

CHAPTER 4

THE STUDY AREA: HOUSEHOLD AND DISTRICT PROFILES

4.1 INTRODUCTION

Uganda is a landlocked East African country lying astride the equator. Almost 80% of the country is at an altitude ranging from 620 - 5,100 m above sea level, moderating the climate to a temperature range of 17° to 32°C. Of its 241,038 km², land covers 81% (197,097 km²), water and swamps cover 16% and forests cover 3%. It experiences both equatorial and savannah climatic conditions with most of the country receiving rainfall in the range of 1,015 to 1,525 mm per annum. A few places receive about 500 mm of rainfall per annum while the Lake Victoria Crescent receives more than 2,000 mm of rainfall per annum. In the south, a bi-modal and well-distributed rainfall pattern allows two crop seasons. This tends towards a uni-modal pattern in the north where the range of crops grown is thus limited. Overall, the climate allows the production of a variety of tropical, sub-tropical and even temperate crops (wheat, Irish potatoes and pyrethrum).

Administratively, the country is partitioned into districts, each of which encompasses a hierarchy of administrative levels (Local Councils) starting at the village level. With the decentralisation process, devolution of power from the centre, the lowest level with some degree of financial autonomy is the sub-county, i.e. Local Council II (Uganda-Decentralisation Secretariat 1994). The decentralisation process is important to the policy making process because it is at the lower levels that policy is interpreted and implemented depending on the allocation of the resources.

Because agriculture is the main economic activity and means to a livelihood for the majority, the chapter discusses different factors that have a direct bearing on the agricultural sector. This includes the agro-ecological characteristics, land and labour availability, cropping patterns, input use and resource control. Demographic characteristics and infrastructure, both of which have a bearing on agricultural activities, are also discussed. Anthropometric data give an indication of the food security situation

in the three districts. Both secondary and primary data are used in this descriptive analysis.

4.2 AGRO- ECOLOGICAL CHARACTERISTICS

The country is classified into several broad agro-ecological zones. However, variations in classifications exist. Opio-Odongo (1992) presents an 11-zone classification in which the montane and the banana/coffee systems discussed below are further sub-divided. To present an overview of the variation in the agro-ecological dispositions, it was decided to use the 7 broad agro-ecological zones⁵ as referred to in Uganda-Ministry of Finance & Economic Planning (1996) and Opio (2000). They are briefly discussed below. Of interest to this thesis are the Teso, Montane and Northern systems. A summary is presented in Appendix 2.

4.2.1 Teso system

In the Eastern part of the country, north of Lake Kyoga, the Teso system includes Soroti, Kumi, parts of Pallisa and the recently created Katakwi districts. The main characteristics of this zone are:

- It receives between 1,065 and 1,774 mm of rainfall per annum in a bimodal pattern; the first rains are from March to June and the second rains from August to November with a pronounced dry season from December to March
- It has light, moderately productive sandy-clay-loam soils, most suitable for ox-cultivation
- The main annual food crops grown are finger millet, sorghum, groundnuts, simsim, sweet potatoes, cassava and beans. Inter-cropping, rotations and fallow periods have been common practices to maintain fertility and reduce soil loss
- Cotton was the dominant cash crop and its production is only being revived

⁵ Because of recent changes in the number of districts and district boundaries, this description does not accurately represent the existing district structure.

- It has good potential for beef cattle (before cattle rustling in the late 1980's, together with Karamoja Teso had 40% of the national herd), goat rearing, poultry and bee keeping (apiary).

Areas in this zone have suffered several shocks in the recent past, turning it from a net surplus food producer to one regularly facing transitory food insecurity. Cotton growing declined greatly because of a number of factors ranging from poor marketing to the fact that is very demanding on labour. Cattle rustling in the latter half of the 1980's almost wiped out the livestock sector. More recently, the African Cassava Mosaic Virus destroyed vast areas of cassava although the introduction of resistant varieties has contributed to the crop's recovery.

4.2.2 The Montane systems

This zone as the name suggests, covers the mountainous areas in the eastern and south-western parts of the country. It is similar to the banana/robusta coffee system, varying in altitude and relief. In the east, it includes Mbale and Kapchorwa districts, and in the south-west it includes Kabale, Rukungiri, Kisoro, Bushenyi, Kasese, parts of Mbarara and Kabarole districts. Kabale and Kisoro districts face relatively poorer rainfall distribution that is comparable to the equatorial zones. Population densities are relatively high in this zone. Its main characteristics are:

- It receives rainfall ranging from 809 to 1,427 mm per annum
- It's soils are good to moderate and of a volcanic nature
- The main food crops grown are bananas, maize, beans, sweet and Irish potatoes, finger millet and rice. Sorghum is the main food crop in Kabale and Kisoro where the distribution of rainfall is poorer relative to much of the zone
- The traditional cash crops grown are arabica coffee at higher altitudes (1,500 to 2,300 m), while robusta coffee and cotton are grown at the lower altitudes. Tea is grown in the south-west montane areas
- It is suitable for dairy cattle, goat rearing and poultry keeping
- The high altitude permits the production of temperate fruits, vegetables and Irish potatoes.

4.2.3 The Northern system

The districts that make up this zone are Apac, Lira, Gulu and Kitgum. Communal cultivation is a common practice in this zone. Although tobacco is grown in some areas, this zone also suffered the decline in the growing of cotton as its main cash crop. Cassava has suffered destruction by the mosaic virus, although it is recovering because of the use of resistant varieties. Agricultural productivity has, in the last decade and a half, suffered because of instability. Gulu and Kitgum districts have been faced with insecurity, which spills over into Apac and Lira districts.

The main characteristics of this zone are:

- It receives 1,204 to 1,822 mm of rainfall per annum in a less pronounced bi-modal pattern
- It has moderate to poor alluvial soils
- The main food crops grown are simsim, sorghum, finger millet, groundnuts, beans and cassava
- Cotton (being revived) and tobacco are the traditional cash crops
- It is suitable for beef cattle, goat rearing and poultry keeping.

4.2.4 West Nile system

This zone covers the districts in the north-west of the country, Nebbi, Arua and Moyo. Its main characteristics are:

- It receives 1,246 to 1,670 mm of rainfall in a pattern that restricts cultivation to one season
- It has good to poor sandy-clay-loam soils
- Tobacco, cotton and arabica coffee are its traditional cash crops
- The main food crops grown are cassava, finger millet, sorghum, simsim and groundnuts
- Suitable for dairy and beef cattle, goat rearing and piggyery
- Other common enterprises are bee keeping and fish-farming.

4.2.5 Banana/coffee system

This system covers the high rainfall areas in the Lake Victoria crescent. It includes the districts of Mpigi, Kampala, Jinja, Iganga, Mukono and Masaka, parts of the western region covering Bundibugyo, parts of Hoima and Kabarole districts, and parts of Luwero and Mubende districts. The proximity of the concentration of demand (the main urban areas) presents many opportunities for food trade. Horticultural crops are also a growing sub-sector. The practice of letting land lie fallow is minimal. Its main characteristics are:

- It receives rainfall in the range from 940 to 1,438 mm per annum, well distributed throughout the year especially around Lake Victoria and in a bi-modal pattern in the rest of the zone
- It's soils are deep, sandy-clay-loams with medium to high productivity
- The main food crops grown are bananas, sweet potatoes, maize, beans, groundnuts and cassava. It is a common practice for the annuals to be inter-planted within the perennial crops
- Robusta coffee is the main cash crop often inter-cropped with bananas and there are pockets of tea, sugar cane, and vanilla growing
- It is suitable for dairy cattle, piggery and poultry keeping
- Other enterprises are bee keeping and sericulture.

4.2.6 Banana/finger millet /cotton system

This zone covers parts of Masindi and Luwero districts, Kamuli, Pallisa and Tororo districts. The main characteristics are:

- It receives 1,056 to 1,595 mm of rainfall in a bi-modal pattern
- It's soils are partly low productive alluvial-sandy soils and sandy-clay-loams with low to medium productivity
- The main food crops grown are maize, finger millet, sweet potatoes and beans
- The traditional cash crops grown are cotton and robusta coffee
- It is suitable for dairy and beef cattle, goat rearing, piggery and poultry
- Other enterprises are bee keeping, fish farming, mushroom growing and floriculture.

4.2.7 Pastoral system

This system is found in the relatively more arid areas of the country, stretching from the north-east of the country through parts of the centre to the mid-south. It covers the districts of Kotido, Moroto, parts of Luwero, Mubende, Mpigi, Kiboga, Masindi, Mbarara, Masaka, Rakai, Kasese, Bundibugyo districts. Nomadic cattle keeping, is a prominent activity. The main characteristics of this zoned are:

- It receives the least rainfall in the country ranging from 768 to 1,115 mm per annum
- It has moderate to poor soils comprising sandy-clay-loams and black-clays of low productivity
- Its main annual food crops are finger millet, sorghum, cassava, beans and maize
- It is suitable for beef and dairy cattle, goat rearing and poultry keeping
- Other enterprises include bee keeping and fish farming.

4.3 HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS

About 90% of the national population dwell in the rural areas with an average household size estimated at 4.9 persons (Uganda-Ministry of Finance & Economic Planning, 1994). The female/male ratio in the national population is 1:1. National literacy rates are higher for men (63.5%) than for women (44.9%). Literacy rates in the rural areas are 60.5% for men and 40.6% for women.

From Table 4.1, the household demographic structures are similar across the three districts as illustrated by the different variables. Female headed households, range from 9% of the sampled households in Mbale District, to 12% in Soroti District. The head of the household is older in Mbale District, on average. This may be due to the land constraint, i.e. lack of land for farming may push young adults away from the rural areas in search of a livelihood.

Table 4. 1: Average household demographic variables by district

| Variable/District | APAC | SOROTI | MBALE |
|---|----------------|----------------|----------------|
| Sample Size | 153 | 149 | 151 |
| Age Head of Household | 43 (14.6) | 42 (13.9) | 49 (13.5) |
| Gender Head of Household | | | |
| Male | 89% | 88% | 91.5% |
| Female | 11% | 12% | 8.5% |
| Education Level of Household head | | | |
| Male – Primary | 57.4% | 61.8% | 60.2% |
| Male – Post Primary | 34.6% | 26.7% | 31.9% |
| Female – Primary | 56.9% | 51% | 70.3% |
| Female - Post Primary | 2.9% | 2% | 11.3% |
| Household size (Number of people) | 6.0 (2.7) | 6.3 (2.8) | 6.3 (2.9) |
| Dependency Ratio | 0.40 (0.21) | 0.40 (0.22) | 0.39 (0.22) |
| Total Adult Equivalent (AE) | 4.60 (2.06) | 4.88 (2.19) | 4.96 (2.54) |
| Children 6 years old or less | 1.7 (1.4) | 1.6 (1.5) | 1.9 (1.6) |
| Children in Primary School | 2.0 (1.8) | 2.3 (1.9) | 2.4 (1.9) |
| Children attending Post-Primary School | 0.3 (0.7) | 0.2 (0.6) | 0.6 (1.2) |
| Households with no child in Post-primary school | 84% | 85% | 72% |

Source: Primary Survey data (standard deviation in parenthesis)

Most household heads, both male and female, have attended some formal education, i.e. primary and/or post-primary education. Between primary and post primary education, most household heads, men and women, have attended primary education but fewer have some form of post-primary education. Between men and women, more men, i.e. 35%, 27% and 32% in Apac, Soroti and Mbale districts respectively, have attended some form of post-primary education. In comparison, 3%, 2% and 11% respectively of the women have attended post-primary education.

On average 2 children per household were attending primary school education. In contrast, households having post-primary school going children are only about 15% of the sampled households in Apac and Soroti districts and 27% of the households in Mbale District. This is indicative of the prohibitive costs of education discussed in Chapter 3.

4.4 INCOME DIVERSIFICATION

Uganda has been described as predominantly rural and agrarian (IFAD, 1994). The finding that the main occupation of the head of the sampled households is farming reflects the predominance of agriculture, as seen in Table 4.2. Though more households in Apac and Soroti District were engaged in fishing than are reflected in the table, they still consider agriculture their main occupation.

Table 4. 2: Main occupation of the head of the household

| Main Occupation of the Household Head | APAC | | SOROTI | | MBALE | |
|---------------------------------------|------|-----|--------|------|-------|------|
| | No. | % | No. | % | No. | % |
| Farming | 130 | 85 | 120 | 80.5 | 131 | 86.8 |
| Public service | 8 | 5.2 | 14 | 9.4 | 13 | 8.6 |
| Local artisans | 8 | 5.2 | 6 | 4 | 3 | 2 |
| Fishing | 1 | 0.7 | 5 | 3.4 | 0 | 0 |
| Trade | 6 | 3.9 | 3 | 2 | 2 | 1.3 |
| Others | 0 | 0 | 1 | 0.7 | 2 | 1.3 |

Source: Primary Survey Data

Income diversification is one measure commonly adopted to reduce variations in income that are particularly prevalent in the agricultural sector owing to productivity fluctuations. In the sampled areas, as in most of rural Uganda, opportunities for income diversification are limited and farm output is the main source of cash income. It was only in one sub-county, Olio in Serere County where an agricultural research station offers opportunities for wage labour. Besides farm output, wage labour is the most common source of income. However, the opportunities for wage labour are highly correlated to activities in the agricultural sector and are therefore seasonal and the demand for labour is constrained by the limited variation in production levels. Opio (2000), citing data from Integrated Household Surveys, notes that the most common non-farm job opportunities, namely wage work in construction, petty trade and preparation of food for sale, generally provided lower returns per year than agricultural wage work.

Nonetheless, some degree of income diversification exists. The study found that besides wage labour, many households engage in other activities such as trade, bicycle repairs, carpentry, brick making, construction, "boda boda" (bicycle or small motor-cycle used to transport people and/or goods on a hire basis) etc. Besides wage labour, women were

commonly engaged in making and selling beer, running market and/or roadside food/snack stalls. In support of this observation, findings from a recent study are that general service and retail shopping are becoming common employment avenues in rural areas. They account for about 13.3% and 12.8% of household labour use respectively. Beer brewing was estimated to account for up to 20.8% of household non-farm labour use (Opio, 2000). He suggests a strong positive association between non-farm rural employment and infrastructure development and so a variation between districts depending on the state of infrastructure.

Data on household income and expenditure were collected but absolute values are interpreted with caution. As an example, in Bumbo and Bugobero sub-counties in Mbale District informal cross border trade is an important economic activity. However, because of Government's efforts to reduce smuggling, respondents were very cautious with their responses regarding income generating activities in which they are engaged. Of income generated from non-farm activities, in Apac District, on average women control about 45%, in Soroti District they control about 37% and in Mbale District about 29%. Through the group discussions it was often said that women are losing control over even food where previously their control largely contributed to their ability to ensure that their households had sufficient food. Control over and/or access to resources, land and income, are other factors that help them in ensuring food sufficiency for their households. Observations from the study were that opportunities for women to generate income were more limiting in Mbale District. Men predominantly sold their labour but women did not participate as much in selling labour, which could partly be attributed to the land constraint. Table 4.3 shows sum averages of the different sources of cash income and expenditure⁶. This compares favourably with Opio (2000), who in a study done in four other districts of Uganda, found that over 60% of farm households earn 500,000 shs or less.

⁶ *The difficulty of collecting income/expenditure data is widely acknowledged in the literature. Differences between average income and expenditures are a pointer to these inaccuracies and the data is therefore interpreted with caution. More emphasis is therefore given to the relative values rather than the absolute values.*

Table 4. 3: Average household income and expenditures (shs)

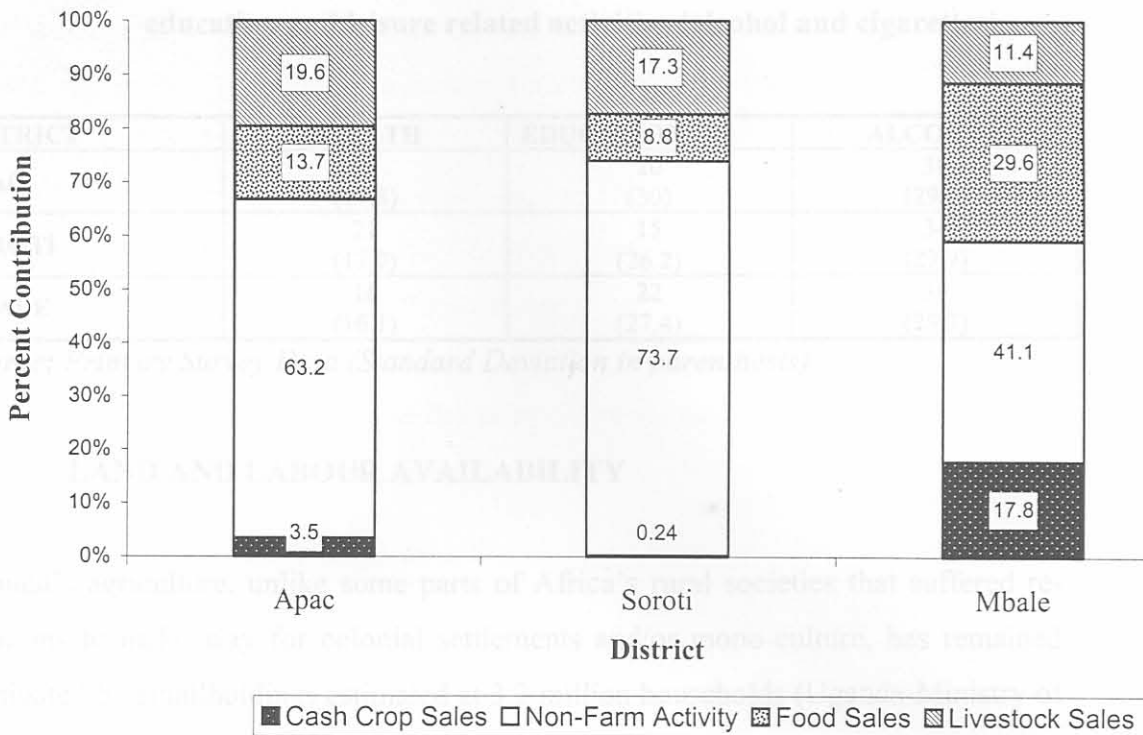
| District | Total Annual Income | Income from different Sources | | | | Expenditure ^c | |
|----------|----------------------|-------------------------------|--------------------------------|-------------------------|------------------------------|--------------------------|-------------------|
| | | Cash Crop Sales ^a | Non-farm Activity ^b | Food Sales ^c | Livestock Sales ^d | None food items | Food Items |
| APAC | 537 913 (437 710) | 17 215 (34 299) | 41 242 (35 583) | 66 788 (84 954) | 33 070 (66 356) | 24 914 (27 603) | 8 152 (3 918) |
| SOROTI | 498 463 (402 691) | 1 915 (10 343) | 39 563 (36 944) | 33 398 (42 325) | 22 801 (36 813) | 20 791 (18 147) | 9 226 (4 766) |
| MBALE | 770 210 (527 354) | 129 095 (134 148) | 36 370 (41 041) | 205 560 (159 694) | 24 619 (39 786) | 19 563 (18 756) | 11 485 (5 784) |

Source: Primary Survey Data (standard deviation in parenthesis)

NB ^aCash crop income is on an annual basis, ^bNon-farm income is monthly, ^cincome from food sales is summed up for total quantities sold, ^dlivestock income is on a three monthly basis, ^eExpenditure is monthly.

Despite that the primary data on income and particular is cautiously interpreted, they reflect the wide variation that exists in the data and implicitly between the households in the sample. The coefficient of variation in income from food sales in Soroti district is for example 1.27, that from cash crops in Mbale District is 1.04. In addition to wide intra-district variation, there are inter-district variations as well. Cash crop income is observed to vary widely across the three districts. Soroti has the lowest average and this is mainly because cotton, which was the traditional cash crop grown in the region, is only being revived. Although cotton is similarly being revived in Apac District, in some areas, e.g. Inomo Sub-county, tobacco is also grown. On average incomes generated from non-farm activities and the sale of livestock are more homogenous across the three districts. Income generated from food sales however, varies widely between Mbale on the one hand, and Apac and Soroti on the other.

Table 4.4: Average proportion (%) of non-food expenditure spent on health, education, alcohol and cigarettes



Source: Data from Primary Survey

Figure 4. 1: Percentage contribution to annual income by sub-sector

Relatively more cash expenditure is on non-food than on food purchases. During the study, farmers often complained about the costs of health care and education and reported that they are a reason for selling food, even if the ultimate result is food insecurity. However, breaking down the non-food expenditure into expenditure spent on health, education and alcohol and cigarettes, the largest proportion on average goes to alcohol and cigarettes in each of the three districts (see Table 4.4). Travelling through the villages, bars are apparent and drinking groups often follow market activities and Sunday service. Ultimately, it can be argued that fewer members in the household benefit from household income as it is mainly adults who engage in drinking. Other non-food expenditure is on basic commodities like soap and paraffin, clothing, and to a lesser extent transport.

Source: Compiled from Statistical Abstracts, (Uganda-Ministry of Planning & Economic Development 1976; Uganda Bureau of Statistics, 1999)

District administrative boundaries have since been changed and these projections are of the old boundaries in which the newly created Katakwi District was part of Soroti District.

Table 4. 4: Average proportion (%) of non-food expenditure spent on health, education and leisure related activities (alcohol and cigarettes)

| DISTRICT | HEALTH | EDUCATION | ALCOHOL |
|----------|--------------|--------------|--------------|
| APAC | 19 (17.8) | 20 (30) | 30 (29.1) |
| SOROTI | 21 (17.7) | 15 (26.2) | 34 (27.9) |
| MPALE | 16 (16.1) | 22 (27.4) | 30 (29.3) |

Source: Primary Survey Data (Standard Deviation in parenthesis)

4.5 LAND AND LABOUR AVAILABILITY

Uganda's agriculture, unlike some parts of Africa's rural societies that suffered relocations to make way for colonial settlements and/or mono-culture, has remained dominated by smallholdings estimated at 3.2 million households (Uganda-Ministry of Planning & Economic Development, 1997d). An estimated 97% of rural households have access to farmland (Nygaard et al., 1997; World Bank, 1993a) with holdings of on average 5 acres per household. It is estimated that 62.2 % have access to ≤ 2.5 acres, 85% ≤ 5 acres and 95.5% ≤ 10 acres. By region, land ownership on average ranges from 2.5 acres or less in the central and south of the country, to larger parcels of 22.5 acres northwards. Land availability is not yet considered a constraint to production but in the high population density districts of Kabale and Mbale (World Bank, 1993a). This is reflected in Table 4.5 showing that the population density according to projections based on the 1991 census in Mbale is about 367 persons per km^2 compared with 83 and 63 persons per km^2 for Apac and Soroti districts respectively.

Table 4. 5: Land distribution and population densities by district⁷

| District | Total area (Km^2) | Farm land (Km^2) | Projections for 1998 | |
|----------|---------------------------------|--------------------------------|------------------------|--------------------------------------|
| | | | Mid-year population | Population density/ Km^2 |
| APAC | 6 541 | 4 345 | 544 300 | 83 |
| SOROTI | 10 016 | 4 968 | 628 100 | 63 |
| MPALE | 2 467 | 1 531 | 905 100 | 367 |

Source: Compiled from Statistical Abstracts, (Uganda-Ministry of Planning & Economic Development, 1997a; Uganda Bureau of Statistics, 1999)

⁷ District administrative boundaries have since been changed and these projections are of the old boundaries in which the newly created Katakwi District was part of Soroti District.

The average farm size in Mbale District is about 4 acres per household and in Apac and Soroti districts' it is about 10 acres per household (see Table 4.6). In Apac and Soroti districts, the majority of the farm holdings are 5.1 to 10 acres, i.e. 41% and 45% respectively and slightly more than 20% of the farm holdings are more than 10 acres. In Mbale District the majority of farm holdings, i.e. 58% of farms, are 2 to 5 acres and about 20% are less than 2 acres in size. Those within the bracket of 5.1 to 10 acres, are 17% while about 5% are more than 10 acres.

Table 4. 6: Land distribution in the sampled areas (acreage and proportion of households within defined acreage)

| District | N | Mean area | <2 acres | 2 – 5 acres | 5.1 – 10 acres | >10 acres |
|----------|-----|----------------|----------|-------------|----------------|-----------|
| APAC | 153 | 10.3 (16.4) | 3% | 31% | 41% | 24% |
| SOROTI | 149 | 10.4 (14.3) | 1% | 32% | 45% | 22% |
| MBALE | 151 | 4.2 (3.5) | 20% | 58% | 17% | 5% |

Source: Primary Survey Data (standard deviations in parenthesis)

NB. The percentages may not add up to 100 because of rounding off

The difference between land owned and cultivated land reflects the finding that land is often a slack variable for many households in Apac and Soroti districts. From Table 4.7, most households, i.e. 74% in Apac District, 73% in Soroti District and 62% in Mbale District, were using between 2 to 5 acres of their farms in production. While less than 10% use less than 2 acres in both Apac and Soroti districts, in Mbale District about 20% of the households use less than 2 acres in production. Only 2% in Mbale and 1% in Apac and Soroti districts were using more than 10 acres in production. The average acreage per adult equivalent (AE) is 0.96 in Apac District, 0.94 in Soroti District and 0.83 in Mbale District.

Table 4. 7: Cultivated land (mean acreage and proportion using defined acreage)

| District | N | Mean Area | <2 acres | 2-5 acres | 5.1 – 10 acres | >10 acres | Area Per AE |
|----------|-----|--------------|----------|-----------|----------------|-----------|----------------|
| APAC | 153 | 4.0 (2.4) | 9% | 74% | 16% | 1% | 0.96 (0.52) |
| SOROTI | 149 | 4.0 (2.1) | 7% | 73% | 19% | 1% | 0.94 (0.67) |
| MBALE | 151 | 3.6 (2.5) | 21% | 62% | 15% | 2% | 0.83 (0.62) |

Source: Primary survey data (standard deviations in parenthesis)

Localised differences do exist. In Apac for example where communal grazing land still exists, the pressure on farm land is on the increase as was reported in Ijuje and Inomo sub-counties. In Mbale District, land pressure is more felt on the slopes of the mountains such as in Budadiri County compared with the low-lying areas like Muyembe Sub-county. In Muyembe Sub-county however, where farm holdings are larger compared with much of the district, many land-less households thriving mainly on wage labour, are a result of land transfers to the large farmers (Group discussions, 1998).

While land is generally considered available, labour is a growing constraint to production (Uganda-Household Agricultural Support Programme, 1997). Generally, family labour is the only labour used in production across the country. According to World Bank (1993a), 68.3% of farms use no hired labour at all. Lately, it is found that a husband and wife team often provide the only labour in a household (Uganda-Household Agricultural Support Programme, 1997).

In Apac District and the Northern agro-ecological zone in general, the labour constraint is alleviated through self-help groups within which labour is shared on a rotational basis (Uganda-Ministry of Agriculture & Forestry, 1984a). The Teso zone widely adopted ox-cultivation for opening the land and shared labour for the subsequent activities. However, following the depletion of oxen due to cattle rustling, labour exchange and wage labour paid for in cash or kind, have become dominant practices. Inter-cropping is a common practice in all the three districts and serves to alleviate the land or labour constraint.

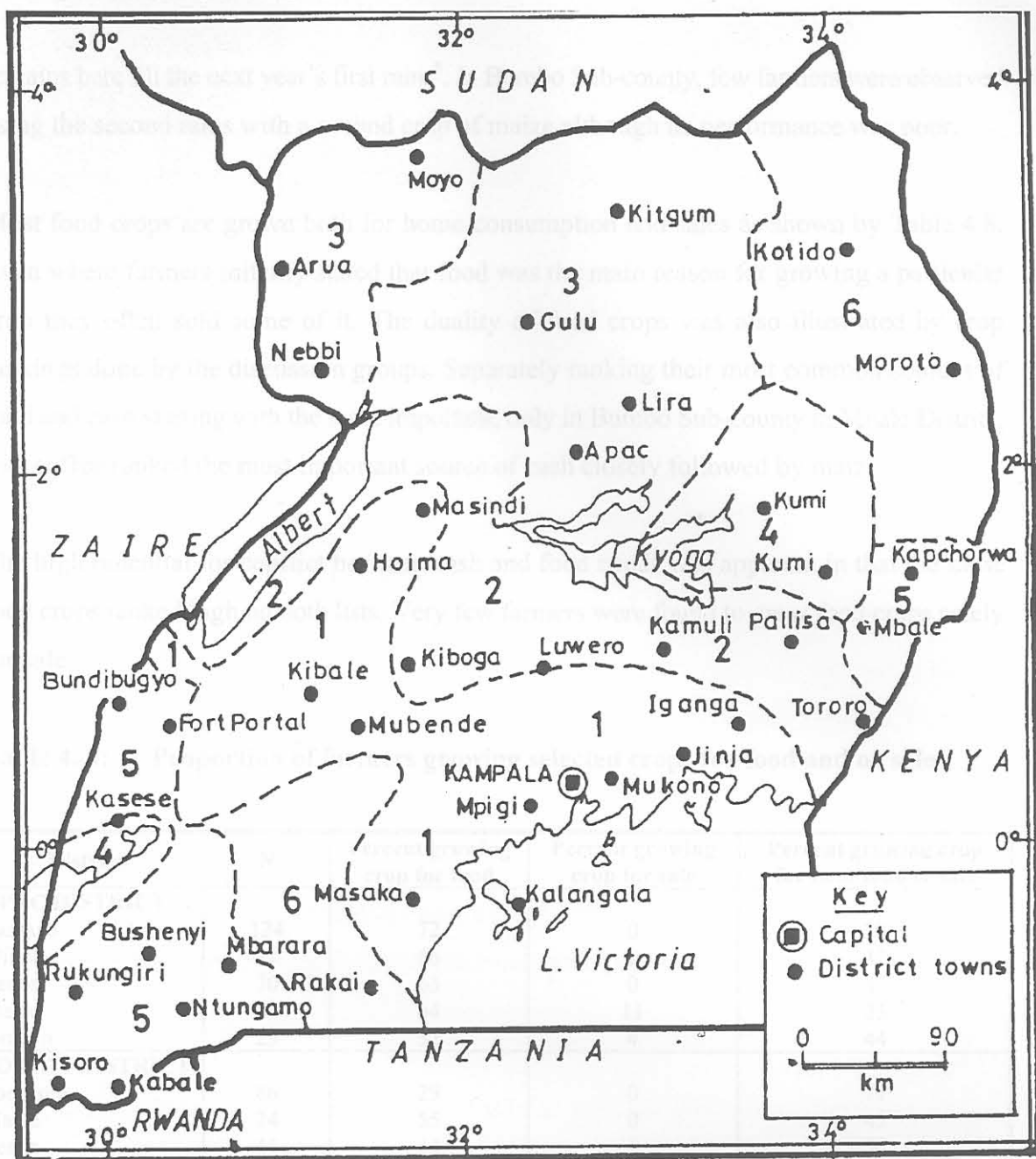
4.6 CROPPING PATTERNS

A diversity of crops best adapted to the agro-ecological conditions as described earlier in the chapter, are grown within each agro-ecological zone. The growing of a range of crops safeguards against the failure of one crop adversely affecting the household and ensures dietary diversity. The crops suitable to the different zones have also had a role to play in the socio-economic development in the different areas. Most notable is that while unfavourable market conditions forced farmers into subsistence production, those growing coffee remained active in the cash economy to a large extent, albeit mainly through the parallel market. This was because of crop specific attributes.

- Coffee is a perennial crop and once established its demands on labour, except at harvest time, is relatively low. It will fruit even with minimal attention albeit at sub-optimal output levels. In allowing resources like labour to be used elsewhere it does not necessarily negate farm productivity except in as far as it occupies land. Annual crops like cotton, which is labour intensive, are more resource demanding in the short term and the decision to plant or not to plant is more subject to the existing market conditions.
- The nature of the harvested coffee crop, i.e. beans, which can be packaged in small quantities in contrast to the bulky cotton, allowed a parallel market to thrive.

Agriculture in Uganda is predominantly rain-fed with less than 1% under irrigation. Although most of the country receives a bi-modal rainfall pattern, in effect, few annual and short maturing crops, e.g. beans and vegetables are double planted in an agricultural year. The main staples, e.g. millet or maize are usually planted in the first (long) rains. In Mbale, maize which is the main annual, is a first season crop. In Soroti District, millet, a staple food, is mainly grown in the first season. In Apac although millet is grown to a lesser extent than in Soroti, it is also grown in the first season.

In Soroti and Apac districts, the practice of crop rotations enables them to put the second rains to good use. Sweet potatoes, sorghum and simsim in some places are for example planted in the second rains in Soroti. In Mbale District, the land constraint makes timing the second rains for maize, the main annual, difficult. Therefore, after the harvesting of the first season maize crop, short maturing crops like beans and sweet potatoes are grown otherwise the land



Agricultural commodity zones

- | | |
|--|--------------------------------------|
| 1. Banana, Coffee, Sugar, Tea and Dairying. | 2. Banana, Millet, Cotton system. |
| 3. Millet, Maize, Simsim, Tobacco and Cotton | 4. Millet, Maize and Cotton. |
| 5. Banana and Coffee - Montane system | 6. Cattle herding -pastoral systems. |

Source: Adapted from Bibagambah, 1996

Figure 4. 2: Geographical distribution of the production of agricultural commodities in Uganda

remains bare till the next year's first rains⁸. In Bumbo Sub-county, few farmers were observed using the second rains with a second crop of maize although its performance was poor.

Most food crops are grown both for home consumption and sales as shown by Table 4.8. Even where farmers initially stated that food was the main reason for growing a particular crop they often sold some of it. The duality of food crops was also illustrated by crop rankings done by the discussion groups. Separately ranking their most common sources of food and cash starting with the most important, only in Bumbo Sub-county in Mbale District, was coffee ranked the most important source of cash closely followed by maize.

The high potential for conflict between cash and food needs was apparent in that the same food crops ranked high on both lists. Very few farmers were found to grow food crops solely for sale.

Table 4. 8: Proportion of farmers growing selected crops for food and/or sale

| District | N | Percent growing crop for food | Percent growing crop for sale | Percent growing crop for both food & sale |
|------------------------|-----|-------------------------------|-------------------------------|---|
| APAC DISTRICT | | | | |
| Cassava | 124 | 72 | 0 | 28 |
| Millet | 41 | 66 | 2 | 32 |
| Beans | 70 | 63 | 0 | 37 |
| Maize | 36 | 64 | 11 | 25 |
| Simsim | 23 | 52 | 4 | 44 |
| SOROTI DISTRICT | | | | |
| Sorghum | 86 | 29 | 0 | 71 |
| Maize | 24 | 55 | 0 | 45 |
| Beans | 46 | 44 | 0 | 56 |
| Simsim | 22 | 64 | 0 | 36 |
| Cassava | 139 | 48 | 0 | 52 |
| Millet | 67 | 38 | 0 | 62 |
| MPALE DISTRICT | | | | |
| Millet | 26 | 61 | 4 | 35 |
| Beans | 94 | 56 | 0 | 44 |
| Bananas (matooke) | 107 | 27 | 3 | 70 |
| Maize | 129 | 5 | 3 | 92 |

Source: Primary Survey Data

⁸ Some farmers in Buyobo Sub-County argued that the practice of letting livestock off the tether after the second rains but before the crops are harvested, are a discouragement because the crops are often destroyed by the livestock.

Farmers' storage practices have mainly involved sun drying food that is not consumed immediately after harvest and storing it for use in times of scarcity or off-season. Some crops are however, known to store better than others, e.g. millet stores better than either maize or sorghum. However, the study observed that many households no longer maintain granaries and where granaries were found, they were often empty. While it could be interpreted to imply less output, it is in part compounded by the fear of food theft and the high post-harvest losses. A concern for example is that some now widely grown crops, e.g. maize and sorghum do not store as long/well as especially millet, which they are replacing (Group discussions, 1998).

4.7 THE USE OF IMPROVED SEED

It has been argued that as commercialisation progresses, the incentive to increase yields is heightened and there is a shift towards using purchased inputs. Von Braun, Bouis & Kennedy (1994) it is recalled, posits that the proportion of purchased inputs to outputs can be a measure of the degree of commercialisation. Primary results however confirm various findings (Uganda-Household Agricultural Support Programme, 1997); the use of inorganic fertilisers is very low. Crop residues and animal manure are commonly disposed of in the gardens. The use of improved seed is highest in maize and beans, and specifically in Mbale District as seen in the following Table 4.9.

Table 4. 9: Farmers who use improved seed in selected food crops (percent)

| CROP | APAC DISTRICT | SOROTI DISTRICT | MBALE DISTRICT |
|-------------|---------------|-----------------|----------------|
| Beans | 5 | 3 | 52 |
| Maize | 7 | 5 | 79 |
| Millet | 1 | 3 | 0 |
| Ground nuts | 1 | 2 | 0 |
| Cassava | 3 | 20 | 0 |

Source: Primary Survey Data

Although the use of improved cassava is low, most of the standing crop is resistant varieties that government and collaborating institutions have distributed. This was part of a concerted

effort to revive the crop following a destructive attack of the African Cassava Mosaic Virus disease. Otherwise, improved food seed is distributed by the private sector and farmers find the prices prohibitive. In contrast, for the traditional cash crops, certified seed is still provided through their respective support institutions, Cotton Development Organisation for cotton and Uganda Coffee Development Authority for coffee.

4.8 RESOURCE USE AND OWNERSHIP

As production systems gradually change, it is expected that changes would take place among the role players within the household according to different preferences by gender or age. These influence the decision making process, i.e. the allocation and utilisation of resources to meet the different individual needs and that of the household, affecting each household member differently (Von Braun et al., 1991).

With increased commercialisation of food crops, men have often become more involved in food production and marketing (ibid.). In the Gambia, a reduction in the women's share of cereal production with the commercialisation of rice which was traditionally a woman's crop, significantly reduced calorie consumption, holding income effects constant. Otherwise, income was positive to calorie consumption (Von Braun, John and Puetz, 1994). However, a further examination shows that calorie gains came from an incremental consumption of the women's crop previously used as a source of income rather than from the men's incremental income (Smith and Chavas, 1997).

4.8.1 Food control in the household

In the food crop sub-sector, production, processing, preparation, storage and marketing, ultimately ensuring household food security, have in many African countries been the domain of women (Von Braun, John and Puetz, 1994). This responsibility begins with control over food gardens. Men have nonetheless participated in the food sub-sector in various ways and sometimes had control over their own food gardens for various reasons. In Mbale District, some groups reported that the men controlled a garden of matooke for food security purposes, supplementing the household needs from his garden when the need arose. The survey

instrument included questions about the number of cultivated gardens, the crop in each garden and who was the owner of the different crops and/or gardens. The group discussions where the common practices were discussed complemented the questionnaire findings.

Table 4. 10: Control of different crop gardens by men and women

| DISTRICT/CROP | N | Percent controlled by women | Percent controlled by men | Percent under shared control |
|------------------------|-----|-----------------------------|---------------------------|------------------------------|
| APAC DISTRICT | | | | |
| Cassava | 124 | 47 | 28 | 25 |
| Millet | 41 | 60 | 18 | 22 |
| Beans | 70 | 43 | 27 | 30 |
| Maize | 36 | 27 | 49 | 24 |
| Simsim | 23 | 38 | 10 | 52 |
| SOROTI DISTRICT | | | | |
| Sorghum | 86 | 24 | 47 | 29 |
| Maize | 24 | 38 | 38 | 24 |
| Beans | 46 | 35 | 35 | 30 |
| Simsim | 22 | 41 | 36 | 23 |
| Cassava | 139 | 36 | 45 | 19 |
| Millet | 67 | 38 | 31 | 31 |
| MPALE DISTRICT | | | | |
| Millet | 26 | 8 | 19 | 73 |
| Beans | 94 | 24 | 33 | 43 |
| Bananas (matooke) | 107 | 13 | 17 | 70 |
| Maize | 129 | 21 | 54 | 25 |

Source: Primary Survey Data

Food is no longer the domain of women as seen in Table 4.10 above. Men are active participants in the food sub-sector and “own” food gardens, i.e. the output is theirs to do with as they please and this is often to generate cash income. The concern is that the shift in “power” relations over food may negatively affect food availability. In Apac District, cassava, millet and beans, which feature more prominently as mainly grown for food are predominantly female controlled crops showing 47%, 60% and 43% respectively. Maize is predominantly controlled by men, i.e. 49% of the maize gardens, were under their control. Although it features more prominently as grown for food purposes, observations are that maize is highly traded. Simsim is mainly a shared crop with 52% of the gardens shared.

In Soroti District, women controlled more millet and simsim gardens and simsim, as earlier seen, features mainly as being cultivated for food. The converse held for sorghum and cassava gardens, which feature more as male controlled crops and as dual-purpose crops. The showing of cassava as a dual crop is a largely a result of the destruction by the cassava mosaic disease and the subsequent shortages in affected areas pushing up demand. However, no crop has more than 50% of the gardens mainly controlled by either women or men.

In Mbale District, millet, beans and bananas stand out as shared crops, while men control more maize gardens, i.e. 54%. Women may inter-crop “their” crops amid the men’s crops and they are often found to grow those crops that are relatively more for subsistence needs like sweet potatoes and yams. Mention is also made that control over a garden, especially by women, does not give her exclusive right to the food. Where they share crops, the implication is often that the man’s portion will be used for cash needs. It was noted that in Mbale District, men were often not shy to say they controlled the food gardens, food in store and may even determine the quantity of food prepared for their meals. Given that food is an important source of cash income for women, they are at times forced to “steal” food to sell from their own household stores. In Muyembe Sub-county, relatively large quantities of maize and beans are produced. It was reportedly common for women to “siphon off” produce while it is being dried and before it is bagged, “stock taking”, after which it would become more difficult.

In contrast, in Apac and Soroti districts, women remain the store-keepers and there is shared decision making regarding the quantities of food to sell and how to use the proceeds (Group discussions, 1998). In these two districts, it was reported that men have appeared before the relative authorities for climbing into the granary, or have been found stealing food to go and sell. “Gone are the days when it was a taboo for a man to be seen climbing into a granary” one respondent said.

It is noteworthy that the by-laws governing food reserves, introduced during the colonial period to ensure community and household food self-sufficiency, vested the control of some household food reserves outside the household. In so doing, to some extent imbalances in intra-household relations that might have compromised the household’s food security were

addressed. The reserve granary for example had a seal that could only be broken following an assessment and the consent of the local chief (Cleave, 1973; Nyangabyaki, 1995).

4.8.2 Livestock ownership

Livestock have several socio-economic roles in many societies. They are a form in which savings are held, especially where formal financial services/institutions do not exist or the culture of formal savings is not strong, doubling as a measure of wealth. They are of cultural importance as bride-price/dowry or part of other ceremonial practices. If raised for consumption, they may contribute to improving the quality of the diet. Lastly, they are an integral part of agricultural activities; cattle are particularly important in production aided by animal traction.

Table 4. 11: Average livestock numbers, per household

| Variable \ District | APAC | SOROTI | MPALE |
|---------------------------|------------|--------------|--------------|
| Number of Goats | 4 (3.3) | 4 (3.8) | 2 (2.5) |
| Head of Cattle | 2 (5.9) | 1.4 (2.8) | 2.1 (2.7) |
| Households without Cattle | 34% | 69% | 38% |

Source: Primary Survey Data (standard deviation in parenthesis)

Nowhere else in the country had ox-cultivation been adopted like in Soroti District, or the Teso agricultural zone as a whole. As noted in an earlier chapter, in the recent past, livestock in general and cattle in particular were one of the most important sectors in Soroti District. However, cattle rustling during the late 1980's wiped out the herd and various attempts are now being made to revive the industry. The destruction of the livestock sector has had adverse effects on production levels. In the period following insurgency, it is estimated that 50% of the arable land is under cultivation compared with more than 70% before the insurgency. This has had a direct bearing on the poverty dynamics in the district (Uganda-Soroti, 1997). From the primary survey, it was determined that about 70% of the surveyed households did not own any cattle in Soroti District, Table 4.11. Apac District was also affected but to a lesser extent and about 35% of the households did not own any cattle.

4.9 INFRASTRUCTURE DEVELOPMENT

As pointed out in Chapter one, repair and development of infrastructure to support the productive sectors, has been accorded high priority in Government's rehabilitation and development programme. The road network is the single most important infrastructure to economic development given that the rail network is largely non-functional. Resources have been invested in upgrading major trunk roads to all weather surfaces. However, most roads, especially feeder roads within the districts are seasonal dry weather roads. The rainy season therefore remains a major challenge for the transport sector, rendering seasonal roads impassable or more difficult to use. This was experienced during the study; many villages could be reached by vehicle during the dry season. The mountainous terrain in Mbale District, the swamp areas of Apac District and even major all weather murram roads became a challenge during the rains.

The road network in the districts is shown in Table 4.12. About 65% is considered all weather tarmac, murram, or gravel in each of the districts.

Table 4. 12: Road infrastructure in the sampled districts

| District | Total road distance (Km) | Dry Weather (dirt road) (Km) | % of roads that is all weather (tarmac, murram, gravel) |
|----------|--------------------------|------------------------------|---|
| APAC | 862 | 308 | 64.3 |
| SOROTI | 1 083 | 373 | 65.6 |
| MBALE | 500 | 180 | 64.0 |

Source: Compiled from Uganda Bureau of Statistics, 1999.

Mbale as the administrative headquarters for the then eastern region, developed to become the third largest urban centre in the country, with a population of 54,000 (Uganda-Ministry of Finance & Economic Planning, 1992e). It is about 250 km from Kampala (the main city) and 70 km from the main border town of Busia. It is a major distributive centre from which commodities move to and from Kampala, Soroti, Gulu and West Nile, Kenya, etc. (Nobera, 1998). It partly shares a border with Kenya, Uganda's main trading partner in the region.

Soroti District with a municipality population of 40,970 (Uganda-Ministry of Finance & Economic Planning, 1992d) is 100 km farther east from Mbale. As of September 1998, about 500 km of feeder roads in the district had been rehabilitated/reopened and under regular maintenance (Uganda-ADB Soroti Field Office, 1998). Most of the district has, in so doing, been rendered usable by vehicles.

Apac is the youngest district of the trio with a town council population of 5,783 (Uganda-Ministry of Finance & Economic Planning, 1992a). The administrative centre is about 200 km from Soroti centre and 300 km from Kampala along the northern route. The swampy Lake Kyoga basin increases the challenges of road maintenance. Many roads are impassable during the rainy season and many that have been washed away or crossed by the swamps also remain closed to traffic.

At the micro-level, distances do not seem to deter trade as, on average, farmers travel 4 km in Apac, 6.6 km in Soroti and 3.1 km in Mbale to various markets. This is within the same range as much of the country where the average distance travelled is less than 5 km (Uganda-Household Agricultural Support Programme, 1997). However, transport to move produce to the market is a constraint as there is a limit that an individual on foot can physically carry and yet walking is the most common mode of movement, or even by bicycle the second most common mode.

4.10 ANTHROPOMETRIC INDICATORS

Stunting, a measure of height-for-age reflects long term effects of inadequate food. Wasting measures weight-for-height and is an indicator of short-term food inadequacies. Although stunting (low height-for-age) may indicate protein energy malnutrition in children, it may also indicate poor health. Pacey & Payne (1985) argue that childhood diseases are more fatal where children are malnourished. In Uganda, it was estimated that 56% of deaths in children less than 5 years old are a result of the effect of malnutrition on infectious disease (World Bank, 1996).

The in depth analysis of anthropometric data is beyond the scope of this analysis. It was nonetheless hoped that the necessary data would be available at the local health centres at the county level to allow for a location specific comparative analysis with the study findings. Unfortunately these records are not kept and one would have to gather the individual children's health progress cards for those attending clinics, to accumulate such data. Secondary data are here used to show the district differences. For lack of recent data on anthropometric measures, this data is drawn from surveys done in 1992/3. Table 4.13 shows the district estimates.

Table 4. 13: District specific stunting figures (based on the 1992/93 IHS)

| DISTRICT | Boys Z – Scores | | Girls Z – Scores | |
|----------|-----------------|-----------|------------------|-----------|
| | < -3 | -2 to – 3 | < -3 | -2 to – 3 |
| APAC | 27.2% | 15.5% | 15.8% | 24.5% |
| SOROTI | 14.9% | 26.9% | 18.2% | 17.2% |
| MBALE | 21.6% | 21.8% | 24.0% | 22.8% |

Source: Extracted from World Bank, 1996

Stunting is said to occur when height-for-age is two or more standard deviations below the mean of the reference population (World Bank, 1993b). However, it is noted that cut off points at which abnormal growth is denoted remain subject to debate with a number of systems in use; percentiles, NCHS (US National Centre for Health and Statistics) standards, standard deviations, and normalised standard deviations or Z-Scores (Maxwell, 1991; Pacey & Payne, 1985).

Quantitatively, the EPAU study (Uganda-Ministry of Finance & Economic Planning, 1995a) using aggregated data, classified Soroti District as suffering transitory food insecurity. Both Apac and Mbale districts were classified as food surplus districts. However, by anthropometric data, Mbale District reflects more severe food insecurity. Apac District registered 42.7% stunting among the boys, Soroti 41.8% and Mbale 43.4%. Among the girls, Apac District registered 40.3% stunting, Soroti District 35.4% and Mbale District 46.8%. The district differences among the boys are narrower compared with those between the girls. Mbale District on average is faced with the worst case of stunting, i.e. about 45% while Soroti

District is the lowest of the three with 38.6% and Apac District shows 41% stunting. At the national level, 44% of children in the lowest expenditure quartile and 37% in the top expenditure quartiles were stunted (World Bank, 1996).

During the primary surveys, extension workers in Mbale District reported that there is a high death rate of young children during the lean months of May to July, which may partly be due to poor nutrition (Ayo, Wakwoma & Nambafu, Personal communication, 1998). Mbale district is plagued with high levels of malnutrition, especially protein deficiency (World Bank, 1993a; 1996). Integrated household surveys done shortly after civil strife which affected among others Apac and Soroti districts, showed the mortality rates of children up to 59 months old to be highest in Mbale District at 216 for every 1000 babies born. Apac and Soroti district are about equal at 191 and 192, respectively (World Bank, 1996). The most common causes in reported cases were malaria, diarrhoea and measles (ibid.).

4.11 CHAPTER SUMMARY

This chapter presented an overview of the study area by comparing and contrasting the average demographic characteristics of the household, agro-ecological and socio-economic factors in the district. The sample is drawn from the districts of Apac, Soroti and Mbale, each of which belongs to a different agro-ecological zone. A variety of food crops best adapted to the different conditions in the zones are cultivated. However, most food crops are grown to meet both food and cash needs. Besides crop cultivation, livestock (dairy or beef cattle, goats, pigs, sheep) and poultry are kept and mixed farming is the more common practice.

It is observed that on average, there is similarity in the demographic structure of households across the three districts. Due to a high population density, land is a constraint to production in Mbale District while a labour constraint is more pronounced in Apac and Soroti districts. Nonetheless, agriculture is the main source of a livelihood and this is underscored with farming being the dominant occupation of household heads. However, it is mainly reliant on the climate (rain-fed) and productive capacity of both land and labour as there is very little use of improved technology or production practices. Opportunities for income generation outside the agricultural sector are also limited. Wage labour is a common income generating

CHAPTER 5

activity, but is subject to the seasonal nature of the agricultural sector. Other activities include fishing, trade, local artisans, brick making and transportation. Women are mainly engaged in the local beer industry or in selling cooked food/snacks along the roadsides or in the markets as a means of income generation. Cash income on the other hand is mainly spend on non-food goods and services but most of it goes to health care, education, alcohol and cigarettes.

On the basis of the district agro-ecological, socio-economic and demographic characteristics as well as agricultural practices, this chapter shows that there is no *a priori* reason for any one district to be more prone to food insecurity than others. However, a summary of anthropometric data shows that Mbale District is the most food insecure of the three with indications that it has the highest degree of stunting and infant mortality rates. An exploratory analysis of the sample data is therefore undertaken to explicate the less apparent factors that contribute towards food security/insecurity.

5.2 DISTRICT VARIATIONS IN FOOD AVAILABILITY DURING THE SURVEY YEAR

Food availability has been equated to food output and purchases, less quantity sold and incremental stocks.

$$\text{Household food-availability} = \text{output} + \text{purchases} - (\text{sales} + \text{increase-in stocks})$$