



Food and Nutrition Studies Programme

Seasonality in the Coastal Lowlands of Kenya

Part 1: Research Objectives and Study Design

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Note on Authors

This study has been a genuine team effort in which several researchers participated in different phases of the research. Also, during the course of the study some of our colleagues left and were replaced by others. Since it is not possible to list all of them as authors to each report, we have chosen to list as authors, the researchers who have taken a large hand in that particular report, be it in data collection, analysis, reporting or otherwise. The full team, however, has contributed to the end results and therefore needs to be mentioned. The respective names, disciplines and periods of participation in the study follow below:

Drs. Dick Foeken	human geography	1987-
Ir. Marian Geuns	human nutrition	1985-1986
Dr. Jan Hoorweg	programme director	1984-
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Drs. Ted Kliet	human geography	1984-1987
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Drs. Ria Lenior	data management	1986-1987
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Drs. Rudo Niemeyer	anthropology/data management	1985-
Walter Okello BSc	economy	1985-
Drs. Willem Veerman	data management	1987-

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This report is the first of a series on seasonality in Coast Province, the result of a joint programme between the Ministry of Planning & National Development, Nairobi and the African Studies Centre, Leiden. The study was carried out over a period of 2 years and a great number of people were involved. Without the assistance and support of these individuals and the institutions they represent the study could not have been realized.

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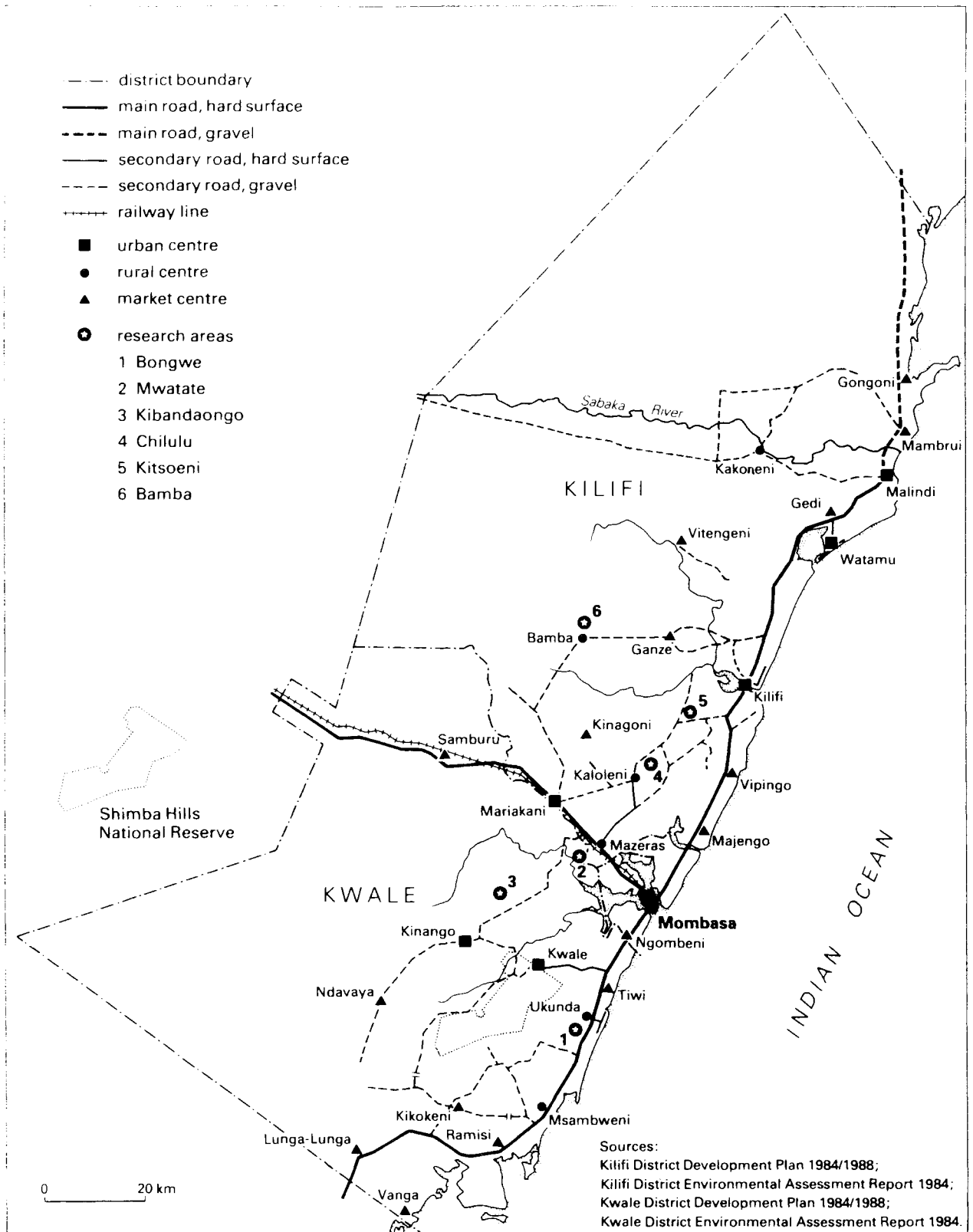
Summary

This is the first of a number of reports on social, economic and nutritional conditions in Coast Province, more particular in Kwale and Kilifi Districts. The reports cover several connected studies that were carried out between July 1985 and July 1987 by a team of the Food and Nutrition Planning Unit of the Ministry of Planning and National Development and the African Studies Centre. The studies were part of the Food and Nutrition Studies Programme (FNSP,1987b) and were concerned with two general topics, namely:

- (-) regional and seasonal fluctuations in food supply and nutrition; and
- (-) nutrition in agricultural and rural development.

The major emphasis of the research concerns the first named topic namely that of seasonality, the angle from which the, often precarious, living conditions in the region have been analysed. This 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. The study consists of a longitudinal survey of 50 households in each location. Households were visited six 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 is part 1 of the study on seasonality and presents a description of the research objectives and methodology, superseding the original research outline (FNSP,1985b). The second report, part 2 of the same title, 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 findings regarding the socio-economic characteristics of the sampled populations together with an analysis of socio-economic differentiation will be presented in part 3, again of the same title. In part 4 the conditions in respect of food consumption and nutritional status will be presented. An analysis of the seasonal variations in food production, food consumption and nutritional status will be the subject of part 5.



Map 1: Kwale and Kilifi Districts: infrastructure and research areas.

1. Introduction

The pressure on land resources in Kenya threatens the future balance between national food demand and national food production (Senga et al.,1981; World Bank,1983). The existing agro-ecological potential for rain-fed farming is quite limited and the country is, in fact, already short of good agricultural land (Ruigu,1987). High and medium potential lands with good to fair prospects for crop production and intensive livestock activities cover only 20% of the land area. The rapid population growth, however, necessitates substantial increases in food production in the near future, together with increases in the production of export crops. The role of agricultural policies, notably of government pricing policies is of vital importance in this respect (Meilink, 1985; 1987). Meanwhile, production increases will depend on the possibilities of increasing yields per hectare, and of bringing remaining, often marginal, areas under cultivation (GOK,1986).

The agricultural land is unevenly distributed over the country. The high and medium potential zones are found in the core region of the Central Highlands, the plateau adjoining Lake Victoria and the Ugandan border, and the very narrow strip near the Indian Ocean. These lands are bordered by semi-arid, low-potential belts. Here, the annual rainfall with its high variability and seasonal nature, offers only limited opportunities for rain-fed agriculture (Braun,1982; Jaetzold & Schmidt,1982;1983). At present, almost the entire high and medium-potential zones are under cultivation (Epp & Kilmayer,1982). As a consequence, cultivation has extended into semi-arid areas, notably the Foreland

Plateau in Eastern Province, the hinterlands of Coast Province and parts of Rift Valley Province (Kliest,1985).

In the semi-arid zones, the rainfall pattern is characterized by a low reliability and low amounts of precipitation. Rain-fed agriculture shows a seasonal cycle of cultivation and harvesting. Such conditions of seasonality, particularly in areas with only one rainy season, easily lead to fluctuations in food availability and nutrition, and even to food shortages. The topic of seasonality has received increasing attention in recent years. Although many African societies traditionally had to cope with seasonal food shortages, the effects of seasonality appear to have worsened as a consequence of the introduction of commercial cropping and because of increasing population pressure. Certain groups, such as small farmers, appear to be more vulnerable to the vagaries of the seasons than others (Chambers et al., 1981; AMREF, 1982; IDS, 1985; IFPRI, 1985).

An earlier FNSP-study on seasonality, a precursor to the present research, has already been mentioned ("Kliest : Regional and Seasonal Food Problems in Kenya, 1985"). This report assessed the national food situation in Kenya together with its seasonal dynamics at the provincial and district level. It called particular attention to the recent population movements into the drier zones against the background of the factual instability of food production in these marginal areas. The dangers of the invasion of more and more people into these environments are many as evinced by the regular food shortages in these areas. As a result, food relief through governmental and non-governmental agencies has become a matter of routine.

2. Coast Province

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 (Boxem et al., 1987). The region knows different agro-ecological zones that can alternate over relatively short distances (Jaetzold & Schmidt, 1983). The relatively humid coconut-cassava zone has a wide potential for food and cash crops, mainly depending on local variations in soil fertility. In the somewhat drier cashewnut-cassava zone, possibilities for crop production are more restricted. The livestock-millet zone and the ranching zone cover more than two-thirds of the agricultural land and offer only limited potential for rain-fed agriculture. Agriculture in the first two zones is dominated by food crops and perennial cash crops, while in the third mentioned zone livestock rearing is combined with cultivation of food crops. The seasonal character and the low reliability of rainfall, however, 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 (Kliest, 1985). The population in the drier zones, in particular, have to deal with the disruptive effects of shorter and longer drought periods (MENR, 1984a; 1984b).

The economic development of the region has not kept pace with that of other parts of Kenya. Although the coastal lowlands were relatively prosperous in pre-colonial and early colonial times, the opening of the highlands by European settlers meant an inevitable shift of development towards the interior (Cooper,1981). Afterwards and also in 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) and 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 (CBS,1983; 1986; CBS/UNICEF,1984).

3. Research Objectives

Regional and seasonal fluctuations in food supply and nutrition is one of the central topics of the Food and Nutrition Studies Programme. The general objective here is to contribute to the knowledge regarding the effects of climatic seasonality on food production and nutrition among rural populations in Kenya. A second objective is to collect information on food practices and nutritional conditions among the rural populations at district level.¹

Coast Province was selected as research area, firstly because of its climatic characteristics and its variety of ecological conditions, secondly because of a relatively high incidence of childhood malnutrition in the region and, thirdly because existing knowledge about nutritional conditions in the province is scarce.

The study objective is to record, describe and analyse the effects of climatic seasonality on food production 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 these seasonal variations.

¹ The study detailed here was only one of several which were carried out in Coast Province at the time. Subsidiary studies to the present study are concerned with the aetiology of childhood malnutrition in the region (Peters & Niemeyer,1987) and with the topic of farm management and ecological adaptation (Oosten,1988). Other studies were concerned with another FNSP topic, namely nutrition in agricultural and rural development, and they concern the following: nutritional conditions at settlement schemes (FNSP,1985a), the contribution of women's groups to development (FNSP,1985c), and nutrition and dairy development (FNSP,1987a).

Specifically, the following aspects are addressed:

- = 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.

4. Research Areas

The study was carried out in Kwale and Kilifi, the two districts that account for more than two-thirds of the rural population² in the province.³ Attention is further concentrated on three agro-ecological zones, namely the coconut-cassava, cashewnut-cassava and livestock-millet zone which sustain the bulk of the population in the districts. One location was selected in each zone in each district: 6 research locations altogether (see Map 1, p. 5). The research locations are listed in Table 1, under the names of the administrative units in which they are situated, with the district and agro-ecological zone which they represent and the population density. In Table 1 follows a brief description of the six research locations, more detailed information on the ecological and economic characteristics of these areas is presented in the next report (part 2).

Table 1. *Research Areas*

DISTRICT	LOCATION	SUB-LOCATION	A-E ZONE ¹	RESEARCH AREA ²	POPUL DENS.
Kwale	Diani	Bongwe	CL3	L3Kw. Bongwe	133
	Mwavumbo	Mwatate	CL4	L4Kw. Mwatate	203
	Kinango	Kibandaongo	CL5	L5Kw. Kibandaongo	40
Kilifi	Jibana	Chilulu/Tsagwa	CL3	L3Ki. Chilulu	312
	Chonyi (N)	Kitsoeni	CL4	L4Ki. Kitsoeni	109
	Bamba	Mikamini	CL5	L5Ki. Bamba	35

1) CL3: Coconut-cassava; CL4: Cashewnut-cassava; CL5: Livestock-millet

2) The density figures are for the Sub-locations concerned (CBS,1981)

² The inhabitants of the two districts belong to the Mijikenda population group which is subdivided in three large groups: the Giriama, Duruma and Digo and six smaller groups: the Rabai, Ribe, Kambe, Jibana, Chonyi and Kauma.

³ These two districts and the sparsely populated Lamu district form the coastal region as such, with its distinctive ecological and cultural characteristics. The two other districts in Coast Province, Taita and Tana River, are mainly situated inland and have their own distinct characteristics.

Coconut-Cassava Zone: Bongwe and Chilulu

Bongwe is situated about 25 km. south of Mombasa, inland from Diani Beach, a tourist area with many hotels. By coastal standards, conditions in this area are favourable: soils are fertile, there is substantial rainfall, with a dense cover of coconut palms and fruit trees. Moreover, there are employment opportunities in trade, in the nearby tourist hotels and in Mombasa which is easily reached with public transport. The local population is of Digo origin and of Islamic denomination. The counterpart area, Chilulu in Kilifi District is situated inland, in the hilly landscape near the township of Kaloleni with a mostly Chonyi population. Here also, conditions for cultivation are relatively favourable. Farmers in this area used to produce and sell considerable amounts of palm wine, until these sales were officially banned. Employment opportunities are few, Mombasa lies at about 50 km. distance, but can be reached along a tarmac road.

Cashewnut-Cassava Zone: Mwatate and Kitsoeni

Mwatate research area⁴ is situated about 25 km. north-west of Mombasa near the trunk road to Nairobi, a few km. past Mazeras. This area is less fertile and has less treecover (mostly cashewnut trees but also batches of coconut palms). With good road connections workers are able to commute to Mombasa, boarding matatus early in the morning and returning late in the afternoon or in the evening. The population is a mixture of the indigenous Nduruma and later

⁴ Not to be confused with Mwatate Location in Taita District.

immigrants. Kitsoeni, the corresponding area in Kilifi District, has similar ecological conditions, with many cashewnut trees as a main characteristic but also coconuts in the higher part. This area is situated along the murram road connecting Kaloleni with Kilifi, at middle distance from the two towns. The population is mostly Kauma. Matatus, the bustling signs of economic activity, are relatively few and people have to depend on busses for transport.

Livestock-Millet Zone: Kibandaongo and Bamba

Kibandaongo is situated halfway along the road connecting Mazeras with Kinango. This is where the hinterland area starts, tree vegetation is scattered and found in clusters on the rain side of hilltops. Overall, the area is dry with limited potential for crop cultivation and potential for extensive livestock rearing. The population is of Nduruma origin, lives scattered, communications are difficult, distances large, while busses pass only twice a day through the area on their way to Mombasa or Kwale town respectively. Bamba is an even more remote area. The population is mainly of Giriama origin. The landscape is less hilly than at Kibandaongo and the treecover is even less. This is the genuine hinterland, where living conditions are usually harsh and livestock is the dominant factor in agriculture. The place is dry, windy and remote and be reached either from Kilifi or Mariakani with busses that leave only twice a day. The murram roads become impassible after heavy rainfall. Employment opportunities are few, and daily commutation to urban centres such as Mombasa or Kilifi is not feasible.

5. Sampling Procedure

For each research area, a map was available identifying about 150 households in a sub-area.⁵ The study sample consisted of every third household in the mapped area, i.e. 50 households in each area.

A household was defined as a group of people who reside together under a roof or under several roofs within a single compound, who are answerable to the same head and share a common source of food.⁶ In some of the research locations, this meant that the size of the household might go up to twenty, because of the prevailing extended families. In one case the total number reached forty-seven. Household members can be either resident, part-time resident or non-resident. Full-time residents are persons taking one or more meals from the household kitchen on a daily basis. Part-time residents are persons who normally live in the compound but who are or have been absent for an uninterrupted period of two weeks or more during the last three months. Non-resident members are members of the household who are staying elsewhere for reasons of employment, education or otherwise, but who return regularly, and keep economic ties with the household.

The 300 households sampled in the 6 areas numbered a total of 2,664 people. Among this population 2,315 were full-time resident, 107 were part-time resident, while 233 were, in fact, non-resident (Table 2).

⁵ We wish to thank the staff of the Central Bureau of Statistics, who had done the actual mapping, for their assistance.

⁶ Households without any land were excluded. This nearly always concerned people such as teachers and agricultural workers who had rented rooms/houses in the areas.

Table 2.
Sample Composition: Number of Household Members by Residency and Area

	L3 Kw	L3 Ki	L4 Kw	L4 Ki	L5 Kw	L5 Ki	Total N=300	(%)
Households: N=50	N=50	N=50	N=50	N=50	N=50	N=50		
Full-time residents	279	458	290	375	331	582	2315	86.9
Part-time residents	9	8	11	2	10	67	107	4.0
Non-residents	11	71	24	55	23	49	233	8.8
Unknown	-	1	-	2	6	-	9	0.3
Total	299	538	325	434	370	698	2664	100

The resident population was composed of 95 elderly people over 60 years; 784 adults between the ages of 20 and 59 years; and 1436 youngsters under twenty. Of the youngsters, 573 were between 10 and 19 years, 414 between 5 and 9, and 449 under-fives (Tables 3 and 4).

Table 3.
Sample Composition: Number of Full-Time Residents by Age Group and Area

Age (years)	L3 Kw	L3 Ki	L4 Kw	L4 Ki	L5 Kw	L5 Ki	Total	(%)
00-09	89	179	109	146	133	207	863	37.3
10-19	67	118	66	93	66	163	573	24.8
20-29	46	48	38	45	53	76	306	13.2
30-39	33	45	37	27	41	58	241	10.4
40-59	38	47	24	46	29	53	237	10.2
60+	6	21	16	18	9	25	95	4.1
Total	279	458	290	375	331	582	2315	100

Table 4
*Sample Composition: Number of Children under Ten by Area and Age Group
 (Full-time Residents)*

Age (months)	L3 Kw	L3 Ki	L4 Kw	L4 Ki	L5 Kw	L5 Ki	Total	(%)
00-11	12	18	11	17	18	20	96	11.1
12-23	9	16	7	17	7	26	82	9.5
24-35	13	23	20	17	10	32	115	13.3
36-47	9	15	8	19	19	20	90	10.4
48-59	6	13	7	9	15	16	66	7.6
60-71	10	25	12	21	8	22	98	11.4
72-83	6	17	10	13	15	30	91	10.5
84-95	5	22	13	14	17	9	80	9.3
96-107	14	17	13	14	12	21	91	10.5
108-119	5	13	8	5	12	11	54	6.3
Total	89	179	109	146	133	207	863	100

6. Data Schedule

Six survey rounds were conducted in the period between June 1985 and July 1987 so that each household was visited six times, at roughly four months intervals. The material collected during the first round is detailed below and concerned household and demographic characteristics, agriculture, off-farm employment, food consumption and nutritional status. The information collected during subsequent rounds, covered household events since the previous interview and consisted of a full interview schedule with the exception of housing and demographic characteristics for which only changes were inquired after. The topics covered during the different rounds are listed in Table 5, which also lists the growing season and harvest concerned.

Table 5. *Survey Rounds*
(+) full information recorded (-) only changes recorded

R N D	PERIOD DATA COLLECTION	DATA SCHEDULE					AGRICULTURAL SEASON COVERED
		Hsng	Farm Demog	NStat	FdCons		
1.	Jun-Jul 1985	+	+	+	+	+	short rains, 1984/85
2.	Oct-Nov 1985	-	-	+	+	+	long rains, 1985
3.	Mar-Apr 1986	-	-	+	+	+	short rains, 1985/86
4.	Jun-Jul 1986	-	-	+	+	+	long rains, 1986*
5.	Oct-Nov 1986	-	-	+	+	+	long rains, 1986
6.	Jun-Jul 1987 **	-	-	+	+	+	short rains, 1986/87

* Pre-harvest

** Restricted to 3 research locations in Kilifi District

An example of the questionnaire/record form, is enclosed in the Appendix. The items in the schedule cover the following topics:

Housing circumstances and living conditions

= house, kitchen, water source, distance water, sanitation (Form 2.1)

A small map was drawn of each compound, identifying the main house as well as other houses and shelters. For the main house the type, style, roof material, wall material, and floor material were recorded. The water source was recorded separately for drinking water and for the watering of livestock.

Demographic characteristics of household members

= sex, age, marital status, education, occupation (Form 3.1)

= period and type of employment; income estimate (Form 3.2)

= non-resident members; reason absence, frequency of visits,
remittances (Form 3.3)

= adult women; pregnancy, antenatal visits (Form 3.3)

= child births and deaths over the past 36 months (Form 3.4)

Farm characteristics

= annual crops; acreage, type ownership, crops and crop mixture,
farming practices, quantity harvests, quantity sales (Form 4.1)

= treecrops and perennials; number of plants, farming practices,
quantity harvests, quantity sales (Form 4.2)

= livestock; type livestock, turn-over, livestock products,
farm management, milk sales (Form 4.2)

Production of annual crops, tree crops and perennials was assessed by means of interviews. The acreage planted or the number of plants were recorded together with the quantities harvested and crop-sales during the period under review. Herd composition and livestock turn-over were similarly recorded, notably the

number of poultry, goats, sheep and cattle that were added or deleted from the existing herd; together with estimates of milk and egg production and milk sales. Further items concerned crop cultivation practices and livestock management.

Food consumption

= household food preparation and consumption, dishes,

ingredients, amounts, origin (Form 5.1)

= food preparation recipe (Form 5.2)

= dietary recall of young children (Form 6.1)

Food consumption was assessed by two recall methods : (a) a recall of all food prepared in the compound during the day prior to the interview, and (b) a 24-hour recall of the quantities of food consumed by individual children, aged 6-35 months, also for the previous day. The recall of food preparation was collected for each kitchen of the household. The women concerned, were questioned about all the foods and drinks they had prepared in the course of the previous day. Starting with the first dish of the day, all subsequent dishes (drinks and snacks) were covered. The women were further asked to demonstrate the cooking procedures, and to indicate the volumes of the different ingredients used, as well as the total volume of the dish as finally prepared. In case of left-overs from meals, the volume of food that had not been eaten was separately estimated and subtracted. For each ingredient it was further noted whether it was home-produced or not.

Individual dietary recalls were collected for all young children, aged 6-35 months. The information was provided by the person who had supervised the feeding of the child, usually the mother. She was asked about the foods and drinks consumed by the child in the course of the previous day and night,

including the number of times the child was breastfed. She was requested to demonstrate the portions consumed with the help of the cup or plate which had been used by the child. The volumes of the different dishes were estimated with procedures similar to those used for the food preparation.

Nutritional status

= anthropometry; weight, height,

mid-upper arm circumference (Form 7.1)

= health; examination for signs of malnutrition,

breastfeeding history, recent illnesses (Form 7.1)

Anthropometry included the measurements commonly used in nutrition studies: weight, height and mid-upper arm circumference. These measurements were collected for all children aged between 6 months and 11 years, as well as the mothers of these children.

The children under the age of two years were weighed using a SALTER 235 scale (max. 25 kg. with an accuracy of 100 grs.). The weighing of these children was done with a pair of 'trousers' with a harness for support. The weights of older children and adult women were measured with a TERAILLON digital scale (max. 135 kg. with an accuracy of 200 grs.).

The height of children under two years was measured with a portable length board with a fixed head rest and a moveable footrest. The children were measured in supine position. Older children and adult women were measured standing straight with their backs against a portable pole with a sliding head rest.

Mid-upper arm circumference of children and women was measured with an ordinary household measuring tape of reinforced cotton.

As regards health information, mothers were requested to report the number of days the child had been ill during the two week period prior to the interview. The presence of major symptoms were registered notably including fever, coughing diarrhoea, vomiting, protruding belly, failure to thrive, worms, hair dyspigmentation, anaemia. The type and the result of treatment were also registered. Similarly recorded were the presence of clinical signs of malnutrition including oedema, hair dyspigmentation, flaky skin, moonface, protruding belly, marasmic appearance, lack of activity. The incidence of diarrhoea and vomiting during the day before the interview were separately recorded.

7. Survey Procedures

Preparations for the fieldwork started in April 1985. The research locations were selected, the research outline was completed (FNSP,1985b) and the study was introduced to the local authorities. Preliminary questionnaires were drafted.

Enumerators were recruited from the respective locations with the help of the Mombasa Office of the Central Bureau of Statistics. The 12 enumerators eventually selected were young people (eleven men and one woman) between the ages of 18 and 25 years, who had completed at least 4 years of secondary education. The training of the enumerators took place during the month of May 1985 and covered the necessary aspects of interviewing, recording and coding. Special attention was given to the recording of food preparation and dietary recall. Training and trial interviews were conducted at Mtwapa Farmers' Training Centre and Mtwapa Settlement Scheme as well as the home areas of the trainees. The final interview schedule was developed concurrently with the training of enumerators. A refresher training course was given before the start of round 2.

To make appointments for interviews with individual households, compounds were visited the day before the planned home-visit. All interviews were conducted in the local vernacular (in a few cases Swahili was used when the respondents belonged to a non-local ethnic group). Completed interview schedules were checked twice weekly by supervisors and senior staff. In order to complete missing data, compounds were revisited, if necessary.

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Appendix: Questionnaire/Record Form

**FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)
REPORT ON ACTIVITIES**

DISTRICT CLUSTER HOUSEHOLD AREA ROUND CONFIDENTIAL

Head compound

	v	r	s
--	---	---	---

Report on activities

day	mth	yr	forms completed	nr of pages	time spent

enumerator

supervisor

coder

data entry

name	code	day	mth	yr	comment

Legend: v = interview for first visit; r = interview for revisit during later rounds; s = interview for first visit in settlement schemes; mth = month; yr = year.

If V is marked do a first visit interview, if R is marked do a revisit interview. In a revisit interview inquire always for changes since the previous visit. Recall periods of three months are now changed to recall periods since last visit. Only when the supervisor is present at the compound during the interview, the appropriate time should be filled.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)
housing and watersources 2.1

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

nr	t	s	k	nr	l	person cooking name	pers	w		o	e	l	o
								nr	o				

nr pen h
lstrines e

--	--	--

water usage

	drinking	livestock	other
	src dis	src dis	src dis
presently	<input type="text"/>	<input type="text"/>	<input type="text"/>
wet seas	<input type="text"/>	<input type="text"/>	<input type="text"/>
dry seas	<input type="text"/>	<input type="text"/>	<input type="text"/>

- CODES:**
- Type: 1 = main house, 2 = ordinary house, 3 = boys house
 - Roof: 1 = grass, 2 = maketi, 3 = maketi, 4 = other
 - Style: 1 = Sehilli, 2 = other
 - Kitchen: 0 = none, 1 = present
 - Floor: 1 = sand / mud, 2 = cemented, 3 = other
 - Pen / shed: 0 = none, 1 = present
 - Water source: 1 = river, 2 = well, 3 = improved well, 4 = pond/dam, 5 = borehole, 6 = piped water, 7 = tank, 8 = other
 - Distance (one way): 1 = delivered at the house, 2 = 0 - 10 min, 3 = 11 - 30 min, 4 = 31 - 60 min, 5 = up to 2 hours (including), 6 = up to 4 hours (including), 7 = up to 6 hours (including), 8 = over 6 hours
- Draw a small map of the compound, indicating the position of the houses and other structures, latrines, bomes or sheds. In the CBS clusters indicate also the structure numbers.
- Key: A-main house, B-ord. house, C-boys house, K-kitchen, L-latrines, Ca-Cattle pen, Go-Goat pen, S-shed.
- In houses where several women are cooking independently, use the lines following the entry for the house to indicate their names and person numbers. The type of roof, walls and floor are only to be entered for the most modern house in the compound, also when this is not the main house.

Legend: typ = type house; sty = style; kit = kitchen; roo = roof; wel = well; flo = floor; src = water source; dis = distance; she = sheep or goats shed.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)
DEMOGRAPHY 3.1

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

CONFIDENTIAL

List of persons grouped according to mealtime arrangements:

grp nr	prs nr	full name	s e x	a g e	r e l a t i o n t o h e a d	m e d i c a l	meals			persons cooking for group	pers nr	
							1	2	3			

- | | | | | | | |
|---------------|---|---|--|--|---|--|
| CODES: | Sex:
1 - male
2 - female | Age (children only):
code the age in years
for children from
0 to 10 years of age
and also enter in
anthropometry form. | Relation to household head:
1 - head
2 - wife
3 - parent
4 - child
5 - spouse of child
6 - brother/sister
7 - spouse of brother/sister
8 - grandchild
9 - spouse of grandchild
10 - other relative
11 - maid/labourer
12 - other
(use customary terms) | Marital status:
1 - single
2 - married monog.
3 - married polyg.
4 - divorced/separ.
5 - widowed | Off-farm activities:
1 - none
2 - schooling
3 - casual labourer
4 - self-employed
5 - temp employed
6 - employed | Residence:
1 - in compound
2 - in compound but absent
during past 3 months
for 2 weeks or more
3 - usually elsewhere
(presently absent)
4 - usually elsewhere
(at present in compound)
5 - sleeping only
6 - eating only
7 - visitor (less than 1 mth) |
| | Age class:
0 - unknown
1 - below 11
2 - 11-16
3 - 17-19
4 - 20-29
5 - 30-39
6 - 40-59
7 - 60 + | Presence mealtimes:
1 - present
2 - not present
(eaten elsewhere)
3 - not present
(not eaten)
4 - absent whole day | | Education:
1 - no formal educ.
2 - adult class only
3 - primary 1 - 4
4 - primary 5 - 8
5 - beyond primary | Casual labour:
1 - never
2 - sometimes
3 - regularly | |

Legend: agecl = ageclass; rel to head = relation to household head; mar = marital status; educ = education; off = off-farm activities; cas = casual labour; res = residence; meals = presence mealtimes.

PROBE for small children not yet mentioned!

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)
DEMOGRAPHY 3.2

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

CONFIDENTIAL

off-farm occupation and casual labour:

If off-farm occupation equals 3, 4, 5, or 6

pers nr	name	description of present primary off-farm occupation	place of work (in full)	code		nr emp	Casual labour	
				period	inc		type	nr of days

CODES:

Place of work (code): 1 = in same location 2 = in different inc. 3 = in divisional headq. 4 = in district headq. 5 = Nairobi 6 = Member 7 = elsewhere outside district	Period worked: code the number of months worked during past 12 months or, in case of revisit, since last visit.	Estimated income level: 1 = below 200 Ksh 2 = 200 - 599 Ksh 3 = 600 - 1199 Ksh 4 = 1200-1799 Ksh 5 = 1800 and over (to be estimated by enumerator)	Nr of people employed: 0 = none 1 = 1 person 2 = 2 persons 3 = 3 or more (only when person is self-employed)	Type of casual labour: 1 = urban casual labour 2 = estates or big commercial farms 3 = other Nr of days: code the number of days worked during the past month
--	--	--	---	---

Legend: period = period worked; inc = estimated income; nr emp = nr of people employed;
type = type of casual labour.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)
DEMOGRAPHY 3.3

DISTRICT CLUSTER HOUSEHOLD AREA ROUND CONFIDENTIAL
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non-residual compound members

pers nr	name	date of departure				d	f	r	
		r	a	e	b				
		day	mo	yr	g	q	m		

women of 16 and over residing in compound:

pers nr	name	w	p	c	place of mch clinic	visiting dates		
						m	e	i
						1	2	3

Names and person numbers in this section, as well as membership of a women's group, should be entered when listing the members of the household. Pregnancies are not to be discussed before all questions on health and anthropometry have been completed. It is generally advisable, to first ask about visits paid to the health centre or dispensary and then to ask whether they go for a check-up when pregnant. In many cases, only use your own judgement to establish pregnancy. Always ask for clinic cards.

- CODES: Place of residence: 1 - in same district; 2 - Nairobi; 3 - Mombasa; 4 - elsewhere
- Reason of absence: 1 - schooling; 2 - working; 3 - looking for work; 4 - main home elsewhere; 5 - visiting; 6 - other
- Degree of permanence: 1 - temporary; 2 - permanent (with the intention of staying more than one year)
- Frequency of visits: 1 - between terms; 2 - several times per week; 3 - weekly; 4 - several times per month; 5 - monthly; 6 - several times per year; 7 - once a year; 8 - less frequent
- Remittances: 1 - regularly sends money home between visits; 2 - sometimes sends money home between visits; 3 - does not send money home but waits till he/she visits
- Women's group, pregnancy, and attendance ante-natal clinic: 1 - yes; 2 - no
- NB: note down the dates of clinic attendance.

Legend: res = place of residence; abs = reason of absence; deg = degree of permanence; frq = frequency of visits; rem = remittances; wom = member women's group; pre = pregnant; cli = ante-natal visits.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)
DEMOGRAPHY 3.4

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

CONFIDENTIAL

child mortality

Live born children past 36 months							Cause of death																					
pers nr	name mother	birthdate			s x	r s	age at death	date of death day mth yr	Cause of death																			
		day	mth	yr					c disease	f o	c o	d i	v u	p a	f m	w o	h o	a r										

- CODES:**
- Sex:**
1 - male
2 - female
 - Presently alive?:**
1 - yes
2 - no
 - Residence:**
1 - in compound
2 - in compound but absent during past 3 months for 2 weeks or more
3 - usually elsewhere (presently absent)
4 - usually elsewhere (at present in compound)
 - Age codes:**
1 - died within first 24 hours
2 - died within first week
3 - died within first 4 weeks
4 - died within first 3 months
5 - died within first 6 months
6 - died within first 9 months
7 - died under one year
8 - died under two years
9 - other
 - Diseases:**
1 - bilharzia
2 - cholera
3 - dysentery
4 - tuberculosis
5 - malar
6 - measles
7 - pneumonia
8 - polio
9 - other
 - Symptoms:**
1 - present
2 - not present
Symptoms coded are:
fever, coughing, diarrhoea, vomiting, protruding belly, failure to thrive, worms, depigmentation of hair, anaemia

Enter the names of the children while filling in demography 3.1. Then inquire about other children born to the women of the compound and the siblings of those already entered. Check for pregnancies between the presently living children and for children that died shortly after birth. This should be done while checking the ages for the anthropometry form.

Legend: liv - presently alive; res - residence; fev - fever; cog - coughing; dia - diarrhoea; vom - vomiting; pro - protruding belly; fai - failure to thrive; wor - worms; hai - depigmentation of hair; ana - anaemia.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)

CONFIDENTIAL

DISTRICT [] [] CLUSTER [] [] [] HOUSEHOLD [] [] [] AREA [] [] ROUND []

annual crops 4.1

Season []

plot nr	acresage	l o t m y w r l p n e x e e e t	casava nr	crops planted	t s a l o d m w d e i l	u quant h s d s e e d s	source of seeds h s n c g h e e n u o o h e o o l a e r s r m t m o l o v n d t e p p	t w f i p c l w e e n u o l a e r s r m v n d t e p p	quantity harvest	quantity sold

Legend:
 owner = ownership; tree = tree density; mixt = crop mixture; time = planting time;
 soil = soil; addt = additional sowing; unit = unit of measurement; hoes = hoe for m;
 shu = shup; nei = neighbour; coop = cooperative; gov = government; thin = thinning;
 weat = weeding; fert = fertilizer; insect = insecticides; purp = purpose of crop;
 comp = harvest completed.

COOES: Season:
 1 = short rains 84
 2 = long rains 85
 3 = short rains 85
 4 = long rains 86

Ownership:
 1 = own land
 2 = common property
 3 = leased
 4 = farming for others
 5 = rented out

Crop mixture:
 1 = single crop
 2 = interplanted

Planting time:
 1 = before rains
 2 = at onset rains
 3 = 1 week after
 4 = 2 weeks after
 5 = 3 weeks after
 6 = after 4 weeks or more

Unit of meas.:
 1 = 90 kg bag
 2 = 20 kg bag
 3 = dobe
 4 = kg ties
 5 = kg weight
 6 = small seed tin
 7 = beer bottle
 8 = treatop bottle
 9 = other (write comment)

Codes for additional sowing, seed sources, thinning or pruning, insecticides, harvest completed:
 1 = yes (used or done)
 2 = no (not used or done)

Purpose of crop:
 1 = home consumption only
 2 = sometimes sold
 3 = regularly sold
 4 = only for sale

Fertilizer:
 1 = none
 2 = manure
 3 = fertilizer
 4 = both

For vegetables only enter the name of the crops. For other crops enter the number of sowings and the number of times the plot was weeded. For cassava note only the number of stems on the plot.

Additional information on plots (form 4.1)

plot nr	pers nr	qu dis nr	sublocation	ho ca us re

Comments:

Quality land:
 1 good land
 2 moderate
 3 not good

Walking distance (one-way):
 1 near home
 2 less than 30 minutes
 3 less than 1 hour
 4 less than 2 hours
 5 two hours or more

If walking distance is 5:

House(or structure):
 1 ordinary house
 2 temporary structure only
 3 no

Caretaker:
 1 household member
 2 relative living near plot
 3 watchman or gardener

Legend: qual = quality land; dista = walking distance; hoes = house or structure; care = caretaker.

FOOD AND NUTRITION STUDIES
PROGRAMME (FNSP-4/5)

CONFIDENTIAL

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

treecrops, perennials, and livestock 4.2

season

treecrop other perennial	type	total nr	producing nr	l f r e m t	i p n u s r e p	past 3 months		u n	comment
						quantity harvested	quantity sold		

Cereals

main sources in past 3 months			
1	2	3	4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

farm labour cas reg
<input type="checkbox"/> <input type="checkbox"/>

Goats and sheep

p c d r o i e m s	nr born	nr bought	nr sold	nr slaught	nr died/lost
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Poultry

p e	nr sold	nr slaught	weekly average nr eggs
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Cattle

p c d r o i e m s s p t	average distance	Caretaker sh h r e a d p t r i d d	f r d e o i month	nr born	nr bought	nr sold	nr died/lost	nr estimated	total nr r m i C o	p h n K s u o e C h p e g p	daily milk production l t	u n	present price per unit
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- CODES: Unit of meas.:
1 = 90 kg bag
2 = 20 kg bag
3 = date
4 = kg ties
5 = kg weight
6 = small seed tin
7 = seed packet
8 = treating bottle
9 = other (write comment)

- Codes for separate plots,
trimming or pruning,
weaners, insecticides:
1 = yes (used or done)
2 = no (not used or done)
- Purpose of crop or milk:
1 = home consumption only
2 = sometimes sold
3 = regularly sold
4 = only for sale

- Composed:
1 = all in compound
2 = some elsewhere
3 = some in compound
- If at distance:
1 = all at one place
2 = at different places
- Owning cattle, goats or sheep, poultry
taking care by self, relative or friend,
buying feed or fodder,
growing fodder, dip, milk consumed
at home, sold to neighbours,
to KCC, to shop or at market:
1 = yes
2 = no

- Source of cereals
(in order of
importance):
1 = home production
2 = shop or market
3 = NCPB
4 = relatives or
friends
5 = Food relief
6 = CRS
7 = Feed for work
8 = other

- Fertilizer:
1 = none
2 = manure
3 = fertilizer
4 = both

Code the quantities harvested and sold only for
crops that are actually sold sometimes and for
pigeon peas! All citrus trees can be combined,
make separate entries for cashewnuts, coconuts,
mango, pawpaw, biza, pigeon peas, cassava, and
yams. All other fruit trees may be combined unless
the produce is sold.

For the average distance enter only the nearest distance
either in hours or in terms of days.

Legend: trim = trimming; fert = fertilizer; insec = insecticides; purp = purpose of crop or milk;
cas = casual; reg = regular; pre = proweese; com = compound; dis = distance;
sel = self; hir = hired labour; rel = relative or friend; feed = buying feed or fodder;
fodd = growing fodder; purp = purpose crop or milk; home = milk consumed at home;
neig = sold to neighbours; KCC = sold to KCC; shop = sold to shop or at market.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)

CONFIDENTIAL

food preparation 5.1

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

person cooking name pers nr person responsible name pers nr fuel used

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dish/ingredients	p r	comments	T	volume	ingredient	prop. consumed	prop. left over	a	s	r	v

CODES: Preparation codes: T: Origin: Availability in past three months:
 1 - cooked on day before 1 - ingredient 4 - broken maize 1 - own production 1 - always home production
 2 - cooked on day of recall 2 - water 5 - flour 2 - purchased 2 - sometimes bought/borrowed
 3 - whole maize 3 - whole maize 6 - sand 3 - borrowed 3 - always bought/borrowed

Probe for foods served between meals or foods which were bought already prepared or fruits.
 If visitors (not coded on form 3.1) consumed part of the food, write their sex and ages in the comment box.

Legend: or = origin; av = availability in past three months.

FOOD AND NUTRITION STUDIES
PROGRAMME (FNSP-4/5)
food preparation recipe 5.2

CONFIDENTIAL

DISTRICT	CLUSTER	HOUSEHOLD	AREA	ROUND
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
person cooking name	pers nr	person responsible name	pers nr	fuel used
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

name dish	code	weight
<input type="text"/>	<input type="text"/>	(a) cooking pot <input type="text"/> kg

Ingredients

name ingredient	code	quantity	unit	comment	calculated weight

Dish after preparation:

weight	
incl. cooking pot	<input type="text"/> kg
(a) cooking pot	<input type="text"/> kg
dish	<input type="text"/> kg
volume	
dish	<input type="text"/> cc
boiling time	
<input type="text"/> hrs	<input type="text"/> min

Comments on dish

Codes unit:

- | | |
|----------------|--------------------|
| 1 = cc | 5 = teaspoon |
| 2 = grs | 6 = number counted |
| 3 = kg | 7 = kg tin tapped |
| 4 = tablespoon | 8 = kg tin level |

FOOD AND NUTRITION STUDIES
PROGRAMME (FNSP-4/5)

CONFIDENTIAL

DISTRICT CLUSTER HOUSEHOLD AREA ROUND

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h | d | v
e | i | o
mths | a | l | a | m

dietary recall 6.1

name respondent	pers nr	name child	pers nr	age mths	days	years	months	days
-----------------	---------	------------	---------	----------	------	-------	--------	------

time	dish/ingredients	comments	T	volume served	volume left over

- CODES: T:
1 - ingredient 4 - broken maize
2 - water 5 - flour
3 - whole maize 6 - sand

N.B. Probe for food consumed between meals!
Write down the approximate time when the
food was served (hours only).

Legend: hsa = presently healthy; ill = presently ill; dia = presently having diarrhoea;
vom = presently vomiting (ticked when appropriate for day covered in recall)

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)

DISTRICT CLUSTER HOUSEHOLD AREA ROUND CONFIDENTIAL

anthropometry and health 7.1

pers nr	name father	pers nr	name mother	height cm	weight kg	nr of days ill	complaint	to be filled by coder weight for height	If the mother is not a full time resident, who is looking after the children? pers nr		name female guardian
------------	----------------	------------	----------------	--------------	--------------	----------------------	-----------	---	--	--	-------------------------

pers nr	name	age	birthdata			height cm	weight kg	mac cm	o d	h l	s k	m a	p r	m e	nr of days ill	disease 1	f 2	c e	d o	v u	p m	f a	w h	a v	h e
			day	nth	yr																				

to be filled in by coder:					to be filled in by coder:				
pers nr	height for age	weight for age	weight for height	mac for age	pers nr	height for age	weight for age	weight for height	mac for age

- CODES:** Breastfeeding: 1 = only breastfed, 2 = partially weaned, 3 = fully weaned. Parents alive? 1 = yes, 2 = no.
- Certificates:** 1 = present, 2 = written note, 3 = clinic card, 4 = easily recollected, 5 = difficult to estimate.
- Weaning age:** 0 = still breastfed, 1 = never breastfed, 2 = 0 - 5 months, 3 = 6 - 11 months, 4 = 12 - 17 months, 5 = 18 - 23 months, 6 = 24 - 29 months, 7 = 30 months or later.
- Observations:** 1 = mild, 2 = severe, 3 = not present. Observations coded are: oedema, dyspigmentation of hair, flaky skin, moonface, protruding belly, marasmus, and lack of activity.
- Diseases:** 1 = bilharzia, 2 = cholera, 3 = dysentery, 4 = malnutrition, 5 = malaria, 6 = measles, 7 = pneumonia, 8 = polio, 9 = other.
- Symptoms:** 1 = present, 2 = not present. Symptoms coded are: fever, coughing, diarrhoea, vomiting, protruding belly, failure to thrive, worms, dyspigmentation of hair, anaemia.
- Visited doctor, health centre, or hospital?** 1 = yes, 2 = no.
- Present health:** 1 = healthy, 2 = improving, 3 = still ill.

Ages and names are to be filled in while listing the household members. Carefully check all ages by asking for certificates, clinic cards or other notes concerning the birthdates. Also ask for children born in between, and, whenever necessary, discuss the age differences between the children.

Legend: liv = presently alive; car = certificate; bra = breastfeeding; wea = weaning age; oed = oedema; hai = dyspigmentation of hair; ski = flaky skin; moo = moonface; pro = protruding belly; mar = marasmus; act = lack of activity; fev = fever, see legend of form 3.4; vis = visited doctor, health centre, or hospital; hse = present health; mac = mid-upper arm circumference.

FOOD AND NUTRITION STUDIES PROGRAMME (FNSP-4/5)

CONFIDENTIAL

DISTRICT	CLUSTER	HOUSEHOLD	AREA	ROUND
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

comments 8.1

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