

KISII FOOD PROCESSING AND STORAGE PREFEASIBILITY STUDY.

Mutiso Consultants Ltd.

INTRODUCTION AND TERMS OF REFERENCE.

Kisii YWCA Branch approached the National YWCA office and requested help in "carrying out a Feasibility Study on some of the following:-

- The amount of food likely to be harvested and after consumption how much could be preserved.
- The type and cost of storage required.
- The equipment needed.
- The personnel required to carry out and manage the project.
- Marketing survey."

After discussions with the Branch, the National Office instructed the consultants to conduct a pre-feasibility study which would focus on the following areas :-

- Survey the possibility of establishing food processing activities.
- Develop a strategy for discussion within the YWCA system.

It became apparent on starting field work that one of the issues is the youth and organisational base of the Kisii Branch. As a result we collected information on the branch and its capacity.

Since this document is to go to donors, we have given background to the district. To assist in the conducting of a detailed feasibility we have developed some maps which are not available from public sources. They will be of use in sampling for a full feasibility.

KISII DISTRICT SETTING.

Kisii District, in Nyanza Province, covers about 2200 sq. kms. It is part of the highlands of southwest Kenya which receive ample precipitation from the Lake Victoria local convection system. Kisii District is bounded by South Nyanza to the west, Narok District to the south and Kericho District to the east.

COMMUNICATION.

Communication to the district and within it is good for major tarmac roads from Kisumu, Kericho and Kilgoris converge at the district center-Kisii town. All wheather murram roads reach out to the divisional centers and service the minor trading centers and tea factories. As of 1983, there were 1,192 kms of roads in the district. 145 of these were tarmac roads, 580 were gravel roads and 468 were earth roads. The total for tarmac roads is to change with the completion of the Kilgoris-Nyamira- Ikonge-Kericho road. This road will significantly improve communication within the district for it cuts through its middle.

ADMINISTRATION.

Kisii District is administered from Kisii Town which had a population of 35,000 in 1983. It is estimated to be 100,000 in 1986. This is one of the fastest growing towns in the country.

The district up to 1983 had 5 divisions, 26 locations and 92 sublocations. Since then a new division, corresponding to the settlement areas in the eastern part of the district, has been created. There also are new locations and sublocations as shown in Appendix 8. Kisii District: Administrative.

POPULATION.

Appendix 2: Kisii Demographics and Appendix 10: Kisii Population Density, shows Kisii population from the 1979 Census. It is estimated that the population is already close to the projected figure for 1988 ie 1.3 million. The average population density is therefore about 550 per sq. kilometre. This is one of the highest district averages in the country.

Since there are not significant numbers of people in towns in the district, population pressure on the farmland, at existing technology, is a serious problem.

Population growth rate is estimated as about 4%. At this growth rate then, in 20 years the population will double and by the year 2,000 it is not unrealistic to expect the district to be carrying close to 2.5 million people. The density will be over 1,000 people per square km.

Clearly such a population cannot be supported by a non-processing agricultural system. It is a priority in the district to get into agro-processing industries.

LAND TENURE.

Unlike other areas of the country where individuals do not have title to their land, and therefore land is used jointly, almost all Kisii land is registered and farmers have title to land. The registration of land has enabled Kisii farmers to get into the market economy for credit in the Kenyan case ultimately depends on access to titled land.

Not much land in the district is held for non-agricultural purposes. Government land is only 3%. Towns are only 1%. Forests and Trust land do not even amount to one percent.

Of the 96% of the land used for agricultural purposes, smallholder freehold land forms 8%, smallholder registered holdings form 83%, and only 5% of smallholder land is unregistered. These facts are shown in Appendix 3: Land Tenure Classification.

Farms are usually very small. In all divisions other than Borabu, where farms average 5-6 hectares, the average farm size in the rest of the district is about one hectare.

Since the pattern of settlement is that a farm starts at the top of a hill and runs down to a stream or valley bottom, farms are thin strips which in the most crowded areas are only a few meters wide.

GENERAL AGRICULTURE.

Because of good volcanic rock derived soils and high rainfall, ranging from 1,600mm to 2,100mm annually, all Kisii land is high potential and good for agriculture. Crop agriculture and animal husbandry are practiced by a majority of farmers who are market oriented.

The most important crops are tea, coffee, bananas, maize, finger millet, beans, potatoes, pineapples, passion fruit, kale, cabbages, saga, etc. Appendix 7: Kisii Production Trends, illustrates the district's enumerated agricultural production since 1982. Figures for 1986 were not available in a useful form.

A detailed classification of farmland in Kisii based on both demographic and agro-economic variables was done by Kenya Woodfuel Development Programme in 1985. This classification is more useful for food related project planning than the classification found in the MOA Farm Handbook. Appendix 9: Major Agro-economic Regions, is an adaptation of the KWDP classification for purposes of this consultancy.

Following the KWDP the district can be classified into the following subregions:

"Subregion 1: Kisii Town and Environs.

This is an urban fringe area roughly covering Kisii Municipality with a fast growing population of small families. The peripheral farms are the smallest in the district with a mixture of crops but a concentration on commercial banana and some coffee.

Subregion 2A: Northern Tea Zone.

This is a commercial farming area in the Kisii highlands, covering roughly the upper part of Manga and Nyamira Divisions. It has had a low population growth rate over the last ten years and has a high dependency ratio (probably due to high rate of male emigration). The population density is medium to high (432 per square km), with farm sizes below average (0.81). Land use is dominated by tea and managed pasture; the area under maize is very low compared with other zones (9.6%).

Subregion 2B: Southern Tea and Pyrethrum Zone

This area, covering the upper (southern) part of Irianyi Division, is somewhat similar to the northern tea zone, but the population density is lower (but growing more rapidly) and the farms larger. Pyrethrum supplements tea as a cash crop. Food crops are more important than in Zone 2A (maize covers 20% of the land area).

Subregion 3: The Coffee- Banana Zone.

This area is situated in the Kisii lowlands, north of Kisii Town and covers the lower parts of Manga and Nyamira Divisions. A characteristic of this area is the joint importance of coffee (5.6% land cover) and bananas (6.4%) giving a high cash crop concentration. Root crops (cassava, sweet potatoes,) are important as food crops, but apart from the dominance of the two cash crops, land use is very mixed. The population density of the area is highest for the rural areas (450 per square km) and farm sizes are near the district average (0.9 ha).

Subregion 4: Banana Zone.

This zone roughly covers the western part of Ogembo Division in the Kisii lowlands. It has some similarities to zone 3. Agriculture is dominated by Bananas with a district maximum of 9% land cover. Coffee is very important in the northern half of this zone. Because of the large area of land under maize (28.5%), food crops are much more important than in the coffee-banana zone.

Subregion 5A: Northwest Traditional Zone.

This zone is situated in the Kisii lowlands and roughly covers the northern part of Bosongo Division. It is a traditional farming area with some cash cropping of bananas along with mixed cropping structure. The area under managed pasture is lowest in the district. Farm sizes are well above the district average (1.8 ha), and population density is relatively low. The population is relatively old (low child dependency ratio, high elderly dependence ratio) and population growth rates are low.

Subregion 5B: Southwest Traditional Zone.

This zone covers the southern part of Bosongo Division in the Kisii lowlands. Agriculture is much more subsistence-oriented than elsewhere, with the largest area under maize (36.2). Like zone 5A, the area under cash crops is of minor importance and what little exists, is dominated by sugar cane. Another notable feature is the reliance of grass as roofing material (the roof ratio of 0.16 is the lowest in the district). Unlike zone 5A, the population is relatively young and is growing rapidly.

Subregion 6: Central Mixed Farming Zone.

This zone covers the eastern part of Ogembo Division and the northern part of Irianyi Division in the Kisii uplands. There is nothing very distinguishing about this area; it tends to fall into the average for almost all variables. It is most like zone 5B, but with smaller farms and slightly greater emphasis on cash crops.

Subregion 7: New Settlement Area.

This area corresponds roughly with Borabu Division in the eastern part of the district. Most farmers migrated into the former part of the White Highlands during the 1960s and early 1970s. It is a very distinct subregion with a low population density (139 per sq.km) and large farms

(average 5.2 ha). The land does not appear to be used intensively. Open grassland (extensively used) and natural vegetation cover a high proportion of the land area. The population growth rate in this zone is very high (5.2%)."

We have quoted extensively from the study WOODFUEL AND AGROFORESTRY IN KISII DISTRICT-KWDP WORKING PAPER NO 7 to show that there are differences in the various parts of the district which must be taken to account in future food processing program development work by the YWCA.

In discussions with Kisii YWCA leadership, preference was expressed for a factory to serve Manga and Nyamira Divisions. Assuming that a factory will have to process surplus bananas and pineapples, it becomes clear that the areas for its coverage would AS A MINIMUM have to cover zones 3, 4, 5A, 5B and 6 (administratively the relevant areas are in lower Manga, lower Nyamira, all Ogembo and all Bosongo and northern Irianyi) because these are the zones producing the market surpluses (bananas and maize especially and some pineapples). Zone 7 must be included since there is surplus land which can be exploited in the longterm. It covers all Borabu Division.

EXISTING PROCESSING.

Maize Milling

There are three large maize milling operations in the district. The owners were not willing to divulge the capacity to the consultants. However they did point out that there was unmet demand-a point also shared by other interviews.

There are many small mills for grinding grain in all small market centers. Discussions with members and officials in Kisii pointed out that the existing capacity does not meet the local demand for flour as national mills still sell in the district. Given the local preferences for locally milled flour, there seems to be a niche worth exploiting.

Fruit Processing

The only "factory" processing fruit in Kisii is Mashambani Industries located near Kisii town. This plant was offered to an NGO in 1985 but no donor would put up the money for it was deemed unprofitable by Deloitte Haskins and Sells who evaluated it for Kenya Rural Enterprise Programme.

However Mashambani collects crude papain, dries bananas and pineapples. In 1985 it was planning to produce pawpaw and and passion fruit juice but there is no evidence these activities ever took off.

There is no data available on the production capacity of the factory but on visiting it, the consultants were told that the plant operates when it gets international orders.

In Kisii, Kisumu and Kericho, pineapple, passion and pawpaw juice, made from Kisii farm produce, is sold by itinerant traders. This is a niche worth exploring.

YMCA ORGANISATIONAL BASE IN KISII DISTRICT.

A perusal of Appendix 1: Kisii YWCA Groups 1986 and Appendix 8: Kisii District Administrative, shows the distribution of groups in Kisii. They are concentrated in a thin belt in the northern part of the district. This is possibly explained by the historical entry of the YWCA into the district which was facilitated by leadership related to the Lutheran Church at Matongo.

The 18 groups listed, with a total of 495 members, represent more than ten years organisational effort. It is not indicative of aggressive activity for where the groups are concentrated, ie proposed Nyamira District, there are 174 other active women groups with a total membership of 4,330.

Issues of future expansion of the organisational base were explored with the current Kisii YWCA leadership. No systematic ideas on where that expansion is to take place were expounded other than the fact that there was need to expand recruitment activities in the Kisii town area.

In discussions with other people several points were raised. First is the fact that the area where the groups are dominant has historically resisted the preponderant leadership role of the area around Kisii town. Secondly the leadership of the Maendeleo ya Wanawake, which is strong in other parts of the district, is seen as a competitor. Thirdly the area where the groups now exist will be in a different district shortly with focus shifting from Kisii town as district headquarters to Nyamira, the new district headquarters.

Evaluating these facts leads us to conclude that possible future expansion will essentially be in the area where the groups now dominate. We do not see the current leadership aggressively venturing out to the rest of the district for the contextual reasons enumerated above unless spurred.

It is not clear how much organising expansion, even in the area of domination, current leadership can do. The issues are their orientation, familiarity with the wider community needs and finally linkage with other organisations operating in the community.

On orientation, the leadership was oriented to the Kisumu Branch till last year. They set themselves the target of splitting from this branch and to date, they seem not to have decided whether the main focus is to be recruitment of many more members in the whole of Kisii district or to focus only on expanding membership in the the planned Nyamira district.

On the familiarity with the wider community needs, the leadership is not conversant with other groups doing development work in the existing district and even in the areas of the proposed Nyamira district. Little contact, consultation, and networking seems to take place with other NGOs or relevant GOK bodies at District or Divisional level to help in thinking through the wider community needs and in the process to identify perhaps new recruitment and development options. Perhaps this will improve as soon as the leadership gets the issue of land for an

office out of the way and begins to focus on specific development work.

National YWCA could help in the process by reorienting Kisii Branch to focus on expansion for the branch membership is too small to handle a major development project. A choice on where to spend organising resources will have to be made now on whether to concentrate in the future Nyamira District, where the current leadership seems to feel more at home or whether to concentrate in other parts of Kisii with the view of ultimately starting another branch when Kisii District is split.

On linkages, whatever strategy is adopted, the leadership should become familiar with the development resources which are available within Kisii and which could be of use to it. One of the unexploited resources is the members. The branch should adopt a more participatory approach with regard to members, groups and leadership style for such a style would strengthen the organisation.

KISII DISTRICT FRUIT PRODUCTION BASE.

The following are 1986 banana, pineapple and passion fruit production estimates for Kisii District as supplied by the District Agricultural Department.

| | Hactarage | Production |
|---------------|-----------|---------------|
| Bananas | 20,000 | 400,000tonnes |
| Pineapples | 960 | 14,400tonnes |
| Passion Fruit | 100 | 1,500tonnes |

The production figures culled from the Nyamira Division Agricultural Report for 1986 are as follows:

| | Hactarage | Production |
|------------|--------------|--------------|
| Bananas | 11 | 170 tonnes |
| Tomatoes | 80 | 4,000 tonnes |
| Kale | 80 | 1,080 tonnes |
| Onions | 4 | ? |
| Saga | Unenumerated | - |
| Pineapples | Unenumerated | - |
| Cabbages | Unenumerated | - |

Bananas.

It should be clear from the above table that there is a lot of bananas produced in the district. In fact Kisii district accounts for about 50%

of national banana production as shown in Appendix 4: National Banana Hactarage and Production 1985. The per hactare productivity in Kisii is among the highest, being number three, the husbandry of bananas is has lagged behind other cash crops in the district. There are few pure stands, little pruning and artificial fertilising. Ministry of Agriculture is set to introduce better planting material and extend better husbandry. However this programme will take a while before impacting on production for the planting material available in 1987 will only be sufficient for planting about 10 ha. It also is doubtful whether farmers will improve on husbandry untill better marketing outlets are generated.

Pineapples.

There is some production of pineapples but the district is not a major producer nationally according to the Horticultural Development Authority. Besides the pineapples from the higher parts of the district are tend towards being acidic and are not as sweet as as the ones from the lower areas and the adjoining South Nyanza District which reputedly produces many more pineapples with limited market outlets. This fact has led the branch to think of a pineapple processing factory at either Magwaga or Matongo- in proximity to the South Nyanza production areas.

Passion Fruit

Passion fruit production had a controversial history in the district. In the nineteen seventies, there was a processing plant in Sotik in the neighbouring Kericho district which was later moved to Thika. Kisii farmers reacted to this violently and to date they do not seriously farm the crop. The estimated production is strictly based on hedgerow planting.

Summary.

The figures above also point to the fact that Nyamira production of bananas and pineapples for processing is not sufficient without importing from other areas of Kisii and perhaps South Nyanza.

PROPOSED KISII YWCA AND FOOD PROCESSING/STORAGE ACTIVITIES.

The following are the recommendations of a strategy for initiating food processing and storage activities. They should be subjected to full economic and social feasibility during the full feasibility study. The recommended activities are arranged in their order of priority.

1. Expansion of Organisational Base.

Before any of the activities recommended below take place, the most urgent issue for the branch is, in our opinion, to drastically expand its organisational base. It is in the areas where there are food and land surpluses where processing and storage activities will have greatest socio-economic impact. These areas are in Lower Manga, Lower Nyamira, all Borabu, all Ogembo, all Bosongo, and Northern Irianyi. A good target maybe close to 10,000 members so as to facilitate the partial financing of a factory to handle surplus produce in the longterm

2. Group Hammer Mills.

There is strong demand for introducing technology to grind grain into flour- the main food in Kisii-for internal consumption. This can be most efficaciously done by getting the various groups to own and operate hammer mills which are economic and can be procured and serviced within the country. Their operations should be run along commercial lines to generate revenue for investing in higher processing technologies later.

3. Group Solar Driers.

Solar driers for food should be introduced to the groups to process their members household food and to service communities. Their operation should be on commercial basis too.

Technology for passive solar driers is fairly cheap and there is capacity in Kisii district for design, installation, and maintenance both under the Catholic Diocese Development Office, and Solar World (E.A) Ltd, a commercial firm. Solar driers will be important for drying grain so as to minimize aflatoxin contamination in storage. They will be important in drying consumption vegetables (saga especially) and in drying bananas, pineapples, onions etc for the local and national markets.

Solar technology is called for since Kisii district is a woodfuel deficit district and given the farm sizes it is not realistic to expect improvement in woodfuel supply.

We are not in favour of marketing dried fruit internationally in the short term for the experience of Mashambani factory, which is backed by a very experienced food company, raises doubt about the economics of such trade in the short run.

However we strongly recommend a decentralised solar drying now so as to build up experience and familiarisation by the groups for running a decentralised factory based system in the longterm. We believe the local, national and regional market for dried fruit will grow. Marketing details will be specified during the full feasibility.

4. Branch Marketing of Fruit and Juices.

There has been identified a national shortage of fresh bananas by the Ministry of Agriculture and Horticultural Crops Development Authority. Appendix 5: Banana Price Differences Between District Wholesale Markets and Appendix 6: Average Banana Prices-District Wholesale Markets show where marketing of fresh bananas could be lucrative.

We believe that with little investment and very tight management the Kisii branch can make significant amounts of money if they move into the niches left out by the banana distribution system which runs from Kisii through Nairobi to Mombasa. We have already mentioned to the National Office that this can be facilitated by marketing through other YWCA branches.

The areas which will be taking fresh bananas are also areas of pineapple deficit. They could be marketed there too.

The Maasai Mara area is a major tourism growth area and it should open up outlets for fresh fruit and juices which currently come from Nairobi. This should be a natural market for the branch.

5. Branch Hiring of a Food Technologist.

The branch should hire or get a volunteer food technologist to be responsible for the food related projects suggested above. This person will be used for planning and managing what could become a major activity if the above recommendations are acted upon.

6. Branch Processing and Storage Factory.

If the recommendations above are acted upon now, planning a central food processing and storage factory serving internal district, national and even international demands will become a possibility within five years. It is not now. What we suggest as a strategy above will allow the branch to start with low level technology for local market and build up to this possibility.

Appendix 1. KISII YWCA GROUPS 1986

| Group Name | No. of Members | Sublocation |
|------------------|----------------|-----------------|
| 1. Matorora | 35 | Bonyakoni |
| 2. Magwagwa | 19 | Bonyengwe |
| 3. Kinyoro | 39 | Bogisanga |
| 4. Gesigoro | 29 | Bokeira |
| 5. Bombere | 24 | Cache- Magwagwa |
| 6. Pondo | 21 | Bonyengwe |
| 7. Erandi | 12 | Mokomani |
| 8. Nyangokiani | 35 | Bonyakoni |
| 9. Ragogo | 25 | Nyakoe |
| 10. Ikamumogondo | 31 | Bonyengwe |
| 11. Timaro | 15 | Bomanono |
| 12. Ngoina | 31 | Ikonge-Bobasi |
| 13. Nyamira | 31 | Bomwanga |
| 14. Matongo | 60 | Cache |
| 15. Ekerenyo | 10 | Bogisanga |
| 16. Gesura | 16 | Nyakenimo |
| 17. Nyamerako | 31 | Bonyando |
| 18. Nyanchua | 31 | Nyansancha |

Total 495

Source: Kisii Branch Records.

Appendix 2 . KISII DEMOGRAPHICS.

| Division | POPULATION | | | | SQ.KM | | DENSITY | | | |
|----------|----------------------------------|-----------|-----------|-----------|-------|------|---------|------|-----|--|
| | 1979 | 1983 | 1985 | 1988 | 1979 | 1983 | 1985 | 1988 | | |
| Manga | 214,708 | 277,082 | 297,842 | 332,127 | 455 | 472 | 609 | 655 | 730 | |
| Nyamira | 198,308 | 255,918 | 275,092 | 306,758 | 640 | 310 | 400 | 430 | 479 | |
| Irianyi | 147,419 | 190,245 | 204,499 | 228,390 | 314 | 469 | 606 | 651 | 726 | |
| Bosongo | 118,158 | 152,484 | 163,908 | 182,776 | 324 | 365 | 471 | 506 | 564 | |
| Ogembo | 190,919 | 246,382 | 264,842 | 295,329 | 461 | 414 | 534 | 574 | 641 | |
| Borabu | Not existing during 1979 census. | | | | | | | | | |
| Total | 869,512 | 1,122,111 | 1,206,182 | 1,345,030 | | | | | | |

Source: CBS.

Appendix 3. LAND TENURE CLASSIFICATIONS.

| Land Category | Sq.Kms | % of Total |
|----------------------------|--------|------------|
| Registered Smallholdings | 1817 | 83 |
| Freehold Smallholdings | 179 | 8 |
| Unregistered Smallholdings | 101 | 5 |
| Government land | 69 | 3 |
| Forest/Trustland | 1 | - |
| Total | 2196 | 100 |

Source: Kisii District Development Plan 1984/1988.

Appendix 4. NATIONAL BANANA HACTARAGE AND PRODUCTION 1985.

| District | Hactarage (Ha) | Production (Tonnes) | Yield/Ha (Tonnes) |
|--------------|-------------------|------------------------|----------------------|
| Kisii | 20,000 | 340,000 | 17 |
| Meru | 12,756 | 78,000 | 7 |
| Muranga | 6,112 | 67,232 | 11 |
| Machakos | 4,471 | 58,123 | 13 |
| Nyeri | 3,537 | 21,222 | 6 |
| Kiambu | 3,300 | 39,600 | 12 |
| S. Nyanza | 3,113 | 31,130 | 10 |
| Bungoma | 2,900 | 29,000 | 10 |
| Kakamega | 2,345 | 37,520 | 16 |
| Taita-Taveta | 1,834 | 55,120 | 30 |
| Kirinyaga | 1,594 | 9,564 | 6 |
| Siaya | 460 | 5,520 | 12 |
| Embu | 300 | 1,343 | 5 |
| Nandi | 220 | 3,680 | 17 |
| Kilifi | 164 | 3,280 | 20 |
| Busia | 150 | 900 | 6 |
| Kisumu | 128 | 1,450 | 12 |
| Kericho | 100 | 800 | 8 |
| Baringo | 25 | 325 | 12 |
| Others | 5,600 | 44,800 | 8 |
| Total | 69,109 | 829,800 | 12 |

Source: HCDA

Appendix 5. BANANA PRICE DIFFERENCES BETWEEN DISTRICT WHOLESALE MARKETS
(Ksh/Bunch)

| | Eldoret | Kisumu | Kisii | Kakamega | Nakuru | Kitale | Nairobi | Meru | Nyeri |
|----------|---------|--------|-------|----------|--------|--------|---------|-------|-------|
| Eldoret | 0.00 | 0.70 | 11.60 | 8.70 | 10.20 | 13.30 | 4.10 | 0.10 | 6.00 |
| Kisumu | | 0.00 | 10.90 | 8.00 | 9.50 | 14.00 | 3.40 | 0.40 | 6.70 |
| Kisii | | | 0.00 | 2.90 | 1.40 | 24.90 | 7.50 | 11.50 | 17.00 |
| Kakamega | | | | 0.00 | 1.50 | 22.00 | 4.60 | 8.60 | 14.70 |
| Nakuru | | | | | 0.00 | 13.50 | 6.10 | 10.10 | 16.30 |
| Kitale | | | | | | 0.00 | 17.40 | 13.40 | 7.30 |
| Nairobi | | | | | | | 0.00 | 4.00 | 10.10 |
| Meru | | | | | | | | 0.00 | 6.10 |
| Nyeri | | | | | | | | | 0.00 |

Source: HCDA

Appendix 6. AVERAGE BANANA PRICES-DISTRICT WHOLESALE MARKETS.
(Ksh.)

| District | Market | Cooking Av. Price | Bananas Range | Ripening Av. Price | Bananas Range |
|----------|----------|----------------------|------------------|-----------------------|------------------|
| U. Gishu | Eldoret | 27.40 | 24-29 | 49.40 | 40-53 |
| Kisumu | Kisumu | 26.70 | 18-35 | 19.50 | 13-28 |
| Kisii | Kisii | 15.80 | 13-22 | 13.60 | 10-17 |
| Kakamega | Kakamega | 18.70 | 16-20 | 11.90 | 10-16 |
| Nakuru | Nakuru | 17.20 | 16-19 | 10.90 | 10-16 |
| T. Nzoia | Kitale | 40.70 | 25-54 | 53.30 | 45-56 |
| Nairobi | Wakulima | 23.30 | 18-28 | 51.25 | 45-54 |
| Meru | Meru | 27.30 | 25-33 | 33.00 | 25-50 |
| Nyeri | Nyeri | 33.40 | 25-45 | 44.40 | 14-60 |

Source: HCDA

Appendix 7. KISII CROP PRODUCTION TRENDS 1982-1986.

| | 1982 | 1983 | 1984 | 1985 | 1986 |
|------------------|------------|------------|------------|------------|------|
| Coffee (Kgs) | 18,788,750 | 27,856,000 | 16,499,162 | 37,574,167 | - |
| Tea " | 26,277,570 | 32,688,700 | 39,536,230 | 54,929,112 | - |
| Pyrethrum " | 1,539,700 | 600,000 | 731,625 | 731,600 | - |
| Maize (bags) | 1,952,314 | 1,686,200 | 1,820,000 | 2,000,000 | - |
| Beans " | 201,379 | 139,600 | 228,580 | 264,000 | - |
| F/millet " | 41,190 | 48,086 | 25,682 | 36,000 | - |
| Sorghum " | 9,630 | 9,670 | 29,400 | 15,000 | - |
| Groundnuts(tons) | 5,175 | 5,410 | 9,980 | 19,000 | - |
| Cassava " | 2,092 | 781 | 1,456 | 2,000 | - |
| S/potatoes " | 9,307 | 1,623 | 38,400 | 17,840 | - |
| I/potatoes " | 5,628 | 4,225 | 3,630 | 6,524 | - |
| Cabbages " | 5,552 | 5,895 | 5,190 | 6,750 | - |
| Onions " | 1,445 | 1,435 | 1,604 | 700 | - |
| Tomatoes " | - | 2,930 | 5,760 | 9,000 | - |

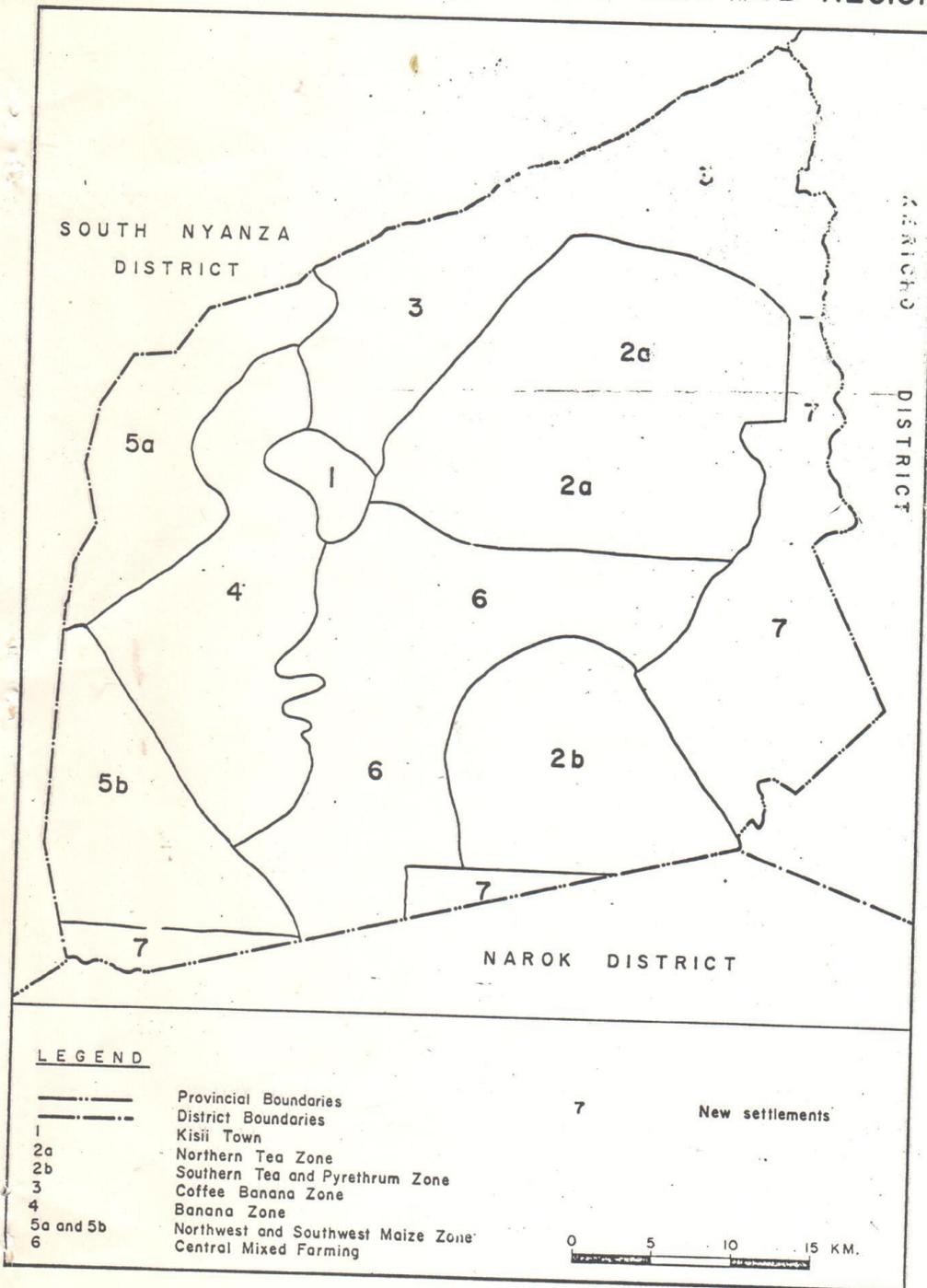
| | | | | | | |
|------------|---|---------|---------|---------|---------|---------|
| Bananas | " | 231,487 | 281,000 | 253,965 | 340,000 | 400,000 |
| Kale | " | 5,930 | 10,920 | 7,718 | 7,000 | - |
| Pineapples | " | - | - | 20,875 | 36,000 | 14,400 |
| Citrus | " | - | - | 139 | 42 | - |
| P/fruit | " | - | - | - | - | 1,500 |

Source: MOA

Appendix 11: PERSONS INTERVIEWED.

1. Jemima Oenga- Kisii Branch Secretary
2. Winston O. Orwenyo- Town Engineer, Kisii Town.
3. Charles Osoro- Asst. Social Development Officer. Nyamira Division.
4. Joseph M. Wekundah- KWDP Kisii Team Leader.
5. Luka Msambai- KWDP Kisii Administrator.
6. Joan A. Omayo- Kisii YWCA.
7. Tabitha Ongere- Kisii YWCA.
8. Eunice Mesa- Kisii YWCA.
9. Joseph N. Nyaosi- Bokera Sublocation Agricultural TA.
10. Ishmael O. Okatch- North Mugirago Chache Location Agricultural TA.
11. Patrick Mamboleo- Agricultural Extension Officer.
12. Aska Nyachae Orina- Magwagwa Women Leader.
13. Jemimah Bosibori Osumo- Magwagwa Women Leader.
14. Charles Oteki Rioba- Solar World (E.A) Ltd. Kisii Town.
15. N.O Ogeto- Executive Director, South Kenya Conference. SDA Church.
16. Rose Nyikal- Ministry of Agriculture Kisii, Farm Management.
17. Richard Asol- Ministry of Agriculture Kisii, Crops.
18. Sospeter Adero- Ministry of Agriculture Kisii, Horticulture.
19. M.N.K. Gichobi- District Officer I. Kisii.
20. Leonard Oloo- Development Coordinator, Kisii Catholic Diocese.
21. Elimelinda Omwenga- Kenyoro YWCA.
22. Z. Magese- Asst. Chief. Boisanga II Sublocation.
23. Mary Gekara- Kenyoro YWCA.
24. Richard Nyanaro- Manga Divisional Agricultural Officer.
25. Biliah Abunga- Kenyoro YWCA.
26. Erasto Mesa- Locational Agricultural TA.
27. Agnes Nyang'au- Kenyoro YWCA.
28. Milcah Kemunto Ong'ayo- KWDP Kisii.
29. Caroline Moraa Nyangeri- KWDP Kisii.
30. Luisa Owiti- YWCA National Secretary
31. Phoebe Omondi- National Programme Officer.
32. M.M. Mukolwe- Head, PPDU Unit, Ministry of Agriculture.
33. M.A.S. Mulandi- Managing Director, Horticultural Crops D. Authority.

KISII DISTRICT : MAJOR AGRO-ECONOMIC SUB-REGIONS.



Source :- Adopted from 1975 KWDP, pp. 19

Appendix 10: KISII DISTRICT : POPULATION DENSITY

