strong relationship between the agricultural and the total national GDP growth rates. This relationship is demonstrated by the annual performance of the two GDPs between 1986/87 and 1992/93 fiscal years (Figure 1.1).

The low growth rates in agriculture and hence GDP affected food output, agricultural raw material output, agro-based industrial output, employment creation, foreign exchange earnings, public revenue, etc. In effect, poor performance in the agricultural sector means poor economic growth, accompanied by associated negative impact on national and individual incomes.

**Figure 1.1** *Relationship between agricultural GDP and national GDP (after Muturi, 1995).*

## Employment

Unemployment is a major problem in Kenya, and the agricultural sector contributes significantly in its resolution. Out of the 7.75 and 9.39 million persons employed in all sectors in 1991 and 1994 respectively, agriculture absorbed 5.73 million (74%) and 6.39 million (68%). Projections for 2001 indicate that 7.55 million persons will be employed in agriculture out of a total employment of 12.0 million and a total labour force of 13.7 million. As indicated in Table 1.3, the majority are absorbed in the smallholder sector.

**Table 1.3** *Labour force and employment by sector 1991, 1994 and 2001*

Sub-sector	1991	1994	2001
Total labour force (millions)	10.0	11.5	13.7
Total employed in all sectors (millions)	7.75	9.39	11.99
Unemployment rate	23.4%	18.5%	12.0%
Total employed in agriculture (millions)	5.73	6.39	7.55
% employed in agriculture	74%	68%	63%
% employed in small-scale agriculture	69%	63%	58%
% employed in large-scale agriculture	5%	5%	5%

Source: Government of Kenya, 1998. National Poverty Eradication Plan (revised draft).

## 1.4 The role of the smallholder sector

### Marketed production

The agricultural sector is commonly subdivided into small-scale, large-scale and pastoral sub-sectors. Small-scale farms are defined as land holdings not exceeding 12 hectares, but the upper limit now has little significance since 80% of the 3.5 million smallholdings are less than 2 hectares. The proportion of smallholders has increased over the last three decades due to subdivision of large holdings for settlement. Currently, the smallholder sector accounts for 60% of the agricultural land in the high- and medium-potential areas. Studies elsewhere indicate that with more efficient use of farm inputs, the small farms are more efficiently utilized than large farms.

Based on statistics of sales through marketing boards, the percentage market share of output from small farms rose from 47% in 1988 to 70% in 1997. However, since significant sales from small farms do not go through marketing boards, this figure of 70% underestimates the contribution from the smallholder sector.

The smallholder sector therefore dominates agricultural production in Kenya. In spite of their small sizes, smallholders account for over 75% of total production and approximately 70% of marketed production. Smallholders account for the production of over 70% of maize, over 65% of coffee, over 50% of tea, over 80% of all milk, over 70% of beef and other meat, and production of all pyrethrum, cotton and most of the other food crops. These small-scale farmers are expected to spearhead future development of the agricultural sector and the economy.

In spite of its dominant role, the smallholder sector is organizationally and technologically complex. This complexity arises from the dynamic nature of farming:

- A continuum from subsistence to market-oriented farming.
- Very diverse agro-ecological conditions and diverse farming systems.
- Social and cultural diversity among the farming communities.
- Low productivity and low use of farm inputs.
- Poor infrastructure, lack of rural finance and poorly developed markets.
- Structural adjustment programmes, some aspects of which have adversely affected small-scale farmers, such as reduced government services.

## 1.5 The challenge

The national challenge of eradicating poverty requires that attention is given to the role that the smallholder-farming sector can play in alleviating poverty. Thus the Sessional Paper No. 4 of 1997 on Industrialization Strategy to the Year 2020, the Eighth National Development Plan (1997–2001) and the National Poverty Eradication Plan (1999) recognize the vital role of this sector. Finding interventions that can promote the development of the smallholder sector is critical.

Commercialization of the smallholder sector is an important factor to this process, a viewpoint subscribed to by the Agricultural Sector Investment Programme (ASIP) of the Ministry of Agriculture. ASIP identified marketing constraints as a major problem in the sector and also identified the ten key commodities that require promotion over the next ten to fifteen years. The targeted sectoral growth rate is 4.3% per annum.

## 1.6 Agricultural marketing systems

### Basic principles of marketing

A “market” is an institutional framework within which the forces of demand and supply operate; sellers and consumers are in constant communication and there is change of title to goods and/or services. “Marketing” is the process of bringing sellers

and buyers together for the purpose of exchanging title to goods and services. Value addition in the course of marketing may occur through (a) change in the form of a commodity e.g. through processing or packaging; (b) storage over time; or (c) distribution over space.

Markets can be categorized by the number of sellers and the number of buyers of a commodity. The theoretical extremes are perfect competition (many buyers and many sellers so that a single buyer or seller cannot influence the price of a commodity), and monopsony/monopoly. The assumptions for a perfect market never hold true in the real world. These assumptions include (a) many sellers; (b) many buyers; and (c) perfect information freely available to all sellers and buyers. Monopoly is the market situation in which there is one supplier of a commodity but many buyers. In monopsony, there is one buyer but many sellers; and the monopolist, just like the monopsonist, tends to dictate prices. Between these extremes are degrees of imperfect competition, such as oligopoly in which there are two or more but at most only a few sellers or in the case of oligopsony, the number of buyers would be two or more but at most only a few.

The difference between the price a producer receives and the price a consumer pays for a commodity is termed the marketing margin. All things equal, the smaller this margin, the more efficient the marketing machinery. In the absence of processing, the key parameters that would affect the margin would be:

- The cost of transport
- The cost of storage, if any
- Loss in transport and storage
- The trader's margin (return to his management, labour and capital).

The cost of transport (per unit weight or volume per km) depends on factors such as type of vehicle, capacity, type of road surface, topography, cost of fuel, labour wages as well as the degree of competition in the transportation business and the volume of business. Most agricultural commodities are highly perishable and unless cold storage facilities are available, the commodities must be sold within a fairly short time to avoid high losses. Milk and horticultural products are particularly perishable.

The trader's margin is affected by, among other factors, the degree of competition in the market and the efficiency of flow of market information. The less competition there is, and the less transparent the market as a result of poor information flow, the higher the chances that the trader will increase his margin either by paying those who sell to him less or demanding high prices from consumers, or both these two actions. Information is often expensive to obtain and hence its flow is less than perfect and, accordingly many decisions are made without the benefit of the necessary information.

In trying to ascertain the efficiency of a marketing system, a typical approach employed is the "structure, conduct and performance" analysis of a marketing system. The



“structure” refers to the number of players, buyers and sellers, in a given market situation. The “conduct” of a given market refers to the degree of competition in the market. “Performance” on the other hand looks at the margins involved in the marketing process. Margins are a measure of efficiency of a marketing system. To be able to undertake a comprehensive structure-conduct-performance appraisal of a market, it is necessary to study the market chain for a given commodity from production to final consumption.

The marketing of diverse agricultural commodities is complex and often costly. The process that brings or makes available the goods in the form that is desired and at the right place and time is often referred to as the marketing machinery. Usually, the marketing process of agricultural commodities starts at the farm level. Where the volume of production is limited, it may not be justifiable to put in place expensive marketing machinery. On the other hand, mass production, which allows for economies of scale, is not feasible until the marketing machinery opens up the doors to the broad mass market. Hence the development of a marketing system and the development of a production system are complementary actions, i.e. there is a positive relationship between increased productivity of the agricultural production process and the development of an adequate marketing system for agricultural products.

## 2 THE STUDY AREA

### 2.1 Need for the study

#### The problem

Food markets in Kenya, and in particular those in which small-scale farmers are involved, face problems in adjusting to free trade and liberal economic policies. The immediate result is often the creation of disincentives for market production. There is need for a well-functioning marketing structure for products to reach the consumers; the farmers must also be able to market their output at a rewarding price as an incentive for increased and improved production.

#### Knowledge gap

Documented information on farm level marketing of agricultural commodities and smallholder orientation to marketing in Kenya is limited. Economic policy reforms adopted since the early 1990s have included the liberalization of marketing of agricultural inputs and commodities. Prior to liberalization and entry of the private sector, monopolistic parastatal marketing boards marketed most of the agricultural commodities. This process of change has not been studied and its implications are not well understood.

It is against this background that a study was commissioned by RELMA in 1998 to assess the role of agricultural marketing for smallholder farmers in Kenya. The study analysed the marketing of agricultural products at the farm level, aimed at establishing farmers' constraints as they interface with the marketing machinery. The study did not go beyond the farm-level and the marketing chains were not therefore investigated.

#### Purpose and objectives

The main objective of the study was to analyse the marketing of agricultural produce at the farm level. Specific objectives were to:

- Identify the major enterprises being run by small scale farmers in the study areas.
- Assess the farm-level marketing of agricultural inputs and outputs.
- Identify the main farm-level marketing constraints in the smallholder sector.
- Suggest the incentives that farmers require to increase their production.
- Propose interventions that could lead to improved production and marketing by smallholder farmers.

## 2.2 Methodology

### Selection of the study area

The study was undertaken in Kirinyaga, Meru and Maragua Districts, in the highlands of central Kenya (Figure 2.1). The characteristics of the study area are described in Section 2.4, with the respective catchments shown in Figures 2.2 to 2.4. The three districts were selected based on a set of criteria:

- The diversity of agro-ecological zones in the study areas provided an opportunity to sample many agricultural enterprises found in Kenya.
- Land holdings are owned by individuals, giving farmers incentive to develop their own farms according to their priorities and ability.
- Smallholder farm development has been in progress for a number of years in these areas.
- Soil and water conservation measures have been implemented in the three districts for a long time with the aim of increasing agricultural productivity through better land management practices.
- There exist important markets, which would be expected to provide easier marketing for farmers' produce.

### Data sources and collection

The study adopted an exploratory research design. Cross-sectional data were obtained from a sample of small-scale farmers in six different catchments.

A questionnaire instrument targeted to the farmers was developed, pretested, adjusted and administered to the farmers. The questionnaire sought information on the main agricultural enterprises in the areas, quantities produced, consumed and sold, inputs applied, and the mode of marketing of inputs and produce.

In the course of implementing soil conservation measures on catchment basis, soil conservation staff carries out farm surveys and prepare detailed farm maps which include the names of farm owners. This information was available for four catchments. A sample of 35 farmers in each catchment was randomly selected from these records. A parallel set of farmers was selected from adjacent catchments, which had been planned for but not yet implemented.

A different sampling method was adopted for the two remaining catchments in which such comprehensive data did not exist. The land surveys had, however, structured the farms in such way that they formed rays running from west to east. Several rays were systematically sampled from north to south and individual farms selected within the sampled rays in such way that the whole catchment was adequately covered.

**Figure 2.1** *Location of the study areas.*

## Analysis of data

Descriptive analysis was used, involving the use of frequency distributions, calculated means and percentages, and tabulations of the various qualitative and quantitative responses relating to marketing indicators.

## Organization of the report

This report is organized in five chapters. Chapter 2 describes the general features of the highlands and the study districts in general, and the details of the catchment areas studied. Chapter 3 discusses the marketing systems and the constraints to the commercialization and marketing of smallholder food crop enterprises. Chapter 4 discusses the same issues in regard to cash crops and livestock enterprises. Chapter 5 summarizes the main findings, raises crucial issues and suggests some follow up actions.

## 2.3 Agriculture in the highlands of central Kenya

### General features

In the context of this study, the highlands of central Kenya comprise of Kiambu, Murang'a, Nyeri and Kirinyaga districts of Central Province, and Embu and Meru districts of Eastern Province as they existed prior to the 1990s, when new administrative districts were carved from some of the districts (see footnote Table 2.1). The population comprises of several ethnic groups, but all belong to the main Bantu group who are traditionally agriculturists, cultivating crops and raising livestock.

The altitude ranges from 600 metres above sea level along the Tana River in North East semi arid region of Tharaka to 2000 metres above sea level along the Mt. Kenya and Abardare Forest boundaries. The total land area (without Kiambu) is approximately 14,361 km<sup>2</sup> (Table 2.1). Agricultural land comprises of approximately 11,700 km<sup>2</sup>, 42% of which is in the sub-humid zones (AEZ 1–3) and 58% in the semi-arid zones (AEZ 4–6). The topography is rolling with medium to steep slopes. Rainfall has a bimodal distribution, and averages from 400 mm per year along the Tana River in Tharaka to 2,400 mm in the Nyambene hills (both in Meru district). In general, rainfall increases and temperatures decrease with altitude. The rainfall is more reliable in high rainfall and high altitude areas. There are two distinct cropping seasons: the long rains occur from mid-March to end-May while the short rains occur from mid-October to mid-December. Soils are predominantly humic Nitisol (FAO classification) derived from basic volcanic rocks with deep, well weathered parent material of moderate to high fertility, but soil fertility declines with intensive cultivation.

**Table 2.1** *Total land area and agricultural land within the sub-humid (AEZ 1–3) and semi arid (AEZ 4–6) areas (km<sup>2</sup>), and the percent of agricultural land within the sub-humid and semi-arid zones*

	Meru*	Embu*	Kirinyaga	Nyeri	Murang'a*	Total
Total land area	6,446	2,562	1,127	1,010	2,216	<b>14,361</b>
Agric. land area	5,317	2,014	955	1,589	1,808	<b>11,683</b>
Sub-humid area	1,926	220	545	986	1,253	<b>4,930</b>
Semi-arid area	3,391	1,794	410	603	555	<b>6,573</b>
Sub-humid (%)	36	11	57	62	69	<b>42</b>
Semi-arid (%)	64	89	43	38	31	<b>58</b>

Source: Jaetzold and Schmidt. *Farm Management Handbook of Kenya*. Ministry of Agriculture. 1983.

\*Meru includes Meru North, Meru Central, Meru South and Tharaka Districts, while Embu consists of Mbeere and Embu Districts. Murang'a has Murang'a and Maragua Districts.

The sub-humid zone has a high population density ranging from 230 to 780 persons/km<sup>2</sup> with an average of 450 persons per km<sup>2</sup> while the semi-arid zone has a low population density with a concurrent low population carrying capacity. Farms in the upper zones are usually small ranging from 0.5 hectare to 4 hectares with an average of 1.5 hectare. The average farm size is greater and more variable in the semi-arid zones, ranging from 0.5 to 50 hectares. Land tenure is of individual ownership.

## Agricultural commodities

The diversity in climate, temperature and soils provides opportunities for diversified agriculture and a variety of food crops, industrial crops, cash crops, horticultural crops, dairy and meats are produced. The main sources of income are derived from the sales of coffee, tea, horticultural crops, surplus food crops, milk, fruits and nuts, and off-farm employment. The production of food crops is particularly important for subsistence needs.

The main agricultural commodities produced in the highlands include:

- Staple food crops mainly consumed in households: Maize, beans, wheat, millets, sorghums, Irish and sweet potatoes and bananas.
- Industrial crops that support local industries: Wheat, barley, cotton, tobacco, sunflower and macadamia nuts.
- Horticultural crops mainly produced for the market: Fruits, vegetables and cut flowers.
- Cash crops mainly exported: Coffee, tea and pyrethrum.
- Meats mainly for the local market: cattle, sheep, goats, pigs and poultry.
- Dairy for the local market: Milk and processed dairy products.

## 2.4 The study districts

### Kirinyaga District

Kirinyaga District has an area of 1,127 km<sup>2</sup> of which 955 km<sup>2</sup> (85%) is agricultural land. Mt. Kenya Forest to the north covers 21% of the district. Of the agricultural land, 36% is sub-humid and the remaining 64% is semi-arid (Table 2.1 and Figure 2.2). The district had a population of 392,000 in 1989, which was projected to reach 522,000 in 1999. The district has a bimodal rainfall pattern, hence two cropping seasons. The long rains occur in March to May while short rains fall in October to November. When rainfall is heavy, the steep gradients result in considerable soil loss and flooding in the lower zones.

The district has three distinct farming systems:

- Farmers in the lower semi-arid areas produce drought tolerant early maturing crops and practise extensive livestock grazing. The largest irrigation project in the country, based on flood irrigation of rice on black cotton soils (vertisols/grumsols) is located in this area.
- Land in the middle part of the district has steep slopes, which make mechanized cultivation difficult. The area is densely populated by small-scale farmers practising arable agriculture and semi-zero livestock production. The area has many rivers and streams with potential for construction of small dams in the “U” shaped valleys.
- The third area comprises the highlands and Mt. Kenya Forest. Coffee, tea and dairy production are important in this area.

### Catchments studied in Kirinyaga District

The catchments selected for study in Kirinyaga District were Kibirigwi Irrigation Scheme and the neighbouring Kiangwaci catchment. The two catchments have similar climate and soil types, and the farmers belong to the same ethnic group. The salient features of the two catchments are presented in the following boxes.

#### **Kibirigwi Irrigation Scheme**

The catchment falls under AEZ sub-zone UM 3, the semi-humid upper midlands, or marginal coffee zone. Average annual rainfall 1,100–1,250 mm. The 60% reliability of long rains 450–580 mm with 120 crop growing days; and short rains 350–400 mm with 85 growing days. Very deep moderately fertile soils, commonly known as Kikuyu red loam.

The total land area of the irrigation scheme is 450 ha, with 291 registered permanent water users. Average land holding is 1.78 hectares, including an irrigated portion of 0.75 hectare for every farmer. Soil conservation measures were implemented as a prerequisite for irrigation. Each farmer is supplied with a 2-inch pipe and mobile irrigation equipment. An annual fee of KSh 500 is payable by each farmer for the maintenance of the irrigation system. Main enterprises are French beans, sweet potato, banana, maize and beans, cabbage, kale and dairy. Milk is sold through a farmers' dairy society and vegetables through farmers' groups.

**Figure 2.2** *Agro-ecological map of Kirinyaga District and location of study catchments.*

### **Kiangwaci Catchment**

The catchment is a short distance to the north of Kibirigwi Irrigation Scheme. It falls under AEZ upper midland UM 4, the transitional zone from semi-humid to semi-arid zone otherwise known as the sunflower/maize zone; and lower midlands LM 3, the semi-humid midland cotton zone. Altitude 1,220–1,340 m. Average annual rainfall for UM4 and LM 3 = 900–1,100 mm. 60% long rains reliability 500–600 mm with 105 growing days; similar figures for short rains 420–500 mm and 75 growing days. Soils similar to Kibirigwi catchment. The catchment was earmarked for soil conservation extension in 1990/91 but conservation measures were not implemented throughout the catchment basis. A few farmers have, however, copied their neighbours in Kibirigwi and have implemented soil conservation measures on an individual basis.



## Meru District

Prior to subdivision into four districts (footnote Table 2.1) Meru District had a total area of 6,446 km<sup>2</sup> of which 5,317 km<sup>2</sup> (82%) is agricultural land. 11% of the agricultural land falls within sub-humid AEZ 1–3 and the remaining 89% in semi-arid AEZ 4–6 (Table 2.1). Meru has practically all the agro-ecological zones found in Kenya (Figure 2.3). The district receives an average annual rainfall ranging between 380 mm in the eastern and northern lowlands, to about 2500 mm in the south-eastern slopes of Mt. Kenya. Rainfall is bimodal: the long rains occur between mid-March and end-May while the short rains occur from mid-October to mid-December. 70% of the district is endowed with good soils, moderate rainfall and a favourable climate for crop and livestock production. Agriculture remains the mainstay of the district's economy, employing a large proportion of the district's labour force. Smallholder producers cover approximately 80% of the arable area and account for over 86% of cash crop production in the district.

## Catchments studied in Meru District

The two catchments selected for study in Meru District were Ruceni and Karukunku. The two catchments have the same climate, soil types and farmers belong to the same ethnic group. The salient features of the two catchments are presented in the following boxes.

### Ruceni Catchment

The catchment falls under AEZ upper highland UH 2, the semi-humid pyrethrum/wheat zone. Altitude 2,440–2,740 m; Annual mean temperature 12–14°C, with seasonal night frosts. Average annual rainfall 950–1,600 mm. The 60% reliability of long rains 450–700 mm with over 175 crop growing days; and short rains 400–550 mm with 135–155 growing days, or 310–330 growing days during the year. The area has very deep, well drained, moderately fertile soils (Nitosols). Potential enterprises in the eco-zone include wheat, barley, pyrethrum, maize, peas, potatoes, cabbages, kale, carrots, pears, plums and apples.

The catchment was settled in 1978. It has 65 farm holdings with a population of 650 persons. Some households have access to piped water. One all-weather road runs through the Division. Feeder roads are poorly maintained but the road network is reasonably good.

Main enterprises by small-scale farmers include: Horticulture (Irish potato, snow peas, carrots, cabbages and kale); Food crops (maize and beans); Cash crops (wheat and pyrethrum); Livestock (dairy and sheep). Potential enterprises are garlic, beans and passion fruit. A farmer's dairy cooperative society was formed in 1995. Soil and water conservation structures have been constructed on the whole catchment.

### Karukunku Catchment

The catchment falls under AEZ upper highland UH 3, the sub-humid upper wheat/barley zone. Altitude 2,230–2,900 m; Annual mean temperature 12–15°C, hence seasonal night frosts. Average annual rainfall 700–1,000 mm. The 60% reliability of long rains 280–500 mm with over 175 crop growing days; and short rains 400–550 mm with 100–150 growing days, or 250–290 growing days during the year. Very deep, well drained, moderately fertile soils (Nitosols). Potential enterprises include wheat, barley, potatoes, pyrethrum and sheep.

Karukunku neighbours the Ruceni catchment and shares the only tarmac road crossing the Division. Access roads are badly eroded compared to those of Ruceni, due to lack of soil conservation measures. The catchment has 248 farms and the main enterprises are the same as in Ruceni. A few farmers have copied the land management technologies adopted in the neighbouring Ruceni. Soil and water conservation for the catchment was planned for implementation in 1997/98, but activities were not implemented due to lack of funds.

The status of the catchment therefore is as follows: Badly eroded farms with only a few terraced, poorly managed farms; two poorly kept tree nurseries; no trees have been planted on the farms.

**Figure 2.3** *Agro-ecological map of Meru District and location of study catchments (according to the administrative boundaries before 1990).*

## Maragua District

Maragua was part of the former Murang'a District (Footnote Table 2.1). Makuyu Division, under which the study catchments fall, has an area of 543 km<sup>2</sup>. The flatter areas of this division are arid and semi arid and production of coffee and pineapples is only possible under irrigation (Figure 2.4). The area has a bimodal rainfall pattern: Long rains in March to May and short rains in October to November. The annual rainfall in some parts of the division could be as low as 412 mm per annum. The main food crops are maize, beans, sorghum, millet and pigeon peas. The major cash crops are coffee and bananas. The main livestock enterprises are cattle rearing, pig keeping, goat and sheep herding, poultry raising, and bee keeping. Livestock products include milk, eggs, hides and skins and honey.

## Catchments studied in Maragua

The two catchments selected for study in Maragua district were Mihang'o Retire, and Pundamilia. Both catchments were formerly white settler farms, which were purchased and settled by indigenous landless Kenyans. The two catchments have the same climate, soils types and the farmers have similar backgrounds. The salient features of the two catchments are presented in the following boxes.

### **Mihang'o Retire catchment**

The catchment falls under AEZ upper midlands UM 4, the transitional zone from semi-humid to semi-arid, commonly known as the maize/sunflower/cotton zone. Altitude 1,340–1,520 m; Annual mean temperature 20°C; Average annual rainfall 900–1,000 mm. The 60% reliability of long rains 350–650 mm with about 100 crop growing days; and short rains 230–380 mm with 65 growing days. Soils vary due to topography, mainly ferralsols or luvisols, some deep, others shallow with rock outcrops.

The original farm was bought, subdivided and settled by the former estate casual labourers in 1972 and formalities of ownership finalized in 1988. The catchment area covers 300 ha with 120 households. The average land size in Mihang'o is 0.75 of an acre, whereas in Retire it is varied and bigger, thus raising the land size for the whole catchment to 1.25 acres per household. The permanent Kambiti river runs through the catchment and there are several perennial springs that are used for irrigated vegetable production. The main agricultural enterprises are maize, beans, bananas and pigeon peas.

### **Pundamilia catchment**

Pundamilia has the same features, climate and type of farmers as the Mihang'o Retire catchment. It was originally a sisal farm, which was subdivided among the society members. Many farmers are engaged in the neighbouring Kakuzi coffee and horticultural plantations

for six days a week and can hardly spare any labour for domestic production. The farms are too small to support the families unless high intensification is practised. The incomes fetched from casual employment are too small to spare for farm intensification, taking into account that domestic expenditure, particularly on items like payment of school fees, were given priority and appeared constraining to many families. Facilities like irrigation water, which would promote intensification, are not readily available. Soil and water conservation measures have not been implemented. The main agricultural enterprises are maize, beans, bananas and pigeon peas.

**Figure 2.4** *Agro-ecological map of Murang'a District and location of study catchments (according to the administrative boundaries before 1990).*

### 3 FARM LEVEL MARKETING OF FOOD CROPS

This chapter describes the various farm-level marketing systems with respect to food crops. Issues discussed include factors affecting farmers decision to produce food crops and sell food produce, land utilization for food production, household consumption and sales, the types of agricultural market organizations, marketing functions undertaken at the farm level, infrastructure, market information, pricing decisions, marketing channels and some of the constraints to commercialization of smallholder food production.

#### 3.1 Production and marketing

##### Land utilization

The proportion of farmers who grow a food crop and the mean household land area devoted to its production are measures of the relative importance of the crop. The average land area (in acres) devoted to the production of the various crops is indicated in Table 3.1.

**Table 3.1** *Mean land area (acres) devoted to various commodities \**

Commodity	Kirinyaga	Meru	Maragua
Maize / beans	0.25	1.21	0.50
Sweet potato	0.13	0.13	-
Bananas	0.23	-	1.81
Coffee	0.63	-	0.50
Pasture	0.38	1.70	-
Napier grass	0.28	0.27	0.27
Kale	0.25	-	0.25
Tomato	0.06	-	-
Field peas	-	0.17	-
Irish potato	-	0.25	-
Carrots	-	0.25	-
Garlic	-	0.25	-
Onion	-	0.13	-
Snow peas	-	0.19	-
Wheat	-	1.00	-

\* For farmers who had these enterprises

The important food commodities include maize, beans, Irish and sweet potatoes, and field peas. The percentage of farmers producing these commodities is shown in Table 3.2. There are differences in the relative importance of food crops in the three sample areas. In Kirinyaga, 99% of farmers grow maize, 93% grow beans and 64% grow sweet potato. Corresponding figures for Meru are Irish potato (74%), field peas (67%), beans (16%), and maize (7%). Maize and beans were the only food crops recorded in Maragua with 91% and 76% of farmers producing the two commodities, respectively. Owing to their importance, the above food crops were selected for farm level marketing analysis.

**Table 3.2** *Percent of farmers who produce the main food crops*

District	Crop	% of farmers
Kirinyaga	Maize	99
	Beans	93
	Sweet potato	64
Meru	Irish potato	74
	Field peas	67
	Maize	7
	Beans	16
Maragua	Maize	91
	Beans	76

### Factors influencing enterprise choice and sale of food crops

Farmers cited several factors that influence their decision to produce and sell food crops. The most important factors are shown in Table 3.3. Subsistence needs has the greatest influence on the farmers' decision on what to produce, followed by considerations of the market price of foodstuffs if the farmers were to later purchase the same commodity to feed the family.

**Table 3.3** *Factors influencing farmer's choice of enterprises and sale of food crops (% of farmers)*

Factor	Kirinyaga	Meru	Maragua
<b>Factors influencing production of food crops</b>			
Subsistence needs	88	90	99
Price of purchased foodstuffs	33	50	6
<b>Factors influencing sale of food crops</b>			
Pressing household needs	84	84	93
Market price	22	46	47

Pressing household needs for cash and producer prices are the most important factors influencing farmers' decision to sell food products. Farmers need to produce some food crops for the market so as to generate cash for essential household requirements such as payment of school fees, clothing, and medical expenses. Although production of food crops is not fully commercially oriented, it is apparent that farmers produce subsistence crops with some exchange in mind.

## Production and sale of food crops

The food policy in Kenya encourages small-scale farmers to produce sufficient foodstuffs to meet their household nutritional requirements and, where possible, offer the excess for sale. Table 3.4 shows the mean production, sales and consumption of food crops by households. The degree of self-provision in the three districts is high, indicating a reasonably high degree of self-sufficiency in basic foodstuffs for the majority of households. Thus, with the exception of beans in Maragua (35%), the self-provision of all other commodities were in the range 50–125%, in most cases over 75%. Farmers in Maragua and Meru produce maize and pigeon peas, respectively in excess of household requirements, hence self provision of over 100% for these commodities. The data also shows that farmers are to a certain extent dependent on the market for some of their food supplies.

**Table 3.4** *Mean production, sales, purchases, household consumption, and self-provision of various food commodities*

Commodity	Production (a)	Sold (b)	Purchases (c)	Consumed (d)	% Sales (e)	% Self provision
MERU DISTRICT						
Irish potato (bags)	6.0	2.5	0.7	4.2	42	83
Field peas (kg)	110	100	10	20	91	50
Maize (bags)	11.0	2.0	0	8.0	18	113*
Beans (bags)	6.0	3.5	1.5	4.0	58	63
KIRINYAGA DISTRICT						
Maize (bags)	15.3	8.0	0.4	7.7	52	95
Beans (bags)	4.4	2.2	0.7	2.9	50	76
Sweet potato (bags)	20.7	18.7	2.0	4.0	90	50
MARAGUA DISTRICT						
Maize (bags)	11.3	5.0	1.6	7.9	44	80
Beans (bags)	3.5	2.1	2.6	4.0	60	35
Pigeon peas (bags)	15.0	10.0	0	4.0	67	125*
Cow peas (kg)	60	40	0	20	67	100

\* Self-provision = (a-b)/d. Self-provision figures in excess of 100% indicate carry-over from previous season. (1 bag of maize, peas and beans is 90 kg, 1 bag of potatoes is 130 kg).

With the exception of maize (18%) and Irish potato (42%) in Meru, and maize in Maragua (44%), sales of food crops as a percentage of household production fall within the range 50–90%. Although farmers mainly produce food crops for self-provision, the high proportion of production sold indicates that a degree of commercialization is taking place. It should, however, be noted the quantities of food commodities produced are low, which limit the opportunities for increasing farm incomes from the sale of food crops.

### Harvesting and periods of sale

The highlands of central Kenya has a bimodal rainfall pattern. This enables farmers to produce two crops per year. The types of crops produced depend on the amount, duration and reliability of the seasonal rains. The double cropping under rainfed conditions and the multiple cropping possible under irrigation offer farmers opportunities to harvest and sell produce at least twice a year.

Since production depends on rainfall, all farmers plant and harvest at the same time, and sales begin almost immediately after harvest. Dry grains can be stored and sales can therefore be extended over a long period. Other produce must be sold immediately after harvest due to their perishable nature. It is possible to delay harvest of some perishable commodities such as Irish and sweet potatoes, but this results in loss of quality.

Thus in Meru, the main food crops (Irish potato and field peas) are harvested from August to November, and the produce is sold in bulk within one month after harvest. The double cropping of maize and beans in Kirinyaga and Maragua results in two harvests in January/February and in August/September. Selling peaks immediately after harvest but significant sales also occur between harvests since the dry grains can be stored. Irrigation in Kirinyaga allows production of sweet potato throughout the year, but the crop must be sold immediately after harvest due to its perishable nature.

### Post-harvest functions

The time lag between harvesting and selling implies that farmers store some food-stuffs. Food storage is most common in Kirinyaga and Maragua, with 97% of the farmers storing food compared to 56% in Meru. The main food commodities stored are maize and beans in Kirinyaga, maize in Maragua and Irish potato in Meru.

Storage loss is one of the factors that influence the efficiency in marketing. The estimated mean storage loss for Irish potato in Meru was 25%. In Kirinyaga the losses were 9% for maize and 8% for beans. Storage loss for maize in Maragua was minimal, reported at 1%. The high percentage loss of Irish potato in Meru and grain in Kirinyaga is of



concern. It indicates that storage technologies developed for smallholders in 1970s and 1980s have not been adopted by farmers.

Other post harvest functions undertaken at farm level are shelling, packaging, preservation and processing. Only chemical preservation is significant with 96% of the farmers in Kirinyaga and 81% in Maragua using preservatives. Use of preservatives in Kirinyaga and Maragua can be attributed to the prevalence of storage pests in areas with high temperatures and the need to store staple grains (maize and beans) for long periods.

## 3.2 Marketing systems

### Types of markets

Two broad types of markets for food crops were clearly identified as formal and informal. Formal markets have a definite location and are regulated by a public organization. Informal markets have no official form of organization or authority. However, as informal markets gain importance, they usually attract attention of authorities who ultimately bring them under their jurisdiction and charge fees.

Most of the formal markets are centralized; i.e. agricultural produce is delivered to large central terminal markets such as Nanyuki, Karatina and Kagio where individuals, retailers, wholesalers and agent middlemen buy the produce. Informal markets are, on the other hand, decentralized, and wholesalers, retailers, agent middlemen and individuals buy directly from farms or at small selling points within the production area. In this system, farmers act as their own selling agents; and marketing thus interfaces with farm production because the farmer is both a producer and marketer of his/her own produce.

### Marketing channels

Table 3.5 shows the type of marketing channels used by farmers. Although farmers have multiple outlets for their food crops, selling at farm gate and personal selling in local markets predominate and account for 91% in Meru, 76% in Kirinyaga, and 59% in Maragua. Traders from outside the district and agent brokers are emerging as important marketing channels. 55% of farmers in Maragua, 25% in Kirinyaga, and 16% in Meru sell through these channels. The relatively high activity of outside traders in Maragua is attributed to the proximity of the area to two major towns, Nairobi and Thika. Millers do not buy directly from farmers, probably due to the low quantities produced. The system of forward contracts does not exist in any of the areas.

**Table 3.5** *Percent of farmers marketing food crops through various channels*

Marketing channel	Meru	Kirinyaga	Maragua
Farm gate	80	33	33
Personal selling in local market centres	11	43	26
Brokers	6	13	6
Outside traders	10	22	49
Millers	0	0	0
Forward contracts	0	0	1

\*Farmers may use more than one outlet.

Distance to markets and the road infrastructure influence the choice of marketing channels. The areas selected for this study were located near all weather roads and near markets. This situation is not typical of most farming areas in the highlands. To illustrate the point, all farmers in the study catchments in Meru were within 2 km to the nearest market. The average distance to markets in Meru is 20 km, and in the nearest market for 48% of farmers in the District is 40 km away. The situation is better in Kirinyaga and Maragua, where most farmers are within 4 km to the nearest market outlet.

## Transport

Availability of transport and cost have significant effect on production and marketing costs. This is especially so in areas where farmers purchase inputs from distant towns and farm produce is transported to distant places. Availability of transport relieves women of drudgery and valuable time since women do most back carrying of produce to markets.

A number of farmers own transport while others hire. Thus in Meru 33% of farmers own transport while 67% hire. The corresponding figures for Kirinyaga are 60% owned and 40% hired. The common modes of transport are lorry, tractor-trailer, ox-cart, back-carrying and passenger-carrying mini-buses (matatu).

Ox-carts are the most popular mode of transportation for a number of reasons. They are owned by individuals in the community and are therefore available within the neighbourhood. This eliminates the need to travel to town in search of motorized transport which may eventually result in over capacity. Ox-carts are multi-purpose and flexible, can transport any type of goods, and do not require improved roads. However, ownership of ox-carts is limited by the small land sizes for the majority of small-scale farmers, which are often insufficient to maintain an ox.

## Market information

Generation and dissemination of market information is essential for the development of smallholder marketing systems. Farmers require periodical information on commodity prices to enable them plan production levels in advance and to negotiate for better prices. Availability of information also helps create transparency among all players in the market. Lack of transparency in the market (e.g. where traders offer very low prices) discourages production and perpetuates poverty, thus constraining further development of the smallholder agriculture. In contrast, a good flow of market information makes commodity prices competitive and results in fair distribution of benefits to producers, traders and consumers.

Awareness of accurate commodity prices among farmers was very low in Meru (21%) compared to Kirinyaga and Maragua, where in each case 73% of farmers were aware of the accurate commodity prices. In spite of the high percentage of awareness in the latter two districts, the price ranges quoted by farmers were no better than in Meru. Table 3.6 gives commodity price opinions at the time of harvest and selling. The last column indicates wholesale commodity prices in Nairobi, after marketers have moved produce from production areas to city markets.

**Table 3.6** *Farmers opinions on commodity prices (KSh/bag)*

District	Commodity	Lowest	Average	Highest	Range	Price in Nairobi*
Meru	Irish potato	1,100	1,500	1,700	600	700
	Field peas	2,000	2,197	4,000	2,000	N/A
	Maize	100	871	2,000	1,900	1,400
	Beans	425	2,165	3,000	2,875	2,300
Kirinyaga	Maize	900	938	7,200	6,300	1,400
	Beans	2,250	2,572	5,400	3,150	2,300
	Sweet potato	100	952	1,300	1,200	1,800
Maragua	Maize	400	848	1,200	800	1,400
	Beans	400	2,916	4,000	3,600	2,300
	Pigeon peas	2,400	2,971	4,000	1,600	N/A

\* Source: The Daily Nation, September 24, 1999. (1 bag of maize, peas and beans is 90 kg, 1 bag of potatoes is 130 kg).

When the range of selling price is too wide in the same area and at the same harvesting period as portrayed in Table 3.6, the possibility of lack of market transparency is strong. Differences in transportation costs or varied preferences of market channels by farmers may not account for the large deviations since the distances to the nearest markets are short. As noted in Table 3.6 the market prices for food commodities in major towns do not differ widely as perceived by farmers, irrespective of the distances from production areas.

## Sources of information for farmers

Farmers get market information from a variety of sources (Table 3.7). Personal visits to markets, neighbours and traders emerge as the most significant price information sources for farmers. As was indicated in Table 3.5, most farmers personally sell their produce at farm gate, in local markets, and outside traders and as expected, they get most of the information during sales transactions. Exchange of all types of information among neighbours is common as a result of social interaction among rural communities. Farmers freely exchange information and learning from neighbours has been rated high as a method of information dissemination in extension programmes.

**Table 3.7** *Major sources of price information (% of farmers)*

Information source	Kirinyaga	Meru	Maragua
Personal visits to markets	72	13	48
Neighbours	15	74	59
Traders	33	52	41
Radio	0	4	0
Newspapers	0	2	0
Extension service	0	0	0

One of the most reliable sources of commodity price information is from the Marketing Information Branch of the Ministry of Agriculture. The Branch regularly gathers the prevailing commodity prices in major towns and avails the information to the mass media. Farmers do not get marketing information from the radio (Table 3.7) and they apparently do not listen to the radio programme. However, the newsprint regularly publishes such information.

It is doubtful that small-scale farmers have access to price information provided by newspapers, probably because they cannot afford newspapers. Those who have access to the information might perhaps use it to bargain for better prices. Since no farmer mentioned extension staff as a source of market information, the study sought to know the types of extension messages provided by extension staff. The findings are presented in Table 3.8.

The main extension messages transmitted to farmers are on crop and livestock husbandry, which is in line with the normal functions of agricultural extension. It was only in Meru that a significant number of farmers (67%) were visited by extension staff more frequently (average 6 visits per year) and given marketing advice (9% of farmers). Most extension staff have not been trained in marketing and this is probably the main reason extension agents are unable to advise farmers.

**Table 3.8** *Dissemination of technical and marketing information in the last one year (% of farmers)*

Extension activity	Kirinyaga	Meru	Maragua
Farmers visited (%)	36	67	19
Mean number of visits	2	6	2
Market information given (%)	1	9	0
Crop information given (%)	31	31	19
Livestock information given (%)	8	14	19

## Market inputs

The majority of farmers purchased some inputs (99% in Maragua, 96% in Meru, and 83% in Kirinyaga). Fertilizers are the inputs predominantly purchased (68% in Meru, 43% in Kirinyaga and 4% in Maragua). A few farmers use pesticides for field disease and pest control and for preservation during storage (14% in Kirinyaga and 12% Maragua). The major sources of farm inputs are stockists in the local market centres, bigger towns and cooperative societies. There is therefore competition in the farm input market.

Some farm inputs are generated on-farm. For example, farmers do not purchase certified seeds for a variety of reasons, and 87% of farmers in Kirinyaga, 71% in Maragua and 61% in Meru generate own seed on farm. The unmet demand is probably acquired from neighbours since no farmer reported purchasing improved seed from commercial sources. On-farm production of livestock based manure is very common in Meru (91%), Kirinyaga (88%) and Maragua (82%). Although production of compost has been promoted by extension as a component of soil conservation, few farmers have adopted the technology (7% in Kirinyaga, 8% in Meru and 3% in Maragua).

## Credit

Access to credit for financing investment and farm operations is crucial to the commercialization of smallholder agriculture. Farmers' knowledge of issues related to agricultural credit is almost non-existent except in Kirinyaga (Table 3.9). For this reason, only the findings related to Kirinyaga are discussed.

84% of farmers in Kirinyaga believe that credit is available and 37% have taken credit in the past. Although 73% of the farmers indicated that the credit received was adequate, only 15% felt that the credit was timely. Cooperative societies were the main sources of credit (81%). 73% of farmers received credit in form of inputs, 12% in cash, and 15% in both inputs and cash. Most of the credit was used for crop and livestock production. Interestingly, 83% of farmers in Meru and Maragua are in need of credit, although their experience with credit issues is low.

It is pertinent to comment on the institutions that provide agricultural credit. The Agricultural Finance Corporation (AFC) was created to provide credit for farm development and agricultural production. Priority was initially accorded to large and medium size farms (over 10 hectares), but small-scale farmers were later accommodated. Medium term credit was provided for farm development and seasonal credit for annual crop production. The effectiveness of AFC declined due to default in credit repayment by the large farm sector. Traders have emerged as providers of credit (8% in Kirinyaga), indicating an interesting development of linking producers to marketers.

At the time of this survey (from August 1977 to July 1998), the annual interest rates by AFC and other commercial banks were approximately 30%, which farmers could not afford. There are other reasons why farmers do not seek credit. Farmers in Meru and Maragua gave “lack of information” as the main reason for not accessing credit, followed by “fear of running into debt”. Farmers in Kirinyaga gave two main reasons: “fear of debt” and “never had credit before”.

**Table 3.9**      *Access to credit by farmers (% of farmers)*

<b>Extension activity</b>	<b>Meru</b>	<b>Kirinyaga</b>	<b>Maragua</b>
Experience with credit			
Taken credit before	3	37	1
Credit availability	0	84	1
Form of credit			
Money	1	12	1
Inputs	0	73	1
Both inputs and money	1	15	0
Source of credit			
Co-operative	1	81	1
Bank	0	4	0
Traders	0	8	1
Agricultural Finance Corporation	0	8	0
Timeliness of credit			
Timeliness of credit	3	15	1
Adequacy of credit	0	73	0
Use of credit			
Crops	50	88	1
Livestock	0	12	0
In need of credit	84	51	82

## Farmer organizations

Cooperative societies have, more than any other farmer support institution, influenced agricultural commercialization among small-scale farmers in Kenya. Co-operative societies are important in commodity marketing, supply of inputs, and provision of credit, among other functions. The effectiveness of a cooperative society depends on its level of development. At one end are the budding cooperative societies with no fixed assets; members are not aware of their rights, obligation and benefits accruing from membership; and the society leadership has no business experience. At the extreme end are the cooperative societies which are well developed, do not require external support, are well managed, and are able to provide credit to their members, invest in agro-processing and venture into export-import business. The Murang'a Farmers' Cooperative Union is an example of a fully developed farmers organization.

The main farmers' organizations in the study area are cooperative societies of the budding type. Membership is low, with only 48% of farmers in Kirinyaga, 29% in Meru and 16% in Maragua being members. Cooperatives account for very little of the credit in Meru and Maragua, while their role is bigger in Kirinyaga and includes provision of farm inputs to members, and marketing of coffee, milk and other farm produce. Cooperative societies are commodity-specific and recruit members according to the availability of the product. This is probably the main reason for low membership. Settlements in Meru and Maragua are of recent origin, dating back to 1978 and 1988 respectively, while they are much older in Kirinyaga, hence the difference in the degree of development of the cooperative movement.

### 3.3 Constraints to the commercialization of agriculture

Commercialization of small holder agriculture is constrained by a number of factors, some of which are related to the farmers themselves while others emanate from the prevailing socio-economic circumstances. Farmers interviewed were requested to indicate the factors that prevent them from commercializing their farming. The results are shown in Table 3.10.

Farmers consider high input prices, low level of production and low producer prices as the most important factors that hinder further commercialization of their holdings. Low level of illiteracy is considered a significant contributing factor by farmers in Meru (37%).

**Table 3.10** *Percent of farmers expressing opinion on the factors that constrain further commercialization of their farming*

Constraint	Kirinyaga	Meru	Maragua
High input prices	51	77	62
Low production	41	18	67
Low producer prices	6	6	35
Low level of literacy	8	37	16
Large households	10	9	9

Farmers gave opinions on actions required to improve their farm productivity in order to generate surpluses for the market. The most frequently mentioned responses were as follows:

- Farmers in Meru suggested the introduction of new crops (45%); getting advice on farm planning (42%); keeping farm records (25%); and adoption of improved crop varieties.
- Kirinyaga farmers suggested introduction of crops (43%); opening up of more land for production (30%); and getting advice on farm planning (25%).
- Maragua farmers suggested getting advice on farm planning (87%) and adoption of improved crop varieties (24%).



## 4 MARKETING OF CASH CROPS AND LIVESTOCK PRODUCTS

### 4.1 Diversity of agricultural enterprises

Production of cash crops and livestock enterprises has a long tradition in central highlands and is important in the farming systems and economies of smallholders. Table 4.1 shows the range of enterprise identified in the study areas.

**Table 4.1** *Cash crop and livestock enterprises in sample farms in the three districts (% of farmers)*

Enterprise (n)	Kirinyaga			Meru			Maragua		
	Kibirigwi (34)	Kiangwaci (34)	Total (68)	Ruceni (35)	Karukunku (35)	Total (70)	Mihango (34)	Pundamilia (34)	Total (68)
Coffee	85	12	49	0	0	0	0	26	13
Pyrethrum	0	0	0	31	11	21	0	0	0
French beans	41	3	22	0	0	0	0	0	0
Snow peas	0	0	0	46	26	36	0	0	0
Wheat	0	0	0	77	69	73	0	0	0
Bananas	85	62	74	0	0	0	82	82	82
Cabbage	9	0	4	63	34	49	0	0	0
Kale	50	9	29	6	9	7	3	3	3
Carrot	0	0	0	60	37	49	0	0	0
Onion	6	6	6	0	0	0	0	0	0
Garlic	0	0	0	20	14	17	0	0	0
Tomato	0	9	4	6	6	6	3	6	4
Pawpaw	0	0	0	0	0	0	26	6	16
Orange	0	0	0	0	0	0	0	3	1
Mango	0	0	0	0	0	0	0	3	1
Dairy cattle	88	62	75	60	69	61	15	50	32
Sheep	0	0	0	63	26	44	0	0	0
Beef/goats	0	0	0	0	0	0	0	6	3
Pigs	0	0	0	0	0	0	6	0	3

A total of 19 different enterprises comprising of 15 cash crop and four livestock enterprises were recorded in the study areas. There is therefore considerable diversification of farm enterprises in each district. Any enterprise carried out by more than 30% of farmers in a district or in a catchment was considered significant and was included in

the analysis of farm level marketing. For example, a total of nine enterprises were recorded in Maragua but only two, bananas and dairy cattle, were kept by more than 30% of farmers. Kirinyaga had 8 different enterprises but only five, French beans, coffee, bananas, dairy cattle and kale qualified for inclusion in the analysis. Seven enterprises in Meru, namely wheat, pyrethrum, snow peas, cabbage, carrot, dairy cattle and sheep met the criteria.

Cash crops are destined for different markets. Thus, coffee, pyrethrum, French beans and snow peas are primarily produced for the export market while bananas, kale, wheat, cabbage, carrot, milk and meats are for the domestic market. Dairy cattle are common in all areas and milk is used both for household consumption and local sale.

## 4.2 Enterprise mix at farm level

Farmers engage in multiple cash generating enterprises, indicative of their desire to generate cash incomes from diverse sources and also to avoid risks. The number without farm enterprises other than food crops were relatively few, less than 10% of the 206 farmers sampled (Table 4.2). However, the number of enterprises per farmer varies considerably between districts. In Maragua, over 70% of farmers have just one or two enterprises, while in Kirinyaga and Meru the spread is more evenly distributed between one and six enterprises. The larger the number of enterprises, the more complex the production and marketing interrelationships.

**Table 4.2** *Percent of farmers with indicated number of farm enterprises*

Enterprises per farm (n)	Kirinyaga			Meru			Maragua		
	Kibirigwi (34)	Kiangwaci (34)	Total (68)	Ruceni (35)	Karukunku (35)	Total (70)	Mihango (34)	Pundamilia (34)	Total (68)
Zero	0	9	4	6	14	10	18	3	10
One	3	44	24	11	17	14	44	47	46
Two	18	26	22	6	11	9	26	29	28
Three	21	18	19	9	14	11	9	12	10
Four	32	3	18	9	20	14	3	3	3
Five	24	0	12	29	9	19	0	3	1
Six	3	0	1	25	9	17	0	3	1
Seven	0	0	0	6	3	4	0	0	0
Eight	0	0	0	0	3	1	0	0	0

There are also differences in the number of enterprises per farm between neighbouring catchments. For example, 95% of the farmers in the irrigated Kibirigwi catchment have two to five enterprises compared to the neighbouring non-irrigated Kiangwaci catchment where 88% of the farmers have one to three enterprises. This is probably due to the opportunities offered by irrigation facility with possibilities for year round production. There are no large differences in the number of farm enterprises between catchments in the other two districts.

### 4.3 Marketing systems for cash crops

#### Coffee

Meru is the leading district in smallholder coffee production, but the crop is not grown in the two sample areas. The crop is, however, popular in Kirinyaga and Maragua districts. In Kirinyaga, 85% of the farmers grow the crop in Kibirigwi and 12% in Kiangwaci catchments. In Maragua, coffee is only found in Pundamilia catchment where 26% of the farmers are engaged in its production.

Farmers produce two types of coffee, 'cherry' and 'mbuni'. Coffee derived from cherry berries is the type mostly preferred in Kenya because of its superior quality, hence the high prices in the export market. Freshly harvested ripe, red-coloured coffee berries undergo a wet fermentation process to facilitate removal of the outer skin (pulping) after which the coffee beans (parchment coffee) are sun dried. All these processes take place at the farmers' cooperative society factories. The parchment coffee is subsequently delivered to millers for de-husking to coffee beans. The beans are subsequently exported for roasting and grinding. To maintain quality, for which Kenya coffee is famous, harvesting of cherry must be selective and normally occurs between April and December.

'Mbuni' coffee is derived from immature and over-mature berries. These are of poor quality and are therefore not acceptable for wet processing. The berries are sun-dried at farm level and marketed through cooperative societies. Subsequent to this, the produce undergoes the same process of de-husking as cherry coffee. Being rejects, 'mbuni' is harvested throughout the year.

Existing regulations stipulate that all coffee produce be delivered to millers through cooperative societies for de-husking. Thus, millers do not buy parchment coffee or mbuni directly from individual farmers. Coffee millers charge a commission for processing. Two such millers are licensed to process smallholder coffee, the Kenya Planters Cooperative Union (KPCU) has been in existence for a long time and had a monopoly for processing of all coffee in Kenya, both estate and smallholder produce. Thika Coffee Mills was licensed after liberalization of the coffee industry. The two

compete for farmers produce at cooperative society level. Other privately owned coffee mills were also licensed after liberalization, but these only process large estate coffee.

Once processed, all coffee is delivered to the Coffee Board of Kenya for auctioning at the Coffee Exchange. Although there are several bidders at the auction, competition for smallholder coffee is still limited since there is only one auctioneer, CBK. For these reasons, it is only when coffee has been auctioned that an individual farmer can confidently claim to have sold his/her coffee because, up to this point, the coffee remains in the hands of different agencies.

A few coffee growers in the study area sell their cherry or mbuni at farm gate to other coffee farmers or agent brokers. This action is technically illegal as it undermines the viability of cooperative societies in which farmers have invested for the development of coffee factories as a group. The price offered by agent brokers is lower than the price offered by cooperative societies because the buyer can not be sure of the price at the auction. Prices at the coffee exchange fluctuate widely for the same quality, sometimes within a few weeks. Farmers who sell through these channels do so for expediency of ready cash.

Individual small-scale coffee farmers are therefore not in full control of the marketing of their produce. This is expected due to the complex nature of coffee production, processing and marketing. The quantity produced by individual farmers is too low and individuals have no requisite resources for such undertakings, hence the role of cooperative societies for reasons of economies of scale. Buyers determine farm gate prices, while cooperative societies decide on the final payment after deduction of the operating expenses.

## Wheat and pyrethrum

Wheat and pyrethrum enterprises were only encountered in Meru where 73% of the farmers in the sample area grow wheat and 21% grow pyrethrum. The two crops have different marketing systems due to their end use.

There are two cropping seasons for wheat, and the grain is harvested in February and September, and sold immediately after harvest. Nearly all wheat is sold at the farm-gate and the majority of farmers interviewed indicated that there were no alternative outlets. 90% of the wheat farmers were aware that they were free to choose the outlet offering the highest price for their produce, but 69% of farmers indicated that they preferred selling through one outlet, citing the long period they had sold wheat through that one outlet as the main reason. Opinion is divided on who determines the producer price, but nearly all agree that the different outlets do not offer the same price for the same quality of wheat.

## 4.4 Marketing systems for horticultural crops

### French beans and kale

Kale is a popular vegetable in Kenyan households and is produced in small patches in almost all rural homesteads. French beans are, on the other hand, mainly produced for the export market. However, commercial production is only significant in Kirinyaga where irrigation facilitates continuous production of the two commodities throughout the year. For this reason, 90% of farmers in the irrigated Kibirigwi catchment produce the two commodities compared to 18% in the neighbouring Kiangwaci catchment. Since farmers in Kiangwaci depend on rainfall, harvesting of French beans is limited to May and June. Kale is perennial and leaves can be harvested throughout the year, but the best quality leaves are harvested in January/February, May/June and September.

A number of commercial companies are involved in the export of French beans. They collect fresh produce daily and airlift it to Europe. Prices are high during winter months in the north, but decline sharply in summer when the climate allows production of vegetables in Europe. 75% of farmers in Kirinyaga cited brokers as their main outlet, and 13% sell at farm gate. All farmers are within 2 km of the selling point. Quality standards for the exported French beans market are very high, and marketers undertake extension service to achieve the desired standards.

### Snow peas, cabbage and carrots

Horticulture is practiced by 67% of farmers in the two catchments studied in Meru. Snow peas, cabbages and carrots are the most important horticultural crops and are grown by approximately 60% of the farmers. Snow peas is the most important crop and is grown for export by 60% of those engaged in horticulture. Most snow peas farmers also produce cabbages, carrots, garlic and onions. The vegetable crops are harvested and sold fresh throughout the year. The peak harvest periods for the various crops are July to September for snow peas, September and January to April for cabbages; and January to April and July to October for carrots. The majority of farmers sell at farm gate.

### Bananas

Bananas are important in Kirinyaga and Maragua districts and are grown by 74% and 82% of farmers, respectively. The crop serves the dual purpose for home consumption and cash crop. Being perennial, the crop can be harvested throughout the year, depending on the variety and the level of management. Under rainfed condi-

tions, peak harvesting occurs in August to October, but production is more evenly distributed under irrigation. The produce must be sold within a few days after harvest to preserve quality. Farm gate, personal selling in local markets, and selling to outside marketers are the main outlets. All banana producers in the study areas are within 2 km of the selling points.

## 4.5 Motivation, farmer organization and information

### Motivation

Farmer responses on the criteria used in the selection of the horticultural crops are tabulated in Table 4.3. Produce price, availability of markets and the combination of the two are the most important factors influencing farmers' choice of crops. As expected, subsistence needs is not a motivating factor since only small quantities are consumed in homesteads. Apparently, the extension service does not advise farmers on the potential of horticultural crops. The zero rating of influence from neighbours is surprising since farmers are known to share information freely and to learn from each other.

### Sources of information

The major sources were indicated as direct personal observation in market places, neighbours and buyers. Extension staff and the mass media do not play a role in information dissemination.

### Farmer organizations

There are no organized farmer groups in any area except in Kibirigwi irrigation scheme where 37% of farmers are members of groups. The formation of groups in Kibirigwi may be attributed to the irrigation-based farming system, which necessitates controlled use of shared water resources. The higher level of awareness of issues related to marketing of horticultural produce in Kibirigwi is probably due to the existence of these groups. Farmers in Kibirigwi were even aware of the existence of markets in major towns such as Nyeri, Nairobi and Mombasa. They were also aware of the major marketing companies who buy their produce for export. The most cited were Everest, Homegrown, Sunfresh and Wase.

**Table 4.3** *Basis for choice of horticultural crops (% of respondents)*

Basis of choice (n)	Kirinyaga		Meru		Maragua	
	Kibirigwi (30)	Kiangwaci (12)	Ruceni (29)	Karukunku (18)	Mihango (22)	Pundamilia (20)
Price (1)	30	67	17	17	41	30
Market availability (2)	33	25	31	28	14	40
(1) + (2)	30	0	52	56	23	0
Extension advice (3)	0	0	0	0	0	0
Neighbour influence (4)	0	0	0	0	0	0
Subsistence (5)	3	8	0	0	5	20
(1) + (3)	0	0	0	0	9	0
Other options	3	0	0	0	9	10

NB: In the case of Mihango, the other option is Price + Low input requirements (9%). For Pundamilia, the option is "Market availability subsistence needs" mentioned by 10% of the respondents.

## Awareness of liberalization

Most farmers believe that liberalization of the horticultural sector has created new outlets for their produce. Over 77% are aware of the existence of export markets for horticultural produce and also believe that local outlets have expanded. They, however, feel that the competition created by freeing the horticultural trade has not resulted in increased prices. As a result, most producers stick to their traditional outlets mainly because of trust, loyalty, the free advice given and customer relationships. The few who use new outlets do so for reasons of higher prices.

Farmers differ on who sets producer prices. The majority believes that farmers and buyers decide on the price, but significant proportions indicate buyers to be the sole setters of price. This divergence of views on the issue exists within the same commodity and within farmers in the same catchment, and it is not clear what accounts for noted differences in farmers' views.

Some farmers suspect cartelization and collusion in price fixing. The claim may be valid especially for export produce where one or two buyers turn up on a given day. All farmers are aware that the government does not play any role in setting prices for horticultural products.

## Quality and price

Quality standards only apply to export crops (French beans and snow peas) and unit prices are based on grade. There are no standards for produce destined for the local market, and there is therefore no linkage between quality and price. Price fluctuations cited by farmers can be attributed to supply and demand in the local market and the climatic conditions in the importing countries.

## 4.6 Production and marketing problems

Reacting to open-ended questions, horticultural farmers identified 21 problems related to production and 22 problems related to marketing. The problems cited most frequently are indicated in Table 4.4. Inadequate moisture for crop production is a major constraint as expressed by 45% of all farmers. The problem is serious in Meru where over 80% of farmers cited inadequate water for irrigation, and over 70% in the semi-arid Maragua cited low rainfall. High input prices, including labour, were cited by 43% of all farmers. Pests and diseases, mentioned by 35% of all respondents, are particularly serious in Kirinyaga and Maragua.

The major marketing problems were identified as low producer price (57% of farmers), lack of markets or buyers (30%), and transport constraints (18%). Low producer prices were mentioned more often in Kirinyaga and Maragua (over 85% of farmers). Lack of markets/buyers was a common problem in both Meru and Maragua.

**Table 4.4** *Common production and marketing problems (% of farmers)*

Problems (n)	Kirinyaga		Meru		Maragua	
	Kibirigwi (30)	Kiangwaci (22)	Ruceni (29)	Karukunku (18)	Mihango (30)	Pundamilia (31)
Production problems						
Inadequate irrigation	17	14	90	83	0	0
Low rainfall	0	0	3	0	53	87
High input prices	80	14	83	28	63	42
Pests and diseases	67	27	10	39	63	55
Marketing problems						
Low produce prices	90	82	66	50	87	90
Lack of a market	13	14	45	61	13	84
Transport constraints	7	5	52	17	3	52

## 4.7 Livestock enterprises

Four livestock enterprises (dairy cattle, sheep, beef cattle/goats and pigs) were recorded in the study areas (Table 4.5). The dairy cattle are common in all areas and are kept by 75% of farmers in Kirinyaga, 64% in Meru and 32% in Maragua. Sheep were only found in Meru (44% of farmers). Beef cattle, goats and pigs are insignificant. Only enterprises kept by more than 30% of farmers in any district were selected for farm level analysis.



## The dairy industry

Milk production serves the dual purpose of household consumption and income generation. Nutrition studies in Kenya indicate that incidences of malnutrition are less in households that produce milk, especially in children under five. Some farmers therefore produce milk for home consumption only (e.g. 29% of farmers in Kirinyaga do not sell milk).

Up to the early 1990s, the Kenya Co-operative Creameries (KCC), a state corporation had monopoly for collection, processing and marketing milk. KCC therefore determined the producer and selling prices of milk. Farm to farm sales and sales to local hotels and institutions were often discouraged and those found engaged in the trade prosecuted. However, this market continued since it was relatively free from official prices and traders could offer higher producer prices and pay farmers promptly.

**Table 4.5** *Livestock enterprises in the three districts (% of farmers)*

Enterprises (n)	Kirinyaga			Meru			Maragua		
	Kibirigwi (34)	Kiangwaci (34)	Total (68)	Ruceni (35)	Karukunku (35)	Total (70)	Mihango (34)	Pundamilia (34)	Total (68)
Dairy cattle	88	62	75	60	69	64	15	50	32
Sheep	0	0	0	63	26	44	0	0	0
Beef/goats	0	0	0	0	0	0	0	6	3
Pigs	0	0	0	0	0	0	6	0	3

A number of private dairies emerged after liberalization and have become significant outlets for small-scale milk producers. In the process, milk hawkers and merchant agents have also emerged and are playing a significant role in moving milk to markets. 78% of the dairy farmers believe that more outlets have resulted from liberalization. Farmers in the study areas sell their milk to neighbours, contracts with local shops and hotels, merchant agents and cooperative societies. Practically all farmers use two outlets (Table 4.6). Brokers may subsequently sell to cooperative societies, local shops or hotels. Under these marketing arrangements, practically all milk is marketed within 2 km of the farm.

**Table 4.6** *Number and types of sales outlets for milk (% of farmers)*

Sales Outlets  (n)	Kirinyaga		Meru		Maragua	
	Kibirigwi (28)	Kiangwaci (7)	Ruceni (22)	Karukunku (5)	Mihango (16)	Pundamilia *
Number of outlets:						
One	29	67	20	0	20	*
Two	64	33	80	68	80	*
Three	7	0	0	32	0	*
Types of outlets:						
Agents	79	43	10	0	0	*
Cooperative	36	14	0	0	20	*
Neighbours	36	0	10	0	0	*
Shops	11	57	0	0	80	*

\* Information on Pundamilia not available.

Farmers get most of market information from a variety of sources, namely buyers, neighbours, direct observation in market places, or a combination of all these sources. The mass media and extension services do not feature in information dissemination. Farmers are of the opinion that the government has no role in price setting and are now able to negotiate with buyers for better prices, especially in the dry season when production is low.

### Dairy farmer organizations

Two types of farmer organizations exist for milk marketing in Kirinyaga and Meru: the relatively large cooperative societies with high membership who handle large volumes of milk, and the smaller local village organization such as women groups. 68% of farmers in Kibirigwi, 70% in Ruceni, and 38% in Karukunku are members of a dairy marketing group. There are no such organized groups in Maragua.

### Sheep production

Sheep were only found in Meru and are reared by 44% of farmers for mutton. Farmers market their livestock to local butchers at the farm gate and no transport costs are incurred. The sheep market has not been affected by the liberalization since the industry was never under government control except for veterinary purposes. Prices are therefore determined jointly by producers and buyers. Nationally, sheep, goats and lamb for slaughter account for only 1% of gross marketed agricultural production. The industry is therefore insignificant and there are no organized farmer groups.

## 5 CONCLUDING NOTES AND COMMENTS

### 5.1 Three general issues

An introductory general observation is that the performance of the smallholder sector in recent decades has been superior to the performance of the large-scale farming sector (Section 1.4). Government efforts as well as donor support have recognized this and mainly targeted the smallholder in activities related to extension and technology development. It may, however, be noted that renewed or at least intensified efforts aimed at subdivision of large farms would, therefore, result not only in a better distribution of welfare but also in an increase of overall production. There is, however, a risk of creating farm plots that are so small they do not produce sufficient for the farmers families, or provide economy of scale to afford necessary inputs.

Another introductory observation is that production and marketing must be regarded as complementary actions (Section 1.6). Where the volume of production is limited, it will not be justifiable to develop expensive marketing machinery. On the other hand, mass production, which allows for economies of scale, is not feasible until the marketing machinery opens up the doors to the broad mass market. There is, therefore, a positive relationship between increased production and an adequate marketing system. Although this is fundamental for agricultural development, it has often not been recognized in, for example, donor-supported activities. Usually, such activities have aimed at increased production and conservation of natural resources or at support to marketing, but rarely combined those aims. Hence, unless marketing issues are taken into account, support aimed at increased production may not be effective. The broadened mandate of RELMA is a healthy reorientation in this context.

A third observation is that the need for marketing of foodstuffs is rapidly increasing. The demand for food is generally rising with the rapid population growth. But *the need for marketing of food increases even more* since an increasing proportion of the population is unable to produce their own food due to rural-urban migration and due to development of sectors of the economy other than the agricultural sector.

### 5.2 Limitations of the study

Since the findings of this report are based on data obtained from six not randomly selected catchments in Kirinyaga, Meru and Maragua Districts in central Kenya, it is essential to examine to what extent the findings can be treated as generally valid for the region. The findings are indicative of the general situation prevailing in the smallholder sector, but a number of factors limit the generalization and extrapolation of the findings. The main limitations are:

- The highlands of central Kenya are very diverse in terms of agro-ecological

zones, soils, potential for agricultural production and farming systems (Figure 1.1). Similar agro-ecological diversity also exists within individual districts (Figures 2.1 to 2.3). Owing to this diversity, selection of representative areas for marketing studies is difficult. For instance, the highly productive and commercialized areas (the main coffee, tea and dairy production zones) were not captured in this study.

- The areas selected for the study were near main roads and markets. Most areas in the highlands of central Kenya lack such good infrastructure, most access roads are poor, and market centres are far from production areas.
- Information obtained through farmer interviews based on their recall of events and without comprehensive farm records should be treated with caution. This is amply demonstrated by the divergence of views and perceptions expressed by farmers on certain critical issues during the study.
- The study did not go beyond farm-level marketing and the different marketing chains were therefore not investigated.

### 5.3 Marketing of subsistence crops

The study showed that the choice of subsistence food crops is primarily influenced by household consumption needs, but it is also clear that farmers produce subsistence food crops with a degree of exchange in mind (Section 3.1). The usual situation that initiates sale of subsistence crops appears to be pressing household needs for cash. In such situations, a certain amount of money is needed and the amount sold will just be the amount that is required to secure the money immediately needed. Therefore, if prices are higher a smaller amount may be sold, whereas if prices are lower a larger amount may be sold. If valid for a larger group or within an area this behaviour would result in an 'inverted supply and demand relationship' as compared to the usual one where a higher price is expected to stimulate larger amounts to reach the market. The poor farmer tends to sell more when prices are low which is to the advantage of the buyers. The buyer has a clear interest to keep the prices low in order to get higher margins and also to increase the available volume.

Further, because the market price is only a secondary factor in decision making, farmers sell at the time money is needed or immediately after harvest. They are thus unable to target the time with high prices and therefore fetch very low price.

It is of course essential that efforts aimed at more effective marketing of food crops are based on a sound understanding of farmer's basis for decision making. Should this finding of the study be widely applicable it appears that efforts to support farmers in marketing of food crops would primarily have to target financial institutions and farmer's knowledge on economic planning, benefits of saving etc.

## 5.4 Market information

The most common sources of market information are personal visits to markets, traders and neighbours. Field extension services play no role in information dissemination (Sections 3.2 and 4.5) and farmers appear rather unaware of information disseminated through the electronic and print media. As a result, market information flow at the farm level is very poor, as evidenced by the wide range of produce prices perceived by farmers. Lack of market information keeps prices and farm incomes low.

A system of gathering and disseminating information on commodity prices in major towns exists, but farmers are apparently not aware of the existence of such information. Good and timely information would provide opportunities and gains of regional trade. A study on effective methods of market information targeted to small-scale farmers appears to be essential. With the non-use of Government extension officers for market information one may conclude that other channels, primarily the private (incl. cooperative) sector is more fruitful to explore. With regard to farmers, education and training may be the paths to follow to ensure that the small-scale producers are business-minded and capable of seeking the information they need. Education and training have to be designed to equip farmers and agriculturalists with the knowledge they need in a new economic environment characterized by free trade and free business. Support to farmers is another option for donors to consider (see further Section 5.8).

## 5.5 Farm inputs

The study also indicated that over 60 – 80 % of farmers interviewed produce their own seeds, and the rest probably acquire seeds from neighbours. No farmer reported purchasing seed from commercial sources.

Kenyan farmers know the benefits accruing from use of farm inputs and have used such inputs in the past. It is therefore prudent to analyse the factors underlying the current low use of farm inputs. The major reason is that farmers may have shied away from purchasing certified seed because of recurrent quality problems (e.g. low germination rates, trueness to variety). Farmers tend to blame the seed company for the poor quality seed, the seed company blames farmers for planting too deep (especially for the small size horticultural seed). The stockists are occasionally blamed for poor storage conditions. Some input merchants become fraudulent and offer farmers fake seeds.

Farm inputs are essential for increased production and commercialization of small-holder agriculture. Whatever the reason may be for farmers not investing in certified seed of the best varieties, it is an overall serious set back for the agricultural economy. If improved seeds are not used, the value of all efforts in development of new crop varieties by breeding becomes less meaningful. It is important that the farmers can

trust the seed dealers, some kind of certification of improved seed is desirable.

This appears to be a subject deserving further investigation. Farmers could be encouraged to form farmer groups or cooperative societies in order to acquire inputs on time and at favourable cost. Formation of such groups would also facilitate group marketing of produce. To avoid past pitfalls in cooperatives, farmers and their leaders should be trained in the rudiments of cooperative management and marketing economy.

## 5.6 Storage

Most produce is sold within the same month of harvest and there is therefore little storage at farm level, except for food grains to sustain families until the next harvest. Harvesting of certain commodities (e.g. Irish potato, sweet potato, bananas) can be delayed for a certain period and may be harvested piecemeal for consumption or sale as required, but quality deteriorates with delayed harvest. Perishable commodities such as French beans and snow peas, leafy vegetables and milk must be sold immediately after harvest to avoid spoilage. For these reasons, most sales take place at farm gate. Commodities marketed through marketing boards (Mbuni coffee, dried pyrethrum flowers) are stored on farm for relatively short periods before delivery to cooperative societies for further processing.

Since there is very little processing of smallholder produce at farm level, the storage function plays a key role by creating time utility in the process of agricultural commercialization. Storage technologies for most products are available and were developed with the small-scale farmer in mind. For example, Swedish International Development Cooperation Agency (Sida) supported a rural structures project up to the late 1980s. Similarly, German Technical Cooperation (GTZ) and the International Potato Centre (CIP) developed technologies for storage of Irish and sweet potatoes. Technologies emanating from these projects do not appear to have been widely adopted.

Before further efforts are made on dissemination of improved storage technologies it would be essential to further investigate the storage issues with particular attention to why existing technologies have not been adopted.

## 5.7 Transport

Distances to the marketing points in the study areas are short (within 2 km) and most sales in fact takes place at the farm gate. Accordingly, transportation is normally on foot, by bicycle and ox-cart. Such proximity to good roads and market centres is not typical of many areas in the interior of central Kenya. Owing to the state of roads and cost of transport, selling at farm gate where the buyer bears the cost of transportation is usually the only option for small-scale farmers.

The wide regional difference in consumer prices and between rural and urban areas is attributed to transport problems. A good road network and transport system would not only reduce the cost of transportation, but it would also minimize losses of produce quality. But it is not only the roads that deserve attention. Too often the only choices at hand for transport is carrying usually by women or use of a costly vehicle. Both these methods have obvious disadvantages.

Development of appropriate technology in terms of improved ox-carts, bicycle carts or donkey carts appears to be needed. It should be noted that the favourable location of the study areas near roads and markets results in an under-rating of the transport problem in the study areas if compared with the general situation in Kenya.

Agricultural processing is an indirect way of reducing the transport obstacles and costs. Processing results in higher value products, and often a smaller volume that is to be transported. Further, processed products are usually less perishable and there is thus greater flexibility in timing which is also advantageous from the transport point of view.

In this context, as well as on several of the other issues highlighted, it would be interesting to make comparisons between Uganda and Kenya. In Uganda, major investment has been made on the secondary roads, and it would be interesting to assess impact of such investment. This study did not address these issues adequately since the whole market chain was not studied.

## 5.8 Farmer organizations

The study indicated that farmer organizations exist, many of which are of the emerging or “budding” type. Most have low membership and many are weak in terms of leadership. But there are also examples of strong and mature organizations.

Looking at the recent history of farmer organization it can be observed that donors, including Sweden, supported the farmer movement significantly earlier, at a time when the cooperatives and unions could hardly play any role due to government interference. Now, when farmers are operating in a more liberal environment and really need to be organized, supporters are rare.

It can of course be argued that donor support to farmer organizations is likely to bring them back into the control of government. Again, training could be the answer. Earlier Farmers Training Centres (FTCs) were vigorously offering farmer training, but now few, if any, are efficient. FTCs could be more important now than any time in the past.

## 5.9 Concluding remarks

Although limited in time and area coverage, the study has demonstrated that there are several areas that are not well understood in marketing of agricultural produce. It is a well-known fact that producer prices are low, and farmers regard that as a major disincentive to production. It is however equally well known that foodstuff is expensive on the market. All in all, this implies major inefficiencies in marketing and transport.

The study has indicated some areas that appear to be particular bottlenecks in the study areas:

- Market information
- Use of farm inputs, in particular certified seed
- Storage
- Transport
- Farmer organization

It has also been noted that many issues related to agricultural marketing in today's Kenya are not well understood. There is, thus, a need for further investigation, and in particular deepening the knowledge of the effects of the liberalized economic environment.

For donors, it is essential to find niches for support while respecting and supporting new roles for governments and private sector.

Education and training has in the past focussed a lot more on production than on marketing. This was relevant as long as the Government absorbed the cadre trained for certificates, diplomas and degrees, but now when that is no longer the case there may be a major need for reorientation. Unless reorientation is embarked upon, training offered may no longer appear to be a useful investment for interested youth and they may rather look for training in other fields. The result may be brain drain from the agricultural sector; the sector that is expected to lead the economic development in the country. Review of curricula, teacher training, development of training materials are responsibilities that will have to rest with the Government even in a liberalized economy. This field is therefore suited for continued government – government support. Areas for governmental involvement – even in a liberalized economy – are legal rules and regulations as well as business habits. Official and trustworthy standards for measuring volumes and qualities of agriculture products are of outmost importance for a well functioning market, the guarantor should be the Government.

In order to better understand impact of activities and the complementarity between production and marketing, comparative studies between Kenya and Uganda may be of great interest. The policies at the local level have been somewhat different in recent years, where, in Uganda, attempts towards decentralization have been more significant than in Kenya.



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## Appendix 1

## Summary findings on food-crop production and marketing

Observation	Kirinyaga	Meru	Maragua
<b>Proportion of farmers growing major food-crops</b>	Maize: 99% Beans: 93% Sweet potato: 64%	Irish potato: 74% Field peas: 67% Beans: 6% Maize: 7%	Maize: 91% Beans: 76%
<b>Harvesting/selling</b>	Maize is harvested in February and August, beans in January and July, sweet potato throughout the year.	Irish potato and field peas are harvested in August/September and February and sold the same months. Maize is harvested and sold in November/December. Beans are harvested in August with sales peaks in September and January/February.	Maize is harvested in February and August, and sold fairly evenly throughout the year. Beans is harvested in January and July and sold evenly throughout the year.
<b>Proportions consumed at home and sold</b>	Maize: 48% cons. 52% sold Beans: 50% cons. 50% sold Sweet potato: 10% cons. 90% sold	Irish potato: 58% cons. 42% sold Field peas: 9% cons. 91% sold Maize: 82% cons. 18% sold Beans: 42% cons. 58% sold	Maize: 56% cons. 44% sold Beans: 40% cons. 60% sold Pigeon peas: 33% cons. 67% sold Cow peas: 33% cons. 67% sold
<b>Proportion of household consumption from own production</b>	Maize: 95% Beans: 76% Sweet potato: 50%	Irish potato: 83% Field peas: 50% Maize: > 100% Beans: 63%	Maize: 80% Beans: 35% Pigeon peas: > 100% Cow peas: 100%
<b>Choice of enterprise influenced primarily by</b>	Subsistence needs: 88% Market price: 33% Resources: 12%	Subsistence needs: 90% Market price: 50% Resources: 10%	Subsistence needs: 99% Market price: 6%
<b>Sale of food crop primarily influenced by</b>	Pressing household needs: 84% Market price: 22%	Pressing household needs: 84% Market price: 46%	Pressing household needs: 93% Market price: 47%
<b>Proportion of farmers that store food crops</b>	97%	56%	97%
<b>Proportion of farmers that register storage losses</b>	9% losses of maize: 43% 8% losses of beans: 34%	18% losses of maize and beans: 1% 25% losses of Irish potato: 53% 24% losses of field peas: 4%	1% losses of maize: 11%
<b>Post harvest functions</b>	94% package after shelling. 96% use chemical preservatives.	3% of farmers involved in packaging and shelling.	75% package after shelling. 81% use chemical preservatives.
<b>Market outlets</b>	Local markets: 43% Farm-gate selling: 33% Outside traders: 22% Brokers: 13%	Farm-gate selling: 80% Local markets: 11% Outside traders: 10% Brokers: 6%	Outside traders: 49% Farm-gate selling: 33% Local markets: 26% Brokers: 6%
<b>Average distance to nearest market</b>	2 km	20 km	3 km

## Appendix 1 (continued)

Observation	Kirinyaga	Meru	Maragua
Proportion of farmers within 4 km of nearest market	98%	52%	93%
Proportion within 4 km of nearest tarmac road	100%	100%	99%
Transport costs	Medium	High	High
Sources of price information	Pers. market visits: 72% Traders: 33% Neighbours: 15%	Neighbours: 74% Traders: 52% Pers. market visits: 13%	Neighbours: 59% Pers. market visits: 48% Traders: 41%
Farmers' awareness of alternative outlets	48% believe there are 1–3 alternative sales outlets.	24% believe there are 1–3 alternative sales outlets.	12% believe there are 1–2 alternative sales outlets.
Farmers' opinion on who decides the price	Buyers: 73% Farmers and buyers: 23%	Farmers and buyers: 79% Farmers: 7% Coop society: 3%	Farmers and buyers: 91% Buyers: 3% Farmers: 3% Coop society: 2%
Involvement in price-setting now compared to pre-liberalization	27% believe they are more involved now.	68% believe they are more involved now.	79% believe they are more involved now.
Freedom to choose outlet with highest price	96% of farmers believe they have freedom to choose outlet.	97% of farmers believe they have freedom to choose outlet.	52% of farmers believe they have freedom to choose outlet.
Preference of one outlet over others	40% of farmers expressed outlet preference.	89% of farmers expressed outlet preference.	38% of farmers expressed outlet preference.
Proportion of farmers who purchase farm inputs	83%	96%	99%
Source of chemical inputs	Local centre: 43% Coop society: 40% Stockists: 17% Outside shops: 18%	Local centre: 68% Stockist: 32% Outside shops: 10% Coop society: 2%	Local centre: 91% Outside shops: 48% Stockists: 3% Coop society: 0%
Type of inputs purchased	Fertilizer: 62% Pesticides: 12% Seeds: 0%	Fertilizer: 58% Pesticides: 14% Seeds: 0%	Fertilizer: 84% Pesticides: - Seeds: 0%
Proportion of farmers that use preservation chemicals	96%	0%	81%
Proportion of farmers that generate inputs	Manure: 91% Seed: 61% Compost: 8%	Manure: 88% Seed: 87% Compost: 7%	Manure: 82% Seed: 71% Compost: 3%
Constraints to commercialization	High input prices: 51% Low production: 41% Large households: 10% Illiteracy: 8% Low producer prices: 6%	High input prices: 77% Illiteracy: 37% Low production: 18% Large households: 9% Low producer prices: 6%	Low production: 67% High input prices: 62% Low producer prices: 35% Illiteracy: 16% Large households: 9%

## Appendix 2

## Summary findings on farm level marketing of cash crops

Observation	Kirinyaga	Meru	Maragua
<b>Proportion of horticultural farmers growing major cash-crops</b>	French beans: 22% Kale: 29% Bananas: 74%	Snow peas: 59% Cabbage: 49% Carrot: 49%	Banana: 98%
<b>Harvesting/selling</b>	Irrigated French beans and kale harvested and sold throughout the year in Kibirigwi – minor peaks in May, July and August. Non-irrigated French beans harvested/sold in May and June. Peaks for non-irrigated kale: January–April and July–September. Bananas harvested/sold throughout the year.	Harvesting/selling all through the year. Peaks in January–April; June–September.	Harvesting/selling throughout the year. Some farmers have peak harvests in August to October.
<b>Market outlets</b>	For French beans: Brokers: 81% Farm-gate: 19%	Farm-gate selling 65% For snow peas also brokers: 47%	Ranked in order: Farm-gate Outside traders Local market centre
<b>Distance to marketing point</b>	100% of French beans and kale are sold within 2 km. 56% of bananas are sold within 2km.	98% of selling takes place within 0.2 km of farms.	Most of the sales take place within 2 km; 68% of sales within 0.2 km.
<b>Source of market information</b>	Pers. market visits: 49% Buyers: 46%	Buyers: 56% Neighbours: 15%	Neighbours: 28% Pers. market visits: 19% Buyers: 17%
<b>Choice of enterprise influenced primarily by</b>	Price: 40% Market availability: 31% Price and market availability: 31% Subsistence needs (for bananas)	Price and market availability: 53% Market availability: 30% Price: 17%	Price: 35% Market availability: 26% Price and market availability: 12% Subsistence: 12%
<b>Proportion of farmers organized in groups</b>	In Kibirigwi: 43% In Kiangwaci: 9%	Not organized: 96%	Not organized: 96%
<b>Farmers' awareness of alternative outlets</b>	79% believe there are no alternative sales outlets for export produce. 63% believe outlets exist for local market produce. Most farmers thought only 1 or 2 alternative outlets exist in the form of brokers and other markets outside the local ones.	80% believe there are no alternative sales outlets for export produce. 19% said the same for local produce. Four firms buy export produce directly or through brokers.	87% believe there are no alternative sales outlets for export produce. 79% said the same for local produce. Less than 25% believe such outlets exist for local produce market in the form of brokers, personal selling and other traders.

## Appendix 2 (continued)

Observation	Kirinyaga	Meru	Maragua
<b>Farmers opinion on if new sales outlets have arisen since liberalization</b>	On export produce: Yes: 17% No: 83% On local market produce: Yes: 65% No: 35%	On export produce: Yes: 5% No: 95% On local market produce: Yes: 5% No: 95%	On export produce: Yes: 0% No: 100% On local market produce: Yes: 65% No: 35%
<b>Reasons for farmers using new outlets</b>	Minority use new outlets. Reasons: (1) Higher prices (2) Prompt payment (3) Better organization Export produce: 1 farmer using new outlet, 2 using old outlets. Local market produce: 33% using new outlets, 67% old outlets.	Minority use new outlets for export or local produce. Reasons: (1) Higher prices (2) Better organized (3) Prompt payment	Nobody uses new outlets for export produce. 91% uses new outlets for local produce Reasons: Higher prices: 90% Higher prices and prompt payment: 8%
<b>Farmers' opinion on who decides the price for export produce</b>	Buyers: 69% Farmers and buyers: 25%	Farmers and buyers: 62% Buyers: 35%	No opinion.
<b>Farmers' opinion on who decides the price for local market produce</b>	Farmers and buyers: 70% Buyers: 30%	Farmers and buyers: 90%	Farmers and buyers: 90%
<b>Farmers' involvement in price setting now compared to pre-liberalization</b>	Export produce: 31% feel more involved now. Local market produce: 52% feel more involved now.	Export produce: 75% feel more involved now. Local market produce: 32% feel more involved now.	Export produce: Only 1 farmer feels more involved now. Local market produce: 81% feel more involved now.
<b>Proportion of farmers believing all outlets offer the same price for the same quality</b>	For export produce: 75% For local produce: 11%	For export produce: 91% For local produce: 5%	For export produce: No indication. For local produce: 0%
<b>Proportion of farmers believing they have the freedom to choose outlet offering the highest price</b>	Export produce: 67% Local market produce: 96%	Export produce: 91% Local produce: 100%	Export produce: No indic. Local market produce: 66%
<b>Barriers encountered</b>	For export produce: Membership: 3%	For export produce: Membership and membership fee: 11% Participant discrimination: 6%	For local market produce: Membership fee: 7% Transport: 19%
<b>Preference for one outlet over others</b>	For export produce: 3 farmers expressed preference primarily because of higher price (50%), free advice and prompt payment. For local market produce: 97% expressed pref. because of high price (55%), benefits and lower transport costs.	For export produce: 97% expressed preference mainly (60%) because of long business relation. For local market produce: 100% expressed preference, mainly (75%) because of long business relation.	For export produce: No preference expressed. For local market produce: 96% had no preference.

## Appendix 2 (continued)

Observation	Kirinyaga	Meru	Maragua
<b>Major production problems</b>	High input prices: 52%	Lack of water for irrigation: 87%	Low rainfall: 70%
	Plant diseases: 50%		High input prices: 64%
	Pests: 27%	High input prices: 62%	Pests and diseases: 59%
	Inadequate water for irrigation: 15%		
<b>Major marketing problems</b>	Low producer prices: 87%	Low producer prices: 60%	Low prices: 89%
	Low local consumption: 21%	Lack of markets: 51%	Lack of markets: 49%
	Lack of markets: 13%	Transport constraints: 38%	

## Appendix 3

**Summary findings on pyrethrum and sheep marketing in Meru**

Observation	Pyrethrum	Sheep
Proportion of farmers growing/raising	17%	44%
Harvesting/selling	Throughout the year, with a peak in January–April. Selling of dried flowers also throughout the year.	Throughout the year.
Market outlets	Through the cooperative society or direct to Pyrethrum Board of Kenya (100%).	Farm gate: 100% Local butchers: 97% Traders: 3%
Sources of market information	Not stated.	Buyers: 48% Neighbours and buyers: 35%
Farmers' organizations	Pyrethrum coop. society exists.	Farmers not organized.
Farmers awareness of alternative sales outlets	86–100% do not believe there are any alternative market outlets.	100% do not believe there are any alternative outlets.
Farmers opinion if new sales outlets have arisen since liberalization	No new outlets: 100%	No new outlets: 100%
Farmers' opinion on who decides the price	Farmers, farmers and buyers, or processors (Few farmers gave any indications).	Farmers and buyers.
Farmers' involvement in price-setting now compared to pre-liberalization	Not a single farmer feel more involved in price-setting now.	Farmers feel more involved in price-setting now.
Farmers' opinion on outlets offering same price for same quality	92% believe that all outlets have the same price for same quality of pyrethrum.	Majority believe that different outlets have different prices for the same quality of sheep.
Farmers' opinion on freedom to choose outlet offering highest price	Farmers are not quite sure that they have freedom to choose outlet with highest prices (due to limited choice of outlets). The answers were 50% for and 50% against.	Farmers believe that they have the freedom to sell to outlet offering highest price.
Barriers encountered	Barriers relate to membership and membership fees of cooperatives (15%).	Farmers believe there are few barriers, if any.
Preference for one outlet over others	No preference (due to their non-existence).	Preference determined by price.

## Appendix 4

## Summary findings on milk marketing

Observation	Kirinyaga	Meru	Maragua
Proportion of farmers keeping dairy cattle	75%	61%	32%
Market outlets	Cooperative society: 34% Neighbours: 28% Nearby shopping centres: 19%	Brokers: 33% Cooperative society Neighbours	Neighbours and local shopping centres: 52% Neighbours: 38%
Distance to market	Within 2 km: 100%	Within 2 km: 84%	Within 2 km: 95%
Mean of transportation	On foot: 63% Bicycle: 30%	Not transported: 100% (presumably brokers buy at farm-gate and transport themselves)	On foot or bicycle: 81%
Source of market information	Buyers: 54% Observation in market: 17% Neighbours: 11%	Buyers: 64% Neighbours: 16%	Neighbours: 67% Observation in market: 14%
Farmers organization	50% are members of groups.	52% are members of groups.	None are group members.
Farmers awareness of alternative sales outlets	97% believe there are several alternative sales outlets, e.g. brokers, dairy cooperative society, neighbours and local hotels. 59% believe there are two alternative outlets.	91% believe there are several alternative sales outlets, e.g. brokers, neighbours, dairy cooperative society. 74% believe there are two alternative sales outlets.	Only 19% believe there are alternative sales outlets. Of these 19%, only 4/5 believe there are more than one alternative.
Farmers opinion on if the new sales outlets have arisen since liberalization	Yes: 97% No: 3%	Yes: 91% No: 9%	No indication
Proportion of farmers using new outlets	35%	92%	5%
Reasons for farmers using new outlets	Higher prices and shorter period of payment.	Better organized, higher prices and prompt payment.	Better organized.
Farmers' opinion on who decides the price	Buyers: 66% Farmers and buyers: 23% Farmers: 11%	Buyers: 51% Farmers and buyers: 49%	Farmers: 60% Buyers and farmers: 33%
Involvement in price-setting now compared to pre-liberalization	More involved now: 31% Less involved now: 69%	More involved now: 66% Less involved now: 34%	More involved now: 76% Less involved now: 24%
Proportion of farmers believing all outlets offer the same price for the same quality	18%	13%	0%



Appendix 4 (continued)

Observation	Kirinyaga	Meru	Maragua
Proportion of farmers believing they have the freedom to choose the outlet with highest price	100%	100%	71%
Barriers encountered	No marketing barriers encountered	No marketing barriers encountered	No marketing barriers encountered
Preference for one outlets over others	Preference: 97% Reasons: Free advice: 54% Long business relation: 24%	Preference: 98% Reason: Long business relation: 53%	Preference: 25% Reason: Long business relation

The Swedish International Development Cooperation Agency (Sida) has supported rural development programmes in Eastern Africa since the 1960s. It recognizes that conservation of soil, water and vegetation must form the basis for sustainable utilization of land and increased production of food, fuel and wood.

In January 1998, Sida inaugurated the Regional Land Management Unit (RELMA) based in Nairobi. RELMA is the successor of the Regional Soil Conservation Unit (RSCU), which had been facilitating soil conservation and agroforestry programmes in the region since 1982. RELMA's mandate is to contribute towards improved livelihoods and enhanced food security among small-scale land users in the region, and the geographical area covered remains the same as previously, namely, Eritrea, Ethiopia, Kenya, Tanzania, Uganda and Zambia. RELMA's objective is to increase technical know-how and institutional competence in the land-management field, both in Sida-supported programmes and in those carried out under the auspices of other organizations.

RELMA organizes training courses, workshops and study tours, gives technical advice, facilitates exchange of expertise, and initiates pilot activities for the development of new knowledge, techniques and approaches to practical land management.

To publicize the experiences gained from its activities in the region, RELMA publishes and distributes various reports, training materials and a series of technical handbooks.

**About this book:**

*Marketing of Smallholder Produce* is a synthesis of case studies in Meru, Kirinyaga and Murang'a (Maragua) Districts in Kenya. It provides an economic analysis of farm-level entrepreneurship in the food and cash crop sectors. The report aims at identifying how the marketing of agricultural products affects food availability and farmers' welfare, as well as identifying opportunities and constraints in marketing. Following enumeration and interviewing of about 90 farmers, their opinions on access to credit, major sources of price information and factors that constrain effective commercialization of farm production were identified and are presented here.

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