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FNSP-studies, 1985-1992: results and recommendations

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Food and Nutrition Studies Programme

FNSP
STUDIES
1985-1992

RESULTS
&
RECOMMENDATIONS

EDITED BY
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FNSP-STUDIES, 1985-1992
RESULTS & RECOMMENDATIONS

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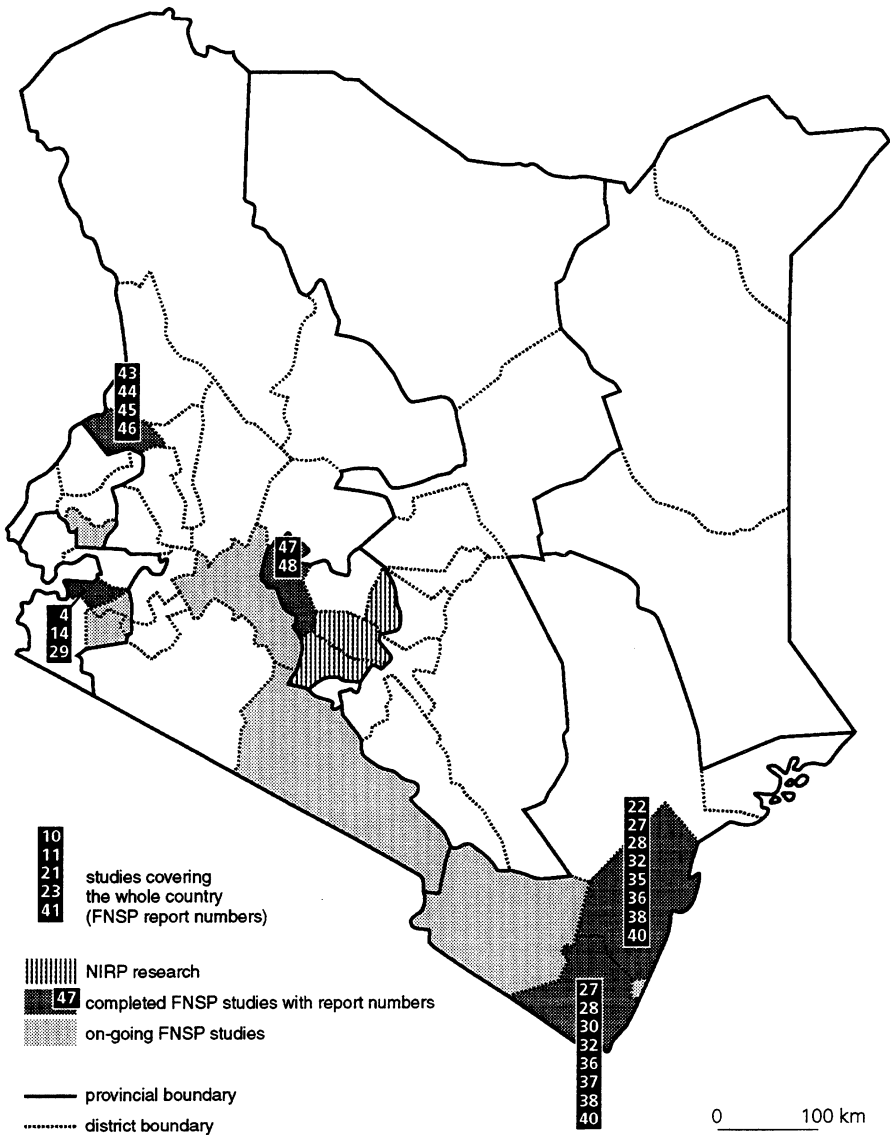
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Map of Kenya with location of FNSP-studies.



Section 1

Introduction

Over the past decades the food and nutrition situation in Kenya has given persistent reason for concern. Some of the statistics are well known:

- Only about 20% of the surface area of the country consists of land suited for crop cultivation;
- Kenya has one of the highest rates of population growth in the world;
- Food crop production has not kept pace with population increase;
- In parts of the country the pressure on land has become a serious constraint;
- Average energy intake per capita has generally met international recommendations but there are large groups of the population that stay behind;
- Estimates are that 30-40% of the rural population fall below the food poverty line and there seems to be little improvement in this respect;
- The incidence of childhood malnutrition is similar to that in other African countries but varies in different parts of the country and among different population groups.

In 1976 the Food and Nutrition Planning Unit was established in the Ministry of Planning & National Development with the responsibility of integrating food and nutrition considerations in development policy and planning. The African Studies Centre (Leiden) which had been involved in the Nutrition Intervention Research Project was subsequently asked to provide research support with the aim to analyse current developments concerning food and nutrition in Kenya, notably regarding the interface between socio-economics,

agriculture and nutrition. Phase 1 of the programme lasted from 1983 to 1989 and was financially supported by the Ministry of Development Cooperation and the African Studies Centre. Phase 2 started in September 1989 and is scheduled to be completed end 1994.

Since the start of the programme more than twenty studies have been completed, four are currently in progress and five more are in preparation. Many of the studies have a regional focus because of the great variation in ecological and cultural conditions in the country and the district focus development policy of the Kenya Government. Several of the major studies included household surveys among the general population in the areas in order to identify economically and nutritionally vulnerable groups.

With the completion of phase 1 in 1989 the programme was transferred to Kenyan research institutes who are currently responsible for the ongoing studies and studies in preparation. The ongoing projects are listed in section 8C.

The studies range from reviews of government pricing to studies of the influence of the home environment on childhood malnutrition. For purposes of this review they are divided into four sub-topics although some studies belong under more than one category:

- food production and marketing;
- food security, food consumption and nutritional status;

- household resources and income generation;
- rural development and food security.

The results of the studies are discussed as a matter of course during seminars in the districts concerned. The aim of these seminars is to get feedback from the local government officers and other researchers, to stimulate optimal dissemination of the findings and to formulate recommendations. The proceedings of two of the larger seminars of this kind have been published separately. The publication strategy of the programme has concentrated firstly on the production of reports with conclusions and recommendations for the host government and the donor agency. A list of programme reports arranged by report number is included in section 8A. The results of the studies are also used for subsequent academic publications and a list is attached in section 8B.

The present report is a compilation of summaries of the studies completed until now. Its purpose is to bring the different results and recommendations together to make them easily available at a time when the next development plan is being drafted. Section 2 consists of a programme review which contains the major conclusions for each of the respective subtopics. Section 3-7 present the results and recommendations for the respective individual studies. The conclusions and recommendations were taken from the original reports and the seminar reports and have been reedited to a greater or lesser extent. Section 7 and 8 concern the seminar reports and the already mentioned programme information.

Section 2

Programme Review

2.1 Food Production and Marketing

Agricultural development in Kenya during the first decade after independence was impressive. Over the next 20 years food production has still shown an increase in absolute terms but not enough to keep up with population growth. Decreased per capita production can be ascribed to lesser impetus from initial growth-inducing factors such as the rapid diffusion of hybrid maize; poor weather conditions; and increasing land constraints as high and medium potential areas are becoming fully occupied. In addition inappropriate pricing policies and excessive degree of government control and regulation are also thought to have adversely affected growth performance.

Heavy demands will be placed on Kenya's agricultural sector in the near future, not only to provide sufficient food for a fast growing population, but also to absorb an equally fast growing labour force. Moreover the agricultural sector has to provide foreign exchange and supply raw materials to the industrial sector and generate tax revenues for national development efforts. Growing urbanization further increases the need for a larger volume of marketed food production. However, policies of movement restrictions and monopolistic buying and selling by the state marketing board have by and large resulted in a lesser efficiency of the official marketing system.

One of the first studies under the programme reviewed the influence of pricing policy on food production.¹ Intervention

by the government in the price formation of food commodities has been traditionally extensive. Analysis of the price setting procedures for staple foods, in particular maize, showed that the producers of these commodities received some degree of protection. However, the overall development of the 'terms of trade' revealed that the purchasing power of farmers' incomes had developed unfavourably. An important conclusion was that a large part of the maize marketed by smallholders did not enter the official marketing channels and therefore the responsiveness of these farmers to official price policy is less pronounced than that of the large farmers who account for the major part of official purchases by the marketing board. The report further stressed that marketing and institutional inefficiencies can easily undercut the role of producer prices as a determinant of marketed food output.

A second review concerned the potential contribution of large scale irrigation development to food production in Kenya.² Less than 20% of the total land area of 5.7m. ha is suited for crop cultivation and there is need to expand agricultural land. Estimates are that more than 500.000ha. can be added through irrigation but at the time of the review the total irrigated area was only 40,000ha. This includes large commercial farms, large public schemes managed by the National Irrigation Board and small-scale schemes. The report discusses, in particular, the performance of the large public schemes, which has generally been below expectations, and mentions a number of issues that merit consid-

eration for improvement. This concerns, among others, the security of tenure for the individual farmers, water rights, the topic of decentralisation, necessary irrigation research and living conditions of the tenants.

Studies on food production in Kenya have tended to concentrate on the staple foods, maize in particular. Less is known about other starch crops such as potatoes and cassava. Even less is known about fruits and other vegetables although they are an important source of income and employment. A series of studies is in progress to study horticultural production and horticultural marketing in selected districts.³ The first two reports concern Nyandarua one of the main vegetable producing districts.⁴ Recently farmers have had to deal with rising costs of fertilizers and pesticides to the extent that the profitability of horticulture is threatened, at least in the lower parts of the district. Recommendations concern the need for improvements in the provision of seeds, supporting research, the issue of royalty payments, greater demand orientation in production, relevant extension information and necessary credit facilities. The trade in horticultural products in the district appears to be quite competitive and by and large prices are determined by demand and supply.⁵ Important constraints need to be addressed, however, which concern the physical market environment (roads and market places); as well as the financial environment (credit facilities and market fees).

2.2 Food Security, Food Consumption and Nutritional Status

A complex ecological setting and a highly diversified agricultural production structure determine food production and supply patterns in Kenya. In certain parts of the country, soil types and rainfall patterns allow for a relatively stable production of food surpluses. In other areas where resource endowments are marginal, production levels tend to be low and fluctuating. In some areas, an emphasis on the cultivation of export crops has reduced local and regional self-sufficiency in food. The seasonal nature of agricultural production leads to fluctuations in food availability. All this greatly complicates the problems inherent in securing the food supply to the different regions of the country.

Essential elements of food security include the availability of food and the stability of supply. However, even with sufficient national food production malnutrition does not necessarily disappear. Distribution and access are equally important factors and attention needs to be given to food marketing and the incomes and purchasing power of households. Recently, attention is also being given to the concept of nutrition security, to emphasize the role of intrahousehold factors such as expenditure patterns and distribution of food among individual household members.

At the start of the programme a review was compiled of regional and seasonal food problems in the country.⁶ Food production patterns are characterized by considerable seasonal fluctuations, which are closely related to environmental factors. Such fluctuations in output contribute to unstable levels of food availability, especially in those parts of the country where

farmers are confronted with relatively short and risky cropping seasons. There is particular instability of food production in the zones of marginal agricultural potential, notably the drier zones of Eastern Province which have to cope with frequent food deficits.

The ongoing population increase has caused serious pressure on land resources. Virtually the entire high and medium-potential zone in the country is used for cropping. This has resulted in increased out-migration and land-man ratios are rapidly deteriorating in those parts of the country which still have a relatively low pressure on land resources, e.g. the better watered parts of Rift Valley Province. At the same time, part of the migration stream is directed towards the drier, marginal-potential belt bordering Kenya's agricultural heartland. The expansion of farming systems developed in more humid environments into ecological areas that are basically unsuitable for rainfed cropping should be carefully planned since there is an increased risk of crop failures as well as a danger of destruction of the environment. There is need for farm technologies adapted to the specific needs of rainfed crop production under semi-arid conditions. The adoption of appropriate farming systems and crop varieties by small farmers will be a relatively slow process and will yield results only in the long-run.

Households actively cope with the conditions they face and it is not surprising that households in these areas try to reduce their dependence on agriculture and the uncertainties of season and climate. A case study from Kwale District illustrates a situation where off-farm employment correlates negatively with agricultural produc-

tion.⁷ Labour is diverted from the agricultural sector and subsistence production is replaced by food purchases. The causes for this are the poor agro-ecological potential of the land, a low appreciation of agriculture as an economic activity, and the pull of employment opportunities. What is important to understand here is that individual farmers strive to broaden their resource base, in order to cope with unfavourable climatic conditions, and to become less dependent on food crop production only. Development planning, apart from measures to increase agricultural production, should also place emphasis on generating opportunities for off-farm employment. This could also ease the pressure on the ecological resource base which already shows signs of degradation.

It is becoming increasingly clear that the food consumption of large parts of the rural population are met from food that is purchased rather than from own production. Moreover, this is not only the case in the marginal areas. The setting of food prices evidently plays an important role in food purchases and food consumption. A review concluded that in the past Kenya has pursued a so-called 'cheap food policy' and that for a long time the prices of most foods, falling under control measures showed less increases than the average rate of inflation and were well below world market prices.⁸ In the rural areas, however, there has been a poor market integration partly due to stringent regulations regarding food transports with resulting price differences. There are arguments pro and arguments contra movement controls but in all there should be no uncritical expectations of the advantages resulting from a free trade system. For years it has been argued that the maize market should be lib-

eralized, but it should be kept in mind that maize cultivation in Kenya is still predominantly rainfed and varies greatly between regions and years. These erratic changes of local maize output and the resulting price fluctuations cannot altogether be eliminated by a free market trading system.

Seasonality is a common phenomenon in Africa. The nature of the seasonal fluctuations has changed as a consequence of the introduction of export crops and increasing population pressure. Certain groups of the population, such as small farmers, are likely to be more vulnerable to these fluctuations. The importance of seasonality as a cause of rural poverty received attention during the early '80s. However, its impact is not equally felt in each region and by each household or individual.⁹ At least four factors determine the degree to which adverse effects are felt and, consequently, what coping mechanisms can be used. These are: climate (rainfall deciding agro-ecological conditions); form of productive organization; resource level (further determining household conditions); and finally, within households, gender and age, giving individual differentiation. The various factors mentioned are interrelated. For instance, in drier climates there are more poor households, while women in poorer households are supposedly hit harder by seasonal stress than women in richer households. The finding that in Kenya more and more people migrate to marginal areas with marked seasonality is an ominous one and there is every reason for planners and politicians to be conscious about these relationships and their implications for future development.

Detailed research in different parts of Africa as well as our research in Kenya has not confirmed the initial thinking.^{10,11} For example, in Coast Province a region of Kenya where rainfall is less abundant and less reliable than in the central highlands, it was found that food consumption did not decrease during the long rains, but rather increased. Women from households with more resources showed greater weight fluctuation than women from households with fewer economic resources. Similarly there was no straightforward stunting of weight and height growth of young children during this period. Rather, the picture appears much more complicated with different growth spurts for weight and height occurring at different times of the year.

Strong seasonal trends have been observed in the incidence of childhood malnutrition in Coast Province. In the wake of earlier research¹² on childhood malnutrition and nutrition intervention in Central Province, a study among coastal households with cases of malnutrition was initiated, but was unable to identify socio-economic factors in which these households differed from other households.¹³ Rather, behavioural differences were noted, particularly as regards child-caretaker relationships. In households where no malnutrition had occurred children were fed more regularly and were provided with more types of social stimulation. This phenomenon was present after the period of rehabilitation. There exist considerable differences in the aetiology of malnutrition in different parts of the country. For example, in Central Province there are strong links with rural poverty and marital instability. In Western Kenya malnutrition appears to be more linked with inexperience of mothers, feeding habits and child-rearing practices.

The above findings are in line with recent thinking about malnutrition and child development, which tends to emphasize the complex interrelationships with socio-economic conditions, child behaviour and caretaker attention. Consequently emphasis during rehabilitation should not be only on nutritional requirements and general child care, but also on individual attention and stimulation, so that these children may eventually return to a safer and more favourable home environment.

If the above results are confirmed, our thinking about malnutrition has to be adjusted, at least for the coastal part of Kenya. In this little developed region with scarce national resources, a low level of food self-sufficiency and low income levels, people nevertheless show little negative effect of seasonality. What needs to be mentioned here is the fact that the physical infrastructure in the country is well developed and that food prices have been kept low through the years. People seem to be able to manage remarkably well under these circumstances notably with the help of wages from various types of employment. In this context the importance of caretaker behaviour for the occurrence of childhood malnutrition can also be understood. What will happen under the current economic reforms with the recent dramatic price increases remains to be seen and it is certainly necessary to learn more about the dynamics of household income in relation to food consumption and nutritional status under such conditions.

2.3 Household Resources and Income Generation

Rural households generally need a mix of resources to assure their livelihood. The household's own food production is usually an important source of food supply, and thus of food consumption. However, it is increasingly recognized that other resources are becoming more and more important, due to such factors as the population growth leading to fragmentation of land and a growing need for money for taxes, school fees, medical services, housing, transport and luxury items.

Several FNSP-studies have looked at household income and nutrition. They confirm the overriding importance of off-farm employment in the resource base of quite different groups. This was the case for households in rural and remote areas in Coast Province even though this part of the country is not particularly blessed with employment opportunities. It was also the case among different groups of rice growers in Nyanza Province. And also among different groups of farm labourers at large farms in Trans Nzoia District.

The income of rural households in the coastal districts is generally low.^{1 4} Findings from 1985 differ little from earlier surveys and it must be estimated that 40% of the households fall below the food poverty line, the income level which is just sufficient to acquire the necessary food. The general performance of the agricultural sector is poor and farmers have little interest to invest in the modernization of agriculture. Ecological and infrastructural factors are important for explaining the poor performance of agriculture but the role of individual household strategies must also be pointed at. Many households

try to diversify their resource base as much as possible in order to protect themselves from the uncertainties of agriculture as well as from uncertain wage income. Income from farming activities is low and only a small group of households manage to realize a living from farming. Because of the critical importance of wage employment, which in principle is not location bound, differences in household income and living conditions between agro-ecological zones in the coastal districts are less than expected. In fact the variation in household resources within agro-ecological zones is much greater and more important than the variation between zones. At the same time, there are no systematic differences in nutritional conditions between households that depend mostly on farming, mostly on wage employment or on a mix of economic activities. All this points at the importance of individual household strategies, i.e. the freedom to develop a resource mix adapted to individual household circumstances.

Recommendations regard measures to increase food production by means of cultivation of drought-resistant crops, increase of the areas under food crops, possibilities of irrigation for vegetable gardens, credit facilities to enable farmers to purchase the necessary inputs, improvement of food storage and food preservation. Improvements in cash crop production are also dependent on some of the above measures but also require better marketing facilities. It is also necessary to adopt a strong policy to increase opportunities for wage employment, especially in the form of agro-based industries as well as the informal sector.

An example of the danger of farmers being forced into rigid production systems was encountered in the course of a study among rice growers in Nyanza Province. The group of tenants who were mostly dependent on the rice cultivation in the large N.I.B.schemes and who were limited in their opportunities to use other economic resources, turned out to be quite disadvantaged compared with other types of rice growers who had a more diversified resource base.¹⁹

Still, land remains a basic resource for many rural households. But in areas where access to land is uncertain the population is even more dependent on rural employment opportunities. One example of such a group concerns the agricultural labourers at large farms in Trans Nzoia District.^{15,16} Average wages paid to permanent and casual labourers in 1989 were below the legal minimum. Both groups are usually given a small piece of land to cultivate and can generally buy cheap maize and cheap milk from the farm but this does not compensate sufficiently for the low wages. Food consumption is below requirements while nutritional status is generally poor, particularly among the casual workers living on the farm. Despite this, labourers living on the large farms spent about one sixth of their income on gifts to relatives, in particular to family members living in the district of origin.¹⁷

The legal position of farm labourers is poor. This is particularly the case for the casual workers who are living on the farm but are not given the status of permanent labourer, because in this way they are cheaper to hire and easier to fire. For that reason, there is even a trend on some farms to turn the permanent labourers into casual

workers of this kind. Groups that were identified as being in particular poor conditions are the squatters on the farm, who are de facto casual labourers, and the landless workers who live outside the farm.

Necessary measures concern the need to improve the legal position of the labourers and to enforce the legal minimum wages, to implement existing health regulations more stringently in respect of drinking water and sanitation, and generally improve educational facilities. It is also necessary to relax the restrictions on resident labourers as regards food crop cultivation and other income-generating activities; efforts should particularly be made to make the more profitable sources of income also accessible to women.

Rural income generation is a recognized development priority but the example of the above agricultural labourers shows that this does not automatically lead to improved nutritional conditions. Apart from the employment conditions as such, there is also the issue how the wage income is used, whether for improved household nutrition or other household needs. There are expectations that the income earned by women is more directly used for nutritional purposes and that therefore income opportunities for women should be given priority. One example is that of economic projects of women's groups. A study among some groups in Coast Province, however, showed that these activities were not remunerative for the majority of the members.¹⁸ Important reasons for this were a lack of education and administrative experience of the group members and the competition with demands for household labour. They make that women are less interested in farming projects and of-

ten unavailable during the agricultural season.

2.4 Rural Development and Food Security

The development of the agricultural sector is generally regarded as one of the main priorities of the countries of sub-Saharan Africa. Necessary policy measures include attractive and stable pricing, improvements in marketing arrangements, credit facilities and extension services. Desired farming practices include the introduction of improved crop varieties, modern farming techniques, and changes in land tenure arrangements. Initially, the expectation was that such changes would lead to increased production which, in turn, would result in increased incomes and higher levels of living. However, evidence has been produced that productivity increases may be realized at the expense of the living conditions of the farming population. The realization has dawned that agricultural development may have positive as well as negative consequences for the food and nutrition situation among rural populations. Studies under the present programme focused on the introduction in Nyanza of large scale irrigation with compulsory production; land division and self-help settlement schemes in Coast Province; and the introduction of intensive dairy farming in Kilifi District.

From the study on households in large-scale irrigation schemes ¹⁹ it is clear that the assumption on which the design of the schemes is based viz. that the livelihood of tenant families can be fully covered by means of cash crop cultivation, is not valid, particularly not in the form of production that was initially enforced on the tenants. The nutritional conditions among resident

tenants, i.e. a group working and living on the schemes and without resource opportunities outside the scheme, show this convincingly. They have low income levels, a low level of food consumption and a poor nutritional status. Tenants who live outside the schemes and have a more diversified resource base, do much better. Rice cultivation at own initiative in smaller schemes does not appear to invoke negative nutritional effects. Therefore, participation in rice cultivation or even large-scale production does not necessarily have negative nutritional consequences and may even contribute positively under certain conditions. However, this is not the case where the sole existence of the farming household depends on this type of agriculture.

Recommendations concern the need for a diversification of agricultural resources in existing as well as future irrigation schemes and the promotion of rice cultivation on an individual basis in small-scale schemes. Other measures concern greater attention for rainfed cultivation of food crops and greater possibilities for livestock rearing together with certain health and nutrition measures.

The study identified one group, so-called resident tenants, as a vulnerable group, and a follow-up study was carried out to gain a more precise understanding of their access to economic resources. The findings confirm the need for widening the resource base of this group and a series of detailed recommendations are included in this report. They concern possible measures to increase paddy income, widening the resource base and adjustment of obsolete scheme regulations.²⁰

A next study²¹ looked at a different way of issuing land to smallholder farmers,

namely in the case of the self-help ('haraka') settlement schemes at the Coast where the government limited itself to providing basic infrastructure and little more. As elsewhere, the settlement schemes in Kenya were started with several objectives in mind. Notably they were a means of settling the landless and improving their well-being, but also to increase agricultural production and stimulate rural development in general. In four existent schemes in the coastal strip tenants have generally been issued larger farms than available to farmers in comparable agro-ecological zones in the coast. But since the start of the schemes, 10-20 years ago, considerable differentiation in the type and size of ownings has occurred. Only half the settlers are resident on the plot issued and own no more or no less land than originally allocated. Still, the tenants have an income that is almost twice that of the general population. In line with this the tenant households have a greater food consumption than the general population and the nutritional status of children in the schemes is better. The contribution of agriculture in the schemes to this improvement is small. The main part of the household income is from off-farm employment, largely outside the schemes. Food production covers only slightly more than half the basic staple needs and a relatively large part of the food has to be purchased. Although there is more cash crop cultivation in the schemes, the income from this is modest and there is no higher productivity per acre or per labour unit when compared with the farms outside the schemes in the same agro-ecological zones.

The final judgment about the government settlement policy in these areas is therefore

ambiguous. From the point of view of regional agricultural development the results are far from optimal but from the point of view of the settler households the schemes are quite a success. The objectives of government policy and the interests of small-holder farmers appear not to converge. Improvements are needed in respect of the cultivation of drought-resistant crops, increasing the areas under food crops, developing irrigated vegetable gardens, and providing credit facilities to enable farmers to purchase the necessary inputs. Improvements in cash crop production are also dependent on some of the above measures but also require improved marketing facilities including the creation of agro-based industries. Neglected land in the schemes is an issue that also needs attention, the redistribution of undeveloped plots should be considered and the screening of potential tenants should be improved.

Intensification of agriculture can take different forms, but particularly the cultivation of valuable cash crops, such as coffee, or food crops such as irrigated rice. Livestock also offers possibilities. Dairy farming has been introduced in various parts of Kenya previously considered not suitable for this kind of economic activity.²² In the coastal lowlands also, small and large-scale farmers are becoming increasingly engaged in dairy farming. The Dairy Development Programme (DDP) has demonstrated that possibilities exist to realize a substantial income from small-scale dairy farming in the slightly wetter part of the districts by means of zero-grazing or semi-zero grazing. This type of dairy farming is both capital and labour intensive and depends more on the use of pur-

chased inputs and services than traditional dairy systems.

Nearly all dairy farmers belong to the group of wealthy and middle-class households. These households are wealthy, however, not because of the dairy income, but because of incomes from off-farm employment. They also show higher food intakes, larger milk consumption and better nutritional status of children. Among the dairy farmers two sub-groups can be distinguished: one group of farmers who employ labourers and another group of farmers who run the dairy unit with the help of family members only. At farms employing labourers, the dairy unit appears to be an alternative for other investments and these households keep more cattle, are more wealthy and more involved in off-farm activities than the households not employing labourers. The latter depend more on agriculture and in these households dairy farming competes more with other activities.

The economic risk for DDP-farmers is relatively high, in particular when the unit counts only a few animals. Therefore, it can be expected that dairy farming will remain out of reach of the majority of rural households that already has problems to attain a minimum level of existence. For these households the positive aspect of the programme is the resulting increase in employment at the farms of the more wealthy households. From the perspective of rural development in general the introduction of intensive dairy farming in Kilifi District can be seen as a positive development. It has stimulated, at least, an inverse flow of capital and created employment opportunities.

Notes

- 1 Report.11 (Meilink, 1985). For a list of reports, see section 8A, p.82
- 2 Report.23 (Ruigu, 1987)
- 3 Report.41 (Dykstra and Magori,1991)
- 4 Report.47 (Dykstra and Magori,1992)
- 5 Report.48 (Dykstra and Magori,1992)
- 6 Report.10 (Kliest,1985)
- 7 Report.30 (Oosten,1989)
- 8 Report.21 (Meilink,1987)
- 9 Report.28 (Foeken & Hoorweg,1988)
- 10 Report.27 (Hoorweg, Kliest, Niemeyer,1988)
- 11 Report.38 (Niemeyer, Foeken & Klaver,1991)
- 12 Hoorweg J & Niemeijer R (1989). *Intervention in Child Nutrition: Evaluation Studies in Kenya*. London: Kegan Paul. Also Nairobi: African Medical and Research Foundation, 1991.
- 13 Report.22 (Peters & Niemeyer,1987)
- 14 Report.32 (Foeken et al,1989)
- 15 Report.43 (Foeken & Verstrate,1992)
- 16 Report.44 (Foeken & Tellegen,1992)
- 17 Report.45 (Tellegen, Verstrate & Foeken,1992)
- 18 Report.37 (Maas & Hekken,1991)
- 19 Report.14 (Niemeyer et al,1985)
- 20 Report.29 (Noy & Niemeyer,1988)
- 21 Report.36 (Hoorweg et al, 1991)
- 22 Report.35 (Leegwater, Ngolo & Hoorweg, 1991)

Section 3
Food Production and Marketing

Food and Nutrition Studies Programme
Henk A. Meilink
Agricultural Pricing Policy in Kenya: Scope and Impact
Report No. 11/1985
Food and Nutrition Planning Unit, Ministry of Finance and Planning, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

The Kenya Government sets prices for a wide range of agricultural inputs and products, and intervenes indirectly in agriculture through trade and foreign exchange regulations. This study is concerned with the national pricing policies before 1985 as regards producer prices, and their impact on Kenya's agricultural sector.

The report firstly describes the scope and the objectives of Kenya's agricultural pricing policies, the institutional framework to implement these policies and the criteria used in the price-setting procedures. Secondly it examines to what extent the agricultural sector has been taxed or protected as a result of the administratively

fixed pricing method. The evolution of the 'terms of trade' for agriculture in the preceding years is discussed, an important indicator of the economic position of the sector in relation to the other sectors of the economy. Finally, the report discusses the effects of pricing policies on the (marketed) supply of agricultural production and the importance of 'relative prices' in the production decisions of Kenyan farmers.

Results

Government price intervention with respect to producer prices in the food commodity sector has been extensive. Producer prices

are largely determined on the basis of international parity prices which has by and large resulted in an efficient allocation of national agricultural resources, but which leaves little room for other considerations such as the desirability of national food self-sufficiency.

Trends of producer prices for staple crops such as maize, wheat, rice and sugar lead to the conclusion that the producers of these commodities received a certain degree of protection in the preceding years. However, the terms of trade between the agricultural sector and the rest of the economy had consistently deteriorated because of the rapidly rising price levels for consumer goods and gave reason for concern.

The price policy of the Kenya Government has important implications for the marketed output of major staple crops like maize and wheat. Producers appear to respond positively to increases in the farmgate prices for both crops, although this applies mainly to the large-scale producers. A large part of the crops produced by smallholder farmers, however, does not enter the official marketing circuit with its controlled price levels. Consequently, the responsiveness of small farmers to changes in the official producer prices is less pronounced. Nevertheless, slight changes in the "producer price/costs of inputs" ratio for different crops can result in significant shifts in the acreage's planted and output levels. However, the report also stresses that inefficiencies in the marketing system as well as ad-hoc import decisions can easily undermine the positive impact of agricultural pricing on production levels and marketed output.

Food and Nutrition Studies Programme
George M. Ruigu Large-Scale Irrigation Development in Kenya Past Performance and Future Prospects
Report No. 23/1988
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

Kenya is short of agricultural land; out of the total land area of 5.7m. ha. less than 20% is suited for crop cultivation. Agricultural land can potentially be expanded through forest clearance, valley bottom drainage and irrigation. Irrigation, in particular, can play an important role in the intensification of land use, which will be the key to future agricultural development. It has been estimated that some 540.000 ha. of cropland can be added through irrigation; the total area under irrigation at the time of this report was only 40.000 ha. This included large commercial farms, large public schemes and small-scale schemes.

This paper examines some policy issues relating to the large-scale public irrigation schemes. The management system of the public irrigation schemes is effected by the National Irrigation Board and the Bura Scheme management under the Trust Land Act. The tenants operate on the basis of one year occupational license which is renewed subject to satisfactory performance. Security of tenure is a major concern of tenants who feel deprived relative to farmers in rainfed Settlement Schemes. The latter get freehold titles for their land as a matter of policy.

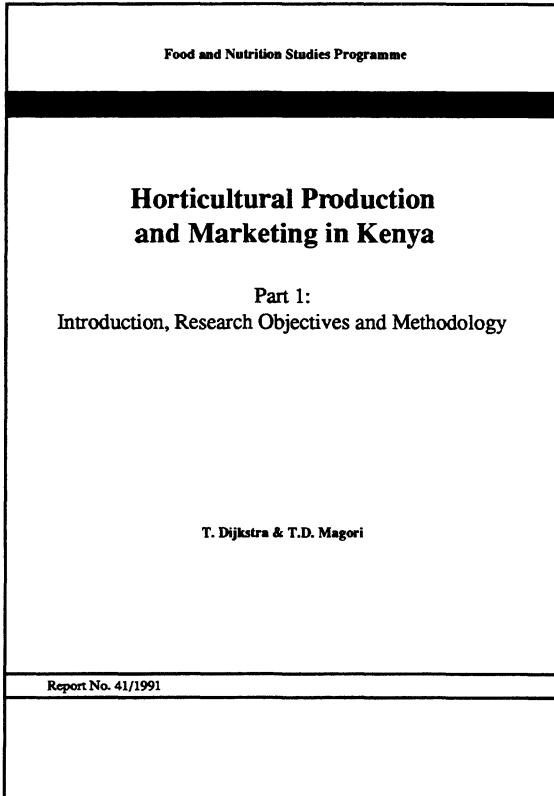
The cost of operation and recovery of investment and operational costs were dis

cussed. Except for Mwea the costs were shown to be high. Recovery of operational costs ranged from zero in Bura to 100% for Mwea and Bunyala Schemes. In the case of Mwea some rents are charged and used to cover unmet deficits in other Schemes and the headquarters costs of the NIB. The NIB is a very centralized board and the issue of decentralization to individual scheme management was raised. The financing system of irrigation development was also considered.

Irrigation research was the primary responsibility of the National Irrigation Board but some work is also done by the

irrigation and drainage research at the National Agricultural Laboratories at Kabete. The current research was examined and the possibilities of the new KARI taking greater role in irrigation research was raised.

Other relevant matters concern nutrition levels and the need to improve the quality of life on the schemes. The issues of water rights and an irrigation development co-ordinating body were mentioned. It was argued that successful co-ordination is unlikely to occur in a policy vacuum, and Kenya does not currently have a national irrigation policy.



Horticulture is an important source of income and employment in Kenya. Vegetables and fruits are grown for sale by many Kenyan smallholders. Selling opportunities strongly depend on the performance of the marketing system.

The structure of the horticultural marketing system in Kenya is characterized by two types of markets: local markets that supply the rural populations and specialized collecting markets that provide for the main urban centers. The collecting markets can be found in the production areas that produce the bulk of the horticultural commodities for the domestic market, whereas local markets exist all over Kenya.

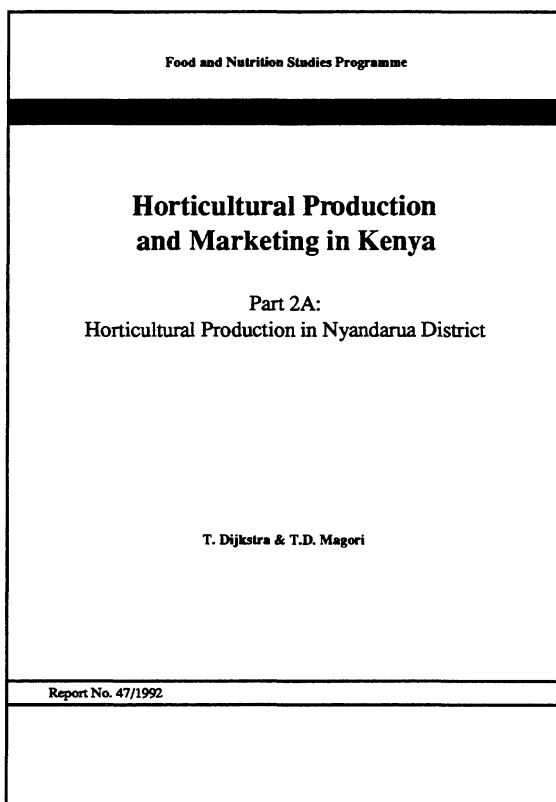
Horticultural traders include collecting traders, interregional traders, urban wholesalers, rural and urban retailers, and specialized export traders. Many of them operate on a part-time basis. The role of each type of trader is determined by transport distances from producers to end-users and on the magnitude and diversity of regional supply. The horticultural traders operate within conventional marketing channels with elements of vertical integration.

Up-to-date knowledge about the marketing system is indispensable for purposes of agricultural policy. The present study tries to meet this need and to generate primary data by means of two

types of surveys, namely farm surveys and trade surveys. The farm surveys aim at estimating horticultural revenues both in absolute terms and in comparison with other sources of income. Moreover, sales arrangements and farmer-trader relations are investigated. The resource base of farmers who sell horticultural produce is compared with those who do not sell, to identify constraints regarding horticultural cash crop production. The trade survey aims at estimating gross trade margins and net trade profits at different marketing levels. Moreover, marketing policies and trading practices are investigated in order to judge the performance of the marketing system. Apart from the surveys, secondary data are used to analyze price integration between horticultural markets and unpredictable price variations in markets.

The surveys concentrate in first instance on the marketing situation in certain individual districts. At a later point in time, the data from different districts will be combined in order to generate information at the national level. During the pilot phase of the study an analytical framework was developed (Structure, Conduct, Performance analysis). Nyandarua District, which is one of the largest horticultural producing areas of Kenya and a main supplier to the Nairobi market, served as a pilot district. Two other districts (Taita Taveta and Kisii) and one urban centre (Mombasa) have since been studied. Taita Taveta is an important supplier to the Mombasa market. Its circumstances are quite unique, because of the presence of a horticultural marketing cooperative and horticultural produce centers. Kisii is of interest because of its high population density and various cash crops that compete for land and labour. The Nyandarua surveys have been

reported fully, the reports in the other districts will follow later.



thirds of the district, on the slopes of the mountains, is suited for horticulture and farmers have developed a flourishing horticultural industry. Almost all households in these areas grow vegetables, with over 90% selling part of their harvest in 1990. The vegetables on average accounted for about half the household net income and cash revenues, with livestock being the second major source. Off-farm employment contributed to some extent, while pyrethrum and fruits hardly counted in terms of sales.

Potatoes are by far the most important vegetable. In 1990, two-thirds of the harvested bags consisted of potatoes, while the crop generated three-quarters of the average vegetable income and cash revenues.

Other important crops are

cabbages, green peas and spring onions, although commercial production of the latter commodity is mainly restricted to Geta location.

The most common fruits are plums and pears. Their production was promoted in the 1970s, but nowadays lack of market outlets lead farmers to neglect the trees and feed the fruits to the cattle. Apples, a possible alternative, are only grown by a small group of farmers.

Inputs like fertilizers, pesticides, hired labour and hired tractor services are quite common in vegetable production. The insufficient use of certified seed in potato

This is one of a series of reports on horticultural production and marketing in selected districts in Kenya. Separate surveys were held among farmers and among traders. This report contains the results of the 'farm' survey in Nyandarua District among 240 households in eight sub-locations regarding the production of vegetables, fruits and cut-flowers. The results of the 'trader survey' in the same district are given in the companion report.

Results

Nyandarua is one of the main vegetable producing districts of the country. Two

cultivation, however, results in many cases of bacterial wilt, while fertilizer applications below the recommended levels affect the fertility of the soil in the long run.

Between 1990 and 1992 the costs of fertilizers and pesticides went up by two-thirds and more, due to scaling down of subsidies by the government and depreciation of the Kenyan Shilling. As a consequence, commercial vegetable production is no longer profitable along the lower slopes of the Aberdares and Bahati escarpment during most of the year. Farmers in those areas lost almost half their income out of horticulture within two years, leaving livestock as the major cash earner.

Recommendations

For the horticultural sector in Nyandarua to play its future part as food supplier for the country and source of income for farmers there is need for sufficient support through extension, research and national policy measures.

A recurrent problem that needs urgent attention concerns the scarcity of certain types of seeds. The KGGCU has appointed private stockists who have increased the availability of inputs in the rural areas, but popular seeds of new varieties are often difficult to obtain or very expensive. This hampers the diversification of vegetable production in Nyandarua. Quality deterioration of Kenyan-produced seeds is also a problem, affecting yields and profits. Constraints with regard to importation and distribution of vegetable seeds should be solved, and the quality control system at Kenyan seed multiplication farms improved.

Research efforts to explore new vegetables and fruits with good market prospects should be increased. Apples, for instance, have been regarded as a promising com-

modity in Nyandarua for many years, but district agricultural officers lack support from the agricultural research institutes in testing varieties and multiplying rootstocks. Support has also been lacking in the cut-flowers sector, leaving the district extension staff without sufficient knowledge about production and post-harvest techniques.

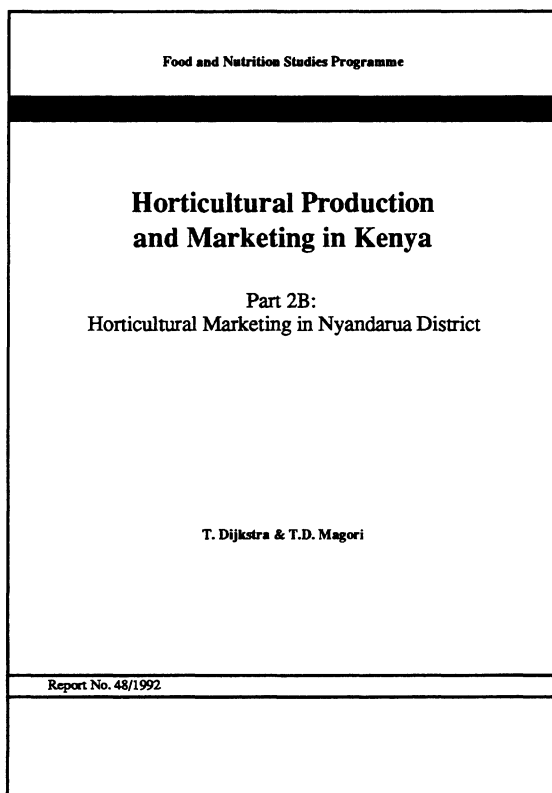
A further issue in the cut-flowers sector concerns royalty payments with regard to planting material. Small-scale flower production will generate income as long as farmers have access to species and varieties that are fashionable in the international market. This is, however, often not the case. The Kenyan government needs, first, to negotiate with foreign multiplication farms on behalf of the small-scale producers, and, second, to subsidize those farmers by paying part of the royalties during the period that the industry is in its infancy. In addition, agricultural research institutes should try to identify promising cut-flower species that are not subject to royalties.

Many vegetable farmers in Nyandarua have to cope with low selling prices and economic losses due to lack of demand orientation so that regular overproduction occurs at certain times of the year. Extension messages by the district extension staff need to promote crop scheduling. This may even imply postponement of vegetable planting during the long rains. Such a message will only be adopted if alternative crops are suggested for growing in the grace period. Research is needed on the latter. Possibilities include oats for cattle feed and crops for the production of edible oil.

Extension messages need to focus on crop rotation, appropriate use of inputs and the afore mentioned diversification of production. Such practices are necessary

to fight diseases like bacterial wilt and late blight, and to avoid degrading of the quality of the soil. The private stockists that are appointed by the KGGCU could serve as intermediaries in advising farmers about optimal use of inputs. They need first to be trained by the extension staff, and thereafter should be supplied with periodical leaflets to keep their knowledge up-to-date which can also be used to instruct farmers. The message could be explained in more detail than on fertilizer bags and seed and pesticide packages. Extension should be based on an integrated approach to horticulture and livestock, as these sources of income are closely related.

Extension messages need to be backed by credit schemes through existing financial institutions like cooperative and private banks. Credit is needed, for instance, to invest in irrigation during off-season production on the lower slopes of the Aberdares, and in the purchase of nets and appropriate inputs for cut-flower production. The credit facilities should be extended to stockists under supervision of the KGGCU, in order to finance their purchase of sufficient quantities of high-quality inputs. Finally, credit needs to be made available to finance vegetable stocks of farmer groups wanting to store produce during supply peaks in order to fetch a better price in the market later on in the year.



This is one of a series of reports on horticultural production and marketing in selected districts in Kenya. Separate surveys were held among farmers and among traders. This report contains the results of two surveys in 1990 among traders in Nyandarua District: the first among 91 traders selling produce in four selected local markets, and the second among 39 middlemen taking produce out of the district. Additional information was obtained from farmers, agents, truck dealers and transporters. The results of the 'farmer' survey in the same district are given in the companion report.

Results

Nyandarua is one of the main vegetable producing districts of Kenya, supplying large quantities of potatoes and cabbages to Nairobi and elsewhere. The district has a positive horticultural trade balance, with tropical fruits as the only deficit category due to climatic conditions.

Farmer-traders and professional traders operate in the local markets. The former sell local commodities, while the latter handle either local produce or commodities from other parts of Kenya. Most traders deal with consumers, but selling to retailers and/or middlemen is common in urban markets (Nyahururu) and markets with collection and distribution activities.

All local markets are characterized by a high degree of competition and daily profits of the traders involved are low to moderate. Two groups realize higher profits namely traders that handle pick-up loads of cabbages, bananas and pineapples and traders that sell commodities from elsewhere to retailers in the Nyahururu and Magumu markets. These retailers reside in town or come from the smaller markets in the southern half of the district.

Horticultural trade with urban centres outside the district is the domain of specialized middlemen. Over 95% of the horticultural farmers in Nyandarua rely on these traders. The majority of the middlemen collect the produce at the farm in or

der to transport it directly to Nairobi and towns in Central Province. Purchasing agents in the buying areas and brokers in the urban wholesale markets are well-known intermediaries. The middlemen, who either live in the urban centres or in the production areas, operate on a full-time or part-time basis. Those who live elsewhere are more often part-time buyers, while being involved in other business activities as well.

Trade in the local markets is characterized by a high degree of competition, while trade by middlemen is at least fairly competitive. Trader cartels are absent and by and large prices are determined by demand and supply. The performance of traders is satisfactory within the constraints imposed by the market environment. These constraints need to be addressed; they concern the physical market environment (roads and market places), financial market environment (credit) and legal market environment (market fees).

Recommendations

A major constraint concerns the poor infrastructure of the district, which, in combination with high precipitation, causes accessibility problems that seriously affect the marketing of horticultural commodities. Major roads are waiting for up-grading by the Ministry of Public Works, but lack of funds have held up improvements. The donor-funded Rural Access Roads and Minor Roads Programmes are coming to an end while many more roads are still in a deplorable state. The infrastructure of Nyandarua needs the priority which it deserves because of its importance for (-) the income generation of the Nyandarua farmers who receive lower prices due to higher transport costs; (-) the supply of commodities from elsewhere to the local

consumers, prices are now inflated because of high transport costs and dependence of local retailers in the southern half of the district on Magumu market; and (-) a smooth flow of horticultural commodities to Nairobi and other urban centres in Central Province.

Two more constraints concern the state of the local market places and the present market fee system. Market places in Nyandarua are in need of improvement as trading activities and the quality of the traded commodities are affected by lack of concrete floors, roofed stalls and sufficient space for all traders. Improvements are the responsibility of the County Council, which receives money for this purpose through collection of market fees.

Market fee rates need attention. In the local markets they are often arbitrarily fixed, that is regardless of the size and value of the load. As a consequence similar traders are not treated equally, and smaller traders pay on average a higher fee as percentage of the gross margin than their larger colleagues. This affects consumer prices and the incomes of the traders concerned. Retailers should at least be charged in accordance with the weight and type of their produce.

When dealing with wholesale quantities, the market fee system has to be improved. Policies regarding fee rates originate from wholesale markets in the large urban centres of Kenya. Charged fees in those markets encourage excessive topping-up of bags, affecting the quality of the produce and the income of the farmers. The system can be changed through forced standardization of bags, starting in the wholesale markets of Nairobi, Mombasa and Kisumu. Those markets are the pivot on which the interregional vegetable flows in Kenya turn, and middlemen have to obey

to their rules. Once the market authorities in those markets ban 'extended' bags, middlemen will refrain from topping up, and other traders and markets will follow.

Profits of horticultural middlemen operating in Nyandarua District were substantial. This leads to the question of possible farmer alternatives to middlemen mediations i.e. marketing by farmer groups. This is feasible from an economic point of view, especially on the upper slopes of the Aberdares and Bahati escarpment where sales per household are large. From an organizational point of view, the activity should be embedded in loose farmer groups, rather than in formal cooperative structures, and start from the ideas of farmers instead of being imposed from outside. Groups will need credit to become successful, which is, however, an important constraint.

DP

Section 4
Food Security, Food Consumption
and Nutritional Status

Food and Nutrition Studies Programme
Ted Kliest
Regional and Seasonal Food Problems in Kenya
Report No. 10/1985
Food and Nutrition Planning Unit, Ministry of Finance and Planning, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

- The instability of food production and supply in areas with marginal agricultural potential, and the role of the formal marketing and distribution system vis-a-vis food problems.

Results

The performance of Kenya's agricultural sector during the two previous decades (1965-85, ed.) does not compare unfavourably to that of the majority of the other African countries. Nevertheless, annual growth rates of total agricultural production decreased during the late 1970's and early 1980's. As a result of the country's high population growth, food production per capita declined.

The ongoing population increase has caused serious

This study presents a general description and analysis of patterns of regional food supply and seasonal variations. The study is based on a review of secondary data and further statistical information concerning the parts of the country with arable agriculture. The arid and very arid pastoral areas were not subject of this report which deals with the following issues:

- Kenya's general food situation, trends in food production, and the impact of population growth on the availability of land resources;
- Patterns of regional food supply, seasonal variation in food production, and the demarcation of food surplus and food deficit areas;

pressure on land resources. Virtually the entire high and medium-potential zone in the country is used for cropping which has resulted in increased out-migration. Land-man ratios are rapidly deteriorating in those parts of the country which still have a relatively low pressure on land resources, e.g. the better watered parts of Rift Valley Province. At the same time, part of the migration stream is directed towards the drier, marginal-potential belt bordering Kenya's agricultural heartland. The consequences of the expansion of arable farming into, and the grafting of farm systems developed in more humid environments onto ecological areas that are basically unsuitable for rainfed

cropping, are an increased risk of crop failures and concurrent food shortages among the local population, as well as a gradual destruction of the environment in those areas. The magnitude of such problems is demonstrated with regard to Machakos and Kitui District. Similar processes, resulting in identical problems, are thought to exist wherever cropping activities are 'invading' Kenya's semi-arid zone.

Food production patterns in Kenya are characterized by considerable seasonal fluctuations, which are closely related to environmental factors. Such fluctuations in output, will, no doubt contribute to unstable levels of food availability, especially in those parts of the country where farmers are confronted with relatively short and risky cropping seasons. There is particular instability of food production in the zones of marginal agricultural potential, notably the drier zones of Eastern Province which have to cope with frequent food deficits.

The spatial distribution of food relief handed out by the Office of the President at the time of the study was indicative of this. The districts partly or almost completely covered by the semi-arid zone of the Eastern Plateau Foreland, especially Machakos and Kitui Districts, scored very high in terms of total quantity relief food received, as well as food allocation per capita.

Recommendations

Kenya's short and long-term food problems are closely related to specific ecological conditions prevailing in a large part of the country, as well as the country's relative lack of land resources. These problems will pose a serious threat to a stable and adequate food supply in all parts of the country in the future and may worsen as a result of the impact of the present popula-

tion movements. It is recommended that the expansion of crop land into the country's drier and marginal zones, as proposed by the present Development Plan (1984-88, ed.), should be carefully planned and executed. Such a step needs to be accompanied by the introduction and widespread adoption of farm technologies and farming systems which are well-adapted to the specific needs of rainfed crop production under semi-arid conditions. It is expected, however, that the adoption of appropriate farming systems and crop varieties by small farmers will be a relatively slow process and will yield positive results only in the long-run.

Food and Nutrition Studies Programme
Farming Systems and Food Security in Kwale District, Kenya Cora van Oosten
Report No. 30/1989
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

agricultural potential has good connections with both Mombasa and Diani Beach. This area is inhabited by the Islamic Digo, and has a more modern social organization, which has been highly influenced by the coastal Arabs and Swahili.

Although the areas differ considerably in economic respect, these differences appear not so much related to agro-ecological potential as to other factors, notably off-farm employment. In the area with better agricultural potential the employment opportunities are also greater and this leads to a relative neglect of agricultural activities, especially food crop cultivation. In the low potential area, on the other hand, the population remains dependent on a rather low and unreliable

This study concerns the existing farming systems in Kwale District. Attention is particularly given to agricultural production and the further composition of the resource base of rural households. Farmers from two quite different locations were included, one in the coconut-cassava zone with relatively high agricultural potential (Bongwe) and one in the livestock-millet zone with low agricultural potential (Kibandaongo)

The low potential location has a poor infrastructure and poor connections with Mombasa. The area is inhabited by the partly animistic, partly Islamic Duruma, who have a quite traditional form of social organization. The location with better

agricultural production, and is subject to frequent food shortages. It appears that in both areas the farm households which are dependent on agricultural production do not have access to the capital required for agricultural improvements, while those households that do have a certain access to capital appear to have minimized their agricultural production.

Results

Kwale District appears to be an area where off-farm employment correlates negatively with agricultural production. This implies that both the profits which are derived from off-farm employment and the labour provided by the household are diverted

from the agricultural sector. Food crop production is then replaced by the purchase of food, which, in its turn, creates a local demand for all kinds of consumer goods and increasing opportunities for local self-employment.

The causes of this trend are rather complex and are firstly the result of poor agro-ecological potential. The non-market oriented character of the existing farming system also plays an important role, leading to unequal rates of return between the farm and the off-farm sector. The results of this study show, however, that within the generally low-potential coastal area, the relatively higher-potential areas show a poorer agricultural performance than the relatively lower-potential areas. The geographical pattern of the non-agricultural sector must be regarded as a possible cause; in the case of Kwale District the non-agricultural sector has historically been concentrated in the higher-potential areas.

It is also mentioned that whether as a cause or as a result of this, the population has a rather negative appreciation of agricultural cultivation. Especially the Islamic Digo regard agricultural activities as inferior to off-farm opportunities. These socio-cultural causes are related to religion, inheritance system and gender-related inequalities and are therefore more difficult to influence by policy makers than the economic causes; they are not only related to income, but also to the mentality and motivation of the population.

The government's policy objectives regarding the rural areas are directed towards an increase of the agricultural production of food crops - in order to feed the rapidly growing population - and of cash crops - in order to provide foreign currency. The interest of the individual

farmer in Kwale, however, is to broaden his/her resource base, in order to cope with unfavourable climatic conditions, and to become less dependent on food crop production only.

If government planners maintain the objectives of increasing agricultural production and productivity, it will take a considerable number of measures in order to make agricultural production more attractive to the population notably by improved marketing facilities and introduction of extension and training programmes. It would be more realistic to readjust the policy at district level, by placing more emphasis on the development of off-farm employment, in keeping with the interest of the population. Moreover, this would ease the increasing pressure on the ecological resource base, which already shows considerable forms of degradation.

Food and Nutrition Studies Programme
Henk A. Meilink
Food Consumption and Food Prices in Kenya: a Review
Report No. 21/1987
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

(controlled) market and rural parallel markets. Government intervention in consumer food price formation is extensive. The country's major food commodities such as maize, wheat, rice, milk, beef, sugar, cooking oil and also coffee and tea at the time of study were or had been subject to price setting procedures.

Results

Results indicate that Kenya has pursued a so-called 'cheap food policy' over the preceding years (before 1986, ed.). Most foods, falling under price control measures, showed less price increases than the average rate of inflation in the preceding years. The domestic consumer prices for the main staple food, maize, were kept well below com-

parable world market prices, another indication of the government's wish to provide food at low prices.

The enforcement of the price controls is mainly confined to the major urban centres of the country. Official food pricing policy does not reach the majority of the Kenyans who live in the rural areas. Here, consumer prices are not so much determined by the government as by market forces, that is by varying supply conditions. Studies analyzing consumer price movements in the rural regions have found evidence of large seasonal price variations in rural areas and substantial regional differences in food prices even between adjacent rural markets. This indicates a low

This study concerns the consumption side of Kenya's food system and its focus is the development of consumer food prices and the role of Government intervention in the marketing system of food commodities. The study mainly draws on existing data from the Kenyan Central Bureau of Statistics' longitudinal price surveys covering several rural markets, as well as existing published and unpublished research materials pertaining to government price intervention and the structure of the Kenyan food marketing system.

The report provides a general discussion of the Government's policy with regard to consumer food prices and analyses changes in food prices in both the official

degree of rural market integration, which is aggravated by the government's policy of stringent regulations regarding food transports across district and provincial boundaries.

In order to understand the reluctance of the government to decontrol the maize trade, the report discusses the pros and cons of food movements controls and the (political) obstacles towards liberalisation of the maize sector in Kenya.

Arguments contra controls:

- controlled prices in surplus areas are depressed and prices in deficit regions are inflated implying a disincentive for producers and greater obstacle to maize consumers;
- transport costs are increased since only small quantities may legally be moved without an official permit. This eventually raises the price faced by consumers;
- because movements controls lead to excessive price differentials, this may enable those who have obtained movement permits to realize windfall profits and this makes room for corruption in the state marketing organization.

Arguments in favour :

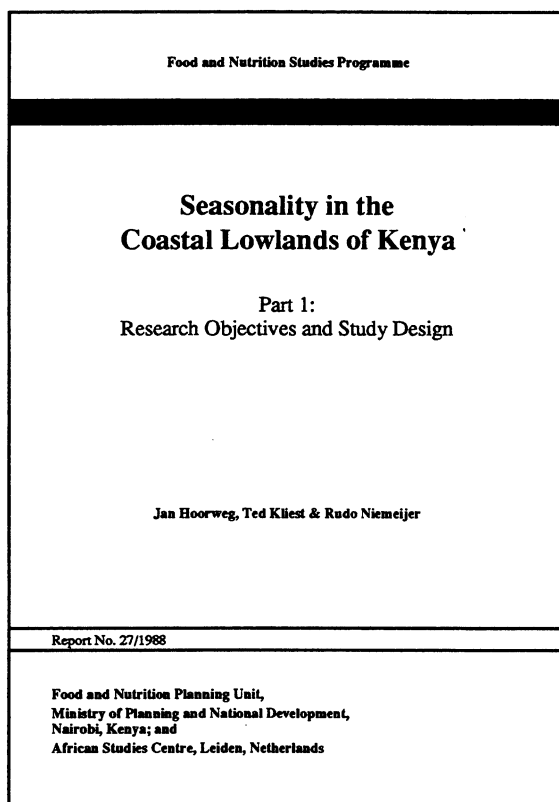
- the government must be able to assure the food security situation of the population;
- the government needs to prevent speculative and destabilizing activities on the part of private traders and also prevent possible domination of food trade by non-indigenous Kenyans;
- the government needs to counter the increased price fluctuations caused by the above mentioned fore-seen developments.

Recommendations

Rural food (maize) consumers will probably be better off if the existing movement barriers are lifted and private traders are gradually allowed to participate in trade activities. However, pros and cons of food movement controls and other obstacles towards liberalisation of the maize sector need to be taken into account.

The report warns against uncritical acceptance of 'automatic' advantages resulting from a free trade system in maize and queries whether this will indeed contribute to a better balancing of supply and demand nationwide and thus lead to less fluctuating food prices in rural Kenya. Maize cultivation in Kenya is still predominantly a rainfed-type of agriculture and due to the wide diversity of ecological conditions, characteristic of the country, rainfall varies greatly between regions producing wide variations in regional yields. Moreover, in a given area rainfall tends to vary, sometimes greatly, from year to year. The resulting yearly fluctuations in local supply may even turn a surplus area into a deficit area the following year.

Thus, the erratic changes of local maize output from one year to the other, are the underlying cause of the short term fluctuations of prices. These cannot altogether be eliminated by advocating the free functioning of the market forces'. Basically, it is an increase in the productivity of the land (higher yields per hectare), still relatively low, particularly in the small scale sector, that should be the focus of attention. In the end, the interests of food consumers (and producers) are best served through high and stable production levels and less dependency upon the whims of climatical conditions.



This is the introductory report on a study on seasonality in the Coastal region of Kenya; the angle from which the, often precarious, living conditions in the region have been analysed. Coast Province is the third area of major population concentration in Kenya, after the Central and Western regions of the country. The climatic and economic conditions of the region are quite different from those of the highland areas. Going inland, rainfall diminishes quickly while the potential evapotranspiration increases. Most soils are chemically poor and the fertility of the land tends to be low. The region knows different agro-ecological zones that can

alternate over relatively short distances; the relatively humid coconut-cassava zone; the somewhat drier cashewnut-cassava zone and the livestock-millet zone and the ranching zone further inland.

The seasonal character and the low reliability of rainfall severely restrict the scope and productivity of agricultural activities. Maize production in the region is insufficient to feed the population and substantial imports are required from elsewhere in Kenya. In most parts, the short rains are unreliable and many farmers do not plant at this time of the year. The population in the drier zones, in particular, have to deal with the disruptive effects of shorter and longer drought periods.

The economic development of the region has not kept pace with that of other parts of Kenya. During the colonial and the post-independence period, economic development has stagnated due to a combination of political, economic and social factors. The industrial and services sector have shown only slow development with the exception of the tourist sector. The growth of employment opportunities outside the agricultural sector is limited. Coast Province, in fact, scores comparatively low on accepted development indicators such as infant mortality (129 vs 109 for all Kenya), childhood malnutrition (stunted 39% vs 28%; wasted 5% vs 3%), and enrollment of girls in primary education

(58% vs 83%). The living conditions of the population in large parts of the province are harsh and estimates place the incidence of rural poverty at 40% or more of the households, higher than in Kenya as a whole.

The study objective is to study food security and nutrition among the rural populations in the coastal lowlands, together with the coping mechanisms that are utilized by different population groups in order to deal with seasonal variations.

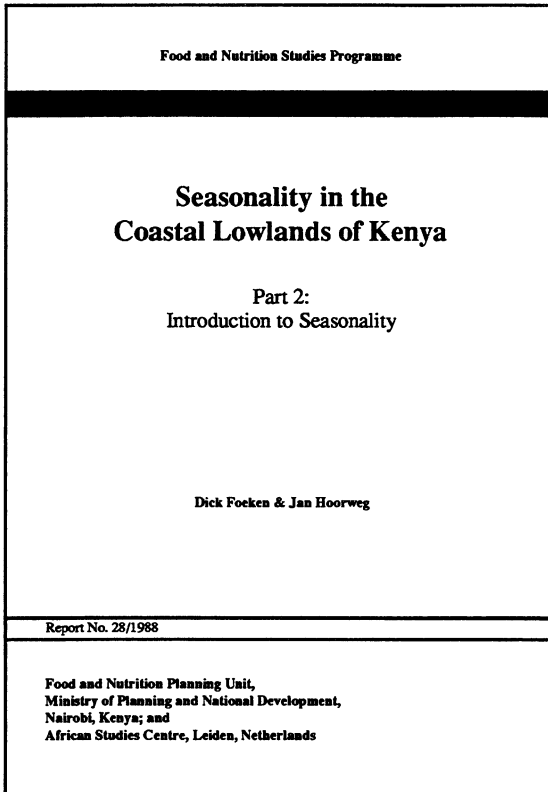
The following aspects are addressed in particular:

- The characteristics of the small farms in different agro-ecological zones in terms of land and labour use, cropping patterns, farm management practices and degree of commercialization;
- The differentiation in socio-economic terms among the farming households;
- The extent and nature of off-farm activities;
- The variations in food consumption over the year;
- The variations in nutritional status of household members during the year.

The study was carried out in six locations in Kwale and Kilifi District, i.e. two locations in each of the three major agro-ecological zones. In each location 50 households were visited five times over a period of two years. The information collected concerns household and demographic characteristics, agriculture, off-farm employment, food consumption and nutritional status.

This report, Part 1, presents a description of the research objectives and methodology. Part 2 of the same title (Report.28), gives a general introduction to the topic of seasonality in Africa and also reviews existing knowledge about socio-economic conditions in the two districts. The find-

ings regarding the socio-economic characteristics of the sampled populations together with an analysis of socio-economic differentiation are presented in part 3, again of the same title (Report.32). In part 4/5 the conditions in respect of food consumption and nutritional status are presented (Report.38).



This report presents a general introduction to the topic of seasonality in Africa and also reviews existing socio-economic knowledge about Kwale and Kilifi Districts.

Seasonality is a common phenomenon in Africa. However, its impact is not equally felt in each region and by each household or individual. At least four factors - on different levels of analysis - seem to determine the degree to which adverse effects are felt and, consequently, what coping mechanisms can be used. These are: climate (rainfall deciding agro-ecological conditions); form of productive organization; resource level (further determining household conditions); and fi-

nally, within households, gender and age, giving individual differentiation.

The dryness of the climate is usually expressed in terms of rainfall per year. According to the existing literature, there is a negative correlation between this figure and the several forms of rainfall variability, i.e. the yearly variations in total precipitation, the variations between the same seasons in different years, and spatial variations. In general, the drier the climate the more seasonality is felt, which in turn implies that agricultural production is more risky and food shortages more likely to occur.

The findings regarding Kwale and Kilifi Districts do not confirm this hypothesis, however. The higher seasonality indices were found

in the coastal strip, i.e. in areas with relatively high rainfall figures. More inland, Kwale town and Chonyi appeared to have the same seasonality index as the much drier locations of Kinango and Samburu further inland. Data regarding interannual variability show no correlation with mean annual rainfall either. Thus, climatic seasonality and unreliable rainfall are more or less equally felt in the different agro-ecological zones in the two districts. Still, in the drier areas, agricultural production is more risky because only a very limited range of crops can be grown there.

Coping mechanisms vary with the dryness of climate. In drier regimes, strategies designed to prevent seasonal stress are less

likely to have the desired results and people will have to resort to famine-related responses earlier. It has been reported that farmers in high potential zones were able to tackle seasonality mainly by agronomic measures, i.e. measures to prevent food shortages. Farmers in low potential zones on the other hand, most frequently reverted to responses such as buying food and selling livestock.

In Coast Province, there is a clear distinction between wetter and drier areas as regards agronomic measures to cope with climatic seasonality. Notably, this concerns the coconut palms in the wetter areas and livestock in the drier areas. In periods of food shortages, the owners of coconut palms are relatively comfortable, not only because they have a 'famine food' readily available, but also because the copra and particularly the palm wine is/was sold in order to buy food. In the drier areas, the selling of livestock offers the main coping mechanism in the agronomic sphere and people without livestock are in a very vulnerable position. In general, however, Mijikenda agriculture is unable to produce enough food for the population.

In most parts of Kenya, including Coast Province, the traditional forms of coping with seasonality - based on social networks - are giving way to more economically defined adjustments. Households sell part of their produce in order to buy goods and pay taxes and are consequently subject to price fluctuations. Crop prices tend to be low just after the harvest and high during periods of food shortages. A trading-class in agricultural products is emerging, buying at harvest time and selling in the lean period.

Poor households tend to experience the effects of seasonality more severely than rich households. In Kwale District, it has

been reported that malnutrition of young children is widespread among poor farmers in the relatively dry hinterland, and almost non-existing among the wealthier farmers in the relatively wet coastal area. But it is important to note that poor farmers are significantly more numerous in drier areas. Secondly, that poor farmers are less able to cope with adverse effects of climatic seasonality and rainfall unreliability.

The impact of seasonality on individuals, and the available coping mechanisms, are age-and gender-specific. Because of their responsibilities for food production combined with their domestic tasks, it is usually expected that women are more severely affected by seasonality than men; the more so in the case of pregnant or lactating women. Coping mechanisms for women lie more in the spheres of agriculture and nutrition, while men's adjustments to food shortages lie more in the economic sphere (wage labour, for instance).

The various factors mentioned are inter-related. For instance, in drier climates there are more poor households, whole women in poorer households are hit harder by seasonal stress than women in richer households. 'Traditional' rural societies have almost ceased to exist because of growing monetisation, growing populations, and growing pressures on the land. Consequently, the finding that in Kenya more and more people migrate to marginal areas with marked seasonality is an ominous one and there is every reason for planners and politicians to be conscious about these relationships and their implications for future development.

Food and Nutrition Studies Programme
Seasonality in the Coastal Lowlands of Kenya
Part 4/5: Food consumption and anthropometry
Rudo Niemeijer Dick Foecken Wijnand Klaver
Report No. 38/1991
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

Household surveys were carried out in six locations in Kwale and Kilifi Districts; two locations in each of the three major agro-ecological zones: CL3 (coconut-cassava), CL4 (cashewnut-cassava) and, more inland, CL5 (livestock-millet). In each location 50 households were visited five times over a period of two years, 1985-87. The data concern households and demographic characteristics, agriculture and off-farm employment, food consumption and nutritional status. The present report deals with food consumption and the nutritional condition of the study population.

Results

Energy intake in the general population is generally below required levels, reaching only 87% of requirements on average. Protein intake is generally well above recommended levels. Food consumption derives for one-third from home-produced foods and for two-thirds from purchased foodstuffs.

Food consumption is strongly related to household size and varies from 3000kcal/ consumer unit in small households to 2100kcal/cu in very large households. Although more food is prepared in large households this is not sufficient to compensate for the greater number of people.

The population does not show the well-known cycle of low food consumption and poor nutritional status during the rainy season. On the contrary, during the long rains food consumption is highest which accords with the higher energy requirement during the cropping season, a time of high labour requirements. The households are in a position to do this because of wage incomes and because maize meal is available cheaply as a result of government policy. Without the availability of cheap maize flour throughout the district at the time, the nutritional condition of the rural population probably would have been worse.

Nonetheless, the higher food intake can not prevent a reduction in the women's nutritional condition during the long rainy

season, i.e. the time of land preparation, planting, weeding, etc. On average, the women's weight-for-height, which is already low (around 90% of the reference), drops to about 88% during the wet season, which corresponds with a weight loss of between 1.0-1.5 kg, on average.

The findings in respect of the nutritional status of young children, aged 6-59 months, are not different from those of earlier surveys and confirm a relatively poor nutritional situation. About 7% of the children shows serious wasting indicative of momentary imbalance; and 36% of the children shows signs of stunting, reflecting a poor health and nutritional history.

The weight status of children does not show regular seasonal fluctuations as among the mothers, because length and weight show different growth patterns over the year. During the dry season from December to March there is an accelerated height growth with weight growth lagging behind, such that weight-for-height declines. The arrears in weight, in turn, are compensated by a weight spurt in the March-June period.

There is little or no difference between agro-ecological zones in respect of food consumption and nutritional status but there are differences between income groups. However, it is the women from the better incomes groups that show the greatest weight variation, not the women in the lowest income class. The children from the lowest income group show indeed the largest fluctuations in length and height growth, without having a poorer overall nutritional status, however. In the better-off households the children's growth is more balanced throughout the year.

Recommendations

During the agricultural season women face a heavy task because of the amount of labour to be done, while the regular household tasks continue. During these peak labour periods, there may be less time for cooking and child care, possibly to the detriment of the health and nutritional conditions of the children. From a nutritional point of view, some relief of the work load of women should be encouraged. Some measures are mentioned (to encourage men to do agricultural work, reduce the number of children), while others may be found in reducing the distance from the homestead to water sources (especially in the drier areas) and in easier provision of fuel (planting trees, for instance).

People in smaller households eat more than people in larger households, all other factors being equal. This is one more reason that the introduction of family planning needs to be intensified; the more so because the acceptance rate of the family planning programme in Kwale and Kilifi Districts is very low. Birth spacing is one of the topics that has to be stressed.

Improvement of the health situation and nutritional condition of the children is primarily an educational task. Maternal health care needs to be improved. Women should be made aware of the dangers of malnutrition. Issues like good health or better child development can be raised during such campaigns. Women groups can be used as entry points for passing knowledge on issues pertaining to health and nutritional condition of children.

Food and Nutrition Studies Programme
Caroline Peters & Rudo Niemeijer
Protein-Energy Malnutrition and the Home Environment A study among children in Coast Province, Kenya
Report No. 22/1987
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

dren generally experienced a lack of resources, they did not differ on important socio-economic variables from the general population in Coast Province who are living at similar low-income levels. Lack of resources, marital instability or low education are not directly associated with the occurrence of malnutrition, although polygamy coupled with lack of support and involvement of the father seems to be of relevance.

Earlier research among women who attended FLTC's in Central and Western Kenya, found important differences between the aetiology of malnutrition in these different parts of the country. While in Central Province rural poverty and marital instability played a major role, in

This study explores the causal background of malnutrition in Kilifi District, notably the role of economic, socio-cultural and home-stimulating factors, the latter referring to the care and attention given to children at home. Information was collected by means of in-depth interviews and participant observation. The fieldwork for this study was conducted in the period November 1985 - March 1986.

Results and Recommendations

In the first part of the study attention focused on cases of malnutrition admitted at Kilifi Family Life Training Centre compared with the general population. Although women with malnourished chil-

Western Kenya this relationship was not found. Here malnutrition was linked with factors such as inexperience of mothers, feeding habits and child-rearing practices. Moreover, the families in Western Kenya were more often extended in type with more sharing of responsibility for children. In Coast Province many of the families are also extended in nature, so that it is difficult to gain an accurate idea of individual resources. One might further speculate whether rural poverty as such fails to be a distinguishing factor, because land is not a scarce commodity, contrary to the situation prevailing in Central Province.

The second part of the study focused on the possible influence of intra-household

factors with attention for feeding and weaning patterns, hygiene, parental care and home-stimulation. Households with acute cases of malnutrition were compared with households of similar socio-economic characteristics, but with children of satisfactory nutritional status. Important variations in respect of these behaviour aspects were found, particularly as regards child-caretaker relationships. In households where no malnutrition had occurred, children were fed more regularly and were provided with more types of stimulation.

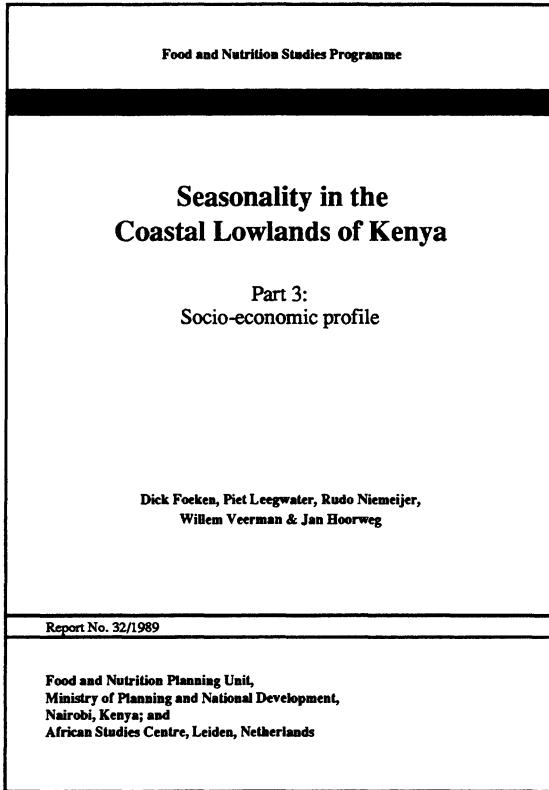
However, there is a problem of interpretation regarding the direction of cause and effect. It is quite possible that unresponsiveness of a sick child may lead to subsequent (or increased) lack of attention on the part of the mother and other relatives. The question is unanswered whether a malnourished child generates a lower level of stimulation on the caretaker's part, or whether lack of stimulation of the caretaker leads to an increased risk of malnutrition.

The present findings, however, not only indicate that a relationship between childhood malnutrition and home stimulation exists, but that it persists beyond the acute episode and subsequent rehabilitation. The lack of home-stimulation may possibly lead to relapses, but the fact that it persists after rehabilitation could well be an important factor in the developmental retardation that has been found at later ages among the victims of childhood malnutrition. This observation is in line with recent thinking regarding the relationship between malnutrition and cognitive development, which tends to emphasize the complex interrelationships between socio-economic conditions, caretaker behaviour, malnutrition and child development.

Consequently emphasis during rehabilitation should not be only on nutritional requirements and general child care, but also on individual attention and stimulation given to the child, so that these children may eventually return to a safer and more favourable home environment.

DP

Section 5
Household Resources and Income Generation



As general background information to the series of studies in Coast Province, a household survey was held in six locations, Kwale and Kilifi Districts. Three locations each were selected in the three major agro-ecological zones: CL3 (coconut-cassava), CL4 (cashewnut-cassava) and, more inland, CL5 (livestock-millet). In each location 50 households were visited six times over a period of two years, 1985-87. The data concern household and demographic characteristics, agriculture and off-farm employment allowing for an estimate of annual income and its composition.

Results

The income of rural households in the coastal districts is generally low. The present findings differ little from earlier surveys in 1977 and 1981 and it must be estimated that 40% of the households fall below the food poverty line of sh.1000 per consumer unit per year. These households have insufficient income to assure the necessary food intake, leave alone a minimum existence level.

Income differences are substantial: about 30% of the households realize less than sh. 750 per consumer unit; another 30% have more than sh. 2,500 per consumer unit. Household income, on average, consists for 60% of wages, 25% of cash crops and livestock and 15% of the value of food crops.

Households in Kilifi are generally larger than in Kwale, because of differences in household organization. On average, households have 8.2 acres at their disposal but in the CL3 and CL4 zones, closer to the coast, 40% of the households have less than 3 acres. About half the land is used for food crop cultivation - predominantly maize but also cassava - except in the CL5 areas situated further inland.

The seasonal character and the low reliability of rainfall in the larger part of the districts severely restrict the scope and intensity of agricultural activities. Smallholders in the wetter parts rely on the cultivation of annual food crops and perennial cash crops. Small farmers living

in the drier zones of Kwale and Kilifi combine annual production of food crops with livestock rearing.

Although some households are able to realize occasional surpluses in years with high rainfall, the majority of the rural population is regularly confronted with the effects of drought periods. Income from farming activities is generally low and but a small group of households, only 10%, depends mostly on farming and is able to realize a minimum existence in this way. Food production is modest and few households manage to grow sufficient food to cover household needs. The average degree of food self-sufficiency was less than 50%. In years with 'normal' rainfall, only 10% of the households succeeded in providing itself with the staple foods to last the year.

Cash crop and livestock production offer a small income for the rural households in the two districts. The main cash crops are coconuts, cashewnuts and citrus fruits and they comprise only about 5% of the total household income; this percentage being somewhat higher in the wetter zones than in the drier zones. In the relatively dry hinterland, livestock is of importance, although it still contributes less than 20% to the household income. Agricultural productivity per household, per acre and per farm labour vary considerably not only between zones, but also between areas within the same zone.

Income from off-farm employment contributes about 60% to the average household income. The jobs consist of a mixture of regular employment, self-employment and casual labour, mostly outside the location. About a third of the households depend on wage income for their livelihood with little or no income from farming.

Aggregated by district, the distribution of households according to economy type (farmer, wage earners, mixed income) is largely the same, with the exception that there are more poor households among the sampled cases in Kilifi. The difference is not large and results mainly from a large number of poor households in one research location. This does not confirm the existing perception that Kwale is the poorer of the two districts but the results do correspond with the Rural Household Budget Survey of 1981/1982 which also reported that household incomes in Kwale were higher than Kilifi, because of higher incomes from salary and wages.

Ecological and infrastructural factors are important to explain the poor showing of agriculture but the role of individual household strategies must not be underestimated. Many households aim to diversify the resource base as much as possible to protect themselves from the uncertainties of agriculture as well as uncertain wage income. Because of the critical importance of wage employment in this, differences in household income and living conditions between agro-ecological zones are less than expected.

The similar distribution does not mean that the agricultural and economic activities in the zones are the same. Rather, it implies, firstly, that in each of the zones a similar number of households fail to rise above the poverty line. Among the households that manage to do so, wage income is the major component, and since employment opportunities are not location-bound the similarity in prevalent household economy is not surprising. What is surprising is that in each zone so few households manage to make an existence from farming only. The variation *within* agro-ecological zones is much greater and

more important than the variation *between* zones.

Recommendations

Although it is widely admitted that soil conditions as well as climatic conditions do not permit full food self-sufficiency, at the same time it is generally recognized that a number of measures can be taken to increase food production.

Maize is the dominant food crop, even though it is not very well adapted to the local circumstances in Coast Province. The range of food crops needs to be widened; especially the cultivation of more drought-resistant crops - such as cassava, sorghum, millet, simsim, groundnuts, soya beans, cowpeas, pigeon peas, yams, and arrow roots - should be encouraged.

Areas used for food crop cultivation are relatively small and should, where possible, be extended. Here lies a task for the men, for instance by clearing the bushy parts of the fields. This may also reduce the damage caused by wild animals and birds. Men should also be involved in measures to stop further soil erosion.

The unreliability of rainfall seriously hampers food production. Irrigation possibilities are few because of the seasonal character of most rivers. Nevertheless, wherever possible, small-scale irrigation, for instance, vegetable gardens should be encouraged. A positive side-effect of such measures could also be a less one-sided diet. Farmers might also be assisted at the time of planting, with rain forecasts through the media in the local languages.

Productivity of food crop cultivation can be raised in several ways, such as more use of fertilizers and manure, better control of weeds, and the introduction of animal traction and other ways of mechanization. Extension services should be intensified

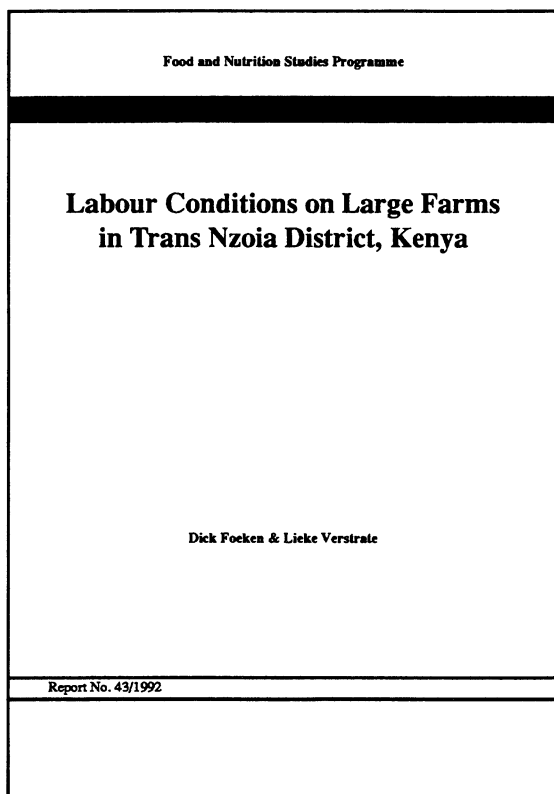
and be directed to education and stimulation of such improvements. In general higher farm productivity can only be realized through higher inputs; in other words, farmers need money to purchase these items and credit facilities should be provided with easy terms. Still, for many households such investments in food crop cultivation were not economically viable at the time of study because of the availability of maize meal at cheap prices.

Beside measures to raise the level of food production, household food supply may also be improved by introducing simple, traditional methods of food storage and food preservation. An example of such methods concerns the boiling and drying of the leaves of the edible pea-plant. In this way, it can be stored for over twelve months.

Cash crop production is hampered by the same physical and cultivation constraints as food crop production, although it is clear that particularly in the wetter zones, potential for cash crops exists. In general, what has been said about measures to increase food crop production applies to cash crop production as well. But there is another problem: except for coconuts (copra), there is no assured market for cash crops in the two districts. Better marketing facilities for products such as cashewnuts and fruits should be explored, including the creation of agro-based industries in the areas.

All being said and done, the potential for crop production remains limited given soil and climate conditions. It is therefore recommended to focus future development efforts not only on agriculture, but also to consider wage employment as an important priority. In order to raise the general living in this part of the country, a strong policy directed towards increasing off-

farm employment, especially in the so-called informal sector, is necessary. In this context, the creation of agro-based industries must be mentioned. Infrastructural improvements, all-weather roads in particular, are also essential, because this may encourage commuting and curb rural-urban migration. In that way, a greater part of the wages may reach the household.



relatively larger share of the land was used for seed maize and for improved grazing. Maize yields were higher as farms are larger, but livestock densities were about the same in all size categories.

In 1989, the 'average' farm of the survey had a size of 711 acres and employed 17 permanent labourers. The number of casual labourers employed on the large farms is related to the maize cycle. Especially during peak labour periods such as weeding, top-dressing, detussling and harvesting, many casuals are needed. However, it appeared that on the larger farms even during the leanest months some 50 casual labourers worked on average 15 days per month.

The number of casual

This report is the first in a series regarding food supply and nutrition among labourers on large farms in Trans Nzoia District. It deals with two important aspects of the labourers' food and nutritional situation, i.e. the incomes they earn with their labour performed on the large farms and the extra provisions they enjoy. The data were collected in 1989 during a survey among 46 large farms of 100 acres and more. Information was gathered regarding general farm features, wages and provisions for permanent labourers, and wages and provisions for casual labourers.

Nearly all farms were of the mixed type, i.e. a combination of maize cultivation and livestock rearing. As farms were bigger, a

labourers in the district in 1988/89 was estimated to range from a minimum of 7,500 during the leanest period (usually in February) to a maximum of more than 17,000 during the busiest period (usually in July). Almost without exception these casuals were recruited on the farm itself: family members of the permanent labourers, people who were employed as so-called 'regular casuals', and (if present) squatters. Almost 10% of the casual labourers on the larger farms worked there for more than 270 days per year. It was quite surprising that on average (i.e. during a whole year) almost three-quarters of the casual labourers are recruited among people who are already living on the farm.

Results

The stereotypical view regarding absentee-ownership of the large farms is not entirely based on fact: two-thirds of the owners appeared to be working and living on their farms. However, as farms are larger, absentee-ownership is more common.

Of the two different groups of labourers living on the large farms, the permanent labourers and the resident casuals, the second group can be subdivided into 'squatters' and so-called 'regular casuals'. The latter sub-group consists of labourers recruited by the farm owners as casual labourers, usually living in the same labour camp as the permanent labourers, and performing casual labour on a permanent basis but being paid on a daily basis.

Labour is used in an exploitative manner. On average, wages paid to permanent and casual labourers in 1989 were below the legal minimum. Wages differ considerably between farms. Wages paid to dairy workers (the largest group of permanent labourers) ranged from sh. 200 to sh. 510 per month. Wages for casual labourers ranged from sh. 7/60 to sh. 16/10 per day.

The legal position of farm labourers is poor. This is particularly the case for the 'regular casuals'. They are not given the status of permanent labourer, because as casuals they are cheaper to hire and easier to fire. For the same reasons, on some farms the permanent labourers had been made into 'regular casuals', thus losing their monthly salary and being paid on a daily basis.

Most farm owners provide their permanent labourers and their 'regular casuals' with a house and a piece of land for their own use. Labourers are generally better off on large farms. The permanent labourers had access to on average one acre, the 'regular casuals' to 0.4 acres (the squatters

had on average 0.7 acres). As far as the permanent labourers are concerned, there is a weak correlation between wage level and the size of their plot, in the sense that when plots are somewhat larger, wages are lower.

On about three-quarters of the farms the permanent labourers and the resident casuals are able to buy cheap maize from the farm's stock. Cheap milk can be purchased on one-third of the farms. The non-resident casuals can enjoy this benefit on 46% and 17% of the farms, respectively. Prices of both maize and milk are substantially lower than average market prices. Prices do not vary with farm size.

Most large farm owners/managers impose restrictions upon labourers living on the farm. On 40% of the farms where seed maize was cultivated, the resident labourers were not allowed to grow their own commercial maize when the fields of seed were nearby. Furthermore, farm labourers are not allowed to keep livestock (except poultry) on the large farm. Finally, and most seriously, the resident labourers (except the squatters) are usually forbidden to undertake economic activities outside the farm they live on.

With an estimated regular labour force of about 25,000 persons in 1989 and an estimated total labour force of 154,000 persons in 1987 in the district the possibilities for the creation of extra employment in the large farm sector are very limited. An increase of the grazing surface of 25% would need some 335 extra dairy workers in the district (i.e. on farms of 100 acres and more). An increase of the area under maize (both commercial maize and seed maize) with 25% would lead to an estimated increase of the casual labour force of some 1,850 persons the whole year

through and about 4,000 during the (short) peak period.

Recommendations

Large farm owners should be forced to pay at least the legal minimum wages in order to improve the poor economic situation of farm labourers.

The legal position of permanent labourers and casual labourers needs to be improved. Regular casuals should be given the status of permanent labourers, so that they may enjoy the same benefits. Steps can also be taken to prevent permanent labourers being turned into 'regular casuals'.

Restrictions on farm labourers living on the large farms need to be relaxed. Households of labourers must be able to undertake income-generating activities elsewhere, in order to improve their economic situation. Furthermore, they should always be allowed to grow maize and other food crops.

Food and Nutrition Studies Programme

Household Resources and Nutrition of Farm Labourers in Trans Nzoia District, Kenya

Dick Foeken & Nina Tellegen

Report No. 44/1992

This report, the second in a series of three regarding food supply and nutrition among labourers on large farms in Trans Nzoia District, deals with the living conditions, household resources, food consumption and nutritional situation in the labourers' households. The data were collected in June and July 1989 among some 300 households. Three types of labourers' households are distinguished, i.e. permanent labourers living on the farms, casual labourers living on the farms ('resident casu-als'), and casual labourers living outside the farms ('non-resident casu-als'). For comparison a group of households was included in which nobody had performed any casual labour on a large farm during

the year prior to the survey ('non-labourers').

Results

Members of households living on the large farms have to be available for casual work any time. They are generally not allowed to seek employment or other income-generation activities outside the farms. As a result, the annual income of these households is comparatively low and is almost entirely derived from the labour performed on 'their' large farm. The households outside the farms manage to realize some income from agriculture, in particular the non-labourers. The latter group is also the only group with a relatively high income from non-agricultural employment. Hence it is by far the wealthiest group.

The households on the large farms have very little land at their disposal, i.e. on average 0.9 acres for the permanent labourers and 0.5 acres for the resident casu-als. In this respect, the situation of the non-resident casu-als and in particular the non-labourers is much better. Especially among the resident casu-als, the percentage of landless households is high (49%).

Only 57% of the households of permanent labourers and 65% of the resident casu-als did have a latrine present. Moreover, about 40% of those having a latrine shared it with one or more other households on the farm. The situation of the households living outside the farms was better in this respect.

Improved drinking water is mainly found *on* the large farms: about half the permanent labourers and 40% of the resident casuals had access to this provision. Of the households living outside the large farms, only 10% had improved drinking water.

Among the labourers' households, living densities are fairly high: on average more than four persons had to share one room. With three persons sharing one room, the situation among the non-labourers is better.

Due to the little land the resident labourers have at their disposal, they produce very little food. This applies in particular to the resident casuals, of whom half (i.e. the 'regular casuals') have no land at all.

For the labourers' households on the large farms, agricultural wage labour is the main source of income: about 80% of the total household income is derived from this source. This is due to the land shortage these households face and to restrictions regarding the keeping of cattle and access to income-earning activities outside the farms.

With an estimated income of sh. 6,950 per year, the resident casuals are the poorest group. This group consists partly of the so-called 'regular casuals' and partly of squatters, the latter sub-group being by far the poorest category. The household income of the group of permanent labourers is about 40% higher than that of the resident casuals, but still lower than that of the casual labourers living outside the farms. In other words, households living *on* the farms are comparatively poor. Nevertheless, there is also a very poor sub-category among the non-resident casuals, notably the landless households. Finally, with an income of almost sh. 22,000 per

year in 1988/89, the non-labourers' households are by far the wealthiest.

Because of their high dependence on casual labour on the large farms, the household incomes of the labourers show some seasonal variability. Moreover, in those households with a piece of land, seasonal labour on a large farm is likely to compete with the households own maize cultivation.

There appeared to be hardly any difference in energy intake between the three groups of labourers. They all have a rather low intake, reaching about three-quarters of requirements (calculated at 2960 kcal per consumer unit per day). Another indication of the low level of energy intake in all study groups (including the non-labourers!) is that in about one-quarter of the households average energy intake appeared to be less than 60% of requirements on the day it was measured.

Energy intake is mainly derived from purchased food. This applies in particular to the labourers living on the farms (85%), but even in the non-labourers' household more than half the food consumed is bought.

In all study groups, the level of protein intake was above what was considered a safe level (calculated at 50 grams per consumer unit per day). Protein intake is highest in the non-labourers' households.

Malnutrition among the children between six months and five years is widespread among the labourers on large farms. In the three categories of labourers' households 23% of the children appeared to be stunted (height-for-age below 90% of the reference) and 10% wasted (weight-for-height below 85% of the reference). The highest percentages of stunted children are found among the 'regular casuals' (34%) and the 'landless' (33%).

Wasting is common among, again, the landless (22%) and the squatters (21%).

As far as the nutritional condition of the children's mothers is concerned, there appeared to be important differences between the four study groups. With an average weight-for-height of 93.5%, the condition of the mothers in the group of resident casuals was relatively poor (mainly due to the even lower weight-for-height of the mothers among the regular casuals: 91.1%). The mothers' nutritional condition among the non-labourers was relatively good (101.1%).

Recommendations

The Health Act needs to be implemented more stringently, forcing large farmers to provide their labourers with latrines and clean drinking water.

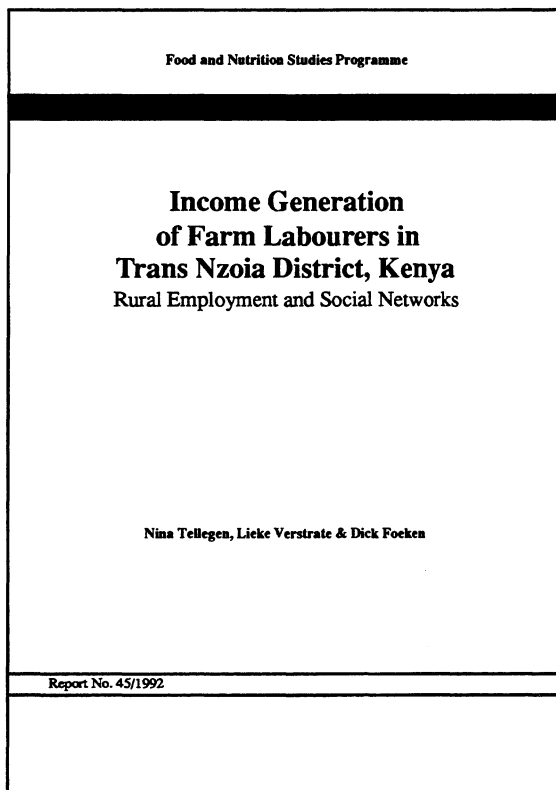
Measures should be taken to increase food production. Soils are generally fertile in Trans Nzoia District and it must be possible to raise productivity on both small and large farms.

Diversification of food crops is important. Maize and sometimes beans are the major crops, causing seasonal food shortages and a monotonous diet. Therefore, it is necessary to stimulate the cultivation of crops with different growing seasons like millet, cassava and sorghum in order to change eating habits and ease food shortages.

No further subdivision of the small plots of farm labourers should take place. Alternatives to generate income should offer young people the possibility to obtain food without growing it themselves.

Improvement of educational facilities is important in connection with access to employment outside agriculture. The educational level of the population is low, which hampers their access to non-agricul-

tural wage labour. Therefore, large farm owners should provide schools for their labourers and District Officers should stimulate the improvement of schooling facilities in general in the District.



This report is the third in a series on household resources and nutrition of labourers on large farms in Trans Nzoia District. The study focuses on income generation of households, notably the importance of rural employment (subdivided into agricultural labour on large farms and non-agricultural employment) and social networks. The population in this study is a sub-sample of the study population of the main household survey and consists of three categories of farm labourers in Trans Nzoia, i.e. permanent labourers living on the large farms, casual labourers living on the large farms (the so-called resident casuals), and casual labourers living outside the farms (the so-called non-resident ca-

suals). For comparison purposes, a group of non-labourers is included.

Results and Recommendations

Non-agricultural employment consists of regular employment and self-employment. Regular employment was predominantly undertaken by men and showed little seasonal fluctuation. Highly rewarding types of employment like teaching and nursing were not accessible for most households because members lacked the qualifications required. Therefore, members of agricultural labourers' households were at best engaged in low-paid types of employment, e.g. in a local store or as a maid. Labourers living on the large farms were usually not allowed to

work outside the farm, these households depended predominantly on the labour on the farm for their livelihood. For the non-labourers, regular employment was a comparatively important source of income. Members of these households were engaged in relatively better-paid jobs like teaching and post office work, for which education is needed.

Self-employment activities ranged from selling of maize to running a *matatu* business. Some of these activities were seasonal and only undertaken during relatively idle periods on the large farms and on the households' own plots, while other types of work provided an income throughout the year. There were more women than

men engaged in self-employment but women's earning were on average only about one-third of men's. Households living on large farms have some self-employment, but again very little compared to the other groups, which was due to the restrictions imposed on them. Casuals living outside the farm were more often engaged in self-employment, especially simple types of activities like selling boiled maize and some trading in vegetables. The households in the wealthiest group, the non-labourers, were engaged in steady activities, showing no seasonal fluctuations in income and requiring quite a lot of starting capital.

For those who have access to non-agricultural employment, this appears to be a relatively profitable source of income. People in regular employment in particular earn salaries which are much higher than the incomes from agricultural wage labour and self-employment. However, regular jobs are not easily accessible to farm labourers since their educational level is rather low and most regular jobs require at least some schooling. Major constraints on self-employment are lack of capital and, for households living on the large farms, the restrictions imposed by the farm owners/managers.

Although the number of women and men in rural employment are about the same, in general women earn less than men. This is because women only have access to lower-paid types of activity, such as casual labour on the large farms, domestic labour and selling roasted maize. Peaks in labour demand on the large farms are mainly filled by women. Men work on a more regular basis.

Despite their low incomes, the households living on the large farms spent about 14% on gifts to relatives, in particular to

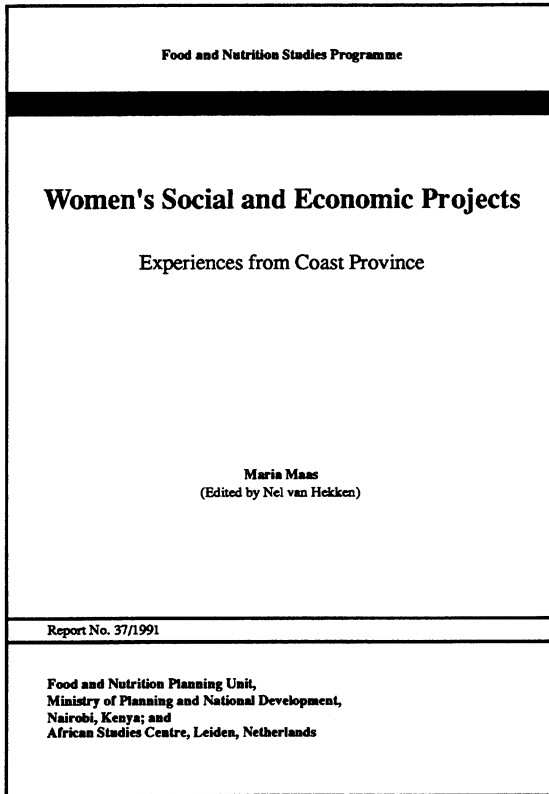
family members living in the district of origin. On average, the value of the gifts exceeded the value of the receipts. Nevertheless, there were 15 households with a positive exchange balance, although this meant a reasonable addition to household income in only two cases. In general, however, the households' social networks appeared not to function as a source of income.

The amount of the gifts and the receipts is related to the type of relationship, the parents of the husband receiving most (despite dowry payments to the parents of the wife/wives). The only positive balance - i.e. receipts exceeding gifts - was found in the exchanges with non-residential household members and children.

Receipts and gifts showed similar seasonal fluctuations, indicating that exchanges of money and/or food do not serve as a coping mechanism to solve or prevent seasonal stress. However, there were examples of non-material exchanges - such as the performance of labour - which appeared to be season-bound.

Efforts have to be made to ensure that women receive the same wages as men for the same type of work. Furthermore, efforts need to be made to make profitable sources of income more accessible for women.

Possibilities to generate income from self-employment need to be expanded by offering credit facilities extension and training to households of farm labourers, and by improving the infrastructure in the District.



This is an in-depth study of the contributions that women's associations make to the improvement of the living standards of the members, their families and the community as a whole. The research focused on women groups in Kilifi (Mtwapa) and Kwale Districts (Diani & Ukunda) and concentrated on the history of the groups; the objectives, organization and results of their activities; the social and economic characteristics of the members and their families; and women's motivations to join a group.

The groups in Kilifi were able to realize several projects and managed these projects quite successfully. They provide the

settler families with services like piped water, nursery schools, adult and tailoring classes and extension on child care and nutrition. The groups in the schemes in Kwale did not succeed in realizing any such projects.

Results

The number of women organized in groups is low in comparison with other parts of the country. Groups generally have a multi-purpose character, with such activities as communal farming, trading, and community development but, as a rule, groups aim to realize some kind of major project that requires large capital inputs.

Women's groups usually aim at two aspects of rural development: to provide the community with certain essential services but also to generate an income for the individual members. For most members the second objective is probably the more important, but experience learns that they are usually disappointed in this respect.

The success of the groups in realizing projects depends to a large extent on external funding and support. A major bottleneck is the absence of members with basic education and training to manage the project. The groups in Kwale seem rather unsuccessful for a variety of reasons.

Few members, however, wish to leave the group or even call for the group's dissolution in order to get a share from the money which the group has accumulated so far. In fact, members judge this last so-

lution as very unfortunate. In the first place, members feel that to dissolve the group would mean to lose face vis-a-vis their husbands and those women who never joined the group.

Individual members can leave the group, but this is difficult for various reasons. Labour input of the members into the groups is rather limited and instead members are required to make two-weekly donations to the group. A considerable number of the members are not capable of paying every two weeks. Quite a few members have thus accumulated debts to the group and some of these are so high that they will have great difficulties in ever clearing them.

These members generally do not leave the group, though. First, because by doing so they would lose the money they already have invested in the group. Second, members do not want to lose their chance to share in the future profits of the group. This is also the reason why their behaviour is accepted by the other members of the group.

Financial and technical support are the main conditions for success of the women's groups in the area. Outside assistance has become more or less a necessity considering the type of projects that the groups aim to realize. The projects that are popular among women's groups usually require sums of money as initial investments as well as financial support from outside after the first start. Furthermore qualified personnel is often required as well to keep the projects going. Most group members are not qualified and need training, which again can only be affected with outside assistance.

Aid, financial and technical, is scarce and consequently the ever growing number of women's groups find themselves in com-

petition with each other. Considering this fact, the ability to attract funds and other aid is a major issue for any group. The groups in Mtwapa appear more successful in this respect. The groups in the Diani-Ukunda schemes see this simply as a matter of waiting for their turn.

The problem with the latter groups is, however, the low level of literacy among the members and the virtual absence of any inspiring and competent leadership. Few members have formal basic education or have experience with or access to government officers or other resource persons.

Recommendations

Community Development Officers, when advising women to form a women's group, need to carefully consider the availability of competent female leaders and members to be included in the group. Otherwise, groups might end up in a similar situation as some of the groups investigated. Members keep on contributing to the bank-accounts of the group without being able to invest this money in any economic or social enterprise.

Resources are scarce and it is inevitable that some of the groups will never get any financial or technical support. Nonetheless, educated and competent leadership enhances the chances to attract aid. Besides this, competent leadership may be able to guide the groups into sustainable small-scale activities which can give the members selfconfidence and can lend them prestige in their own communities.

Furthermore, women groups are in need of advice on leadership, competence, education and literacy level. The literacy level of existing groups has to be raised and training (book-keeping, management) intensified. The women's groups have to be

legalized, so that credit facilities can be improved. The CDO's need to explore the possibilities for co-operative marketing of commodities provided by the women's groups, as well as the possibilities for funding. Finally, the intersectoral collaboration among the officers dealing with women's groups have to be intensified.

Section 6
Rural Development and Food Security

Food and Nutrition Studies Programme
Rudo Nemeijer Marianne Geuns Ted Kilest Vincent Ogonda Jan Hoorweg Nutritional Aspects of Rice Cultivation in Nyanza Province, Kenya
Report No. 14/1985
Food and Nutrition Planning Unit, Ministry of Finance and Planning, Nairobi, Kenya; and African Studies Centre, Leliden, Netherlands

as such avail of a combination of resources;

- individual rice growers who have a similar combination of resources as the third group but who usually cultivate only small rice plots.

Socio-economic information and agricultural data were collected by means of structured interviews. Food consumption was assessed by two methods: a recall of all food consumed in the households during the day prior to the interview, as well as a 24-hour recall of the food consumption of individual children, aged 6-47 months. Nutritional status included the anthropometric measures commonly used in nutrition studies i.e. weight, height and mid-upperarm circumference.

Household surveys were conducted among four groups of farmers representing different degrees of participation in and dependence on irrigated rice production.

The four groups are:

- non-rice growers who take no part in irrigated agriculture and who largely depend on traditional farming techniques and management practices;
- resident tenants who are living and farming at large-scale irrigation schemes and who largely depend on irrigated crop production for their daily living;
- non-resident tenants farming at the same schemes but who live outside the schemes on plots of land elsewhere and

Results

The youngest children proved to have a high prevalence of diarrhoea and vomiting and showed a slow-down of height growth in the second half of the first year. The incidence of stunting among pre-school children was similar to that among Kenyan children in general. Weight-for-height, however, was low and indicated a considerable incidence of wasting at the time of the survey, early 1984. The average quantities of foods consumed by the children were rather low and did not meet caloric requirements, particularly among the 3 and 4 year old children. Protein consumption was generally sufficient.

The observed differences in nutrition between the four groups appear to be primarily related to variations in resource availability and are not associated with poor health conditions or monotonous 'rice' diets. The group with the smallest resource base i.e. the resident tenants have the lowest food production for home consumption and the lowest average energy intake per consumption unit. This group also had the lowest food intake levels among the young children and showed a higher incidence of stunting compared to the children belonging to the other study groups. The nutritional differences among the remaining groups are much smaller but, in turn also appear related to variations in resource base. The nutritional status of the children of the non-resident tenants proved to be the most favourable. The two remaining groups, the non-rice growers and individual rice growers, take an intermediate position in respect of diversity of resources which is reflected in the nutritional conditions among these groups.

It is evident that the assumption on which the design of the schemes is based viz. that the livelihood of tenant families can be fully covered by means of cash crop cultivation, is not valid. The nutritional conditions among the resident tenants show this convincingly. However, unequivocal conclusions about the nutritional consequences of participation in irrigated rice production are not possible. It cannot be said that participation in rice cultivation in itself has detrimental effects. Both the group with the most favourable nutritional conditions (non-resident tenants) and the category which showed the least favourable results (resident tenants) are farmers at the large-scale irrigation schemes.

Participation in large-scale rice production does not necessarily have negative nutritional consequences and may even contribute positively under certain conditions. However, this is not the case where the sole existence of the farming household depends on this type of agriculture. Rice cultivation on an individual basis in the small schemes does not appear to invoke negative nutritional effects.

Recommendations

Since a diversified resource base is instrumental in securing satisfactory nutritional conditions it is strongly recommended:

- to assure a diversification in the agricultural resources of households in existing as well as future irrigation schemes;
- to support and promote rice cultivation on an individual basis in existing and future small-scale schemes in view of the fact that this type of rice production broadens the resource base of small farmers.

With regard to the existing large-scale irrigation schemes in the Kano Plain it is stressed that:

- the group of resident tenants (farmers working and living at the schemes) should particularly be assisted to attain a more satisfactory diversification of resources.

The following measures are suggested to improve the nutritional situation at the large irrigation schemes:

- the introduction of rainfed crops in the cropping pattern either through introduction of multiple cropping of paddy and rainfed crops on existing scheme plots;
- allocation of separate rainfed plots on presently noncultivated scheme land;

- creating more possibilities for livestock rearing at the schemes by lifting current restrictions on cattle keeping; and the introduction of zero grazing in combination with fodder production.

Recommendations to improve nutritional conditions in general include:

- stimulation of milk consumption, notably through the introduction of graded cattle;
- emphasis on the quantitative food requirements of children, notably in health and nutrition education.

The general health situation, moreover, can be improved by:

- provision of village water supply systems that are of an accessible and inexpensive nature, notably by extending the coverage of the existing shallow wells programme.

Food and Nutrition Studies Programme

Resident tenants at the Ahero Irrigation Scheme

Household economics and nutrition

Frank Noij & Rudo Niemeijer

Report No. 29/1988

Food and Nutrition Planning Unit,
Ministry of Planning and National Development,
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This follow-up to the earlier study on rice irrigation schemes gives a more precise understanding of access to economic resources and the causation of nutritional problems among the resident tenants at Ahero Rice Irrigation Scheme, identified earlier as the most vulnerable group. The study focuses on two aspects: firstly, the ability of the tenants to raise sufficient income to maintain their households and, secondly, the factors determining the expenditure patterns in these household, in particular the money spent on food purchases. The precarious nutritional status of the children of the resident tenants that was found in the previous survey was confirmed.

Results

The resident tenants obtain paddy yields that are on the average equal to those of the non-resident tenants. The most important factors deciding the yield level of any individual tenant appear to be the condition of the block in which his plot is situated. Yield levels of blocks differ substantially and are related to the distance along the main feeder, i.e. the distance from the centre of the block to the inlet on the main canal of the feeder serving the block. Besides the condition of the block and the suitability of the growing season, the availability of labour is an important factor.

Many tenants are in debt for their daily and irregular expenditures. It is common to buy on credit and tenants generally live in an indebted economy. In this context, the tenants find it hard to reserve the cash needed for rice cultivation, which in turn reduces yield levels.

Household members are also involved in other income generating activities. When the interaction between the cultivation of rice and these other activities is analysed, regular wage labour is seen to correlate positively with rice yield. This type of income is earned by men who use it in rice production to hire labour at peak periods of labour demand. Rain-fed agriculture and the cultivation of bunds are neutral to rice production, i.e. participation in these activities has no effect on rice yields.

The expenditure pattern of a household is influenced by its access to different sources of income and the distribution of this income among its members. The cash income of male household members including rice proceeds is used for irregular expenses such as hiring labour for cultivation, or buying large quantities of staple foods. The income of female household members is mostly spent on food, as is the income from paddy sold directly by the household. This latter kind of income is mostly handled by the wives.

The income from rice production is insufficient to cover regular household expenditures. A series of recommendations are made below to raise household rice incomes. Although higher incomes will not lead directly to a better nutritional condition of the households concerned, it can be expected that they will improve the general living conditions of these households. The findings of the present study confirm an important recommendation of the earlier study, namely the necessity to widen the resource base of the resident tenants to reduce dependence on rice production. This is especially urgent, as it is expected that further population growth will only augment the already existing problems. Detailed recommendations address issues concerned with raising paddy income, widening of the resource base, improving scheme operations and quality of drinking water.

Recommendations

PADDY INCOME

- Production costs of paddy are high in relation to the income realized. Therefore, lowering production costs is essential. Although tenant households differ considerably, in composition as well as in ability to raise work-capital, the costs of rice pro-

duction are the same for all of them. Costs should be made more flexible in order to correspond to the diverse socio-economic conditions of tenants. Costs can be reduced by preparing plots with oxen instead of preparation with tractors by the scheme management.

- Although preparation by the scheme management is not obligatory, and preparation of fields by the tenant himself is optional, this is not often done. The reduction of charges granted in that case is minimal and bears no relation to the actual costs made by the NIB for land preparation. Costs of land preparation by the NIB should be evaluated and farmers compensated fully for these costs if they prepare their plot by their own means.

- Generally, costs need to be more differentiated and be more in accordance with the actual use of water and services by each tenant (or groups of tenants), to give them an active interest in reducing these costs.

- Rice production can be increased if tenants have access to cheap credit to be able to hire a larger volume of labour. This is the purpose of many of the local credit societies which need to be supported. Alternatively, the NIB may also furnish the necessary cash to hire oxen and labour at the completion of the preparation and settle this advance at the final pay-out.

- Improvement of the management of the rice plots of individual tenants is also needed. Transplanting, weeding and harvesting need to be done at the right time. Sowing the nursery in four successive weeks in four different parts gives more time for transplanting, weeding and harvesting and spreads the amount of labour that needs to be hired over a longer period. Another possible change is mechanical weeding with the help of a simple in-

strument for which, however, planting on line is a necessity.

- Regular interchanges between research station and tenants are needed to increase the transmission of knowledge about rice cultivation to tenants and also to increase the awareness among the researchers of the conditions under which the tenants operate.
- The knowledge that plots with the longest distance to main feeders have the lowest yields should be incorporated in the rotation calendar. Priority should be given to these blocks to guarantee an optimal irrigation, in order to realize higher yield levels in these disadvantaged blocks.
- The part of the production delivered to the NIB can be increased by either a higher advance at delivery of the paddy or a quicker pay-out. The main reason for unauthorized paddy retentions is to use them for labour payments during harvesting and to satisfy direct cash needs.

RESOURCE BASE

- Bund production of food crops needs to be stimulated. At present, bunds in some areas of the scheme are rather high and narrow. Lowering of these bunds would widen them without reducing the total surface available for rice. In other areas of the scheme widening of bunds could also be considered. Growing of crops on bunds requires that livestock is kept away from irrigated plots.
- Scheme land that is not used until now can be divided and distributed, in the first place among the group of tenants. This will widen the resources available to the resident tenants, and means an increase of the agricultural potential of the scheme. Garden production does not interfere with rice production.

- Tenants should be permitted to realize additional income by means of off-farm activities. Off-farm labour of men, even of household heads, appears to be not only compatible with rice production, but even to raise rice production. Tenants and members of their households should also have the possibility of working as labourers for the NIB. They may even be given priority.
- The introduction of single cropping on the scheme, instead of the double cropping, accompanied by the introduction of (partly) rain-fed agriculture during the long rains merits serious consideration. Single cropping has the advantage that production per crop will probably increase and that the burden of pests and diseases will be reduced. It can also be expected that subsistence food production will increase. For many tenants annual paddy income will probably increase particularly for tenants in low producing blocks. On the other hand single cropping will place greater demands on pump capacity, plot preparation and capacity of the drying floor. Also peaks in demand for rice labour may lead to higher labour costs.

SCHEME REGULATIONS

- There is considerable deviation between the standing rules and regulations of the scheme and the actual practices of tenants, and even scheme authorities. This situation is far from desirable, and it results from a difference between the original blueprint of the scheme and the actual realities in which the tenants and the scheme authorities find themselves. It is recommended that generally rules, or their interpretation, should be formulated in such a way as to coincide more closely with actual practice and with what is feasible.

- A solution should be sought, in particular, for the problem of sub-tenancy. At present, the scheme authorities interact with sub-tenants through the official tenant. This encourages unauthorized sales of produce, and makes it more difficult for the scheme authorities to reach the actual farmer about methods of cultivation and disease control.

- Another issue is the assumption that tenants should live in villages on the sites originally allocated to them. In reality an increasing number of tenants live on sites different from those originally allocated to them and only about 50 per cent of the tenants actually live in the scheme.

- Tenants may also be given the possibility to lease part of their plot. Some tenants do this already without the consent of the scheme authorities. The advantage is, that they are able to adjust their rice growing activities to the family labour and work-capital available. This could also be a way to make partitioning of rice plots among different households of the same family official, which will open the way to pay proceeds from the harvest directly to the individual producers working the plot.

- Better ways are needed for the NIB to deal with its tenants in general. One possibility would be to interact more with groups of tenants (co-operatives) and less with individual tenants. This could be part of a process of shifting responsibilities, i.e. the role of the NIB would partly change to that of a service organization, while co-operatives would take its place as deciding bodies concerning as many issues as possible, without impeding the aim of rice production. The present forms of tenant representation could be organized into an effective intermediate level.

DRINKING WATER

- Measures are further necessary to improve the general condition of life on the scheme. Improved water sources are a necessity, as is evident from the high rate of weanling diarrhoea. Under such circumstances, health education plays an important role, as a supplement to an attempt to make improved water sources more accessible and more convenient.

Food and Nutrition Studies Programme

Economic and Nutritional Conditions at Settlement Schemes in Coast Province

Jan Hoorweg, Rudo Niemeijer,
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Report No. 36/1991

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This report is concerned with land distribution and rural development and presents the final results of a survey in four settlement schemes in Kwale and Kilifi Districts. In each scheme one hundred households were visited and information collected regarding small farm characteristics, off-farm employment, socio-economic differentiation between households, food consumption and nutritional status of the population. Data from a companion survey among the general population were available for comparison purposes.

As elsewhere, the settlement schemes in Kenya, were started with several objectives in mind. Notably they were a means of settling the landless and improving their

well-being, but also to increase agricultural production and stimulate rural development in general. The coastal settlement schemes are also of interest because they can demonstrate the potential for agricultural development by smallholder farmers under the prevailing regional conditions. The farmers in most schemes operate under rather favourable conditions, at least by local standards. They have sizable holdings that are situated on relatively fertile land, and at some time they were given the opportunity to start out on new land. On the other hand, they experience the same limitations on agriculture, notably agro-ecological and infrastructural restrictions, but also historical restrictions that determine

local attitudes to farming. Since the farmers in the schemes have received only moderate development support under the prevailing settlement policy of the government, the schemes mark the potential and the limits of agricultural development under these conditions.

Results

The tenant households generally avail of farms that are larger than in comparable agro-ecological zones. At the same time, there is a considerable differentiation in type and size of land ownership. Only half the settler households are resident on the plot allocated, and own no more land, no less. Almost a third of the tenants have ei-

ther sold a part of the part of the plot, rented out a plot or obtained a small plot later. Some have sold out completely. A smaller number (about 15%) have managed to enlarge their land by leasing or buying but the schemes differ considerably in this respect.

Overall income in the settlements is almost twice that among the general population. Consequently the percentage of households below the food poverty line is small, only 10-15%. However, this finding cannot be attributed directly to the development activity as such, since both groups draw the main part of their income from wage employment; wage incomes accounting for about 60% of household income.

The settlement tenants achieve a slightly higher degree of food self-sufficiency, namely 60%, but this still leaves about 40% of the required food to be bought. Cash crop production in the settlement schemes is three to four times higher than among the general population. However, there is no higher productivity per acre and per labour unit compared with the farms outside the schemes in the same agro-ecological zones.

Wage income in the settlement schemes is much higher than among the general population. This is mainly the result of the favourable location of the schemes, along the coastline with tarmac roads connections that offer easy access to off-farm employment, in Mombasa in particular. This means that workers can commute, live at home and presumably bring a larger part of their income home.

Compared with the general population, the average energy intake in the households of settlement tenants, is substantially higher - about 200-300kcal/cu. In the general population, food consumption is rather one-sided and consists for three-

quarters of cereals. In the settlements cereals comprise 65% of the diet, but because total energy intake is higher there, the absolute level of energy from food groups other than cereals is more than 50% higher than among the general population.

On the whole, the nutritional status of the children in the project populations is better than in the general population. In the settlement schemes, 5% of the pre-school children (6-59 months) was found to be wasted and 26% stunted. Despite this improvement compared with the local population, the percentage of these children in the schemes that is wasted or stunted still equals the national averages.

The end judgment about the government settlement policy in these areas is therefore ambiguous. From the point of view of regional agricultural development the results are far from optimal but from the point of view of the settler households the schemes are quite a success. As so often the case, the objectives of government policy and interests of smallholder farmers do not converge.

Recommendations

Food production in the settlement schemes is higher than among the general population, but could be raised here as well and most of recommendations earlier listed in FNSP-32 apply in this case as well.

Maize is the dominant food crop, even though it is not very well adapted to the local conditions in Coast Province. The range of food crops needs to be widened; especially the cultivation of more drought-resistant crops - such as cassava, sorghum, millet, simsim, groundnuts, soya beans, cowpeas, pigeon peas, yams, and arrow roots - should be encouraged.

The unreliability of rainfall seriously hampers food production. Irrigation possibilities are few because of the seasonal character of most rivers. Nevertheless, wherever possible, small-scale irrigation, for instance, vegetable gardens should be encouraged. A positive side-effect of such measures could also be a less one-sided diet. Farmers might also be assisted at the time of planting, with rain forecasts through the media in the local languages.

Productivity of food crop cultivation can be raised in several ways, such as more use of fertilizers and manure, better control of weeds, and the introduction of animal traction and other ways of mechanization. Extension services should be intensified and be directed to education and stimulation of such improvements. In general higher farm productivity can only be realized through higher inputs; in other words, farmers need money to purchase these items and credit facilities should be provided with easy terms. Still, for many households such investments in food crop cultivation were not economically viable at the time of study because of the availability of maize meal at cheap prices.

Beside measures to raise the level of food production, household food supply may also be improved by introducing simple, traditional methods of food storage and food preservation. An example of such methods concerns the boiling and drying of the leaves of the edible pea-plant. In this way, it can be stored for over twelve months.

Cash crop production is hampered by the same physical and cultivation constraints as food crop production, although it is clear that particularly in the wetter zones, potential for cash crops exists. In general, what has been said about measures to increase food crop production applies

to cash crop production as well. But there is another problem: except for coconuts (copra), there is no assured market for cash crops in the two districts. Better marketing facilities for products such as cashewnuts and fruits should be explored, including the creation of agro-based industries in the areas.

The neglect of land gives some reason for concern. Tenants should be selected in such a way that maximum utilization of the land is guaranteed as much as possible. Redistribution of neglected plots may also be considered. Areas used for food crop cultivation are relatively small and should, where possible, be extended.

Food and Nutrition Studies Programme
Dairy Development and Nutrition
in Kilifi District, Kenya
Piet Leegwater, Japhet Ngolo & Jan Hoorweg
Report No. 35/1991
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

Dairy farming is introduced in various areas previously considered not suitable for this kind of economic activity. In the coastal lowlands also, small and large-scale farmers are becoming increasingly engaged in dairy farming under the auspices of the National Dairy Development Programme. In Kilifi District two farming systems are being promoted by DDP; a zero-grazing system for the wetter parts of the district and a semi-zero-grazing system for the drier areas. The two DDP-systems are capital and labour intensive and depend more on the use of purchased inputs and services than traditional dairy systems.

Surveys were held among five groups of households in the period May-June 1987:

DDP-farmers; independent dairy farmers; livestock farmers in the drier parts; DDP-customers and a comparison group from the general population. The data collected concern: household characteristics, dairy farming and production, milk sales, household food consumption, milk consumption and nutritional status of pre-school children.

Results and Recommendations

Constraints for intensive dairy farming in Kilifi District are quite different from those in the high-potential areas of Kenya: cattle diseases such as trypanosomiasis and East Coast Fever are more prevalent; temperatures are higher; soil fertility is lower; rainfall is less predictable, which makes fodder crop cultivation more complicated and fodder conservation necessary; and farmers with former experience in dairy farming are rare.

The results of the zero-grazing units are promising but farmers following the semi-zero-grazing system have to cope with a high mortality rate of their graze cattle and also face a shortage of fodder. Milk production per cow but also per farm at DDP-farms is higher than at other dairy farms. The closer to urban and tourist centres, the more easily farmers can sell their milk at a high price. Farmers further away depend more on local demand and have to accept

lower prices. This is true for DDP-farmers as well as for other dairy farmers.

The Dairy Development Project has demonstrated the feasibility of dairy farming in areas with a relatively low ecological potential. Possibilities exist to realize a substantial income from small-scale dairy farming in the wetter part of the districts; area where before only few farmers were successful in keeping grade dairy cattle.

The value of livestock production in the DDP-households is about twice as high as in the households keeping livestock in the hinterland and far higher than among the general population in the same agro-ecological zones. Milk production in the DDP-households, both per farm and per lactating cow, is substantially higher than among other farmers keeping livestock.

Nearly all DDP-farmers belong to the group of wealthy and middle-class households. These households are wealthy, because of high incomes from off-farm employment, the same as in the settlement schemes. Wage income accounts for about 40% of the household income; dairy farming about one third.

Within the group of DDP-farmers two sub-groups can be distinguished: one formed by farmers who employ labourers and a group of farmers who run the dairy unit with family members only. At farms employing labourers, the dairy unit appears to be an alternative for other investments and these households keep more cattle, are more wealthy and more involved in off-farm activities than the households not employing labourers. The latter depend more on agriculture and in these households dairy farming competes more with other activities.

The use of milk for home consumption in Kilifi District is low; the average daily

consumption per household was 1.6 liters in the group of DDP-farmers, 1.8 litres in the group of independent dairy farmers and 1.2 liters among the livestock farmers in the hinterland. At the DDP-farms about 17% of the milk production is used for home consumption, in the two other groups this is about a third.

The local milk clients of DDP-farmers consist primarily of households of wage earners. They are mainly found among the few well-off households that depend on better paid permanent jobs near home, in the non-agricultural sector or offered by the government. On average they buy about one litre of milk per day.

Milk consumption among households of the general population is rare and irregular. The price of milk compared to other commodities such as maize and beans is high. Given the fact that two-thirds of the households have a daily energy intake that is considerably below requirements it is - from a nutritional point of view - more reasonable for these households to spend extra shillings on staple foods than on milk.

Compared with the general population, the average energy intake in the households of DDP-farmers, is substantially higher - about 200-300kcal/cu. In the general population, food consumption is rather one-sided and consists for three-quarters of cereals. In the project population, cereals comprise 65% of the diet, but because total energy intake is higher there, the absolute level of energy from food groups other than cereals is more than 50% higher than among the general population.

The nutritional status of pre-school children in DDP-households and among the DDP-customers is better than among children from the general population. The

better results are most likely due to better child care in general, of which milk consumption is but one aspect.

The economic risk for DDP-farmers is relatively high, in particular when the unit counts only a few animals. In general it is not likely that farmers will put all their capital at risk for intensive dairy farming, they will need to reserve some capital for security. Therefore, it can be expected that farmers who join later, will also belong to the group of more wealthy households that have access to sufficient capital and more than is strictly needed for investment in a dairy unit. Dairy farming in Kilifi District will remain out of reach of the majority of rural households that already has problems to attain a minimum level of existence. For these households the positive aspect of the programme is the resulting increase in employment opportunities at the farms of the more wealthy households.

From the perspective of rural development in general, the introduction of intensive dairy farming in Kilifi District can be seen as a positive development. The general performance of the agricultural sector is poor and farmers have little interest to invest in the modernization of agriculture. Instead, many adults are involved in off-farm employment and two-thirds of the rural households derive an income from this source. In fact, rural development in Kilifi District has to cope with a decrease of interest in agriculture in favour of off-farm employment. It is the virtue of DDP that it has stimulated, at least, an inverse flow of capital and created employment opportunities in the agricultural sector.

The DDP-project should be expanded, cattle keeping in general should be encouraged and more bulls should be made available for use by farmers. A precondition, however, is that animal disease control

must be intensified in order to reduce loss of animals. Farmers should receive better instruction on the care of their animals and be motivated to increase milk production. In order to increase the profitability for the farmers, the cultivation of fodder crops should be increased, for instance by integrating the project with agro-forestry and by creating nurseries for the fodder plants. Conservation of fodder crops should be stimulated, so that fodder can be used during the dry season. Moreover, the marketing of milk should be improved, for instance through decentralization of the marketing or through co-operative marketing groups of farmers.

Section 7
Seminar Reports

Food and Nutrition Studies Programme
Socio-economic and nutritional studies in Coast Province: summaries and recommendations
Proceedings of a dissemination seminar at Diani, 28-30th November 1990
Dick Foeken & Jan Hoorweg (Editors)
Report No. 40/1991
Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi, Kenya; and African Studies Centre, Leiden, Netherlands

Proceedings of a dissemination seminar at which the different coast studies that were part of the programme between 1985-87 were presented and discussed with government officials and researchers from other organizations.

The following studies were presented for discussion

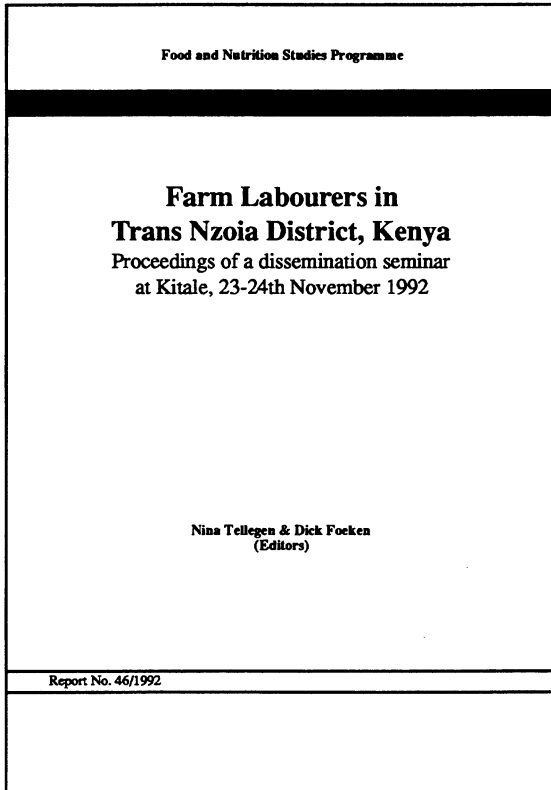
- Coastal Lowlands of Kenya: Socio-Economic Profile
- Seasonality in the Coastal Lowlands of Kenya: Food Consumption and Nutritional Status
- Economic and Nutritional Conditions at Settlement Schemes in Coast Province

- Women's Social and Economic Projects
- Dairy Development and Nutrition in Kilifi District

The report contains the following sections:

- Introduction to FNSP and coast study programme
- Summaries of the respective studies
- Review of conclusions
- Review of recommendations

The conclusions and recommendations listed in this seminar report have been included in the study summaries presented in the earlier sections of the present compilation.



Proceedings of a dissemination seminar at which the different studies conducted on large farms in Trans Nzoia in 1989 were presented and discussed with government officials and researchers from other organizations.

The following studies were presented for discussion:

- Labour Conditions on Large Farms in Trans Nzoia District
- Household Resources and Nutrition of Farm Labourers in Trans Nzoia District
- Income Generation of Farm Labourers in Trans Nzoia

The report contains the following sections:

- Introduction to FNSP and the Trans Nzoia studies
- Summaries of the respective studies
- Review of conclusions
- Review of recommendations

The conclusions and recommendations listed in this seminar report have been included in the study summaries presented in the earlier sections of the present compilation.

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Section 8
Miscellaneous

8A. PROGRAMME REPORTS

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Nairobi / Leiden: Ministry of Finance and Planning / African Studies Centre. Food and Nutrition Studies Programme, Report No. 4 (43 pp)
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Protein-Energy Malnutrition and the Home Environment: A study among children in Coast Province, Kenya. Nairobi / Leiden: Ministry of Planning & National Development / African Studies Centre. Food and Nutrition Studies Programme, Report No. 22 (61 pp)
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Large-Scale Irrigation Development in Kenya: Past Performance and Future Prospects. Nairobi / Leiden: Ministry of Planning & National Development / African Studies Centre. Food and Nutrition Studies Programme, Report No. 23 (29 pp)
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Progress Report: December 1987
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- Report.30 Oosten C van (1989)
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- Report.31 FNSP (1989)
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Nutrition and Dairy Development in Kilifi District. Nairobi / Leiden: Ministry of Planning & National Development / African Studies Centre. Food and Nutrition Studies Programme, Report No. 35 (134 pp)
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Horticultural Production and Marketing in Kenya, Part 1: Introduction and Research Objectives. Nairobi / Leiden: Ministry of Planning & National Development / African Studies Centre. Food and Nutrition Studies Programme, Report No. 41 (100 pp)
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**8C. FNSP STUDY PROJECTS
(July 1993)**

Ongoing	Institution & Research Officers
• Effect of Season on Food Consumption and Nutritional Status of Vulnerable Groups in Smallholder Rural Households in Nakuru District	Division of Research & Extension, Egerton University Mrs.Hilda Kigutha
• Effect of Price Flucatuations on Food Consumption in Vihiga District	Division of Research & Extension, Egerton University Mr. Lewis Aritho
• Group Ranch Subdivision among the Maasai: Effect on Food Consumption Patterns and Nutritional Status in Kajiado District	Unit of Applied Human Nutrition, University of Nairobi Mrs.Maureen Kuyoh
• Horticultural Production and Marketing in Kenya	Division of Research & Extension, Egerton University & African Studies Centre, Leiden Tom Magori & Tjalling Dykstra
Planned & In Preparation	Institution & Research Officers
• Rural Energy and Nutrition	Unit of Applied Human Nutrition, University of Nairobi
• District Nutrition Planning	Food and Nutrition Planning Unit, Ministry of Planning and National Development John Owuor & Walter Okello
• Nutrition among Urban Destitute Households	Unit of Applied Human Nutrition, University of Nairobi
• Rural Employment and Nutrition	Division of Research & Extension, Egerton University
• Nutrition Surveillance	Food and Nutrition Planning Unit, Ministry of Planning and National Development John Owuor & Walter Okello

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