EFFECTS OF POPULATION CHANGE ON LAND USE IN KISII DISTRICT, KENYA.

By

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DECLARATION

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

Signed _____

Candidate

This Thesis has been submitted for examination with my approval as University Supervisor

Signed _____

Supervisor.

DEDICATION

This work is dedicated to my Mother, the late Maria T. Mochari and to my Father, Mr. S. B. Begi.

and

All my brothers and Sisters

and

My people of Gusiiland.

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Omare C. N.

ABSTRACT

The relationship between population change and land use is a very essential pre-requisite for achieving proper planning policies on employment and production. In this study the population change in relation to the production patterns and trends in Kisii are discussed. It has been observed that not only population change influences land use practices but the relationship between the two variables i.e. population change and land use, incorporate also the influence of other independent variables inherent in historical economic development.

The study foresees that there would be discernable upper-limit to the increased production of coffee, tea, and pyrethrum in Kisii district. Once the upper-limit has been reached population growth will induce the number of workers per unit land and income levels to and below subsistence level. Once subsistence will no longer be sustainable out migration forces will set in motion.

This study suggest that the production patterns require complete transformation i.e. change from industrial (cash) crop to Horticultural production not only for increase in overall per capita incomes but also to allow for increase in subsistence production for the increasing population. Horticultural production requires

less land and give higher potential returns to both unit of land and labour. Uprooting of coffee trees has been suggested; and change in the eating habits by adoption of potatoes in place of maize as staple food has also been suggested. It has also been argued against employment creation in agricultural production and the need to have non-agricultural activities in the district.

The study foresees that diversification of agricultural production alone will not sustain the growing needs for income earning and employment opportunities for the increasing population. To this end the study recommends further research to examine the relationship between population change and non-farming activities in the district.

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CHAPTER ONE

1.1. STATEMENT OF THE PROBLEM

Kisii district is in south western Kenya, in Nyanza Province. Until 1961, Kisii district was part of South Nyanza District as an administrative unit that replaced the former Kavirondo district. But as presently constituted Kisii district consists of one homogeneous ethnic unit, the Gusii or Abagusii.

The Abagusii population in 1900 was about 105,000 In 1938 it had increased to about 140,000 growing at an annual growth rate of 0.5 per cent. From 1938 to the first census in 1948, the Abagusii population had jumped to 225,108. The Abagusii population might have been growing at an average growth rate of 1.2 per cent in 1930s, rising to 3.7 per cent in the 1940s. Accepting the census figures for 1948 and 1962, the Abagusii population appears spectacular. The comparative figures for the census are 225,108 for 1948 and 519,418 for 1962 giving an annual growth rate of about 7.0 per cent.[1] The Abagusii population had risen to 661,465 in 1959 giving an annual average growth rate of 3.9 per cent between the census years 1962 and 1969.

Table 1 shows the average annual gowth rates for the leading ten most densely populated districts in Kenya as per 1979 population census figures.[2]

Between the census periods 1962 and 1969, Kiambu, Muranga, Siaya and Busia experienced below annual average growth rates. Their rates of natural increase for the given periods are 4.2, 4.3, 4.1 and 3.6 per cent per annum respectively.[3] Comparing the average annual growth rates with natural rates of increase, the low annual average inter-censal growth rates can be attributed mainly to outmigration.

In contrast, between the census years 1969 and 1979, Kiambu, Muranga and Busia experienced above annual average growth rates which almost agree with the rates of natural increase. The other district which experienced above annual average growth rate was Bungoma. The other remaining district experienced below average growth rates. Comparing the 1969 - 1979 annual growth rates with those of 1961-1969 for the latter districts, one can observe that while Siaya has been experiencing a net loss of population since 1962, Kisii and Kisumu districts might have started experiencing a net loss of population after 1969, though they still maintain high growth rates. Most singificantly, perhaps, these higher rates of population growth are occuring in the already most densely settled areas. The high growth rates areas are already posing development problems in Kenya in terms of provision of more and better food, improved access to land and health care and more opportunity to gainful employment.

TABLE 1: ANNUAL INTER-CENSAL GROWTH RATES FOR TEN SELECTED DISTRICTS

District	Annual Growth Rate %	
	1962-69	1969-79
Kisii	3.4	2.6
Kakamega	3.9	3.2
Kiambu	1.6	4.4
Muranga	2.7	4.5
Kisumu	4.1	2.0
Kirinyaga	4.6	3.6
Siaya	2.3	2.3
Busia	2.2	5.0
Bungoma	5.2	4.6
Nyeri	3.9	3.5
KENYA	3.4	4.0

Source; Population Census Reports.

While the high growth rates might be problematic in Kisii district, its distribution and density patterns raises major problems given its small area of about 2,196 square kilometres, of which 197,300 hectares [4] or 90% of the total area is available for crops or livestock while the rest is occupied by rivers, steep hils, roads swamps and infrastructure. As Uchendu and Anthony[5] noted

> "Whatever the rate of population at this period there is no doubt that Gusii economy could have been seriously strained had the environment and unused resources of land which made unsponsored settlement possible in the highlands ..... In the 1960's, however, the Gusii faced another reality: an expanding population on already occupied landbase".

By independence, Kisii district had become one of the most densely populated areas of western Kenya, itself a heavily settled region.[6] The crude densities for Kisii as per 1962, 1969 and 1979 censuses were 234, 304, and 396 per square kilometre respectively. As table 2 shows, Kisii has been and still is, the most densely agricultural district in Kenya. To appreciate these magnitudes of population densities, the amount of good agricultural land or simply arable land per person must be considered. The amount of arable land per capita in Kisii is among the lowest in Kenya, i.e about 0.25 hectares (compared with the national average of 0.51).

TABLE 2 : AVERAGE DENSITY FOR TEN MOST DENSELY POPULATED AGRICULTURAL DISTRICTS, 1969 AND 1979 AND THEIR RANKING (R)

District	Persons per km^2 (Density)			
	1969	R	1970	R
Kisii	304	1	391	1
Kakamega	220	2	290	2
Kiambu	184	4	266	3
Muranga	176	5	256	4
Kisumu	192	3	231	5
Kirinyaga	146	7	198	6
Siaya	151	6	186	7
Busia	119	8	179	8
Bungoma	113	9	165	9
Nyeri	108	10	145	10
KENYA	19	-	25	-

Source: Statistical Abstracts and Population Census Reports.

Table 3 shows the amount of arable land per capita for the ten selected districts.

TABLE 3: ESTIMATED AMOUNT OF ARABLE LAND PER CAPITA: 1969 AND 1979

District	Hectare *	Hectares/Person			
		1969	Rank	1979	Rank
Kisii	220,000	0.33	1	0.25	1
Kakamega	325,00	0.42	3	0.31	3
Kiambu	170,000	0.36	2	0.25	2
Muranga	217,000	0.49	6	0.34	6
Kirinyaga	100,000	0.46	5	0.34	5
Kisumu/Siaya	438,000	0.56	7	0.46	7
Busia	163,000	0.81	9	0.54	9
Bungoma	253,000	0.73	8	0.50	8
Nyeri	160,000	0.44	4	0.32	4
Kenya	7,837,000	0.72	-	0.51	-

* Based on I.L.O Report on Employment and Incomes in Kenya: 5 ha. of medium potential land = 1 ha of high potential and 100 ha. of low potential = 1 ha. of high potential.

Besides the high densities, Kisii district is also characterised by high family sizes with an average household size of 8.8.[6] This means, therefore, that the amount of

arable land per household of 8.8 is about 2.2 ha. The land holding size of 2.22 ha. falls short of the average optimum farm size of 3.05[7] for Kisii district needed for an income of KShs.3,000/- per annum plus subsistence per family of 8.8.

Taking the average optimum farm size of 3.05 ha, Kisii can only support a farm population of about 726,885. Comparing this figure with the 1979 census figure, we find that there is already an overspill farm population of 140,115. The fact that there is already an overspill of farm population implies that Kisii is experiencing some problems to the effect that the needs of the existing population are not adequately met.

The economy of Kisii is basically small holder cash crop and subsistence agriculture. On the small farms are grown a variety of food crops such as maize and bananas, both for consumption and sale. Cash crops include coffee, tea, pyrethrum and passion fruits. These crops are the mainstay of the Kisii economy for there is little else besides agriculture to earn money from outside the district.

The minimum farm size per household of 8.8 needed to meet subsistence requirements only is 1.72 ha., while the amount of land per household at sub-locational level ranges between 1.14 to 4.82 hectares. This means that some aprts of the districts are already suffering

from food shortage. About 27,000 males of 16 and above in the district are landless or without wage employment, and taking the average number of dependants of this male group to be 6, then 162,000 persons can be classified as the poor of the district.[9]

Already the land resource in the district is intensively cultivated such that there is hardly any room left for expansion of crops in some parts of the district. Hence, incidences of overcropping and soil exhaustion and the utilization of lands which are not suitable for production of crops, e.g. steep slopes, swamps, river banks etc, are part of Kisii realities. Thus, the limited land resources is already being rendered less productive or in some incidence, serious damage of the environment has been caused.

Because of the excess population together with the rapid population increase, the production of any agricultural land per unit area, given the economic requirements of the people (i.e. more and better food, improved access to land and health care and more opportunity for gainful employment), is becoming limited. Furthermore, in the absence of any non-agricultural activities, this will ultimately lead to higher rates of out-migration which was minimal between the census years 1962 and 1969, as characterized by high growth rates of 3.4 per cent compared with a growth rate of 2.6 per cent between the census years 1969 and 1979.

As already mentioned, migration to urban areas has its own dimension of problems. Hence, the solutions to employment problems must rely upon the development of the rural areas so as to relieve the population in the urban centres due to high rates of rural urban migration.

As Garst [10] wrote:

> "During most parts of the 1950's and the 1960's development planners generally subscribed to the theory of advancement through industrialisation, but unfortunately, it has not generated adequate employment opportunities. Agriculture, therefor is, and will continue to be, the most important sector of employment and export earnings."

Garst notes further that due to high cost of setting each family, opening up new land as a solution to solving the dual problem of production and employment in agriculture has been abandoned. Hence, the only solution left in tackling the dual problem of production and employment is that of intensification by application of new technology. or simply old technology in a more concentrated form, to increase output per acre. He finally concludes that:

"Increased output per unit labour is important, but since employment generation is a principal goal, efficiency takes a secondary position."

In summary, Kisii district is already suffering from limited land resources upon which the economy depends. The high population growth has mainly affected its development. Firstly, the high population growth increases the population of total income that is consumed, thus diminishing the level of domestic saving available for investment. Secondly, the new population requires more development funds to build additional schools, houses, hospitals, roads and machines. Only after the new population is provided for will there be any improvement in the living standards of the people. Thirdly, when the new dependency ratio is increasing, more people are employed simply for the new people without increasing real income per capita. Fourthly, the pressure of people on land and capital reduces the productivity of labour.[11]

It is in view of all this that the relations between population change and land use are important, especially with regard to the national development. National strategies are therefore, required for resolving the problems of population change on land use. The contribution of this study should, therefore, be seen in this context. Given the high rates of population

growth and scarcity of land, the dense agricultural population may be an obstacle to effective use of land unless proper planning and controls are applied. The choice of solutions to ensure higher living standards for the people will depend on the demographic patterns and actions on the improvement of the economic organization of the people.

1.2. STUDY OBJECTIVES AND ASSUMPTIONS

The subject of inquiry of this study is:" Effects of population change on land use". Hence, the main objectives of the study are:

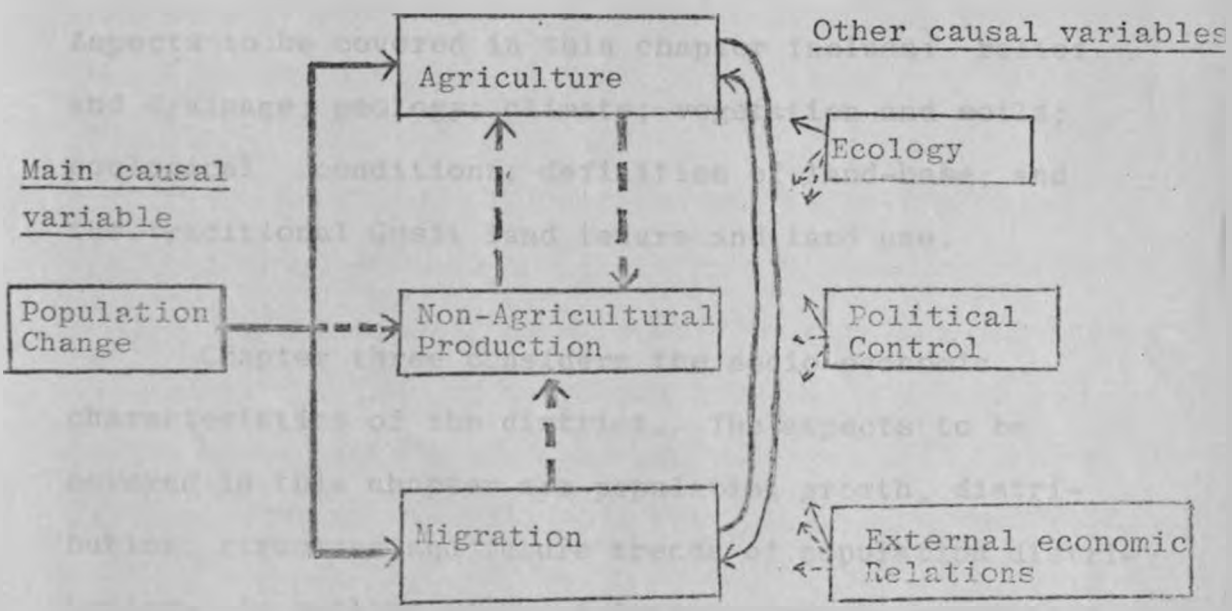
1. To examine how population change has affected agricultural land use in terms of change in crop emphasis and examine how these changes have and/or will affect the incomes per capita.

2. Examine the inter-relationship between the growing labour force, sex ratios and annual population growth rates at divisional level in relation to diminishing land resources and available employment opportunities; with a hope of establishing future population migration trends in the district.

3. Based on the findings, the study will then recommend possible planning approaches

that will take into account both population growth and shortcomings in the existing land use patterns.

The study will assume that it is population change that determines land use practices and not vice versa. However, there are other causal variables that influence land use practices and these include: ecological factors; political control and external economic relations. The model of analysis will also assume that the primary economic branch is agriculture. That is whilst population change may exert an independent influence over other branches of production, much change that occurs in these production is consequent upon agricultural change. Similarly, whilst migration from rural areas can be attributed simply to population growth, in reality that relationship is a reflection on the nature of changes that occur in agriculture. This is illustrated diagramatically below.



Source: Carlsen, J., and Moody, T., 1976[12]

In this diagram, the solid arrows represent relationships which are discussed in detail in the study. The broken arrows represent relationships whose existence is acknowledged, but are not specifically discussed.

1.3 SCOPE AND ORGANIZATION OF THE STUDY

In relation to the objectives of the study stated above, the focus will be on agricultural production in relation to population change. This study is organized in six chapters. Chapter one introduces the study. It represents the problem, objectives and assumptions of the study and review of related literature.

Chapter two considers the physical and socio-economic background to development in the district. Aspects to be covered in this chapter include: relief and drainage; geology; climate; vegetation and soils; ecological conditions; definition of land-base; and the traditional Gusii land tenure and land use.

Chapter three considers the socio-economic characteristics of the district. The aspects to be covered in this chapter are population growth, distribution, structure and future trends of population distribution. An outline of the existing economic activities (agricultural and non-agricultural) will be given and broad land use patterns in relation to population

distribution. The chapter will basically try to find out the relationship between the existing development patterns in relation to population distribution and potential labour force.

Chapter four will focus on the evolution of the present stage of agricultural development in relation to population change. Hence, this chapter will first deal with agricultural development under the colonial administration; secondly, an examination of the present stage of agricultural development in relation to population increase and production per unit of land and labour. Finally, the chapter will discuss: household size, size of holding and migration trends; and size of holding and production patterns in relation to the results of a household survey conducted in one of the most densely populated - and with least inter-censal growth rates, division in Kisii district.

Chapter five will discuss the major findings and their implications to planning; and based on these findings, recommendations of possible planning approaches that will take into account both population growth and shortcomings in existing land use patterns will be given. Finally, chapter six will give the summary and conclusion.

1.4. RELATED LITERATURE REVIEW

Many districts in the highlands of Kenya are suffering from land shortage due to high population growth rates. As Ominde[13] wrote:

> "..... population growth has created one of the most congested parts of Kenya. By 1950's pressure of population on cultivable land had reached critical proportions and considerable areas of steep hillside, were being cleared for cultivation with disastrous results. Fragmentation has been one of the major problems of land use in the area".

Allan [14] noted that in Nyanza Province, the old farming systems have long since broken down as a result of population growth and cultivation of cotton. Ominde[15] also calls attention to the pressure on land resources in Central and North Nyanza which are faced with problems of diminishing space and falling yields of the basic cereal crops.

Bernard and Anzagi[16] almost agree with Ominde's and Allan's observations but add that due to reduction in fallow and abandoning of conservation practices, cultivators have often been forced to replace a crop

making a higher nutrients demand on the soil with the tolerant of poorer soil condition and gave an example of replacing of maize by cassava. Another tendency they observed especially under population pressure is that of altering diets from protein-rich traditional staples, such as millet and sorghum to carbohydrates such as yams.

Boserup[17] summarises the causes of the above changes on land use by regarding population growth as the independent variable which in turn is a major factor of determining agricultural development. His line of argument is that agricultural changes are caused by population trends and not the other way round. His analysis is based on the frequency of cropping and states that:

> ".... most of or all land added to the sown area as population increases in a given territory was used already as fallow land, pasture, hunting ground, or otherwise ....."

About 85% of Kenya's population live in rural areas and their economy is by and large dependent on agricultural production. To measure the economic development of the rural areas, therefore, one has to determine how the growth in agricultural production per capita has grown/or is likely to grow over time. However, as Gray[18] noted, given the high population growth, the use of agricultural production per capita is misleading because of the existence of very large family size with poor

people having larger families. Hence, the growth of economic development is usually retarded by too large a population or by a high rate of population growth in most countries.

Gray argues further that population growth induces the number of workers per acre, the average incomes to and below the level of subsistence and ones subsistence is no longer sustainable, forces tend to set in motion and such forces including migration susceptibility to diseases etc. will tend to reduce population size to the equilibrium level. The intensity of labour on arable land will probably retard economic development. Furthermore, the impact of population growth on the key variables such as rate of capital accumulation, capital out-put ratio and total population in the productive age group to resources available is, mainly, that of outmigration in search of gainful employment opportunities.

In summary, it can be observed that population growth is an important factor in determining the patterns of land use. This study will pursue Boserup line of argument and see how change in crop patterns has been influenced by population growth. An attempt will also be made to measure the trend in economic development in Kisii district given the high rate of population growth on resources. Finally, based on the

trends on the production patterns, an assessment will be made on the future population movement. The latter will largely be based on Gray's assumption that population growth induces the number of workers per acre, the average incomes to and below the level of subsistence and once subsistence is no longer sustainable, forces such as out-migration tend to set in motion.

1.5 METHODS OF DATA COLLECTION AND ANALYSIS

During the whole exercise of data and information collection, three main methods were used. The first one was through documentary research aimed at examining relevant documents in government departments. These were the sources of statistical information that was necessary for the exploration of the existing situation in the country as a whole and the study area in particular.

The second method was through personal contact and open interviews with departmental heads , e.g. District Agricultural Officer, Field Officers, Chiefs and Assistant Chiefs in Kisii district, particularly when conducting a household survey in Manga Division.

The third method was that of questionnaires, copies of which are included in Appendix I .These were used in a household survey conducted in the most densely populated

- with last inter-censal growth rates, division in Kisii district. The purpose of the household survey is to examine the relationships between: household size, size of holding and migration trends; and size of holding and production patterns. A total of hundred and sixty households were interviewed between mid-August and mid-September, 1980. Four most densely populated rural sub-locations in Manga division, Eronge and Central Kitutu locations were chosen in each sub-location (two from each location), forty households were interviewed. The households were chosen at random with the help of the Assistant Chiefs of each sub-location.

Though the questionnaires were in English, the whole interview was conducted in "Ekegusii", the native language of the Gusii. The information sought in the questionnaire included: household size and composition; migration trends by inquiring on how many family members lived away; production structure and land holding sizes. The data was analysed manually and summarized in tables. For justification of inference made from the analyses of the documentary information, the analysis dependent on frequencies, percentages, and averages.

1.6. PROBLEMS OF DATA COLLECTION AND ANALYSIS

The major problem encountered was that of inconsistency in the way some of the information was documented especially, the district agricultural annual reports.

For example, while in one year data is given on the acreage under various crops, in others only the volume of exports are given. Hence, in some years acreage under crops is based on their productivity per unit of land and compared with the total volume of exports.

The other problem was with the respondents who were either unable or unwilling to answer some questions as in the case of their incomes, exact acreage of their holdings, acreage under various crops and more important, on the number of their children. To this end, the household survey is only important in determining the popularity of various crops and illustrating the relationship between subsistence production and cash crop production and also livestock production and crop production as acreage diminishes. This will be discussed in chapter four.

References:

1. Uchendu, V.C. and Anthony, K.R.M., 1975: Agricultural Change in Kisii District, Kenya EALB, Nairobi.

2. Kenya Population Census, 1979: (Unpublished) Central Bureau of Statistics.

3. Kenya, 1978: Human Settlement in Kenya: A Strategy for Urban and Rural Development, Physical Planning Department, Ministry of Lands and Settlement.

4. Kenya, 1980: Kisii District Development Plan, 1979-83, Ministry of Economic Planning and Development.

5. Uchendu and Anthony, 1975: op. cit.

6. Ominde, S.H., 1963: Land and Population Movement in Western Kenya. Unpublished Ph.D. Thesis, Makerere University.

7. Bernard, F.E. and Anzagi, S.K., 1979: Population Pressure in Rural Kenya: Unpublished Project, Ohio University Anthens.

8. Bernard and Anzagi, 1979: op. cit.

9. Kenya, 1980: op. cit.

10. Garst, R.D., 1972: The Spatial Diffusion of Agricultural innovations in Kisii District, Kenya: Unpublished Ph.d. Thesis, Michigan State University.

11. Boserup, E., 1965: The Conditions of Agricultural Growth: George Allen and Unwin Ltd., London.

12. Carlsen, J. and Moody, T., 1976: Population Pressure, Agricultural Productivity and Rural Employment in Kenya I.D.S. Unpublished Project Paper, Copenhagen, Denmark.

13. Ominde, S.H., 1968: Land and Population Movement in Kenya: Northwestern University Press, Evenston.

14. Allan Cited in Hance, W.A., 1970: Population, Migration and Urbanization: Columbia University Press, New York.

15. Ominde, S.H., 1968: op. cit.

16. Bernard and Anzagi:, 1979, op. cit.

17. Boserup, E., 1965: op. cit.

18. Gray, H, P. and Shant, S.T., 1970: Economic Development and Population Growth: D.C. Heath and Company, Massachusetts.

CHAPTER TWO

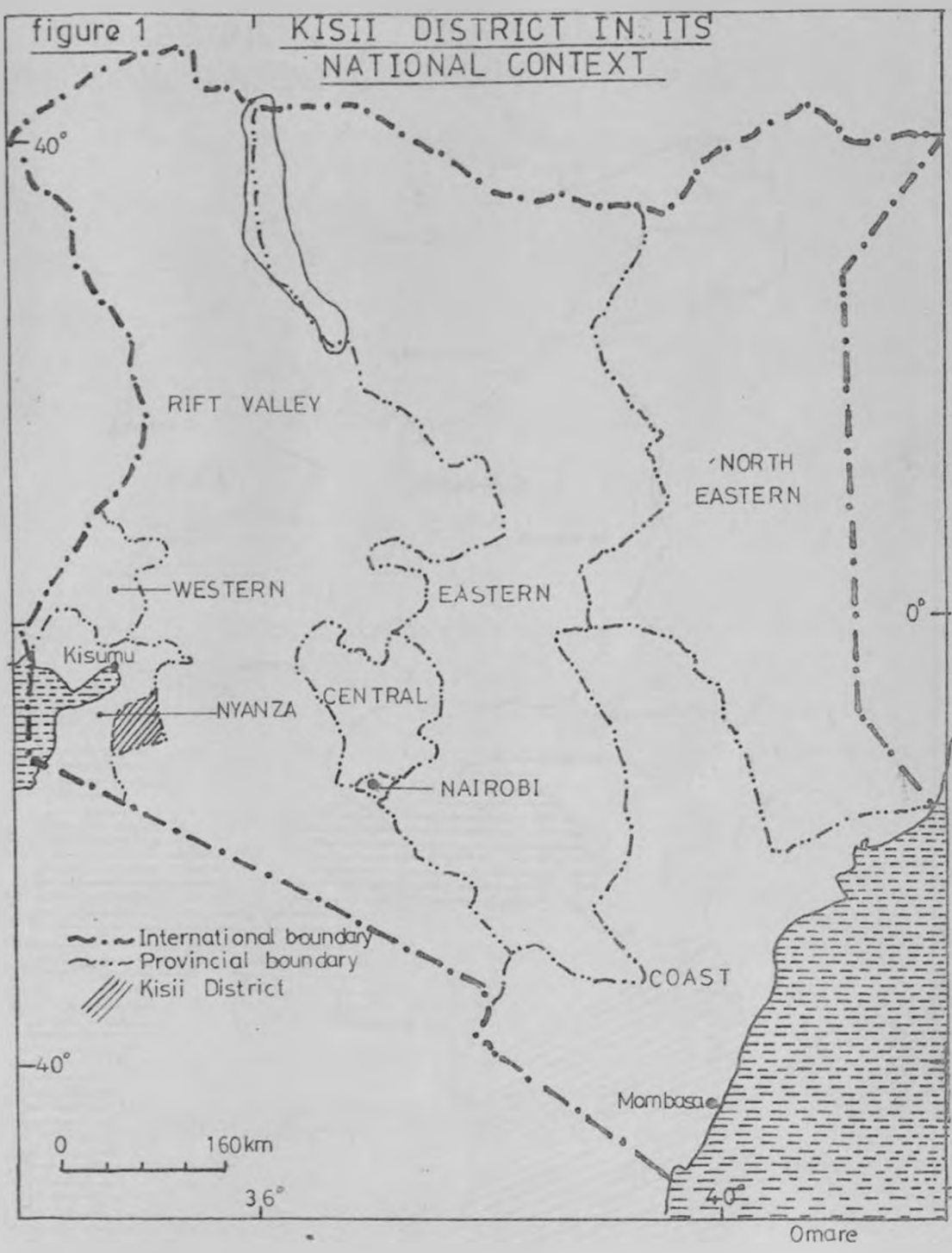
PHYSICAL AND SOCIO-ECONOMIC BACKGROUND TO LAND USE

2.0. INTRODUCTION:

Kisii District is in South Western Kenya, about 400 kilometres West of Nairobi and 50 Kilimetres East of Lake Victoria. It is occupied by the Gusii Tribe. The politcal unit of Kisii is 2196 square kilometres situated between 34° 37'E and 35° 07'E and between 0° 82'S and 0° 25S. The district bonders Kericho district to the East, South Nyanza district to the West and Narok district to the South. (See figure 2). In 1979, it had a population of 867,438. Included in the district is the former settlement area, now Borabu Location of 653 square kilometres.

The district ranges in elevation from 1525 metres to over 2135 metres above sea level. The region is characterized by cool temperature and abundant rainfall. However, due to its high population densities, nearly all suitable land for agriculture has been utilized. Thus one will hardly find any of the orignial forest cover remaining. The high altitudes of Kisii, the presence of good soils, an adequate rainfall which is well distributed, accessible surface water and the high potential land which the district commands for the production of both food crops

figure 1 KISII DISTRICT IN ITS NATIONAL CONTEXT



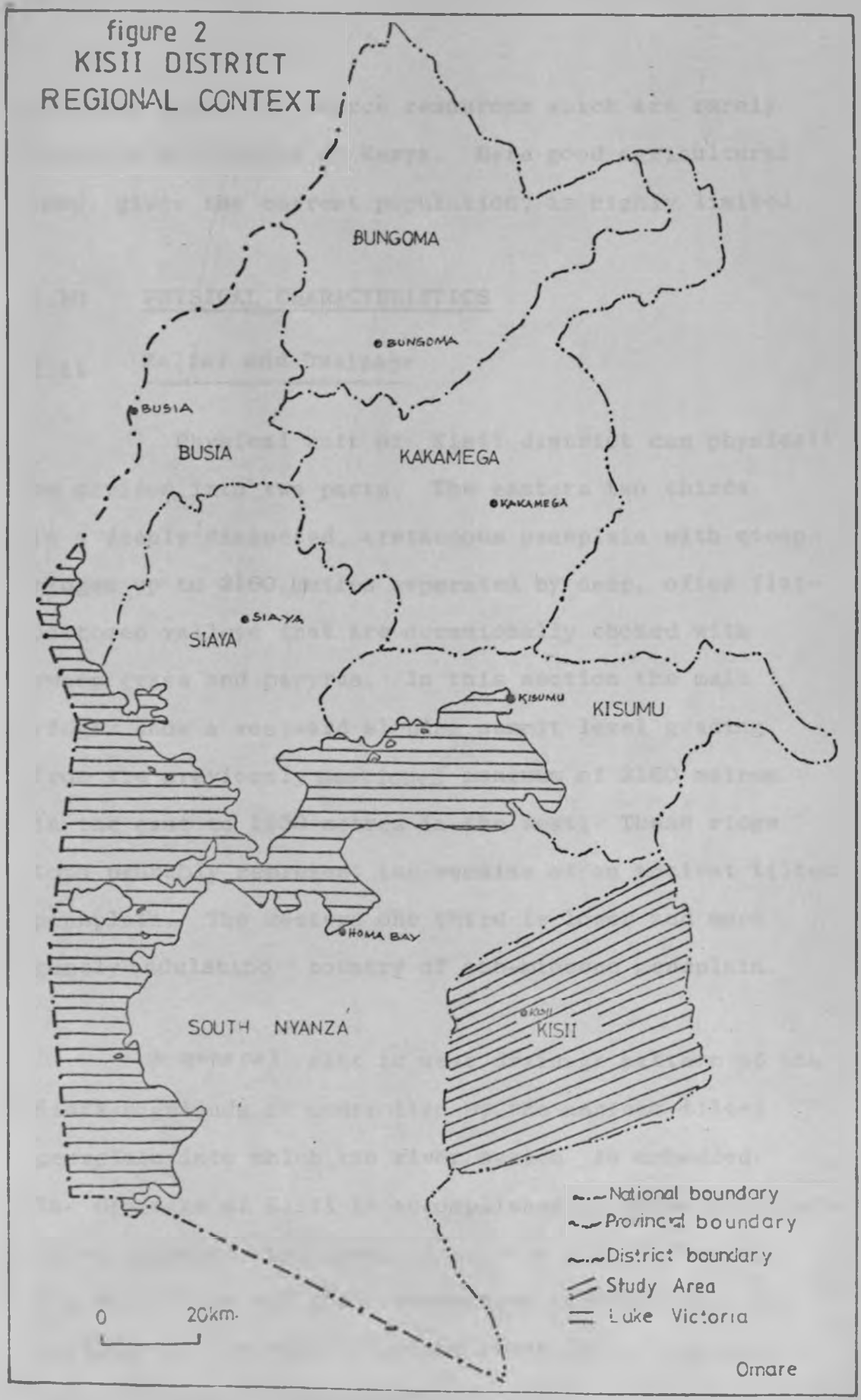


figure 2
KISII DISTRICT
REGIONAL CONTEXT
BUNGOMA
BUNGOMA
BUSIA
BUSIA
KAKAMEGA
KAKAMEGA
SIAYA
SIAYA
KISUMU
KISUMU
HOMA BAY
SOUTH NYANZA
KISII
KISII
National boundary
Provincial boundary
District boundary
Study Area
Lake Victoria
0
20km.
Omare

and cash crops are scarce resources which are rarely found in most parts of Kenya. Here good agricultural land, given the current population, is highly limited.

2.10 PHYSICAL CHARACTERISTICS

2.11 Relief and Drainage

Physical unit of Kisii district can physically, be divided into two parts. The eastern two thirds is a deeply dissected, cretaceous peneplain with steep ridges up to 2160 metres seperated by deep, often flat-bottomed valleys that are occasionally choked with swamp grass and papyrus. In this section the main ridges show a westward sloping summit level grading from the previously mentioned maximum of 2160 metres in the east to 1950 metres in the west. These ridge tops probably represent the remains of an ancient tilted peneplain. The western one third is lower and more gently undulating country of sub-miocene peneplain.

A general east to west drainage pattern of the Kisii highlands is controlled by the ancient tilted peneplain into which the river system is embedded. The drainage of Kisii is accomplished by three principle river systems: the Sondu River, the Mogusii River, the Kuja River and their respective tributaries. The drainage of the whole highland eventually flows into Lake Victoria.[1] (See figure 3).

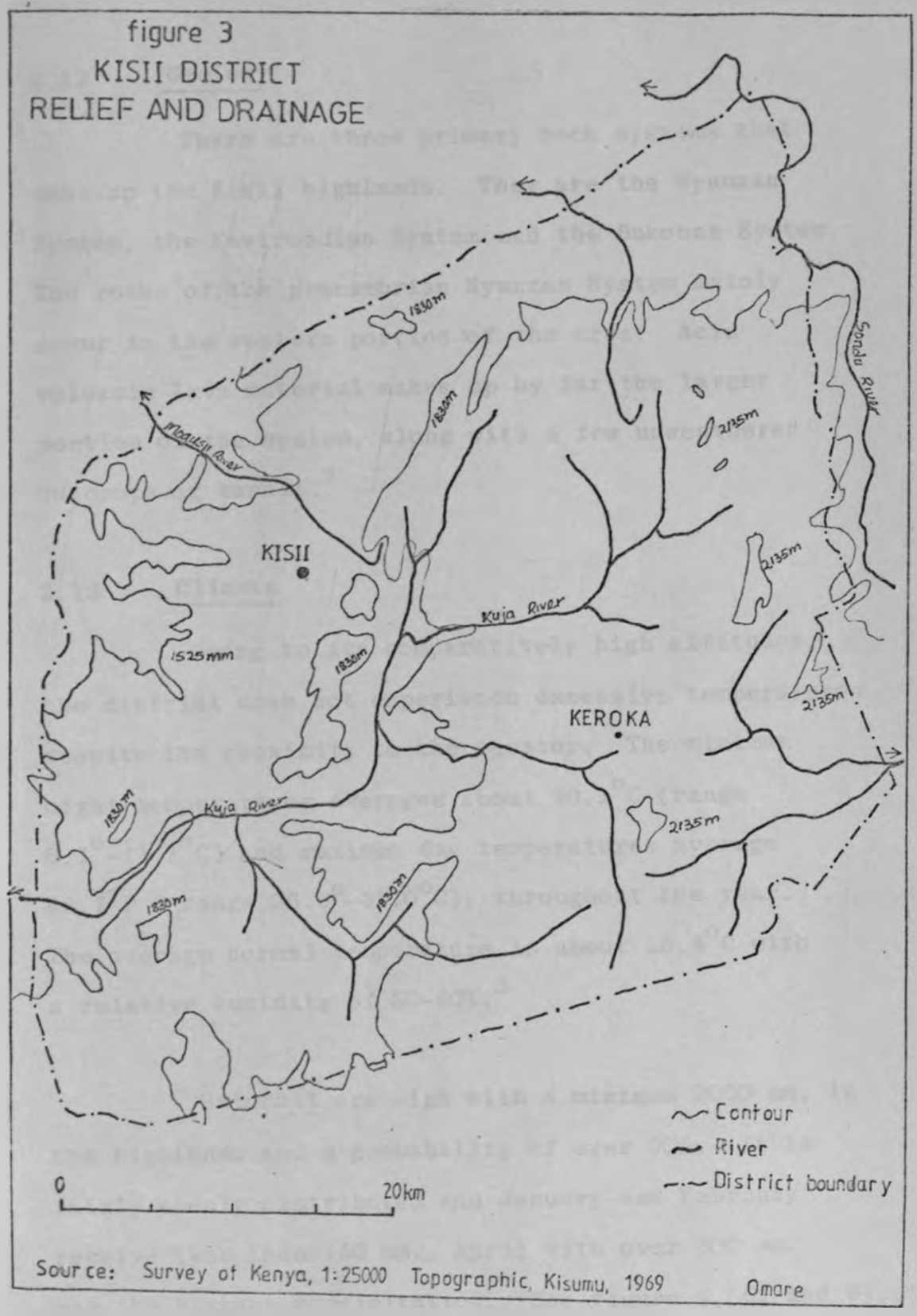


figure 3
KISII DISTRICT
RELIEF AND DRAINAGE
1830m
Mogusii River
1830m
2135m
Sondu River
KISII
2135m
Kuja River
1525mm
1830m
KEROKA
2135m
1830m
Kuja River
2135m
1830m
1830m
Contour
River
District boundary
0
20km
Source: Survey of Kenya, 1:25000 Topographic, Kisumu, 1969
Omare

2.12 Geology

There are three primary rock systems that make up the Kisii highlands. They are the Nyanzan System, the Kavirondian System and the Bukoban System. The rocks of the precambrian Nyanzan System mainly occur in the western portion of the area. Acid volcanic lava material makes up by far the larger portion of the system, along with a few unweathered outcrops of basalt.[2]

2.13 Climate

Owing to its comparatively high altitudes, the district does not experience excessive temperatures despite its proximity to the equator. The minimum night temperatures averages about 10.1°C (range 8.1°-11.1°C) and maximum day temperatures average 28.7°F (range 26.6°-31.0°C), throughout the year. The average normal temperature is about 19.4°C with a relative humidity of 50-60%.[3]

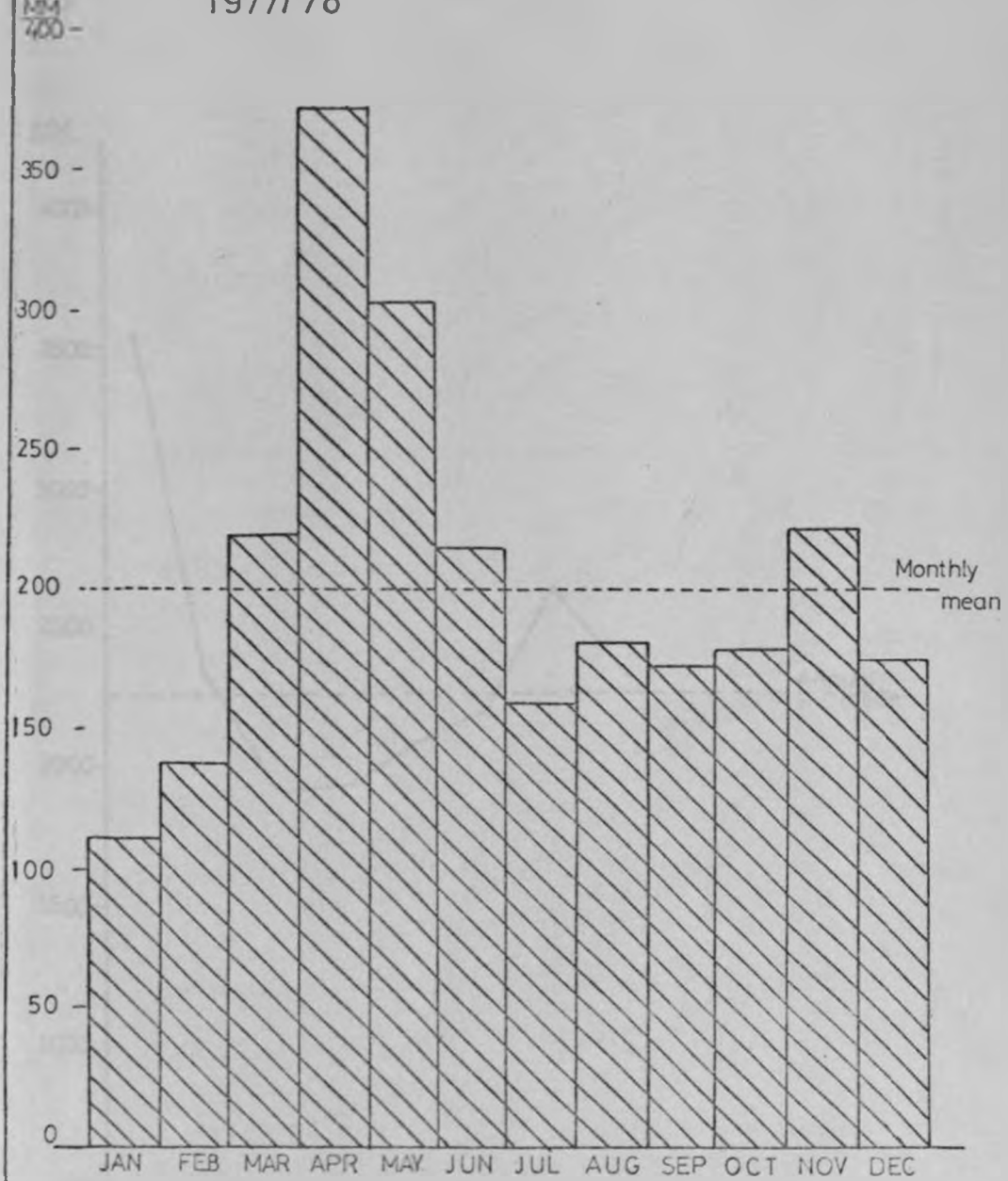
Rainfall are high with a minimum 2000 mm. in the highlands and a probability of over 90%. It is fairly evenly distributed and January and February receive less than 150 mm., April with over 300 mm. has the highest precipitation. (See figure 4, 5, and 6).

figure 4

KISII DISTRICT

MONTHLY AV. PRECIPITATION

1977/78

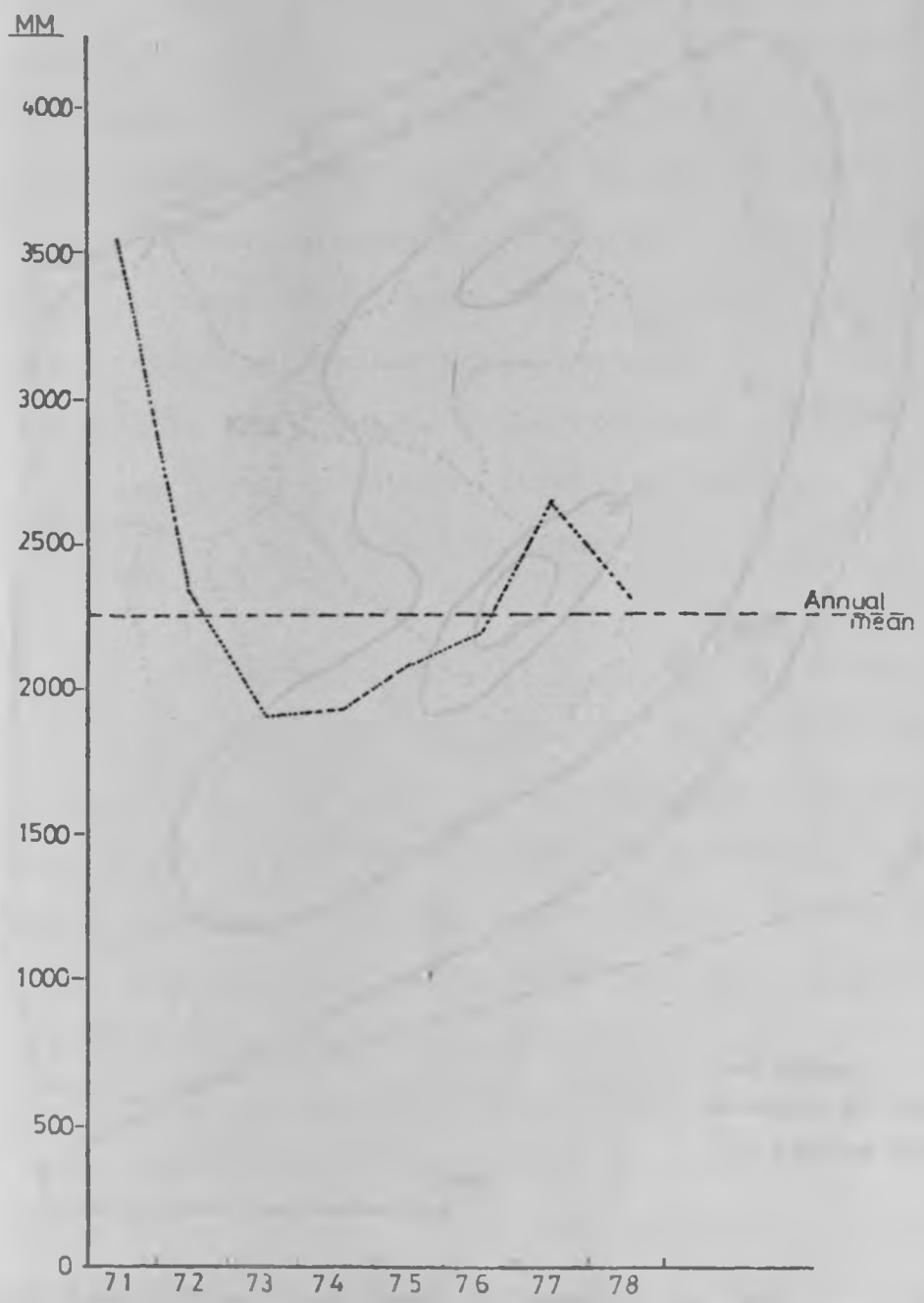


Source: Statistical Abstract, 1979

figure 5

KISII DISTRICT

ANNUAL RAINFALL TOTALS

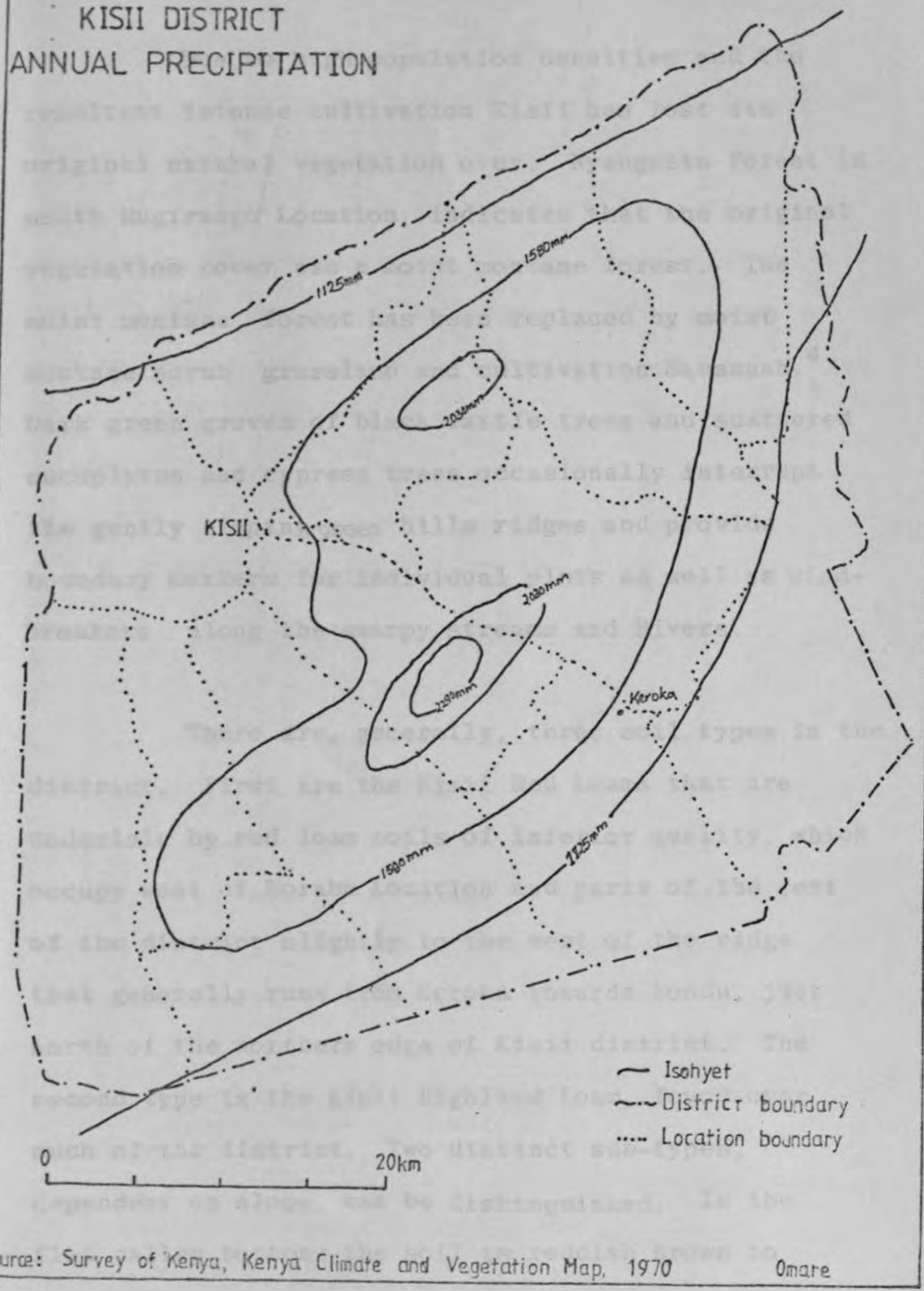


Source: Statistical Abstract, 1979

figure 6

KISII DISTRICT

ANNUAL PRECIPITATION



Source: Survey of Kenya, Kenya Climate and Vegetation Map, 1970 Omare

2.14 Vegetation and Soils

Due to high population densities and the resultant intense cultivation Kisii has lost its original natural vegetation over. Nyangweta Forest in south Mugirango Location, indicates that the original vegetation cover was a moist montane forest. The moist montane forest has been replaced by moist montane scrub grassland and cultivation Savannah.[4] Dark green groves of black wattle trees and scattered eucuplytus and cypress trees occasionally interrupt the gently sloping green hills ridges and provide boundary markers for individual plots as well as wind-breakers along the swampy streams and Rivers.

There are, generally, three soil types in the district. First are the Kisii Red Loams that are underlain by red loam soils of inferior quality, which occupy most of Borabu Location and parts of the rest of the district slightly to the west of the ridge that generally runs from Keroka towards Sondu, just north of the northern edge of Kisii district. The second type is the Kisii Highland Loam, found over much of the district. Two distinct sub-types, dependent on slope, can be distinguished. In the flat valley bottoms the soil is reddish brown to red and is quite deep due to deposition. On the hill-sides and hilltops the soil is much shallow and stoney, with an occasional rock outcrop interpersed.

The third soil type, found largely on the lower part of the district is the Kisii Savannah loam. A very rough indication guide would be west of the main road entering Kisii from the north, going through Kisii town and then south through Ogembo to Nyangusu. This soil is usually shallow and variable in colour from reddish brown to gray. Rock outcrops are common, erosion can be severe and runoff is quick. The best agriculture is confined to pockets of deep soil on the valley bottoms.[5]

2.2.0 ECOLOGICAL CONDITIONS AND ZONES

Ecologically, the district lies within the Kikuyu and star grass zone both of which are normally of high agricultural potential. The Kikuyu grass zone roughly [illegible] tween 1800 and 200m contour line. The star grass zone lies below 1,800 m. contour. The Kikuyu grass zone is suitable for maize, coffee and exotic cattle. Table 4 gives a summary of the ecological zones of Kisii district. (see also figure 7)

2.3 DEFINITION OF LAND-BASE

The Gusii had first settled in Nyanza Province in the 16th Century as a territorial expansion of the Bantu of the Lacke Victoria Basin. By 1800 they had been mostly pushed out of the Kano Plains and Kavirondo Gulf shore by the successive immigration of the luos.

TABLE 4 KISII DISTRICT: ECOLOGICAL ZONES

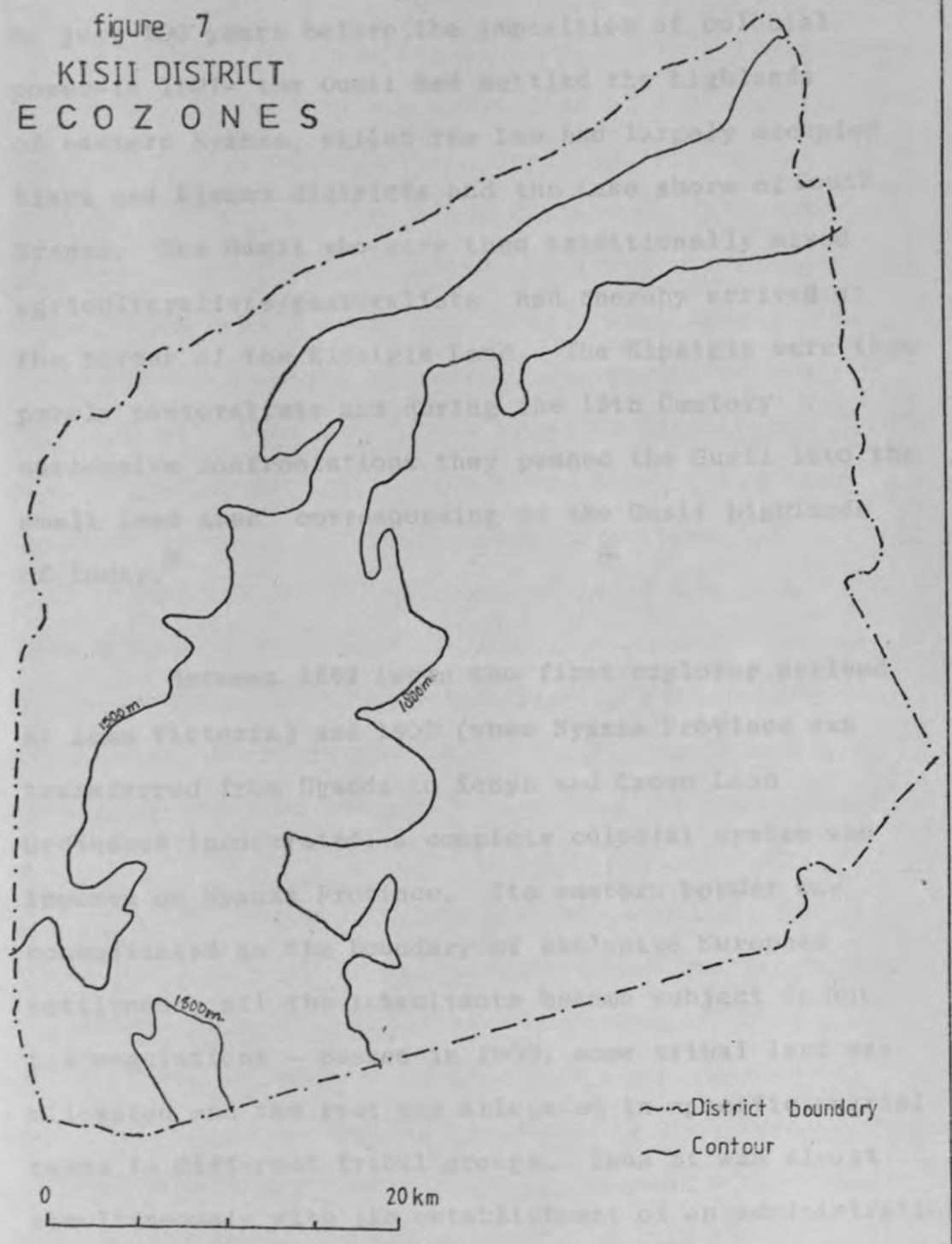
	ZONE I	ZONE II	ZONE III
ALTITUDE IN METRES			
RAINFALL			
NATURAL VEGETATION	Lower Moisture Forest	Moisture Montane Forests	Moist Montane Forests
CURRENT LAND USE	Semi-Permanet Cultivation Grazing, Permanent Cultivation and Grazing	Permanent Cultivation	95% Cleared Permanent.. Cultivation
MAJOR CROPS	Hybrid Maize and Sugarcane	Hybrid Maize and Coffee	Tea and Pyrethrum
OTHER CROPS	Sweet Potatoes, Coffee, Groundnuts, Bananas, Finger-millet Cassava, Beans & Vegetables	Bananas, Local Maize, Finger-millet, Sweet Potatoes Irich Potatoes, Tea, Pyrethrum, Sugar Cane, P/Fruits, Beans & Vegetables.	Hybrid Maize, Coffee, sweet Potatoes, Local Maize, Passion Fruit, Vegetables
ANIMAL HUSBANDRY	Traditional	Dairy	Dairy

Souree: Bernard And Anzagi, 1979; pg. 123.

figure 7

KISII DISTRICT

ECOZONES



Source: Bernard and Anzagi, 1979

Omare

So just 100 years before the imposition of colonial power-in 1907- the Gusii had settled the highlands of eastern Nyanza, whilst the Luo had largely occupied Siaya and Kisumu districts and the Lake shore of South Nyanza. The Gusii who were then traditionally mixed agriculturalists/pastoralists had thereby arrived at the border of the Kipsigis Land. The Kipsigis were then purely pastoralists and during the 19th Century successive confrontations they pushed the Gusii into the small land area corresponding to the Gusii highlands of today.[6]

Between 1862 (when the first explorer arrived at Lake Victoria) and 1903 (when Nyanza Province was transferred from Uganda to Kenya and Crown Land Ordinance inaugurated) a complete colonial system was imposed on Nyanza Province. Its eastern border was consolidated as the boundary of exclusive European settlement; all the inhabitants became subject to hut tax regulations - passed in 1900; some tribal land was alienated and the rest was allocated in specific spatial terms to different tribal groups. Thus it was almost simultaneously with the establishment of an administration, that the colonial authorities passed finite boundaries on the land-base of the population of Nyanza.

The Crown Land Ordinance of 1903, a legislation reinforced in 1933 by the subjective evidence of the Kenya Land Commission,[7] laid down the land tenure policy of Kenya which persists until now. All land in Kenya above 5000 feet above sea level was deemed suitable for white settlement - with the exception of certain tribal native reserves, Kikuyu, Nandi and Kipsigis all lived above this level in large numbers and were assigned tribal reserves. Where there was supposed to exist a risk of inter-tribal war tracts of boundary "no-mans" land were reserved and prohibited from African Settlement. In the highlands (Kipsigsis-Gusii boundary) these were occupied by white settlers at a later date. In the lower Kano Plains (Nandi-Luo boundary) the land was given to Asians for settlement.[8]

The only part of Nyanza Province left for rural migrations of the population after the imposition of these finite boundaries of the land-base, were the inland areas of what is now South Nyanza district - and this was later largely reserved for Luo people. Since 1903 the Gusii have largely been confined to the small area of the present Kisii district.

2.4 GUSII LAND TENURE

The traditional land tenure system in Gusiiland was based on the principle that an individual has

heritable rights over his arable land, mainly cultivated by his wife or wives whilst sharing with his kinsmen other resources such as grazing lands and forests claimed by the community. This principle of individual use of one's arable field and the communal grazing of land could only be maintained as long as there was enough land for everybody.

The rights in arable land were protected by the fact of actual residence. Before population explosion started to be experienced in Kisii, individuals founded homesteads within what they defined as their clan areas. Wealthy Gusii located their wives on dispersed holdings over the rolling hilly land. Sovereign control of land in each clan territory rested with individual clans and between clans, an uncultivated bush or a prominent ridge provided a boundary marker.

Traditionally the main forms of heritable assets were cattle, goats and bridewealth debts. With scarcity of land, rights in land have become a major asset and the principle which govern the bridewealth law[9] are applied to land inheritance. A Gusii inherits as a member of a family, <u>enyomba</u>. The usufructuary rights in a man's assets, like other assets, are divided between the houses of different wives, even while he is alive. Each woman cultivates a number of

of fields given her by her husband. When the husband dies, her children inherit legal rights over these fields. Gusii land law can, therefore, be summarized as one based on the principle of individual sons having a legal claim over "fields cultivated by their mother but owned by their father.[10]

In Chapter four we shall see how increasing population; opportunities for earning cash incomes; and Government policy combined to produce a tenure arrangement which is approaching the classic freehold system.

2.5 LAND USE PATTERNS

A typical Gusii farm consists of a long strip of land running from the top of a ridge to the valley bottom and includes the farmer's homestead.
The traditional land use among the Gusii was governed by the requirements of two major enterprises: food staples-notably finger millet-and cattle. A distinction was therefore made between arable lands and grazing lands. The communal grazing lands were defended by Gusii elders and initiated men who lived in cattle villages (ebisarate) up to 1912 when the colonial administration forbade Gusii access to the cattle villages.[11]

In the residential areas, three types fields could be distniguised: the enyomba, the enderemo and the emonga. The enyomba field was/is that portion of a man's arable holding that was/is cultivated by each of his wives to meet subsistence needs. The enderemo field was a type of "group farm" formerly jointly reclaimed from unoccupied bush, but now borrowed from a local benefactor for a season or by a group of cultivators who do the initial clearing and land preparation in common. Then the co-operators share the fields and work their strips individually. This system of land use was designed to help a young man, whose parents are short of land, to earn cash incomes by investing his labour.

Since the grains produced in enyomba fields were jealously guarded by individual wives the Gusii husbands sometimes cultivated his private field (emonga) for his own private profit. Emonga probably arose from the need to guard against grain shortages and the desire by the family head to have a granary over which he could exercise absolute control. The husband largely depended on his emonga produce for tax money. However, with the introduction of cash crops combined with the increasing population and the modern land tenure system, the need for emonga has long ceased.

REFERENCES

1. Garst, R.D., 1972: "The Spatial Diffusion of Agricultural Innovations in Kisii District, Kenya". Unpublished Thesis, Michigan State University.

2. Ibid.

3. Republic of Kenya, 1980: "Kisii District Development Plan, 1979-83"

4. Garst, R.D., 1972: op. cit.

5. Uchendu, V.C. and Anthony, K.R.M. 1975: Agricultural Change in Kisii District, Kenya" EALB, Nairobi.

6. W.R. Ochieng' Opondo, "The Gusii history" upto 1900" in Ogot, B.A. (ed.) "Kenya Before 1900", EAPH, Nairobi, 1976.

7. Colonial Office, "Report of the Kenya Land Commission", land 4556, London, 1934.

8. Ibid.

9. Levine, R.A., 1962: "Wealth and Power in Gusii Land" (New York, John Willey and Sons, Inc.).

10. Uchendu, V.C. and Anthony, K.R.M., 1975: op. cit.

11. Maxon R., 1972: "British rule in Gusii Land 1907-1963", Unpublished thesis, Syrause.

CHAPTER THREE

POPULATION GROWTH, STRUCTURE AND TRENDS, AND EXISTING DEVELOPMENT PATTERNS.

3.0. INTRODUCTION

This chapter introduces the reader to the population growth and trends, and existing development patterns in Kisii district. In examining these, an attempt will be made to relate population distribution with the existing development patterns. Also to be considered in this chapter is the contribution of the ecological and external economic relations factors to the present land use patterns.

Hence the casual variables to the present land use patterns to be considered in this chapter are: the ecological variables and external economic relations. However, the latter will be considered further in chapter four together with population change (as the main casual variables) and political control.

3.1. . POPULATION GROWTH, STRUCTURE AND TRENDS.

3.1.1 Population Growth

Until 1961, Kisii district was part of South Nyanza, an administrative unit that replaces the former Southern Kavirondo. But as presently constituted, Kisii district consists of almost one homogeneous ethnic unit, the Gusii. In 1900 the Gusii population was estimated at 105,000. This figure had risen to 123,000 in 1929 to about 140,000 in 1939 and 225,108 in 1948. Thus between 1900 and 1938, Gusii population was growing at a rate of 0.5 per cent per annum in the first decades of the century and rising to an average of 1.2 per cent per annum during the 1930's and probably attaining a growth rate of

3.7% in the 1940's.

Accepting the 1948 and 1962 census figures for the Gusii population, the Gusii population was increasing at about 6% per annum. Comparative figures for the two censuses are 225,108 for 1948 and 519,418 for 1962.[2] This suggests that there might have been an under-renumeration in 1948.

The total population of the district increased from 534,793 in 1962 to 675,041 in 1969[3], growing at an average annual growth rate of 3.4%. By 1979, the population was 869,512[4], thus growing at an average rate of 2.6%.

Thus, the above figures indicate that the population growth in Kisii, since 1900, has been increasing slowly up to 1930's and more rapidly in 1940's through 1950's and to early 1960's. Between 1962 and 1969, the population growth rate started declining, though still high compared with the national average of 3.4% per annum. And it would seem that between 1969-1979 the decline in the growth of population was more rapid and was below the national average of 4.0% per annum. Kisii district total population constituted 6.2% of the total Kenya's population in the 1962 and 1969, and 5.7% in 1979.[5]

These figures suggest that either there was a loss of population from the district or decline in the rate of natural increase. These observations will be dicussed further under relevant sub-sections.

Table 5 shows total population and population growth rates within the district. The change in intercensal annual growth rate between the two census periods was more pronounced in Manga and Ogembo divisions. The latter's growth rate was above the district average between 1962-1969 whereas if equalled the district average between 1969-1979. On the other hand, Manga has been experiencing growth rates much below the district average. These changes in inter-censal growth rates will be discussed further when considering the development patterns in the district,(see section 2). Meanwhile it can be observed that Manga (where the household survey was conducted) might have been experiencing a considerable loss of population since 1962,as will be illustrated with the results of the household survey conducted in the area.

TABLE 5: KISII DISTRICT POPULATION TOTALS AND ANNUAL AVERAGE INTERCENSAL GROWTH RATES BY DIVISION: 1962, 1969 AND 1979

Administrative Unit*	Population Totals			Annual Average intercensal Growth Rates (%)	
	1962	1969	1979	1962-1969	1969-1979
Manga	162,245	191,245	224,293	2.4	1.6
Nyamira	126,609	150,032	198,308	2.5	2.8
Irianyi	73,322	93,781	127,097	3.6	3.1
Bosongo	64,522	85,660	119,531	4.1	3.4
Ogembo	103,437	148,237	190,919	5.3	2.6
Kisii Township**	4,530	6,080	9,364	4.3	4.4
Kisii District	534,793	675,041	869,512	3.4	2.6

Source: Population Census Reports; 1962, 1969, and 1979

** - Assumes 1969 Administrative Boundary

* - Assumes 1979 Administrative Boundaries.

TABLE 6: PROJECTED POPULATION DISTRIBUTION, KISII DISTRICT BY DIVISION, 1979

Administrative Unit*	1979	1984	1989	1994	1999
Manga**	214,708	258,797	311,850	375,780	452,815
Nyamira	198,308	238,890	287,862	346,874	417,983
Irianyi**	117,758	142,494	171,707	206,907	249.323
Bosongo**	118,158	143,543	172,970	208,429	251,156
Ogembo	190,919	231,555	279,024	336,224	405,150
Municipality	29,661	32,482	39,139	47,162	56,831
Kisii District	869,512	1,047,761	1,262,552	1,521,376	1,833,258

* - Assumed 1979 Administrative Boundaries

** - Affected by the extension of Kisii MunicipaliBoundary.

Source: Author's Own Observations.

3.1.2. Projected Population Distribution and Densities.

Tables 6 and 7 show the projected population distribution and densities in Kisii district up to the year 1999. It is important to mention here that the ratio of each division's population to the district population in 1979 has been used as the ratio for proportioning the increase of each division's population.

In 1969, the population density for the district was 307. This had risen to 396 in 1979 and is expected to rise to 835 in 1999. An analysis of the sub-locational densities (see Appendix II) reveals that they ranged between 1353 to 123 in 1979 with the highest densities occurring in Manga division and the lowest in Nyamira division (in Borabu location - formerly reserved for the white settlers and now a settlement scheme). Ignoring these extreme densities, because the former occurs in Mwamosioma sub-location near Kisii Municipality and the latter is found in the settlement scheme, the normal rural densities then averaged between 786 (in Bomabacho sub-location, West Mugirango location) and 195 (in Boikanga sublocation, South Mugirango location) in 1979 (see figure 8).

To appreciate these magnitudes, the inverse of population density has been taken and shown as the amount of land per person. As of 1979, the average amount of land

TABLE 7: POPULATION DENSITIES AND AVERAGE AMOUNT OF LAND PER PERSON BY DIVISION: 1979, 1989, AND 1999

Administrative Unit	Population Density (Persons per square kilometre)			Amount of Land per Person (in hectares)		
	1979	1989	1999	1979	1989	1999
Manga	472	685	995	0.21	0.15	0.10
Nyamira	310	450	653	0.32	0.22	0.15
Irianyi	416	607	881	0.24	0.16	0.11
Bosongo	365	534	775	0.27	0.19	0.13
Ogembo	414	605	879	0.24	0.17	0.11
Municipality	847	1118	1623	0.12	0.09	0.06
Kisii District	396	575	835	0.25	0.17	0.12

Source: Author's Own Observation

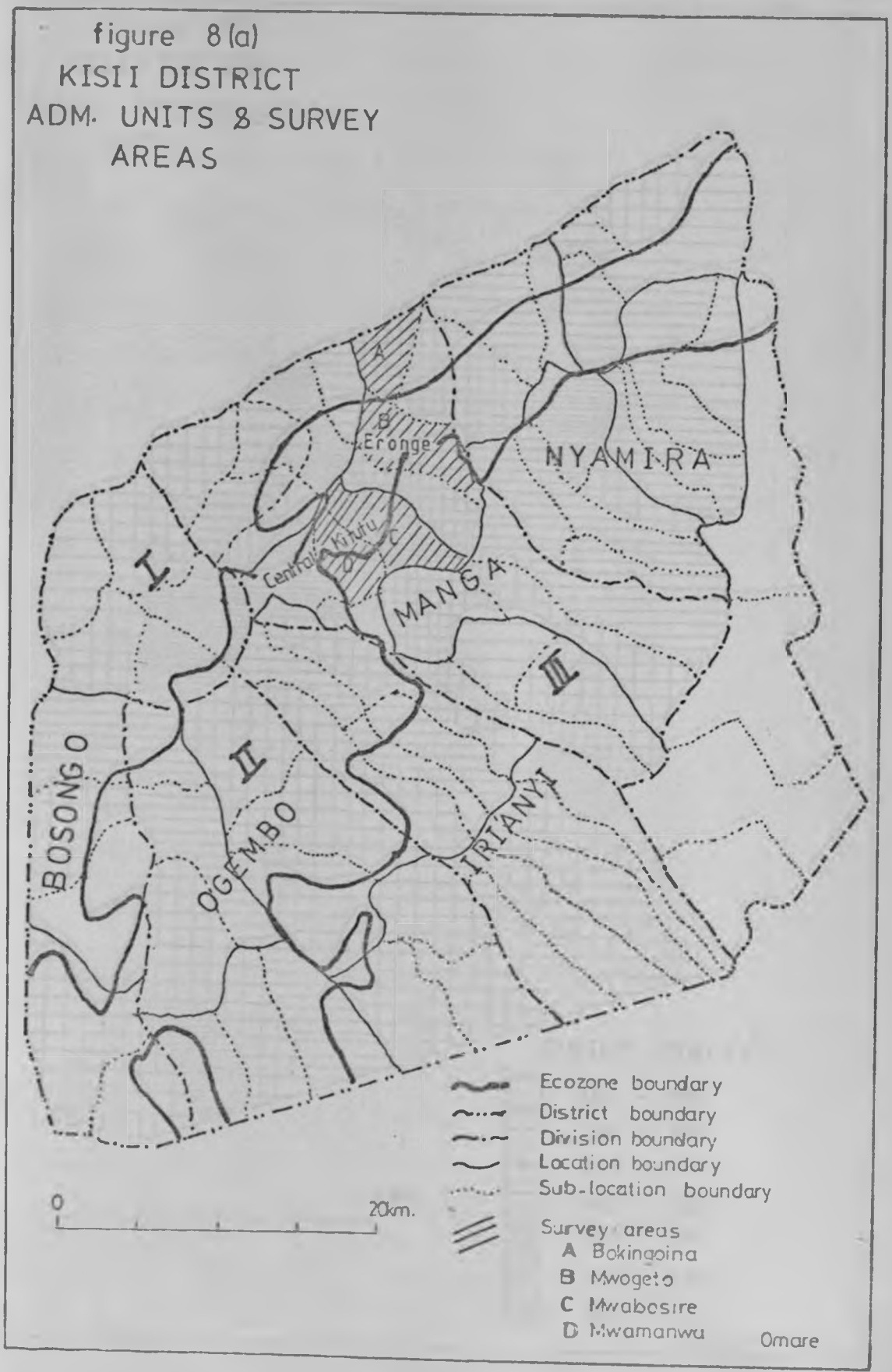


figure 8(a)
KISII DISTRICT
ADM. UNITS & SURVEY AREAS
A
B
Eronge
NYAMIRA
C
Kiutu
Central
MANGA
I
II
III
BOSONGO
OGEMBO
IRIANYI
0
20km.
Ecozone boundary
District boundary
Division boundary
Location boundary
Sub-location boundary
Survey areas
A Bokingoina
B Mwogeto
C Mwabosire
D Mwamanwa
Omare

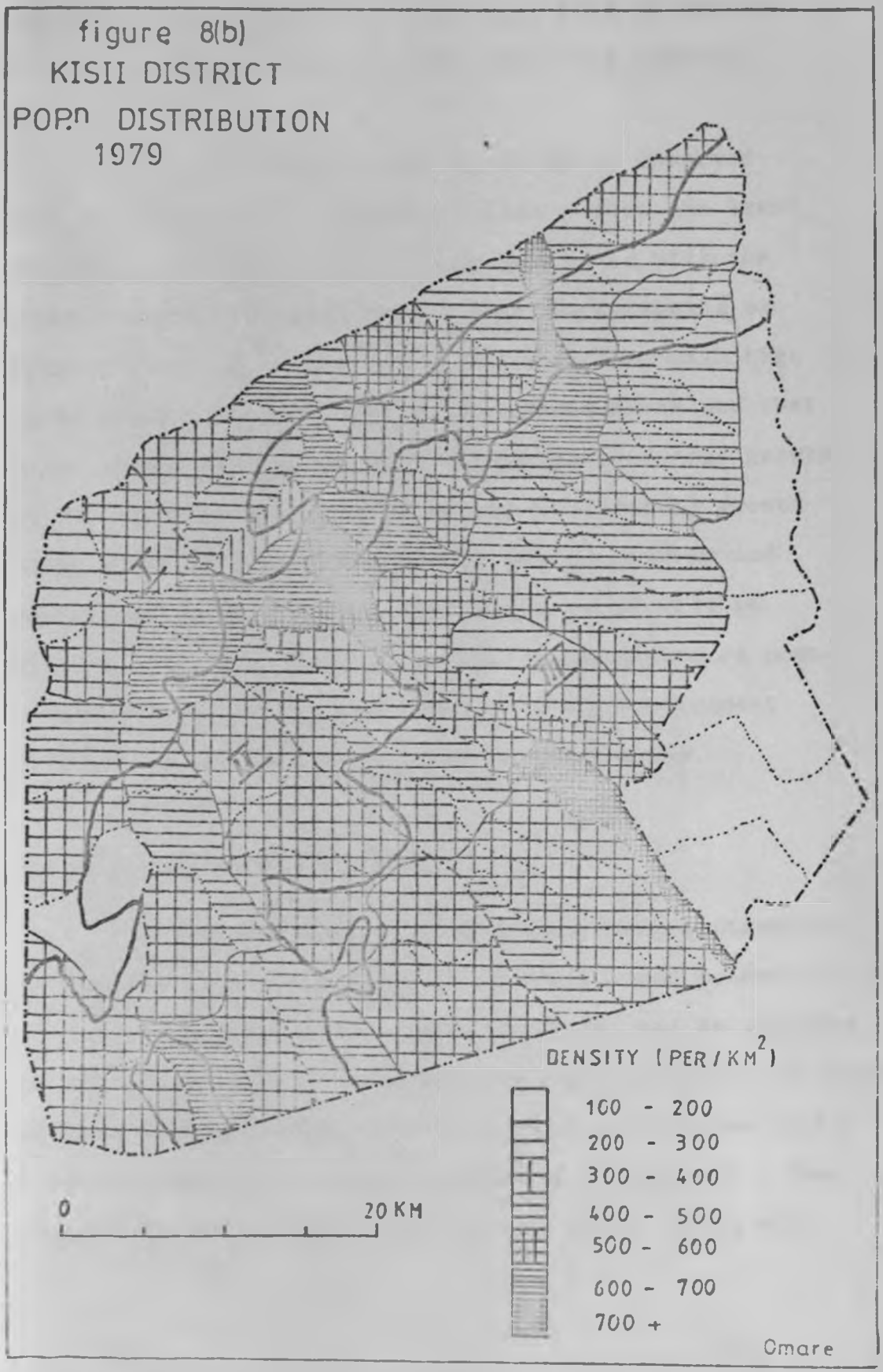


figure 8(b)
KISII DISTRICT
POPn DISTRIBUTION
1979
DENSITY (PER/KM²)
100 - 200
200 - 300
300 - 400
400 - 500
500 - 600
600 - 700
700 +
0
20 KM
Omare

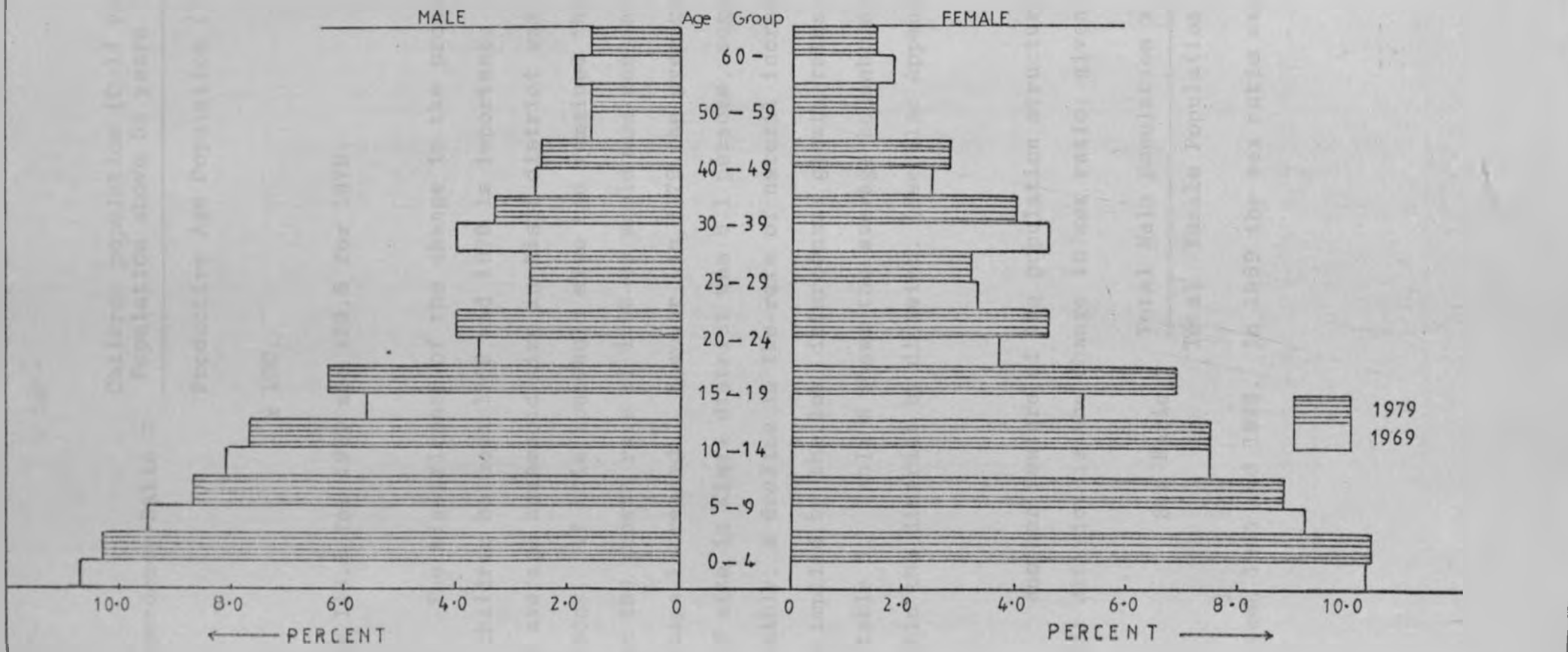
per person averaged 0.25 hectares and this is expected to fall to 0.12 hectares by the end of the century.

Relating tables 5 and 7, it can be observed that the divisions - Manga and Ogembo - with the least inter-censal growth rates are the ones again with the highest population densities - with the exception of Irianyi division. Associating out-migration with high rural population densities as the source areas and that these areas are characterized by low inter-censal growth rates; then the differences in the inter-censal growth rates might be attributed to the existing income and employment opportunities. The latter point will be developed further when the spatial distribution of population will be related with the existing development patterns in the district, later in the chapter.

3.1.3. Population Structure.

A notable feature of Kisii population structure is the declining proportion of children (aged between 10 - 14 years) and persons aged above 59 years; and an increase in the proportion of the productive age group (15 - 5 years) between 1969 and 1979. The difference and changes in age structure are illustrated graphically in figure 9. The dependency ratios for the two census years, given by:

figure 9 KISII DISTRICT POPULATION PYRAMID: 1969/79



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$$\text{Dependency Ratio} = \frac{\text{Children population (0-14 yrs.)} + \text{Population above 59 years}}{\text{Productive Age Population (15-59 yrs)}} \times 100;$$

were 143.8 for 1969 and 129.6 for 1979.

The significance of the change in the proportion of children between 1969 and 1979 is important. In 1969 the average household size in Kisii district was 7.6 persons. If this household size had remained the same, then the growth rate of 1962-69 would have continued, or perhaps increased.[6] However, in 1979 the average household size in Kisii district was 6.1 persons, suggesting possibly, a decline in the rate of natural increase as was implied by the low intercensal growth rates shown in table 5. Table 8 shows the average household size within the district by division. (See also Appendix III)

Another feature of the population structure in Kisii district is the change in sex ratio, given by:

$$\text{Sex Ratio} = \frac{\text{Total Male Population}}{\text{Total Female Population}} \times 100;$$

between 1969 and 1979. In 1969 the sex ratio was

TABLE 8: POPULATION TOTALS, NUMBER OF HOUSEHOLDS AND AVERAGE HOUSEHOLD SIZE, KISII DISTRICT, BY DIVISIONS: 1979

Administrative Unit	Population Total	Number of Households	Household size (Average)
Manga	214,708	35,136	6.1
Nyamira	198,308	30,586	6.5
Irianyi	117,758	19,311	6.1
Bosongo	118,158	20,996	6.3
Ogembo	190,919	30,168	5.6
Kisii Municipality	29,661	5,410	5.5
Kisii District	869,512	141,607	6.1

Source: 1979 Population Census - Unpublished Report.

100.9 and had fallen by 5.9% to 94.9 in 1979. Since, in Kenya it is the male population aged between 15 - 59 years who tend to migrate in search of better income and employment opportunities, this drop in the sex ratio might lead one to conclude that there was out-migration from the district between 1969 and 1979. However, a further analysis of the change in sex ratios by age groups and comparing the result with the total change in sex ratio reveals that the mean of the deviations from the total population change is 0.6. (see Appendix IV). This suggests that the change in sex ratio might have been mainly due to increase in proportion of females between the two census years; and to a lesser extent out-migration. Table 9 shows the change in sex ratios within the district by division.

TABLE 9: KISII DISTRICT, SEX RATIOS BY DIVISION: 1969 AND 1979

Administrative Unit	Sex Ratio		Percentage Change
	1969	1979	
Manga	97.8	92.4	- 5.5
Nyamira	107.8	96.6	- 10.0
Irianyi	96.6	94.0	- 2.7
Bosongo	95.3	92.4	- 3.0
Ogembo	100.3	94.4	- 5.9
Municipality	146.2	116.2	-20.5
District	100.9	94.9	- 5.9

Source: Author's own calculations based on 1969 and 1979 census.

TABLE 10: POPULATION MOVEMENT IN AND OUT OF KISII DISTRICT: 1969 AND 1979

(a) Population Born in Kisii now living in: (Emigration)

Census Year	Resident in District of enumeration	Resident outside district but within province	Resident elsewhere	Total
1969	603,441	7,072	32,669	643,183
1979	820,965	3,808	10,075	834,846

(b) Population living in Kisii District born in: (Immigration)

Census Year	Born in District of enumeration	Born outside district of enumeration but within province	Born elsewhere	Total
1969	604,758	3,005	67,288	675,041
1979	851,932	6,863	10,717	869,512

Source: Population Census Reports: 1969 and 1979.

3.1.4 Population Movement

From table 10 above, it can be observed that population movement in the district dropped by a factor of more than 6 between 1969 and 1979 whereas population movement out of the district dropped by a factor of more than 3. In both census periods, there was a net gain of population in the district, however, this had also dropped by a factor of more than 3. The comparative figures are: 30,552 for 1969 and 3,797 for 1979, representing 4.5% and 0.4% respectively of the total population in the census years 1969 and 1979 respectively.

An analysis of the volumes of population movement living in Kisii born within or outside Kenya and born in Kisii but living within Kenya reveals that most of the immigration is from Nairobi whereas most of the emigration is to Rift Valley, mostly Kericho and Nakuru districts. The emmigration to the former can be attributed to the presence of tea plantations in Kericho district whereas emigration to the latter might be dueto the rural areas in search of land. Comparative figures for 1969 are given in table 11.

In section 3.1.0, it was noted that the low inter-censal growth rates between 1969 and 1979 might be attributed to either a loss of population from the district or a decline in rate of natural increase in the district. The analysis of population structure seemed to suggest that the low growth rate might be due to decline in rate of natural increase as was reflected by the reduction in the household size from 7.6 to 6.1 persons between 1969 and 1979. However, the analysis of natural increase in population is beyond the scope of this study.

TABLE 11: POPULATION MOVEMENT OUT AND IN KISII DISTRICT: 1969

Place of Destination (Province)	Living in Kisii Born in:	Born in Kisii Now living in:	Net migration in and out - Place of Destination
Nairobi	57,970	3,462	54,508
Central	1,301	1,683	- 652
Coast	256	1,343	-1,087
Eastern	438	689	- 251
North Eastern	119	96	21
Rest of Nyanza	3,005	7,072	-4,067
Rift Valley	2,445	24,870	-22,425
Western	3,446	526	2,920
In Kenya (unstated)	42	-	-
Outside Kenya	657	-	-
Unstated	619	-	-
Total	70,293	39,741	30,552

Source: Kenya, Population Census Report, 1969.

The analysis of the change in sex ratios did indicate that there is some out-migration from the district as is reflected by the change of sex ratios between 1969 and 1979. But further analysis of the change in sex ratios by groups reveals that there is no significant difference in the changes in sex ratios by age group as is measured by the mean of deviations from the total change in sex ratio - suggesting, therefore, that the change in sex ratios between 1969 and 1979 is mainly due to increase in proportion of the female population rather than out-migration of the male population from the district.

However, the analysis of the population movement in and out of Kisii district reveals that there has been a net in flow of population in Kisii and that the rate of population into Kisii has been decreasing since 1969. Indeed as land resources become scarce as a major consequence of increasing population, this inflow will cease, a position which has almost certainly been reached in some parts of the district (as will be illustrated later in chapter four with the results of a household survey conducted in Manga division). The trend already observed is that not only will immigration into the district from people outside cease, but the rate of emigration is expected to rise in the whole district.

ZONE III: This comprises most of the highlands in Kisii district. The typical crops in the highlands are: tea and pyrethrum. (see also figures 7 and 8 and table 4 for detailed land use and cropping patterns in each of the zones).

Maize is grown all over the district as a major food staple. However, due to differences in altitudes, the varieties grown in the lower areas are early maturing than the varieties grown in the highlands. This makes it possible for two plantings in a year in the lower areas. Passion fruits and the bulk of milk production is concentrated in the highlands; and finger-millet and beans are grown all over the district, mainly for subsistence needs.

A brief comparison of the cropping patterns in different ecological zones shows that the intra-district imbalances in so far as opportunities for cash incomes are concerned. Relating the cropping patterns to population distribution and growth rates together with the average size of farm holding within the district, the following observations can be made. Note that areas where tea and pyrethrum are grown and most of the passion fruits and milk production concentrated are considered of a higher potential. These are also the areas with highest population densities

The following sections attempt to give an outline of the existing development patterns in the district in relation to population distribution and growth rates. The development patterns will be related further with the ecological and external economic relations variables.

3:2: EXISTING DEVELOPMENT PATTERNS

3:2:1 Ecological Zones and Major Agricultural Activities

It is observed in chapter two that the ecological zones conform with variations in soils, rainfall, temperature, and altitude. Each of these ecological zones specializes in different combination of crops:

ZONE I: Comprises of the land areas between 1500 - 1600 metres above sea level; mostly the lower areas in the western parts of the district. The typical crops in this zone are: sugar cane, bananas, and groundnuts. This area covers most of Bosongo division and the lower parts of Manga and Nyamira divisions.

ZONE II: This comprises the middle lands of the district and cover most of Ogembo division, Manga division and the lower parts of Irianyi division together with the middle parts of Nyamira division. The typical crops in this area are: coffee and bananas.

ZONE III: This comprises most of the highlands in Kisii district. The typical crops in the highlands are: tea and pyrethrum. (see also figures 7 and 8 and table 4 for detailed land use and cropping patterns in each of the zones).

Maize is grown all over the district as a major food staple. However, due to differences in altitudes, the varieties grown in the lower areas are early maturing than the varieties grown in the highlands. This makes it possible for two plantings in a year in the lower areas. Passion fruits and the bulk of milk production is concentrated in the highlands; and finger-millet and beans are grown all over the district, mainly for subsistence needs.

A brief comparison of the cropping patterns in different ecological zones shows that the intra-district imbalances in so far as opportunities for cash incomes are concerned. Relating the cropping patterns to population distribution and growth rates together with the average size of farm holding within the district, the following observations can be made. Note that areas where tea and pyrethrum are grown and most of the passion fruits and milk production concentrated are considered of a higher potential. These are also the areas with highest population densities

and growth rates - the only exception being parts of Manga and Ogembo divisions with limited cash income earning opportunities due to the ecological factors. On the other hand, the potential for agricultural production in the lower areas has not been fully utilized though some of the locations are characterized by high population densities and growth rates.

The average farm holding per household in the district averages 1.52 hectares in 1979 and the region with the highest population density, are also the areas of high value cash crops, the average was between 1.28 hectares (in Manga), 1.46 hectares (in Irianyi) per household.

The following is a brief presentation of the production and marketing of the major crops in Kisii district. These are coffee, pyrethrum, tea, passion fruits, maize and bananas.

COFFEE: The coffee zone is made up of areas that fall within the district's western boundary and 1800 contour line i.e. ecological zones I and II. The coffee zone represents about one-third of the district's total area.

Coffee was first planted on a commercial scale in 1931. It now covers a total of 6,745 hectares distributed amongst 42,053 active growers (in all, there are 51,749 growers)[7].

The processing and marketing of coffee seems to be well-organized through 26 primary Co-operative Societies, 25 of which are affiliated to Kisii Farmers Co-operative Union Ltd. and one which is independent. In all, there are a total of

61 factories processing the crop.

However, the coffee industry has been experiencing management problems at the co-operative society level and as a result, a decline in output delivered to the societies. The management problems include amongst others; long delays in payments to farmers which often kill incentives as farmers have to wait for 6 to 10 months after delivery before they are paid. This compares unfavourably with other major cash crops such as tea and pyrethrum where regular monthly and two monthly payments are made respectively.

Labour input and quality is important for successful coffee growing, especially land preparation at the establishment of the crop, weeding, prunning and spraying have all an important bearing on yields. Most of these activities were neglected by farmers mainly due to delays in payments in the early 1970's, this resulted in low yields of coffee in the districts. Crop husbandry has however improved since the 1970's when farmers become encouraged by good prices during the "Coffee Boom" of the mid 1970's. In 1978, the district yielded 2330 tons of coffee from about 6,740 hectares[8].

The potential for improvement in production of coffee is high, however, quality must be improved first in order to compete effectively in the world market.

PYRETHRUM: Commercial production of this started in 1952 and has since been on the upgrade. At present the district is one of the leading producers of pyrethrum in Kenya.

Pyrethrum is grown mainly in all areas outside the coffee zone where the altitude is higher and the climate is cooler. Recent expansion of pyrethrum to coffee growing zones, especially in Ogembo division have resulted in low quality of pyrethrum content produced in the district because these areas are not ideal for pyrethrum growing.

There are 51,070 pyrethrum growers at present in the district and the area under the crop is 8,429 hectares.

Pyrethrum production is characterized by a tendency where world demand has exceeded supply. This has tended to support the upward trend in its production. However, in the early 1970's, a severe crisis hit the progress in the production of pyrethrum in Kisii district. The Pyrethrum Board of Kenya decided to deduct a special cess of 55 cents per kilogram of dried flowers for the expansion of Nakuru factory from the final payments to the farmers - against their wishes. Because most farmers felt that the additional factory facilities could have been put in Kisii district, this resulted in many farmers deciding not to deliver pyrethrum flowers until the decision was reversed. The issue necessitated Presidential intervention before farmers

started to deliver flowers again. Though the cess was removed for future production, its effect had decreased the ouput of pyrethrum for a considerable number of years as will be seen in chapter four. The Board announced new prices in 1979 and this has encouraged growers to resume production.

Pyrethrum is a labour intensive crop, like tea and its success depends on the pyrethrum content of the varieties grown. About two thirds of the farmers, mostly in the coffee growing zones, still grow low content pyrethrum. Also important for the production of the crop is the amount of labour input, fertilizer application and spraying. The latter two are hardly done in Kisii district.

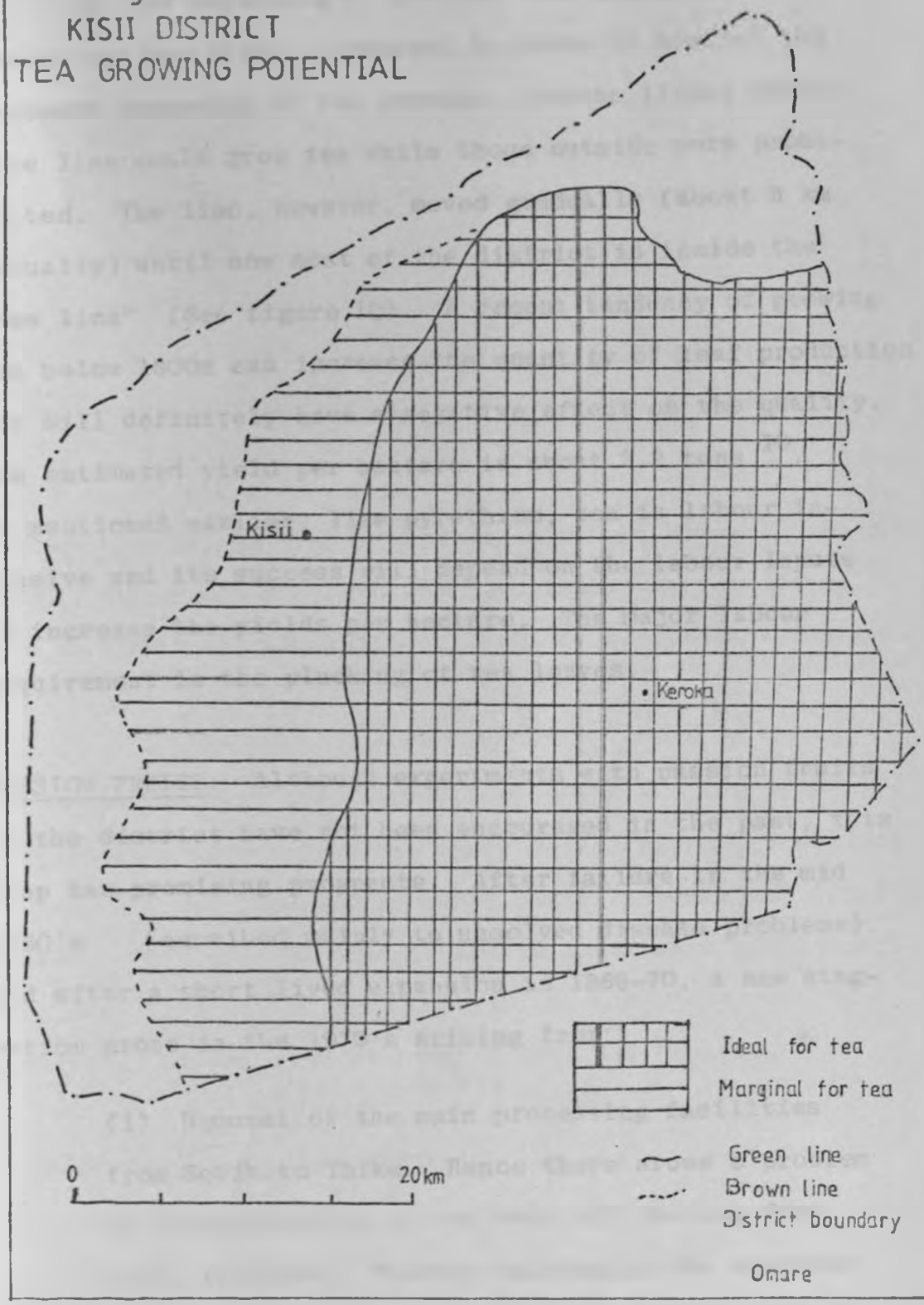
Increase in the production of pyrethrum in the district can therefore,be made through use of high content clones, increase in the labour inputs and use of fertilizer and spraying. These if used properly could increase yields by about 20%.[9]

TEA: Tea, like pyrethrum, is grown mostly in all areas outside the coffee zone where the altitude is higher and the climate cooler. Tea was first introduced in the district in 1957 when 10 acres of the crop were planted in North Mugirango Location, Bomabacho sub-location. It spread to Mokomoni and Magombo areas in East Kitutu location. It now covers a total of 7,974 hectares distributed amongst 30,000 growers. The average size of holding per grow is 2.5 hectares.

figure 10

KISII DISTRICT

TEA GROWING POTENTIAL



At the beginning a "tea line" was established where tea was first introduced in order to control the outward expansion of tea growing. Anyone living inside the line could grow tea while those outside were prohibited. The line, however, moved gradually (about 5 km annually) until now most of the district is inside the "tea line" (See figure 10). A recent tendency of growing tea below 1800m can increase the quantity of leaf production but will definitely have a negative effect on the quality. The estimated yield per hectare is about 2.2 tons [10]. As mentioned earlier, like pyrethrum, tea is labour intensive and its success will depend on the labour inputs to increase the yields per hectare. The major labour requirement is the plucking of tea leaves.

PASSION FRUITS: Although experiments with passion fruits in the district have not been encouraged in the past, this crop has promising prospects. After failure in the mid 1960's (ascribed mainly to unsolved disease problems), and after a short lived expansion in 1969-70, a new stagnation arose in the 1970's arising from:

(i) Removal of the main processing facilities from Sotik to Thika. Hence there arose a problem of transportation of the crop all the way from Kisii to Thika. Thereby increasing the overhead costs; consequently low prices.

(ii) The production process of the crop is very complicated and knowledge about it is insufficient.

(iii) The high material inputs required for production. These include both financial and organizational. The investment costs per hectare are well over KShs.10,000/- and the provision of material inputs such as wooden posts cannot always be assured.

Due to its virtually unlimited world market demand, passion fruits can be a high potential cash income earner not only for the district, but also for Kenya as a foreign exchange earner.

Quality and quantity of labour inputs, fertilizer application, proper spacing, spraying and plant protection, if properly utilized can increase plant lifespan and increase yields. Currently passion fruits is grown in a 450 hectare area that lies slightly to the east of the centre of the district. Yields average about 4 tons per hectare.[11]

Marketing is organized along certain routes where lorries pick up the fruits. Meaning that only farmers within reach can be served, but with expansion of production, the network for collection could be expanded to serve new farmers and new areas also.

MAIZE: This is the major stable food in the district and Kisii district is generally self-sufficient in maize. It is estimated that 70 to 75 per cent of the farmers grow hybrid maize and the estimated rate of fertilizer application is between 20 and 30 per cent.[12]

The productivity of the crop in the district will depend on the following factors:

(i) Exact timing of planting since delays will reduce the yields per hectare.

(ii) Application of fertilizer and spraying

(iii) Use of hybrid seed - the variety will depend in the altitude.

Most farmers' decisions on maize production are usually aimed at ensuring the family's subsistence needs. On the settlement scheme, the crop is grown as a cash crop.

In 1978, 98,160 tons of maize were produced in the district from 31,160 hectares.[13] Quantities sold to the Maize Marketing Board were less than 5% of the total production in the district. However, it is only the surpluses over what can be absorbed in the local markets that is sold to the Board.

There is considerable scope for the improvement of maize production. By using the above measures especially in the lower parts of the district where two crops can be planted in a year.

BANANAS: The growing zone coincides with the coffee growing zone and covers over 2400 hectares. The average yield per hectare is about 12 tons. Of late, the crop has become a very popular cash earner for a substantial number of farmers and the potential could be exploited by introducing improved methods of growing.

As of now, the district is perhaps the largest supplier of bananas within Kenya for urban markets. The problem facing this crop is that of marketing constrained mainly by poor roads and arrangements. More could be realised from this crop with good roads, proper marketing and research into the possibility of processing the crop for local and export markets.

OTHER CROPS:

These include: Irish potatoes, sugar-cane, vegetables and groundnuts, all with good chances of success and high potential.

Sugar cane is the main cash earner for the population in the lower areas. The sugar is presently processed in jaggeries. However, the recent opening of the South Nyanza Sugar Company factory at Awendo will encourage further production as the market is now assured.

Experiments with potatoes in the mid 1960's showed good results, especailly in the middle zone. They were. however, not introduced in a large scale perhaps due to the disease problems and unassured market outlets. Potatoes are

hardly consumed by the local population, but increasing urban influence their absorptive capacity will soon increase in the local markets.

With respect to vegetables and fruits, marketing arrangements and connections in the urban centres have been a major hindrance to their increased production. Tobacco has been tried in the lower parts of the district, but were soon discarded by the local population due to labour inputs and marketing problems.

DAIRYING:

About 65 per cent [14] of the district is covered with grassland. The area under grassland shows decreasing tendency as acreage decreases, which is due mainly to competition with cash crops. It, however, remains an important aspect of agricultural production in the district in order to ensure sufficient milk production both for domestic consumption and market.

Compared to other agricultural enterprises, pasture farming is relatively poor in the district compared with districts like Kiambu and Nyeri with high population densities. This might be due to lack of general awareness among the farmers to the importance of pasture farming. In 1978 there were 230,000 cattle, 72,000 goats and 56,000 sheep in the district. The district produces over 50,000 kilograms of milk per year out of which one quarter is

sold to the Kenya Co-operative Cremeries Plant at Sotik, local societies and local markets.[15] The only area which can be considered effective in dairy farming is the settlement scheme due to their larger size of holdings.

3:2:2 Markets for Crops:

From the foregoing, it can be observed that there exists considerable economic potential for agricultural development in the district. This is due to its favourable ecological zones. However, there was one common problem with all the agricultural enterprises: the marketing problem. Using the criteria of existence of markets and supporting organization[16], we can distinguish two broad categories of agricultural products in the district:

I. Products with controlled and established markets. These include: tea , pyrethrum, coffee and to a lesser extent, maize.

The markets of these crops are characterized by:

(a) Marketing prospects and price are determined by factors beyond the district (either by world demand or the national product policy).

(b) Markets are regulated by laws carried out by established statal or parastatal organizations.

(c) The marketing prospects are comparatively well known.

2. Products for which markets are relatively free from state influence or intervention and are in the initial stages of development. These include: potatoes,passion fruits, bananas, sugar cane, vegetables and milk. These have several common features.

   (a) Prospects for their further development are likely to be good.

   (b) The existing marketing facilities are provided by private traders.

   (c) Relatively little is known of the details of such prospects as market capacity, marketing costs and the optimum spatial organization of marketing facilities.

As already observed, the first category of products are well developed in Kisii district and the latter's potential need to be exploited further. The characteristics of markets for the first category of products are going to be used further in chapter four as temporal casual factors that have influenced agricultural development in the district. They will be used to explain the fluctuations in the areal expansion of coffee and pyrethrum (which fall in the first category of products.)

Meanwhile, it can be observed that the significance of the type of crops and their markets is important when

it comes to policy recommendations for their developments for the benefit of the area being planned for and its entire population. First, you need to know the nature of the problem, might be organizational, efficiency and the supply and demand relationships.

3:2:3 Non-farming Activities

The district economy is nearly exclusively agricultural and non-agricultural activities are of very limited scope. The main non-agricultural activities are:

(a) Processing of agricultural products;and

(b) Tabaka soapstone industry.

(a) Processing of Agricultural Products

Bearing in mind that the district is predominantly agricultural, this sector of non-farming activity provides most employment and income-earning opportunities outside agriculture. However, this sector experiences severe limitations:

(i) Tea processing is done in five factories at Nyakoba, Nyasiongo, Kiamokama, Kebirigo, and Nyamache each employing only 150 persons. Other two factories are under construction at Ogembo and Nyaramba. It must be noted that the first five factories are located in the highlands whereas the last two are in the middle ecological zone.

(ii) There are 62 coffee factories in the district which employ about 250 labourers permanently and may provide additional employment for some 1000 seasonal labourers at the peak months of July and September.

(ii) Pyrethrum and passion fruits are not processed in the district, but are transported to Nakuru and Thika respectively.

(iii) As regards to the processing of dairy products, there is the Kisii Dairy Society which performs marketing functions only. The only K.C.C. factory near the district is at Sotik in Kericho District.

It can be observed that coffee processing employs most of people engaged in the processing of agricultural products. Tea processing is the second employer. However, pyrethrum processing could also provide employment for the increasing labour force in the district, but the processing factory is situated in Nakuru and yet Kisii district is the leading district in the production of pyrethrum.

These limitations mean that the employment generated by agricultural processing factories are few and hindered by the type of technology used, particularly in the tea factories which are mostly capital intensive.

(b) Tabaka Soapstone Industry

The Tabaka soapstone activities are based on Kisii soapstone which is carved into handcrafts and curios for the tourist trade and export. The Kisii soapstone has also been used to produce black board chalk and, though the quality has been a problem, it is now marketed within Kenya. Two other applications have been explored, one is for the production of a ceramic material, a product which could be used for basins, bath taps, etc. It can also be used as a base for the production of insecticides. But as yet, no industrial application has started. The other possibility is for electrical insulators which has been investigated by the East African Industrial Research Organization.

The soapstone deposits are virtually unlimited (in South Mugirango location) are the only valuable mineral deposits in the district. The soapstone could provide the basis for an industry run on a comparatively large scale, with assured market.

(c) Other Manufacturing Activities

These are on a comparatively small scale and employ a relatively small number of people. These activities include: a tannery, bakeries, motor repair garages, building and construction, printing and carpentry.

With limited land resources, as a consequence of increasing population and the continuing tendency of sub-division of land holdings; there is the fear that an increasing amount of land will be required for subsistence production. This will obviously be accompanied by stagnation or even reduction in cash crop production unless non-farming income-earning and employment opportunities are created at the same rate as that of the increasing labour force.

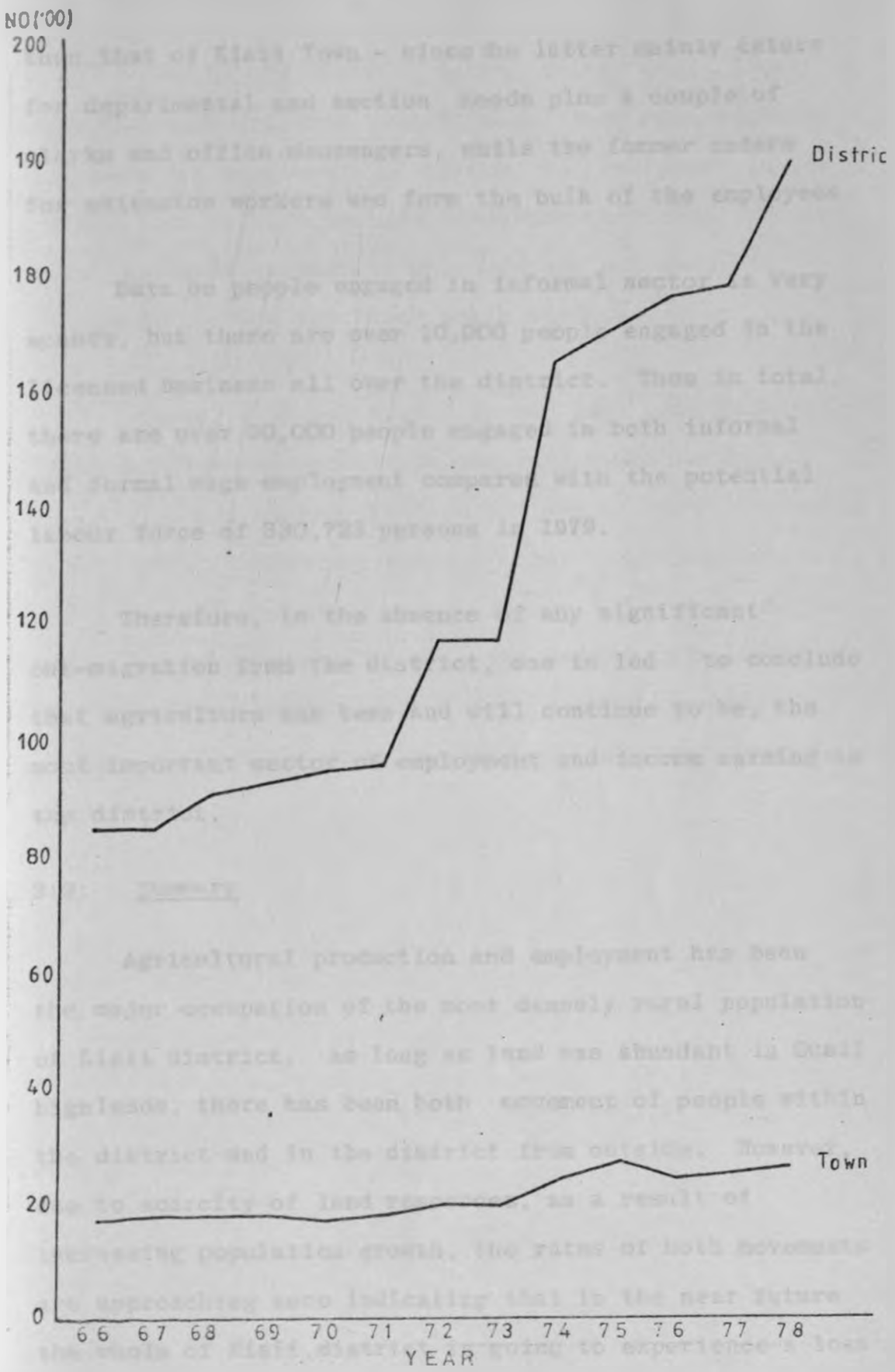
3:2:4 Wage Employment in Kisii District

It has been observed that the proportion of the productive age group in Kisii district is increasing. This means that resources will have to be found to generate new employment opportunities for the growing labour force.

Kisii Town is the major employment centre in the district. But as figure 11 illustrates, the number of employment opportunities reflected in the total number of wage employment cumulative curve for the town, is not growing at the same rate as that of the labour force. The reason why Kisii Town is not generating adequate employment opportunities, relative to the growing labour force, is due to lack of any significant industrial activities in the town.

Most of the people employed in the district in the so-called modern sector (in general terms wage employment) are Government employees. This might explain why the Kisii cumulative wage employment curve is growing at a faster rate

figure 11 REPORTED WAGE EMPLOYMENT IN KISII DISTRICT AND TOWN



Source: Statistical Abstract : 1970 and 1979

Omare

than that of Kisii Town - since the latter mainly caters for departmental and section heads plus a couple of clerks and office messengers, while the former caters for extension workers who form the bulk of the employees.

Data on people engaged in informal sector is very scanty, but there are over 10,000 people engaged in the licensed business all over the district. Thus in total, there are over 30,000 people engaged in both informal and formal wage employment compared with the potential labour force of 330,723 persons in 1979.

Therefore, in the absence of any significant out-migration from the district, one is led to conclude that agriculture has been and will continue to be, the most important sector of employment and income earning in the district.

3:3: Summary

Agricultural production and employment has been the major occupation of the most densely rural population of Kisii district. As long as land was abundant in Gusii highlands, there has been both movement of people within the district and in the district from outside. However, due to scarcity of land resources, as a result of increasing population growth, the rates of both movements are approaching zero indicating that in the near future the whole of Kisii district is going to experience a loss of population through emigration in search of better income-earning and employment opportunities.

Already the district is suffering from not only unemployment problems, but in some areas some of these farmers can be classified as the "working poor" in the sense that the little land resources they have, coupled with existing production patterns, do not generate adequate incomes for their basic needs.

In agriculture, there are two ways of attacking the dual problems of production and employment: opening new land and intensification of production on currently used land. The former has been abandoned largely due to high cost of settling each family. The next chapter is going to address itself to the latter in relation to population change as the main casual variables; others include political control and external economic relations.

References:

1. Uchendu, V.C. and Anthony, K.R.M., 1975: Agricultural Change in Kisii District, Kenya: EALB., Nairobi

2. East African Statistics Department: African Population: 1948 Census, and Kenya, Population Census for 1962.

3. Kenya, Population Census for 1969

4. Kenya, Population Census for 1979

5. Kenya, Population Census for 1962, 1969 and 1979

6. Kisii Physical Development Plan, Town Planning Department, Ministry of Lands and Settlement.

7. Kisii Development Plan, 1979-1983, Ministry of Economic Planning and Development, 1980.

8. Ibid

9. Hubert, K., 1972; Draft Plan for Kisii District Development Committee, District Commissioner's Office Kisii.

10. Kisii District Development Plan, 1979-1983, op.cit

11. Ibid

12. Hubert, K., 1972: op. cit.

13. Kisii District Annual Agricultural Reports, 1966 - 1978, Ministry of Agriculture

14. Basic Agricultural Data for Kenya, as reconciled by Ministry of Agriculture and Ministry of Economic Planning and Community Affaris, 1978.

15. Kisii District Development Plan, 1979-1983 - op. cit.

16. Michoma, J.M.G.: The Role of Agro-based Industries in Rural Development: A Case Study of Smallholder Tea in Kisii District, Kenya, Unpublished M.A. Thesis, Nairobi, 1980.

CHAPTER FOUR

POPULATION CHANGE AND AGRICULTURAL LAND USE

4.0 INTRODUCTION

This chapter attempts to examine: how increasing population, opportunities for earning cash income and Government Policy have combined to produce a tenure arrangement which is approaching the freehold system; and how increasing population has influenced intensification of Agricultural production on currently used land. It suffices to mention that in examining these variables in relation to land use, population change is assumed to be the main causal variable. Other temporal causal variables include: political control, external economic relations and the ecological factors. The latter has been discussed in chapter three and a brief mention was made of the external economic relations and the ecological factors.

In examining these causal variables in relation to agricultural development it will be difficult to discuss all the agricultural activities in the district. Hence in this chapter the historical development of coffee, pyrethrum, tea and maize cultivation will be discussed in detail since, as of now, they occupy about 75 percent[1] of the total cultivated land

in the district.

This chapter is divided into three sections. The first section examines the agricultural development under the colonial administration, and the second section examines the present stage of agricultural development. The third section discusses:

(1) Household size, size of holding and migration trend; and

(2) Size of holding and production patterns;

in relation to the results of a household survey conducted in one of the most densely populated - and with least inter-censal growth rates, division in Kisii district.

4.1 AGRICULTURAL CHANGE UNDER COLONIAL ADMINISTRATION: 1907-1958

4.1.1 Policy Background

The pre-colonial land use among the Gusii consisted of a mixed pastoral and agricultural land use. The Gusii system of land use was such that the grazing land was communal and set some distance from the settled areas where land use was predominantly for the cultivation of finger millet. For every family hamlet of homesteads found in the cultivated areas, there

was a corresponding cattle village (See chapter 2).

The Colonial Policies towards Peasant Agriculture were dominated by the development of agriculture within the so-called "scheduled" areas exclusively for European settlers. This dominance controlled which crops the African Peasants were allowed to grow, or made to grow, and rested on the principles that African agricultural development should not compete with the settler agriculture in production, demand for labour, or access to land. For example, during the depression of the 1930s the Kenya Farmers' Association K.F.A., a settler co-operative set up as early as 1927 both to market particular crops and to represent the growers to the colonial government), came to realize not only that the African growers had been supplying most of the domestic internal market in maize, but also the domestic price of maize had become higher than the export price. The response of the K.F.A. was the attempt to set up controls on African maize marketing in order that more African - produced maize should be pushed on the export market; a move calculated to allow the European maize to participate on the higher priced domestic market. This situation of discriminatory marketing facilities was only possible because the settlers had direct access to the political means of control. The other example of production and marketing

discrimination was the case of prohibiting coffee growing by Africans, a well known example; a less known is that of pyrethrum growing by Africans was prohibited, leave alone tea growing which was exclusively recommended for estate plantations.[2]

Discrimination also occured in developments in the stock industry - another area where Africans and Europeans competed for production facilities and markets. This was well illustrated when the colonial administration for bade access by the Gusii to the traditional cattle villages.[3] Within the context of these constraints, colonial policies towards African agriculture had several well defined aims:[4]

1. to contribute to exports and bring traffic to railway infrastructure

2. to supply food-stuffs to the internal market of displaced labour;

3. to control soil erosion and over-exploitation of land, resulting from the imposition of finite limits to African settlement;

4. to provide cash-incomes which would be taxed for colonial revenue; and

5. to restrict access to land reserves where there would not be European settlement (under 1523 metres above sea level) more a potential for limited settlement by Asians.

There was hardly any change in these policies until the late 1950's when under the influence of the Swynnerton Plan[5], there began a concentrated policy to develop African commercial change in the colonial attitudes to African agricultural development, and the 1957-58 date in chosen, instead of the 1963 when Kenya got independence, as the first era of change.

4.1.2 The Emergence of Individual Land Tenure

Until the formal registration of land in Kisii in the early 1960s individual land tenure was more of a communally recognised right to the productive output of a certain measure of land and labour pertaining to the individual family.' The major incentive behind this early development was perhaps a need to guarantee individual resources in order to pay the compulsory "hut tax" livied on each family.

Individual land tenure system in Kisii started to be more rigid between 1907-1958 due to increasing population on a fixed land basis. In pre-colonial time there were cattle villages all over the district at distances away from the settlement villages. Colonial

administration forbade access by the Gusii to the traditional cattle villages and cattle had to be kept at the homestead. This intensified a need for each household to secure its own piece of grazing land and therefore its rights of tenure to a fixed piece of land. Another factor in the evolution of individual land tenure in Kisii was the effect of colonial restriction on the Gusii to settle in other districts and the internalisation of the land frontiers; unlike the neighbouring Luos who had an opportunity for rural migration to South Nyanza district.[6]

Thus in Kisii district, under good agricultural land-suitable for cash crop production, under external influences, population growth was accompanied by a very direct evolution of land tenure. Indeed, as of 1970 only 2.4 per cent of the total land area had been registered in Kisumu district whereas 63.0 percent of the land had been registered in Kisii district. By 1978 these figures had risen to 21 and 99 percent for Kisumu and Kisii districts respectively.

4.1.3 Agricultural Change: 1907-1957:

Between 1907 and 1930 the Gusii agricultural development was characterized by a relatively small rate of population growth, and an abundant supply of

land relative to the population. Also characteristic of this period were limited market opportunities provided mainly by the neighbouring Luos and the cultivation of grain crops notably, finger millet, as staple food by women and old men and the dominance of cattle as the "pride" of Gusii economy. Cattle were herded by young men in cattle villages up to 1912 when the Gusii were forbidden access to the traditional cattle villages.

However, between 1931 and 1957 white maize was introduced in Gusii land and it started rivalling finger millet and Sorghum. The latter two were predominantly the major agricultural crops before 1931. After 1931 maize started replacing finger millet as a principal crop. The demand for grains, especially millet, sorghum and maize, in food deficit areas of Kenya, a demand which increased with the extension of the railways to Kisumu and the opening of the Kakamega gold fields and the Kericho estates in the 1930's, stimulated grain output - in particular. Maize, output, in Gusii land .[7] It was during this period that a small beginning was made towards the diversification of Gusii economy with a small start of cash crop production and coffee in 1930 and pyrethrum in 1952 .

After the fall of the value of Kenya's colony's export which came with the world depression the colonial administration was forced to consider how export production could be extended to peasant agriculture sector. In 1930 the colonial government proposed that coffee should be grown in Kisii, Meru and Embu. However, this was met with considerable resistance from the settler farmers who feared competition, theft and disease.[8] This resistance from settlers forced strict administrative constraints on the introduction of coffee in Kisii. Fear of competion forced the Government to impose restrictions on avearage: 100 acres maximum between 1933 - 41, and 200 acres maximum between 1941-51. Fear of theft from settler plantations forced also the adoption of a policy of block-farming only and registered marketing, and fear of disease necessitated very strict control on husbandry. Despite these restrictions, those Gusii who were permitted to plant coffee adopted it readily as a cash crop. Block farming restrictions were lifted in 1936.

Only 100 acres (40.5 ha) were under coffee by the beginning of the war, and by the end of 1946, there were 312 growers owning 189.27 acres (76.6ha.) of coffee. A more rapid expansion occured in the 1950s. For example the acreage under coffee in 1951 was 370 acres (149.8 ha). This had risen to 2661 acres (1077 ha)

in 1957. Similarly the number of growers had risen from 1470 in 1951 to 8578 growers in 1957.[9] Thus the area under coffee had increased by a factor of 7 between 1951 and 1957 whereas the number of growers also increased by a factor of 6. Thus between 1935 and 1951 the areal expansion of coffee was very much limited due to acreage restriction imposed on the Gusii growers by the colonial administration. However, between 1951 and 57 the areal expansion of coffee was largely to new growers and secondly due to the expansion in area under individual holdings: which had increased from 0.25 acres (0.10 ha.) in 1951 to 0.31 acres (0.13 ha.) in 1957.

The first commercial pyrethrum nursery was established at Rigoma in East Kitutu location in 1950. However, the first varieties were not particularly successful and it was not until improved strains were introduced in 1952 that the crop slowly became popular.[10] The acreage under pyrethrum rose from 80 acres (32 ha.) to 520 acres (214 ha.) between 1954 and 1957. In 1954 there were 200 growers with 0.4 acres per grower. The number of growers rose to 1661 in 1957 with 0.31 acre per grower. Thus the acreage under pyrethrum increased by a factor of 10 while the number of growers increased by a factor of 8. The increase in the areal

expansion of pyrethrum was mainly as a result of new growers and not due to the increase in individual holdings: as the average acreage per grower had decreased from 0.40 acre in 1954 to 0.31 acre in 1957.

Hence one can observe that the rate of adoption of pyrethrum was more rapid than coffee between the first colonial era. This might be attributed to higher returns realised from pyrethrum, the easiness of its establishment and the fact that it can be adopted in small units. On the contrary, as a possible response to the increasing population growth rates, coffee growing was so controlled and subject to administrative directives.

Table 12 shows changes in land use 1930 to 1976. Therefore, measuring agricultural change in terms of crop areas, the adoption of maize was the most significant change that occurred in Gusii land agriculture during the first colonial era. The 1976 estimates are included in order to relate the first historical stage of development to the next-post 1957 and the scale of change relative to the two periods.

TABLE 12 CHANGES IN LAND USE 1930-76, KISII DISTRICT: ESTIMATED PROPORTION OF CULTIVATED LAND UNDER MAIZE, MILLETS AND CASH CROPS IN PERCENT

	Maize	Sorghum/ Finger Millet	Cash Crops	Others
1930[1]	4	74	0	22
1950[1]	38	41	1.1*	20
1976[2]	41	3	34**	22

Source: (1) MOODY, T, and CARLSEN, J., 1976;[11]
, (2) BASIC AGRICULTURAL DATA FOR KENYA,[12] 1976.

Note: * only coffee
** Coffee, Pyrethrum and Tea.

4.2. PRESENT STAGE OF AGRICULTURAL DEVELOPMENT

4.2.1 Policy Background

Since 1957 the agricultural policy in Kenya has been based upon the principles embodied in the Synnerton Plan published in 1954. The Swynnerton Plan laid the foundations of the role of Government in agriculture i.e. of concentrating upon development of commercial agricultural in the "small farm" sector-agricultural units outside the "large farm" sector.

As per the Swynnerton Plan all peasant holdings should be consolidated and legally registered as the property of the individual peasants. Once a peasant had the security of a title deed he would then adopt from the range of cash crops available to him and from the recommended inputs and advisory services available; a production pattern which was assumed would yield profit and allow him to become a "modernized" agricultural entrepreneur, in other words the commercialization of African peasant agriculture.

Since, however, the objective of the colonial administration are hardly defined in terms of overall societal transformation, the result has been to create everywhere in their colonies disequilbrium additions in the social and economic life of the people. In Kenya, modern technology and organization methods were applied and is still being applied to that sector of the economy which could provide exportable surpluses; all these sectors were introduced but only in so far as they helped the efficient operations and comfort of the colonial group. This is well illustrated in Kenya given that the plan came during the emergency and these aims were inspired in the political reform that the colonial powers saw necessary in their terms in order

to counteract the political unrest that prevailed in the early 1950s. Modern administrative practices were extended to the colonies but only to the extent that they facilitated the maintenance of law and order.

On the contrary in the area of population the colonial administration concentrated on improvement in medical facilities and sanitation - the latter in urban areas mostly, so as to reduce the risks of dealth with the obvious result of rapidly declining death rates while it placed no comparable emphasis on education and general enlightment with the equally obvious result that little was done to bring down the increasing population growth rates in the already most densely populated areas. The result was high rates of natural increases of the African population on given and well defined land base.

The major concern, however, of the colonial administration was to encourage rapid expansion in the production of exportable agricultural produce, to organize its efficient marketing and collection, and to establish modern transportation for evacuating these to coastal ports. All improvement in agricultural practices were only in relation to export crops. Food crops and other locally required agricultural produce were largely ignored even though fundamental transformation in farming

practices and land tenure system can only take place in relation to the improvement in the production of these crops. Today, not only Kenya but, most of the African countries are facing a crisis in the food supply to its rapidly increasing population.[13] To appreciate fully the nature of this crisis requires that we examine the evolution of the present production pattern in relation to increasing population.

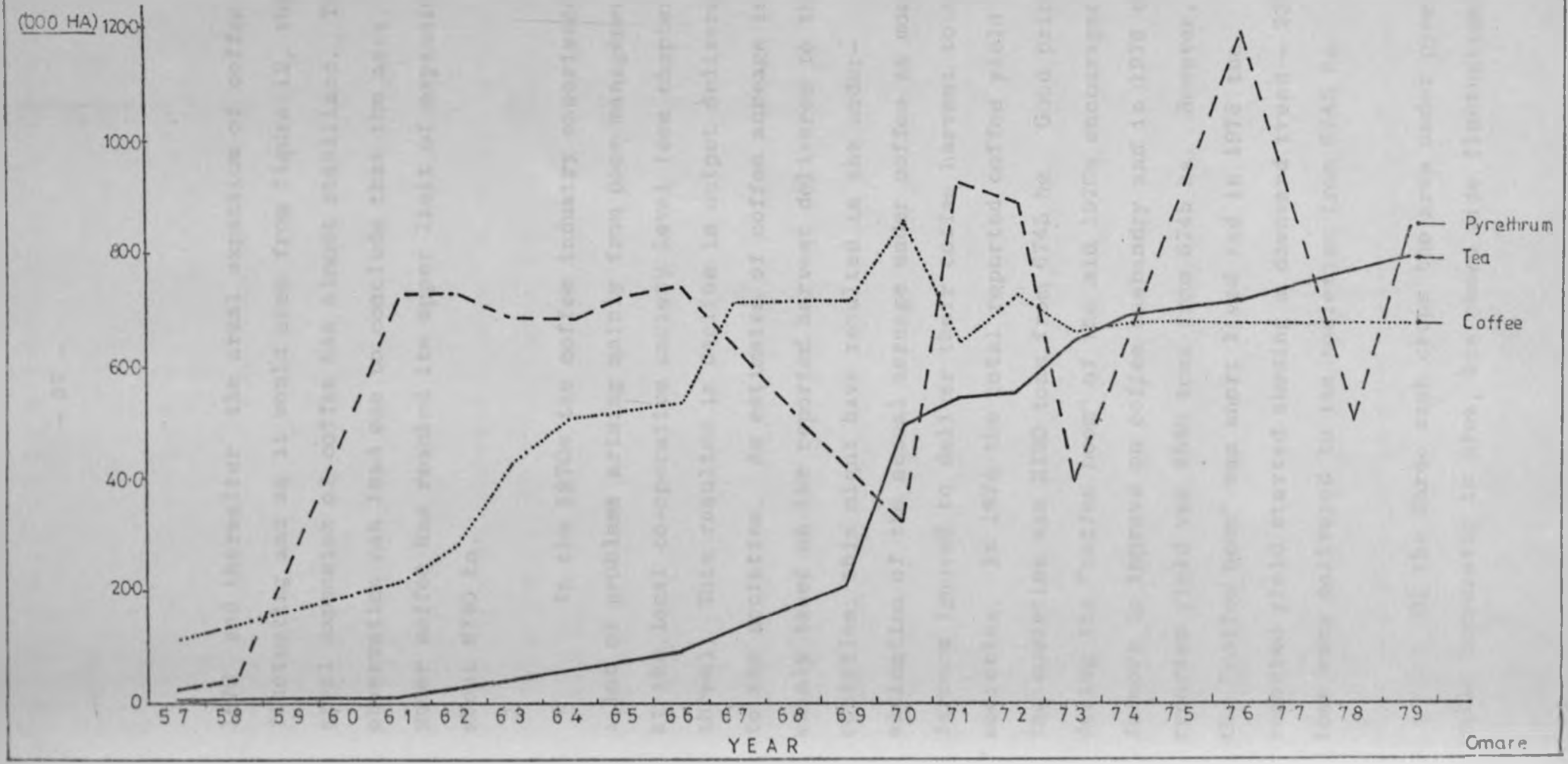
4.2.2 Adoption of cash crops in Kisii District: Coffee, Pyrethrum and Tea

As was observed above coffee and pyrethrum predated the Swynnerton Plan in Gusii land: tea was introduced in 1957. In 1950 coffee and pyrethrum occupied about 0.1 percent of the total cultivated land area whereas the food crops occupied about 80 per cent (see table 16). By 1976 coffee, pyrethrum occupied 34 percent whereas the food crops occupied 44 percent of the total cultivated land area in Kisii district. Thus the proportion of food crop growing, in relation to the total cultivated land area, had decreased by a factor of 1.8 whereas that of each crop production had increased by more than 340 times.

Of the three cash crops only the areal expansion of coffee and tea have been increasing steadily up to

figure 12

AREAL EXPANSION OF COFFEE TEA AND PYRETHRUM



1970 and thereafter the areal expansion of coffee started fluctuating and as it would seem from figure 12, the areal expansion of coffee has almost stabilized. This observation can lead one to conclude that the area under coffee has reached its upper limit of expansion of about 6740 ha.

In the 1970s the coffee industry experienced a lot of problems arising mainly from poor management at the local co-operative society level (see chapter three). This resulted in decline in output delivered to the societies. As estimates of coffee acreage is mainly based on the reported harvest delivered to the societies; this might have resulted in the under-estimation of the actual acreage under coffee as most farmers ignored to deliver their coffee harvest to the societies. In 1974 the total reported coffee yield to the societies was 2190 tons from 6745 ha. Good prices during the "coffee boom" of the mid 1970s encouraged the farmers to improve on coffee husbandry and in 1976 the reported yield was 2550 tons from 6745 ha. However, the "coffee boom" was short lived and in 1978 the reported yield started showing a downward trend - 2330 tons were delivered to the societies from 6745 ha.

Of the three cash crops the area under pyrethrum, while increasing in area, has shown wide fluctuations.

Tea and coffee being permanent crops would not show short term responses to price changes, whilst pyrethrum being an annual crop does show areal variations that might indicate short-term responses. However, the main cause of the fluctuations in the 1970s was the decision by the Pyrethrum Board of Kenya to deduct a special cess of 55 cents per kg. of dried flower for the expansion of the Nakuru factory from the final payment to the farmers. When the decision was reversed in late 1973, the farmers decided to deliver the pyrethrum flowers to the societies. The trend in the areal expansion continued from 1973 to 1976 when again it started showing a downward trend. With the new prices announced by the Board in late 1976 farmers have again resumed growing pyrethrum and the upward trend of the areal expansion of pyrethrum might have been resumed again.

On the other hand, tea growing has shown a very steady areal expansion since the time it was introduced in the district. The rate of adoption of tea was more rapid between 1969-74 when the restriction on growing tea below 1800 m. contour was lifted.

Further analysis of the areal expansion of the three cash crops in relation to the number of growers indicate that the areal expansion of coffee is largely

due to new growers; whereas the areal expansion of tea between 1957-63 was as a result of increase in individual holding acreages, thereafter the increase in area under tea was due to new growers. This analysis is reflected in table 13.

TABLE 13 AREA UNDER CROP PER GROWER

Crop/year	Area in Hectares 1957	1963	1968	1968
Coffee	0.13	0.12	0.13	0.13
Tea	0.07	0.18	0.24	0.24
Pyrethrum	0.13	0.34	0.14	0.28

Source: District Agricultural Annual Reports

Thus one can observe that increase in the number of potential growers has resulted in the areal expansion of coffee, pyrethrum and tea. However, from the analysis, the areal expansion of coffee has almost reached its upper limit and allowing for subdivision of farm holdings, as population increases, the acreage under coffee per grower will obviously start showing a downward trend. This is already happening in the most densely populated parts in the

coffee growing zone. Consequently this will not only have a negative effect on the income levels of the households dependent on cash incomes from coffee but also some members of the household will not be engaged in gainful employment in coffee production.

On the other hand, both tea and pyrethrum growing are showing an upward trend. This will continue as the number of potential growers increases since no upper limits of their areal expansion is yet discernable. Hence this will have a positive effect on the income levels of the households depedent on cash incomes from tea and pyrethrum. This difference in income earning opportunities might, perhaps, explain why population growth rates in tea and pyrethrum growing zones are comparatively higher than in the coffee growing zone - inspite of the fact that they all have high population densities.

4.2.3 Relationship between Areal Expansion of Cash Crops and their Productivity per Unit of Land

Table 14 and 15 summarises the relationship between the areal expansion of coffee, pyrethrum and tea and their productivity per unit of land. The following observation can be made as regards to the production of coffee, pyrethrum and tea from 1968-78.

Coffee:

It was noted in chapter three that improvement on the productivity of coffee depend on: good management so as not to kill farmers incentives by paying them regularly; and increased labour input and improved quality of coffee by constant weeding, prunning and spraying to increase not only the yields but also inorder to compete favourably in the world market.

However, as table 14 indicates the areal expansion of coffee has not been matched with increase in value of exports. Moreover, the production per unit of land has declined from 0.57 tons/ha. in 1968 to 0.35 ton/ha. in 1978. Although the gross value of exports has been increasing, largely because of the increase in prices shown as return's per unit weight,and Gross value per unit of land compares favourably with tea and pyrethrum (see table 15); the arealexpansion of coffee has not shown any significant changes in the 1970s. Though the latter is largely attributed to restriction on coffee acreage to a maximum of 6000 ha. the downward trend of the productivity of coffee per unit of land reflects that the farmers are neglecting their crops and consequently low yields per hectare. This has been altributed to poor management at the local co-operative society level and unnecessary commisions deducted from the farmers final pay. For instance in 1978, though the

TABLE 14 COFFEE, PYRETHRUM AND TEA PRODUCTION: KISII DISTRICT

Year	COFFEE			PYRETHRUM			TEA		
	Area (ha.)	Volume (Tons)	Returns/ha (Ton/ha)	Area (ha)	Volume (Tons)	Returns/ha (Ton/ha)	Area (ha)	Volume (ha)	Returns/ha (Ton/ha)
1968	5,668	3,212	0.57	5,100	4,811	0.94	4,212	3,299	0.78
1974	6,785	2,190	0.32	22,500	8,05	0.36	7,581	14,211	2.14
1976	6,740	2,550	0.38	11,930	7,750	0.65	7,170	15,377	2.14
1978	6,787	2,330	0.35	4,000	4,139	1.03	9,771	32,377	3.31

Source: DISTRICT ANNUAL AGRICULTURAL ANNUAL REPORTS AND AUTHORS OWN OBSERVATIONS.

TABLE 15 VALUE OF EXPORTS, AND RETURNS PER UNIT WEIGHT AND HECTARE

	COFFEE			PYRETHRUM			TEA		
	Value of (£'000)	Returns/ Unit Wgt. £/ton	Returns/ha (£'000)	Gross value (£'000)	Returns/ha Unit/Wgt. (£/Ton)	Returns/ Ha. (£/ha)	Gross value (£'000)	Returns/ Unit/Wgt. (£/Ton)	Returns/ ha. (£/ha.)
1968	935	291	166	692	143	134	146	44	31
1974	990	452	145	1,830	227	82	737	52	97
1976	2,808	1,101	418	2,181	281	182	847	53	113
1978	2,934	1,259	440	1,511	565	375	2,861	83	274

Source: DISTRICT ANNUAL AGRICULTURAL REPORTS AND AUTHORS OWN OBSERVSTIONS.

gross realization from coffee was £2,933,613 the growers only received £1,833,096 or 62 percent of the total gross realization from 2,330 tons delivered to the society. The rest being commissions paid to: Central Bank of Kenya (about 2.0%); Kenya Planters' Coffee Union (¼%); Gusii County Council cess (2.0%) and; Kisii Farmers Co-operative Union and the marketing societies (about 33 percent). Hence, although the calculated Gross value per hectare in 1978 is £440, the farmers realized about £273 per hectare which does not compare favourably with tea and pyrethrum. This can lead one to conclude that poor management, which has killed the farmers incentives to improve on their coffee husbandry, has been the main causal factor in the decline in the production of coffee per unit of land in Kisii district.

Pyrethrum:

Similarly, increase in pyrethrum productivity per unit of land depends on: Amount of labour input which is again a function of expected price per unit of production. Between 1968 and 1974 the production per unit of land under pyrethrum showed a downward trend as opposed to the upward trend in the Gross value per unit of production. Although the decline in the productivity per unit of land might be attributed to the extension of pyrethrum growing zone to areas of

marginal productivity (areas below 1800 m contour) the main causal factor is "psychological" in the sense that the farmers felt that the decision to deduct a special cess of 55 cts. per kg. of dried flower towards the extension of the Nakuru factory was extremely unfair; given that Kisii district is the leading producer of pyrethrum in the country. However, after the Presidential intervention together with better prices per unit of production the farmers resumed production and intensified their production as is reflected in the increased productivity per unit of land

Tea:

Like pyrethrum tea is a labour intensive crop. Hence increased yield per unit of land is dependent very much on the labour input especially during plucking The achievement in tea growing has been the most successful among the three crops. This is reflected in the increased areal expansion of the crop which matches with increased volumes of exports. The latters increase is also due to increased returns realized from unit of land.

Assessing the degree of intensity of the production of coffee, tea and pyrethrum in terms of productivity per unit of land; then intensification of tea production, through increased labour inputs made

possible by regular and increasing prices, has been the most successful in Kisii district since 1968. Coffee has shown a downward trend in its productivity per unit of land mainly due to poor management and pyrethrum, whereas, showing an upward trend in its productivity per unit of land, the fluctuation in its area expansion and productivity is a reflection of poor policy decisions by the Marketing Board.

This imbalance in income earning opportunities, has been brought about by, not only decrease in size of holding but also the prevailing land use patterns in relation to population increase. This had led some coffee growing farmers to uproot their coffee trees in favour of either maize or bananas. And where the ecological conditions allow, most of the coffee plots have been replaced by either tea or pyrethrum. This is happening in Ogembo division.

Finally it is important to try and assess what the future prospect are for further increases in the growing of these major cashcrops, as population increases in future. But as this should be directly linked with the production of maize as a subsistence stable then the following sub-section will first outline the major changes in maize cultivation in Kisii district.

4.2.4 Production of Maize and Finged-Millet

As had been observed earlier in the chapter, maize occupied about 4 percent of the cultivated land area in 1930, the percentage had increased to 38 and 41 percent in 1950 and 1976 respectively. The corresponding figures for percentage area under finger-millet and sorghum are 74, 41 and 3 percent respectively. The figures illustrate that since the introduction of maize in Kisii between 1939-45 it has largely replaced finger-millet to become the major subsistence crop. Initially there had been large exports of maize from Kisii. Gradually, however, as population grew, the marketed surplus shrunk. In 1964 hybrid maize was introduced into the district and to day almost 80 percent of the planted maize is hybrid variety with higher yields per unit land.

Table 16 shows the volume and value of exports of maize and its returns per unit ton as an indicator of price changes.

The recent increases in the aggregate value of exports from the sales of maize can be attributed to higher yields as a result of the increased area under hybrid maize and to a leaser extent due to to higher returns per hectare reflected in row three after it

TABLE 16 VOLUME, VALUE AND RETURNS PER UNIT TON OF MAIZE EXPORTS

YEAR	1953	1954	1955	1960	1963	1965	1966	1971	1973	1975	1976
Volume in Tons	25,831	23,891	9,800	15,000	16,407	3,057	3,277	2,629	10,485	10,744	21,739
Value in £ ('000)	8	6	5	.	204.8	47.6	45.5	55.7	180.6	345.0	690
Returns Per* Unit Ton £	-	-	-	-	12.5	15.6	13.9	21.2	17.2	32.0	31.7

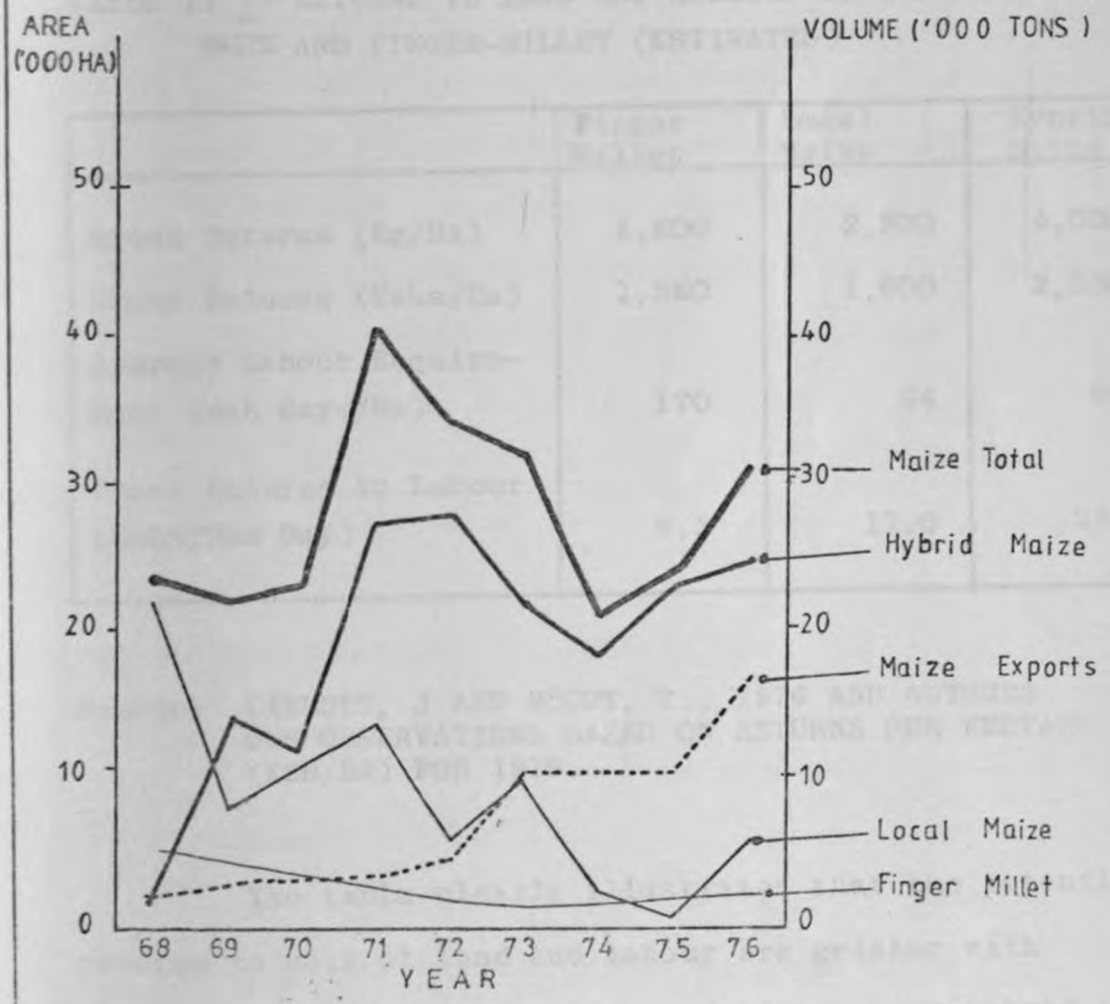
Source: UCHENDU AND ANTHONY, 1975, DISTRICT ANNUAL AGRICULTURAL REPORTS 1963-1976 AND AUTHORS ON OBSERVATIONS*.

However, as the increasing population consumes more, there is a possibility that the marketed surplus will shrink unless the areal expansion of maize increases proportionately in relation to the growing population or increase the productivity per unit land.

Figure 13 shows the trend in the areal expansion of both maize and finger-millet, and the volume of the marketed surplus maize from 1968 to 1976. A notably feature of figure 14 is the upward trend of areal expansion of maize and a downward trend of the areal expansion of finger-millet. Further the marketed surplus maize has shown an increasing trend despite of the fluctuation in the estimated planting of maize.

As maize planting is largely influenced by the subsistence needs of the growing population one would expect that as population increases the marketed surplus should shrink or fluctuate in a similar manner as the areal expansion of maize curve. However, an analysis of both figure 14 and table 16 suggest that the continued increase of the marketed maize surplus might be due to favourable returns per unit ton and continued increase in proportion of area under hybrid maize: which is characterized by an upward trend while the area under local maize is showing a downward trend.

figure 13 AREAL EXPANSION OF F/MILLET AND MAIZE AND MAIZE EXPORTS



Source District Annual Agricultural Reports. Omare

The reason for a higher rate of adoption of hybrid maize than local maize is due to its higher potential returns per unit of land and labour. This is illustrated in table 17 below.

TABLE 17 : RETURNS TO LAND AND LABOUR: HYBRID MAIZE, LOCAL MAIZE AND FINGER-MILLET (ESTIMATED)

	Finger Millet	Local Maize	Hybrid Maize
Gross Returns (Kg/Ha)	1,800	2,500	4,000
Gross Returns (Kshs/Ha)	1,580	1,600	2,560
Average Labour Requirement (man days/ha)	170	94	90
Gross Returns to Labour (Kshs/Man Day)	9.3	17.0	28.4

Source: CARLSEN, J AND MOODY, T., 1976 AND AUTHORS OWN OBSERVATIONS BASED ON RETURNS PER HECTARE (KSH/HA) FOR 1976.

The table clearly illustrates that the potential returns to unit of land and labour are greater with local maize than finger-millet and higher with hybrid maize than with local maize.

4.2.5. Future Prospects for Planting Maize and the Principal Cash Crop

If, as it appears, innovations, (coffee, pyrethrum, tea, hybrid maize) are assessed in terms

of their returns to both unit of land and labour, then this might perhaps be the reason why their is continued areal expansion of both tea and pyrethrum: the latter is subject to prevailing prices in the world market and the level of pyrethrum content - hence its fluctuation.

A comparison of figures ([12]), (13) and tables 14, 15, and 16 suggest that whereas tea planting is still continuing, according to the trends, there is a stronger tendency for maize cultivation to grow faster largely due to subsistence needs of the growing population. Much of the areal expansion of maize has been at the expense of finger-millet, the traditional food staple, and some of it must represent an intensive exploitation of land frontier, by cultivating previously uncultivated pasture and boundary land.

Fluctuation in the area under maize corresponds to an increase in area under pyrethrum which can tempt one to conclude that pyrethrum planting has been increasing at the expense of maize. However, a decrease of about 20,000 hectares of maize and an increase of about 3000 hectares of pyrethrum between 1973 and 1976 indicates that the area under maize might have declined at the expense of other crops notably bananas and sugarcane.

In 1976, sugarcane earned the district £112,500 and bananas £720,000. The area under these crops was 2,406 ha. for sugar and 2,420 ha. for bananas. Their gross potential returns per unit hectare was, Therefore, £45.2 and £297 for sugarcane and bananas respectively. Using the argument that has been developed above then one is lead to conclude that sugarcane is competing with maize cultivation while bananas with maize and the three principal cash crops already discussed.

In brief, if land supplies become limited as a major consequence of population growth, there is a tendency to adopt land use patterns with greater potential returns to both land and labour. This point is going to be illustrated further with results of a household survey conducted in the most densely populated divisions in Kisii district i.e. Manga division.

4.3. RESULTS OF HOUSEHOLD SURVEY:

The sampling units (sub-locations) were taken from two most densely populated locations in Manga division as has been mentioned earlier. The locations are central Kitutu and Erongo with densities of 764 and 495 persons per square kilometer as of 1979 census. These two locations had the least inter-censal growth

rates - of 0.3 percent per annum each, between 1969 and 1979. The average amount of land per person in 1979 was 0.13 ha. for central Kitutu and 0.20 hectares for Eronge.

In 1979 the average holding size of holding per household was 0.8 ha. for central Kitutu and 1.1 ha. for Eronge. In these terms and from our earlier discussion it would appear that majority of the people in the two locations, and more so in central Kitutu, are not only generating enough income to meet their basic needs but also, are living below their subsistence requirements.

The four sub-locations are: Mwabosire and Mwamanwa in Central Kitutu and Mwogeto and Bokingoina in Eronge. In total 160 questionnares were administered, 40 from each location, in random. This was made possible by the assistance accorded to the author by the respective assistance chiefs through the office of the District Commissioner Kisii.

4.3.1 Household size, size of holding and out-migration trends

Table 18 gives a summary of the household size, size of holding and out-migration trend rates (measured as a percentage of the total population of

the households interviewed) by sublocations. The following observations can be made as regards table 18..

The large household size is a reflection of higher proportion of children in relation to adults or the productive age group is higher than that of the district. It also appears that the larger the household size the higher the out-migration trends.

In contrast, a close examination of the correlation between out-migration trends and model size of holdings does not seem to support the hypothesis that as land diminishes, as a consequence of population growth, people will tend to migrate: in search of better income earning and employment opportunities. This might be,and indeed is, due to the sampling size in relation to the sampling technique.

On the whole, the figures do suggest that there is out-migration from the sub-locations. Another observation is that as the size of holding diminishes, there is a tendency for households to rent land-mainly for subsistence cropping. The out-migration can be attributed to diminishing income earning opportunities as land diminishes.

TABLE 18 HOUSEHOLD SIZE, SIZE OF HOLDING AND HOLDING AND OUT-MIGRATION TRENDS

Sub-Location	House-hold size	Density	Modal size of holding	% of House-holds Rent-ing Land	Out-Migra-tion as % Household Population
Bokingoina	7.3	515	1-20 acres	38	3.83
Mwogeto	10.4	573	1-2 "	11	10.40
Mwabosire	8.7	618	5-6 "	0	7.65
Mwananwa	7.3	642	4-5 "	0	7.57

Taking the inverse of population densities shown and compare them with the model size of holdings, it can be observed that the distribution of land holdings in both Mwabosire and Mwamanwa is more unevenly distributed than in Bakingoina and Mwageto.

Finally, another important feature of the sub-locations not shown in table (18) is that, almost all households interviewed had inherited their holdings. This is reflection of sub-dividion of land through inheritance. Sub-division of land through inheritance had been common among the traditional land tenure system and is still common under the present land tenure system.

Sub-division of land through inheritance will gradually reduce the size of holdings: consequently, not only landlessness in the district, if any, will increase but also the number of households living below the minimum subsistence requirements.

4.3.2. Relationship between size of holding and production Patterns

Table 19 (a) and (b) summarises crop and livestock production in relation to size of holding in the four sub-locations. The following observations can be made as regards to the results of these tables.

1. The most popular cash crops are coffee and tea: maize is grown by every household as a major food staple.

2. The proportion of households planting coffee increases with decrease in acreage and in the case of tea an opposite observation can be observed.

3. Since the ecological zone for tea planting is the same as that of pyrethrum planting, one would expect almost the same proportion for percentage of households planting both tea and pyrethrum. But this

is not the case suggesting, possibly that since 1976 pyrethrum has lost its value in terms of returns to land and labour.

4. As size of holding decreases the percentage of households engaged in cash crop production is higher than those engaged in livestock production: whereas the larger the size of holding the bigger the percentage of households engaged in livestock production than cach crop production.

TABLE 19 RELATIONSHIP BETWEEN SIZE OF HOLDING AND PRODUCTION PATTERNS

(a)

Size of Holding (Acres)	Finger-Millet (Per-cent	Coffee (percent	Pyrethrun (percent)	Tea (Percent)	Livestock Household no.
0-1	6	13	13	6	1.3
1-2	25	22	17	14	1.8
2-3	25	22	10	10	4.1
3-4	7	10	13	14	4.2
4-5	17	16	26	20	1.9
5+	20	17	21	36	4.9

* 6 Goats or Sheep = 1 Cattle. These percentages are expressed an relation to the total number of producers per crop.

TABLE 19 (b)

Size of Holding (Acres)	Finger-Millet	Percentages Coffee	Pyrethrum	Tea	Cattle
0-1	25	60	15	15	20
1-2	92	96	16	28	60
2-3	100	100	9	21	61
3-4	50	39	11	50	86
4-5	58	64	24	31	73
5+	17	75	28	75	100
TOTAL	82	72	17	37	

These percentages are expressed in relation the total number of household per size of holding.

When conducting the household survey the following observations were made as regards to the general development of the study area sublocations.

Eronge:location: lies mostly in ecological zone I and II and abit in ecological zone III. In the lower parts of Eronge location the main cash crops grown are coffee and Bananas. Farmers in the middle zone II had started growing tea and most of the tea plants were young. Tea is grown in the upper part of

the holdings while coffee is grown in the lower parts. Characteristic of all the farm holdings in the study area is that most of the homesteads are located on the upper parts.

Pyrethrum growing had been started by most of the households interviwed in the lower parts but due to its lower pyrethrum content as a consequence of ecological conditions the prices were correspondingly lower. Hence most of the farmers were discouraged by low prices realized from their pyrethrum harvest and consequently uprooted their pyrethrum plants.

Where farm holdings were extremely small, in order of less than ½ acre, intercropping of coffee and beans, maize and beans and even coffee and pyrethrun was observed. There was hardly any land for grazing or left idle and there were no boundary markers between holdings and between various land uses within the holdings. Further, in Bokongoina sub-location the problem of land supply is aggravated by early marriages observed hence higher rates of subdivision of holdings

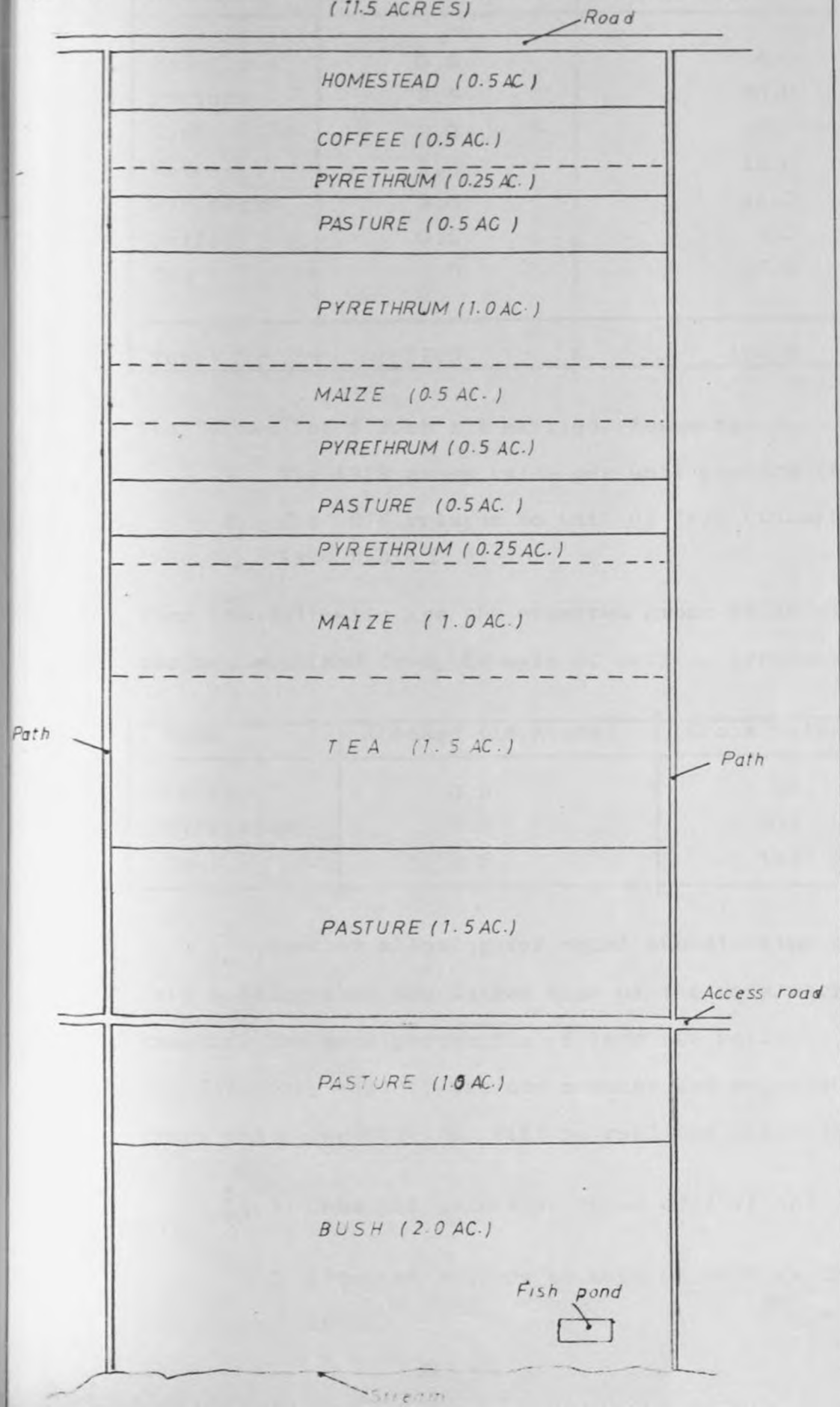
Central Kitutu Location: lies in both ecological zone II and III.. In the middle zone II the main cash crops are coffee and tea. The roadnetwork in Central

Kitutu is more developed than in Eronge location mainly due to the fact that tea growing is associated with rural access roads for its easier collection and marketing.

Farmers in ecological zone III have a wide variety of crops which include: passion fruits, pineapples and vegetables, hence their cash income base is wider than farmers in ecological zone II and I. Farmers whose holdings extend to springs in valley bottoms have small fish ponds.

In the larger holdings the proportion of grazing land is higher in relation to cultivated areas; and most farmers intervewed had started keeping grade cattle but due to livestock diseases, notably rinderpest, the cattle died. Instead farmers have started improving their local breed through artificial insemination. Figure 15 gives a rough sketch of a typical mixed farm layout of a progressive farmer in Mwogeto sub-location. Eronge location in the bit that falls under ecological zone III. The proportion of the farm activities are:

figure 14 TYPICAL FARM LAYOUT MWOGETO SUB-LOCATION (11.5 ACRES)



Activity	Area in Acres	Percentage of total farm
Homestead	0.5	4.0
Pasture	3.5	30.0
Bush	2.0	18.0
Maize	1.5	13.0
Pyrethrum	2.0	18.0
Coffee	0.5	4.0
Tea	1.5	13.0
Total	11.5	100.0

The farmer had 4 sons all married. Assuming:

1. The 1978 gross value per unit hectare (£/ha.) and;.
2. The 1978 returns to unit of land (tons/ha.) (see table 15).

Then the following are the expected gross value of cash incomes realized from the sale of coffee, pyrethrum and tea:

Crop	Acreage (in acres)	Gross value in £
Coffee	0.5	89.
Pyrethrum	2.0	302
Tea	1.5	165

Further allowing for equal sub-division of the farm holding when the father dies or the sons marry, and assuming the same proportion of land use patterns, then the following will be the new acreage and expected gross value incomes that will be realised assuming:

(a) Constant prices as those of 1978 and

(b) Constant returns to unit of land as those of 1978.

Actual	Area in Acrea	Percentage of Total Farm
Homestead	0.125	4.0
Pasture	0.875	30.0
Bush	0.500	18.0
Maize	0.375	13.0
Pyrethrum	0.500	18.0
Coffee	0.125	4.0
Tea	0.375	13.0
Total	2.675	100.0

Crop	Acreage (acre)	Gross Value in £
Coffee	0.125	22.25
Pyrethrum	0.500	75.50
Tea	0.375	41.25
Total	1.000	139.00

Thus under:

1. Constant Prices
2. Constant Productivity per unit of land; and
3. Some production patterns;

and allowing for further land sub-division of farm holdings, not only will incomes from the sale of cash crop decrease as land supplies become limited, but also as the increasing population will demand increased food supplies; the proportion of land under maize cultivation will have to be increased. The latter will result in an intensive exploitation of land frontier by cultivating previously uncultivated pasture and boundary land - a situation observed in both Bokingoina and some parts

of Mwogeto Sub-locations.

4.4 SUMMARY

The pre-colonial land use among the Gusii consisted of a mixed pastoral and agricultural land use. However, between 1907 - 1930 the Gusii land use was characterised by relatively small rate of population growth and an abundant supply of land relative to total population. The major land use pattern in this period were cultivation of grains as staple foods; and to a lesser extent cattle keeping, which started losing its importance when the colonial administration forbade the Gusii access to "cattle" villages in 1912.

Between 1931 and 1945, maize became a very important cash crop and competed with finger millet as a food staple. The period was characterised by increasing population growth rate. The increasing population; the colonial restriction on the Gusii to settle in other districts; and the need for each household to secure its own piece of grazing land intensified the need for individual ownership of land in Gusii land. Another factor which might have led to individual land ownership was the felt need to guarantee individual resources in order to pay the compulsory "hut tax". During this period, a small beginning was made in the diversification of Gusii economy with the introduction of coffee in Nyaribari.

The increasing population growth rates between 1948 and 1968 intensified further the need for individual land ownership in Gusii land. At about 1961/62 formal registration of land tenure started in Kisii and by 1971 the exercise had been completed. Maize continued to be the major cash earner in Kisii up to 1957. With the introduction of high value cash crops in the late 1950's, notably tea and pyrethrum, maize started losing its importance as a cash crop. By 1964, coffee and pyrethrum were the leading cash income earners. It was not until 1969 that coffee, pyrethrum and tea became the leading cash income earners in the district - tea displaced maize as a cash crop. During this, the adoption of hybrid maize, coffee, tea and pyrethrum was very rapid though the latter showed wide fluctuation in its aereal expansion. Characteristic of this period was that the net gain of population through immigration and rate of internal migration to coffee growing areas and the settlement scheme was more pronounced.

However, between 1969 and 1979, the land use in Kisii was characterized by declining population growth rate and out-migration from some parts of the district, notably Manga. Characteristic of this was the increasing importance of crop production for both subsistence requirements of the growing population, and cash incomes. The rate of adoption of cash crop was lower than that of 1948 and 1968. Instead the farmers started intensifying their agricultural production through better crop husbandry and increased input of labour to increase the yield per unit of land - there was illustrated in pyrethrum and tea production

References:

1. Basic Agricultural Data for Kenya, as reconciled by Ministry of Agriculture and Ministry of Economic Planning and Community Affairs, 1978.

2. Roger Van Zwanerberg, 1972: Agricultural History of Kenya to 1939, EAPH, Nairobi.

3. Ibid

4. Carlsen, J, and Moody, T., 1976: Population Pressure, Agricultural Productivity and Rural Employment in in Kenya, I.D.S. Project Papers, Copenhagen, Denmark.

5. Swynnerton, R.J.M., 1962: African Farming Transformed: Commonwealth Journal Vol. 5, No. 3, pp. 137-140.

6. Carlsen, J. and Moody, T., 1976: op. cit.

7. Uchendu, V.C. and Anthony, K.R.M., 1975: Agricultural Change in Kisii District, Kenya, EALB, Nairobi.

8. Carlsen and Moody, 1976; op. cit.

9. Uchendu and Anthony, 1975: op. cit.

10. Ibid

11. Carlsen and Moody, 1976: op. cit.

12. Basic Agricultural Data for Kenya, 1978: op. cit.

13. Mabogunje, A.L., 1970: Population Growth, and their Consequences in Africa, Unpublished Paper, Nairobi.

CHAPTER FIVE

5. FINDINGS, PLANNING IMPLICATIONS AND POLICY RECOMMENDATIONS.

5.1. FINDINGS AND THEIR PLANNING IMPLICATIONS

5.1.1. Cash Crop Production:

It has been observed that the areal expansion of coffee has been matched with an increase in the number of growers. The increase was more rapid in the late 1950's. But in the 1970's the expansion of coffee started showing some fluctuations due to management problems at the local co-operative society level and restrictions imposed on coffee acreage by the Internal Agreement on Coffee Acreage. Now the acreage under coffee has almost reached its upper limit.

More important is that the out-put of coffee per unit of land is showing a downward trend inspite of its higher value per unit weight of production. The latter was made possible by the 'coffee boom' of the mid 1970's but this was short lived.

This means, therefore, that as the number of potentia coffee growers increases, no new land is going to be opened up for coffee growing. Consequently, the new growers will have to share the existing acreage under coffee with the result that the acreage under coffee per grower will start

showing a downward trend too. Furthermore, the downward trend of coffee acreage per grower combined with the downward trend of the out-put per unit of land will mean that increase in cash incomes realized from coffee production will show a downward trend also as land supply diminishes. Therefore, increase in the income levels per capita from coffee production is very much limited in Kisii district as population increases; even if we allow for intensification and proper management at the local co-operative society level.

Furthermore, it has been observed in chapter three that coffee processing factories employ the majority of the people engaged in cash crop processing industries in the district. Though data to show how employment creation has been increasing in coffee factories has not been shown anywhere in the thesis; the trend observed now show that employment creation opportunities in coffee processing factories is also limited. In fact, if the out-put per unit of land under coffee continues to decline, some of the employees will soon be rendered redundant. Furthermore, decline in acreage under coffee per grower will reduce the number of workers per unit of land. Hence one can conclude that employment creation in coffee production both at the farm level and factory level is very much limited.

Thus, the trend observed now as regards to coffee production and population growth will induce the number of

workers per unit of land; the acreage incomes to and below subsistence level and once subsistence will no longer be sustainable forces such as out-migration will tend to set in motion. Out-migration is already a reality in some areas in the district as was illustrated with the results of the household survey conducted in Manga division.

By similar arguments as the onces developed in coffee production, there is still room for increase in income levels per capita from pyrethrum and tea production in the district. But this will only be confined to the pyrethrum and tea growing zones. The increase in income levels per capita has been/will be made possible by increased out-put per unit of land through intensification; increasing value per unit weight of production and; to a lesser extent, increase in areal expansion of these crops. However, the latter will be subject to amount of land left for fallow and pasture and the growing subsistence needs of the increasing population. But, as in the case of coffee production, population growth will soon or later reduce the number of workers per acre to and below the level of subsistence and once subsistence will no longer be sustainable forces such as out-migration will tend to set in motion in the tea and pyrethrum growing zones.

The processing of pyrethrum products is done in Nakuru and until a factory is built in Kisii district, employment creation opportunities through pyrethrum production is very much limited. On the other hand, increased production of tea leaves will necessitate the opening up of new factories. Thus of the three major cash crops in the district, it is only tea which can offer new agricultural employment opportunities. But as was observed in chapter three, tea processing is capital intensive hence employment opportunities in tea processing factories are very much limited in relation to the growing potential labour force.

5.1.2. Subsistence Production

Maize is the major staple food crop in the district. The main maize growing areas are: Ogembo division, Bosongo division and the Settlement Scheme in Nyamira division. These areas have been the major suppliers of maize to Irianyi and parts of Manga division who tended to specialize in cash crop production and used the cash so earned to buy maize.

However, with the expansion of tea and pyrethrum to Ogembo division and sugar cane growing in Bosongo division; furthermore, with the discovery of bananas as a cash income earner in both Ogembo and Bosongo divisions,

maize exports from these areas has ceased. Now that the population in Ogembo and Bosongo have a wider income earning base, maize is only grown for subsistence needs.

Hence the growing subsistence needs of the increasing population has posed another constraint to the development of both pyrethrum and tea production in the district. Hence farmers in the pyrethrum and tea growing zones have been forced to allocate a large portion of their land under food crop production, mainly at the expense of pyrethrum production - being an annual crop.

Thus the trend observed now is that of change from cash crop production to food crop production to meet the subsistence needs of the increasing population and also due to scarcity of land which is also associated with the increasing population.

5.1.3. Out Migration Trends

It was noted in chapter three that Kisii is suffering not only from unemployment problems, but also some areas are already experiencing out-migration. This is illustrated in chapter four by the results of a household survey conducted in one of the most densely populated and with least inter-censal growth rates - division i.e. Manga division.

It was also noted, in chapter three, that while Manga, Ogembo and Irianyi have high population densities, the latter has a comparatively higher inter-censal growth rates than both Manga and Ogembo divisions. The comparative figures are: 1.6% per annum for Manga, 2.5% per annum for Ogembo and 3.1% per annum for Irianyi between 1969 and 1979 population census years.

An analysis of both the sex ratios and household sizes by division showed that these indices are statistically insignificant as indicators of migration trends and rate of actual population growth in the district.

However, associating out migration with the impact of population growth on the key variables such as trend in the income levels per capita and total population in the productive age group to resource available; the following observations can be made.

Both Manga and Ogembo division lie in the coffee growing zone whereas Irianyi lies in the tea and pyrethrum growing zone. The downward trend of both the income levels per capita and the out-put per unit of land together with limited employment opportunities in coffee production have a negative effect on the population of these two divisions. Ogembo has an added advantage than Manga in that it has a comparatively higher average amou

of land per household and has a wider cash income base in the division although of marginal productivity and discovery of bananas as a cash income earner.

On the other hand, tea and pyrethrum production have a positive effect on the income levels and employment opportunities for the population of Irianyi. Hence on the basis of imbalances in income earning and employment opportunities, one can observe why Manga division has been experiencing low inter-censal growth rates, i.e. because of out-migration. Out migration is less pronounced in other areas of the district, but with the observed trend in the present production patterns, soon or later, out migration will be a reality in the whole district. This problem will be aggravated as land resources diminishes thereby increasing the number of workers per unit of land and consequently resulting in redundant labour relative to land.

5.2. FUTURE PROSPECTS

The major problems identified so far are:

1. Trend in decline in income per capita realized from cash crop production;

2. Trend in decline in the rate of employment creation opportunities in agricultural production and also lack of adequate non-agricutlural employment opportunities in

relation to the increasing productive age group and;

3. Associated with these two problems is that of increasing trend of out migration from the district in search of gainful income earning and employment opportunities.

These problems have been brought about by high population growth on the limited land-base. The high population growth has induced the number of workers per unit land, the average incomes to and below the subsistence level in some areas of the district due to the prevailing land use practices. The next question, therefore, will be,what are the alternative options left in creating gainful income earning and employment opportunities given the limitations of the prevailing land use practices, the high population growth and limited land supplies as the major constraints, to the realization of higher living standards of the population?

The choice of solutions in solving these problems will depend largely on the existing development potential in the district and the Government rural development policies and how effectively these policies can be implemented. But left to the choice of farmers they will opt to go for crops that will yield higher

potential returns to both unit of land and labour. However, the major problem will be how and where will they sell their products?

A sound economic development policy for the district will be the exploration of vegetable production for the expanding urban markets in the country. This is a very profitable proposition since their returns per unit land and labour are higher than cash crop production. And since the concern of the Government is to increase the income levels of the rural population, this possibility should be explored very urgently. Vegetable production will not only benefit the local population, but will also serve as a foreign exchange earner for the country as a whole and Kisii district in particular. However, an efficient marketing organization will have to be established first.

Banana growing is also another enterprising occupation in the district. However, due to lack of organized marketing system and poor road network in the banana growing zone, farmers have often suffered great losses. Hence proper marketing organization, possibily through the coffee co-operative societies, should be explored so as to boost the income levels of the population. Rural access roads should also be improved to make transportation easier.

Non-agricultural industries for example, processing of Kisii soapstone should also be explored to create not only employment opportunities, but the centres where the industries will be located will serve as markets for vegetables.

There is also an urgent need to locate a pyrethrum factory in the district since it is the leading producer of pyrethrum in the country. Also exploration of agro-based industries, such as food processing factories, should be looked into as there is potential for the necessary raw materials.

As value per unit weight of production of vegetables is higher than cash crop production; also its land requirement relative to the available labour is less than cash crop production; future expansion of cash crops should be restricted and if possible, coffee trees should be uprooted to allow for food crops and vegetables production.

Maize is the staple food crop in the district. But as land supplies become limited, soon or later, they won't be enough land for maize production to meet the subsistence needs of the growing population. To this end then, more food nutrition experts or field officers should be deplored in the district and educate the people on the nutritional values of potatoes, cassava, bananas,

yams, etc. and consequently people should be encouraged to change their eating habits. These food crops yield higher output per unit of land and have higher nutritional value than maize. THis should be a sound food policy for the growing population on the already limited land-base. It will not only meet the subsistence needs of the population, but will also serve as a cash income earner.

However, diversification of agricultural production will not be the only solution to the growing needs of increasing per capita incomes and employment opportunities of the increasing population. To this end alternative means of production and employment creation opportunities need to be sought in the non-agricultural sector of the economy within the district. These include the development of:

(a) Resource-based non-farming activities;

(b) Agricultural output-based non-farming activiti

and (c) Rural income-based non-farming activities.

(a) Resource-based non-farming activities

The Kisii soapstone deposits are virtually unlimite (in South Mugirango Location) and are the only valuable

minerals in the district. Currently it is carved into handcrafts and curious for the tourist trade and exports. It has also been used to produce black-board chalk and, though the quality has been a problem, it is now marketed within Kenya. The Kisii Soapstone can be used for the production of:

(i) Ceramic materials;
(ii) Base for production of insecticides; and
(iii) Electrical insulators.

Thus the soapstone could provide the basis for an industry on a comparatively large scale, with assured market. Hence the government should look into possibilities of setting up an industry to process the soapstone and thereby create employment for the growing potential labour force in the district.

The possibilities of intensifying fish farming and conservation of trees for charcoal burning should also be explored. However, note must be taken that these being "natural resources" their is a limit to their exploitation. Too high activity in one year will have a negative influence on income and employment opportunitie in the following years.

(b) Agricultural output-based non-farming activities

These consists of processing and trade in farm-output and depend first and foremost upon the rural patterns of agricultural production. The processing of coffee and tea and their limitations as regards to employment generation in the district has already been discussed. The other output-based activities include posho-mills and hides and skin bandas. The extent to which processing of agricultural output leads to rural employment seems to depend upon the inter-related choice of "quality" of finally processed products, choice of technique and scale of production and the choice of location of processing industries. For export crops the quality of the products is determined by the standards of international competition, but for other products there seem to be a real choice as to where employment creation shall take place. For example:

Maize was originally ground by wives within the homesteads but is now in most areas processed into posho in power-driven posho mills in the nearest market place. If the granary becomes empty before the beginning of the next harvest the wives buy shelled maize in the local market and bring it to the posho mills for milling. However, an increasing part of the surplus

maize produced by farmers is being processed in relatively capital-intensive large-scale mills in big towns like Nairobi, Eldoret, Mombasa and Nakuru.

Likewise beer is a traditional locally produced consumer good that is now also produced in the so-called "better quality" in big factories also in big towns. The recent ban by the government on the brewing of local beer has greatly affected the number of wives employed in beer brewing in the rural areas.

To this end the possibility of locating large scale maize mills in the rural areas; and encouraging the production of local beer of better quality should be explored as possible sources of income earning and employment creation opportunities. Also future agricultural enterprises should be such that they can be processed locally for export. However, their success will depend upon the income elasticities, income distribution and the relative efficiency of the rural producers.

(c) Rural income-based non-farming activities

They include small-scale industries e.g. the Rural Industrial Estates Programmes, services and repairs trade as well as traditional crafts like pottery and

basket-making. A sound economic policy for the development of such non-farming activities should be such that they produce for the urban market or being sub-contracted by the modern sector. However, nothing of this kind exists in Kenya. Here the rural industries have to compete with small as well as medium and large-scale industries in the bigger towns. The success of this policy will need government intervention; and the rural population must be discouraged from over-reliance on imported goods (since as income increases, their is a larger propensity to spend on goods produced outside the rural areas) and this, therefore, calls on the improvement of the relative efficiency of rural industries. Also their is need for education, training and encouragement of co-operative societies for the success of this policy.

Tannery, bakeries, building and construction, printing and carpentry should be given top priority in rural areas and to a less extent in the urban areas.

Though it has not been possible to scale the actual possibilities on how the development of these non-agricultural sector of the economy within the district will contribute to the production and employment opportunities, the chances are that these might not sustain the needs of the increasing population.

This will therefore call for creation of alternative employment opportunities through direct government intervention. The government policy to this end is outlined in the Human Settlement Strategies for Urban and Rural Development in Kenya. These include the development of Service Centres, Growth Centres, an Integrated Transportation and Communication Network and Rural Development. The success of these strategies for Human Settlements in Kenya will by and large depend on the resources available and how effectively they can be used for the benefit of not only the individuals or interest groups but that of the entire community being planned for.

5.3. POLICY RECOMMENDATIONS

In the light of the above discussion the following should be sound economic development policies in tackling the dual problem of production and employment given the increasing population on a limited land-base.

(i) Encouragement of food crop production through higher prices as incentives to farmers.

(ii) Proper marketing organization for selling farmers produce by formation of new co-operative societies or making use of the existing societies with proper management.

(iii) Encouragement of Horticultural production by assuring the farmers markets for their produce through necessary urban contacts. As Horticultural production requires substantial capital investment in its initial stages of production, credit facilities should be made available to the farmers.

(iv) Setting up an upper limit on a viable land holding size below which growing of export crop e.g. coffee and tea will be rendered uneconomical.

The above should be seen as short-term policy recommendations to tackle the dual problem of production and employment. The long-term policy recommendations should include amongst others:

(i) Development of the non-agricultural sector of the economy through training in village polytechnics. The village polytechnics encourage the development of non-formal education programmes for school leavers who cannot secure employment in the formal sector. These programmes

aim at giving the school leavers practical skills which enable him to support himself through self-employment, or alternatively they aim at improving his chances of securing formal employment through the attainment of further qualifications. The causes offered in village polytechnics include: craft skills; agricultural knowledge; small scale business; and general economic understandings of the young people who are forced to look for their livelihood in the rural areas.

(ii) Formation of co-operative societies or groups e.g. carpentry, building and construction, bakery etc. groups to produce goods for both the urban and rural areas. For this to succeed credit facilities should be made available to the rural population through the village polytechnics and the necessary urban contacts should be established first.

(iii) Starting of large and small scale industries in the district to make use of the natural resources and agricultural output for both domestic consumption and export. This will need government intervention by providing the necessary infrastructural facilities and services.

CHAPTER SIX

6. SUMMARY AND CONCLUSIONS

6.1. SUMMARY

The existing development patterns in Kenya is, historically a feature of the colonial and post-colonial period. Before that time, the Gusii who now inhabit the study area, were still in a state of migration and/or expansion of territory as their number increased. The way in which tribal lands were imposed with finite boundary, within which their growing population subsequently developed the present land use patterns, is now of historical significance but it marks a stage that is related to stage of agricultural growth described by Boserup i.e. in change from fallow agriculture to annual agriculture.

Between 1900 - 1930, agricultural development in Kisii district was characterized by a relatively small rate of population growth and an abundant supply of land relative to labour. Also characteristic of this period were limited market opportunities provided by mainly the neighbouring Luo population and the cultivation of grain crops - mainly finger-millet - as a staple food and cattle rearing.

In the second phase of agricultural development (1931 - 1957), maize became a very important cash crop and rivalled finger millet as a food staple. Population was growing more rapidly but land was still abundant relative to labour. The increasing population and the need to earn cash incomes caused an important evolution of attitudes with regard to land tenure. This resulted in a much formal litigation of the present land tenure system. A small beginning was also made by the colonial authority in the diversification of Gusii economy with the introduction of coffee in 1931 and pyrethrum in 1952. However, the former was subject to strict administrative conditions and was not readily adopted till after 1957.

The third phase (1958 - 1969) coincided with a rapid population increase that still found accommodation within the limited land-base. Thus after a long period of colonial neglect of agriculture in Kisii, the new policies of the Swynnerton Plan in the late 1950's opened the productive choices of Kisii district peasants to a succeeding variety of cash crops. (Note, however, that coffee and pyrethrum predated the Swynnerton Plan in Kisii but were not readily adopted). Tea was introduced in 1957. Hybrid maize was also introduced in 1964. The adoption of these new crops was more rapid during this period and most of the land added to the planted area as population increased was used already as

fallow land and pasture. The increase in planted area under these crops matched with a corresponding increase in the value of exports from the district. Hence not only the income levels per capita was increasing, but also the subsistence needs of the growing population and employment opportunities were being adequately met. Immigration into the district was common and found accommodation. However, toward the end of 1960's coffee production started showing a downward trend.

The fourth phase (1970-79) can be termed as a period of population pressure in the district. The increasing population on a limited land-base together with the growing subsistence needs saw the total area under cash crop increasing very slowly. Maize growing was still showing a steady increase - an increase that matched with the subsistence needs of the growing population. The value of exports of maize started increasing slowly. More fallow land (if any) and pasture land was being allocated to food crop production and less to tea and pyrethrum production and none to coffee production. The enthusiasm the farmers had in adopting these cash crops is almost fading. The period was also characterized by slow immigration rates meaning that the pull factors i.e. availability of income earnings and employment opportunities were becoming less. Furthermore, the increasing proportion

of the potential labour in relation to diminishing land resources has forced some people to move out of the district in search of gainful income earning and employment opportunities. The high population growth has also created an awareness to the population to adopt crops with higher returns to unit of land and labour.

6.2 CONCLUSION

Kisii district is already suffering from limited land resources. So long as land was abundant relative to labour, the proportion of land devoted to cash crop production was immaterial. The only constraint was labour. However, as land supplies become limited as a consequence of increasing population, the tendency to develop commercial agriculture with industrial crops appear to have certain perceptible limits.

The industrial (cash) crops: coffee, pyrethrum and tea are important agricultural products whose production Kenya is keen to expand, and upon which production export incomes and domestic industries to some degree depend. In the near future (and under the existing political and economic conditions), the study foresees that there would be discernable upper-limit to the increased production of these crops not only in Kisii but also in similar areas with the same production patterns and high population densities.

Consequently, once the upper-limit has been reached, population growth will induce the number of workers per unit land and income levels to and below subsistence level. And once subsistence will no longer be sustainable in the rural areas population influx to urban areas with its associated urban problems, e.g. housing, violence, slum creation etc. will be more than a reality in Kenya.

The study recommends diversification of agricultural production and improvement of the existing marketing organizations. However diversification of agricultural production alone will not sustain the growing needs for income earning and employment opportunities of the increasing population. Hence creation of alternative income earning and employment opportunities in the non-agricultural sector of the economy.

However, it was not possible to scale the production and employment potential in the non-agricultural sector of the economy in relation to the increasing population. To this end the study recommends detailed development of non-agricultural activities and their future potential in relation to the growing needs for income earning and employment opportunities for the increasing population on the limited land-base.

BIPLIOGRAPHY

1. Allan, W., 1949 : African Land Usage in Northern Rhodesia: Oxford University Press, London

2. Bernard, F.E. and Anzagii, S.K., 1979 Population Pressure in Rural Kenya Unpublished Project, Ohio University Athens.

3. Boserup, E, 1965: The Conditions of Agricultural Growth: George Allen and Unwin Ltd., London

4. Carlson, J. and Moody, T, 1976: Population Pressure, Agricultural Productivity and and Rural Employment in Kenya: I.D.S. Unpublished Project Paper, Copenhagen, Denmark.

5. Colonial Office, 1934: Report of the Kenya Land Commission: Cmd 4556, London

6. Garst, R.D., 1972: The Spatial Diffusion of Agricultural Innovations in Kisii District, Kenya; Unpublished Ph.D. Thesis, Michigan State University.

7. Gray, H.P., and Shant, S.T., 1970: Economic Development and Population Growth: D.C. Heath and Company, Massachusetts.

8. Hance, W.A., 1970 : Population, Migration and Urbanization: Columbia University Press, New York.

9. Hubert, K., 1972 Draft Plan for the Kisii District Development Committee, District Commissioner's Office, Kisii.

10. LeVine, R.A., 1962: Wealth and Power in Gusii Land John Willey and Sons Inc., New York.

11. Mabogunje, A.L., 1970: Population Growth, trends and their Consequences in Africa, Unpublished Paper, Nairobi.

12. Maxon, R., 1972: British rule in Gusiiland 1907 - 1963, Unpublished Ph.D. Thesis, Syracuse.

13. Michoma, J.M.G., 1980: The Role of Agro-based Industry in rural development.A Case Study of Smallholder Tea in Kisii District, Kenya. Unpublished M.A. Thesis, Nairobi.

14. Ominde, S.H., 1963: Land and Population Movement in Western Kenya, Unpublished Ph.D. Thesis, Makerere University.

15. Ominde, S.H., 1968: Land and Population Movements in Kenya. Northwestern University Press, Eventon.

16. Ogot B.(ed.) 1976: Kenya Before 1900, EAPH., Nairobi.

17. Roger Van Swanenberg, 1972: Agricultural History of Kenya, EAPH, Nairobi.

18. Swynnerton, R.J.M., 1962: African Farming Transformed, Commonwealth Journal, Vol. 5 No. 3.

19. Uchendu, V.C. and Anthony, K.R.M., 1975: Agricultural Change in Kisii District, Kenya, EALB., Nairobi.

20. Republic of Kenya: Basic Agricultural Data for Kenya, as reconciled by Ministry of Agriculture and Ministry of Economic Planning and Community Affairs, 1978.

21. Republic of Kenya: Human Settlements in Kenya: A Strategy for Urban and Rural Development, Physical Planning Department, Ministry of Lands and Settlement, 1978.

22. Republic of Kenya: Kisii District Annual Agricultural Reports, 1966 - 1978, Ministry of Agriculture.

23. Republic of Kenya: Kisii District Development Plan 1979-1983, Ministry of Economic Planning and Development, 1980.

24. Republic of Kenya: Kisii Physical Development Plan, Town Planning Department, Ministry of Lands and Settlement, 1971.

25. Republic of Kenya: Population Census, 1962, Ministry of Finance and Economic Planning, Statistical Department.

26. Republic of Kenya: Population Census, 1969, Ministry of Finance and Economic Planning, Central Bureau of Statistics.

27. Republic of Kenya: Population Census, 1979, Ministry of Economic Planning and Development, Central Bureau of Statistics, Unpublished Reprots.

28. Republic of Kenya: Statistical Abstract, 1970, Ministry of Finance and Economic Planning,Central Bureau of Statistics.

29. Republic of Kenya: Statistical Abstract, 1979, Ministry of Economic Planning and Development, Central Bureau of Statistics.

APPENDIX I:

UNIVERSITY OF NAIROBI

DEPARTMENT OF URBAN AND REGIONAL PLANNING

M.A.(PLANNING)

SECOND YEAR 1980/81

HOUSEHOLD SURVEY

A. IDENTIFICATION

Farm no..... Location ..... Sub-location .....

Date of interview ..... Interviewer .....

B. BACKGROUND INFORMATION

1. (a) Are you the owner of the farm? 1=Yes 2=No

   (b) Farm Head 1=male 2=Female

   (c) Is Farm Head residence? 1=Yes 2=No

   (d) (If No), where do he/she reside? .....

2. (a) What is Head's main occupation? .....

   Others .....

   (b) What is the education level of head?

   0=None; 1=upto Std 3; 2=upto Std.7

   3=technical training; 4=upto form II;

   5=upto form IV; 6=Professional training;

   7=upto form 6; 8=University/College.

   (c) Literacy of head

   1=Vernacular, 2=Swahili; 3=English;

   4=All, 5=Vernacular and Swahili

   6=Vernacular/English; 7=Swahili and English.

(d) Marital status of head: 1=Single;
2=Married; 3=Divorced; 4=Widower;
5=Widow.

(e) If married, how many wives, or widows.....

(f) Birth place of Heads Father .....

3. (a) How many people live on this farm? .....
Adults (16 yrs. and above) .....
Minors (less than 16 yrs.) .....

(b) How many of head's direct family are on this farm? ..... and away?.....

(c) How many of head's children attend school? ..... Primary? ..... Higher? .....

C. MIGRATION

4. If some household members live away

(a) How many in rural areas but within the same division? ..... Name areas .....

(b) How many in rural areas outside the division but within the district? .....
Name areas .....

(c) How many in rural areas but outside the district? ..... Name district(s) .....

(d) How many in urban centres but within the district? ..... Name centre(s) .....

(e) How many in urban centres outside the district? ..... Name centres .....

(f) How many intend to come back? .....

(g) When? .....

(h) How many females? .....

(i) About what age are most of them? .....

D. LAND

5. (a) How many piece of land are owned/rented?

.....

(b) How many acres total are owned, rented?,.....

6. (a) Is this land: 1=Inherited; 2=Bought;
3=Rented; 4=Other.

(b) Is it: 1=Adjudicated; 2=Surveyed;
3=Registered; 4=Titled.

7. (a) Is this land enough for your needs?
1=Yes; 2=No.

(b) If No, what do you intend to do? .....

E. PRODUCTION AND FARM LABOUR

	CROPS	Maize	Wimbi	Coffee	Tea	Pyrethrum
8.	(a) Have you ever grown					
	(b) When di you start growing					
	(c) Have you ever stopped growing					
	(d) Are you still growing					
	(e) If Yes, how many acres/trees under					
	(f) Do you use chem. fertilizer; Farm Yard manure or none					
	(g) Do you ....Dust spray					
	(h) What is your average annual total harvest of					
	(i) How much do you store for consumption			*	*	*

9. Other crops grown .....

.....

	LIVESTOCK (GRADE)	CATTLE	POULTRY
10.	(a) Have you ever kept		
	(b) When did you first start keeping		
	(c) Have you ever stopped keeping		
	(d) How many ..... do you have		

11. How many local cattle do you have? .....

12. How do you feed your cows? .....

13. How often do you dip or spray your cattle? .....

14. What farm labour do you use?

1=Family members; 2=Self help;
3="Risaga"; 4="Egesangio"; 5=Paid contract;
6=Paid regularly; 7=Others.

APPENDIX II:

KISII DISTRICT POPULATION TOTALS AND DENSITY BY LOCATION: 1979

ADMINISTRATIVE UNIT*	POPULATION TOTALS	DENSITY PERSON/SQ.KM.
MANGA DIVISION	214704	471
Central Kitutu	33545	764
Eronge	43485	495
West Kitutu	52274	431
East Kitutu	39515	427
North Kitutu	45889	415
NYAMIRA DIVISION	198308	309
Borabu	31587	132
West Mugirango	91706	502
North Mugirango	75015	342
IRIANYI DIVISION	117758	423
Nyaribari Chache	50777	437
Nyaribari Masaba	66981	409
BOSONGO DIVISION	118156	364
Wanjare	49176	398
S.Mugirango Chache	36166	315
S.Mugirango Borabu	32816	379
OGEMBO DIVISION	190919	414
Majoge Chache	44767	422
Majoge Borabu	50314	446
Bassi Chache	51116	400
Bassi Borabu	44722	390
KISII MUNICIPALITY	29661	844
KISII DISTRICT	869512	395

SOURCE: Kenya, Population Census 1979

* 1979 Administrative Unit Boundaries.

APPENDIX III:

KISII DISTRICT NUMBER OF HOUSEHOLDS, HOUSEHOLD SIZE AND SIZE OF HOLDING PER HOUSEHOLD: 1979

ADMINISTRATIVE UNIT*	NUMBER OF HOUSEHOLD	HOUSEHOLD SIZE (PERSONS PER HOUSEHOD)	HOLDING SIZE (HECTARES/ HOUSEHOLD
MANGA DIVISION	35135	6.1	1.29
Central Kitutu	5661	5.9	0.79
Eronge	6844	6.4	1.27
West Kitutu	8882	5.9	1.43
East Kitutu	6423	6.2	1.43
North Kitutu	7326	6.3	1.50
NYAMIRA DIVISION	30586	6.5	2.09
Borabu	4591	6.9	5.18
West Mugirango	13754	6.7	1.33
North Mugirango	12241	6.1	1.78
IRIANYI DIVISION	19311	6.1	1.44
Nyaribari Chache	8770	5.8	1.32
Nyaribari Masaba	10541	6.4	1.55
BOSONGO DIVISION	20996	5.6	1.55
Wanjare	9574	5.1	1.28
S.Mugirango Chache	6333	5.7	1.82
S.Mugirango Borabu	5089	6.4	1.69
OGEMBO DIVISION	30168	6.3	1.53
Majoge Chache	7771	5.8	1.35
Majoge Chache	7785	6.5	1.63
Bassi Chache	8190	6.2	1.55
Bassi Borabu	6422	7.0	1.78
KISII MUNICIPALITY	5410	5.5	0.65
KISII DISTRICT	141607	6.1	1.55

SOURCE: Kenya, Population Census, 1979

* 1979 Administrative Unit Boundaries.

APPENDIX IV:

KISII DISTRICT POPULATION BY SEX AND LOCATION: 1979

ADMINISTRATIVE UNIT UNIT*	TOTAL	MALE	FEMALE	SEX RATIO MALE/FEMALE X 100
MANGA DIVISION	214708	103016	111692	92.2
Central Kitutu	33545	16256	17289	94.0
Eronge	43485	20793	22692	91.6
West Kitutu	52274	25359	26915	94.2
East Kitutu	39515	18819	20696	90.9
North Kitutu	45887	21789	24100	90.4
NYAMIRA DIVISION	198308	98972	99336	99.6
Borabu	31587	17040	14577	116.7
West Mugirango	91706	45108	46598	96.8
North Mugirango	75015	36854	38161	96.6
IRIANYI DIVISION	117758	56907	60851	93.5
Nyaribari Chache	50777	24624	26153	94.2
Nyaribari Masaba	66981	32283	34698	93.0
BOSONGO DIVISION	118156	56728	61430	92.3
Wanjare	49176	23788	25388	93.7
S.Mugirango Chache	36166	17163	19003	90.3
S.Mugirango Borabu	32816	15777	17039	92.6
OGEMBO DIVISION	190919	92725	98194	94.4
Majoge Chache	44767	21702	23065	94.1
Majoge Borabu	50314	24426	25888	94.4
Bassi Chache	51116	25125	25991	96.7
Bassi Borabu	44722	21472	23250	92.4
KISII MUNICIPALITY	29661	15102	14559	103.7
KISII DISTRICT	869512	423450	446062	94.9

SOURCE: Kenya Population Census, 1979.

* 1979 Administrative Unit Boundaries.