

**SAVE THE CHILDREN FUND (UK)**

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**THE UNITED NATIONS WORLD FOOD PROGRAMME**

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## **HOUSEHOLD FOOD ECONOMY ASSESSMENT SINGIDA REGION, CENTRAL TANZANIA**



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SAVE THE CHILDREN FUND



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### ***Household Food Economy Assessment - Singida Region, Central Tanzania***

The Household Food Economy Assessment in Singida Region was undertaken within the framework of the “ Emergency Support to Household Food Economy Assessments in Tanzania” project. The project is a joint initiative of the Disaster Management Department (Prime Minister’s Office), the World Food Programme and Save the Children Fund (UK). The overall project covers two additional regions of Tanzania (Arusha and Dodoma) where similar assessments have been conducted.

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## SUMMARY

### BACKGROUND

- , **Household food economy analysis** is a method for assessing food security and understanding rural livelihoods. This assessment of Singida Region was undertaken in May - July 1999 by SCF-UK, the Prime Minister's Office, and WFP, and funded by the EU and WFP (with DfID support). The purpose was to provide background or contextual information on how people live in the area, and an analysis of the situation this year, with particular reference to the need for external food assistance in order to enable a timely and accurate response to acute food insecurity.
- , Singida Region has been divided into 12 **food economy zones**, of which four (Zones V, VI, VII and IX) are described in this report. Together they represent about three-quarters of the Region's population outside urban or peri-urban areas, and 237 out of 346 villages. A food economy zone refers to a geographical area within which members of different economic groups share the same set of food and income options, and place the same relative importance on each of the options in 'normal' and 'bad' years. The food economy zones do not follow administrative boundaries and are more likely to be related to agro-economic zones. 39 villages in Dodoma Region have also been covered, as part of Zone VI.
- , The **differences between the zones** in Singida Region are not huge. In Zones V and VII, as wealth increases so do the number of cattle owned and the number of acres cultivated. The main difference between the zones is the actual number of cattle owned and acres cultivated in each wealth group. Livestock loaning practices also differ somewhat: in Zone VII it is essential to have access to manure to fertilise the sandy soils and therefore it is common for the poor to borrow cattle from the rich. In Zone V, with its more loamy soils, manure is less important and, although oxen are used for ploughing, borrowing cattle is not the only means of obtaining access to draught power.
- , Unlike Zones VII and V, in Zones VI and IX there are a mixture of tribes and land is relatively plentiful. The number of cattle owned and the number of acres cultivated do not necessarily increase in tandem as wealth increases. In Zone IX, it is possible to have a large farm without owning cattle because manure is not necessary (even in areas with sandy soils, land is plentiful and farmers can shift or rotate their fields rather than manuring) and ploughing is not common. In Zone VI, those who fall into this category depend heavily on communal and casual labour, funded by beekeeping and crop sales, for their increased farm size. Zones VI and IX have more complicated wealth breakdowns than the other zones, and also have 'floating' pastoralist populations.

## ZONE VII

- , **Sources of food in a ‘normal’ year:** All wealth groups rely on their **own crops** to make up the majority of their food needs in a ‘normal’ year (such as 1996/97), ranging from 45-50% in the case of the ‘very poor’ to 80-85% for the ‘rich’ in such years. None of the wealth groups are large consumers of **livestock products**. ‘Very poor’ and ‘poor’ households obtain up to 40% of their food needs through **labour exchange** in the form of agricultural labour. Payment is made in kind (food) or in cash, usually depending on the choice of the labourer in a ‘normal’ year. All wealth groups except the ‘rich’ rely on the **purchase of grain** to make up their remaining food needs in a ‘normal’ year, ranging up to 25% of annual food needs. Other foods such as sugar, vegetable oil and meat are purchased in small quantities, increasing with wealth
- , **Sources of income in a ‘normal’ year:** For ‘middle’ and ‘rich’ households, **income from livestock** (both sales of animals and sales of products) is the most important source of income, supplemented by smaller amounts of income from **crop sales, brewing and trade**. In contrast, livestock sales make only a small contribution to the incomes of ‘very poor’ and ‘poor’, for whom **brewing and casual labour** are more important.
- , **Expenditure in a ‘normal’ year:** Expenditure on grain decreases as wealth increases, from about 25-35% of income in the case of the ‘very poor’ to nothing in the case of the ‘rich’. In contrast, expenditure on non-grain food (sugar, oil and meat) increases with wealth, from next to nothing in the case of the ‘very poor’ to up to 10% for ‘rich’ households. In addition to paying their taxes, all households spend a certain amount of income on schooling, medicine and non-food items such as clothes, kerosene and soap. The amount spent on these items increases as wealth increases. Agricultural inputs are a significant expenditure only for the ‘rich’ as they employ labour.
- , One of the strengths of the Household Food Economy approach is that the results provide a basis for **analysing the effects of a change** in context compared to the baseline (‘normal’ year) picture. In order to assess the current situation, it is first necessary to clearly define the ‘problem’ that households are expected to face. This ‘problem’ can then be analysed in relation to how households live in the baseline year, taking into account any options that might exist for expansion of existing food and income sources, for the exploitation of new food or income sources, or for switching away from non-essential expenditure in the current year. Most of the information to define the problem this year versus the ‘normal’ year, particularly for food and cash crop production, has been taken from government division-level monitoring information.
- , The **current agricultural season (1998/99) has been poor** due to late, irregular and patchy rain, and this follows another bad season (1997/98) when pest damage was widespread. The **scenario** which is analysed in this report for the current year in Zone VII (late April 1999 to late March 2000) is as follows: food crop production roughly half of

'normal' (a slight increase compared to last year); cash crop production (sunflower and finger millet) almost 'normal'; land areas cultivated less for the 'very poor' and 'poor' (75% of 'normal' land areas because they spent so much time last year doing casual labour) and more for the 'rich'; livestock prices 60-65% of 'normal' (the same as last year); grain prices 325% of 'normal' (the same as last year); agricultural work slightly reduced in availability from last year but similar payment rates (80% of 'normal' in terms of food payment or cash purchasing power).

The **initial food deficit** ranges from 45-55% for poorer households to 55-65% for 'middle' households. 'Middle' and 'rich' households are generally more affected by the current problem because they rely more heavily on own crops as a source of food and livestock sales as a source of income in a 'normal' year. It must be stressed that the term 'initial deficit' is not actually experienced as a period of deficit, but as the beginning of a process which involves planning and budgeting for the rest of the year.

In order to counter the initial deficit in the current year, households will employ a variety of strategies, one of which will be to **reduce spending on non-essentials** in order to increase food purchases from available income. The better off the household, the greater the capacity to switch expenditure in this manner. Other strategies that households will employ vary by wealth group. For example, poorer households will: do as much agricultural labour and other casual labour as possible (including a limited amount of migration to other areas); entreat the support of richer relatives and neighbours, receiving **gifts** in the form of either food or cash (to purchase food); and gather and **consume wild foods** (in limited quantities because they are not widely available). 'Middle' and 'better off' households will sell livestock and cash crops. It is unlikely, however, that they have any remaining food stocks this year.

Through a combination of these strategies, the initial deficit for each wealth group will be reduced to a certain extent. However, the **'very poor' and 'poor' remain with deficits of 25-35% and 15-25% of annual food needs** respectively, given a number of assumptions which are outlined in the report (and which preclude 'undesirable' activities).

In terms of **timing relief food deliveries**, it is important that they are spread over the period from the start of the cultivation season (late October - November 1999) to the start of the green maize harvest (late March 2000, if next year is 'normal'). The number of deliveries is not important, but the timing is: by coinciding with the start of the cultivation season, and at least to a certain extent covering the 'hunger period', relief food should enable households to spend some time cultivating their own farms rather than spending all their time cultivating for others for payment or even migrating to other regions in search of work at key points in the agricultural calendar.

If more precise monitoring information becomes available in the future, it will be possible to refine and update the analysis and conclusions presented in this report.

## OTHER ZONES

- , Similar information to that summarised above is presented in report for the other three zones.
 

**Zone V** is generally wealthier than Zone VII: at each level on the wealth spectrum households cultivate more land and own more livestock. Although the categories of food and income sources are the same in this zone, crop yields tend to be higher, so households generally obtain more food and income from their own crops than in the other zones. Overall income levels are higher. **This year**, food crop production is about 40% of 'normal', while cash crop production is three-quarters of 'normal'. Grain prices are expected to be similar to last year (almost three times 'normal'). Most other aspects of the problem facing this zone in 1999-2000 are much the same as for Zone VII. The different wealth groups are expected to pursue similar strategies this year as last year: switching expenditure from non-essential to essential items, gathering wild foods, expanding casual labour, selling livestock (and not replacing them). In addition, for the 'very poor' and 'poor', having relatively easy access to highly productive areas to the west and east of the zone means it will be easier to find agricultural and other types of casual work. **Even the 'very poor' are not expected to face a deficit** in 1999-2000.
- , **Zone IX** differs from the Zones VII and V in having wealth groups which concentrate on cultivation in addition to those which both cultivate and keep cattle. The general food and income sources are the same as in the other zones. **This year**, crop production is worst in this zone, at about one-third of 'normal' for food crops and half of 'normal' for cash crops. Other aspects of the problem are similar to Zone VII. The different wealth groups will employ similar strategies this year as in Zone VII. It is expected that the **'very poor' and 'poor' will face a deficit of 25-35%** of annual food needs between now and the start of the next green harvest.
- , **Zone VI** is like Zone IX in the sense that ownership of cattle and land areas cultivated do not increase in tandem as wealth increases: there are households which cultivate large areas of land but do not own cattle. The general food and income sources are the same as in the other zones with the addition of honey as a (minor) source of food and as a significant source of income. **This year**, food crop production is better than last year, but still just under half of 'normal' production. Other aspects of the problem and response are expected to be similar to Zone VII. It is expected that the **'very poor' will face a deficit of 10-20%** of annual food needs between now and the start of the next green harvest.

## Introduction

The following report stems from two months of field study in Singida Region, in May - July 1999, designed to establish baseline information on the livelihood patterns of rural households in different parts of the Region. The study was part of a larger initiative to establish a baseline food economy picture for three regions in the north and centre of Tanzania, including Arusha, Singida and Dodoma Regions. This joint project between the Prime Minister's Office, the World Food Programme and Save the Children Fund (UK) was funded by ECHO and WFP (with support from DfID).

The motivation behind establishing these baseline pictures was two-fold:

- C First, they will provide the necessary context for understanding the effects of drought-related shocks sustained in recent years thereby contributing a basis for making rational judgements with regard to the need for relief assistance. More importantly, this context helps decision-makers understand why people may be unable to cope on their own, helping to clarify the objectives, scope and time frame of a relief intervention.
- C Second, the same context can be viewed as an investment in future planning, not only in the areas of early warning and response, but also for the purposes of mitigation and development assistance. Without a detailed and comparable baseline of how rural households in Tanzania obtain access to food and income, appropriate planning for livelihood support is not possible.

In short, the results of the work are intended to provide clear and compelling justifications for relief assistance if such assistance is necessary. They will also form the basis for a far more informed approach to targeting development assistance to mitigate against future emergencies and reduce absolute levels of poverty.

## Methodology

Household Food Economy Analysis is a method for assessing food security and understanding rural livelihoods. The method is based upon developing an understanding of the various options people employ to secure *access* to food. It goes beyond traditional production-based assessments by exploring, in a systematic fashion, the other food sources people rely upon, and the extent to which these can be expanded in times of crisis.

A feature of the approach is that it is *household-based*, exploring how 'poor', 'middle' and 'rich' households obtain food and income. The concept of vulnerability inherent in the food economy framework is linked to economic circumstances, as opposed to being tied to pre-defined group parameters, such as 'women', 'elderly', 'disabled', etc. The situation of individuals cannot be considered in isolation from their economic circumstances or the economic circumstances of the households in which they live. Thus the objective of food economy work is to define just what it is that makes some households more vulnerable to food shortage than others.

In a rural setting, the task in essence is to piece together the relative importance of different food and

income options for different types of households ('poor', 'middle' and 'rich'), basing this estimation on an understanding of how much of each source a household may have access to over the year, and in turn a knowledge of that food's potential calorific contribution.<sup>1</sup> For instance, if we know that a household of 6 produces three 90 kg sacks of sorghum most years, we are then able to calculate that sorghum contributes around 25% to that household's total annual food income in a normal year<sup>2</sup>. The question then becomes, if people in that household are managing to survive, what makes up the other 75%?

The teams used a tiered approach to obtaining information, starting at the regional level, moving to the district level, and finally to 'representative' villages, where the majority of time was spent. A wide range of standard PRA techniques may be used during village interviews, but for the most part, information was derived through rigorous semi-structured interviews.

### Why Use The Food Economy Approach?

A multi-regional study is particularly challenging in the sense that in order for the results to be useful in a larger context, one needs the **capacity to compare findings from region to region and from sub-region to sub-region**. The tendency in this case would be to lean towards a large statistical survey with questionnaires and enumerators. But experience counsels that a rich understanding of the economic context, detailing how people obtain their food in most years, and more importantly how the whole economic system fits together with relation to intra- and inter- community exchange, is impossible to derive through traditional survey methods.

Food Economy Analysis counters the problem that most so-called qualitative assessments face (the problem being that they tend to produce information which may be detailed, but ultimately lacks the components which allow for comparisons to be made from area to area - something which is critical in prioritizing both relief and development assistance) by utilizing rigorous quantitative analysis in both the field work and the final deductive process. **Because the Food Economy approach is based in large part on quantifying access to food, and in describing the links within and outside a community which determine this access, it allows for comparisons to be made between geographic areas and between economic groups**. It also enables analysts to estimate the level of 'shock' likely to create a food shortage.

## Singida Region: Agro-Economic Zones and Food Economy Zones

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<sup>1</sup> 1900 kcals per person per day, used in this analysis, represents the minimum compatible with long-term subsistence. It is based on an estimate of minimum calories required for different age groups, averaged across an expected age distribution in developing countries.

<sup>4</sup> The calculation is as follows:  $3 \times 90 \text{ kg} = 270 \text{ kg}$ . An average adult needs .53 kg per day of sorghum to meet his/her 1900 kcal minimum requirement if sorghum is all he/she is eating. Thus to find out how many **total days** 270 kg of sorghum will last, divide 270 by .53. This gives you 509, which divided by the number of people in the family (6) is 84. 84 days is approximately 23% of a year.

Singida Region borders on Arusha, Dodoma, Iringa, Mbeya and Tabora Regions. It lies between latitudes 3° 50' and 7° 30' South and Longitudes 33° 30' and 35° 30' East. Administratively, the Region has three districts (Iramba, Manyoni and Singida), four Councils<sup>3</sup>, 21 divisions, 86 wards and 346 villages (excluding Singida Town).

The area experiences a unimodal rainfall system, stretching from November to early April, although a dry 'stress period' may occur in February. Natural vegetation varies from miombo woodlands and bushland thickets ('Itigi Thickets') to grasslands, while 23% of the land is arable and another 40% suitable for grazing<sup>4</sup>. Singida Region is part of the Central Plateau of Tanzania with two major escarpments: one on the northwest and dropping into the Wembere Depression (starting in Shelui division and running roughly parallel to the Wembere and Sibiti rivers up to Lake Eyasi in the extreme north); and the other running approximately north-south and just inside the eastern border with Dodoma Region. Both escarpments are associated with the Rift Valley system. Rainfall is less in the centre of the plateau, as well as in the lowlands. Soil changes from the fertile sandy loam soils of the plateau in Iramba (and the parts of Singida bordering on Basuto Division in Hanang District) to the sandy soils in the main central bulk of Singida Rural and Urban Districts and the more populated northern areas of Manyoni District. Moving southwards into the miombo forests of Manyoni, there is some improvement in soil quality, which ranges from loam to sandloam. The lowlands are black cotton with saline spots<sup>5</sup>.

In the northern two-thirds of the region, access to good land is relatively restricted and there is a need to manure fields to maintain fertility in the sandy soils. In contrast, in southern Manyoni, where land is plentiful, farmers tend to follow a shifting/rotational cultivation pattern instead. Cultivation practices also vary from one area to another, and this is partly related to soil types. In Iramba District, a dominant feature is the use of ox-ploughs for agriculture, and this permits the cultivation of large farms. In Singida District, ox-ploughing is less common, and fields are dug during the first weeding, *after* planting. This system is practised as far south as the central railway line (which passes from East to West through Manyoni). Beyond that, fields are mostly tilled by hand but practices vary considerably as the area has been settled by people from different cultural backgrounds and with different farming styles.

A food economy zone refers to a geographical area within which members of different economic groups share the same set of food and income options, and place the same relative importance on each of the options in 'normal' and 'bad' years. Broadly speaking, the underlying rationale behind

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<sup>3</sup>Each district has a council, except for Singida, which has one for the 'urban' area surrounding the town and one for the more remote 'rural' villages and small towns.

<sup>4</sup>Singida Regional Commissioner's Office, "*Socio-Economic Profile and Perspective Plan 1996/97 to 2000/01*", The Regional Government of Singida, November 1996, pp.1-4.

<sup>5</sup>Singida RC's office, 1996, p.53.

creating these zones is that it provides a common basis for understanding the effects of production or exchange shocks on households in a particular area; as such, households within one zone should generally be at risk to and affected in similar ways by the same external factors. Food economy zones do not usually follow administrative boundaries and are more likely to be related to agro-economic or farming system zones.

Singida Region is divided into six agro-economic zones<sup>6</sup> based on altitude, rainfall, soils and vegetation. The main characteristics of these zones are outlined briefly in Table I below.

**Table I - The Agro-economic zones of Singida Region<sup>7</sup>.**

<b>Zone name</b>	<b>Area covered</b>	<b>Soil type</b>	<b>Crops grown</b>	<b>Rainfall</b>
<b>The Northern Zone</b>	<b>Iramba:</b> Nduguti division <b>Singida:</b> Mtinko and Ilongero divisions	Loam to sandy loams	Maize, sorghum, bullrush millet, cotton* and sunflower	600 mm to 650 mm
<b>The Central Iramba-Singida Plateau</b>	<b>Iramba:</b> Kinyangiri, Kisiriri and Kinampanda divisions <b>Singida:</b> Mungumaji and Unyakumi divisions	Loam sandy	Sorghum, bullrush millet, cotton*, and sunflower	600 mm to 650 mm
<b>Southern Singida and Northern Manyoni</b>	<b>Singida:</b> Ihanja, Mungaa and Ikungi divisions <b>Manyoni:</b> Manyoni division	Sandy soils	Sorghum, millet, sunflower and cotton*	500 mm to 650 mm
<b>The Manyoni Miombo Woodland Plateau</b>	<b>Manyoni:</b> Itigi, Nkonko and Kilimatinde divisions	Loam to sandy loam	Maize, sorghum, millet, cotton* and tobacco	600 mm to 850 mm
<b>The Eastern Rift Valley Plains</b>	<b>Singida:</b> Part of Mgori division <b>Manyoni:</b> Kintinku division	Black cotton, with saline spots	Sorghum, paddy and millet	500 mm to 550 mm
<b>The Western Rift Valley and the Wembere Plains</b>	<b>Iramba:</b> Shelui and Kirumi division	Saline barren patches and black cotton	Sorghum, paddy and cotton.	500 mm to 600 mm

\*In these zones cotton has largely been abandoned

<sup>6</sup>Socio-economic Profile and Perspective Plan, The Regional Government of Singida, pp 53.

<sup>7</sup>Socio-economic Profile and Perspective Plan, The Regional Government of Singida, pp 53.

However, when considering food economy zones, certain key factors in people's livelihoods also need to be included. Initial discussions with key informants<sup>8</sup> led to the establishment of fourteen more detailed zones, taking the following considerations into account: natural environment (rainfall and soil fertility), the types of food crops, the types of cash crops, the importance of livestock and its distribution within the community, proximity to 'urban' centres, and the presence of other sources of income and food (such as mining, fishing or honey). Interviews at village level led to further revisions to these zones. This is because an important factor in distinguishing between zones is the definition of what constitutes 'rich' and 'poor' in communities -- wealth descriptions -- such definitions should be similar within a particular zone.

Details on crop types and vegetation in the various zones are summarised in Table II later in this section. Figure 1 on page 6 shows the geographical layout of Zones I to XII.

Four zones (V, VI, VII, IX) are described in this report. These four were selected for priority coverage for two reasons: size and reported vulnerability. Taken together, these zones cover 276 out of 387 villages (or 71%) in the assessment area (Singida Region: 346 villages plus Kwa Mtoro and Farkwa divisions: 41 villages). 37 'villages' are in fact towns or border very closely on towns (urban and peri-urban centres), and if these are excluded, the four zones then cover 79% of rural villages. Based on figures supplied by the Regional Government, the zones represent approximately 63% of the total population of the area, or 78% of the population that is not resident in urban or peri-urban areas.

Each of these four zones is described in more detail in the following sections.

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<sup>8</sup>Mr. Mathias Mwiko, Planning Officer Singida Region, and members of LAMP, in particular: Prof. Bugendo and Mr. Richard Viner, Orgut Consultant, December 1998.

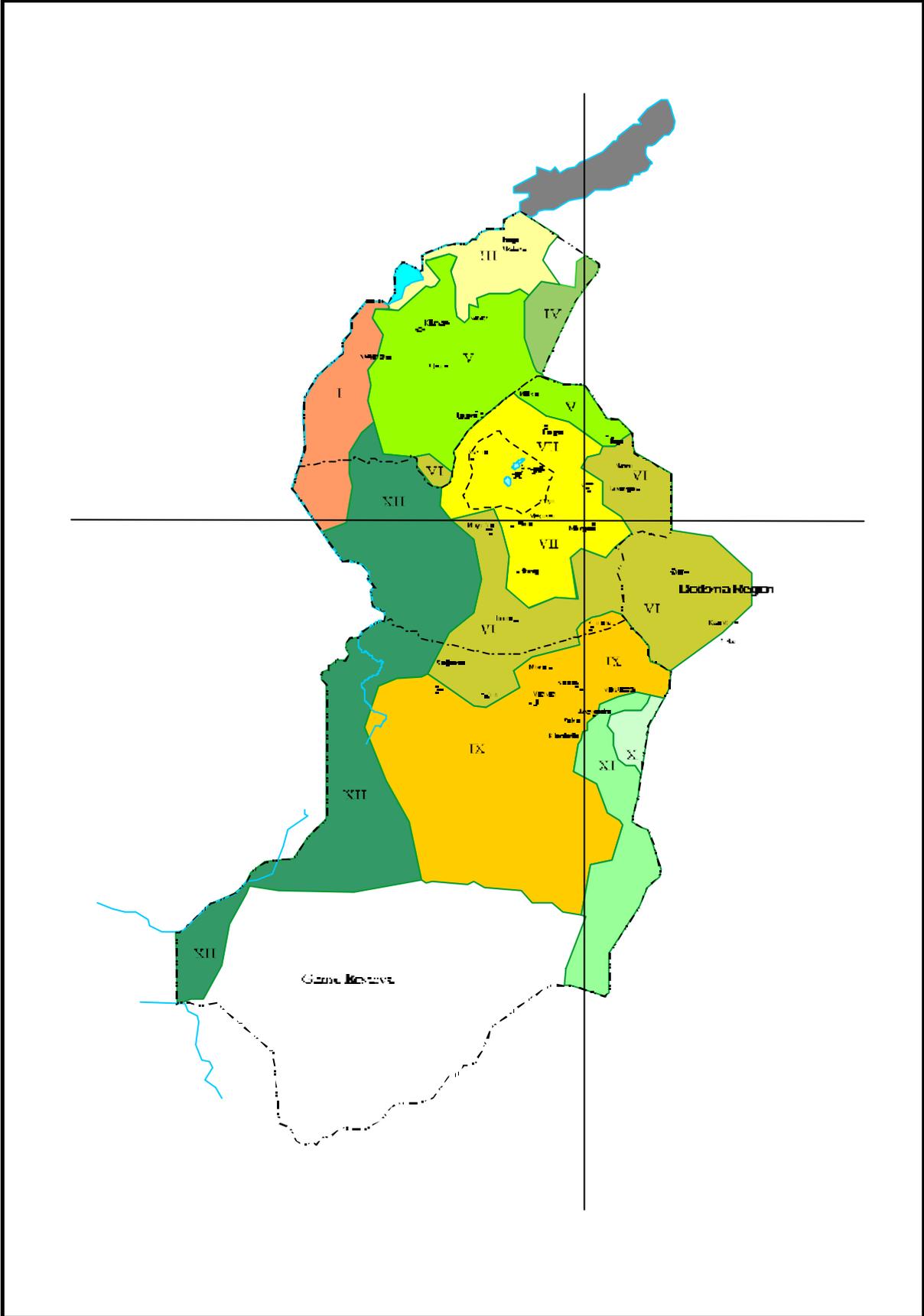


Figure 2 - Food Economy Zones in Singida Region





Zone	Name	Description
I	Wembere Rift Valley	<ul style="list-style-type: none"> <li>, Flat lowlands with dark brown silt loamy soils; some black cracking clays. Some intensive farming, with livestock rearing and some fishing. Presence of mines in the area.</li> <li>, Vegetation: Woody savannah — Acacia common as well as swampland around the Wembere River.</li> <li>, At the foot of the escarpment of the Wembere river rift valley; the western three-quarters of Shelui division and western half of Ndago division in Iramba district. The western third of Sepuka division and the extreme west of Ihanja division in Singida Rural district. Extends into Igunga and Maswa districts of Tabora and Shinyanga regions respectively.</li> </ul>
III	Sibiti Rift Valley	<ul style="list-style-type: none"> <li>, Similar to Zone I but with a drier climate. Crop growing combined with livestock rearing the main activities; also the presence of small hunter-gatherer communities.</li> <li>, Vegetation: Bushland, Acacia.</li> <li>, The northern extremes of Iramba district along the Wembere river starting from Lake Kitangiri. Parts of Kisiriri and Kirumi divisions.</li> </ul>
IV	Wheat Growing Borderlands	<ul style="list-style-type: none"> <li>, In terms of food economy, an extension of Dongobesh division, Mbulu district, into Iramba. Similar to Zone V with wheat farmers and some pastoralists.</li> <li>, Vegetation: Bushland, Acacia</li> <li>, The NE extreme of Iramba District, bordering with Haidom, only six villages.</li> </ul>
V	Iramba Plateau	<ul style="list-style-type: none"> <li>, Most agriculturally productive zone in the Region, because of high rainfall and good soil fertility. Farm sizes large: Rich -- 15-40 acres, Poor -- 2-4 acres; cattle used for ploughing.</li> <li>, Crops: Maize (both food and cash), sorghum (food), pulses (beans, bambara nuts and particularly yellow grams — both food and cash), sunflower (cash), onions (cash) and some bulrush millet (food). Also some finger millet (cash), wheat (cash, esp. in NE).</li> <li>, Rainfall: 600 - 650 mm.</li> <li>, Creamy, loamy soils with some dark cracking soils in the depressions.</li> <li>, Medium herd sizes — &gt;30 head of cattle per rich household, borrowing or renting cattle common.</li> <li>, Vegetation: Mixture of Acacia bushland, grassland and some woodland common.</li> <li>, Southern part (higher elevations) of Kirumi division, most of Kisiriri division (except rim of NW lowlands), the eastern quarter of Shelui division and the whole of Kinyangiri and Nduguti divisions in Iramba District. The northern half of Ilongero and Mtinko divisions in Singida Rural district.</li> <li>, The largest zone, having 83 villages and approx.215,000 people (22% of population within assessment area).</li> </ul>

VI	Peripheral Sandy Plains	<ul style="list-style-type: none"> <li>, Some poor soils, as in Zone VII below, but larger numbers of cattle and beekeeping a major activity.</li> <li>, Crops: Sorghum and bullrush millet (food), sunflower and finger millet (cash) with some groundnuts (cash and food).</li> <li>, Rainfall: 500 - 650 mm.</li> <li>, Livestock: Medium herd sizes: Rich -- &gt;30 head of cattle, borrowing of cattle very common among the poor, for milk and manure. Some large herds belonging to Wasukuma herdsman.</li> <li>, Honey, a key feature of this zone, together with higher livestock numbers.</li> <li>, Vegetation: Bushland with some Itigi Thicket</li> <li>, Western third of Ihanja, most of Ikungi Division and parts of Ntuntu ward, Mungaa division, Ngimu ward, Mgori Division in Singida Rural Division; Sanjaranda Ward, Itigi Division and Aghondi ward, Manyoni division in Manyoni District. Also Kwa Mtoro and Farkwa divisions in Kondoa district, Dodoma Region.</li> <li>, A large zone, comprising 74 villages and approx. 130,000 people (13% of population within assessment area).</li> </ul>
VII	Sandy central plains	<ul style="list-style-type: none"> <li>, One of the least fertile areas in the region, sandy soils requiring manure for fertiliser. Some lowland patches of loamy soils.</li> <li>, Crops: Millet and Sorghum (food), sunflower and finger millet (cash).</li> <li>, Rainfall: 500 - 600 mm.</li> <li>, Livestock: Low holdings— &gt;20 for a rich family — borrowing cattle for milk and manure very common among the poor.</li> <li>, Vegetation: Bushland and grassland</li> <li>, Southern half of Ilongero and Mtinko divisions, western two-thirds of Mungaa Division, northern third of Ikungi Division, eastern third of Ihanja Division and eastern half of Sepuka Division in Singida Rural District; Singida Urban District except for the town itself and larger market centres.</li> <li>, A large zone, comprising 92 villages and approx. 210,000 people (22% of population within assessment area).</li> </ul>
IX	Manyoni Highlands	<ul style="list-style-type: none"> <li>, Mixed soil types; some sandy and acidic, most quite fertile loam and sandloam. Low population density. Rainfall somewhat unreliable.</li> <li>, Mixture of pure farmers and agro-pastoralists, the cycle of farming based on shifting cultivation. People inhabiting the area from many different tribal groups, notably Wagogo, Wanyaturu, Wasukuma, Wanyamwezi, Wakimbu and some Taturu (agro-pastoralists). Ox-ploughs rarely used.</li> <li>, Crops: Sorghum and millet (food), maize (food and cash), cassava (food), bambara nuts and beans (food and cash), groundnuts (cash), cotton (cash, but abandoned after 1996 because of poor market), sunflower (in some areas, since 1997), tobacco (important new cash crop).</li> <li>, Rainfall: High, 600 - 850 mm</li> <li>, Livestock: Significant among agro-pastoralist communities, &gt;30 cows for the richest.</li> <li>, Honey, especially in the west and south, an important activity.</li> <li>, Vegetation: Grasslands, bushlands, thicket and Miombo woodland.</li> <li>, Highlands of Kilimatinde and Nkonko Divisions, Manyoni Division and Ipande and Doroto wards, Itigi Division, in Manyoni district.</li> <li>, A medium-sized zone, comprising 27 villages and approx. 52,000 people (5% of population within survey area).</li> </ul>

X	Bahi Paddy Growing Area	<ul style="list-style-type: none"> <li>, Similar to Wembere, Zone I. Lowland, black cracking soils, flat topography, with rice an important cash and food crop. Some fishing activities and livestock important.</li> <li>, Vegetation — similar to Zone IX, but with more scrub and swamplands.</li> <li>, Kintinku division in Manyoni, extending into Bahi in Dodoma Rural district, Dodoma region.</li> </ul>
XI	Bahi Rift Lowlands	<ul style="list-style-type: none"> <li>, Similar to the Bahi Paddy Growing Area (Zone X), but with greater herd sizes and far less paddy.</li> <li>, Vegetation — same as Zone X, but with more scrub and swamplands.</li> <li>, Majiri and Sasajila Wards in Kilimatinde division, Sanza ward in Nkonko Division in Manyoni district, extending into Dodoma Rural district, Dodoma region.</li> </ul>
XII	Miombo Tobacco Lands	<ul style="list-style-type: none"> <li>, Reddish-brown soils with dark patches in valleys and depressions. Population clustered in two wards. Tobacco the biggest cash crop (requiring high-cost inputs but producing high incomes), the presence of seasonal labourers and beekeeping an important activity.</li> <li>, Vegetation: Miombo woodland and forests, similar to Tabora region.</li> <li>, SW Itigi division (Mgandu and Rungwa wards) in Manyoni district. Extends well into Sikonge district, Tabora region.</li> </ul>
XIII	Pastoralists	<ul style="list-style-type: none"> <li>, Mostly Barbaig people, although some Taturu, Wasukuma and Wagogo practice this lifestyle.</li> <li>, People move with their herds (in search of good pasture and water sources).</li> <li>, Generally, this zone is superimposed on Zones VIII and IX, stretching from Kwa Mtoro Division in the north to Nkonko Division in the south.</li> <li>, Herd sizes ranging from large — &gt;50 up to 800 head of cattle — to quite small — 10 to 30 head for the poorer families. Livestock may be 'loaned' but the borrower may sell animals to obtain needed commodities.</li> <li>, Households may keep sizeable farms (up to five acres) although most who farm have 1 to 4 acres. Crops limited to cereals (maize and sorghum) as well as a few pulses, farming by hand, although casual labour often employed.</li> <li>, Some population movement from highlands (wet season) where farms are located, to the lowlands such as Bahi Swamp area (dry season).</li> </ul>
U	Urban/Peri-urban Centres	<ul style="list-style-type: none"> <li>, Singida Town, suburbs and nearby villages.</li> <li>, Market centres.</li> </ul>

## Wealth Groups Within Each Zone

The differences between the zones in Singida Region are not huge. In Zones V and VII, as wealth increases so do the number of cattle owned and the number of acres cultivated. The main difference between the zones is in the actual number of cattle owned and how this is associated with the acres cultivated. Livestock borrowing practices also differ somewhat: in Zone VII it is essential to have access to manure for repeated cultivation of sandy soils, increasing the tendency for borrowing cattle. In Zone V, with its more loamy soils, manure is less important and, although oxen are used for

ploughing, borrowing cattle is not the only means of obtaining access to draught power<sup>9</sup>.

Unlike Zones V and VII, Zone IX and to a lesser extent Zone VI have a mixture of people within each village from different tribal and cultural backgrounds. Access to farming land is also much less restricted. The number of cattle owned and the number of acres cultivated therefore do not necessarily increase in tandem as wealth increases. In both zones it is possible to have a large farm without owning cattle. In Zone VI, those who fall into this category depend heavily on communal and casual labour, funded by beekeeping and crop sales, for their increased farm size. In Zone IX, it is possible to have a large farm without owning cattle because manure is not necessary (even in areas with sandy soils arable land is plentiful so farmers can shift or rotate their fields rather than manuring) and ploughing is not common. These two zones have a more complicated wealth breakdown than the other zones, and also have 'floating' pastoralist populations.

In the following sections, it must be borne in mind that the figures for herd and farm sizes given are intended to reflect the baseline year (1996/97 -- see section on Zone VII for explanation), and do not necessarily represent the current situation.

### **Zone VII - The Central Sandy Plains**

The distinguishing features of this zone are the relatively high population densities (limiting expansion into new areas) and the sandy soil (with low fertility), which makes the cyclical manuring of fields essential. For this reason, up to 95% of the households in a village normally have a small herd of cattle, even if they are acquired on loan. The more animals a farmer has access to, the better the fields are fertilised, and the higher the yield achieved in any given season.

Due to the importance attached to livestock husbandry, it is natural that livestock, and especially cattle ownership, should be the prime indicator of wealth in this zone, and that farm sizes should increase along with herd size. The intensity of the farming in the area and the occurrence of droughts mean that it is difficult to build up herds to a point where a household no longer needs to farm; numbers are checked by pasture availability and the need to sell in one of the frequent bad years.

The system of loaning cattle provides benefits on both sides: the borrower benefits from the manure and milk produced by the cattle, while the loaner benefits from the herding and grazing land provided by the borrower and from splitting up their herd (reducing the risk of disease).

**Table III - Zone VII Wealth Breakdown**

	Very Poor	Poor	Lower Middle	Middle	Rich
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<sup>9</sup> Interviewees explained that the rich often pay for casual labour by ploughing their 'employees' fields.

<b>Livestock holding</b> (shoats roughly equal to cattle)	None & do not borrow	No cattle— but borrow; may own shoats	1-5 cattle & borrow	6-20 cattle	>20 cattle
<b>Land cultivated</b>	1-2½ acres	1- 3 acres	3-4 acres	3-5 acres	>5 acres

Villagers identified four different wealth groups, based on ownership of cattle, but then added a fifth, dividing the poor group into those who borrow cattle (the ‘poor’) from those who do not (the ‘very poor’). This last group was reckoned, on the whole, to be the smallest. It may contain the weakest and non-typical households, but it comprises mostly ‘normal’ families.

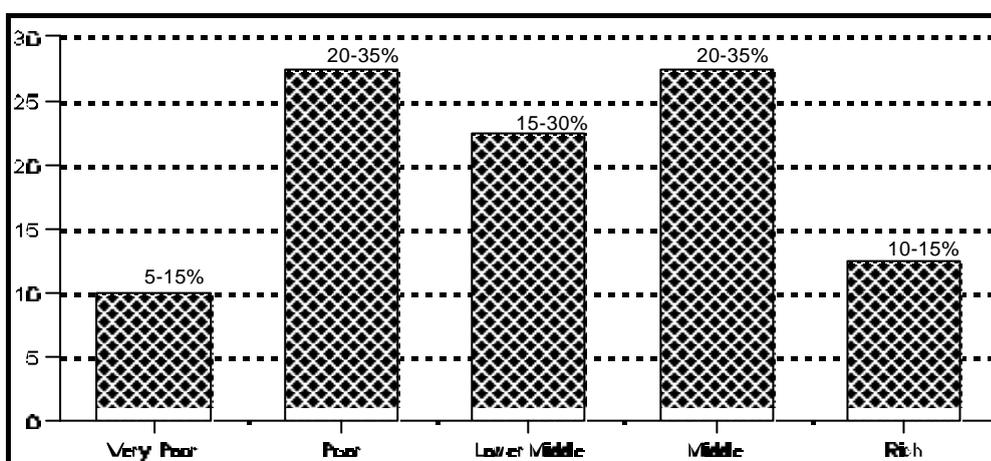


Figure 3 - Zone VII Wealth Breakdown: Percent of Households

Note that the proportion of households in the middle group is quite high and comprises a large range of ownership: 1-5 cattle in the case of the ‘lower middle’ and 6-20 in the case of the ‘middle’.

### Zone V - The Iramba Plateau

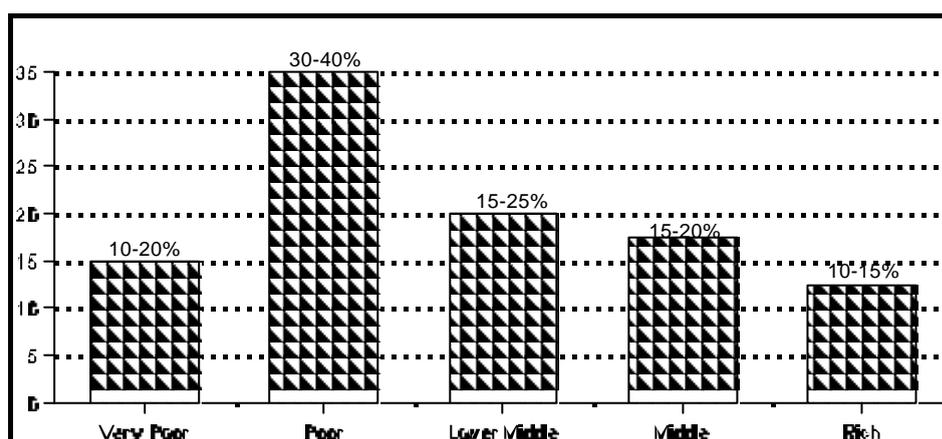
The important features of Zone V are the large farm sizes, especially for the better off wealth groups, as well as the somewhat larger herds. Livestock husbandry is important, as in other areas, to provide a hedge against periodic crop failure (through sale and exchange mechanisms) and as a direct source of food (milk and meat) and, most importantly, as an aid to cultivation through draught oxen. Cattle are less important as a source of manure.

As in Zone VII, descriptions of wealth are primarily based on cattle ownership and, linked to this, on the size of land cultivated. The proportion of households not borrowing or owning cattle is higher in this zone than in Zone VII, although that of households with five cattle or fewer is smaller. The reason for the former is that having access to cattle is not as important in this zone (because manure is not essential) and therefore the benefits of milk or having access to plough oxen are offset by the extra time required to tend the animals. Poorer farmers explained that the wealthy may plough one’s land in return for looking after their cattle (but only after their own land was finished first, which was usually too late) and ploughing was more easily obtained in exchange for doing some labour directly

for the wealthy.

**Table IV - Zone V Wealth Descriptions**

Wealth Characteristic	Wealth Group				
	Very Poor	Poor	Lower Middle	Middle	Rich
<b>Livestock holding</b>	None & do not borrow	0-5 cattle and borrow; 0-5 shoats	5-15 cattle; >5 shoats	15-30 cattle; >5 shoats	>30 cattle; >5 shoats
<b>Land cultivated</b>	2 acres	3-5 acres	4-8 acres	7-10 acres	15-40 acres



**Figure 4 - Zone V Wealth Breakdown: Percent of Households**

### **Zone VI - The Peripheral Sandy Plains**

This zone crosses the border into Dodoma Region and includes Kwa Mtoro and Farkwa divisions of Kondoa District.

Zone VI differs from the other zones in three respects: It has the lowest rainfall, the existence of virgin bush and forest close to the villages allows for extensive beekeeping, and greater numbers of livestock are kept. Soils can be less fertile, requiring manure as in Zone VII but land is also more abundant. This zone also has a larger percentage than Zone V or VII of households without any livestock and it is honey that makes the big difference, boosting incomes and allowing some farmers to purchase manure and hire casual labour for larger farms, without access to cattle. This latter group of 'less poor' farmers is not present in all villages and tends to be found more on the Dodoma side,

where soils are a bit more fertile.

**Table V - Wealth structure of Zone VI: the Peripheral Sandy Plain**

	Very Poor	Poor	Less Poor	Lower Middle	Middle	Rich
<b>Livestock holding</b>	None & do not borrow	0-5 cattle & borrow	None and do not borrow	6-10 cattle	10-30 cattle	>30 cattle
<b>Land cultivated</b>	1-3 acres	2-5 acres	3-6 acres	3-5 acres	4-6 acres	5-10 acres
<b>Percentage</b>	5-10%	20-30%	0-20%	15-25%	20-25%	10-20%

Geographically, this zone takes in one of the largest areas, stretching from Kaselya in Iramba district to Farkwa in Kondo; so it is not surprising that there are some local variations. In particular, the Bubu River in Farkwa allows extensive fishing to be carried out for three months of the year, while the people on the western side of Singida concentrate more on larger cattle herds. Nevertheless, with beekeeping and larger herd sizes the common theme, livelihoods are quite similar, justifying the amalgamation of the whole area into one zone.

The people living in this zone are primarily from the Nyaturu and Sandawe tribes, although there are substantial members of Barbaig clans who are part of the 'floating' pastoralist zone.

### **Zone IX - Manyoni Highlands**

This zone was initially based on the vegetation 'Itigi Thicket' found along the border between

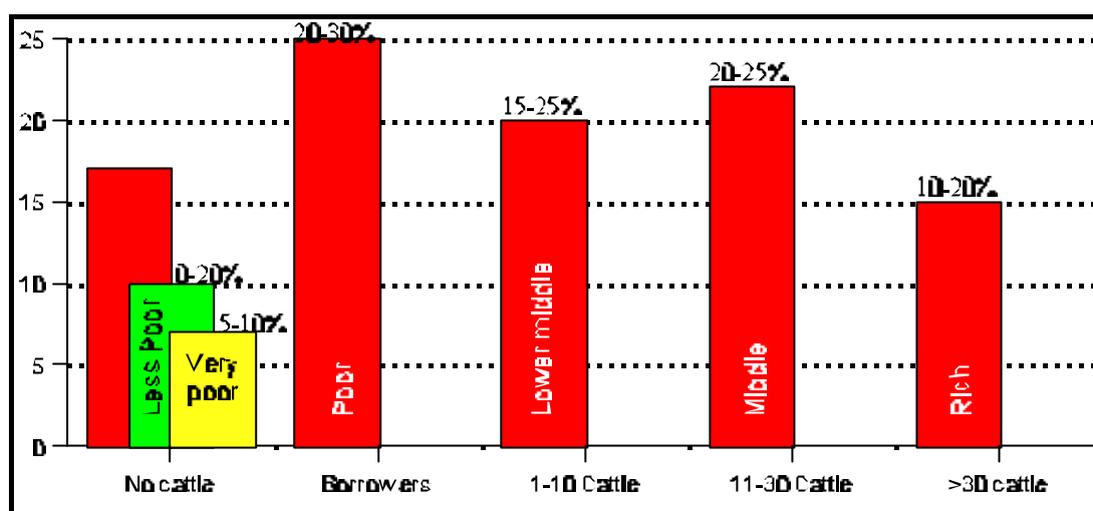


Figure 5 - Zone VI Wealth Breakdown

Manyoni and Singida Rural districts (also an agro-economic zone, Conyers<sup>10</sup>) and it was thought that the acidic soil and low population density would mean a somewhat different livelihood system. In fact, the area north of the railway line (except Mkwese village and Makuru ward in the northeast corner of Manyoni district) was found to be part of Zone VI, while that to the south of the line was somehow composite and transitory. There did not seem to be the usual simple relationship between wealth and cattle ownership (linked to land cultivated), as many households without any cattle had substantial farms and significant incomes. It was also found that many villages had received considerable numbers of newcomers in recent years, particularly Nyaturu people from Singida District, Sukuma from Shinyanga, Barbaig from Arusha, Nyamwezi from Tabora, Kimbu and Nyachusa from Mbeya and even Hehe from Iringa. This is on top of the more long-term population of Gogo and Taturu people. With so many recent arrivals from such diverse sources, there exists a tremendous variation in the socio-economic breakdown and in agricultural and other practices. Therefore, in order to define wealth, it was necessary to examine the kind of activities being undertaken by different groups.

It became apparent that there are four basic wealth/activity groups: farmers, agro-pastoralists, pastoralists and the poor from all groups. However, in order to obtain a pattern that depicts the relative proportions of each group, it was found to be best to group the pastoralists, who are present in large numbers in some places and not at all in others, as a discrete 'floating' food economy zone (Zone XIII) that stretches across both Zone IX and Zone VI<sup>11</sup>.

<sup>10</sup>D. Conyers, *Agro-economic Zones of Tanzania*, The University of Dar-es-Salaam, Bureau of Resources Assessment and Land Use Planning, Research paper No. 25, August 1973.

<sup>11</sup>Although certain types of activities may be associated with certain tribes, this text does not imply that those activities are limited to a particular tribe, e.g. more 'pastoralist' communities such as the Barbaig people, may, and very often do, practise very intensive agriculture, just as members of, say, the Sukuma tribe may also be wholly taken up with herding cattle.

Within the groups engaged in farming, four main categories could be distinguished based roughly on farm sizes. Within each of the three lowest main categories (poor, lower middle and middle) there are two sub-categories, essentially those with and those without cattle. Arranging all seven sub-categories according to income levels, it becomes clear that in this zone there are two possible routes to prosperity — acquisition of assets in the form of livestock or expansion of farm size. This is possible in Zone IX because of the availability of large tracts of relatively fertile land (and hence the lack of dependence on farmyard manure, unlike in Zone VII and VI, where cattle keeping is essential).

**Table VI - Wealth Description of Zone IX, the Manyoni Highlands**

Main Category L	Poor		Lower Middle		Middle		Rich (large herds +large farms)
	Sub- Categories L	Very Poor (small farms only)	Poor (with borrowed cattle)	Less Poor (bigger farms +cash crops)	Lower Middle (own cattle)	Middle (large farms +cash crops)	
<b>Land cultivated</b>	1-3 acres	2-4 acres	3-6 acres	3-7 acres	6-10 acres	5-10 acres	7-15 acres
<b>Approx. house-hold Income (=6)</b>	c. Tshs. 72,000 pa	c. Tshs 80,000 pa	c. Tshs 120,000 pa	c. Tshs c.250,000 pa	c. Tshs 300,000 pa	c. Tshs 450,000 pa	c. Tshs 600,000 pa
<b>Livestock holding</b>	None	Borrowed	None	1-10 cattle	None	10-30 cattle	>30 cattle
<b>Percentage</b>	10-25%	0-15%	15-30%	10-20%	5-15%	5-15%	0-10%

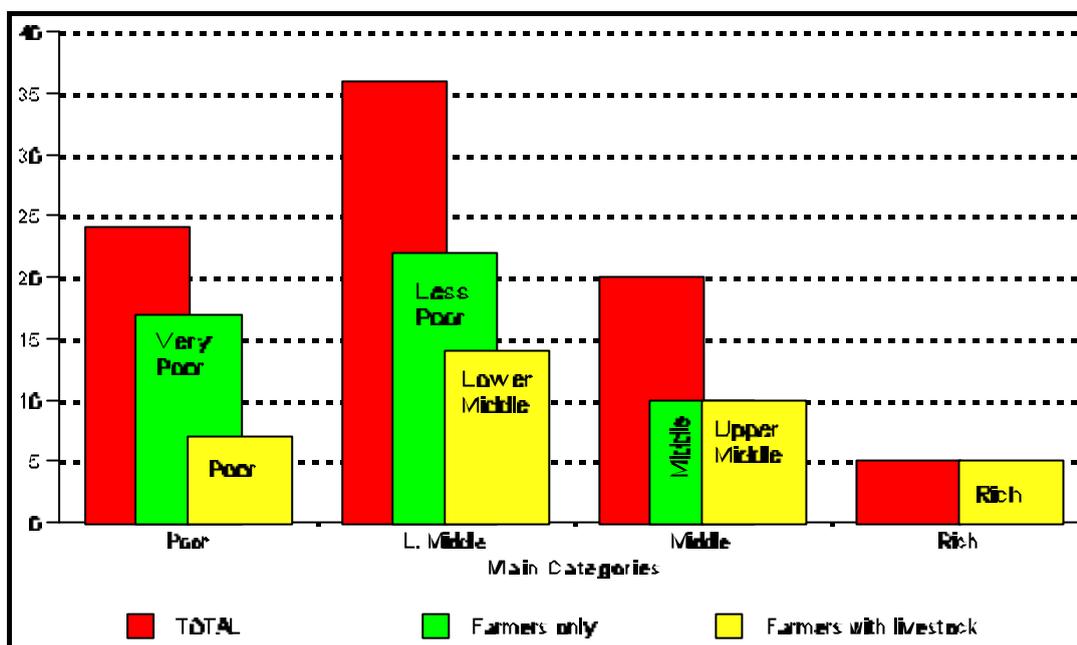


Figure 6 - Zone IX Wealth Breakdown: Percent of Households

## ZONE VII: Singida Central Sandy Plains

In this section, livelihood patterns for different wealth groups in Zone VII will be described: first for a 'normal' year (1996/97) and then for a bad year (1998/99). Finally, a projection will be made for the likely effects of this year's poor crop production (1999/00).

For the purposes of the analysis which follows (of the 'typical' picture for each wealth group), specific points on the wealth spectrum for Zone VII (see Table III) are illustrated:

- , the 'very poor' do not own or borrow any livestock (apart from chickens) and they cultivate about 2 acres;
- , the 'poor' do not own livestock but they borrow about 5 cattle, and cultivate 2-3 acres;
- , the 'lower middle' both own and borrow cattle (about 5-7 total), own a similar number of shoats<sup>12</sup>, and cultivate 3-4 acres;
- , the 'middle' own 10 cattle and a similar number of shoats, and cultivate 4 acres; and
- , the 'rich' own 30 cattle (15 of which are loaned to other groups) and cultivate about 7 acres. (Note that this is the

<sup>12</sup> Shoats = sheep + goats

top group, but does not represent the very richest households, who can own more than 1000 cattle but are extremely few in number.)

### **Sources of Food in a 'Normal' Year**

The term 'normal year' is defined as the type of year which occurs most frequently. In Singida Region, this tends to be a 'moderate' year: one which is not good and not bad, but somewhere in between. The most recent 'normal' year was 1996/97, running from mid-to-late March in 1996 (the time of the start of consumption of green crops from the field) to the same time in 1997.<sup>13</sup>

#### *Own crops*

The main food crops grown in Zone VII are sorghum, bulrush millet, maize, sweet potatoes, beans, and cowpeas. In most areas in this zone bulrush millet and sorghum are planted in larger quantities than maize because they have better yields in the sandy soils and are more drought resistant. However, significant quantities of maize are planted in some areas in the zone.<sup>14</sup>

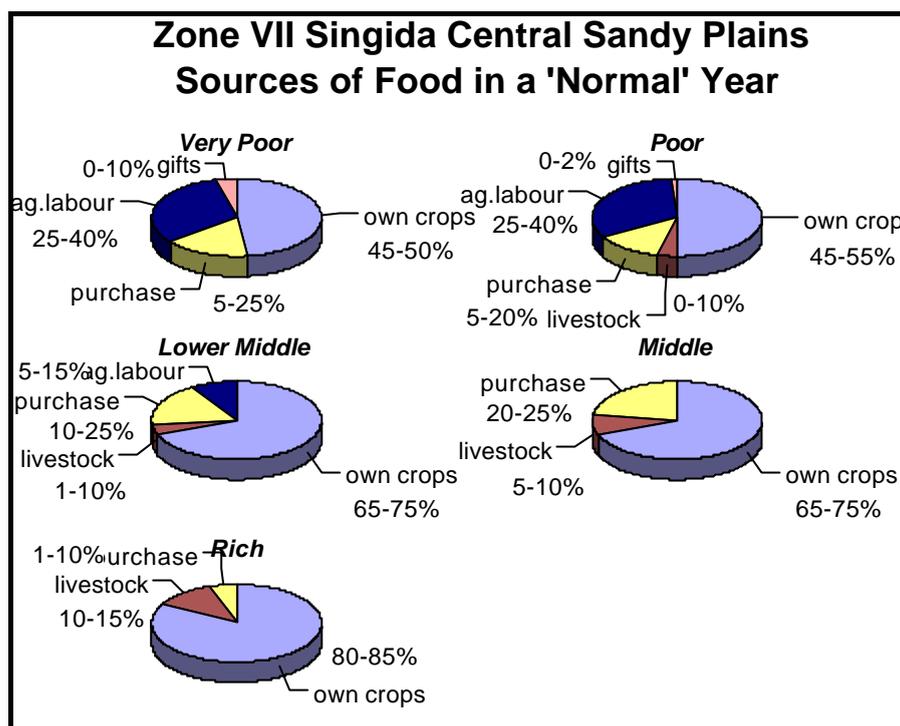
Manure is an essential input for crop production in this zone. This is one reason why the 'very poor' (those who do not borrow livestock and who cultivate small areas) is a small group in this

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<sup>13</sup> Note that this is a different 'year' from the one used by the Ministry of Agriculture, which runs from the start of the cultivation season in one year to the same time in the next.

<sup>14</sup> This year more maize was planted because people observed that maize was less damaged last year by pests. But given the circumstances this year (inadequate and irregular rain) it may have been wiser to plant normal sorghum and bulrush millet fields.

zone:  
because  
everyone  
who can  
borrows  
cattle for  
manure.  
Fields are  
normally  
manured  
once every  
three years.  
In a year of  
'moderate'  
crop  
production, a household expects a manured acre to yield 5-6 sacks of grain.

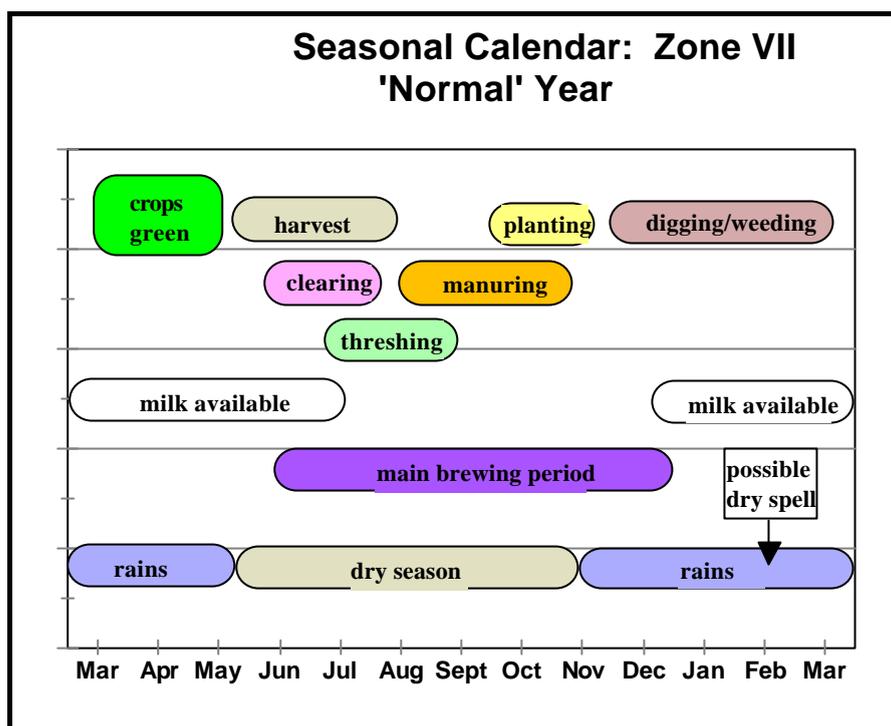


**Figure 6:** Each pie represents annual food requirements for a typical household in the wealth group. A figure of 1900 kcals per person per day is taken as the average daily calorific requirement.

Cultivation is primarily done by handhoe. Ploughing is rare in this zone and where it does occur it is in lowland areas. The sandy soils which are predominant are not ploughed. Most commonly, crops are planted before the rains start in sandy soils and digging (piling up soil around the plant) occurs after planting and after the rains start

The 'very poor' and 'poor' consume a large part of their production green (maize and pulses straight from the field before the main harvest), accounting for upto 2 months of consumption. This reduces their overall harvest because they tend to start consuming green before the crops have reached full maturity. Other wealth groups can afford to wait for the harvest and therefore consume a smaller quantity of green crops. The 'rich' in particular only eat green crops 'for taste'.

The 'crops' indicated in the food pies represent the food that households consume from their crops after sales and other uses (such as gifts, brewing, casual labour, communal labour and seeds). For more detail on crop sales see the 'sources of income' section below. The proportion of food obtained from own crops increases with wealth, from roughly 45-50% of minimum annual needs for the 'very poor' to 80-85% of needs for the 'rich'.



**Figure 7:** (Note: this seasonal calendar is not significantly different in the other *Milk/meat* zones.)

The 'poor' and 'lower middle' tend to have one lactating cow in a 'normal' year, the 'middle' have two and the 'rich' have three. Most cattle calve at the start of the rainy season. Milk sales are most common in the rainy season (January - May), when milk production is greatest. About ½ a litre per day is typically sold per lactating cow, although this varies considerably from one place to another in the zone, depending on access to markets.

The following table outlines the lactation periods and milk yields which have been used in this analysis:

<i>Milk Yields in a 'Normal' Year*</i>	
<i>Lactation period</i>	<i>Milk yield per cow per day</i>
January - May	1.5 litres
June - August	1 litre

\* Each figure in the table represents the mid-point of a range.

Only the 'middle' and 'rich' tend to slaughter animals for home consumption – about 2 shoats per year on special occasions. Chicken consumption is common in all groups (increasing with wealth).

#### ***Agricultural labour***

'Very poor' and 'poor' households obtain up to 40% of their food needs through labour exchange in the form of

agricultural labour.<sup>15</sup> Payment is made in kind (food) or in cash, usually depending on the choice of the labourer in a 'normal' year. The pie illustrates payment in food but this could just as equally be payment in cash, illustrated as income in the income pie (see below) and additional purchase of food in the food pie above. Payment in cash tends to be related to the current market value of a certain quantity of food. For example, someone digging an acre usually receives two tins of grain or cash equivalent; payment for weeding is less. These are the two most important agricultural activities and they conveniently occur at the most difficult time of year for 'very poor' and 'poor' households, in the months before the next harvest. Other agricultural activities include: clearing (new land), spreading manure, cleaning and gathering stalks (on old fields), planting, harvesting, and threshing. Migration in search of agricultural labour or other work is not common from most areas of this zone in 'normal' years.

### *Market purchase*

All wealth groups except the 'rich' rely on the purchase of grain to make up their remaining food needs in a 'normal' year, ranging up to 25% of annual food needs.<sup>16</sup> Other foods such as sugar, vegetable oil and meat are purchased in small quantities, increasing with wealth (see expenditure section).

### *Gifts*

Gifts of food are a difficult topic to unravel at village level: the 'rich' insist that they give gifts freely (as opposed to payment for labour), while the majority of the 'very poor' and 'poor' insist that they are given nothing freely. However, in a few interviews the poor groups admitted to receiving small quantities of food as gifts and, consequently, gifts have been included in the 'normal' year food pies (about 3 tins per 'very poor' household and 1 tin per 'poor' household). The 'destitute' (at the bottom of the 'very poor' group) benefit most from, and to a certain extent rely on, gifts (as in any society).

Gifts of food are in addition to the cattle which are loaned to the 'poor' and 'lower middle' and which could be classified as gifts. Both sides benefit from the arrangement: those who borrow obtain milk and manure, while those who lend have access to more grazing land and benefit from having their herd split up (reducing the risk of the entire herd being hit by disease).

### *Wild food*

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<sup>15</sup> This is different from communal labour, which is also widely used in the region. 'Payment' for communal labour is usually just a meal and beer. It is largely reciprocal, with almost all wealth groups both doing and 'employing' communal labour.

<sup>16</sup> It is important to point out, however, that if the 'very poor' were paid in cash for their casual work, then the purchase section of their food pie would be 45-50%.

Small quantities of various wild foods (mainly fruits and leaves)<sup>17</sup> are available in the rainy season. They do not make a significant contribution to household food requirements in a 'normal' year.

### Sources of Income in a 'Normal' Year

Because the purchase of food is the means by which non-rich wealth groups supplement their other sources of food, an understanding of food security in the zone cannot be complete without an understanding of income levels and sources and expenditure patterns. For 'middle' and 'rich' households, income from livestock (both sales of animals and sales of products) is the most important source of income, supplemented by smaller amounts of income from crop sales, brewing and trade. In contrast, livestock sales make only a small contribution to the incomes of 'very poor', 'poor' and 'lower middle' households, for whom brewing and casual labour are more important.

For the specific points illustrated on the wealth spectrum in Figure 8 below, a 'very poor' household has an annual income (at 1996/97 prices) of about TSh 50-55,000; a 'poor' household has an income of about TSh 60-75,000 per year; 'lower middle' households of about TSh 145-160,000 per year; 'middle' households of about TSh 180-200,000 per year; and 'rich' households of about 380-440,000 per year.

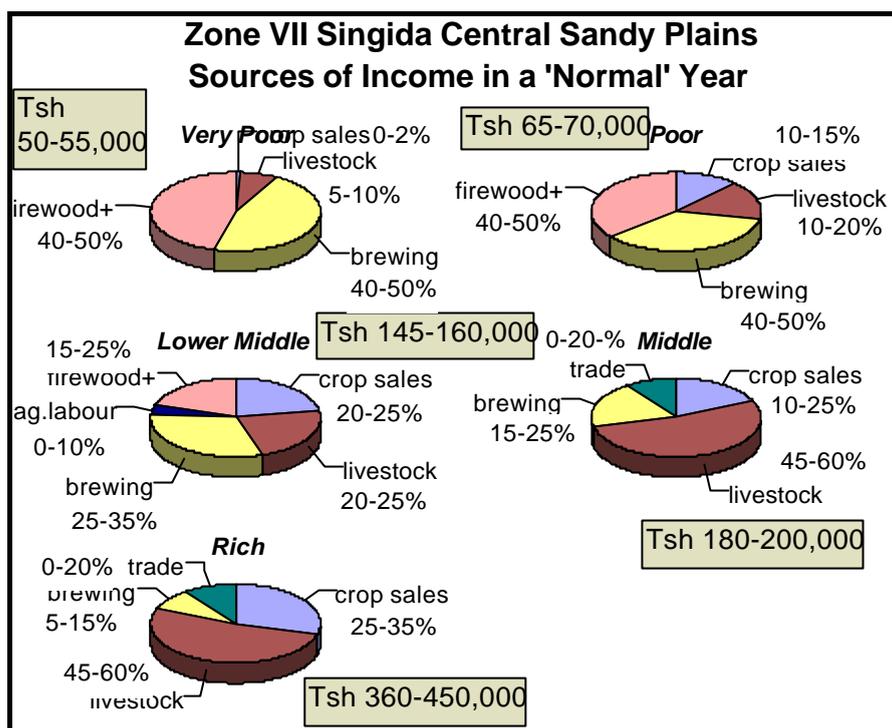
#### *Crop sales*

Crop sales increase with wealth: the 'very poor' sell a maximum of a couple of tins of grain in a 'normal' year (and many do not sell any crops at all), representing just 0-2% of their total income, whereas the 'rich' sell roughly 5 sacks each of grain, sunflower and finger millet, representing 25-35% of their income. Sunflower, finger millet and groundnuts are the main cash crops in the area.

The timing of sales varies by wealth group. The poorer groups tend to sell at harvest time, or soon thereafter, when prices are low. They do not sell because they have a 'surplus'; they sell because at that time of year they have a number of expenses (eg tax and school fees) and selling crops may be one of the few ways in which they can obtain cash. The 'rich' can afford to sell later in the year, often in the months before the next harvest when prices are higher, because they have other means of obtaining income at harvest time (eg livestock sales, as this is when livestock prices are highest).

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<sup>17</sup> *Sasati, laday, suna, and furu* (fruits); *isoa and masingano* (tubers); *oyoga* (mushrooms).



**Figure 8**

### *Livestock sales*

Livestock sales increase with wealth and are a particularly important source of income for both 'middle' and 'rich' households. The 'rich' tend to sell three cattle and four shoats per year, while the 'middle' sell one and three respectively. In 'normal' years the adult cattle which are sold are usually replaced through the purchase of calves. Households avoid selling females of reproductive age. Both groups also sell a number of chickens, about 1-2 per month on average (Singida is a chicken-exporting region).

The 'very poor' and 'poor' typically only own and sell chickens (although some in the 'poor' group own a few shoats). The 'lower middle', although they own 1-5 cattle, tend not to sell cattle in a 'normal' year. On average they sell 3-4 shoats and about 10 chickens in such a year.

### *Livestock product sales*

As noted above, milk sales are most common in the rainy season (January - May) for all groups except the 'very poor' (who do not have access to cattle). About ½ a litre per day per lactating cow is sold, although this varies considerably from one place to another in the zone, depending on access to markets and on the number of people with fixed employment (eg teachers) in the village or nearby market centre. Some households also sell ghee but not in large quantities as this is mostly kept for own consumption.

### *Agricultural labour*

Agricultural labour has been described above and is shown in the food pie rather than the income pie for 'very poor' and 'poor' households because it is most common for labourers to be paid in kind rather than in cash.

### *Other casual labour (firewood+)*

There are a variety of 'other' sources of income which are pursued by 'very poor', 'poor' and 'lower middle' households. In locations near the bush, firewood, charcoal and construction pole sales are common. Firewood is sold by the person-load in small towns and market centres. Charcoal is usually sold in towns by the sack. Construction poles and bricks are produced by 'contract' (when a 'rich' person requests a certain number of poles or bricks). Different households tend to focus on different activities (i.e. most households do not obtain income from all of these activities in a given year). Migration in search of agricultural labour or other work is not common in 'normal' years.

Income from these various sources amounted to about TSh 20-30,000 per 'very poor' or 'poor' household in 1996/97.

### *Brewing*

In a 'normal' year almost every household brews and almost every household drinks (or rather the men and women within it drink), regardless of wealth group. The 'rich' tend to spend more than they earn from this income source, whereas the poorer groups on average earn more than they spend (although there are notable exceptions to this typical picture). Brewing is the primary means by which income circulates from men (who tend to sell the crops and livestock and to earn from agricultural or other casual labour) to women.

Each woman typically brews twice per month (often there is an organised rotating schedule), each time starting with a tin of sorghum and producing four buckets of brew. The profit rate in 1996/97 was about TSh 2,000 per brew (but this partly depended on the business sense of the brewer – some women succumb to too many requests for free 'tastes'). Apart from the 'rich' group, most women do not use their own sorghum production to brew. Rather, they tend to start with one or two tins of own production and then continue as a business: purchasing additional tins with the proceeds of the previous brew.

Brew is most available in the months after the harvest, when almost all women brew. The 'very poor' and 'poor' tend to stop brewing about six months after the harvest (November - December).

### *Trade*

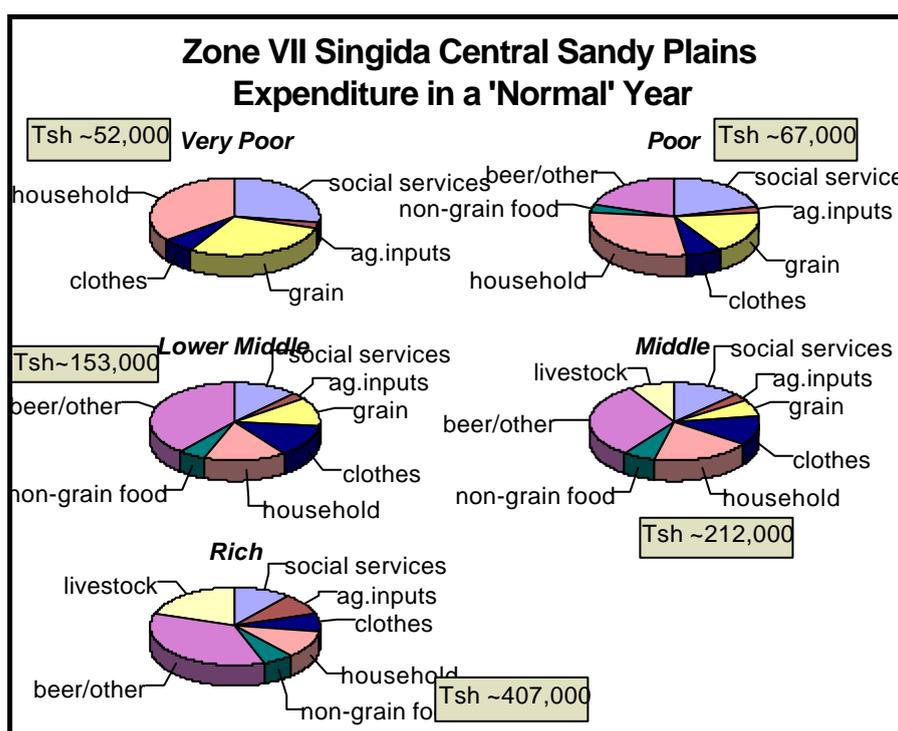
Petty trading tends to be an activity pursued by the 'middle' and 'rich' groups as they have the capital and bicycles. Some households transport crops in one direction (to town) and household items such as kerosene, sugar, and salt in the other, while others engage in small-scale livestock trading. This is not a major activity, but it is more common in this zone than in others because of a noticeable lack of small shops in most villages. In other zones most villages have a small shop which tends to monopolise this type of trading activity.

## Expenditure

Expenditure on grain decreases as wealth increases, from about 25-35% of income in the case of the 'very poor' to nothing in the case of the 'rich'.<sup>18</sup> In contrast, expenditure on non-grain food (sugar, oil and meat) increases with wealth, from next to nothing in the case of the 'very poor' to upto 10% for 'rich' households.

The category 'social services' includes tax, medical expenses, and the cost of sending two children on average to primary school. The absolute amount of money spent on clothes increases with wealth but it doesn't change much as a percentage of total income. Agricultural inputs are a significant expenditure only for the 'rich' as they employ labour and payment for labour has been included as a cash expense in this analysis (whether or not it is usually paid in food).

All households spend a certain amount of income on household items: soap, kerosene, grinding, utensils, salt, and lotion. The 'very poor' spend minimal amounts on these items (eg one bar of soap per month), yet they together make up the largest item of expenditure for this group.



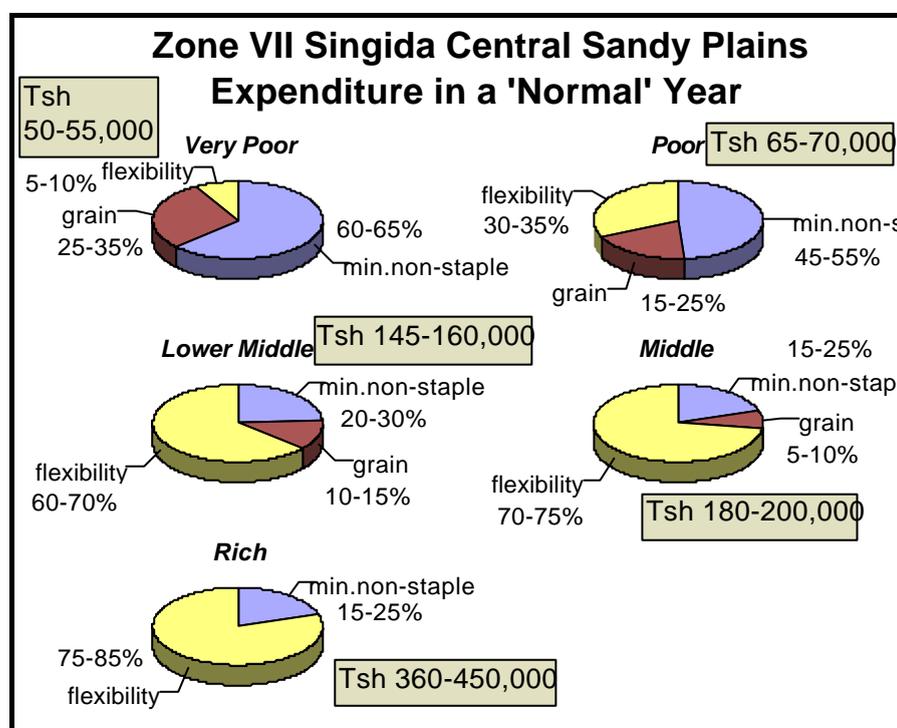
**Figure 9**

Expenditure

<sup>18</sup> Again, it should be pointed out that this percentage for the 'very poor' would be higher if income from agricultural labour was shown as cash rather than food, because then more food would need to be purchased.

on 'other' increases with wealth and includes investment in livestock and spending on beer (some households may prefer one over the other) and potentially increased spending on any of the other expenditure categories.

Figure 9 presents a picture for actual expenditure for the different wealth groups in a 'normal' year. Another way of looking at expenditure is to examine minimum food and non-food expenditure<sup>19</sup> and then (after making allowance for agricultural and livestock inputs) to compare the 'extra' cash that different wealth groups have available for discretionary, or non-essential, purchases (eg better quality food, larger quantities household items and clothes, more beer, or investment). This 'extra' cash has been labelled 'flexibility' in Figure 10 below and, as expected, 'flexibility' increases as wealth increases.



**Figure 10**

<sup>19</sup> Minimum food expenditure is based on a cheap basket of grain. Minimum non-food expenditure is based on interview information on the minimum 'acceptable' basket for poor households.

## Maximum Access to Food in a 'Normal' Year

Another way of comparing the sources of food and income and patterns of expenditure for the different wealth groups in a 'normal' year is to compare their maximum access to food. In addition to the sources of food outlined above, all of the sources of income have been converted into the food that they could buy in 'normal' years (excluding the money that is needed to purchase the minimum non-food basket). All of this food is shown as a percentage of annual household food needs. Figure 11 can be used to compare levels of poverty and wealth across the wealth groups.

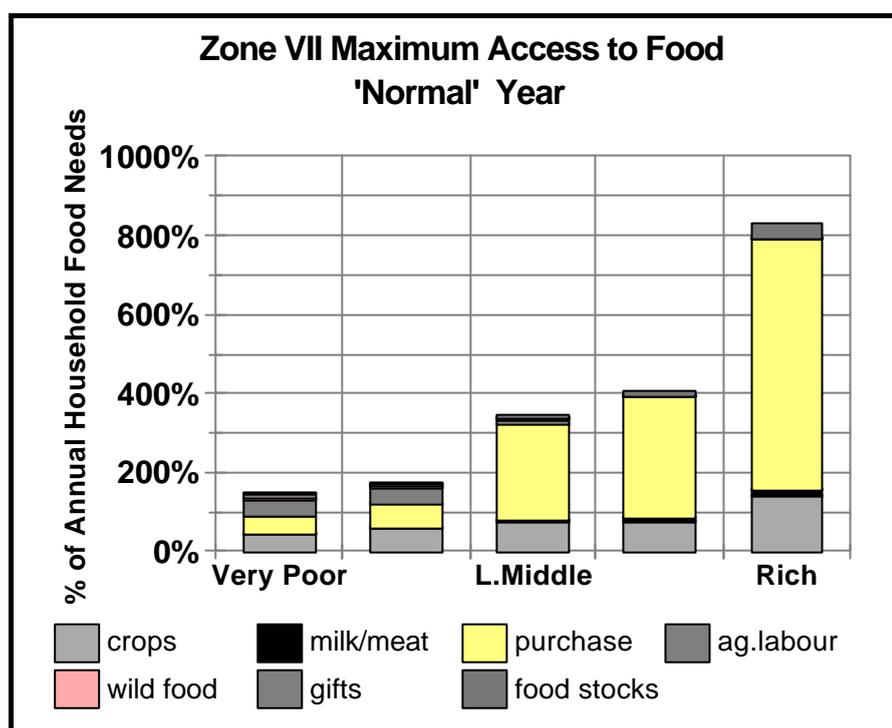


Figure 11

## Last Year: Crop failure due to heavy rains and pests

One of the strengths of the Household Food Economy Approach is that the results provide a basis for analysing the effects of a change in context compared to the baseline picture. The result should be a better understanding of the likely impact of change on the various groups within the population, and of the vulnerability of these groups to such a change.

The above sections have outlined a baseline picture of how the population in Zone VII of Singida Region survives in a 'normal' year. In order to assess the situation last year, it is first necessary to clearly define the 'problem' that households faced. This 'problem' can then be analysed in relation to how people survive in the baseline year, taking

into account any options that might exist for expansion of existing food and income sources, for the exploitation of new food or income sources, or for switching away from non-essential expenditure last year. Information on the strategies which households actually pursued last year has been obtained from interviews conducted with different wealth groups specifically about last year. This information is also essential for understanding the situation in the coming year (see next section).

### *Defining the Problem*

Singida Region experienced poor crop production during the agricultural season 1997-98. This was mostly attributed to an unprecedented infestation by green stink bugs combined with an invasion of quelea quelea birds which devastated both sorghum and bulrush millet fields just before harvest time. The maize crop was damaged less by pests but maize yields were reduced by water logging in the early stages of cultivation. The only crop which outperformed normal production levels was sweet potatoes. Once farmers observed that their grains had failed or performed poorly, they planted large areas of sweet potatoes and the yields were high but overall production was insufficient to fully counter the loss of other crops. Information on crop production by division last year versus the 'normal' year were obtained at district level from the Ministry of Agriculture.

According to this information, cash crop production was less affected by last year's problems. However, this may not reflect the true extent of the problem, as areas cultivated for these crops have been increasing steadily over the last few years. In other words, yields per acre may have been much lower than 'normal' although overall production was three-quarters of 'normal'.

Households had to survive for a longer than normal period between harvests due to the delayed and inadequate rains during the agricultural season 1998-99. This meant that the green harvest was late in 1999. Therefore the analysis of 'last year' presented here in fact covers the period from late March 1998 to late April 1999 (13 months).

Singida Region traditionally exports food. This created a problem last year because traders had to adjust to importing food from outside the region: finding markets to purchase at a price which enabled them to make a profit, given the costs of transporting the long distance to Singida on poor roads. The price of maize (for a time the only grain available in the market) was extremely high in the period November 1998 - March 1999. Over the year, the farm gate price of maize averaged more than three times its 'normal' year price in 1996/97. Farm gate prices last year were gathered by the SCF/TCRS relief food distribution project; farm gate prices for the 'normal' year were obtained during village-level interviews and were compared with official prices collected by the district-level Ministry of Agriculture.

For those who own livestock, livestock sales are the most common means of coping with bad times, whether the result of bad luck or illness during a 'normal' year or of generalised poor crop production in a bad year. Livestock prices were much lower than normal last year and, combined with the increased grain prices noted above, resulted in a significant decrease in purchasing power. Livestock prices last year versus the 'normal' year were obtained at district level from the Ministry of Agriculture.

Milk availability was slightly increased last year due to the lengthy period during which pasture was available as a result of the heavy and prolonged rains in the first half of 1998. Milk prices, however, remained roughly constant

from 1996/97, according to key informants.

The 'very poor', 'poor' and 'lower middle' had no option but to increase their search for agricultural labour and other casual work. Most work was found locally, but some people or households were forced to migrate in search of work in another region. The 'rich' made every effort to employ people, seeing this as a form of assistance (although they obviously also benefited from it). However, payment rates for agricultural work declined steadily during the year in terms of both food and the purchasing power of cash paid. Payment for other types of casual work (firewood etc) remained constant in cash terms, representing a large reduction of purchasing power.

Due to the relative unavailability of grain last year, brewing was reduced, and indeed by early 1999 there was reportedly no brew available at village level.

Relief food was distributed in the majority of villages in this zone between November 1998 and April 1999. The quantities of maize distributed varied considerably from village to village, from 15 kg to 63 kg per person, and averaged 48 kg per person. The food was targeted to the poorest 60-70% of the population through a community-managed distribution system which was widely regarded as effective. Most of the villages in the zone which did not receive food from SCF/TCRS were either close to Singida town (and hence had additional income-earning opportunities) or were close to Puma town (where a Catholic mission was distributing relief food).

In sum, the problem which occurred and which is analysed below for last year is as follows:

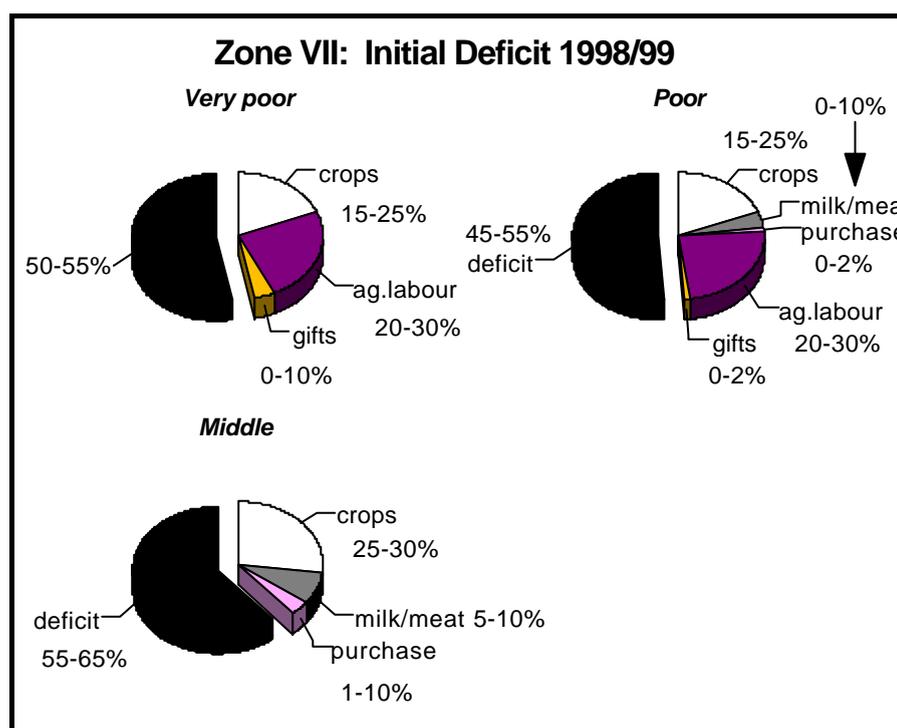
- , food crop production was roughly 40-45% of 'normal'
- , cash crop production (sunflower and finger millet) was three-quarters of 'normal'
- , the 1999 harvest was one month late
- , livestock prices were 60-65% of 'normal'
- , the minimum non-staple basket was 139% of 'normal'
- , cereal prices were 325% of 'normal'
- , milk availability was 116% of 'normal'
- , relief of 48 kg per person was provided to the poorest 60-70% of the population
- , brewing was roughly one-third of 'normal' in terms of quantity but nominal prices increased by about 45%
- , agricultural work was more available than 'normal', but payment rates were 80% of 'normal' in terms of food payment or cash purchasing power
- , other types of casual work were also more available than 'normal' but payment rates remained constant in cash terms.

In the following two sections, the effects of the problem as specified above are analysed in two sequential steps: first, the immediate deficit which results from the loss of food and income is described (the initial deficit); and second, the resources and options that households might rely upon to make up the deficit are explored (the response).

### ***The Initial Deficit***

In Figure 12 below, the initial food deficit ranges from 45-55% for 'very poor'/'poor' households to 55-65% for 'middle' households. This is a small difference, but 'middle' and 'rich' households were generally more affected by last year's problem because they rely more heavily on own crops as a source of food and livestock sales as a source of income normally; on the other hand, these wealth groups usually have a greater capacity to respond to a problem. It must be stressed that the term 'initial deficit' is not actually experienced as a period of deficit, but as the beginning of a process which involves planning and budgeting for the rest of the year.

The 'initial deficit' can be expressed in its component parts, including the loss of food from own crop production, from agricultural labour, and from purchase. This is illustrated in the following three figures, for the 'very poor', 'poor' and 'middle' groups.<sup>20</sup> The figures also illustrate the response of these groups last year, discussed in the section below.



**Figure 12**

<sup>20</sup> This analysis is also available for the other wealth groups.

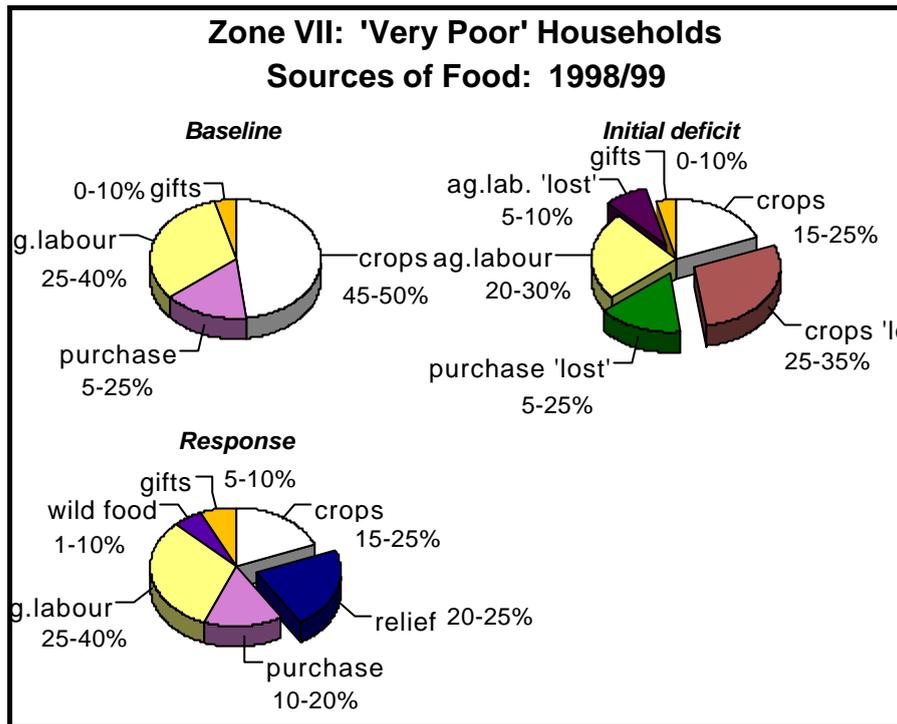


Figure 13

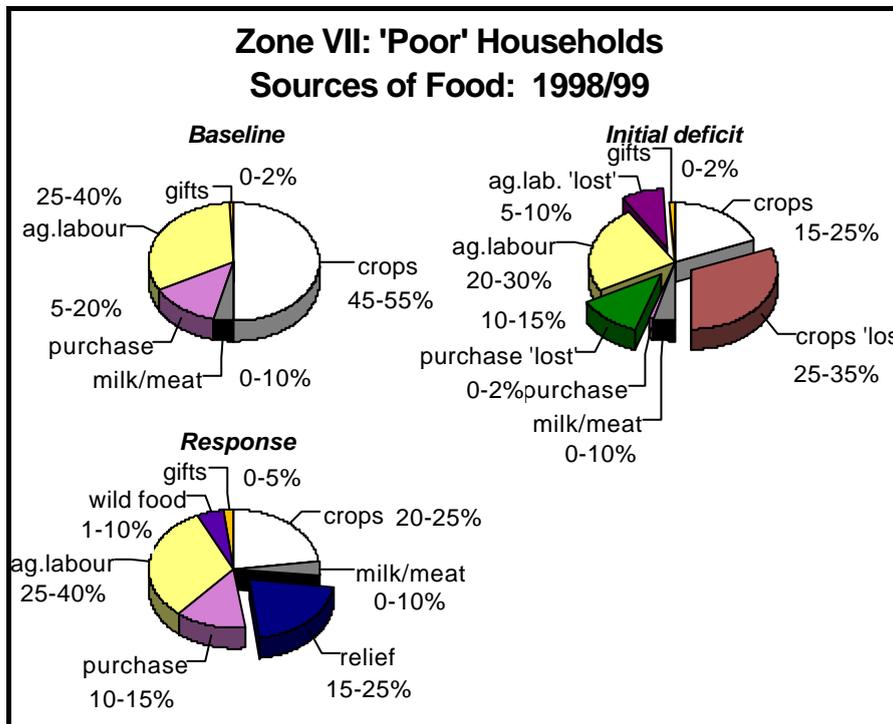
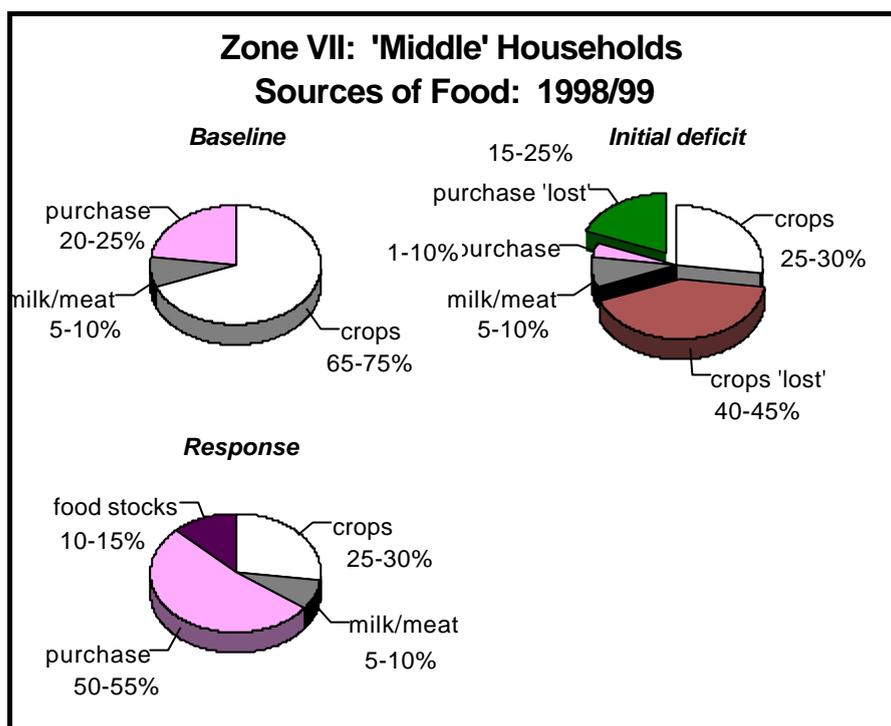


Figure 14



**Figure 15**

### ***The Response: How Did Households Cope?***

Last year was a very difficult year for households in all wealth groups, but people did survive.

Households employed a variety of strategies, most of which varied by wealth group. 'Very poor' and 'poor' households entreated the support of richer relatives and neighbours, receiving additional gifts, usually in the form of food, and expanded the quantity of agricultural labour and other casual labour that they did for food and income.

These two groups, and the 'lower middle', also gathered a number of wild foods. Some of these were gathered in large quantities, but because they were mostly green leaves and fruit the calories obtained were small. Only in a few areas was wild cassava available and even then in only small quantities.

'Middle' and 'rich' households increased livestock sales. The extent to which they were forced to sell unsustainable numbers of livestock primarily depends on whether they sold early, when livestock prices were relatively high and food prices relatively low, or on whether they sold late when the reverse situation in terms of prices existed. In reality, they probably did a bit of both, the late sales in particular being the result of the unexpected delay in the start of the 1999 harvest, which forced people to purchase more food than originally anticipated.

'Middle' and 'rich' households also usually have food stocks carried over from one year into the next as a precaution against bad years. The 'lower middle' may also have very small food stocks carried over, but the 'very poor' and 'poor' usually do not. Although the harvest of 1997 was officially declared to be poor in the area, in fact

most people at village level do not remember it as a particularly bad year and in some areas go so far as to describe it as 'normal'.<sup>21</sup> As a result, some food stocks were carried over into 1998.

Most households sell their grain crops in 'normal' years, but this practice was largely abandoned last year in order to conserve the relatively small quantities of grain that were harvested. Other crops were sold as normal, however, partly because they are not usually consumed (eg sunflower) and partly because they fetch relatively high prices compared to the food normally purchased (eg finger millet).

Figure 10 outlined the flexibility that households have in a 'normal' year in terms of their expenditure on non-essential items. One strategy which is employed by households in bad years is to reduce spending on non-essentials in order to increase food purchases from available income. This strategy was employed by households of all wealth groups, but the better off the household, the greater the capacity to switch expenditure.

For the 'very poor' it is unlikely that the strategies mentioned above, combined with the relief food received, were adequate to meet household food needs for the 13 month period under discussion. This group was forced to reduce expenditure below the 'minimum acceptable' defined in this analysis. In other words, they were forced to reduce their spending on essentials such as soap, kerosene and grinding (which even normally were only purchased in small quantities by this group), particularly towards the end of the year. In addition, these households often did not pay school fees and related costs last year. Some children were allowed to continue in school despite this, others were pulled out. Many of the 'very poor' also did not pay tax last year. These households survived by spending almost all available income on food. And because of all the reasons above, the available income was itself much less than 'normal' in terms of its purchasing power. This is illustrated in Figures 16 & 17 below (for two wealth groups).

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<sup>21</sup> Divisional-level data on crop production for the 1996/97 agricultural season in Singida District was not available from the District Office.

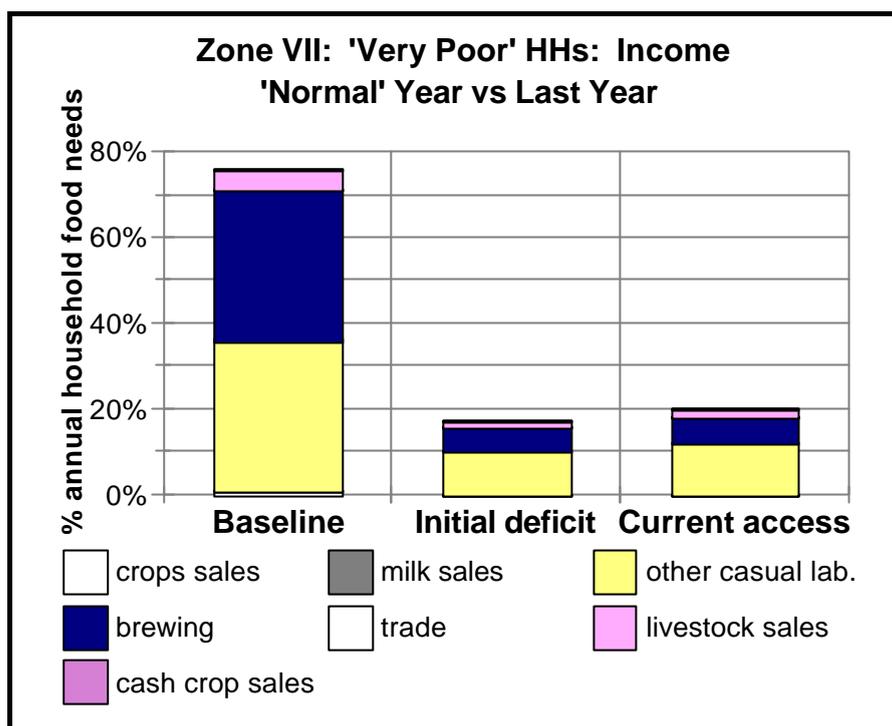


Figure 16

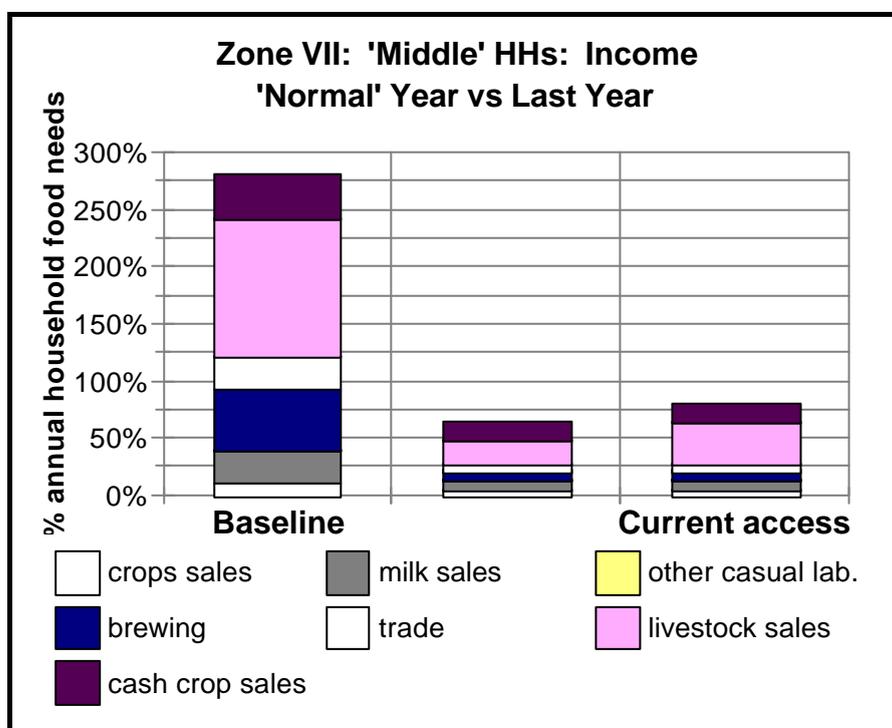


Figure 17

## **Current Situation: Crop failure due to late, irregular and inadequate rainfall**

### *Defining the Problem*

Much of Singida Region has again experienced poor crop production during the agricultural season 1998/99 due to late, irregular, and patchy rainfall. According to information provided by the Ministry of Agriculture at district level, food crops have been particularly affected, although production is slightly better than last year. Cash crop production (sunflower and finger millet) appears to be about 'normal'.

A second problem for 'very poor' and 'poor' households, which compounds the effect of the poor crop yields, is that they have cultivated less land than 'normal', due to the fact that they spent so much time doing agricultural labour for others and other types of casual labour last year. This is despite the provision of relief food last year. Without the relief food, this problem would have been even worse.

Given that food crop production is similar to last year, and that current grain prices (June/July 1999) are similar to the same period last year, it is anticipated that grain prices will be similar to last year's levels over the coming year. A similar assumption is made for livestock prices.

The scenario which will be analysed here for the current year (late April 1999 - late March 2000, an eleven month period) is largely based on the experience of last year and is as follows:

- , food crop production: half of 'normal' (a slight increase compared to last year)
- , cash crop production (sunflower and finger millet): about 'normal'
- , land areas cultivated: the 'very poor' and 'poor' cultivated 75% of 'normal' land areas; the 'rich' cultivated 125% of 'normal' land areas
- , livestock prices: 60-65% of 'normal', the same as last year
- , the minimum non-staple basket: increased by 12% from last year to account for inflation
- , cereal prices: 325% of 'normal', the same as last year
- , milk availability: the same as 'normal'
- , brewing: similar to last year, with prices increased by 12% for inflation
- , agricultural work: slightly reduced in availability from last year but similar payment rates (80% of 'normal' in terms of food payment or cash purchasing power)
- , other types of casual work: similar to last year

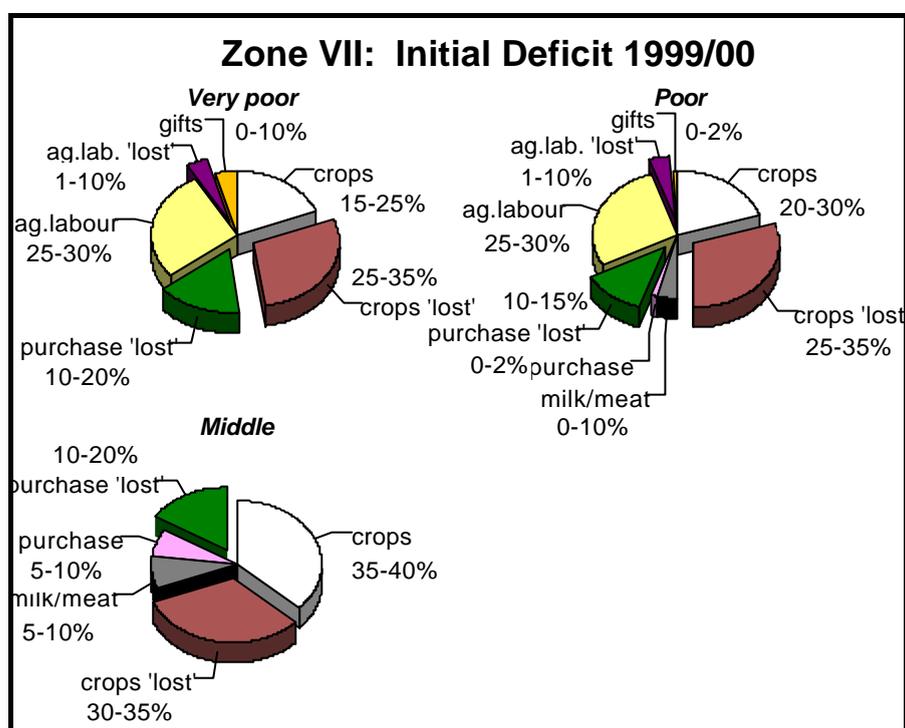
***The accuracy of the following analysis of the current year depends on the accuracy of this problem definition and the monitoring information from which it was taken, particularly for crop production. If updated monitoring information becomes available over the course of the year, for example on food and livestock prices and on the timing of next year's harvest, it will be possible to refine the analysis presented in this report.***

As for the analysis of last year, the effects of the problem this year as specified above are analysed in two sequential

steps: first, the immediate deficit which results from the loss of food and income is described (the initial deficit); and second, the resources and options that households might rely upon to make up the deficit are explored (the response).

### *The Initial Deficit*

As explained above, the term 'initial deficit' is not actually experienced as a period of deficit, but represents the beginning of a process which involves planning and budgeting for the rest of the year. Figure 18 shows the initial deficits for three wealth groups in Zone VII, broken down into their component parts, including the loss of food from own crop production, from agricultural labour, and from purchase. All three groups illustrated in the figure face initial deficits in the range of 35-50%.



**Figure 18**

### *Defining the Response: How Will Households Cope?*

The different wealth groups will employ similar strategies this year as last year. (See figures below.) The poorer groups will entreat the support of better off relatives and neighbours; collect wild foods; and do as much agricultural

labour and other casual labour as possible. The 'middle' and 'rich' will sell livestock and cash crops. It is unlikely, however, that they have any remaining food stocks this year. 'Lower middle' households fall in between the poorer and better off groups. All groups will reduce spending on non-essentials.

The analysis presented here precludes 'very poor' households from reducing expenditure on essential items included in the 'minimum acceptable' basket of non-staple expenditure, unlike last year. It assumes that the 'very poor' will not have to back-pay taxes and school fees which were not paid last year. It also assumes that one of the aims of relief food is to prevent people from having to uproot and move completely to another region. (The point being that agricultural labour is expandable if people move far enough in search of it but that this is not necessarily desirable.) Related to this last point is the assumption that another aim of food aid is to enable people to cultivate their own farms (i.e. that the men in particular do not spend the entire agricultural season in another region doing casual work, neglecting farm work at home).

The final conclusion is that the 'very poor' will face a deficit of 25-35% of annual food needs between now and the start of the

next green harvest (assuming it arrives on time). The 'poor' will face a deficit of 15-25% over the same period. Other wealth groups are unlikely to face a deficit unless they budgeted badly last year and sold all their

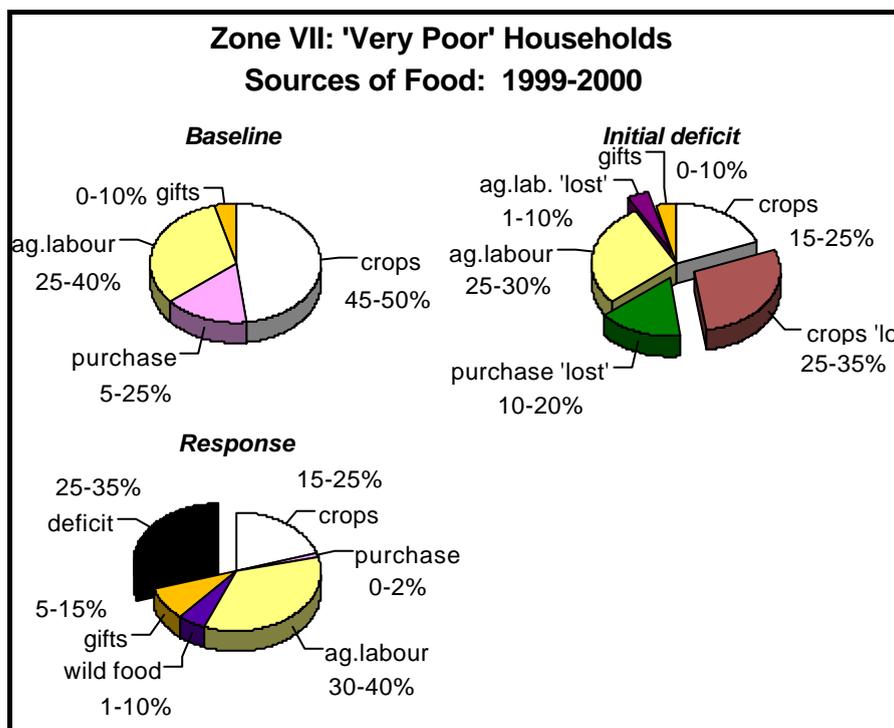
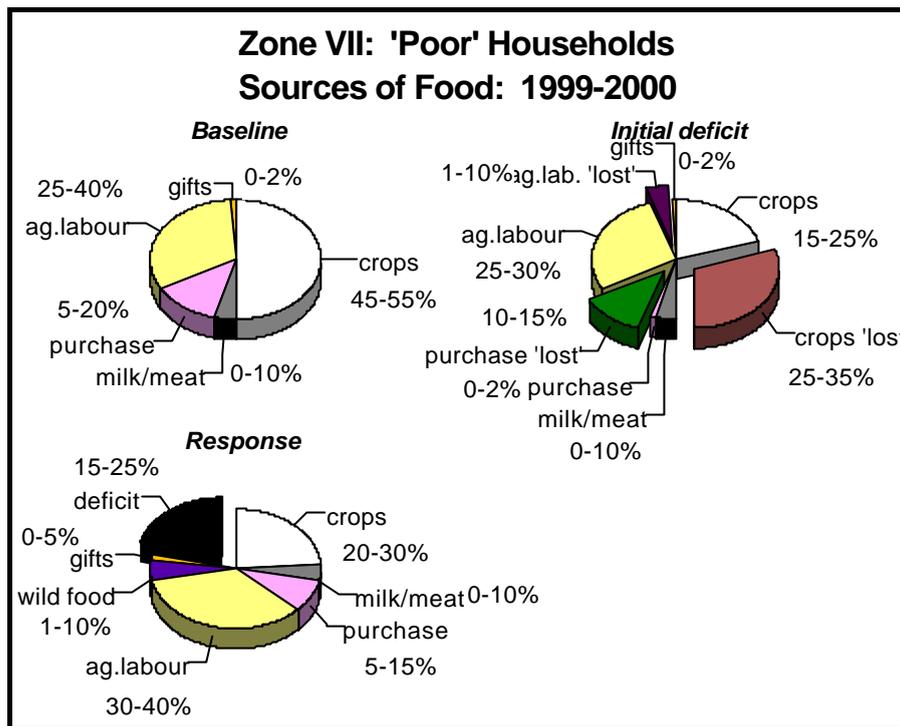


Figure 19

livestock at extremely low prices. As a precautionary measure to allow for this scenario, some of the 'lower middle' should now be considered as 'poor'.

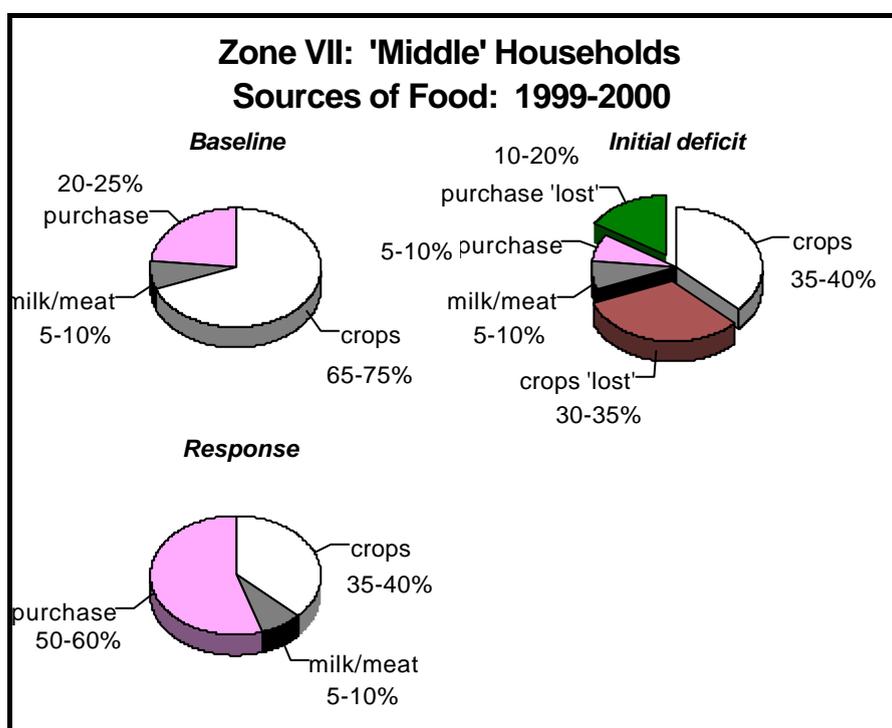


**Figure 20**

**Implications for a Relief Programme**

In terms of timing relief food deliveries, it is important that they are spread over the period

from the start of the cultivation season (late October - November 1999) to the start of the green maize harvest (late



**Figure 21**

March 2000, if next year is 'normal'). The number of deliveries is not important<sup>22</sup>, but the timing is: by coinciding with the start of the cultivation season, and at least to a certain extent covering the 'hunger period', relief food should enable households to spend some time cultivating their own farms rather than spending all their time cultivating for others for payment or even migrating to other regions in search of work.

The deficits illustrated here, combined with the wealth breakdown presented earlier in the report, should not be directly calculated into metric tons of relief food required because that would assume perfect targeting and would not allow for the unavoidable inaccuracies in any distribution and targeting system. The percentage of the population to be provided with food will inevitably have to be higher than the percentage actually requiring it, and the quantity of food provided to beneficiaries will inevitably have to be equal, if only to ensure that those who need it most receive what they require.

Another practical point to consider is that the deficits illustrated here for the current year represent a typical picture for the zone. It is possible that some areas within the zone will be worse off and others will be better off as a result of the patchy rainfall patterns in the most recent cultivation season. This can be analysed in more detail by comparing division-level crop production figures for the cultivation season 1998/99 versus last year (1997/98) and the 'normal' year (1995/96).

As noted above, if more precise monitoring information becomes available in the future, it will be possible to refine and update the analysis and projections presented in this report.

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<sup>22</sup> It was found last year that delivering food for more than one month at a time was logistically easier and allowed beneficiaries to better plan and budget for the months ahead.

## **ZONE V: Iramba Plateau**

This section will follow the same format as the section above for Zone VII. Livelihood patterns for the different wealth groups in Zone V will be described: first for a 'normal' year (1996/97) and then for a bad year (1998/99). Finally, a projection will be made for the likely effects of this year's poor crop production (1999/00). To avoid repetition, the main differences between Zone V and Zone VII will be highlighted here; aspects of the zone which are the same will not be described in detail. Therefore, it is advisable to read the section on Zone VII before this one.

Specific points on the wealth spectrum for Zone V (see Table IV above) are illustrated:

- , the 'very poor' do not own or borrow any livestock (apart from chickens) and they cultivate about 2 acres;
- , the 'poor' own 0-5 cattle and similar numbers of shoats, they borrow additional cattle and cultivate about 4 acres;
- , the 'lower middle' own 10 cattle and cultivate 6 acres; shoat ownership varies within the group, but most households own more than 5;
- , the 'middle' own 20 cattle and cultivate about 8 acres – this group is not outlined in detail here; and
- , the 'rich' own 50 cattle (20 of which are loaned to other groups) and cultivate about 20 acres.

### **Sources of Food in a 'Normal' Year**

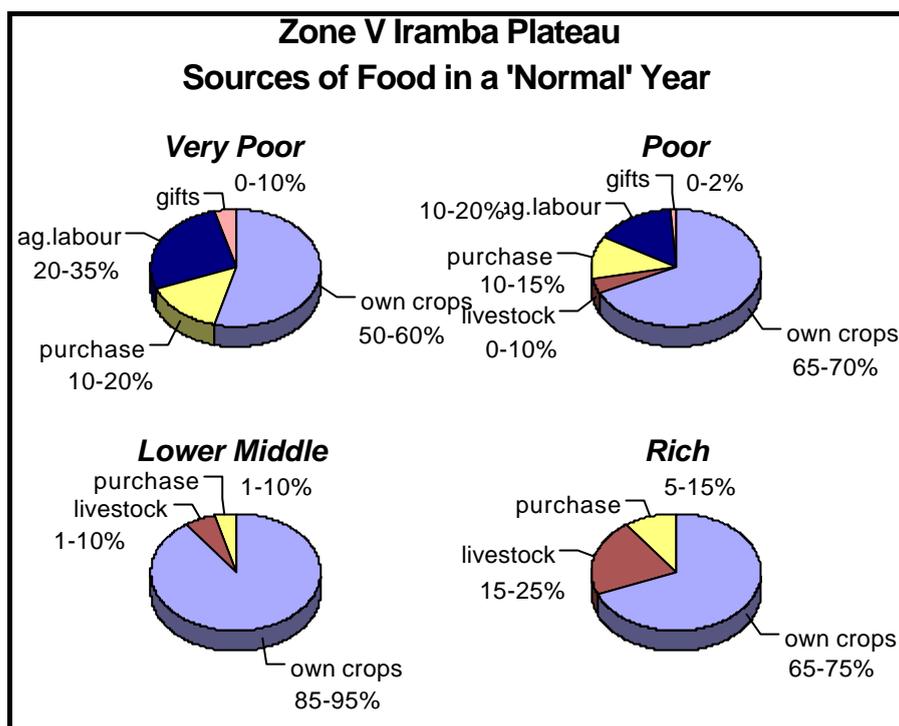
As for Zone VII, the most recent 'normal' year was 1996/97, running from mid-March in 1996 (the time of the start of consumption of green crops from the field in Zone V) to the same time in 1997.

#### ***Own crops***

The main food crops grown in Zone V are maize, sorghum, beans, groundnuts, bambara nuts, cowpeas, and yellow grams. Most of these crops are also sold for cash.

Unlike in Zone VII, manure is not essential for crop production due to the loamy soil. Ploughing is widespread and means that larger overall farm sizes can be cultivated per household. Households which do not own plough oxen can either borrow, hire or labour in exchange for them. This means that it is not essential to have year-round access to cattle, and partly explains why the 'very poor' group, which does not borrow cattle, is larger in this zone than in Zone VII.

The 'crops' indicated in the food pies roughly represent the food that households consume from their crops after sales and other uses (such as gifts, brewing, casual labour, communal labour and seeds). For more detail on crop sales see the 'sources of income' section below.



**Figure 22**

The proportion of food obtained from own crops increases with wealth, from roughly 50-60% of minimum annual needs for the 'very poor' to over 70% of needs for other groups.<sup>23</sup>

### *Milk/meat*

The 'poor' tend to have one lactating cow in a 'normal' year, the 'lower middle' have 1-2<sup>24</sup> and the 'rich' have six. Lactation periods, yields and milk sales are similar to Zone VII. Livestock slaughter is slightly different, with the 'poor' on average slaughtering one shoat per year, the 'lower middle' two and the 'rich' four.

### *Agricultural labour*

'Very poor' and 'poor' households obtain up to one-third of their food needs through labour exchange in the form of agricultural labour. As in Zone VII, payment is made in kind (food) or in cash, usually depending on the choice of

<sup>23</sup> The sources of food pie chart for the 'rich' may look slightly strange, because the proportion of food obtained from own crops is smaller than that for some of the other wealth groups. This is because the pie represents 1900 kcals per person per day and this group obtains a large number of calories from milk and from purchased foods (such as sugar and meat). In reality this group consumes more than 1900 kcals per person per day in a 'normal' year.

<sup>24</sup> The reason this is lower than for households with similar numbers of cattle in Zone VII is because the 'lower middle' in Zone V have a disproportionate number of oxen for ploughing.

the labourer in a 'normal' year. The pie illustrates payment partly in food but this could just as equally be payment in cash, illustrated as additional income in the income pie (see below) and additional purchase of food in the food pie above. Payment in cash tends to be related to the current market value of a certain quantity of food.

Migration to other areas in search of agricultural work is common from Zone V, even in a 'normal' year. On the western side of the zone, labourers travel to the highly productive Zone 1 (Shelui Division), and on the eastern side they travel to Hanang District in Arusha Region, an area where large numbers of outside labourers find employment.

### *Market purchase*

Only 'very poor' and 'poor' households purchase grain to make up their remaining food needs in a 'normal' year (upto 20%).<sup>25</sup> The other wealth groups obtain adequate food from their fields, supplemented in the case of some groups by milk and meat. Other foods such as sugar, vegetable oil and meat are purchased in small quantities, increasing by wealth group.

### *Gifts/other*

As for Zone VII, gifts (in small quantities) have been included in the 'normal' year food pies for the 'very poor' and 'poor'.

### *Wild food*

Small quantities of various wild foods (mainly fruits and leaves) are available in the rainy season. They do not make a significant contribution to household food requirements in a 'normal' year.

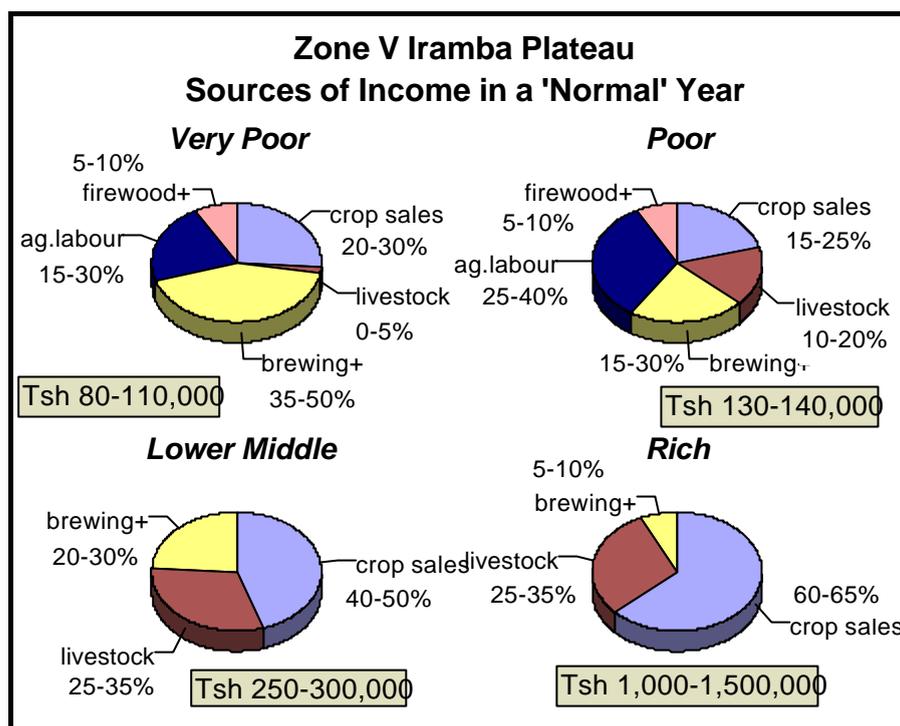
## **Sources of Income in a 'Normal' Year**

For all wealth groups except the 'very poor' and 'poor', crop sales are the most important source of income: 40-50% of income for 'lower middle' households and 60-65% for the 'rich' (and something in-between for the 'middle' who are not examined in detail here). For the 'lower middle' and 'rich', income from livestock (both sales of animals and sales of products) is another important source of income. In contrast, livestock sales make only a small contribution to the incomes of 'very poor' and 'poor' for whom brewing and casual labour (both agricultural and other types) are much more important.

For the specific points illustrated on the wealth spectrum in the figure below, a 'very poor' household has an annual income (at 1996/97 prices) of about TSh 90-100,000; a 'poor' household has an income of about TSh 120-150,000 per year; 'lower middle' households of about TSh 250-290,000 per year; and 'rich' households of about 1,000-1,400,000 per year.

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<sup>25</sup> If the 'very poor' were only paid in cash for their casual work, then the purchase section of their food pie would be 40-45%.



**Figure 23**

### *Crop sales*

Crop sales increase with wealth: the 'very poor' sell a maximum of 5-10 tins of grain and 10-15 tins of other crops in a 'normal' year, representing 20-30% of their total income, whereas the 'rich' sell about 50 sacks each of grain and cash crop (sunflower, yellow grams, beans), representing 60-65% of their income. Of late, onions have been an important crop for the poorer groups, but the better off tend not to cultivate them.

As in Zone VII, the timing of crop sales varies by wealth group.

### *Livestock sales*

The 'rich' tend to sell five cattle<sup>26</sup> and five shoats per year, while the 'lower middle' sell one and 1-2 respectively. In 'normal' years the adult cattle which are sold are usually replaced through the purchase of calves. Households avoid selling females of reproductive age.

The 'very poor' typically only own and sell chickens, while the 'poor' may also sell a shoat.

<sup>26</sup> This tends to be 5 'average' sized cattle or 2-3 large bulls per year, which have a similar value.

### *Livestock product sales*

Milk sales are most common in the rainy season (January - May) for the wealth groups with access to cattle. About ½ a litre per day per lactating cow is sold, although this varies considerably from one place to another in the zone, depending on access to markets and on the number of people with fixed employment in the village or nearby market centre. Some households also sell ghee but not in large quantities as this is mostly kept for own consumption (reducing the purchase of vegetable oil for cattle-owning groups).

### *Agricultural labour*

Agricultural labour has been described above and usually partly paid in kind (shown in the food pie) and partly in cash (shown in the income pie). The precise split between payment in food and payment in cash can vary considerably from one household to another, and is usually the choice of the labourer.

### *Other casual labour (firewood+)*

There are a variety of 'other' sources of income which are pursued by 'very poor', 'poor' and 'less poor' households. These are similar to Zone VII, except for gum sales (from some varieties of the acacia tree), which is an income source in parts of Zone V. Income from these various sources amounted to about TSh 5-10,000 per 'very poor' and 'poor' households in 1996/97.

### *Brewing + Trade*

Both of these are similar to Zone VII. It was difficult to separate the two activities for the pie charts: within each wealth group, some households focus on one, some on the other, and some do both. Overall income levels are fairly clear, however, as indicated in the pie charts. Brewing is the main source of income for 'very poor' households and a supplementary source of income for other groups.

## **Expenditure**

The pattern of expenditure in Zone V is roughly the same as in Zone VII, except that households are generally wealthier in this zone. Expenditure on grain only appears in the pies for the 'very poor' and 'poor'. In general, the proportion of expenditure labelled as flexibility (as defined above for Zone VII) increases as wealth increases, with a possible exception for the 'rich' because they spend such large amounts on agricultural inputs. The actual amount of money represented by the slice 'flexibility', however, greatly increases as wealth increases.

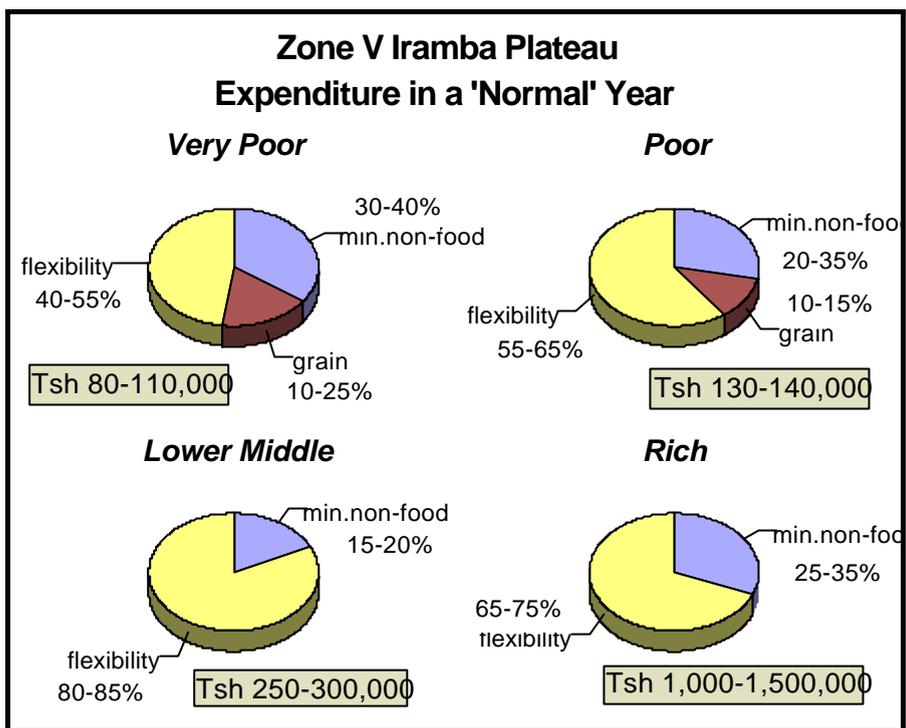


Figure 24

Maximum  
Access  
to Food  
in a  
'Normal'  
Year

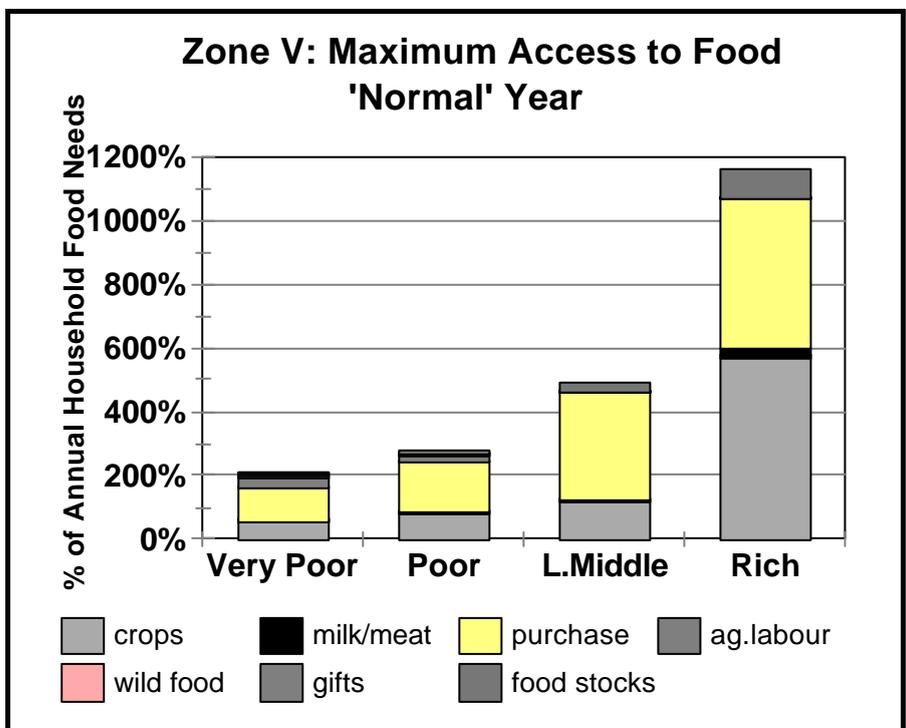


Figure 25

## **Last Year: Crop failure due to heavy rains and pests**

### *Defining the Problem*

In general terms, the problem in Zone V last year was much the same as in Zone VII: crop production in 1998 was reduced due to heavy rains and pests, the green harvest in 1999 was late, grain prices were high, livestock prices were low, and brewing was reduced. In terms of specifics, however, the severity of the problem was greater, according to the official figures<sup>27</sup>:

- , food crop production was about a quarter of 'normal'
- , cash crop production was about three-quarters of 'normal'
- , the green harvest was one month late (mid-April instead of mid-March 1999)
- , grain prices were 266% of 'normal' (less than in Zone VII)
- , brewing was about a quarter of 'normal'
- , agricultural labour about 50% more than 'normal', payment 90% of 'normal'
- , other casual labour also about 50% more than 'normal', payment 90% of 'normal'
- , majority of villages did not receive relief food
- , everything else the same as Zone VII

### *The Initial Deficit*

Figures 26 & 27 show the initial deficits for two wealth groups in Zone V, broken down into their component parts, including the loss of food from own crop production, from agricultural labour, and from purchase. The 'very poor' faced an initial deficit of 55-65%, and the 'lower middle' of 70-80%.

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<sup>27</sup> The official crop production figures for Iramba District can be questioned. Interviews at village level did not indicate that the situation was worse in this district than in Singida or Manyoni Districts; quite the contrary. However, the official figures have been used here in keeping with the team's effort to use official monitoring information where it was available. It should be kept in mind when reading this section, however, that the situation was probably not as severe as stated.

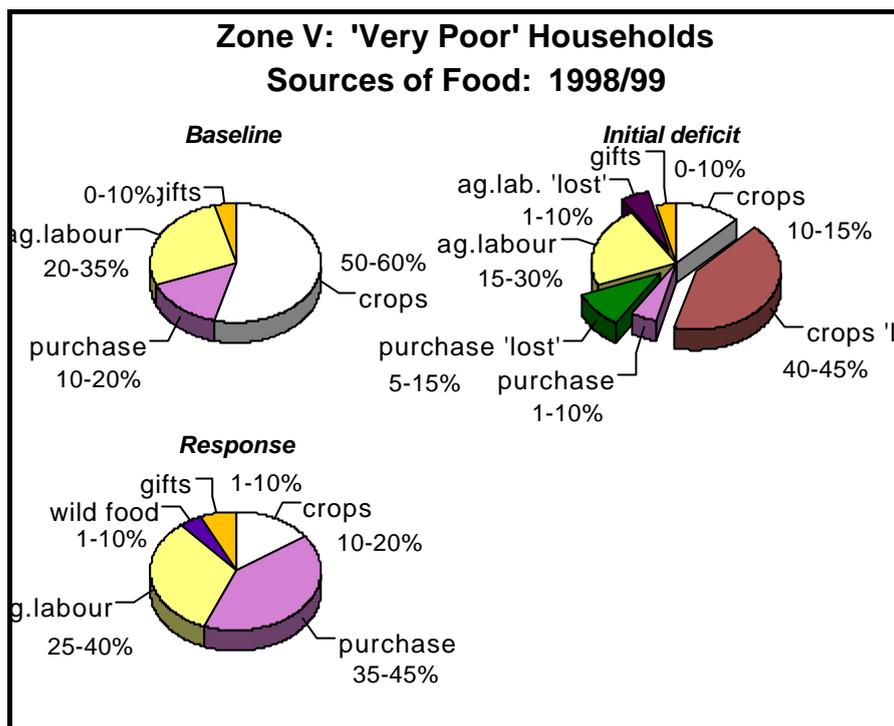


Figure 26

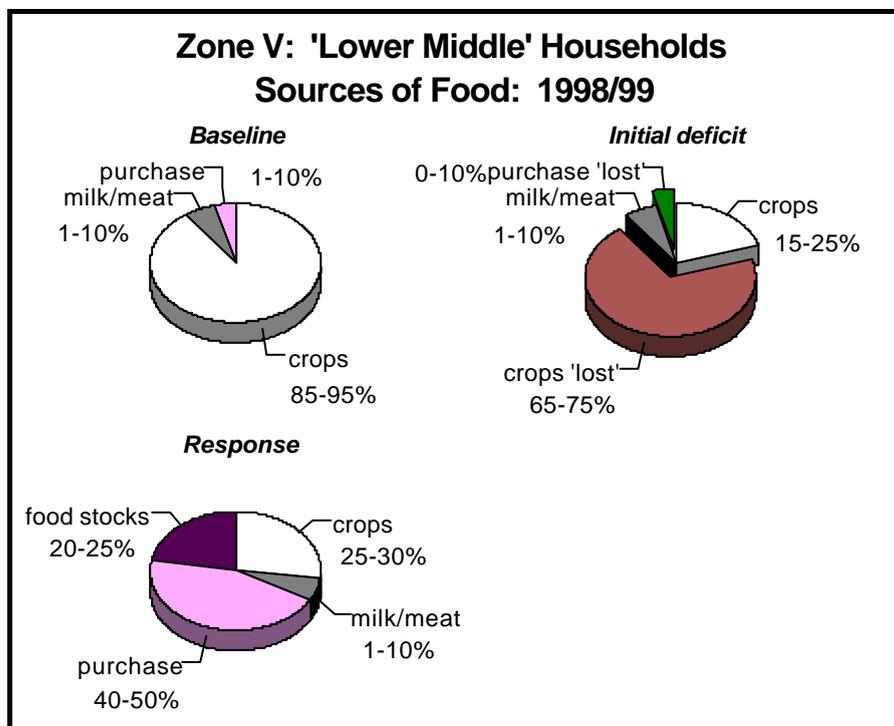


Figure 27

### ***The Response: How Did Households Cope?***

The strategies pursued by the various wealth groups to obtain food and income last year were in broad terms similar to Zone VII: switching expenditure from non-essential to essential items, gathering wild foods, expanding casual labour, selling livestock (and not replacing them). But households in Zone V are generally wealthier than their southern neighbours and therefore their capacity to cope was greater. In addition, for the 'very poor' and 'poor', having relatively easy access to highly productive areas to the west and east of the zone meant it was easier to find agricultural and other types of casual work. Zone V did not receive food aid last year.

### **Current Situation: Crop failure due to late, irregular and inadequate rainfall**

#### ***Defining the Problem***

Crop production this year is better than last year in Zone V. The scenario which is analysed here for the current year (mid April 1999 to mid March 2000) is as follows:

- , food crop production about 40% of 'normal'
- , cash crop production about three-quarters of 'normal'
- , land areas cultivated: the 'very poor' and 'poor' cultivated 90% of 'normal' land areas; the 'rich' cultivated 110% of 'normal' land areas
- , brewing one-third of 'normal'
- , grain prices 266% of 'normal', the same as last year
- , agricultural labour and other casual labour the same as last year
- , everything else the same as Zone VII

#### ***Initial Deficit***

Figures 28 & 29 show the initial deficits for two wealth groups in Zone V, broken down into their component parts. The 'very poor' face an initial deficit of 40-50%, and the 'lower middle' of 50-60%.

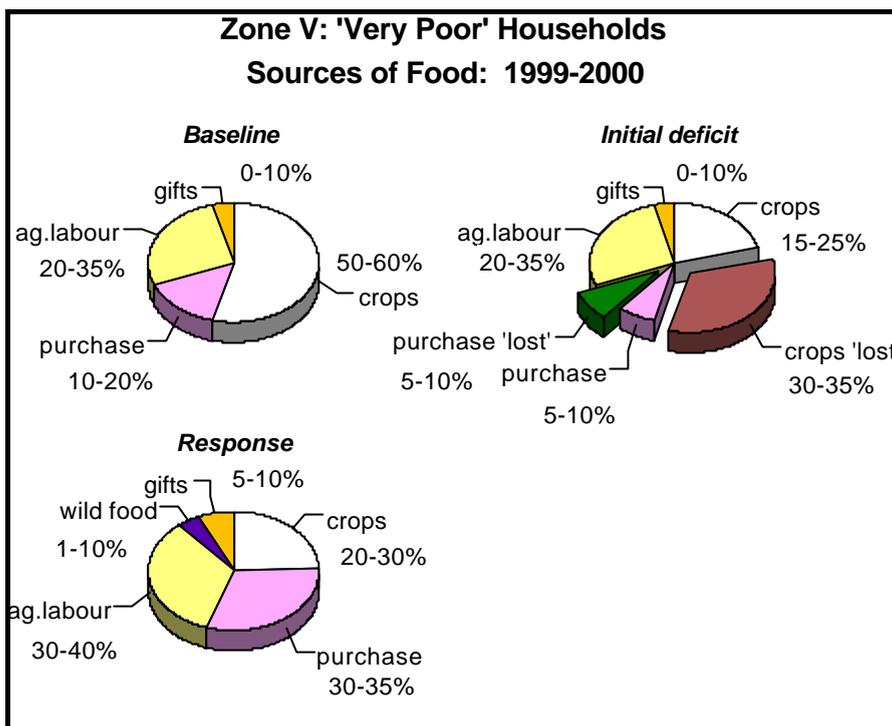


Figure 28

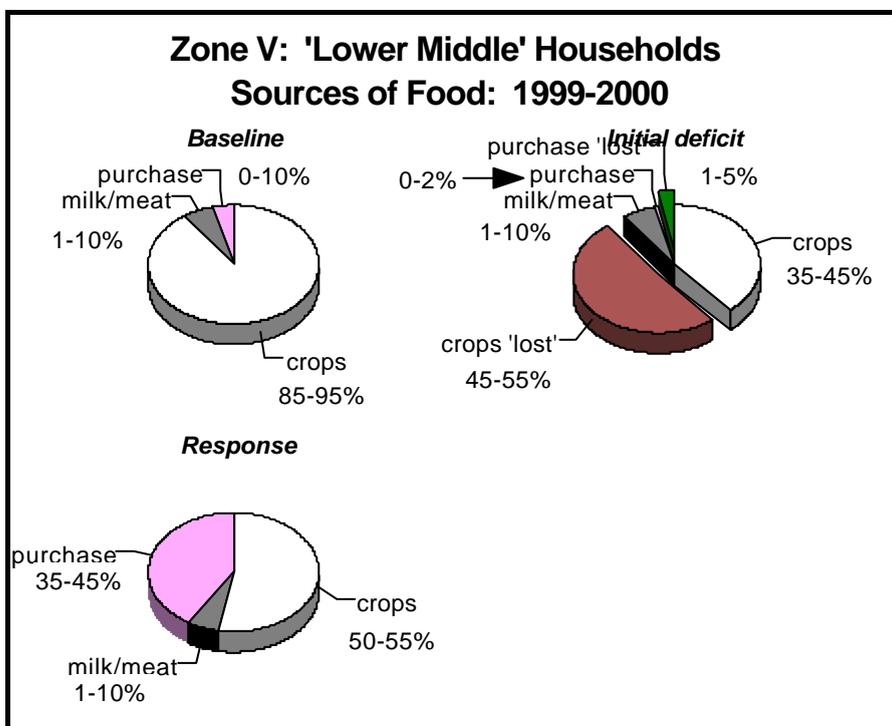


Figure 29

### *The Response*

The strategies pursued by the various wealth groups to obtain food and income this year will be much the same as last year: switching expenditure from non-essential to essential items, gathering wild foods, expanding casual labour, selling livestock. The assumptions behind the analysis for this year are the same as in Zone VII. Even the 'very poor' are not expected to face a deficit.

## **ZONE VI: Peripheral Sandy Plains**

This section will follow the same format as the section above for Zone VII. Livelihood patterns for the different wealth groups in Zone VI will be described: first for a 'normal' year (1996/97) and then for a bad year (1998/99). Finally, a projection will be made for the likely effects of this year's poor crop production (1999/00). To avoid repetition, the main differences between Zone VI and Zone VII will be highlighted here; aspects of the zone which are the same will not be described in detail. Therefore, it is advisable to read the section on Zone VII before this one.

Specific points on the wealth spectrum for Zone VI (see Table V above) are illustrated:

- , the 'very poor' do not own or borrow any livestock (apart from chickens); they typically own 20-30 beehives and cultivate about 2 acres;
- , the 'poor' do not own cattle but they borrow about 5, they own a couple of shoats and more than 20-30 beehives, and they cultivate 3-4 acres;
- , the 'less poor' (who are found more on the Dodoma side of the zone) do not own or borrow any livestock; they typically own 30-40 beehives and cultivate 4-5 acres;
- , the 'lower middle' own about 5 cattle and borrow another 5; they own more than 15 beehives and cultivate about 4 acres;
- , the 'middle' own 20 cattle, 10 shoats and more than 10 beehives (although only about half of this group is engaged in honey production), and cultivate about 5 acres – this group is not outlined in detail here; and
- , the 'rich' own more than 30 cattle and more than 15 shoats, and cultivate about 8 acres; few households in this group own beehives.

### **Sources of Food in a 'Normal' Year**

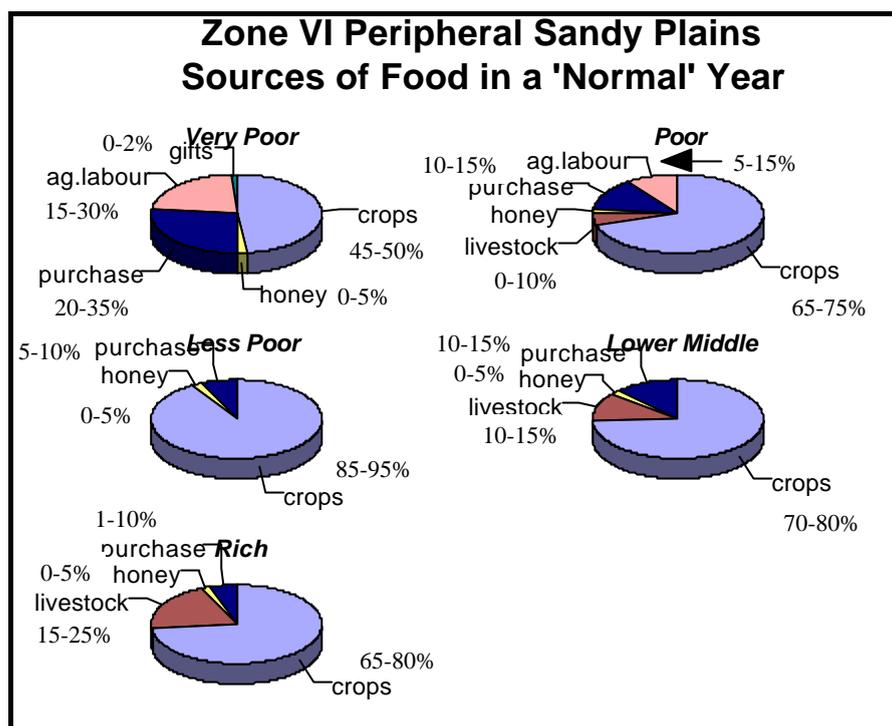
As for Zone VII, the most recent 'normal' year was 1996/97, running from mid-to-late March in 1996 (the time of the start of consumption of green crops from the field in Zone VI) to the same time in 1997.

#### ***Own crops***

The main food crops grown in Zone VI are sorghum, bulrush millet and groundnuts. Most of these crops are also sold for cash.

Manure is essential in some parts of Zone VI, but incomes from honey allow some farmers to purchase manure rather than requiring them to own or borrow livestock. In other parts of the zone, land is abundant, allowing farmers to shift their fields when they become infertile. Ploughing is not common.

The 'crops' indicated in the food pies roughly represent the food that households consume from their crops after sales and other uses (such as gifts, brewing, casual labour, communal labour and seeds). For more detail on crop sales see the 'sources of income' section below.



**Figure 30**

The proportion of food obtained from own crops increases with wealth, from roughly 45-50% of minimum annual needs for the 'very poor' to over 70% of needs for other groups.<sup>28</sup>

### *Milk/meat*

The 'poor' tend to have one lactating cow in a 'normal' year, the 'lower middle' have 2 and the 'rich' have six. Lactation periods, yields and milk sales are similar to Zone VII.

### *Agricultural labour*

'Very poor' households obtain up to a quarter of their food needs through labour exchange in the form of agricultural labour. As in Zone VII, payment is made in kind (food) or in cash, usually depending on the choice of the labourer in a 'normal' year. The pie illustrates payment partly in food but this could just as equally be payment in cash, illustrated as additional income in the income pie (see below) and additional purchase of food in the food pie above. Payment in cash tends to be related to the current market value of a certain quantity of food.

<sup>28</sup> The sources of food pie chart for the 'lower middle' and 'rich' may look slightly strange, because the proportion of food obtained from own crops is smaller than that for some of the other wealth groups. This is because the pie represents 1900 kcals per person per day and this group obtains a large number of calories from milk and from purchased foods (such as sugar and meat). In reality this group in particular consumes more than 1900 kcals per person per day in a 'normal' year.

Migration to other areas in search of agricultural work is common from some parts of Zone VI, even in a 'normal' year.

### *Market purchase*

Only 'very poor', 'poor' and 'less poor' households purchase grain to make up their remaining food needs in a 'normal' year (up to 30%).<sup>29</sup> The other wealth groups obtain adequate food from their fields, supplemented in the case of some groups by milk and meat. Other foods such as vegetable oil and meat are purchased in small quantities, increasing by wealth group.

### *Gifts/other*

Gifts (in small quantities) have been included in the 'normal' year food pies for the 'very poor'.

### *Wild food*

Small quantities of various wild foods (mainly fruits and leaves) are available in the rainy season. They do not make a significant contribution to household food requirements in a 'normal' year.

### *Honey*

A characteristic of Zone VI is that all villages are near to bush and forest lands where flowering proliferates. Within villages, those households living adjacent to the bush and forests will own beehives, the number of hives varying according to wealth group. By and large, this tends to diminish with increasing wealth (particularly with livestock assets), although exceptions to this rule exist.

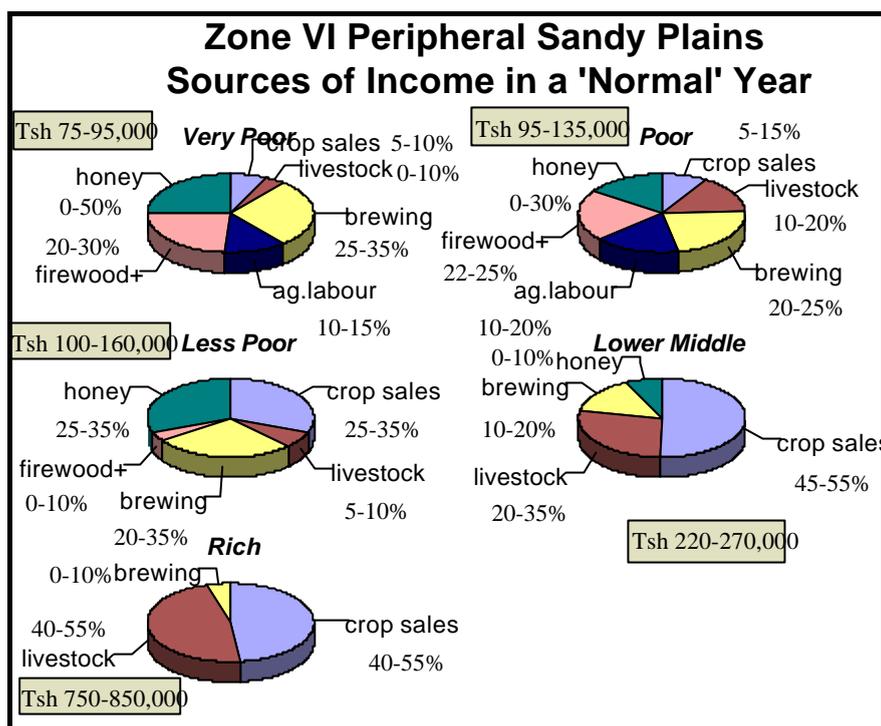
Honey is produced primarily for sale, but a small amount is consumed within the household. In a 'normal' year, each beehive produces between 5 and 15 litres, depending on size, location and 'luck'. About 7 litres per hive is most common. A total of one debe or tin (approximately 20 litres) is typically consumed per household per year.

## **Sources of Income in a 'Normal' Year**

For all wealth groups except the 'very poor' and 'poor', crop sales are the most important source of income: roughly 45-55% of income for 'lower middle' and 'rich' households (and something similar for the 'middle' who are not examined in detail here). For the 'lower middle' and 'rich', income from livestock (both sales of animals and sales of products) is another important source of income. In contrast, livestock sales make only a small

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<sup>29</sup> If the 'very poor' were only paid in cash for their casual work, then the purchase section of their food pie would be 45-55%.



**Figure 31**

contribution to the incomes of the 'very poor', 'poor' and 'less poor' for whom brewing and honey are much more important. Casual labour (both agricultural and other types) is also important for the 'very poor' and 'poor'.

For the specific points illustrated on the wealth spectrum in the figure below, a 'very poor' household has an annual income (at 1996/97 prices) of about TSh 75-95,000; a 'poor' household has an income of about TSh 95-135,000 per year; 'less poor' households of about 100-160,000 per year; 'lower middle' households of about TSh 220-270,000 per year; and 'rich' households of about 750-850,000 per year.

### *Crop sales*

Crop sales increase with wealth: the 'very poor' sell about 10 tins of grain in a 'normal' year, representing 5-10% of their total income, whereas the 'rich' sell about 30 sacks of grain, and two acres worth of cash crops, representing 40-55% of their income. Sunflower, finger millet and groundnuts are the main cash crops.

As in Zone VII, the timing of crop sales varies by wealth group.

### *Livestock sales*

The 'rich' sell more than six cattle and shoats per year, while the 'lower middle' sell one and 1-2 respectively. In 'normal' years the adult cattle which are sold are usually replaced through the purchase of calves. Households avoid selling females of reproductive age. The 'very poor' typically only own and sell chickens, while the 'poor' may also sell a shoat.

### *Livestock product sales*

Milk sales are most common in the rainy season (January - May) for the wealth groups with access to cattle. About ½ a litre per day per lactating cow is sold, although this varies considerably from one place to another in the zone, depending on access to markets and on the number of people with fixed employment in the village or nearby market centre. Some households also sell ghee but not in large quantities as this is mostly kept for own consumption (reducing the purchase of vegetable oil for cattle-owning groups).

### *Agricultural labour*

Agricultural labour has been described above and usually partly paid in kind (shown in the food pie) and partly in cash (shown in the income pie). The precise split between payment in food and payment in cash can vary considerably from one household to another, and is usually the choice of the labourer.

### *Other casual labour (firewood+)*

There are a variety of 'other' sources of income which are pursued by 'very poor', 'poor' and 'less poor' households. These are similar to Zone VII. Income from these various sources amounted to about TSh 20-25,000 per 'very poor' and 'poor' households in 1996/97.

### *Brewing*

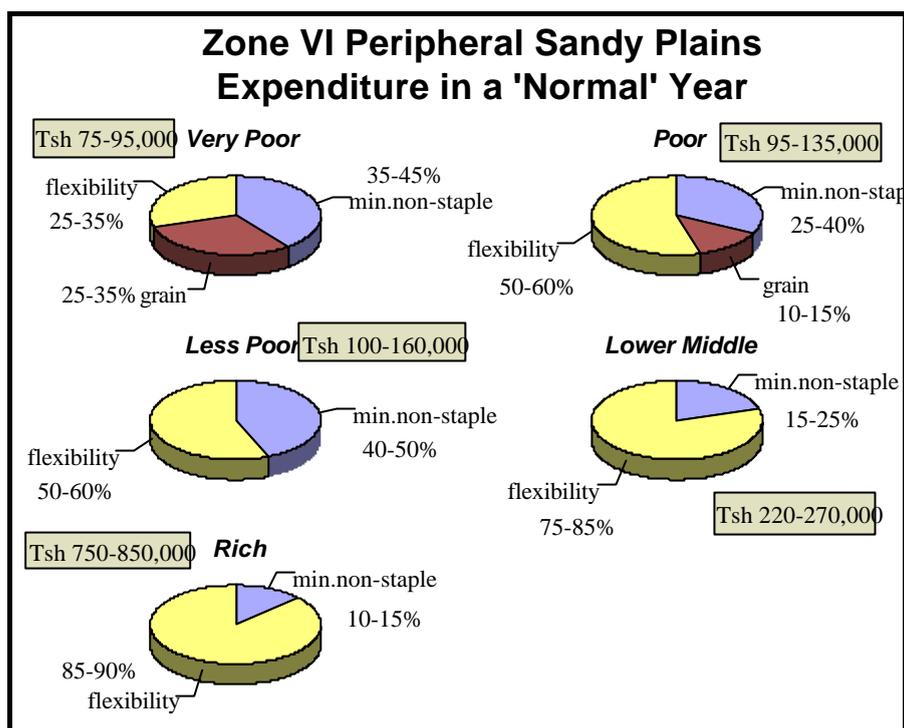
This is similar to Zone VII.

### *Honey sales*

Typical production per beehive in a 'normal' year was mentioned above. All hive-owning wealth groups except the 'less poor' keep one debe (20 litres) aside for their own consumption, one debe for brewing (as an additive to grain-based brews) and sell the remainder. The 'less poor' need more honey (about three debes) for preparing brew for communal labour activities, upon which they depend more than others for their greater farm size. The 'rich' obtain an insignificant income from this source, while the 'very poor' and 'less poor' (the two main honey-producing wealth groups) obtain TSh 20,000 and 40,000 respectively in the baseline year.

## **Expenditure**

The pattern of expenditure in Zone VI is roughly the same as in Zone VII, except that households are slightly wealthier in this zone. Expenditure on grain only appears in the pies for the 'very poor' and 'poor'. The proportion of expenditure labelled as flexibility (as defined above for Zone VII) increases as wealth increases.



**Figure 332**

## Last Year: Crop failure due to heavy rains and pests

### *Defining the Problem*

In general terms, the problem in Zone VI last year was much the same as in Zone VII: crop production in 1998 was reduced due to heavy rains and pests, the green harvest in 1999 was late, grain prices were high, livestock prices were low, and brewing was reduced. In terms of specifics, however, the severity of the problem was slightly worse, according to the official figures<sup>30</sup>:

- , food crop production was roughly 30-40% of 'normal'
- , cash crop production was about a third greater than 'normal'
- , majority of villages did not receive relief food
- , everything else the same as Zone VII

### *The Initial Deficit*

Figures 33-35 show the initial deficits for three wealth groups in Zone VI, broken down into their component parts,

<sup>30</sup> The problem described here applies to the parts of Zone VI found in Singida Region only.

including the loss of food from own crop production, from agricultural labour, and from purchase. The 'very poor' and 'poor' faced an initial deficits of 50-60%, and the 'less poor' of 60-70%.

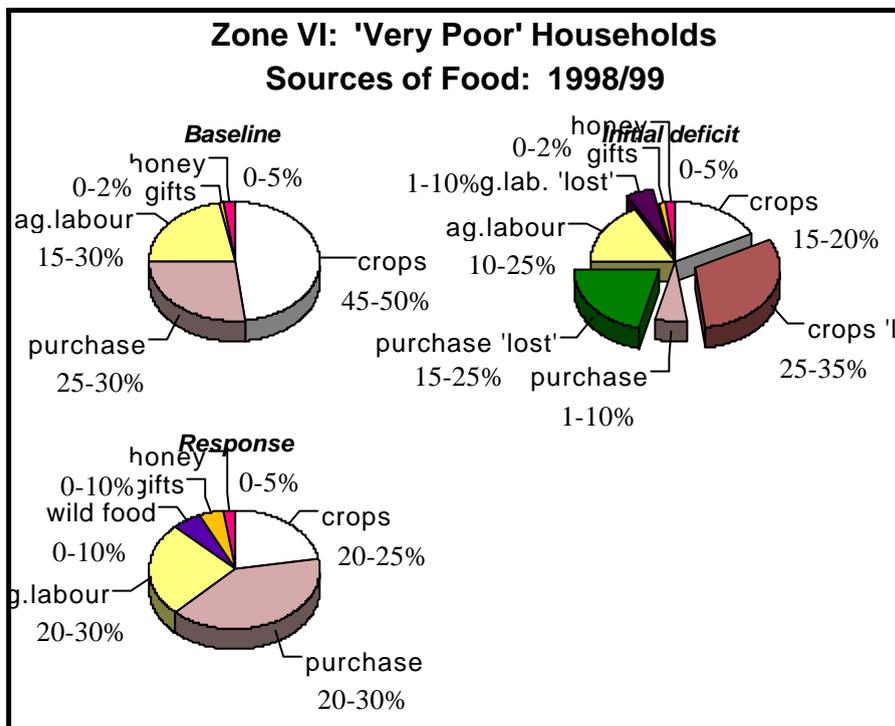


Figure 33

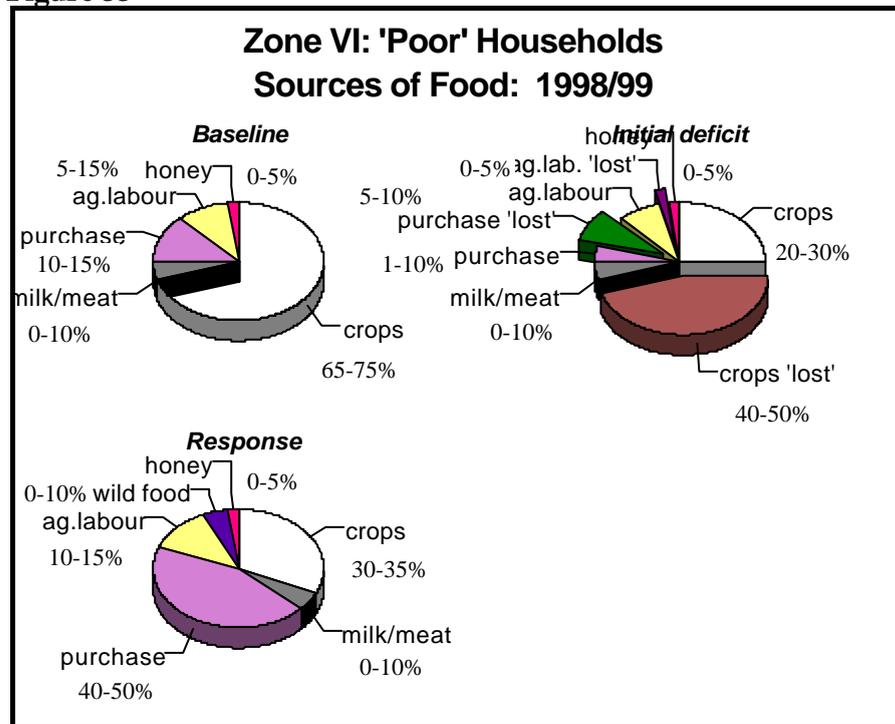
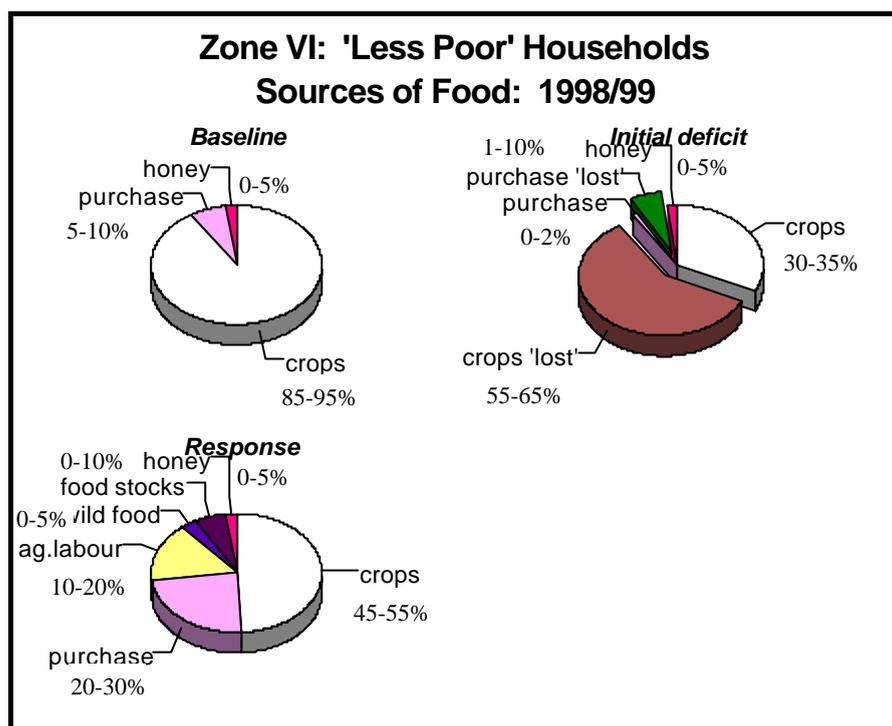


Figure 34



**Figure 35**

### *The Response: How Did Households Cope?*

The strategies pursued by the various wealth groups to obtain food and income last year were in broad terms similar to Zone VII: switching expenditure from non-essential to essential items, gathering wild foods, expanding casual labour, selling livestock (and not replacing them). The expansion of casual labour within the zone was probably greater than in Zone VII, however, because Zone VI is wealthier overall (for example, in terms of livestock ownership). In addition, households in Zone VI have a source of income which is rarely available in Zone VII: honey sales. This makes them more resistant to the effects of crop failure.

### **Current Situation: Crop failure due to late, irregular and inadequate rainfall**

#### *Defining the Problem*

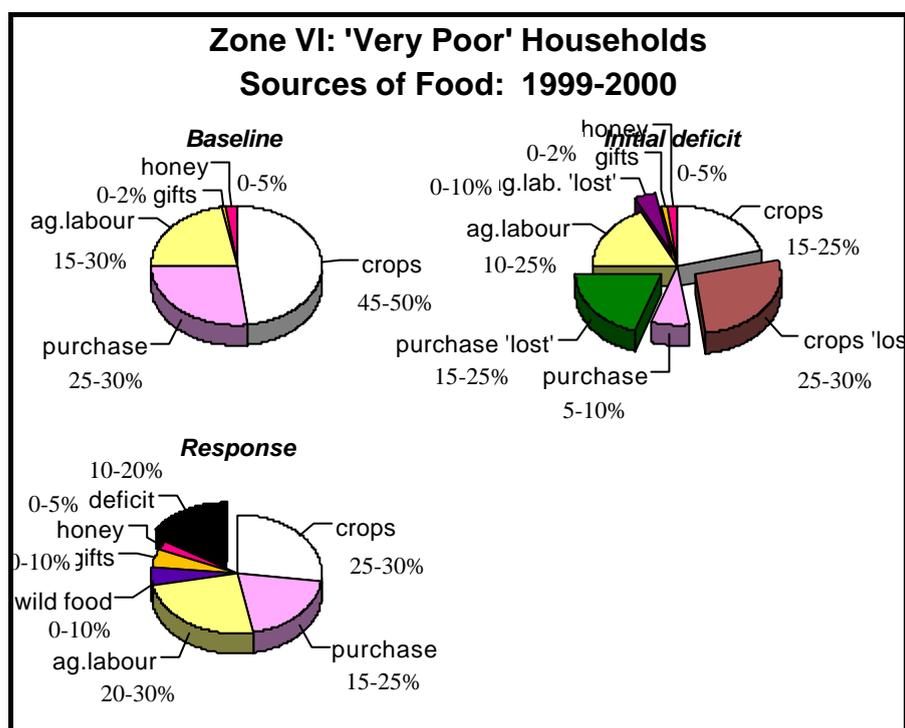
Crop production this year is better than last year in Zone VI. The scenario which is analysed here for the current year (late April 1999 to late March 2000) is as follows:

- , food crop production about 45-50% of 'normal'
- , cash crop production slightly less than 'normal'
- , land areas cultivated: the 'very poor', 'poor' and 'less poor' cultivated 90% of 'normal' land areas; the 'rich' cultivated 125% of 'normal' land areas
- , brewing almost half of 'normal'

, everything else the same as Zone VII

### *Initial Deficit*

Figures 36-38 show the initial deficits for two wealth groups in Zone V, broken down into their component parts. The 'very poor' and 'poor' face an initial deficit of 45-55%, and the 'less poor' of 55-60%.



**Figure 36**

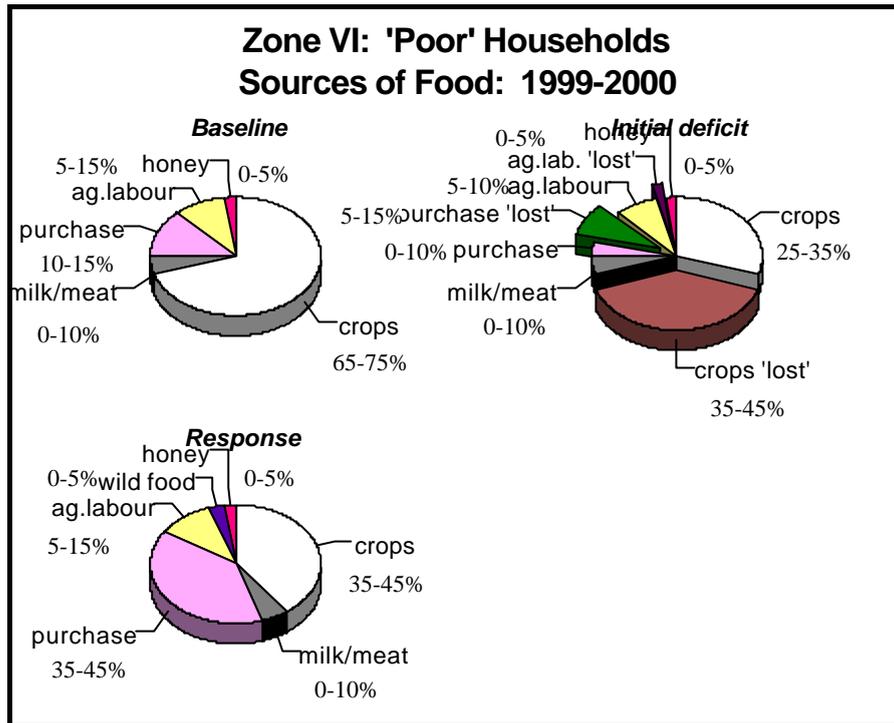


Figure 37

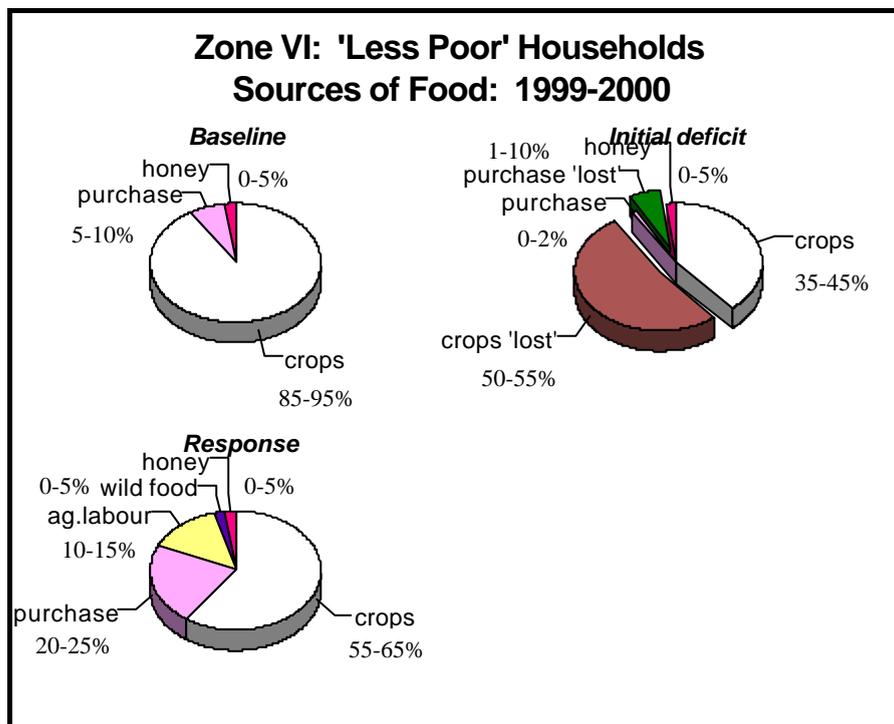


Figure 38

### *The Response*

The strategies pursued by the various wealth groups to obtain food and income this year will be much the same as last year: switching expenditure from non-essential to essential items, gathering wild foods, expanding casual labour, selling livestock and honey. The conclusion is that the 'very poor' will face a deficit of 10-20% of annual food needs between now and the start of the next green harvest. See the corresponding section for Zone VII above for a more detailed discussion on the assumptions behind and the implications of the findings for the current year.

## **ZONE IX: Manyoni Highlands**

This section will follow the same format as the section above for Zone VII. Livelihood patterns for different wealth groups in Zone IX will be described: first for a 'normal' year (1996/97) and then for a bad year (1998/99). Finally, a projection will be made for the likely effects of this year's poor crop production (1999/00). To avoid repetition, the main differences between Zone IX and Zone VII will be highlighted here; aspects of the zone which are the same will not be described in detail. Therefore, it is advisable to read the section on Zone VII before this one.

Specific points on the wealth spectrum for Zone IX (see Table VI above) are illustrated:

- , the 'very poor' do not own or borrow any livestock (apart from chickens) and they cultivate 2 - 2 ½ acres;
- , the 'poor' are not illustrated separately from the 'very poor'; the main difference between the two groups is that the 'poor' borrow some cattle and therefore obtain a small amount of food from milk;
- , the 'less poor' farmers do not own or borrow livestock; they cultivate about 4 acres;
- , the 'lower middle' agro-pastoralists own 1-10 cattle and borrow more, own a similar number of shoats, and cultivate 4-5 acres;
- , the 'middle' farmers do not own or borrow livestock; they cultivate about 8 acres; and
- , the 'rich' agro-pastoralists own 50 cattle (20 of which are loaned to other groups) and cultivate about 10 acres.

### **Sources of Food in a 'Normal' Year**

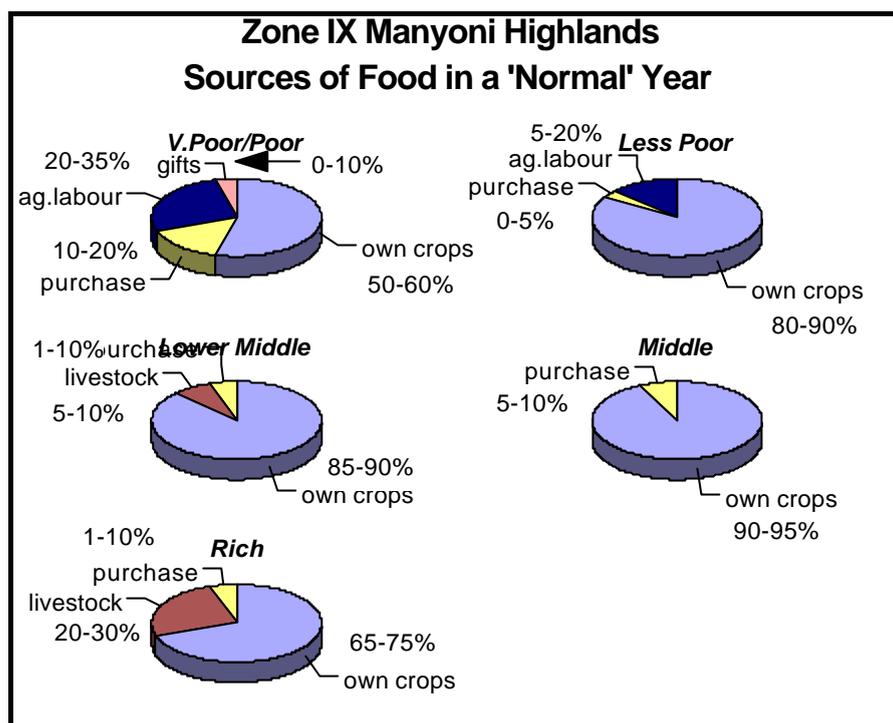
As for Zone VII, the most recent 'normal' year was 1996/97, running from early April in 1996 (the time of the start of consumption of green crops from the field) to the same time in 1997.

#### ***Own crops***

The main food crops grown in Zone IX are maize, sorghum, bulrush millet, sweet potatoes, beans, groundnuts, bambara nuts and cowpeas. Most of these crops are also sold for cash.

Unlike in Zone VII, manure is not essential for crop production in this zone. Although much of the soil is sandy, land is plentiful and therefore it is common practice to rotate or shift to new fields every 3-4 years. In a year of 'moderate' crop production, a household expects an acre to yield about 6 sacks of grain.

As in Zone VII, cultivation is primarily done by handhoe. Ploughing is rare in this zone and where it does occur it is performed by Wasukuma in lowland areas. The sandy soils which are predominant are not ploughed. Most commonly, crops are planted before the rains start in sandy soils and digging (piling up soil around the plant) occurs after planting and after the rains start.



**Figure 39**

The 'crops' indicated in the food pies above represent the food that households consume from their crops after sales and other uses (such as gifts, brewing, casual labour, communal labour and seeds). For more detail on crop sales see the 'sources of income' section below.

The proportion of food obtained from own crops increases with wealth, from roughly 50-60% of minimum annual needs for the 'very poor' and 'poor' to over 70% of needs for other groups.<sup>31</sup>

### *Milk/meat*

The 'lower middle' tend to have two lactating cows in a 'normal' year, the 'upper middle' (not illustrated here) have four and the 'rich' have six. Lactation periods, yields and milk sales are similar to Zone VII, as is meat consumption through slaughter.

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<sup>31</sup> As for Zone V, the sources of food pie chart for the 'rich' in Zone IX may look slightly strange, because the proportion of food obtained from own crops is smaller than that for some of the other wealth groups. This is because the pie represents 1900 kcals per person per day and this group obtains a large number of calories from milk. In reality this group consumes more than 1900 kcals per person per day in a 'normal' year.

### *Agricultural labour*

'Very poor' and 'poor' households obtain up to 30% of their food needs through labour exchange in the form of agricultural labour. As for Zone VII, payment is made in kind (food) or in cash, usually depending on the choice of the labourer in a 'normal' year. The pie illustrates payment partly in food but this could just as equally be payment in cash, illustrated as additional income in the income pie (see below) and additional purchase of food in the food pie above. Payment in cash tends to be related to the current market value of a certain quantity of food. Migration in search of agricultural labour or other work is not common from most areas of this zone in 'normal' years.

### *Market purchase*

Only 'very poor' and 'poor' households purchase grain to make up their remaining food needs in a 'normal' year (about 15%).<sup>32</sup> The other wealth groups obtain adequate food from their fields, supplemented in the case of some groups by milk and meat. Other foods such as sugar, vegetable oil and meat are purchased in small quantities, differing by wealth group.

### *Gifts/other*

As for Zone VII, gifts have been included in the 'normal' year food pies for the 'very poor'. Due to the mixture of tribes in this zone, however, it is likely that gifts are less common than elsewhere in the region. Therefore, this section of the food pie has been combined with 'other' small sources of food, such as honey.

### *Wild food*

Small quantities of various wild foods (mainly fruits and leaves) are available in the rainy season. They do not make a significant contribution to household food requirements in a 'normal' year.

## **Sources of Income in a 'Normal' Year**

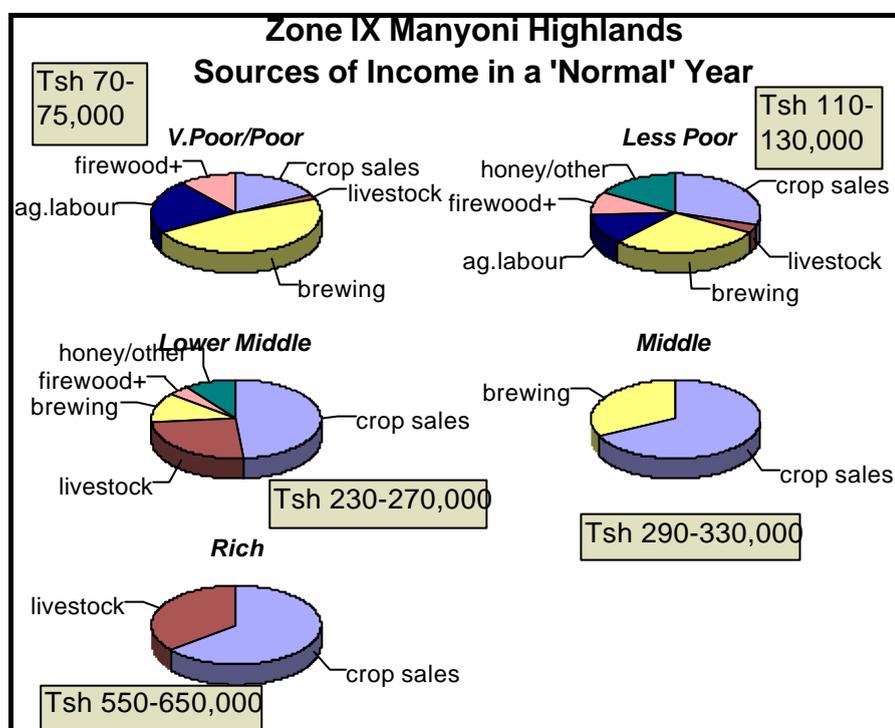
For all wealth groups except the 'very poor' and 'poor', crop sales are the most important source of income, ranging from 25-35% of income for 'less poor' farmers to 60-70% for 'middle' farmers and 'rich' agro-pastoralists. For the cattle-keeping wealth groups (the 'lower middle' and 'rich'), income from livestock (both sales of animals and sales of products) is another important source of income. In contrast, livestock sales make only a small contribution to the incomes of 'very poor', 'poor', 'less poor' and 'middle' households, for whom brewing is much more important. The 'very poor' and 'poor' obtain a significant proportion of their income from agricultural and other types of casual labour.

For the specific points illustrated on the wealth spectrum in Figure 40 below, a 'very poor'/'poor' household has an

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<sup>32</sup> If the 'very poor' were only paid in cash for their casual work, then the purchase section of their food pie would be 40-45%.

annual income (at 1996/97 prices) of about TSh 70-75,000; a 'less poor' household has an income of about TSh 110-130,000 per year; 'lower middle'



**Figure 40**

households of about TSh 230-270,000 per year; 'middle' households of about TSh 290-330,000 per year; and 'rich' households of about 550-650,000 per year.

### *Crop sales*

Crop sales increase with wealth: the 'very poor' sell a maximum of 10 tins of grain and 5-10 tins of other crops in a 'normal' year, representing 15-20% of their total income, whereas the 'rich' sell about 30 sacks of grain, and two acres worth of cash crops, representing 60-70% of their income. In 1996, cotton was still a major cash crop in the area, but its production has been greatly reduced since then, with farmers citing marketing problems as the main reason for discontinuing its production. Groundnuts, finger millet, sunflower, grain and tobacco are currently the main cash crops in the area.

As in Zone VII, the timing of crop sales varies by wealth group. See above section for more details.

### *Livestock sales*

The 'rich' tend to sell three cattle and four shoats per year, while the 'lower middle' sell one every other year and three respectively. In 'normal' years the adult cattle which are sold are usually replaced through the purchase of calves. Households avoid selling females of reproductive age.

The 'very poor', 'poor' and 'less poor' typically only own and sell chickens (although some in the 'poor' and 'less poor' groups own a few shoats).

### *Livestock product sales*

Milk sales are most common in the rainy season (January - May) for the wealth groups with access to cattle. About ½ a litre per day per lactating cow is sold, although this varies considerably from one place to another in the zone, depending on access to markets and on the number of people with fixed employment in the village or nearby market centre. Some households also sell ghee but not in large quantities as this is mostly kept for own consumption.

### *Agricultural labour*

Agricultural labour has been described above and usually partly paid in kind (shown in the food pie) and partly in cash (shown in the income pie). The precise split between payment in food and payment in cash can vary considerably from one household to another, and is usually the choice of the labourer.

### *Other casual labour (firewood+)*

There are a variety of 'other' sources of income which are pursued by 'very poor', 'poor' and 'less poor' households. These are similar to Zone VII. Income from these various sources amounted to about TSh 10-15,000 per household in 1996/97.

### *Brewing*

Brewing in Zone IX is different from in Zone VII. The wealth groups which do not own cattle tend to do more brewing than the cattle-keepers and to a certain extent this income source compensates for the lack of income from livestock sales for these groups. Brewing occurs throughout the year: when grain becomes expensive, brewers switch to brewing from honey and even from sugar.

### *Honey/other*

The 'less poor' and 'lower middle' groups obtain about TSh 15-30000 per year from selling honey or engaging in petty trade. The other wealth groups typically do not own beehives, although there are of course exceptions to this.

### **Expenditure**

Expenditure on grain only appears in the pie for the 'very poor'/'poor'. Flexibility (as defined above for Zone VII) increases as wealth increases. The detailed expenditure for the different wealth groups is similar to the other zones (at

similar income levels).

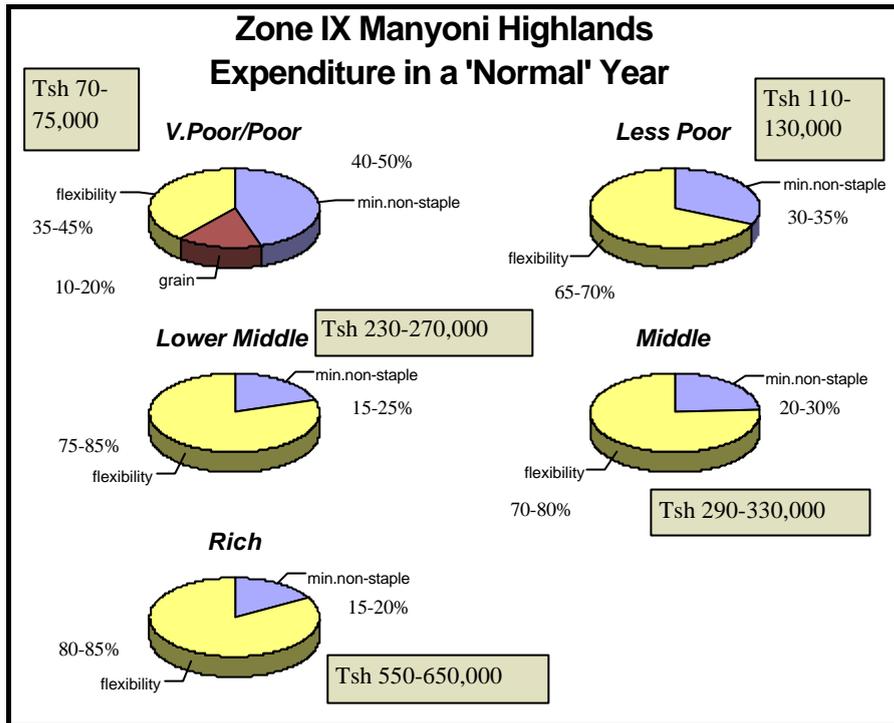


Figure 41

Maximum Access to Food in a 'Normal' Year

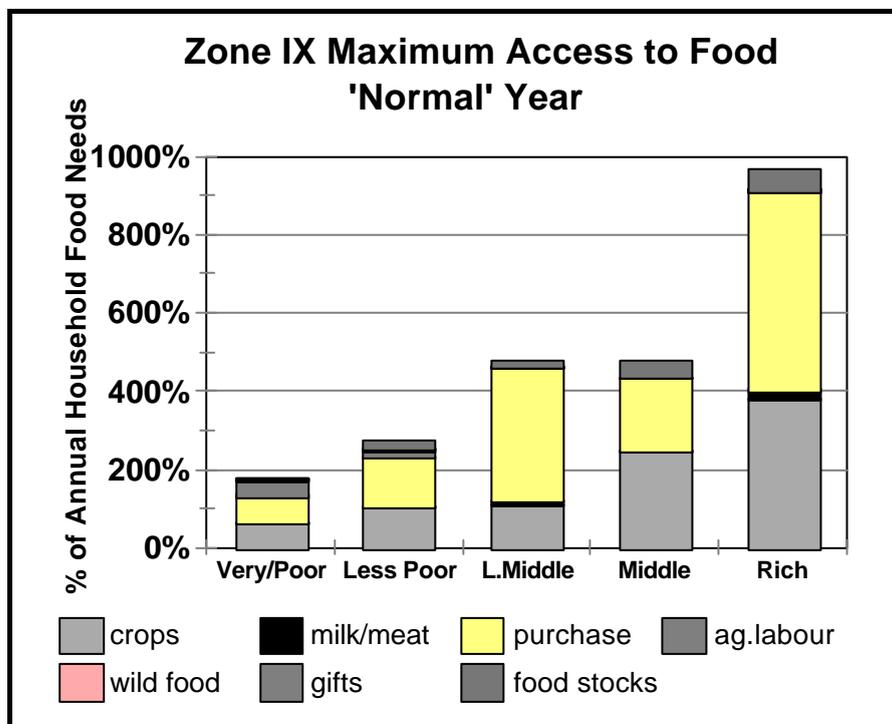


Figure 42

## **Last Year: Crop failure due to heavy rains and pests**

### *Defining the Problem*

In general terms, the problem in Zone IX last year was much the same as in Zone VII: crop production in 1998 was reduced due to heavy rains and pests, the green harvest in 1999 was late, grain prices were high, livestock prices were low, payment for agricultural labour was less than 'normal', brewing was reduced, and relief food was distributed. In terms of specifics, the problem which occurred and which is analysed below for Zone IX last year is as follows:

- , food crop production was 38% of 'normal'
- , cash crop production was 137% of 'normal'
- , the 1999 harvest was 1 ½ months late (late May rather than early April)
- , brewing was two-thirds of 'normal' (because honey and sugar are brewed in addition to grain)
- , relief of 30 kg per person was provided to the poorest 60-70% of the population
- , everything else (grain prices, livestock prices, milk availability, agricultural and casual work) was similar to Zone VII

### *The Initial Deficit*

Figure 43 below shows the initial deficits for three wealth groups in Zone IX, broken down into their component parts, including the loss of food from own crop production, from agricultural labour, and from purchase. The 'very poor' and 'poor' faced an initial deficit of 50-55%, and the 'less poor' and 'lower middle' of 55-65%.

### *The Response: How Did Households Cope?*

The strategies pursued by the various wealth groups to obtain food and income last year (see Figures 44-46) were similar to Zone VII. The main difference, however, was that in many areas the amount of agricultural work available locally was less than in Zone VII (production in 1998 having been worse) and the poorer groups had to migrate in search of work, primarily west to Mgandu and into Tabora to work on tobacco farms. In some households, the man travelled back and forth every week or couple of weeks, returning each time with food. In others, the entire household migrated for a period. The overall amount of work obtained, however, was similar to Zone VII.

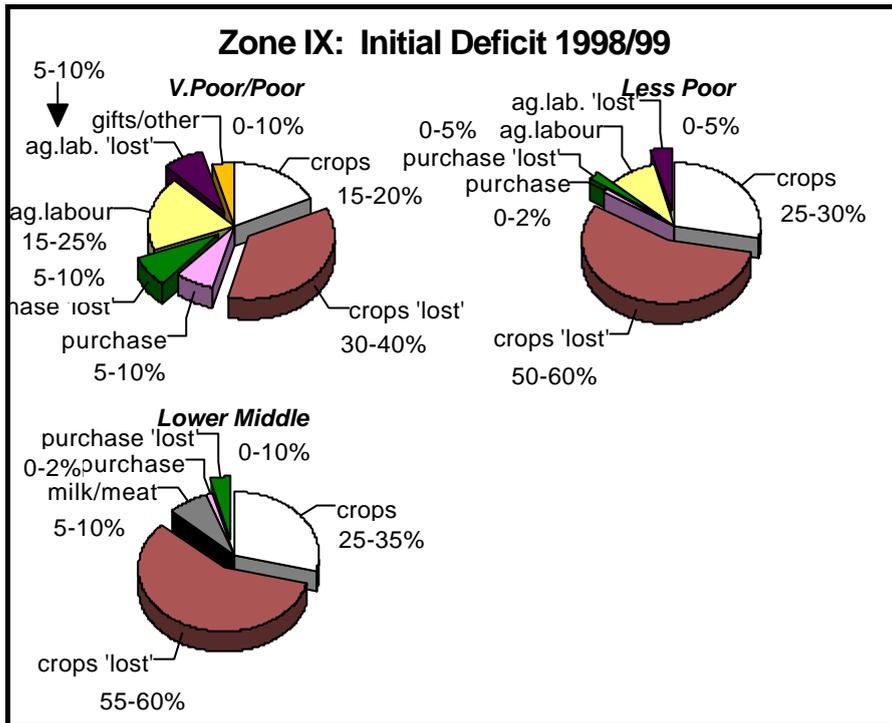


Figure 43

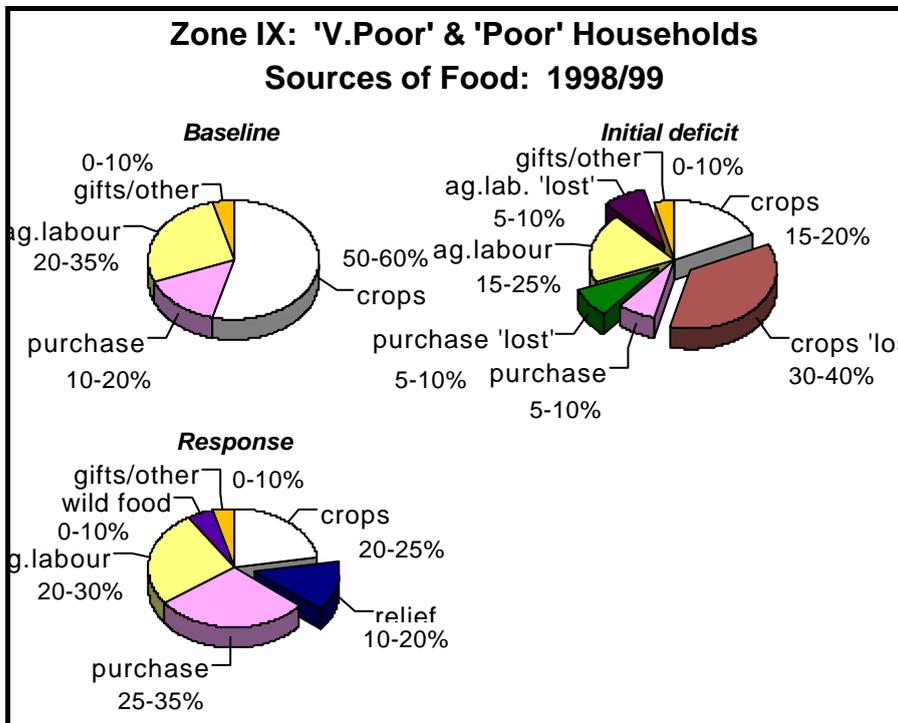


Figure 44

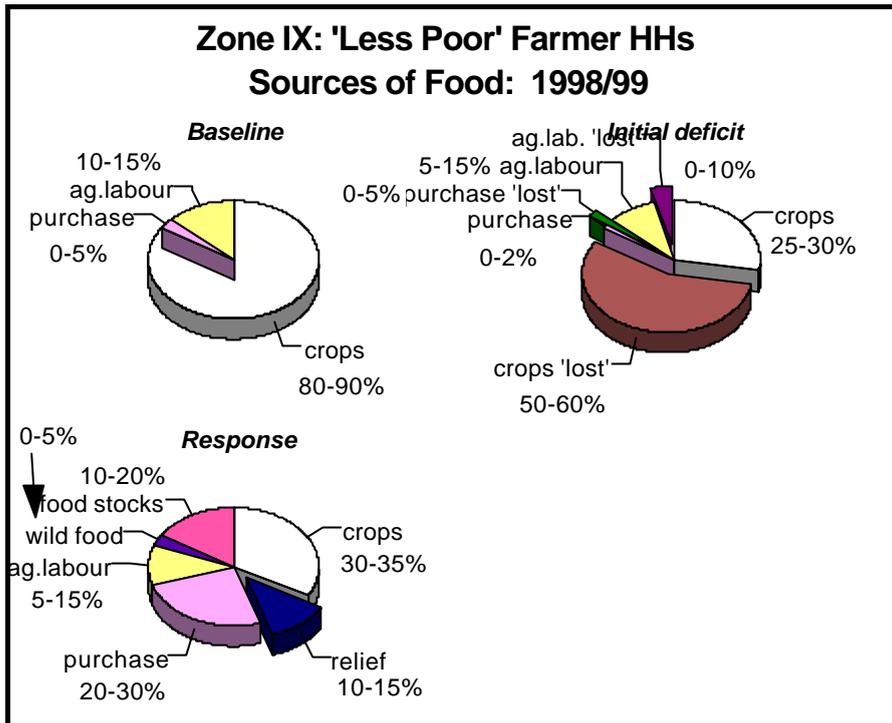


Figure 45

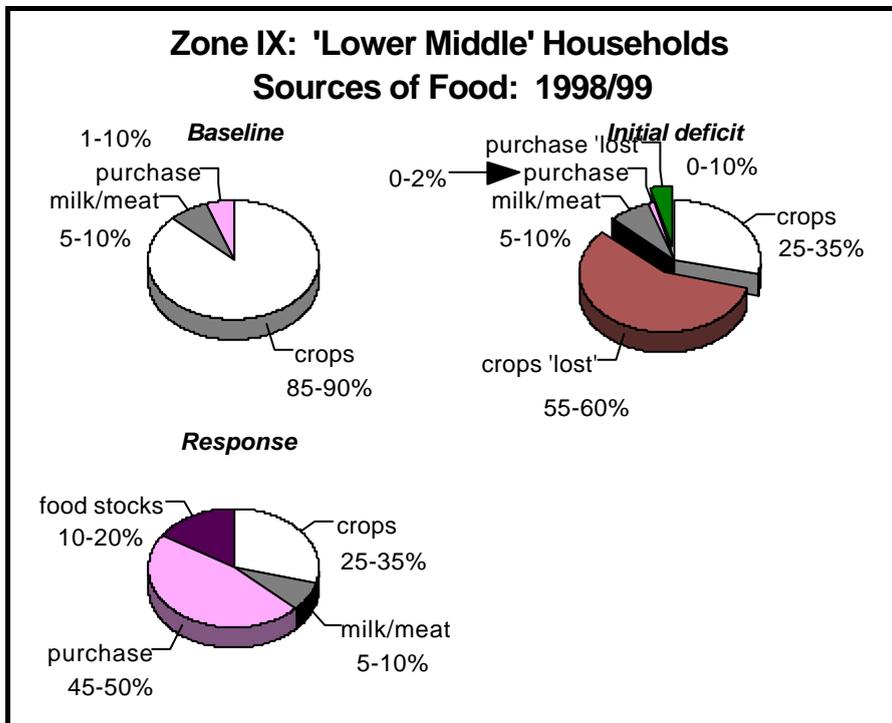


Figure 46

## **Current Situation: Crop failure due to late, irregular and inadequate rainfall**

### ***Defining the Problem***

Crop production this year is slightly worse than last year in Zone IX, according to division-level figures provided by the Manyoni District Office. The scenario which is analysed here for the current year (late May 1999 to early April 2000) is as follows:

- , food crop production one-third of 'normal'
- , land areas cultivated: the 'very poor' and 'poor' cultivated 75% of 'normal' land areas; the 'rich' cultivated 125% of 'normal' land areas
- , cash crop production about half of 'normal'
- , brewing one-third of 'normal' for very poor and poor; half way between this and 'normal' for other groups (two-thirds)
- , agricultural labour and other casual labour less available than last year, payment same as last year
- , everything else the same as Zone VII

### ***Initial Deficit***

The three figures below include the initial deficits for three wealth groups in Zone IX, broken down into their component parts. The 'very poor' and 'poor' face an initial deficit of 50-55%, and the 'less poor' and 'lower middle' of 55-65%.

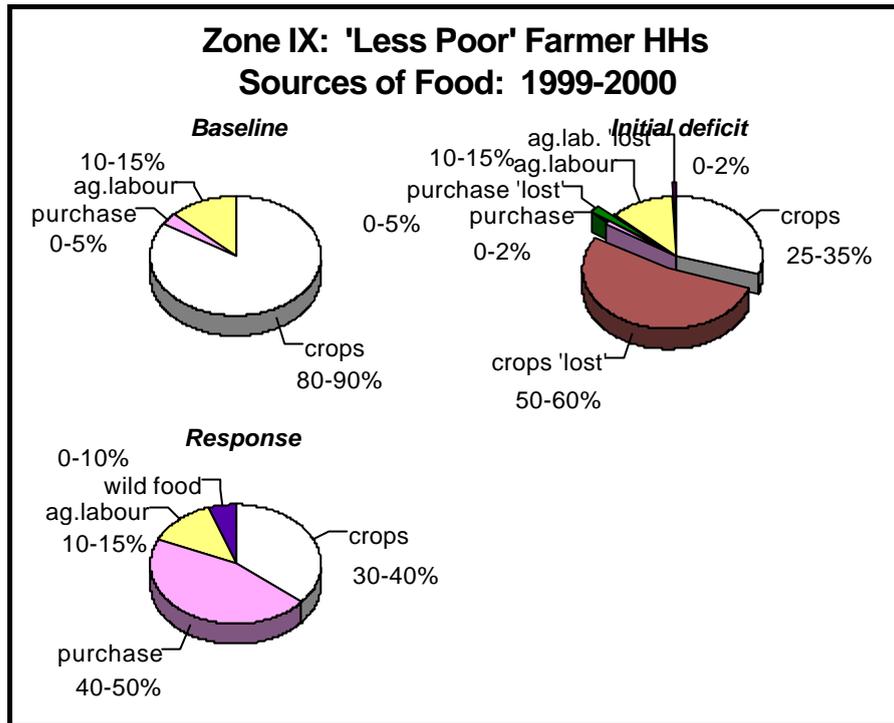


Figure 48

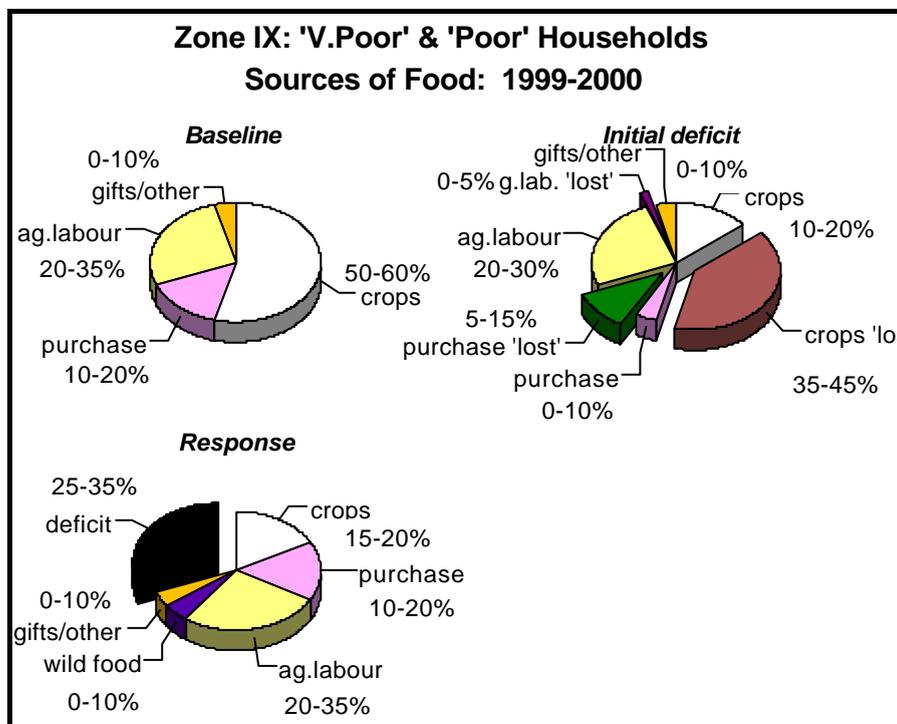
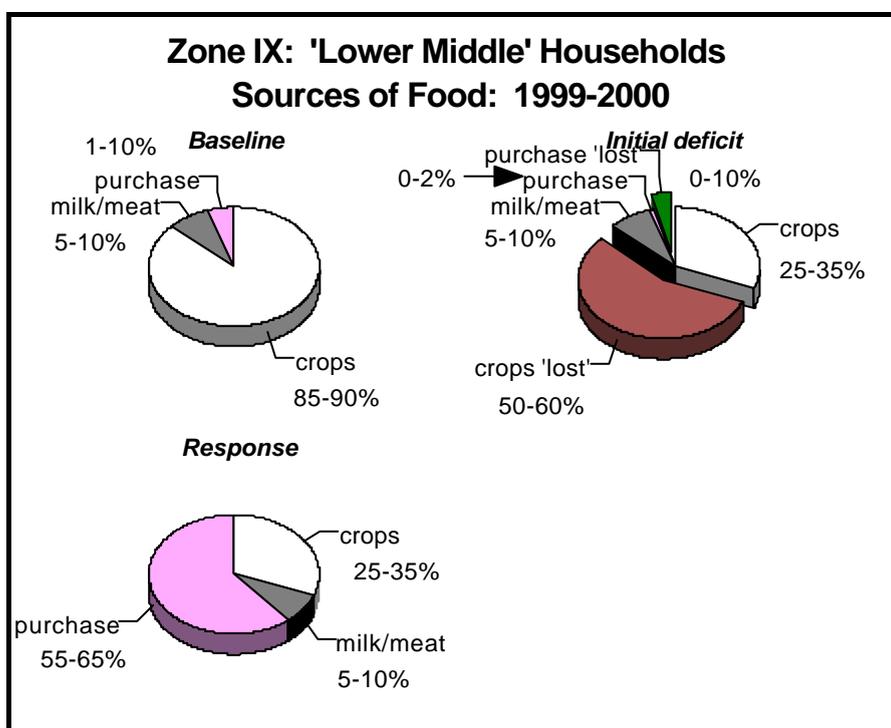


Figure 47

### The Response

The different wealth groups will employ similar strategies this year as last year, which is to say similar strategies as in Zone VII. This is illustrated in the figures above. The



**Figure 49**

final conclusion is that the 'very poor' and 'poor' will face a deficit of 25-35% of annual food needs between now and the start of the next green harvest. See the corresponding section for Zone VII above for a more detailed discussion on the assumptions behind and the implications of the findings for the current year.

## Comparing Zones

It is possible to compare maximum access to food across zones, and this in turn reflects differences in levels of poverty and wealth and relative food security. Figure 50 compares three zones. Zone V is the best off zone in terms of the production and purchasing power of the different wealth groups: at each level on the wealth spectrum, its wealth groups have better access to food. Zone VII is worst off.

A number of factors account for the differences across the three zones. A combination of poor soil fertility, unreliable rainfall and an undiversified economy is at the root of the problem in Zone VII. The sandy soils mean that yields are poor, and cultivating more extensive areas to counter this problem does not seem to be an easy answer for two reasons.

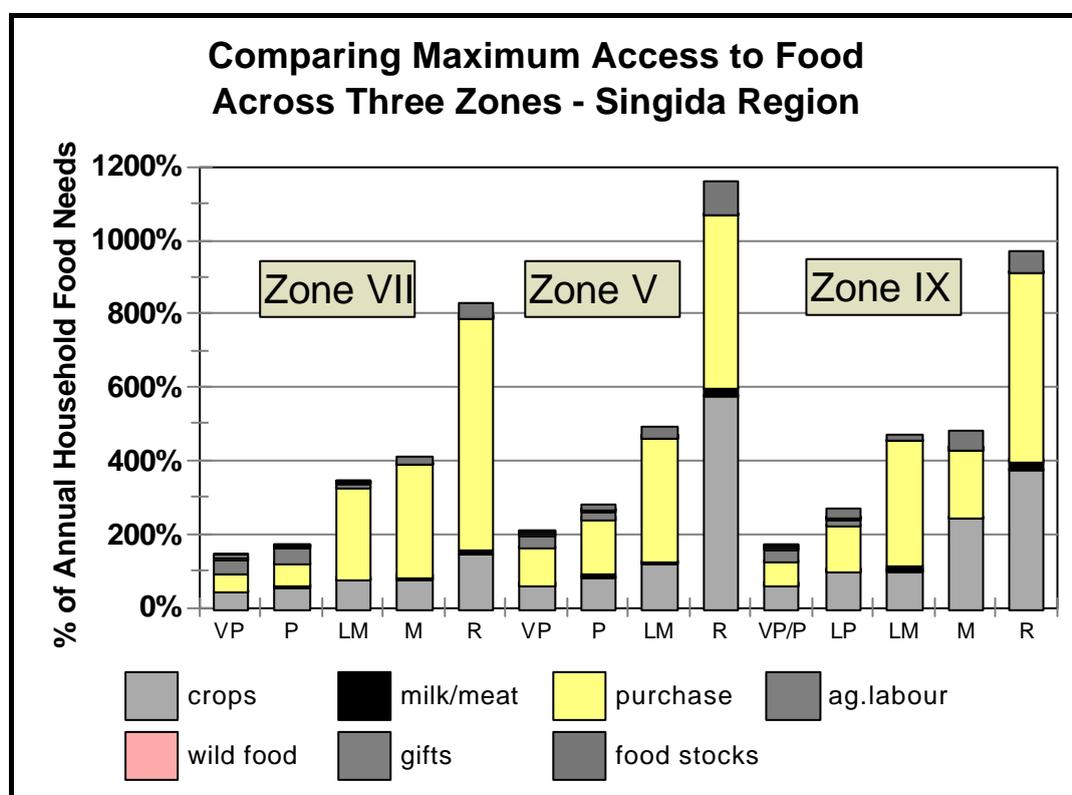


Figure 50

Lan

d areas cultivated per household are much greater in Zone V because farmers use oxen to plough, but it is reportedly difficult to plough the sandy type of soil found in Zone VII. In addition, manure is an essential agricultural input in Zone VII and is available in limited quantities; farmers argue that cultivating larger areas without manure would be pointless. The unreliable rainfall in Zone VII means that bad years are relatively frequent, forcing households to sell cattle (partly because they have limited carry-over food stocks because yields are poor even in 'normal' years), thus limiting herd sizes and the availability of manure. Furthermore, the entire economy of the zone is dependent on crop and livestock production and there are no unrelated options for households to turn to in times of stress. This is a common problem throughout the region, but at least there is a certain amount of honey production in Zones VI and IX and fishing and gum collection in areas neighbouring Zone V.

Figure 50 also suggests the type of shock to which each wealth group is most vulnerable: for example, the 'rich' in Zone V are particularly vulnerable to crop failure as they have the most to lose from failure of this source of food and income. The 'rich' in Zone VII, in contrast, are most vulnerable to shocks affecting their sources of income (since the 'purchase' part of the bar chart is largest), of which livestock sales are the most important. The 'very poor' and 'poor' in all zones have more diversified sources of food, making them less vulnerable to one type of shock in particular. But since their overall access is so limited, it takes less to push them below the 100% level.

The poorer households in each zone face a trade off each cultivation season between: cultivating their own land for yields in 5-6 months' time versus needing to eat each day of the cultivation season (and therefore having to work for others to find food or income to buy food each day). Although the return to working on their own land may ultimately be greater, these households are forced to spend time working for others in order to make it through the hungry season. This becomes an unending cycle and, because casual labour payment rates tend to be low, it is difficult for them to build up the assets required to improve their situation: livestock for manure or ploughing in Zones VII and V; and cash or food for paying casual labour in all zones.

## APPENDIX 1

In each of the following villages, wealth breakdowns and up to 6 detailed food economy interviews with different wealth groups were conducted, unless otherwise indicated:

### Singida Region

#### Zone V

Mampanta  
Zinziligi  
Uwanza  
Kisonga  
Ilunda  
Makuro  
Malaja  
Ishenga (wealth breakdown only)  
Kikhonda (wealth breakdown only)

#### Zone VI

Nkhoiree  
Mpetu  
Choda  
Unyampanda  
Minyughe  
Matare  
Mang'onyi (wealth breakdown only)  
Issuna (wealth breakdown only)  
Mahambe (wealth breakdown only)  
Gurungu (wealth breakdown only)  
Nsonga (wealth breakdown only)  
Mgungia (wealth breakdown only)  
Mwighanji (wealth breakdown only)

#### Zone VII

Wibia  
Nkuninkana  
Mampando  
Mwisi  
Mwahango  
Nduu  
Msungua  
Irisya  
Mnang'ana (wealth breakdown only)  
Mtunduru (wealth breakdown only)  
Unyangwe (wealth breakdown only)  
Msule (wealth breakdown only)

**Zone IX**

Ipande  
Doroto  
Msemembo  
Mbugani  
Mkwese  
Mpola  
Kashangu  
Chikombo  
Sambaru (wealth breakdown only)

**Zone XII**

Mwaru

**Zone XIII (villages where interviews were conducted with pastoralists)**

Mkwese  
Kashangu  
Baaba  
Mpola

**Dodoma Region****Zone VI**

Gonga  
Porobanguma  
Kuria  
Gingu  
Manantu  
Takwa  
Kinyamsindo  
Baaba (wealth breakdown only)  
Ovada (wealth breakdown only)  
Tumbakosi (visited by Dodoma team)

**ADDENDUM**

- BY C. RETHMAN

**ZONE III: Sibiti Rift Valley**

This section follows the same format as the section above for Zone VII in the Report: *Household Food Economy Assessment, Singida Region, Central Tanzania*. Livelihood patterns for the different wealth groups in Zone VI will be described: first for a 'normal' year (1996/97) and then for a bad year (1998/99). Finally, a projection will be made for the likely effects of this year's poor crop production (1999/00). To avoid repetition, the main differences between Zone VI and Zone VII will be highlighted here; aspects of the zone which are the same will not be described in detail. Therefore, it is advisable to read the section on Zone VII before this one.

Specific points on the wealth spectrum for Zone VI (see Table V, Report: *Household Food Economy Assessment, Singida Region, Central Tanzania*) are illustrated:

- , the 'very poor' do not own or borrow any livestock (apart from chickens); cultivate about 2 acres;
- , the 'poor' do not own cattle but they borrow up to 10, they may own shoats and they cultivate 3-4 acres;
- , the 'lower middle' own about 5 cattle and borrow up to another 5; they own around ten shoats and they cultivate about 5 acres;
- , the 'middle' own 20 cattle, 20 shoats and they cultivate about 7-8 acres – this group is not outlined in detail here; and
- , the 'rich' own more than 30 cattle and more than 20 shoats, and cultivate about 12 acres –this group is also not outlined here.

**Sources of Food in a 'Normal' Year**

As for Zone VII, the most recent 'normal' year was 1996/97, running from mid-March in 1996 (the time of the start of consumption of green crops from the field in Zone III) to the same time in 1997.

***Own crops***

The main food crops grown in Zone III are maize, sorghum, sweet potatoes and pulses, including groundnuts. Most of these crops are also sold for cash.

Manure is not so essential in Zone III, and the soil on the plains is fertile but rains can be erratic. This is why sweet potatoes are cultivated, and the practise of boiling, slicing and drying is also followed by households as is common in Shinyanga and Tabora. Good land is restricted, so farmers are not so able to expand to the same extent as in Zone V. Ploughing is, however, just as common as in Zone V.

The 'crops' indicated in the food pies roughly represent the food that households consume from their crops after sales and other uses (such as gifts, brewing, casual labour, communal labour and seeds). For more detail on crop sales see the 'sources of income' section below.

The proportion of food obtained from own crops increases with wealth, from roughly 60-65% of minimum annual needs for the 'very poor' to over 70% of needs for other groups.<sup>33</sup>

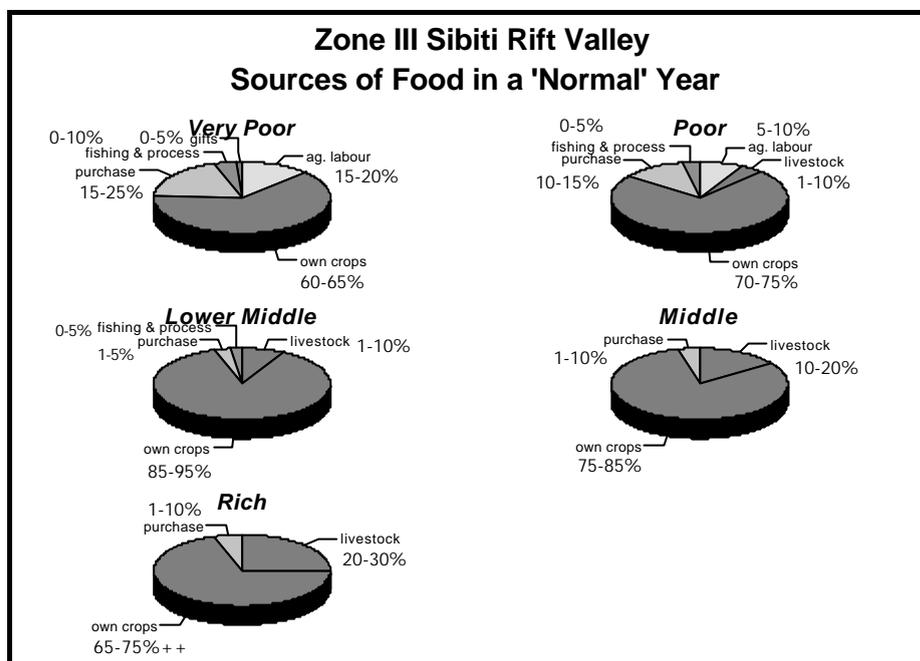


Figure 52 - Sources of food

### Milk/meat

The 'poor' tend to have one lactating cow in a 'normal' year, the 'lower middle' have 2 and the 'rich' have six. Lactation periods, yields and milk sales are similar to Zone VII.

### Agricultural labour

'Very poor' households obtain up to an eighth of their food needs through labour exchange in the form of agricultural labour. As in Zone VII, payment is made in kind (food) or in cash, usually depending on the choice of the labourer in a 'normal' year. The pie illustrates payment partly in food but this could just as equally be payment in cash, illustrated as additional income in the income pie (see below) and additional purchase of food in the food pie above. Payment in cash tends to be related to the current market value of a certain quantity of food.

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<sup>33</sup> The sources of food pie chart for the 'rich' may look slightly strange, because the proportion of food obtained from own crops is smaller than that for some of the other wealth groups. This is because the pie represents 1900 kcal per person per day and this group obtains a large number of calories from milk and from purchased foods (such as sugar and meat). In reality this group in particular consumes more than 1900 kcal per person per day in a 'normal' year.

Migration to other areas in search of agricultural work is common Zone III, especially in 'normal' years.

### ***Market purchase***

Only 'very poor' and 'poor' households purchase grain to make up their remaining food needs in a 'normal' year (up to 25%).<sup>34</sup> The other wealth groups obtain adequate food from their fields, supplemented in the case of some groups by milk and meat. Other foods such as vegetable oil and meat are purchased in small quantities, although this increases by wealth group.

### ***Gifts/other***

Gifts (in small quantities) have been included in the 'normal' year food pies for the 'very poor'.

### ***Wild food***

Small quantities of various wild foods (mainly fruits and leaves) are available in the rainy season. They do not make a significant contribution to household food requirements in a 'normal' year.

### ***Fish and Fish Processing***

Fishing equipment in the Sibiti valley is usually owned by wealthier people, or by specialist fishing families. However, the menial tasks of catching tend to be carried out by people from the poorest wealth groups who are allowed to keep one day's catch for every three. Most of the catch gained from the fourth day is sold, but some are always kept for eating. The full four-day cycle will usually take a week, and may be repeated up to 20 times a year, depending on the availability of fish. Typically, around a half to two-thirds of the 'very poor' are involved in this activity, less than a half of the 'poor', and very few 'lower middle'.

Likewise, processing fish (smoking and drying) is normally done by the 'poor' and 'very poor' on a contract basis with the fishermen. Again, they are paid with proceeds from the work (they get to keep the dried fish), although the earning rate is higher. The work is less attractive, however, and roughly half the numbers of household engage in this activity as in fishing itself.

Both activities supply a substantial amount of food for the 'very poor' and 'poor', 0-10% and 0-5% respectively.

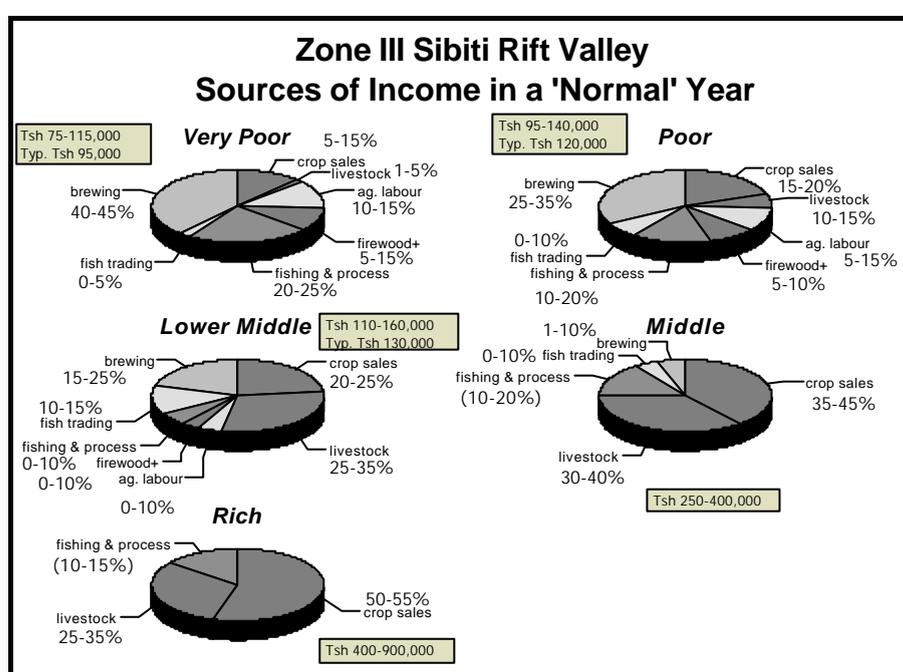
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<sup>34</sup> If the 'very poor' were only paid in cash for all their casual work, then the purchase section of their food pie would be 30-35%.

## Sources of Income in a 'Normal' Year

For the top two wealth groups, crop sales are the most important source of income: 44-55% of income for 'middle' households and 55-60% for the 'rich'. For the 'lower middle', 'middle' and 'rich', income from livestock (both sales of animals and sales of products) is another important source of income. In contrast, livestock sales make only a small contribution to the incomes of 'very poor' and 'poor' for whom brewing and fish-related income are much more important. Casual labour (both agricultural and other types) is also important for the 'very poor' and 'poor'.

For the specific points illustrated on the wealth spectrum in **figure 2** above, a 'very poor' household has an annual income (at 1996/97 prices) of about Tshs. 75-115,000; a 'poor' household has an income of about Tshs. 95-140,000 per year; 'lower middle' households of about Tshs. 110-160,000 per year;



**Figure 53 - Sources of Income**

'middle' households of about Tshs. 250-400,000 per year; and 'rich' households of about 400-1,000,000 per year.

### Crop sales

Crop sales increase with wealth: the 'very poor' sell about 12 tins of grain in a 'normal' year, representing 5-15% of their total income, whereas the 'rich' sell about 30 sacks of grain, and two acres worth of cash crops, representing

55-70% of their income. Sunflower, finger millet and groundnuts are the main cash crops<sup>35</sup>.

As in Zone VII, the timing of crop sales varies by wealth group.

### ***Livestock sales***

The 'rich' tend to sell three cattle and four shoats per year, while the 'lower middle' sell one and 1-2 respectively. In 'normal' years the adult cattle which are sold are usually replaced through the purchase of calves. Households avoid selling females of reproductive age.

The 'very poor' typically only own and sell chickens, while the 'poor' may also sell a shoat, though not every year.

### ***Livestock product sales***

Milk sales are most common in the rainy season (January - May) for the wealth groups with access to cattle. About ½ a litre per day per lactating cow is sold, although this varies considerably from one place to another in the zone, depending on access to markets and on the number of people with fixed employment in the village or nearby market centre. Some households also sell ghee but not in large quantities as this is mostly kept for own consumption (reducing the purchase of vegetable oil for cattle-owning groups).

### ***Agricultural labour***

Agricultural labour has been described above and usually partly paid for in kind (shown in the food pie) and partly in cash (shown in the income pie). The precise split between payment in food and payment in cash can vary considerably from one household to another, and is usually the choice of the labourer, although activities early on in the year would fetch cash, while those later on during the hunger period, would fetch food.

Labour performed outside the area (mainly in Shinyanga, on the cotton farms) is invariably paid in cash. Not all households engage in this, though, but it may be seen as an alternative to fishing and fish processing.

### ***Fish and Fish Processing***

Incomes vary, but a typical pattern may be: 18 days catching for self, each day fetching 20 smaller fish that sell for Tshs.50 each<sup>36</sup>. This means an annual income of Tshs.15-20,000, with a similar amount coming from processing (which takes less time, but is harder work and opportunities are more limited).

### ***Fish and Trading***

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<sup>35</sup>Cotton was grown in 1996, but this has since been abandoned — farmers cited poor markets as the main reason.

<sup>36</sup>These data are based on interviews.

Trading may not always involve fish, but usually this is the main activity. The activity is mainly carried out by the 'lower middle' and 'middle' groups, who can net Tshs. 10-20,000 per annum. The 'very poor' and 'poor' get less than Tshs. 5,000 and Tshs. 12,000 annually, the main constraint being their lack of capital and access to markets. The 'rich', with their crops and livestock, do not need to get involved in the activity, and will instead purchase equipment for contract loaning to the poorest sections.

**Other casual labour (firewood+)**

There are a variety of 'other' sources of income which are pursued by 'very poor', 'poor' and 'lower middle' households. These are similar to Zone VII. Income from these various sources amounted to about Tshs. 5-15,000 for the 'very poor' and 'poor' households in 1996/97 and Tshs. 2-6,000 for the 'lower middle'.

**Brewing**

This is similar to Zone VII, except that the 'rich' do not typically brew. Brewing from honey is common.

**Expenditure**

The pattern of expenditure in Zone III is roughly the same as in Zone VII, except that households are slightly wealthier

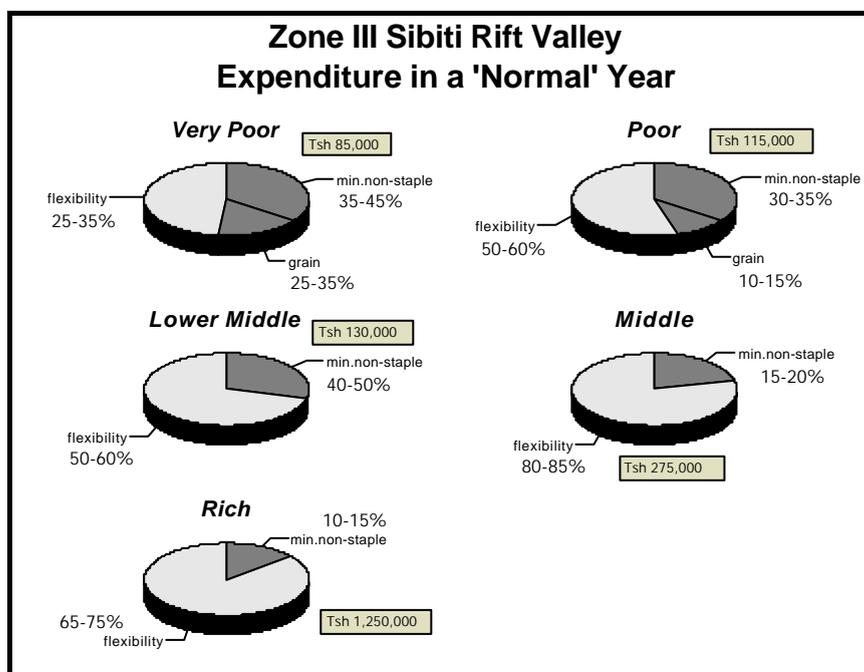


Figure 54 - Expenditure

in this zone. Expenditure on grain only appears in the pies for the 'very poor' and 'poor'. The proportion of expenditure labelled as flexibility (as defined above for Zone VII) increases as wealth increases.

## **Last Year: Crop failure due to heavy rains and pests**

### *Defining the Problem*

In most aspects, the problem in Zone III last year was much the same as in Zone VII: crop production in 1998 was reduced due to heavy rains and pests, the green harvest in 1999 was late, grain prices were high, livestock prices were low, and brewing was reduced. However, a notable difference for this zone was in the production of fish, which bred up more than usual in the heavy rains and then became easy to catch as the waters shrank with the delayed rains at the end of the year. The severity of the problem for agriculture was slightly worse, according to the official figures:

- , food crop production was roughly 15-20% of 'normal'
- , cash crop production was three-quarters of 'normal'
- , the majority of villages did not receive relief food
- , grain production, and hence brewing, was 10-20% of normal
- , agricultural labour could be expanded to three times normal (300%) by travelling to Shinyanga to work on the cotton farms there
- ,
- the fish catch increased five times over normal (500%)<sup>37</sup>
- , the price of fish also increased, by 20% more than normal
- , everything else the same as Zone VII

### *The Initial Deficit*

Figures 4-6 show the initial deficits for three wealth groups in Zone III, broken down into their component parts, including the loss of food from own crop production, from agricultural labour, and from purchase. The 'very poor' and 'poor' and 'lower middle' wealth groups all faced initial deficits of 70-80%.

### *The Response: How Did Households Cope?*

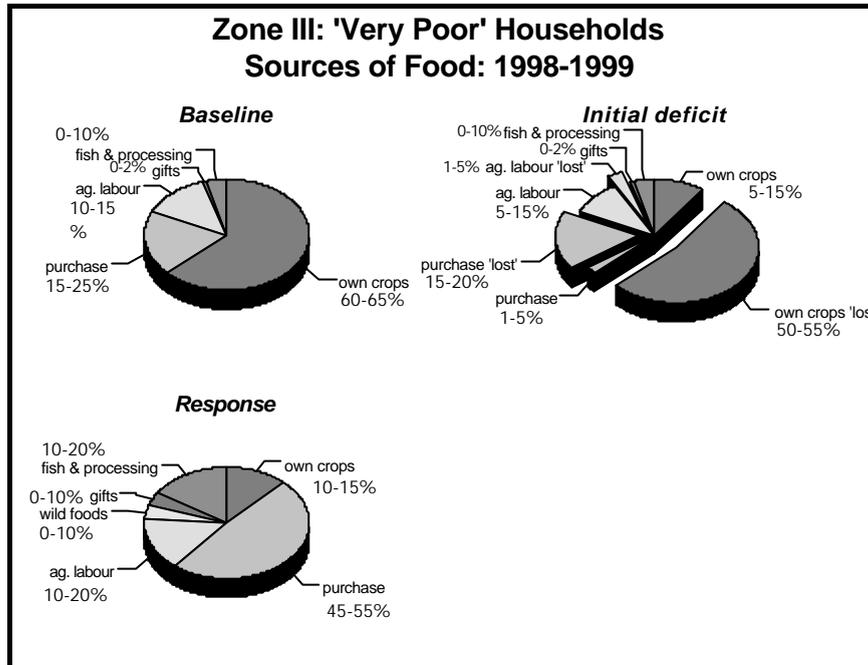
The strategies pursued by the various wealth groups to obtain food and income last year were in broad terms similar to Zone VII: switching expenditure from non-essential to essential items, gathering wild foods, expanding casual

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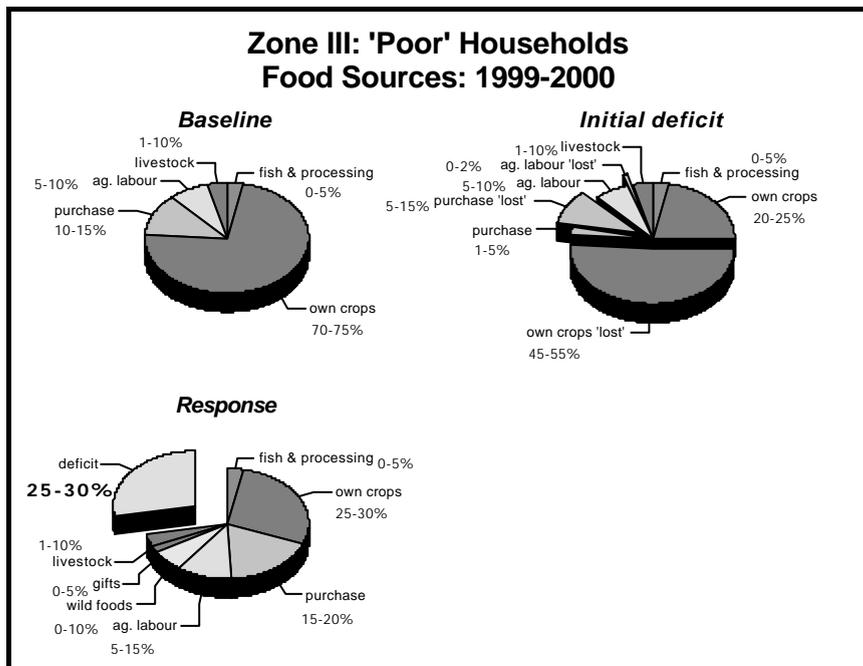
<sup>37</sup>The problem specification for fish is based on Statistics from Iramba District Council. These statistics are only being used for relative comparisons, as it was reported that the absolute numbers may be an underestimate since they are collected for tax purposes.

labour (including travelling to Shinyanga), selling livestock (and not replacing them). But households in Zone VI have a source of income that is rarely available in Zone VII: fish sales. This enabled them to survive the effects of crop failure.

**Current Situation: Crop failure due to late, irregular and inadequate rainfall**



**Figure 55** - 'Very poor' households in 1998-1999



**Figure 56** - 'Poor' households in 1998-1999

**Defining the Problem**

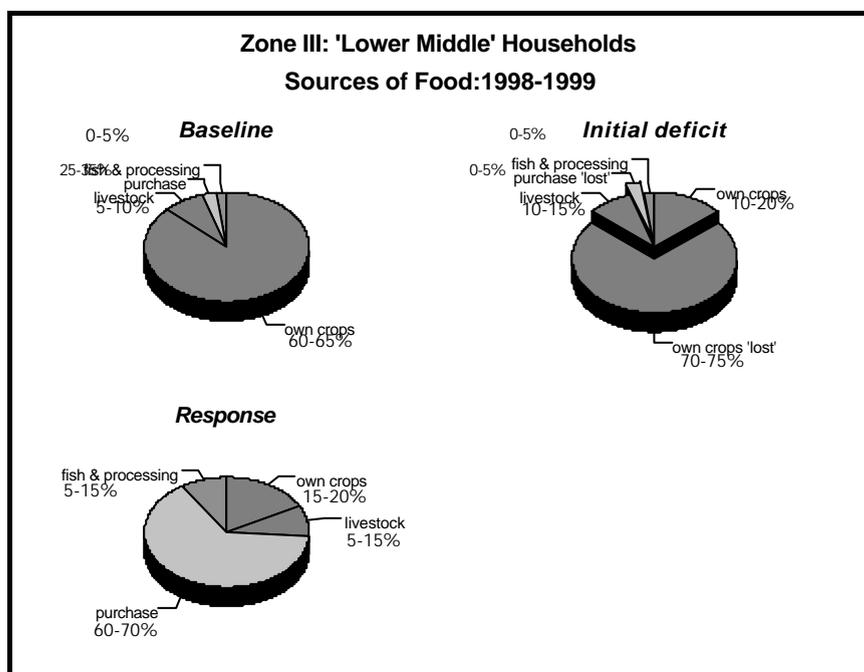
Crop production this year is somewhat better than last year in Zone III. The scenario which is analysed here for the current year (late April 1999 to late March 2000) is as follows:

- , food crop production about 30-40% of 'normal'
- , cash crop production three-quarters of 'normal'
- , land areas cultivated: the 'very poor' and 'poor' cultivated 75% of 'normal' land areas; the 'rich' cultivated 25% more than 'normal' land areas
- , brewing one-quarter of 'normal' substantial reductions in cotton farming in Shinyanga and no opportunities for work there, hence agricultural labour only expandable by another half (50%)
- , fish production the same as normal (the poor rains in the previous season having an adverse effect)
- , fish price 20% more than normal
- , everything else the same as Zone VII

**Initial Deficit**

Figures 7-9 show the initial deficits for two wealth groups in Zone V, broken down into their component parts. The 'very poor' and 'poor' face an initial deficit of 55-65%, and the 'less poor' of 50-60%.

**The Response**



**Figure 57** - 'Lower middle' households, 1998-99

The strategies pursued by the various wealth groups to obtain food and income this year will be much the same as last year: switching expenditure from non-essential to essential items, gathering wildfoods, expanding casual labour as much as possible, selling livestock and expanding fishing to the maximum. However, the conclusion is that the 'very poor' and 'poor' will both still face a deficit of 25-30% of annual food needs between now and the start of the next green harvest. The 'lower middle' will also face a deficit, but this will be somewhat less: 15-25%. Other wealth groups will not face a deficit. See the corresponding section for Zone VII above for a more detailed discussion on the assumptions behind and the implications of the findings for the current year.

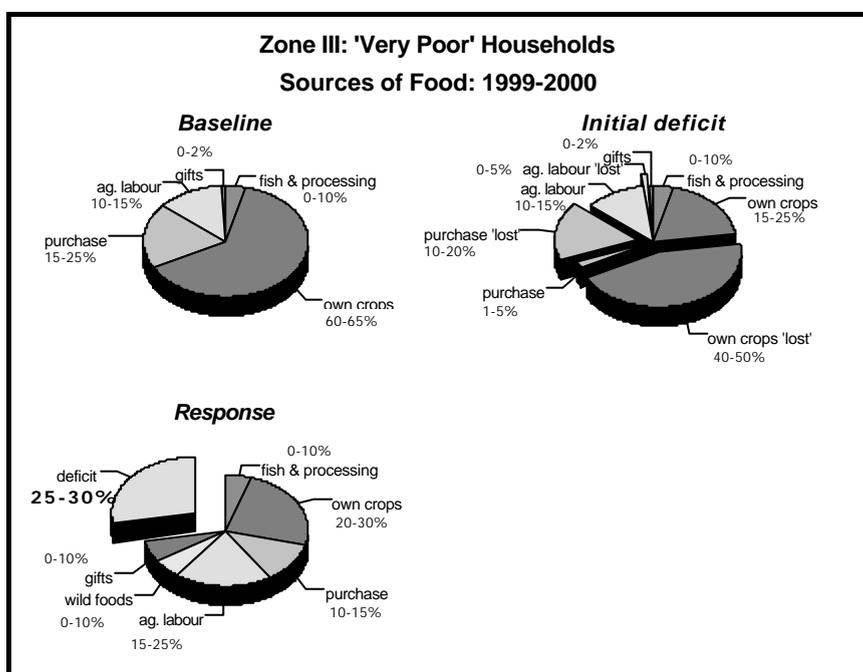


Figure 58 - 'Very poor' households in 1999-2000

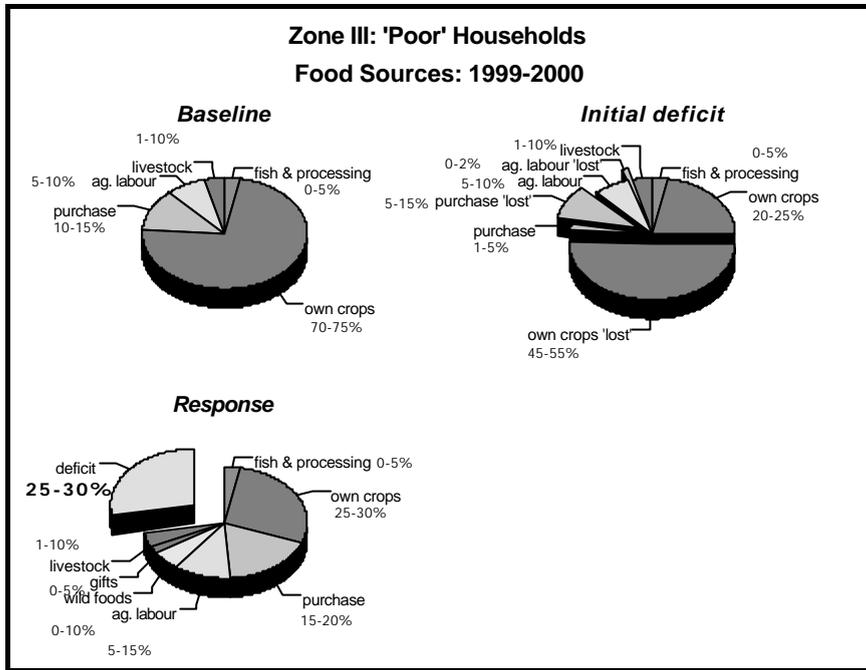


Figure 59 - 'Poor' households in 1999-2000

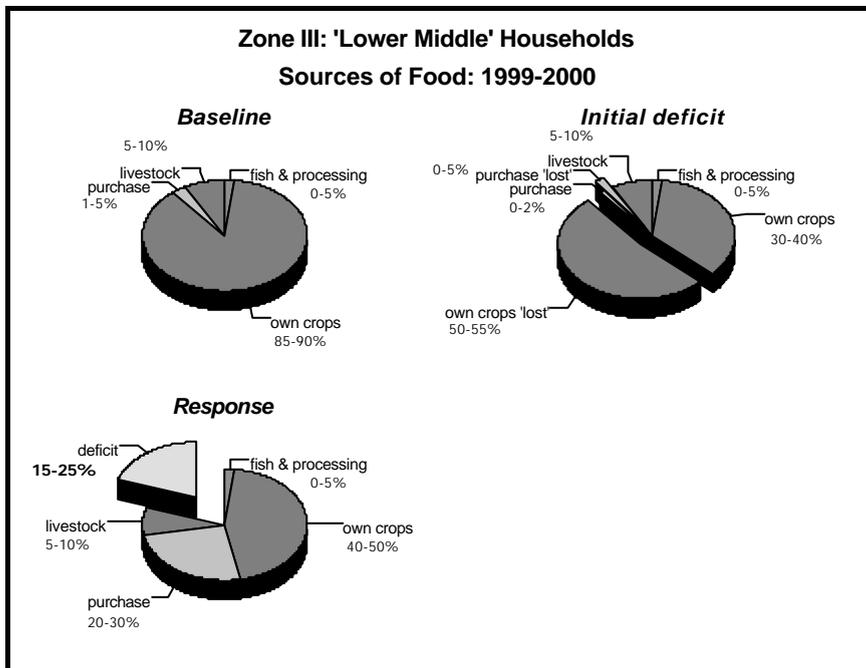


Figure 60 - 'Lower middle' households in 1999-2000