THE IMPACT OF HIV/AIDS ON FOOD SECURITY – A STUDY OF ORPHAN ADOPTION IN RURAL INGWAVUMA, KWAZULU-NATAL

by

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A dissertation submitted in partial fulfilment of the requirements of the B. Soc. Sci (Masters) Degree in ECONOMICS

Faculty of Human and Management Sciences

Pietermaritzburg

July 2003

ABSTRACT

"Food security is access by all people of all times to enough food for an active, healthy life" (World Bank, 1986:1).

It is thought that between 300 million and 1 billion people in the world are food insecure. This could be as much as twenty percent of the world population. A World Bank study estimated that 340 million people in developing countries did not have enough calorie intakes to prevent stunted growth, and a further 730 million did not have enough income to ensure an active working life. Many households barely subsist around a poverty line - at times above it, and at other times below. Such transitory food insecurity is common, dependent on the weather and other environmental or socio-economic factors. In South Africa, a rising population growth has meant a rise in food insecurity for many rural households, and this may be further exacerbated by the impact of HIV/AIDS which increases occupancy and dependency ratios in households when orphaned children are taken in to be cared for.

This research introduces the key concepts and indicators of food security set in the framework of rural subsistence and a high HIV infection rate in Ingwavuma, KwaZulu Natal. Four research objectives have been developed around a 'case-control' design, whereby the demographic, agricultural and socio-economic characteristics of families who have adopted AIDS orphans are compared to households who have not adopted orphans. The first objective of the study comprised an assessment of the make-up and social fabric of households in order to analyse the household head's ability to manage the family's consumption requirement. The results showed that forty six percent of households in Ingwavuma were headed by a 'mother' (single parent) figure and that the larger household occupancy ranges tended to be female headed. Furthermore, households comprising between 11 and 15 people, were female to male headed 7:1, pointing to high dependency ratios in households less likely to receive consistent income from a local and employed male household head. The second objective was to assess the level of dependency on income related purchases of food compared to the level of food production generated within the household itself. Sixty-three percent of households stated that they would not anticipate being able to obtain any work and thirty two percent felt they might be able to obtain work in the cities or with neighbours which would sustain them for one month. Only two percent of the sample anticipated

being able to source income for three months, and another two percent for six months - highlighting the high level of dependency that the study area has on agriculture as opposed to income. The third aim of the study was to assess the impact that illness, death and the adoption of AIDS orphans have on the dependency ratio within a household, and its resultant impact of food security. A high level of illness and death was shown to occur in both cohorts of the sample, although deaths in the 'orphaned households' created larger numbers of household occupants and thus dependents when compared to households without orphans. Finally, three logistic regression models of food security were developed based on the main food and livelihood management indicators in the Ingwavuma community and the impact of the HIV/AIDS epidemic on these was included in the models. The indicators could be incorporated in the development of a predictive early warning food security model for the area, similar to the work undertaken in Mozambique and Botswana where an early warning system is used to highlight expected periods of 'lean harvest' in order to ensure that the most vulnerable households are cared for. Another recommendation of the study is the development of a surveillance system for the monitoring of the epidemiology of illness and death in the area to enable organisations to tackle the impact of the HIV epidemic. Specific research to address the targeting of 'households at risk' which include grandparent headed households and household heads who are HIV positive would also be of great benefit. Research into the development of both the formal and the informal economy, the industrial and entrepreneurial development of the area and the training of the community's untapped labour supply would also be of value to the community. Finally, research into methods to improve the agricultural base and food production skills would be enormously useful in developing the capacity of the community to provide for itself.

ACKNOWLEDGEMENTS

This thesis is written with grateful thanks to Tennassie Nichola my supervisor, for his patient waiting, consistent encouragement and for all the help and guidance that I have received from him. I owe a tremendous debt of gratitude to my husband Martin, who has hosted so many friends without me, made dinners and washed mountains of dishes, spent hours pouring over this work at certain stages and learnt how to make himself scarce at others, managed to cope with my continued obsession with Ingwavuma and cheerfully entertained most of my wildest schemes and incessant talking and thus to quote the words of another 'graciously accepted my absences and more so my presences'*.

I would also like to express my appreciation to all the people who helped me with the data collection in Ingwavuma, in particular Beni and Hervey Vaughn-Williams, very generous with their hospitality and friendship, who joined me in the data collection and who put me in contact with the many people who proved so helpful. My father, who unfazed by the increasingly unrecognisable state of his truck, spent time with me in Ingwavuma collecting data and developing GIS records of the interviewed households. Marcus, Hlengiwe and Gugu, the interviewers, for their enthusiasm and their commitment to project, in spite of the long hours spent in the hot sun and worse still, in the rain. Both 'Mr Mthembu's' – Mr Mthembu, the headmaster of St Phillips Primary School, for the time he spent with us, the meeting that he hosted and for his willingness and availability to be of assistance whenever needed. 'Mr Mthembu of Agriculture' for the long distance telephone conversations that we had and his ability to communicate concepts that were difficult to understand. Also grateful thanks to Ann Barnard, Andrew Ross and Nokthula for their valued input.

Gugulethu Miya and Fortune and Hlengiwe Nguse helped me with the translation of the questionnaire, and their assistance was greatly appreciated.

My family and friends have stood by me full of encouragement and wisdom. I would like to thank my mother, for her valued support, and for the many prayers, phone calls, cards and her insistence on the consumption of multivitamins! I particularly appreciated the prayer, and being whilst suffering from tonsillitis during the write up of the thesis,

drew great strength and comfort in them. I also felt that God gave me extra resources of energy and strength, and a real clarity of mind for which I thank and praise Him. My work colleagues have been full of kind words of encouragement and sympathy, as have the Davis family with emails from afar. I would also like to thank my in-laws for their patient acceptance of my ghost-like existence, as so too with my closest friends and I would like to name them in appreciation of their sacrifice; Dave, Jo, Trevyn and Bruce; Rhys and Sara and Eden; Judit and Deigo, Sian, Claire, Caryn, Cath and Cindy.

And finally, an 'ode to chocolate' for where would I have been without it in the wee hours of the morning?

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CHAPTER 1
INTRODUCTION

1.1 OVERVIEW

Ninety five percent of the approximately thirty six million households living with HIV/AIDS reside in developing countries and of these, 4.2 million live in South Africa. The illness and later deaths of those presently HIV positive will have tremendous impact on family members and will affect communities where HIV infection rates are high particularly if these communities are rural and dependent on subsistence farming, thus requiring healthy individuals to produce sufficient food to meet the household's dietary requirement. Increasing research is being undertaken to assess the impact of HIV on food security in rural areas, and in the rural areas of South Africa in particular which were marginalised during the apartheid era and have remained underdeveloped and agriculturally dependent.

1.2 THE PROBLEM

The Ingwavuma district has been described as one of the poorest in South Africa. Most of the Ingwavuma community reside in traditional homesteads and are subsistence farmers with only thirty percent of the wage earning population employed. The little income available in the area is sourced from remittances, social welfare grants and pensions and the livelihood of the community thus depends on the ability of family members to work in fields and to harvest sufficient food for their household's needs. At the same time however, Ingwavuma has a high rate of HIV infection, and as such, may be considered a 'community at risk'. In this region, one in three people between the ages of 15 and 30 have HIV/AIDS. The ramifications of this are beginning to be felt as more members of the community have begun to die leaving behind them orphans who need care and nurture, and as the epidemic progresses and more people develop full blown AIDS, individual cases of HIV might well impact the level of wellbeing in the entire community.

The hypothesis underlying this research purports that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans. The premise underlying this hypothesis is that families who have not adopted AIDS orphans will have smaller household occupancy and thus household dependency ratios, as the food supply available to the family will thus be shared amongst fewer people. The premise underlying the hypothesis is also developed in view of the fact that HIV generally kills the more productive members of the family, reducing the food security of those who reside in households where dependency ratios are increasing, or where household members might be dependent on HIV positive breadwinners who may become ill and unproductive over time. Another reason is that orphaned children might reside with grandparents who are elderly and unable to work or to stretch their pensions to cover the food requirements of the growing household, thus causing the household food security status to be even more vulnerable.

1.3 THE OBJECTIVES OF THE STUDY

The study aims to introduce the key concepts and indicators of food security within an agricultural community and to set this in the framework of international development research and rural subsistence in South Africa in order to identify the impact of HIV on food security in Ingwavuma. The objectives of the study conducted in Ingwavuma were to:

- assess the main characteristics of the structure of households, and in particular to assess the household head's ability to manage the household food consumption requirement, relative to the household dependency ratio;
- assess the level of dependency on income related purchases of food compared to the level of food production generated within the household itself;
- assess the impact that illness, death and the adoption of AIDS orphans has on the dependency ratio within a household and its resultant impact of food security
- develop a predictive model for food security in the Ingwavuma community with regard to the present level of livelihood management and the impact of the HIV/AIDS epidemic.

1.4 PROCEDURE AND DATA

An extensive literature review informed the data collection process and led to the development of a survey that was conducted in 91 households in Ingwavuma in November 2001. The survey included information regarding the household consumption requirement, household food production, income and liquid assets available to purchase food. It also included the difficulties in production encountered by the household, animal husbandry and diseases, the family's coping mechanisms in the face of food insecurity and family illness, death, and the costs of medical treatment. The interviews were conducted in a 'case-control' format, with families containing no AIDS orphans forming the 'control' cohort, and families who had adopted AIDS orphans being considered as 'cases'. Two separate analyses were performed on the data. The first was a descriptive and qualitative appraisal of the sample which was also informed by the research team's observations during the data collection process, the second – a more quantitative analysis, was performed on the data using a logit model.

1.5 THESIS ORGANISATION

The thesis contains two literature reviews which comprise chapters two and three. Chapter two introduces the main concepts developed in international food security research, since the 'development of the topic' in 1974. The main sections of the chapter identify the background and development of household food security research; the causes of food insecurity and resultant malnutrition; indicators of food insecurity; gender equality and famine. The chapter concludes with an overview of common international causes of food insecurity, which creates a platform for food insecurity and HIV in South Africa, discussed in chapter three.

Chapter three assesses food insecurity and HIV in the context of the characteristics of the disease and the epidemic, its impact on rural livelihoods, vulnerability by race and province, gender, crime, education and human and financial capital and concludes by highlighting similar research presently conducted in the field of food security in South Africa.

Chapter four introduces the study area and provides a descriptive and qualitative analysis of the sample. Researched household characteristics give rise to an understanding of intra-household entitlements, resource provision and general household income allocation. Because the nutritional wellbeing of individuals within households, especially children and the elderly depend on decisions made by the household head, the structure of the household will be analysed in detail. In view of the hypothesis underlying the study which purports that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans, occupancy and dependency ratios were deemed important in the anticipation that these would have an effect on food security, and especially if households are experiencing increasing occupancy ratios. The quantity of food produced and the difficulties in production encountered by households forms a large part of the qualitative analysis in chapter four. This is noted in the context of the income intensification, food supplementation and reduction activities undertaken by households when their harvested produce begins to run out. Finally, chapter four notes the differences between the 'orphan' and 'non-orphan' households when analysing the impact of illness and death and it addresses these in the light of the community's capacity to care for the rising number of orphans created by the HIV/AIDS epidemic.

The descriptive overview presented in chapter four forms the basis of a logistic regression presented in chapter five. The model uses variables discussed in chapter four to construct predictors of food insecurity in Ingwavuma, noting the impact of the absorption of HIV/AIDS orphans into a household as well as other variables such as number of occupants per household, person fulfilling the position of the household head, quantity of the staple produced, damage to crops from pests and during storage, family wealth, illness and death which are all anticipated to have a significant impact on the consistency of a household's access to 'sufficient food at all times for a healthy life'. The chapter begins by introducing the explanatory and dependent variables in the model, and then presents the methodology, results and discussion that follow from the analysis.

Chapter 6 concludes the dissertation, noting how the study achieves its stated objectives as well as describing some of the limitations of the study and possible areas for further research.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

> "There is a new theme in international discussions of Africa's food supply. That theme is crisis."(Koopman Henn, 1983:1043).

The above quote highlights the seriousness of world food insecurity in the mid-1970s and early 1980s (the time of the quote above). During that period, food shortages occurred on a national scale, and these problems prompted policies (for essentially developing countries) to raise national agricultural production. These policies, linked to `the Green Revolution' agricultural technology, were generally successful in reducing such national food shortages (Koopman Henn, 1983).

But the successes in agricultural production and national food security have not been emulated in a different form of crisis; that of household food security (Kennedy and Haddad, 1991).

Household food security relates to the 'ability of a household to secure enough food to ensure an adequate dietary intake for all its members' (von Braun, Bouis, Kumar and Pandya-Lorch, 1992). Achieving this type of household food supply remains a global challenge with an estimated 300 million to 1 billion individuals in the world currently food insecure. It is thus an issue of supreme international importance. National food security is a poor proxy for household food self-sufficiency. It is possible, and often common, to have a quarter of the population consuming less than eighty percent of their nutritional requirements even when the country has more than the needed per capita food supply. It is essentially the household's ability to obtain sufficient food (related to household production and income) which determines their food security, rather than national supplies. Household food security requires both (i) adequate physical food supplies at easily accessible locations, with the maintenance of food delivery at the location, as well as (ii) the entitlement of each household member to adequate food. Such food would be self-produced or purchased from income earnings.

Thus the focus on food security should be on a household's access to available food, rather than national or local food supply (von Braun *et al.*, 1992).

The study of household food security thus requires a vast amount of information which links socio-economic, demographic and anthropometric variables with food demand, supply, stock and trade indicators. It is also directly impacted by poverty, as the poor do often not have adequate means and entitlements to accessing food in the necessary quantities for healthy living. Not only are the results of food insecurity tremendous human suffering, but also productivity losses and diminished work. Diminished school and mental performance cause inefficient income-earning decisions as well as inefficient resource allocation. Ensuring adequate household food security will thus have important implications for household and thus regional productivity, resource-allocation and income-earning potential (Haddad and Kennedy, 1991; Herbold Green, 1993; McLachlan, 1992 and von Braun *et al.*, 1992).

The purpose of this literature review is to expose the key concepts and findings regarding international household food security. Food security has been a topical issue since the World Food Conference of 1974, and much has been analyzed and developed in the area since then. It is useful to set the findings of household food security in Ingwavuma, in the context of researched knowledge of the topic. The literature review thus focuses on:

- the background and development of household food security research;
- the causes of food insecurity and resultant malnutrition;
- indicators of food insecurity;
- gender and entitlement;
- food insecurity and famine.

The HIV/AIDS pandemic has had a severe impact on food security, particularly in sub-Saharan Africa. Chapter 3 will assess the impact of HIV/AIDS on household food security in the South African context, and an attempt will be made to clarify the South African scenario in the context of the five above focus areas. Research conducted in this field in South Africa will be described, linking governmental policies to the activities of international and local organisations, as well as to the research conducted by universities and development workers. The literature review is intended to give the

reader clarity regarding the relevant food security concepts and indicators that will be applied to the research conducted in Ingwavuma.

2.2 HISTORIC OVERVIEW OF FOOD SECURITY INDICATORS

Household food security monitoring dates back to 1880. In the years prior to this date, famine had been regularly recurring in India (the then British Colony). The British Administration drafted a household food monitoring system called the Indian Famine Codes, which were aimed at ensuring efficient information channels where the early detection of food scarcity could be communicated, and emergency relief measures thus prepared (De Waal, 1989). The codes were developed on a provincial basis and relied on information similar to the indicators in use today. These were agricultural production, rainfall and social indicators like grain market prices and migration patterns (Davies, Buchanan-Smith and Lambert, 1991).

There is little information available about food security from those times through to the World Food Conference of 1974. Since then, the historical analysis of food security has seemingly crossed three 'overlapping paradigm shifts' (Maxwell, 1996). These are:

- From a global and national focus to a focus on household food security;
- A food first view to a livelihood perspective;
- From the use of objective indicators to subjective indicators of food security (Maxwell, 1996:157).

2.2.1 From a global view to a household view of food security

The World Food Conference held in 1974 was the result of a sharp rise in world food prices, and thus the fear that the world food market was unstable. Its focus was chiefly on world food supply, and the food security of nations. The proposals that were then drafted identified food stock and import stabilisation plans with new institutions birthed for these schemes, like the World Food Council and the FAO (Food and Agriculture Organisation) Committee on Food Security. The IMF (International Monetary Fund) also made financial assistance available for cereal imports for poorer countries.

The conference identified food security in this international and national context by defining it as:

> "availability at all times of adequate world supplies of basic foodstuffs ... to sustain a steady expansion of food consumption ... and to offset fluctuations in production and prices" (United Nations,1975).

National Policies during this time promoted country level risk-reducing strategies. The causes, consequences and levels of food insecurity differed widely between countries, and internationally promoted policy options were very general, with the aim of being country specific if applied. Examples of these policies are:

- Macroeconomic policy: which focused on development strategies for growth and poverty alleviation. As such, non-agricultural and other economic policies were needed to complement food and agricultural strategies. These included pricing strategies, job creation and employment, income equality, industrial protection, fiscal policies and basic service delivery (von Braun *et al.*, 1992).

- Storage and trade oriented strategies: many low income countries had, and still have foreign exchange constraints and other trade disadvantages. The 'minimalist' approach to price stabilisation was promoted as an effective trade strategy. IMF loan facilities were also identified as possible relief measures. Food storage under public control was considered essential for national food security.

- Production oriented policies: these would be programs that would have aimed to increase the production of food and cash crops for sale within the country. Technological innovations were seen as methods to boost plant yields and farming methods, thus stimulating agricultural growth, employment opportunities and food supplies.

- Other strategies: would have included national credit provision for the poor, labour-intensive public works programs, food subsidies and feeding schemes and emergency relief programs for famine or severe transitory food insecurity problems.

The shift from the above national food self-sufficiency view is essentially credited to Amartya Sen (1981) who focused on the issue of access to foodstuffs. `Food

entitlement' was the name given to access to food production or supplies by household members. (This concept will be described in more detail later in this section with reference to a diagram).

The change in concept of food security being an issue of access rather than supply was cemented as international policy initiatives changed to accommodate the principle. This concept was used by the FAO in 1983 (Huddleston, 1990). It was also incorporated in the Bellagio and Cairo Declarations of 1989, and was foremost in the next international nutrition conference held in 1992 (FAO International WHO, 1992). Although there is still uncertainty regarding the unit of analysis (be it the individual or the household), current definitions of the term 'food security' try to incorporate the links between the international, national, community, household and individual economies. This type of a view may be noted in the diagram (Figure 1).

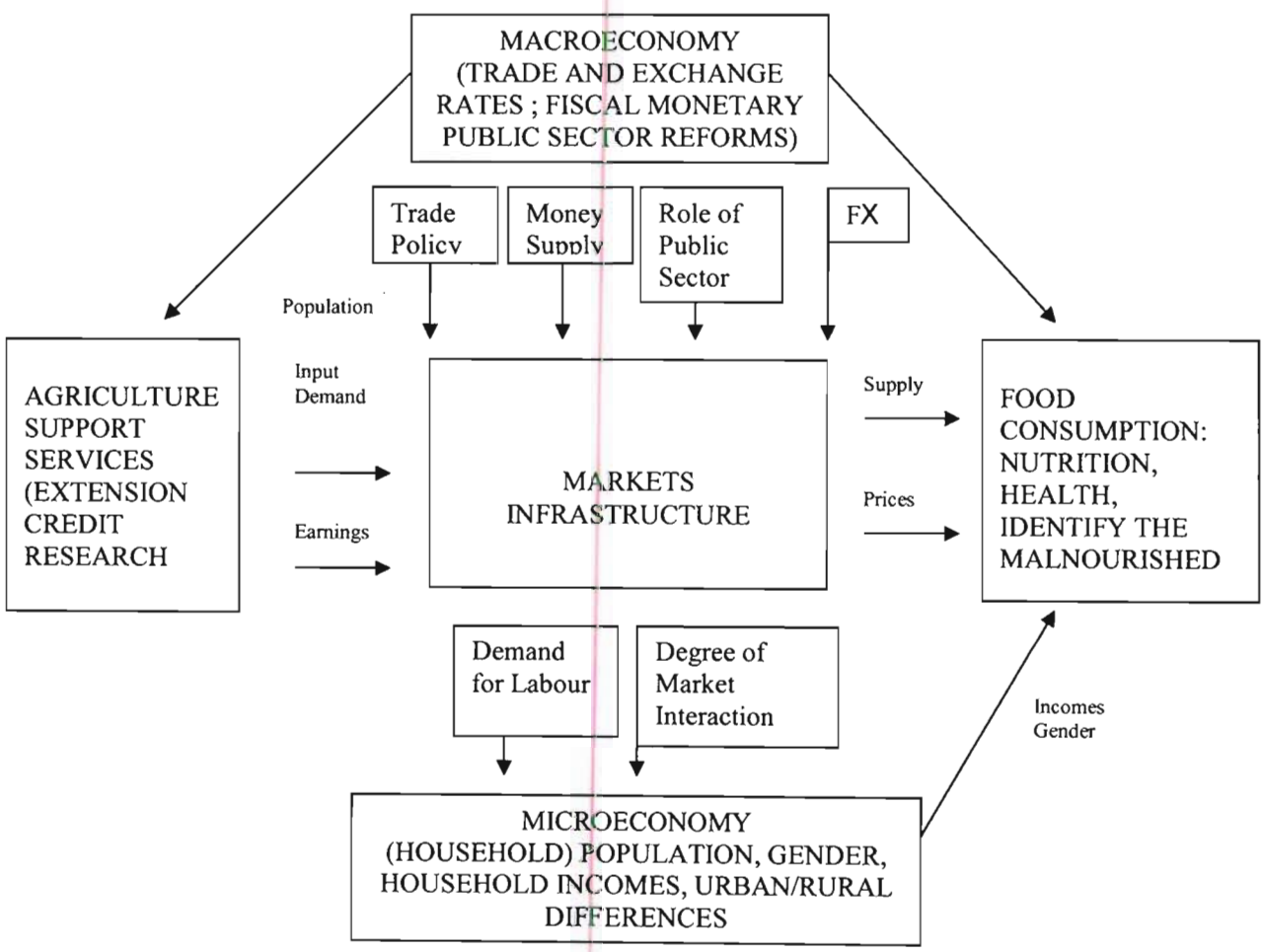


Figure 1:An Overview of National and Household Food security

Source: Hindle (1990)

Explanation of the diagram

International and national food security would relate to the macroeconomic policies discussed earlier, such as storage, trade-oriented and production-oriented policies and programmes. These would include the factors shown on the diagram, which are denoted as trade, exchange rate, fiscal and public sector reforms. The national food security programme would also include 'agricultural' support services, ensuring agricultural growth in the form of both food and cash crops, and the extension of credit to the poor to stabilise consumption and to promote self-employment and self-sufficiency. Thus, together, the 'macroeconomy' and 'agricultural support services' would ensure national food availability.

The central block containing `markets infrastructure' would knit together all sectors of food supply. Markets are the medium, transmitting output, produce and money from areas of supply to places where they are in demand (Hindle, 1990).

The 'microeconomy' and 'food consumption' blocks highlight the incorporation of the new concepts of food security into the general definition and is based on the paradigm shift of 'entitlement' credited to Sen (1981). Developed around this paradigm shift are three concepts of food security - food availability, accessibility and utilisation.

- *Food availability* relates to national issues of importation and the market efficiency of food distribution. It is assessed in terms of the food requirements of the population, and relies on the domestic production of the agricultural sectors and the country's import, storage, distribution and processing systems (von Braun *et al.*, 1992.

- *Food accessibility* refers to the ability of households to consistently obtain sufficient food for the household members. This may be achieved either through monetary or other exchange, or via production for household consumption. The chronically poor, having low incomes and few marketable skills and assets are very vulnerable to food inaccessibility.

- *Food utilization* is the final use of food by the members of the household.

Household practices of food selection, preservation, preparation and storage influence final food consumption. These household practises are directly influenced by intra-household entitlements, which could be the decision-making authority, exposure to education, cultural norms and control over resources. Thus the nutritional well-being of the individuals within households, especially children and the elderly depends not only on the households' access to food, but also on food utilization. (Hindle, 1990; Food Security Policy for South Africa, 1997; Kennedy and Haddad, 1991).

The paradigm shift in the early eighties allowed for the recognition of the complex inter-linkages between food security on a national, international, household and intra-household level and the definition for food security thus changed to its present definition, defined by the World Bank:

> "Food security is access by all people of all times to enough food for an active, healthy life" (World Bank, 1986:1).

2.2.2 From a food first perspective to a holistic, livelihood perspective

This shift in food security analysis resulted mainly from the observations of a famine in Africa in 1984/1985. Conventional thought of food security would have placed it in the 'fundamental and physiological' category of Maslow's hierarchy of needs. It would have therefore been assumed that the poor would make large sacrifices to protect their immediate food security. Observations of the behaviour of the poor facing food vulnerability and crisis have however shown the opposite, that the short-term food intake is only one of the many objectives that people pursue. De Waal found this to be true in his analysis of famine in Darfur, Sudan, when he observed:

> "people are prepared to put up with considerable degrees of hunger, in order to preserve seed for planting, cultivate their fields or avoid having to sell and animal" (De Waal, 1991:8).

Thus the broader issue of 'livelihood' is of importance in addressing food security. Oshaug (1995) identified three kinds of households which differed in the attainment of

their livelihood sufficiency. *'Enduring households'* are able to maintain food security with consistency over time, *'resilient households'* suffer crises when availability or access is reduced, but are able to recover quickly after a short-lived difficulty. The third, *`fragile households'* become increasingly insecure and vulnerable in the face of major or minor shocks. This analysis has led to a theory of there being two types of food and livelihood insecurity. *'Chronic insecurity'* is a consistently occurring livelihood vulnerability caused by poverty. It is thus the persistent inability of households to meet their member's nutritional needs. *'Transitory food insecurity'* is a temporary decline in a household's access to food supply. In reality, the poorest i.e. 'fragile and resilient households' will have their livelihood hit by transitory problems (World Bank, 1986).

2.2.3 From an objective analysis to a subjective analysis of food insecurity

The change in this sphere essentially relates to a distinction between the 'conditions of deprivation' and 'feelings of deprivation' as experienced by the food insecure (Townsend, 1974). Kabeer (1988) wrote about the detrimental impacts of poverty on the self-esteem and self-respect of the poor. Conventional research and assessment of food security has focused on measurable scientific standards. This has included the idea of the somewhat nebulous poverty line (Deaton, 1984), and target levels of consumption that include standards for required daily calorie intakes (Siamwalla and Valdes, 1980; Reardon and Matlon, 1989). There are two arguments against the scientific approach to food security. Firstly, the concept of a nutritional target precludes the variable aspects of health, age, gender, work description and behaviour of which a nutritional target should be a function. Pacey and Payne (1985) have thus concluded that any measure of 'optimal' food intake can only be subjectively determined and is thus a value judgement. This raises the second point, which asks the question of whose value judgement should count, since the objective target would not necessarily have included culturally acceptable foods, consistent with local food habits and human dignity (Oshaug, 1985; Eide, Holmboe-Ottesen, Oshaug, Perera and Tilakaratna, 1985). It was considered important to not only develop an understanding of poor people's coping mechanisms, but also to support them in the survival strategies that they have developed for themselves. This viewpoint also allows for a greater grasp of

household food entitlement and led Maxwell (1988:159) to define food security in a new way, as seen on the following page.

> "A country and people are food secure when their food system operates in such a way as to remove the fear that there will not be enough to eat. In particular, food security will be achieved when the poor and vulnerable, particularly women and children and those living in marginal areas, have secure access to the food they want."

Since the documentation of these ideas, that is by the mid 1990s, humanitarian organisations had noted the need to change their view of the poor from 'passive beneficiaries to main actors'. The Indian national sample survey and United States researchers have attempted to include subjective indicators in their analyses. These have included feelings of deprivation, food acquisition in socially or culturally unacceptable methods and lack of food choice (Maxwell, 1996).

Thus, the result of these paradigm shifts has lead to significant changes in the concept of food security, and in particular, in concepts pertaining to household food security. International research has thus fundamentally shifted from a focus on national food supply, regional productivity and imports to inter and intra household livelihood, entitlement, and coping mechanisms, within a context of perceived risks and uncertain circumstances.

2.3 THE CAUSES OF FOOD INSECURITY AND RESULTANT MALNUTRITION

2.3.1 Food availability, accessibility and utilization (entitlement)

It has already been stated that the three major factors causing household food security are the availability, accessibility and utilization of food. These three areas bring together macroeconomic food supply as well as the household's ability to obtain sufficient food for all members at all times.

The concepts can be analyzed in greater detail in order to understand the framework for the causes of insecurity and these are best viewed through the use of a diagram as shown on the following page (Figure 2).

Food availability can be the combination of production, stocks, import and food aid available in a country. Nichola (1998:87) defines availability as:

Availability	=	production - intermediate use and waste plus net imports - change in stocks.

Food availability will be a function of the underlying determinants of each of the factors above. In terms of household food security, it could be based on resources available in the community or natural, capital or human resources, as shown in figure 2 (see overleaf).

As stated in the introduction, food availability on a national scale will not guarantee household food security. This requires that the food is available in local or community markets, meaning that smooth market operations, adequate information and functioning infrastructure are all in place. Seasonal changes in the production and pricing of food can greatly contribute to food security. Exacerbated periods of high prices or low national production can culminate in chronic food insecurity and compromised nutrition (von Braun *et al.*, 1992).

The reality of this problem can be viewed via the example of the difficulties experienced by low-income developing countries during the 1980s and 1990s. Debt-crises, global economic recessions, oil price shocks, high interest rates and decreased foreign aid negatively impacted food availability in these countries.

At a country level, food availability in the international market will be a function of foreign exchange availability and world food prices. But low-income developing countries, limited in their supply of foreign exchange, were limited in their access to food imports. Many of them relied heavily on foreign aid, which proved not to be a reliable source of food. And seemingly from past experience, when world food prices have risen, foreign food aid has declined. Economic growth in these nations has similarly declined and household food insecurity has increased, exacting a heavy toll of

malnutrition, increased child and infant mortality rates and nutrition-related disease (Cornia, Jolly and Stewart, 1987).

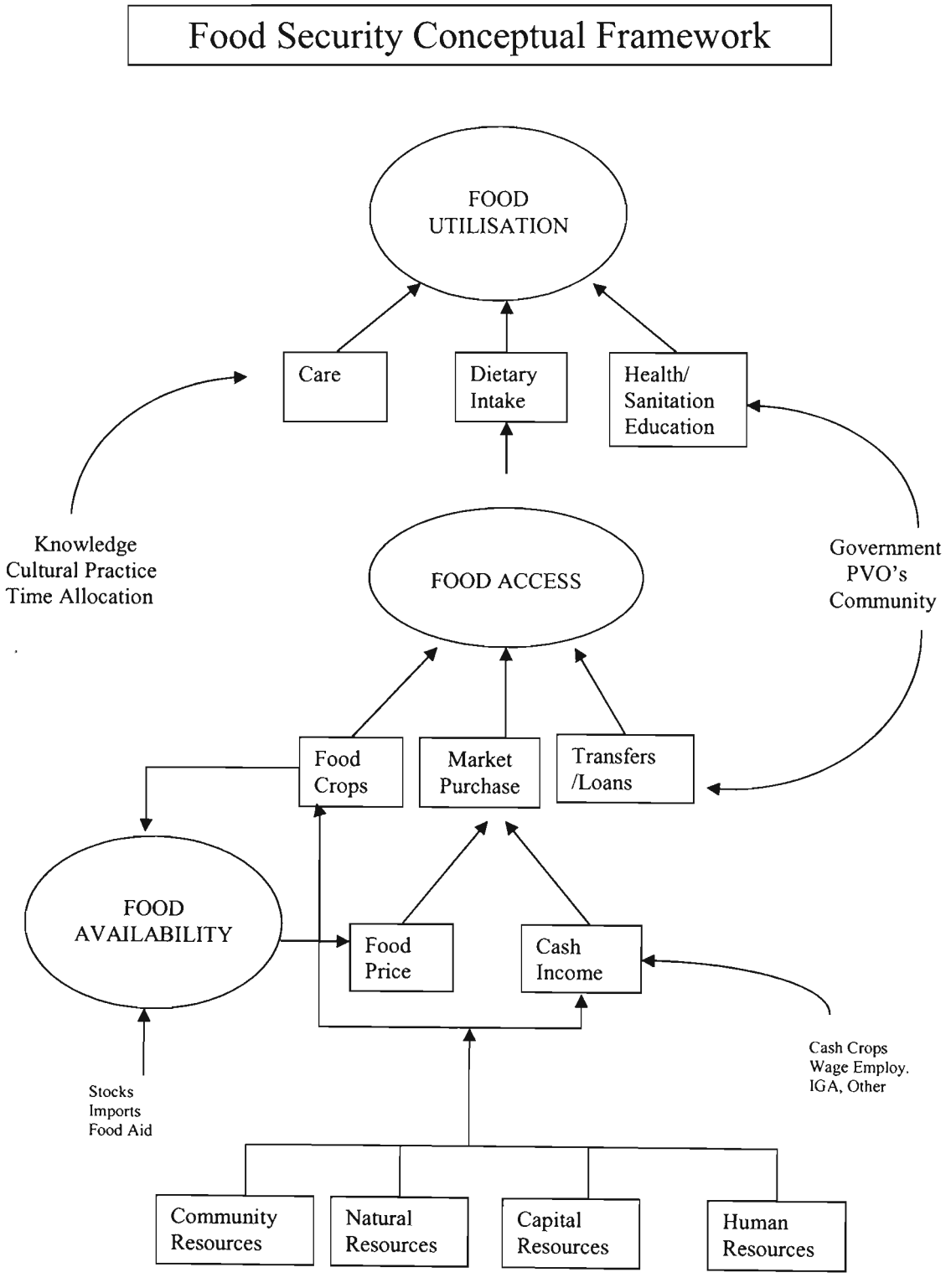


Figure 2: Food Security Conceptual Framework

Source: Riely and Mock (1995)

The *access to food* by these households is influenced by regional availability of food supplies. Ultimately at the household level, food availability can either be from the production of food for direct consumption, or bought food from income generated by cash crops, wage employment or by some of the diverse income-generation schemes on which the poor seem to depend. Thus it depends on the physical, social and policy environments in which the households live, and these determine how effectively households are able to utilize their resources to meet their food security objectives (Riely and Mock,1995).

A framework of food security which incorporates both *food access and availability* is used by a number of countries in food security monitoring programmes. Examples of these are found in Botswana and Mozambique.

Figure 3 shows the organization of Botswana's food security monitoring system. `Village Health Committees' feed rural nutrition and food security information through channels which ultimately reach the `inter-ministerial drought committee'. The `inter-ministerial drought committee' combines this information with that of drought and rainfall statistics, national food security information, and rural development concerns. It is analyzed together in order to provide for the planning of operations and policies that will ensure that household food security is maintained throughout the country (Stewart, 1990).

A similar model is used by Medecins Sans Frontiers (MSF) in Mozambique. They created a project called the Food Security Consolidated Information System (CIS) in 1992. Its purpose is to give a projection of how well households will endure the 'between harvest' period. (There are two harvests in sub-Saharan Africa, February/March and June. Periods in between these harvests and during the growing of the crops are called 'lean periods' as households' food stores may run out).

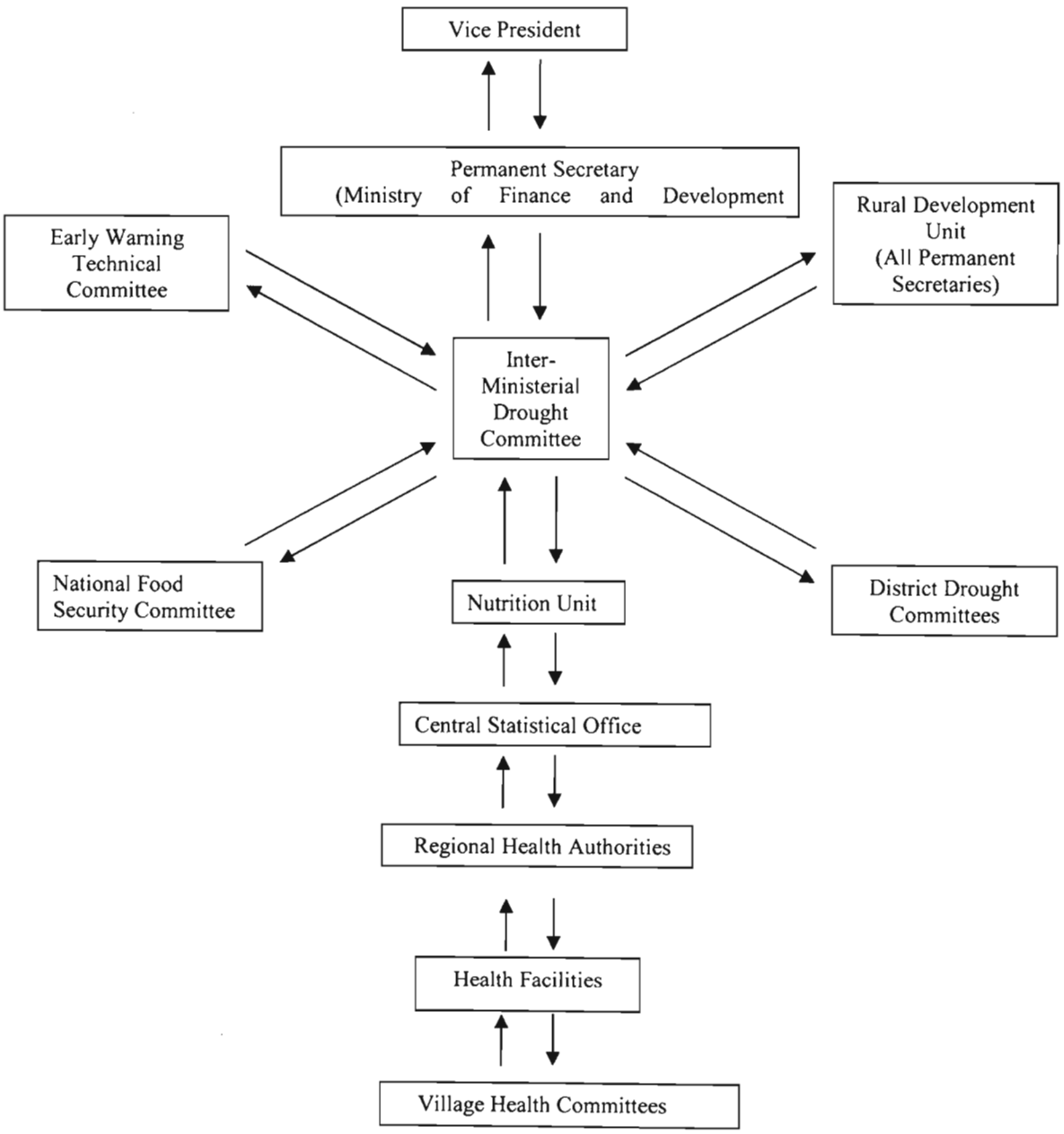


Figure 3: Botswana's Nutritional Surveillance System

Source: McLachlan (1992)

The CIS model projects how well or badly the lean period will be endured by households based on (i) household structural potential and (ii) conditions in the current year. The structural data analyses the household's capacity to produce sufficient food, based on the concept of a 'normal year'. This is defined as the historical average of a combination of characteristics of exogenous variables. The variables would be rain distribution in quantities approximating historical averages, and normal drought; pest and planting conditions. Such conditions would determine the average agricultural and monetary potential of households, expressed in 'months of consumption'. Current conditions or risk factors are identified as natural hazards (climatic hazards, pests and natural disasters), market fluctuations (high transport costs, periodic inaccessibility and uncertainty of production and prices) and political and social instability causing conflicts and hazards. The model thus evaluates the impact of the prevailing conditions on the structural potential of the households in terms of their production and consumption abilities. A graphical description of this method of regional household food security monitoring can be viewed in figure 4 on the following page (personal visit to MSF/AEDES during May 2000).

The value of the `early warning systems' of Botswana and Mozambique, are that they provide a framework for the consistent analysis of food access and availability in their respective countries. Two of the three fundamental causes of food insecurity can thus be timeously and systematically addressed.

The third basic cause of food insecurity (as shown in the Figure 2 diagram, viz. the conceptual framework of the causes of food insecurity), is food utilization. *Food utilization* is the final use of food by the members of the household. Household practices of food selection, preservation, preparation and storage influence final food consumption. These household practises are directly influenced by intra-household entitlements, which could be decision-making authority, exposure to education, cultural norms and control over resources. Thus the nutritional well-being of the individuals within households, especially the more vulnerable, the children and the elderly, depends not only on the households' access to food, but also on food utilization. This could be called `household economics'. The World Bank's work has focused on the

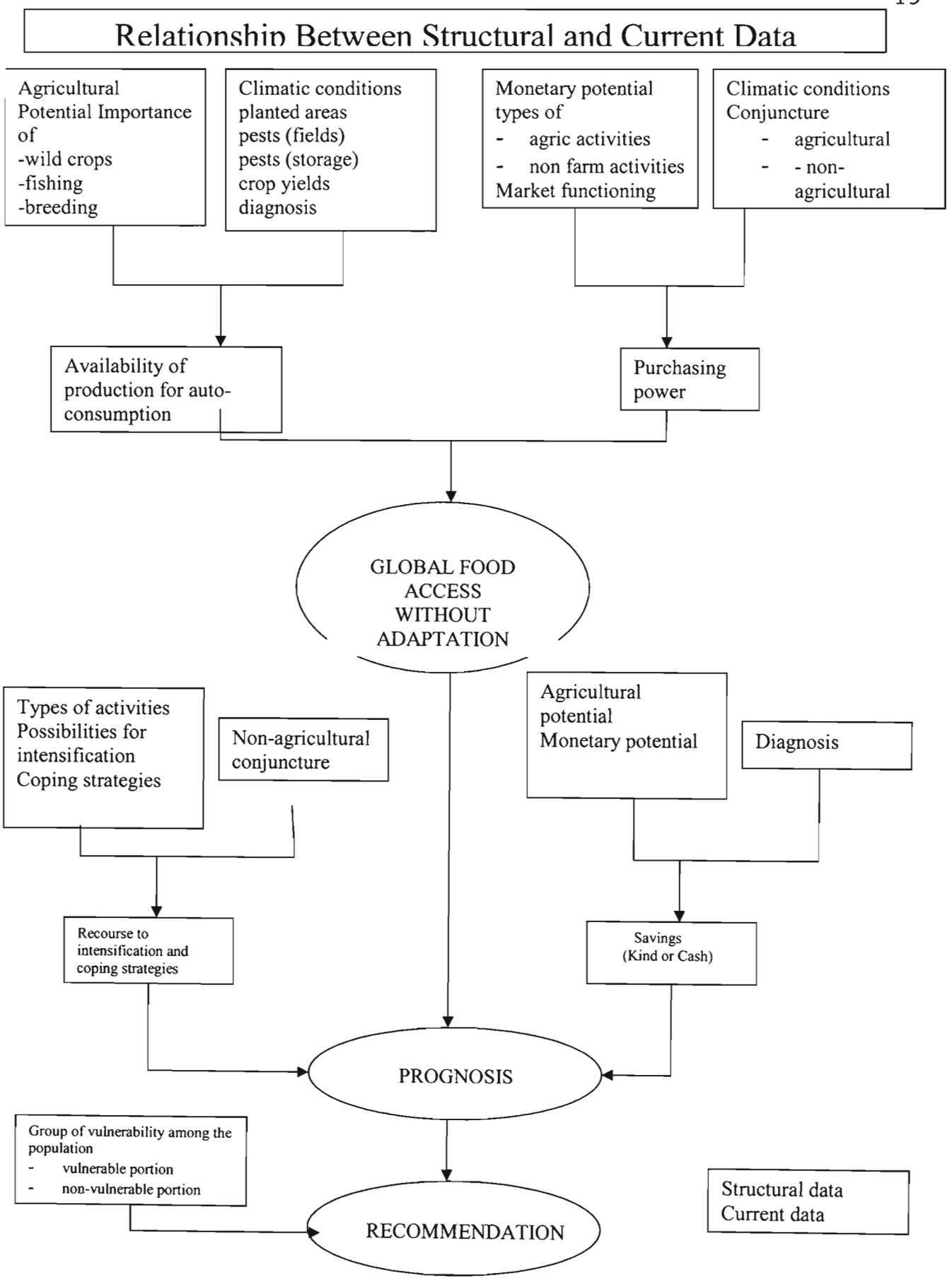


Figure 4 : Food Security Monitoring in Mozambique

Source: Visit to MSF/AEDES April 2000

role of gender in this regard, as it has been found that improved education for women leads not only to improved incomes and thus greater available income for food consumption, but also leads to improved nutrition knowledge and thus food security and health. The implications of intra-household utilization can be substantial; it was found that income controlled by mothers in urban Brazil has twenty times the effect on child survival than if controlled by fathers. Research in Kenya and Malawi also found that lower income female-headed households had lower levels of preschooler malnutrition than did the children of higher income male-headed households (Hindle, 1990 ; Food Security Policy for South Africa, 1997; Kennedy & Haddad, 1991).

The utilization of food by each member of the household will be reflected in his/her nutritional status and general health. Dietary intake, food and health care (based on adequate knowledge, cultural practises, entitlement and time allocations) and sanitation, are all direct factors underlying utilization. Dietary quantity, quality and a sanitary (disease-free) environment are necessities for healthy individuals.

There are thus five questions that can be asked of households, to ascertain their food security according to these three underlying causes. These questions are:

- Where do households get their food?
- What are the factors that limit the ability of households to obtain food from each of these sources?
- How do households obtain their cash income?
- What are the factors that limit the ability of households to obtain income from each of these sources?
- What are the factors that limit how well households use their food to meet the dietary needs of the individuals within them?

(Reily and Mock,1995).

Although simple, answers to the questions will enable a researcher to analyze a vast number of indicators that would identify possible food insecurity. For example, a USAID Policy Paper identified a range of food security indicators which included:

- chronic poverty;
- rapid population growth;

- declining per capita food output;
- poor infrastructure;
- ecological constraints;
- limited arable land;
- disease;
- poor water and sanitation;
- civil war;
- inadequate nutritional knowledge;
- ethnic conflicts.

(http://www.usaid.gov/policy/ads/pps/foodsec/foodsec.doc)

Such indicators are but a few of the many causes of food insecurity. Most however, can be categorised into the concepts of availability, access, and utilization (entitlement).

2.3.2 Poverty

Poverty is the real determinant of food insecurity. This is because the poor do not have adequate `entitlements' to secure availability, access and the best utilization of their food. Purely increasing the income of the poor will not necessarily improve their nutritional well-being because of the ways that they derive their livelihood (Sen, 1981).

The `tree' diagram in figure 5 on the following page gives an overview of the sources of funding (inflows) into a rural household, and the household expenditures (outflow). They are distinctly different to the inflows and outflows of developed countries' rural households, and explain the vast variety of activities undertaken by those endeavouring to eke out a survival in subsistence agriculture.

The major goals in the lives of subsistence farmers include:

- ensuring food security which if most often dependent on the agriculture produced by the family;
- meeting other basic physiological needs such as clothing, school fees, housing;
- fulfilling social, religious and cultural obligations to their families, community and society;
- improving their living standards and their status in the community.

(Devereaux, Pares and Best; 1987)

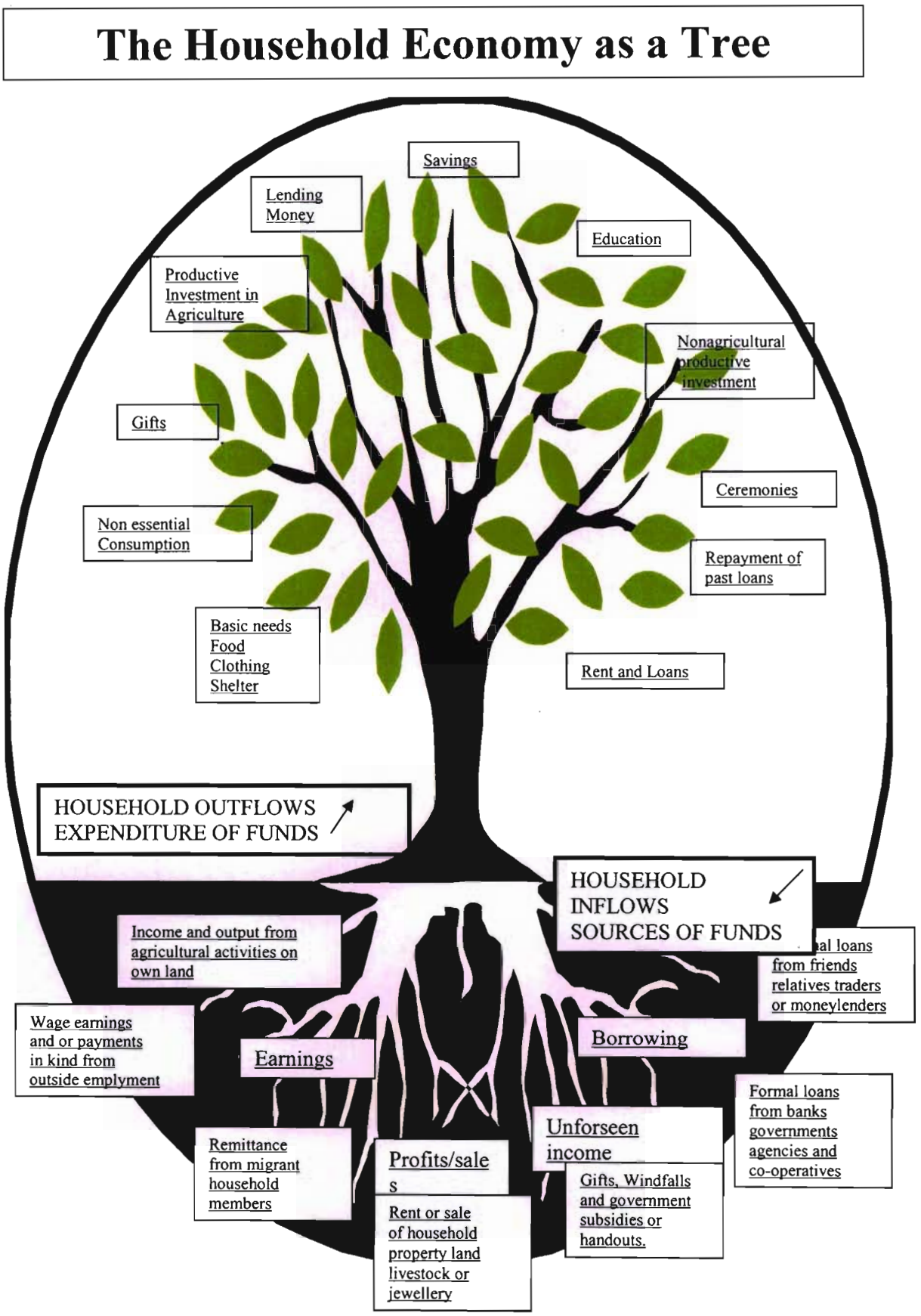


Figure 5: The Household Economy as a Tree

Source: Devereaux et al; 1987

Thus a range of activities (both economically productive and non-productive) are involved in the daily lives of such households. Most are time-consuming and can include:

- growing, harvesting, storing, transporting and marketing produce;
- collecting water and firewood;
- fishing, hunting, gathering;
- building homes, repairing and making implements and household goods;
- making goods for sale.

From these activities one can identify the sources of income generated by the households. The tree shows income to be generated mainly by:

- earnings;
- sales or profit from goods or services;
- unforeseen income;
- borrowing from friends, relatives, informal or formal banking services.

The incomes are being continuously spent on household needs, and as such the immediate demands of rent, loan repayments and basic needs have to be satisfied first. The rest of the `branches of the tree', incorporating expenditure on family commitments, ceremonies, education, agriculture and so forth, are generally satisfied according to the urgency of payment or repayment of the debt (Devereaux *et al.*, 1987).

Thus, it should be clear that in the rural areas, economically profitable activities are not distinct but are simply part of the functioning of the household unit. Cash within the household is frequently `mingled' with other household activities, and as such the financial needs of individual entrepreneurs are never separable from the financial needs of the household (Otero and Rhyne, 1992). The urgency of the need will generally dictate the use of the cash.

Due to this integrated survival strategy; poor households will generally not have separate emergency or `rainy day' money available as protection against external shocks. They are thus very vulnerable to seasonal and monthly harvest availability, and shocks such as drought can put their livelihoods under severe strain. This can lead to transient or chronic food insecurity resulting in negative consequences for the health

and nutritional status of the weaker household members (Department of Agriculture and Land Affairs, 1997).

Although increased income may be channelled into different activities in which the poor partake, increased incomes will improve the food security of households in general. Increases in incomes are associated with higher caloric intakes of both staple and non-staple foods (i.e. more of the staple diet and other foods being consumed). There is an income effect on the consumption of micronutrients found primarily in higher income foods, such as iron, found in meat. Higher income foods thus tend to be income elastic. Although poverty is the root cause of household food insecurity, the diagram makes obvious the fact that increased monetary resources will not necessarily solve it. The poverty does not cause the compromised nutrition of the weaker individuals through inadequate calorie intake alone, but through the numerous factors attached to poverty such as inadequate education, sanitation, housing and health. Figure 6 on the following page highlights this fact clearly via the cyclical nature of the consequences of poverty on child nutrition. (The diagram will not be explained further). A holistic approach to poverty and its consequences would thus address the problem of food security in a far more satisfactory way (von Braun *et al.*, 1992).

2.3.3 Food insecurity and malnutrition: causes and consequences

Food insecurity is not an end in itself, but is rather a manifestation of the result of inadequate resources, and a cause of an ultimate consequence: malnutrition. The two can thus not be conceptually separated. In essence, it is not food insecurity alone that is to be eliminated, but inadequate dietary intake, disease, malnutrition and death. Economically (as opposed to the obvious personal, emotional, moral and social costs), the costs of such human suffering are large indeed. The World Bank has estimated the cost of malnutrition in the form of dietary deficiency in South Asia alone to equal:

- 20,000 deaths
- 11,000 children born cretins or blinded as preschoolers
- 1.3 million person-years of work lost due to lethargy or more severe disability
- 360,000 student-years wasted (3 percent of the total student body).

(www.worldbank.org/html/extdr/hnp/nutrition/enrich.htm', 1994)

The lack of basic micro-nutrients in the diet can cause learning disabilities, mental retardation, poor health, low work capacity, blindness, and premature death. The result is not only personal loss and distress, but in the developing world this constitutes a public health problem, with about a billion people presently suffering the effects of these dietary deficiencies, and another billion are at risk of compromised health.

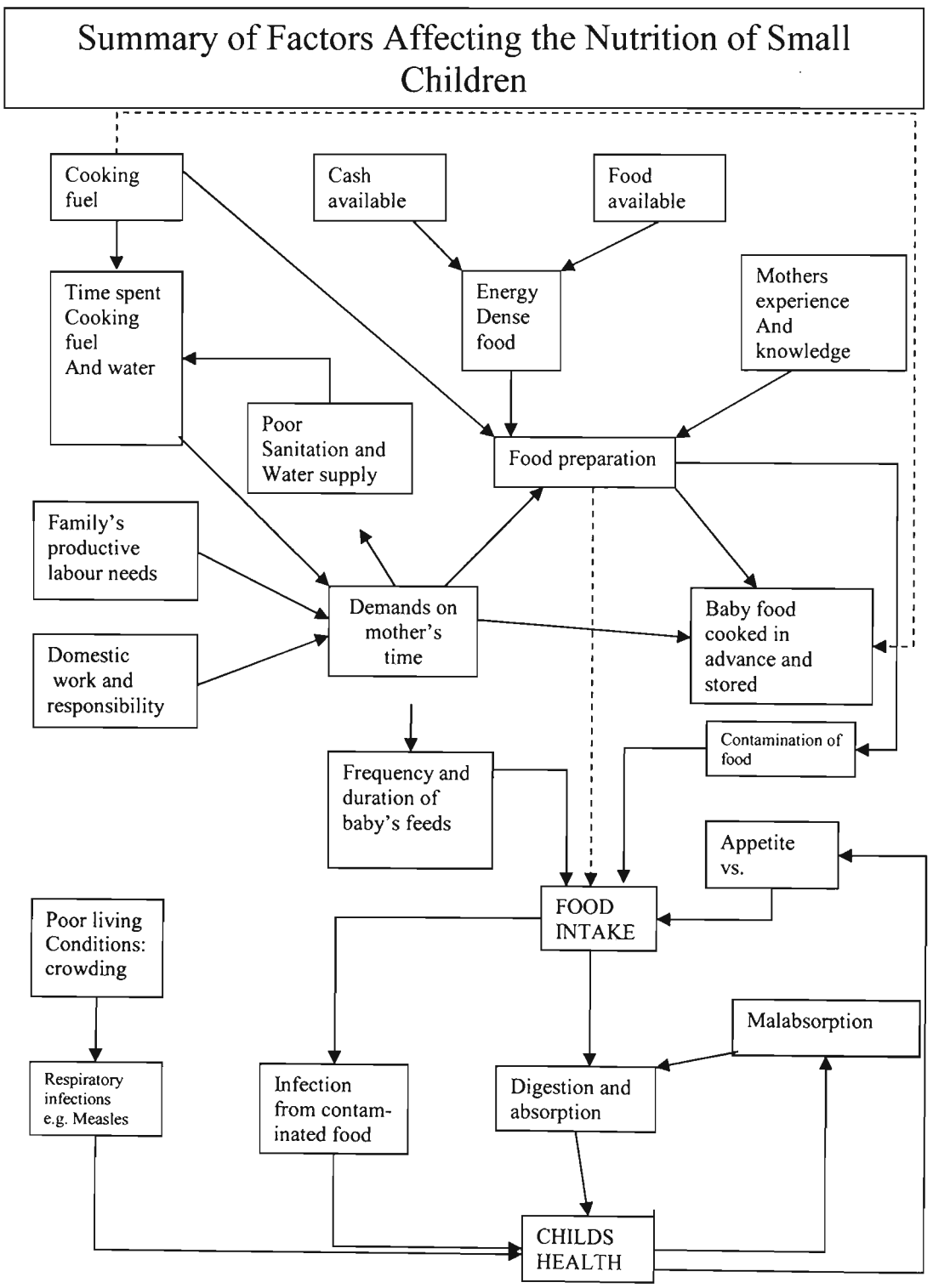


Figure 6: Summary of Factors affecting Child Nutrition
Source: Pacey and Payne (1985)

Jonnson (1981) summarises three levels of causation influencing nutritional status, where the ultimate manifestation is malnutrition. This framework is further defined by Jonnson and Toole (1991). It can be viewed in figure 7 on the following page. As shown in earlier parts of this chapter, inadequate resource appropriation is the basic cause of food insecurity. Such resources can be human, economic or organisational. These inadequacies cause poverty, resulting in insufficient household food security, inadequate maternal and child care, insufficient health services and an unhealthy environment. The nutritional consequence of this poverty is inadequate dietary intake and disease.

Targeting food insecurity is aimed at reducing the vulnerability of households to poverty and malnutrition. People's health status determines their capacity to work, their developmental skills and education which in turn affects the returns to their labour (Posel, 1997). A poverty cycle is then effected, because the capacity to work and returns to labour then determine their income-generation and food supply. A negative cycle may thus cause food insecurity, vulnerability to economic shocks and resultant malnutrition. Indicators of food insecurity have been researched in greater detail in order to identify cyclical patterns and to reduce their recurrence and will be discussed in the following section.

2.4 INDICATORS OF FOOD SECURITY

Maxwell and Frankenberger (1992) consider two different categories of indicators in the main, process indicators and outcome indicators. Both can be further classified, process indicators as indicators reflecting food supply and food access, and outcome indicators classified which are according to whether they are direct or indirect.

Indicators reflecting food supply highlight the availability of food on a national scale (whereas food access indicators identify household access and entitlement). Supply indicators identify the risks of disaster events that would compromise food security. Briefly, they are:

- Meteorological and demographic data: climatic factors and environmental changes greatly affect food security, and are often considered a cause of food insecurity through droughts, floods, hail damage and other unpredictable events.

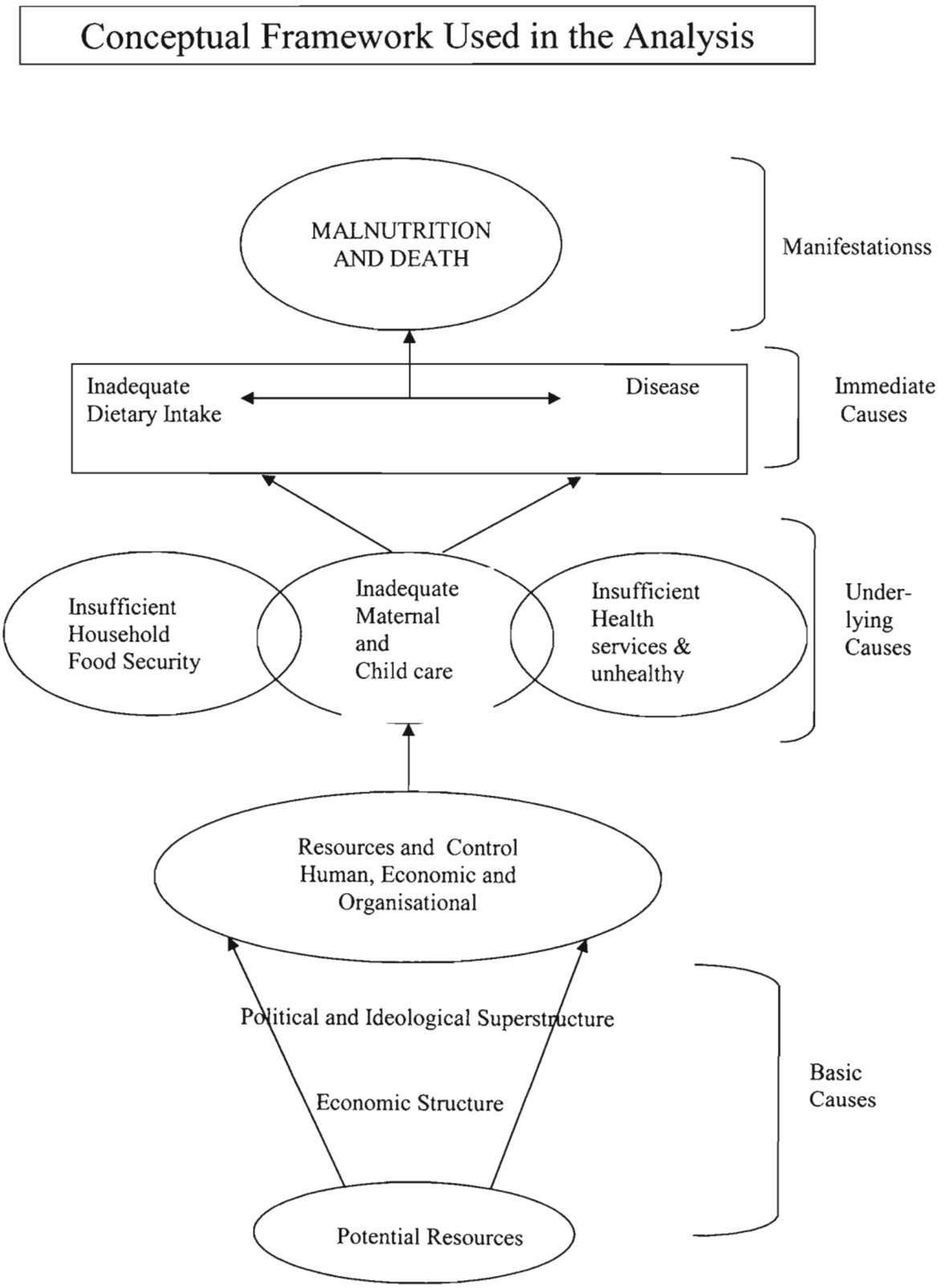


Figure 7: Conceptual Analysis of Food Security

Source: Jonnson (1991)

- Natural resource monitoring: Wet and tropical climates are considered to be locations for increased food insecurity. A different example is that the extent to which households have access to common property resources which have a strong influence on households ability to be secure, thus community resources can as a buffer against insecurity (Babu, 1995).

- Agricultural production data: crop production is the primary determinant of food security in rural areas. This data can be used for assessing regional vulnerability, especially when per capita food production is calculated. The indicator is difficult to assess, particularly in rural areas where people are illiterate and where one cannot ascertain to what extent crop production equals food consumption.

- Agro-ecological models: this indicator is very similar to natural resource monitoring as it takes into account soil and water conditions for specified crops.

- Food balance sheets: this indicator is commonly used in addressing national food supply. Information is assembled from opening stocks, imported food supplies, national production, domestic food needs, exports and closing stocks (Babu, 1995). The balance sheets are used as indicators of yearly national food deficits or surpluses.

- Pest monitoring: since pest attacks such as locusts, borer beetles or animals can devastate crops, households' vulnerability and exposure to such pests can be monitored with policies, aid or technology thus helping those who are affected.

2.4.1 Market infrastructure

Markets are important, impacting upon both deficits and surpluses in food security. The ability of households to obtain sufficient food for their needs and to sell surpluses in order to buy other basic commodities is vital. When markets are unstable, prices tend to be volatile and fluctuations hit the poorest households the hardest. Many poor people's coping strategies are tied to the consistent functioning of markets and sales of

livestock and other assets can be relied on for relief in tougher times and transitory insecurity(Maxwell and Frankenberger, 1992).

2.4.2 Regional conflict

Disputes over resources, traditional conflicts and civil wars lead to the destruction of crops and infrastructure and the instability of markets. Households in such regions thus have their food security threatened and often devastated if instabilities continue in the long term (Maxwell and Frankenberger, 1992).

2.4.3 Poor access indicators

Entitlement indicators, intra-household ownership of resources, livestock and other liquid assets often indicate the real resource security available to household members in more difficult times than in normal periods (Babu, 1995). Household food availability will generally reflect the food security situation. Net food availability is considered as `food produced - quantity sold plus quantity purchased'. The time when food stocks are depleted before the next harvest has matured provides a very concrete indication of the extent to which the household is secure throughout the year. Linked to this, food security can be reflected by the number of meals eaten per day in different seasons of the year. Poor access indicators include:

- Coping strategies and assets: Food insecure people attempt to develop self insurance coping strategies to minimize the threats to their livelihood. Coping strategies are also implemented by households to ensure future income generation, not just the maintenance of current consumption. Assets owned by households can either be liquid or productive. Liquid assets are usually for self insurance and savings, such as livestock or jewellery. Productive assets are of high value to the household and would be costly to dispose of. A household's access and ownership of assets is often a good indicator of its vulnerability(Babu, 1995).

- Technology indicators: the technology adopted by rural households will often determine their level of crop production and thus their vulnerability to insufficient

food. The levels of input used and subsequent costs (such as fertilizers) will also determine their productive success, as will their access to credit. Farmers who have access to credit have generally been shown to adopt more expensive but higher yielding technologies.

- Income indicators: Income from cash crops, livestock sales, farm and non-farm employment, remittances from relatives and friends will all contribute to household income, and is used to supplement the home produced food. Given the availability and functioning of markets, food security could be indicated by the extent to which income is spent on food. This indicator is particularly useful when households have run out of food. The availability of employment will often reflect the potential earning capacity of households which can make a difference to a community during the hungry period when casual employment could provide income for households' food needs (Babu, 1995).

- Outcome indicators are usually proxies for adequate consumption, and as such consumption can be defined as food availability, expenditure, foods eaten or nutritional status (Maxwell and Frankenberger, 1992). There is obviously a large amount of overlap between the process and outcome indicators as they are a loosely defined classifications for detecting food insecurity. Direct indicators are those closest to actual food consumption rather than other indicators showing, for example, medical status. Indirect indicators are generally used as less direct proxies when direct indicators are unavailable or too costly to collect. These include:

- Household consumption surveys: data on food expenditure can be converted to calories per person (or household), based on calorie per unit conversion factors.

- Food frequency assessments: this involves the collection of minimum amounts of food consumption based on the basic foods eaten by the household, and the frequency of consumption of such foods. Generally, food is collected through a 24-hour recall survey.

2.4.4 Indirect indicators

- Storage estimates: Estimates of food storage during between-harvest periods often indicates the security status of households producing their own food.

- Subsistence potential ratio: the ratio of the household's ability to feed itself versus its need to feed itself (Whelan, 1983). Data utilized for this ratio are from size, expected yield, age and gender of household head, labour and number of dependents. Such a ratio works well in communities where the majority of food consumed is self-produced.

- Household perception of food adequacy: people's own perspective of their food needs will highlight their behavioural changes that they were forced to make in order to compensate for their reduced food supply. Even when food might meet nutritional requirements, it may not be culturally acceptable (Eide, Holmboe-Ottesen, Oshaug, Perera, Tilakaratna and Wandel, 1986).

- Nutritional status assessments: anthropometric measures are commonly used as indicators for food security. These include weight-for-height , incidence of illness, age at weaning, sanitation facilities (Kennedy and Haddad, 1991; Riely and Mock, 1995).

2.5 GENDER AND ENTITLEMENT

A development issue that has been addressed more recently is the fact that women are Africa's primary food producers. This aspect is however, not new. In 1928, Herman Bauman documented that 55% of farming surveys conducted in sub-Saharan Africa noted women as the main farmers. Since that time, women's responsibilities have increased as cash crops and the amount of food being supplied to cities increased. Part of the reason for the work divide originated in the colonial era, when men became migrant workers. `Male work' thus became identified as `paid work', and the traditional subsistence activities were shifted to the women and children. This meant that women

became responsible for feeding their families as well (Koopman Henn, 1983:1044). This gender-based work division not only affects income, but time allocation as well. In South Africa, approximately 38% of households are without running water and electricity. This means that women are primarily responsible for the wood and water collection, and a daily average time demand of a hour-and-a-half (for water collection), and an hour (for wood collection) has been estimated for these tasks. As such, the time spent compensating for the absence of these basic services could have been spent on income generating activities. Not only is the issue of male versus female work discriminatory, but women continue to earn less than men in the formal and informal job sectors. A reason for this, as identified by Posel (1997) is that employers anticipate women reducing their work commitments in favour of child care, meaning that their labour force participation would be discontinuous. Fincham and Jinabhai (1993) term this the `maternal dilemma', essentially between women's productive and reproductive roles. Policy makers in developing countries have recently tried to bridge the gap between these two schools of thought, with the promotion of issues considered to enhance the dual roles. These would be:

- improved literacy and education for women;
- access to health structures;
- technology and infrastructure;
- women property ownership and income rights;
- access to credit and social security;
- access to employment and child care.

(Fincham and Jinabhai, 1993)

Poverty levels in the growing number of female-headed households in developing countries have posed challenges for food security. For all of the above reasons, female-headed households have tended to be poorer, own less and have less access to land, labour, credit and basic services. However, there is still a conflict between income affects and gender affects on food security (Kennedy & Peters, 1992). Research by IFPRI (International Food Policy Research Institute) and others found that income controlled by women is more likely to be spent on food. Women were found to allocate proportionately more of their income on food, especially food for their children.

This has meant that households with female-controlled income sources are generally more food secure (Kennedy & Haddad, 1991). May, Carter and Posel (1995), estimated that the incidence of under-nutrition in South Africa would fall by twelve percent if consumption patterns in male-headed households mirrored those of their female counterparts.

As expressed by Fincham & Jinabhai (1993), the conclusion of many development workers regarding the `food security - gender debate', would be to find creative and innovative ways to improve nutrition. An attractive focus of this plan is the targeting and extension of micro credit to rural women. The assumption underlying this approach is that both income and information are needed to ensure nutritional improvements for households, and that increased involvement with women will meet societal objectives of increased spending on children's food (Hopkins, Levin & Haddad, 1994).

2.6 FOOD SECURITY AND FAMINE

News and media often portray the malnutrition, starvation and migration of communities facing a famine crisis. Such exposure may cause people to assume that the poor are taken by surprise and were ill-prepared victims of circumstance and this perception of the poor is not true. The recurrent famines in Africa throughout the 1970s and 1980s allowed for extensive analyses of the coping strategies used by the poor. Research has shown that subsistence households plan strategically to minimise the risks of their food entitlement. Severe famine conditions simply pose a more severe threat to these households, and the televised scenes of their distress shows the failure of such strategies, which during less severe conditions, would prevail. Although undesirably, one could even say that on the contrary, `distress migration' would form the final coping mechanism available to them – and they might hope that this would lead them to available supplies of food (Corbett, 1988)

.

Studies of the famines of the 1970s and 1980s usually took the form of between one and three perspectives; economic, medical or socio-anthropological. These studies have confirmed a distinct sequence in the coping behaviour of households. Commonly

observed patterns of responses would include:

- changes in cropping, planting and harvesting patterns
- dispersed grazing;
- migration to urban or other rural areas in search of employment;
- collection of wild roots, plants and berries;
- use of inter or intra-household transfers, loans and moneylender credit;
- rationing of food consumption, e.g. from three meals a day to two;
- sales of household assets, be they stores of value (e.g. jewellery) or productive assets (e.g. tools, livestock or land);
- the break-up of the household;
- distress migration.

(Corbett, 1988)

Famines vary greatly in the rapidity of their development and the time of their duration. There is thus not a blueprint of their food security effects. However, studies have shown that risks to food security are often anticipated at a household level. In the study of the 1984 Darfur famine, De Waal found that the evidence of the harvest failure meant "people know that they have to make their resources cover a full twelve to fifteen months and husband them accordingly" (Corbett, 1988). He noted that a common strategy was the collection and burial of grain and wild food, which was left buried for around six months whilst the owners were employed in income-earning labour elsewhere. Perhaps this example differed from many others, because the start of the drought in Sudan began five years previously. As it became evident that the rains were to fail each year, households were forced to review their planned strategies. The point still remains that in general, households do respond to initial events triggering a threat to their food security. There may then follow a long period during which a number of different responses are employed to enable the family to preserve its food security and to survive. Such strategies may prevail with consequent success, or fail as one response after another is eroded by the increasing severity of the situation. It is obvious that not all households are equally vulnerable to external shocks, and the poorer households will not have the same options available to them, as would the less poor. They might find it more difficult to obtain credit, have fewer assets to sell, or more dependents restricting possible migration in search of employment (Corbett, 1988).

In general, a striking feature of food insecurity is the similarity of the distinct sequences of coping behaviour employed by the poor in different countries. Corbett's (1988) research analyzed the similarities in coping behaviours employed by the poor in four famines; Nigeria 1973/74; Red Sea Province, Sudan 1984; Wollo Province, Ethiopia, 1984./85; and Sudan, 1984. All four studies showed that the way households managed their asset shocks were critical for their survival, and coping behaviour seemed to follow a process comprising three stages: These were:

- Stage One: Insurance mechanisms
- State Two: Disposal of productive assets
- Stage Three: Destitution

2.6.1 Stage One: Insurance mechanisms

In this stage, households try to involve the "smallest commitment of domestic resources" (Corbett, 1988). The success of the insurance mechanisms available to households depend on their resource management in non-crisis periods, and would be seen as the availability of surplus livestock, reciprocal obligations between friends and relatives, and food reserves. Rahmato (Corbett, 1988) noted that in the earlier phases of the Ethiopian famine, there was an increased reliance on loans and transfers of food and assets between households. This also incorporated barter exchanges and credit arrangements. Assets sold or exchanged tended to be non-productive, such as jewellery. He saw that within households, there was a reduction of the number of meals eaten per day, as well as the quality and variety of food eaten. Time was spent searching for wild foods to be consumed as well. The period over which households could sustain themselves using these strategies tended to be quite long. Rahmato (Corbett, 1988) added in another semi-stage to the process (which he called Stage 2) where adult males left the households temporarily to search for employment in wealthier rural or urban areas.

2.6.2 Stage Two: Disposal of productive assets

The second stage comprised the sale of productive assets. The sales of productive assets are considered to be `distress sales' because the cost to households is great and they would probably not be able to obtain a `best price'. Sales of this kind included livestock, agricultural tools and land. A further reduction in consumption levels also occurred. The distress sales would be jeopardising the future wellbeing of the households and signal the fact that households have exhausted all possible other less costly options. Borrowing from moneylenders during this phase would generally be at a very high price, thereby also jeopardising the household's future prospects of escaping debt-traps. If a huge number of households in an area reach this stage, then the "community collateral security system may disintegrate leading to a severe economic crisis" (Corbett, 1988).

2.6.3 Stage Three: Destitution

The final stage in the sequence of responses forms as households are left destitute, with nothing to generate an income. The household members themselves may be so weakened by hunger or a related disease that they are unable to work for income. Distress migration is thus the only option available to the household. Generally all the members in the household strong enough to search for relief will leave, and only the existence of an effective government or humanitarian aid organization may help ensure the survival of some or all of the individuals. Often this migration occurs at a community level, with large numbers of people leaving an area together. Distress migration is thus the terminal stage in the sequence (Corbett, 1988).

Households thereby adopt a variety of coping strategies to avoid household collapse during severe economic crises. As they move along the coping path they ultimately disregard assets in favour of life preservation and survival (Von Braun *et al.*, 1992).

2.7 INTERNATIONAL HOUSEHOLD FOOD SECURITY CONCERNS

It is estimated that between 300 million and 1 billion people in the world are food insecure. This could be as much as twenty percent of the world. A World Bank study in

1986 estimated that 340 million people in developing countries did not have enough calorie intakes to prevent stunted growth, and a further 730 million did not have enough income to ensure an active working life (Von Braun *et al.*, 1992). Such estimates would not give an indication of food insecurity, because they disregard changing risks in the availability and access to food, and focus rather on food deficiency. Food deficient households are obviously food insecure, but do not necessarily form the whole scenario. Many households barely subsist around a poverty line - at times above it, and at other times below. This transitory food insecurity is common, dependent on the weather and other environmental or socio-economic factors. Thus food deficiency estimates understate food insecurity with certainty but to what degree remains unknown.

Considerable progress in poverty alleviation occurred in the world in the 1960s and 1970s. Food security declined during this period and the FAO estimates showed a decline in under-nutrition from 19 to 15 percent. A World Bank survey of eleven countries also showed considerable improvement in poverty alleviation (von Braun *et al.*, 1992). This trend continued in South and East Asia, but rising population growth in Africa has meant a rise in food insecurity for many households, irrelevant of the poverty alleviation programmes. The early 1990s saw a decline in per capita food levels in eighty percent of all sub-Saharan African countries. Aside from the impacts of the high population growth, the trend in Africa's food output has been declining production and cereal shortages. Consequently, seventy percent of sub-Saharan African countries have been unable to meet their minimum food requirements, and eighty five percent of these countries recorded low and declining dietary intakes, these values being far less than the minimum standard. The result of these failings is that seventy percent of Africa is considered to lack their basic need of a minimal calorific diet. Alongside their declining food output, Africa suffered terms of trade loss resulting in a reduced import capacity. This has had a major impact on food security because there has been a preference shift in Africa from traditional food staples like bananas, cassava, millet, maize and sorghum to non-traditional and 'more western' rice and wheat. The non-traditional foods are less drought-tolerant and more expensive to import than the traditional foods causing the objective of food self-sufficiency to be far harder to fulfil (Siddig, 1995).

An approximate idea of the international locations of the food insecure can be traced. South Asia (especially India and Bangladesh), hold a large proportion of the extreme poor, followed by East Asia and Africa. An IFPRI survey (von Braun *et al.,* 1992) on the location of food insecure by agro-ecological zones, found that food energy deficiencies ranged from 38% in sub-Saharan Africa, 35% in Asia, 26% in South America and 23% in Central America. In general, food-energy deficiency tended to be higher in arid zones and lower in wet regions. Within South Asia, ninety percent of the poor were located in the warm tropics and subtropics, as in Central America and the Caribbean. In South America the poor are concentrated in humid and wet regions and in the arid sub-Saharan zones of Africa. Thus, in most instances, the distribution of the food insecure mirrors population distributions within agro-ecological zones. (von Braun *et al.*, 1992). Common characteristics of food insecure people have been observed and are noted in the following sub-section.

3.3.1 Common characteristics of food insecure people

A number of socioeconomic and demographic characteristics common to food-insecure people have emerged from surveys over recent years. These are:

- food-insecure households are generally larger in size as well as in number of dependents than less secure households;

- landless or quasi-landless households have less security and are dependent on riskier food sources than those able to depend on the rural economy;

- women's income is more likely to be spent on nutrition, thus their status and income within the household (i.e. intra-household entitlements) is important; (von Braun *et al.,* 1992

- household resource planning and coping strategies impact food-security status during risk periods. Although context and location specificity cannot be generalised, food insecure people will typically fluctuate around a poverty line during normal and risk periods;

- combinations of different risks will commonly cause the most severe forms of food

insecurity. For example, these might be a household with a large number of dependents, and a limited ability for farming diversification experiencing a bad crop, or the loss of the breadwinners' employment. (Von Braun *et al.*, 1992).

A large proportion of the world's population suffers food insecurity. Internationally, as stated before, the poor can be noted residing mainly in South Asia, East Asia and Africa and in sub-Saharan African higher proportions of the food insecure live as subsistence (or deficit) farmers in rural areas. In the 1990's, the rise of the HIV/AIDS epidemic has served to exacerbate problems of food insecurity, illness and death. Such an epidemic, linked to the famine presently occurring in Zambia, Malawi, Mozambique, Zimbabwe and Swaziland leads to a repeat of the opening quote now twenty years later, in the context of household food insecurity and fragmentation:

> "There is a [new] theme in international discussions of Africa's food supply. That theme is crisis."(Koopman Henn, 1983:1043).

2.8 CONCLUSION

The last two sections set the scene for the following chapter, 'food security and HIV/AIDS'. The section on 'food security and famine' is surprisingly similar in nature and content to the next chapter addressing 'food security and the impact of the HIV/AIDS pandemic'. Furthermore, the next chapter, set in the South African context, revisits most of the topics addressed in this chapter, viz. gender and entitlement and the causes and indicators of food security. The chapter addresses the relationship of HIV with macroeconomic issues including household resources and rural livelihoods, the position of women in South Africa, crime, education and vulnerability to food insecurity by race and province. The end of the chapter will form a conclusion for both chapters, in detailing previous research conducted in South Africa as well as the work of local, national and international organisations attempting to alleviate the difficulties caused by a lack of availability, access and entitlement to sufficient and appropriate food.

CHAPTER 3
LITERATURE REVIEW

3.1 INTRODUCTION: FOOD SECURITY AND HIV/AIDS

Ninety five percent of the thirty six million households living with the HIV/AIDS virus are in developing countries (Barnett and Rugalema, 2001). Sub-Saharan Africa contains the greatest number of HIV positive people with South Africa the country most affected, having 4.2 million HIV positive people. Assuming that each case of HIV/AIDS directly impacts the lives of four other individuals, then 16.8 million people are presently affected by the disease in South Africa, this figure amounts to forty percent of the 40.5 million South African citizens. (It is estimated that 13.7 million Africans have already died and 25 million HIV positive people will die by the year 2020). This toll of millions of lives lost will have a significant impact on food security for those orphaned by the disease, or living with the elderly who might be too old to provide for themselves and affected by the deaths of family bread winners (Haddad and Gillespie, 2001).This chapter discusses the impact of HIV/AIDS on food security in the rural areas of South Africa, and begins by explaining the nature of the disease and how this impacts on society at large.

3.1.2 The unique aspects of the HIV pandemic

HIV/AIDS is a different condition to many other illnesses and will thus have a more significant impact on the lives of the food insecure. This is because:

- HIV is fatal and at present, incurable. The medicines available for the disease can only improve the sufferer's quality of life for a limited period. The available drugs are too expensive for many (drug price cuts are central to ethical debates) and illness and certain death can undermine incentives to prepare for future harvest periods or to accumulate assets(Haddad and Gillespie, 2001).

- It kills the most productive members of the family, thus it reduces the productivity and caring capacity of the household. It increases dependency ratios and

impairs the intergenerational transfers of skills, abilities and knowledge. The survival of the household unit is thus threatened and its coping strategies for these shocks are more likely to be irreversible.

- The disease has a long incubation period during which individuals are highly infectious. The disease is socially and physically invisible and attitudes towards sex and the disease lead to silence, stigma, discrimination and denial. Large-scale prevention of it as an 'epidemic' is thus very difficult. During the long incubation period and in the absence of routine testing, individuals may be unaware of their HIV status and have less incentive to alter behaviour which would spread it. Households and families who are also unaware cannot alter their livelihood strategies in preparation for the loss of a family member or breadwinner (Haddad and Gillespie, 2001)

- HIV/AIDS affects both the rich and the poor and has urban and rural dimensions. Rural poor may migrate to cities to seek work after the death of a bread-winner. Urban worker deaths may force children to be sent to rural extended families to be cared for.

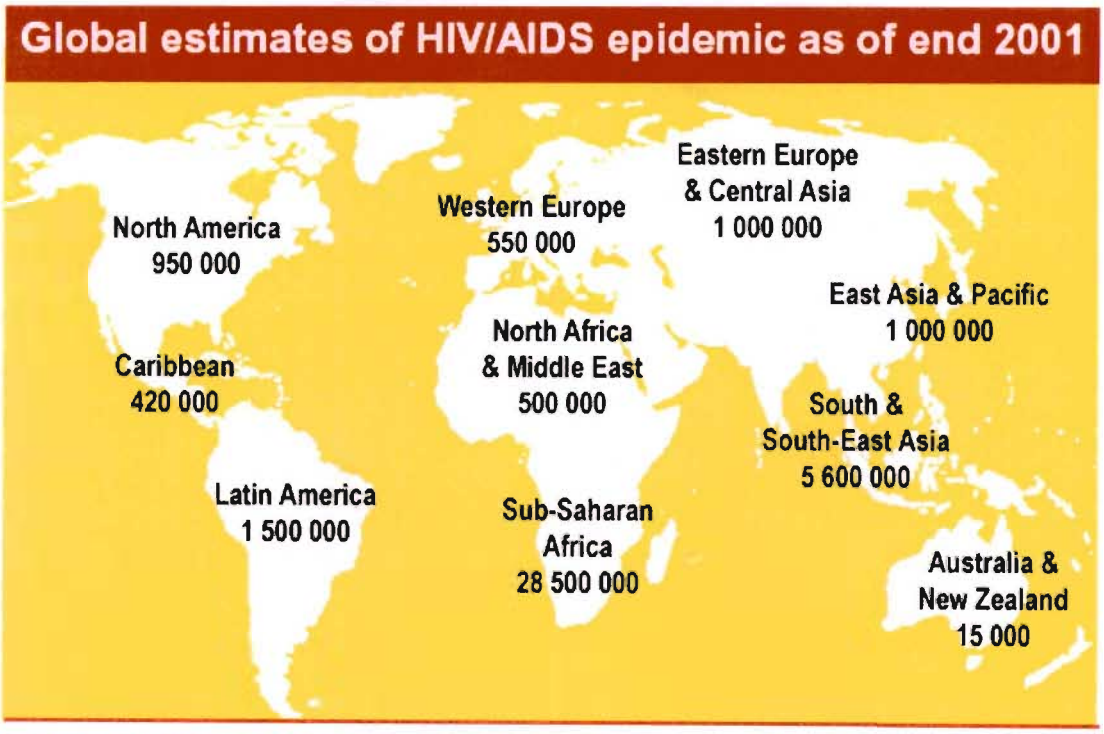
- HIV also affects both sexes, but women are more at risk of being exposed to it. Women are more biologically vulnerable and are more marginalized and powerless.

- Poverty and marginalisation increase exposure to HIV and its toll is higher when borne by poorer households who depend on informal coping mechanisms (friends and family) rather than the less marginalised who may receive formal insurance benefits (Haddad & Gillespie, 2001).

- HIV/AIDS generally impacts the age group of 20 -40's, society's most productive individuals. Thus as HIV/AIDS increases so the capacity to fight it decreases, and in particular with the deaths of those in government and working in NGOs.

HIV is a global concern although infection and prevalence rates remain the highest in Africa, and in sub-Saharan Africa in particular. Figures 8 and 9 and table 1 below

show global estimates of the HIV/AIDS epidemic, as well as changes in life expectancy in African countries with a high HIV prevalence, when compared to countries with a low HIV prevalence, which is frightening, when noting the implications of increasing mortality rates from HIV. This leads into the next section, which details the impact of HIV/AIDS on the subsistence livelihoods of many rural people living in developing countries.



Total number of adults and children living with HIV/AIDS: 40 million

People newly infected with HIV in 2001	**Total**	**5 million**
	Adults	4.2 million
	Women	*2 million*
	Children <15 years	800 000
Number of people living with HIV/AIDS	**Total**	**40 million**
	Adults	37.1 million
	Women	*18.5 million*
	Children <15 years	3 million
AIDS deaths in 2001	**Total**	**3 million**
	Adults	2.4 million
	Women	*1.1 million*
	Children <15 years	580 000
Total number of children orphaned by AIDS, and living, end 2001**		**14 million**

**Defined as children aged 0–14, as of end 2001, who have lost one or both parents to AIDS.

Figure 8 and Table 1 : Global Estimates of the HIV Epidemic as of end 2001.

Source http://www.unaids.org

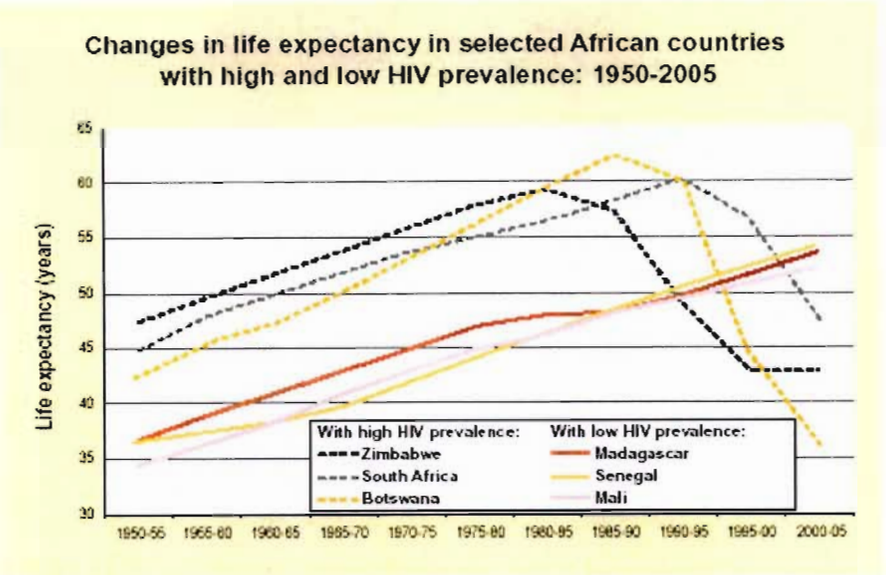


Figure 9: Changes in life expectancy in selected African countries with high and low HIV prevalence: 1950 - 2005.

Source http://www.unaids.org

3.1.3 HIV/AIDS and livelihoods

Subsistence farming is the main source of livelihood for poor individuals living in developing countries. The individual's nutritional status will play a major role in the person being able to combat the physical impact of HIV and to be productive in planting and harvesting food for their family. Thus, problems facing areas dependent on subsistence farming and having large numbers of HIV/AIDS related deaths will include:

- labour shortages and asset depletion;
- a loss of formal and informal institutional networks as tribal methods, collective action, stokvels, small business enterprises;
- a loss of farming and community knowledge, the impact of this may be viewed in table 2 (Haddad and Gillespie, 2001).

How does HIV/AIDS change the context of agricultural growth?	Leads to . . .
Labor changes	
Shortage of household labor due to . . . • mortality • surviving adults take care of infirm	• less land being farmed • underfarming of land in absence of labor sharing and well-defined property rights • more child labor • less labor-intensive crops grown
Shortage of hired labor due to . . . • mortality • migration to cities • lack of cash to pay for it	• emphasis on meeting food needs first and cash crops later • greater emphasis on small livestock cultivation • decline in marketed output for crop processors • natural resource mining (the future is heavily discounted)
Loss of farm-specific knowledge	
• premature mortality curtails period for intergenerational role modeling and knowledge transfer	• less appropriate farming practices within a more hostile farming environment • more farmers who are inexperienced and need training, role models (e.g., youth)
Income changes	
• fewer earners, increase in dependency ratio • greater expenditure on medical, transport, special needs of ill	• more off-farm income sources • migration
Institutional and organizational changes	
• loss of institutional knowledge, high turnover, low investment in staff development	• weaker rural institutions (e.g., extension services, microfinance institutions, NGOs) • weaker social capital • weakening of property rights for some • weakening of asset base of women (especially land)

Table 2: Summary of the ways in which HIV/AIDS may affect agricultural growth.
Source: Haddad and Gillespie (2001)

Gillespie (1989) observes that agriculture in central Africa is dependent on a high degree of specialisation by age and gender in farming activities, an interdependence of labour inputs with increasing returns to labour and a low substitutability of capital for labour. Haddad and Gillespie (2001) also added that a community's ability for collective action and household ownership of property rights were central to the community's overall vulnerability when faced by HIV/AIDS loss.

Haddad and Gillespie (2001) view three phases that may occur in a subsistence agriculture area as more people die of HIV/AIDS. These phases reflect expected and observed patterns of the management of household food security requirements.

Phase 1 may occur when a few of the older productive breadwinners become ill or die. Families `import' labour from friends or the community to replace the lost labour or to care for the sick. Children may be recalled from school and both children and adults might work longer hours in the fields. The next phase may incorporate methods of farming that depend on less labour, so families may cultivate roots and tubers (cassava in Mozambique being a case in point), raise small livestock (chickens) and grow food crops rather than (cash) crops which are more labour intensive. When mortality increases further there may be nothing to be done with the land except to sell it, leaving it fallow and migrating to the cities. Incentives to manage communal resources will diminish and households may fragment. Property rights and the decision-making power of women may become of critical importance at this stage. As stated earlier, these phases reflect similar patterns of change to households at risk of severe food insecurity and famine, discussed in section 2.6 (Haddad and Gillespie, 2001; Corbett, 1988).

3.1.4 HIV/AIDS and household assets

The impact of HIV/AIDS is to strip people of the resources they hold as individuals, households and communities. These include:

- *Human capital*: Individuals affected by HIV/AIDS will be ill with infections and will be less productive once past the incubation phase; they will also die prematurely. Healthy individuals may also have their productive capacities diverted to caring for the infirm and attending funerals for the dead. The cost to children may be the loss of their schooling and future income abilities, the quality of their care and the shock of household migration to care networks. Hours of manual labour for those remaining may increase in order to maintain food security needs. In terms of knowledge, the loss of adults in their most productive years diminishes the transfer of taught wisdom and the role model education from one generation to another. Both the reduction of transferred knowledge and the loss of schooling for children mean that future livelihoods are sacrificed to maintain current livelihoods(Haddad and Gillespie, 2001).

- *Financial capital*: The financial assets of the family are severely depleted by HIV/AIDS through medical costs, burial, transport and care needs. Within these

pressures, families need to maintain their consumption levels, and so deplete their assets, selling stores of value (e.g. savings, livestock, tools, household items) or by getting into debt to other community members. Microfinance services invariably lend at high interest rates and tend to be spatially concentrated, thus vulnerable to shocks themselves. Families tend to get into debt for funerals in particular. This has been described as the main distress response in Tanzania (Lundberg, Over and Mujina, 2000).

- *Physical and natural capital*: Basic infrastructure, productive equipment, land and time all become threatened by the pressures of HIV/AIDS, as do property rights when claimed by widows and orphans. The use of collective action for protecting wetlands and communal gardens may be increasingly strained as individuals fight to maintain their own financial status or as orphans become the household managers.

3.1.5 Women and HIV/AIDS

Women are between two and four times more likely to become infected with HIV during unprotected sex (World Bank, 1997). The same pertains to sexually transmitted diseases (STDs) which may multiply the risk of HIV infection by three to four hundred percent. Socio-economically and culturally women are more vulnerable to HIV infections. Reasons include an African culture of silence about sexual matters and practises, sexual coercion from men, economic vulnerability, migrant labour lifestyles, widow inheritance and male rights over women and children within marriage (Haddad and Gillespie, 2001).

When improving household food security within this context, it is important to focus on improving women-centred food security. Empowering women to protect themselves from being infected with HIV will maintain with greater success, food security for a household. A conceptual framework for this can be seen on the following page. (Haddad and Gillespie, 2001) and is discussed in greater detail in Section 3.2.3.

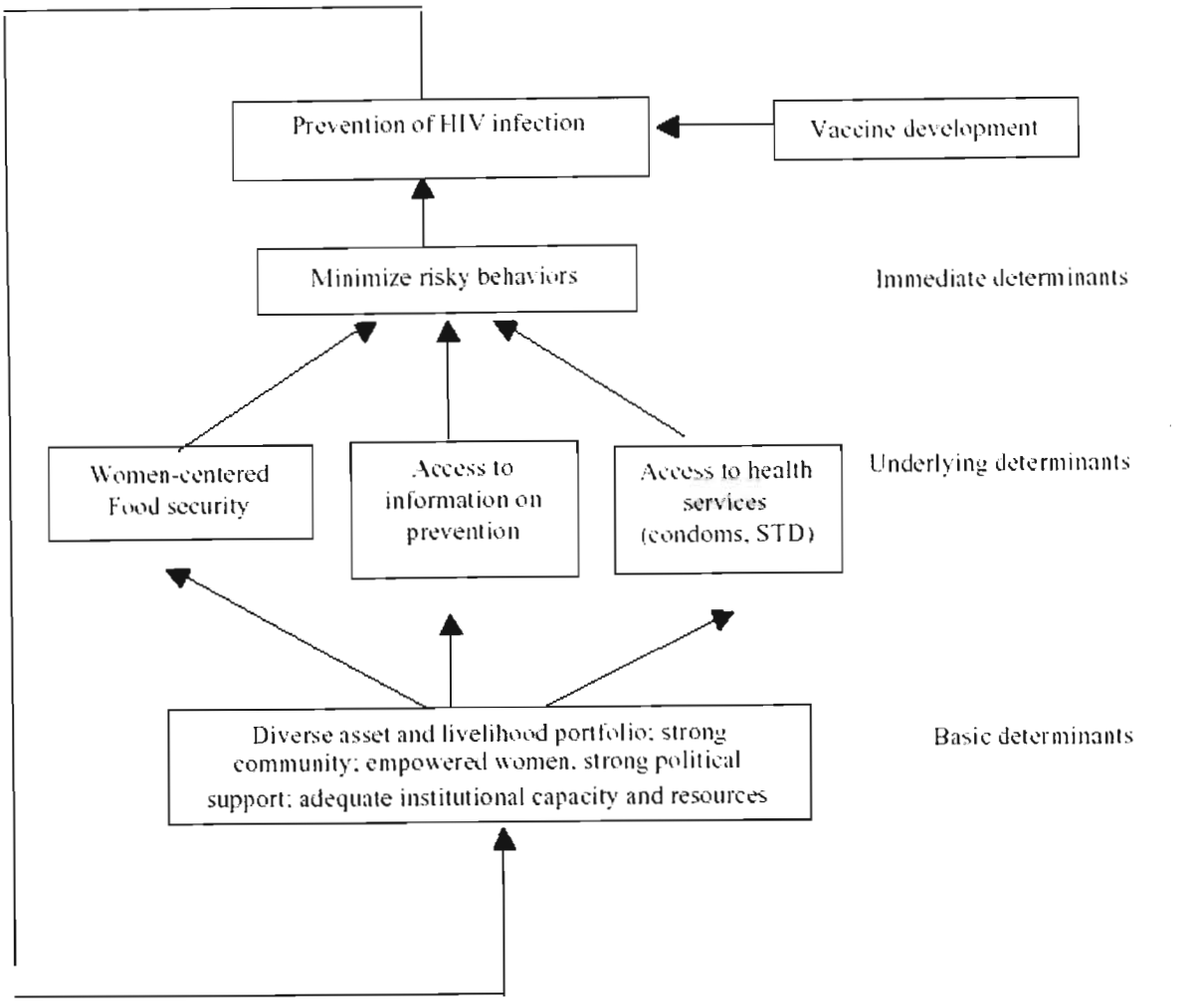


Figure 10: HIV prevention – A Conceptual Framework

Source: Haddad and Gillespie, 2001

Thus the impact of HIV/AIDS is a critical factor impacting food security in Southern Africa. The next section provides an overview of the socio-economic conditions prevailing in South Africa and then addresses issues of food security and HIV/AIDS in the context of rural subsistence farmers.

3.2 SOUTH AFRICA, FOOD SECURITY AND HIV/AIDS

South Africa is classified as a middle income country with a per capita income similar to Mauritius, Brazil and Botswana. South Africa has virtually always been nationally food sufficient but has a large inequality ratio (gini coefficient) with many households plagued by poverty, food insecurity, ill health, stunted growth and labour practises of long hours and low pay. The structural imbalances in South Africa have stemmed from

many sources, but in particular from the colonial era that ultimately emerged as apartheid. The active dispossession of land from the black majority (a practise of apartheid), as well as a lack of access to markets, human development opportunities and infrastructure impoverished many non-white South Africans. During the sanctioned years and until 1985, South African agriculture had followed a policy of self-sufficiency promoting commercial farming, often at the cost of consumer welfare (Project for Statistics on Living Standards and Development, 1994).

Such a background of inequalities and repression has caused much of South Africa's present household food insecurity. Approximately 14 million South Africans are vulnerable to food insecurity, fluctuating around the poverty line. One in four children below six years has been stunted due to malnutrition. Such stunting normally causes chronic mental retardation, thus having a long-term impact on the children's future opportunities and capabilities. Vitamin A and iron deficiencies are widespread, particularly in rural areas where malnutrition is higher than in urban areas. In rural areas, many farmers are considered to be deficit producers - being net consumers of food. Often rural households adopt diverse strategies to preserve their livelihoods, such as crop production, migrant labour, local employment and social security benefits.

The PSLSD (Project for Statistics on Living Standards and Development, 1994) estimated that thirty nine percent of the population were not meeting a daily energy requirement of 2000 kilocalories/day. The protein energy malnutrition statistic has shown that the stunting range for children lies between twenty-three and twenty-seven percent. Two-thirds of South Africa's poor and sixty percent of all stunted children live in three provinces of South Africa, the Eastern Cape, KwaZulu Natal and the Northern Province. Children in rural areas and mothers with limited education form the group of people suffering from micro-nutrient deficiencies.

South Africa's human development statistics fare poorly when compared to other countries of a similar per capita income. Countries that have had lower per capita GNP levels have performed better in terms of life expectancy, adult literacy and mortality. Life expectancy, adult literacy and mortality indicators are used to construct the Human Development Index (HDI). Ranking 86th in the world (Jones, 1992), South Africa is shown to have a medium level of human development. But there are great disparities in the levels of human development between the different provinces, with the Cape and

Gauteng ranking higher than KwaZulu Natal which ranks 95th (similar to China) and the Northern Province ranking 123rd with Zimbabwe (the lowest possible rank is Mozambique at 159).

3.2.1 Vulnerability by race and province

Poverty affects all races in South Africa, but is concentrated amongst Africans. A racial head-count of the poor shows it to affect 1,8% of whites, 8,4% of Asians, 24% of Coloureds and 66% of the African racial group. Food insecurity and poverty also have a gender dimension with forty-eight percent of women compared of forty-three percent of men being classified poor, and sixty-seven percent of female headed households in rural households being impoverished. Poverty is concentrated amongst the elderly and children, with sixty percent of South Africa's poor being above 60 or below 18 years of age (Department of Agriculture and Land Affairs, 1997).

The distribution of poverty amongst South Africa's nine provinces is very uneven. The Eastern Cape and Northern Province have by far the highest poverty rates. Almost three-quarters of these populations are poor. Three provinces, the Eastern Cape, Northern Province and Free State contain thirty five percent of the population, but fifty nine percent of the country's total poverty gap. Together with KwaZulu-Natal, they then make up seventy five percent of the poverty gap. In contrast, the Western Cape and Gauteng make up four percent of the poverty gap.

The Agricultural White Paper (1995) highlights government commitment to addressing both national and household food security. A 1997 Food Security Policy for South Africa discussion document (Department of Agriculture and Land Affairs), states that South Africa faces three key food security challenges. These are:

- ensuring that there will be sufficient food available for all people in the present and in the future;
- that prices and incomes will match to ensure access to basic foodstuffs for everybody;
- enabling and educating consumers to make food choices that will ensure optimal health and nutrition for all people in the country (Department of Agriculture and Land Affairs, 1997).

In order to meet these challenges, six strategies have been devised and planned for the next few years. They include:

- agricultural reform in order to optimise the contribution of the agricultural sector to food self-sufficiency and the economic empowerment of the more vulnerable and impoverished rural groups;

- food trade to focus on maintaining regional and national food security;

- income enhancement, job creation and crop diversification to improve the income generating capacity of vulnerable and poorer communities;

- ensuring that those eligible to social security are receiving their government services and in particular, targeted benefits;

- protecting the livelihoods and food security of households during disaster or stress periods;

- food consumption and nutrition to be enhanced through education and a safe food supply (Department of Agriculture and Land Affairs, 1997).

3.2.2 Food security and education

The impact of food security on education and *vice versa* in South Africa is significant. Malnutrition, stunting and diseases have taken their toll with much of the South African population `under qualified for a modern economy' (Lemke, 2001). In 1994, forty-six percent of black South Africans were illiterate, and although South Africa has a fairly good record of school enrolment, late entry in school, high repeat rates, and additional problems with a lack of teacher and student discipline, mass action and gang warfare which has meant that only sixteen percent of black students qualify for entry into university (Lemke, 2001).

According to Budlender (2000:99):

> '...young women and men in impoverished areas stay at school despite poor performances because of the high unemployment rate and lack of alternative possibilities, and the (often misguided) perception that education provides a route out of poverty'.

This is a particularly unfortunate perception in rural areas where work in fields (which maintains food security for families and passes skills and knowledge to younger household members) is sacrificed in preference to a schooled education (Lemke, 2001).

3.2.3 Gender, crime and food security

South Africa has been characterized by an extensive system of patriarchy since colonial times (Popenoe *et al.*, 1998) and although women's farming and reproductive capacities were valued, these capacities were controlled by men (Sachs, 1992). Under customary law, black South African women had unequal rights with regard to property, inheritance, marriage, children, divorce and childhood assets and were permanently under the guardianship of a male relative or husband (UNICEF and NCRC, 1993). Laws have since changed (the Bill on the Recognition of Customary Marriage Acts became law on 15 November 2000 (*Government Gazette*, 1998) although they are not retrospective and most of the tribal customs continue in rural areas regardless. Access and entitlement to food security have thus been hampered by women's lack of rights, and this is exacerbated in rural areas by the lifestyle fluidity of the migrant labour system. The present rural household pattern is to a large extent the result of migrant labour and Ramphele (1993) found that few couples were able to maintain stable relationships under such pressure. Women are commonly left in rural areas with their children, and although their food needs can be partially met through subsistence agriculture, they are dependent on the remittances of their migrating partners. Studies have consistently found that women do not know how much their partner earns (Breslin and Delius, 1997; Jones 1999 and Bank, 1997). Women are thus in a vulnerable position and their precarious dependence has implications for the food security of the entire family. Family life has been further disrupted by high unemployment and poverty. In this situation, women are more vulnerable than men, which is revealed in alarming

statistics on violence against women within and outside the home in South Africa. Rape and sexual abuse in particular have risen, and the high incidence of HIV infection rates amongst young adolescent girls also highlights wrong assumptions that relations with virgins will cure AIDS (*South African National STD/HIV/Aids Review*, 1994;Lemke, 2001).Thus women are vulnerable to crime, and in this impacts their livelihood in rural areas where as *'de facto'* household heads, women have to walk long distances to collect water, firewood and work in fields. Statistics on the prevalence of HIV infections in pregnant women in South Africa may be viewed in Figure 11.

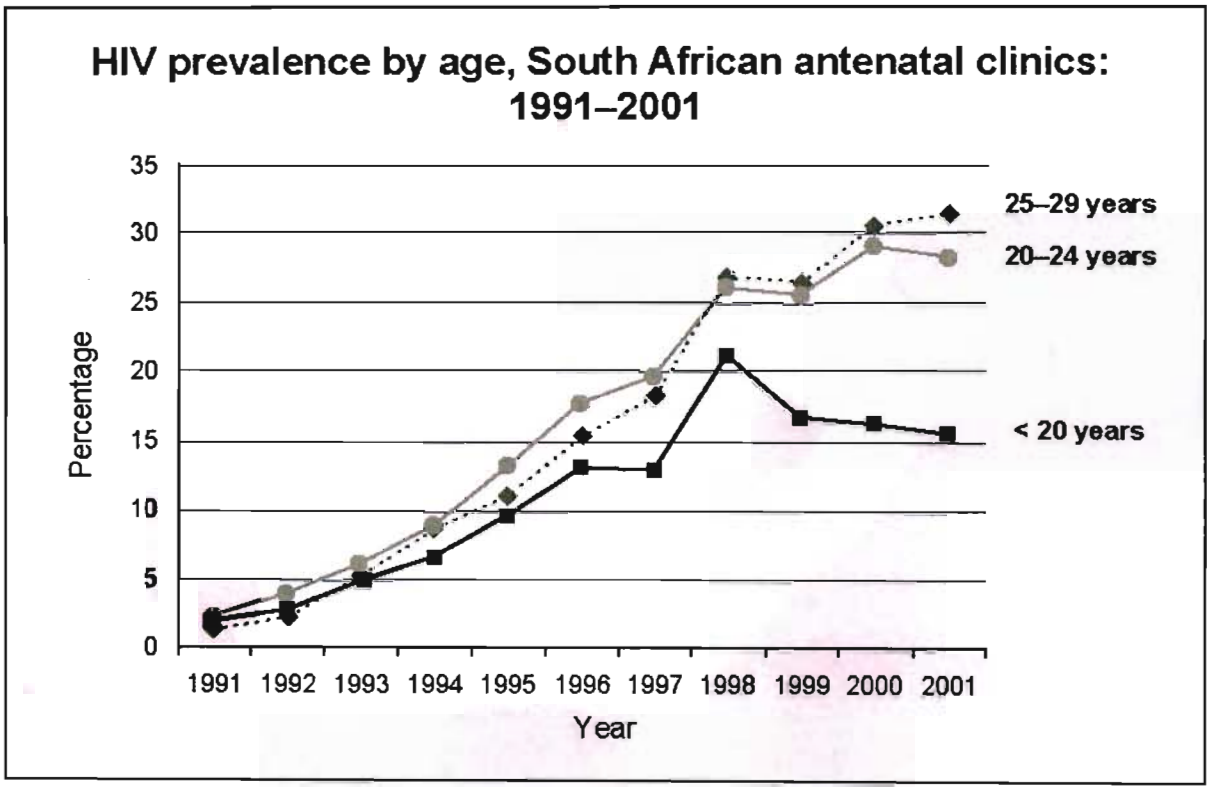


Figure 11: HIV Prevalence by age

Source: Summary Report, National HIV and Syphilis Sero-Prevalence Survey of Women Attending Public Antenatal Clinics in South Africa, 2001. Department of Health, South Africa, 2002

3.2.4 Food security and HIV in South Africa

As noted in the introduction, sub-Saharan Africa contains the greatest number of HIV positive people with South Africa the country most affected. The impact of this disease in terms of numbers alone and in particular adults, (society's most productive members) can be viewed in figures 12 and 13, which show estimates of millions of people living with HIV/AIDS. You will notice that South Africa is at the top

of the chart with 4.2 million people HIV positive– thus containing more absolute numbers of people living with HIV than India, a country far more heavily populated. Figure 13 gives an estimated percent of adults (15-49 years) living with HIV/AIDS, thus highlighting the fact that South Africa might well lose the most productive years of twenty percent of its population.

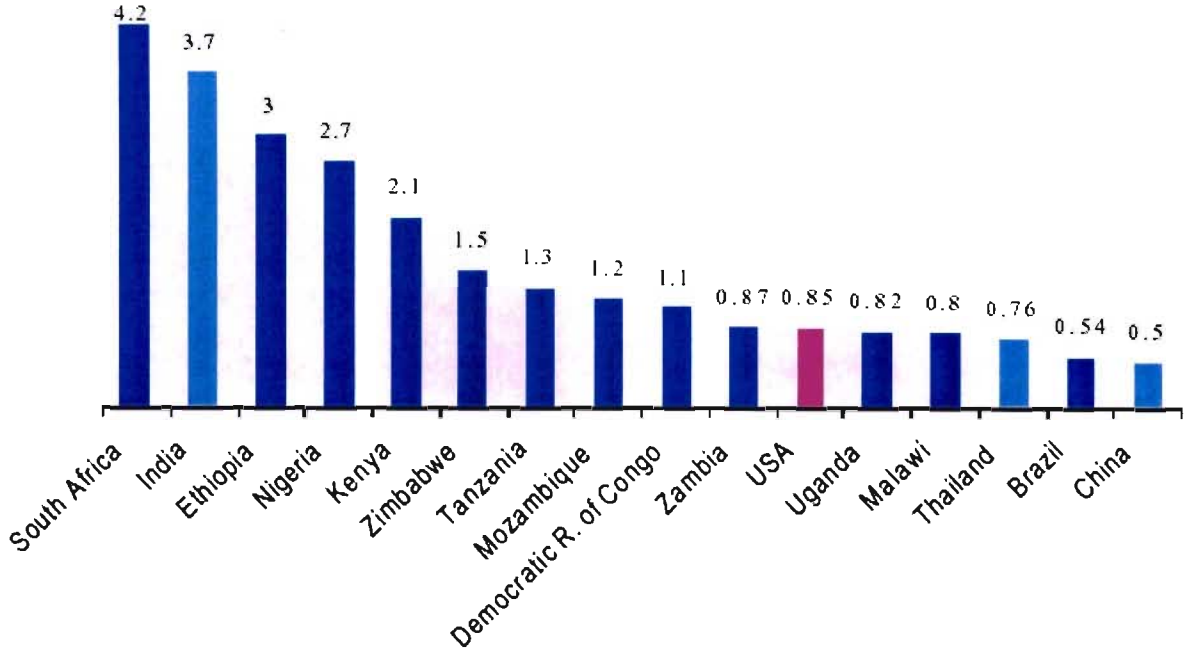


Figure 12: Estimated millions of people living with HIV/AIDS, end 1999

Source:http://www.unaids.org

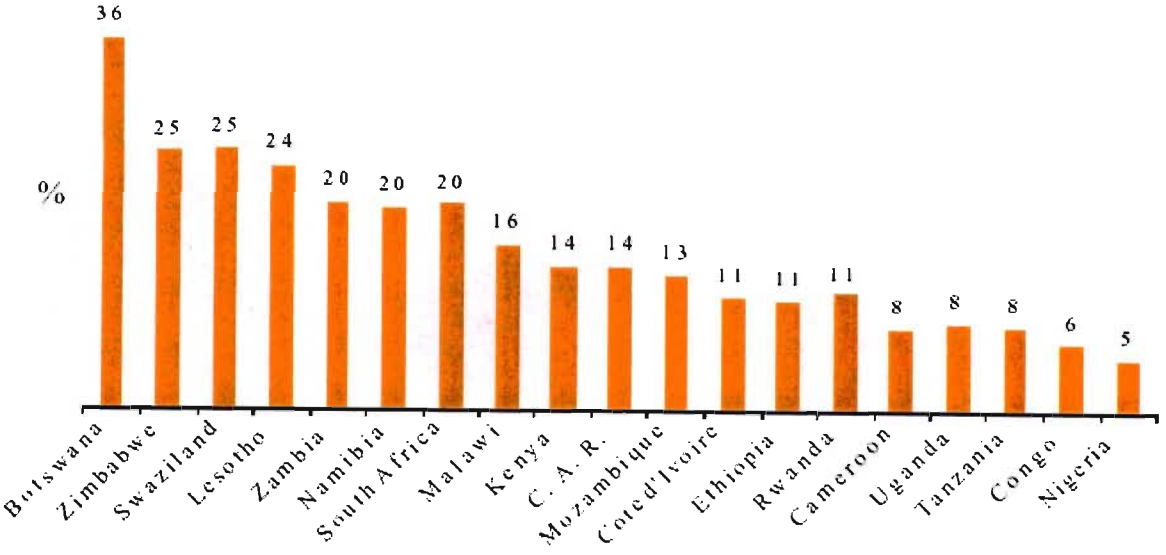


Figure 13: Estimated percent of adults (15-49 years) living with HIV/AIDS, end 1999

Source: http://www.unaids.org

The increasing incidence of AIDS has serious implications for household food security, as the HIV infected people will lose their working and care capacity. Linked to this, and typically in rural areas, individual cases of HIV will impact households and the level of wellbeing in entire communities because of the close interrelatedness of poverty-related and communicable diseases like tuberculosis (Budlender, 2000). The migrant labour system also has a significant impact on this, spreading HIV and infections between rural and urban areas. Figures 14 and 15 highlight the potential workforce lost to South Africa due to HIV/AIDS, a consequence not only impacting businesses and trade but in rural areas will affect main sources of income, often used for maintaining entire households.

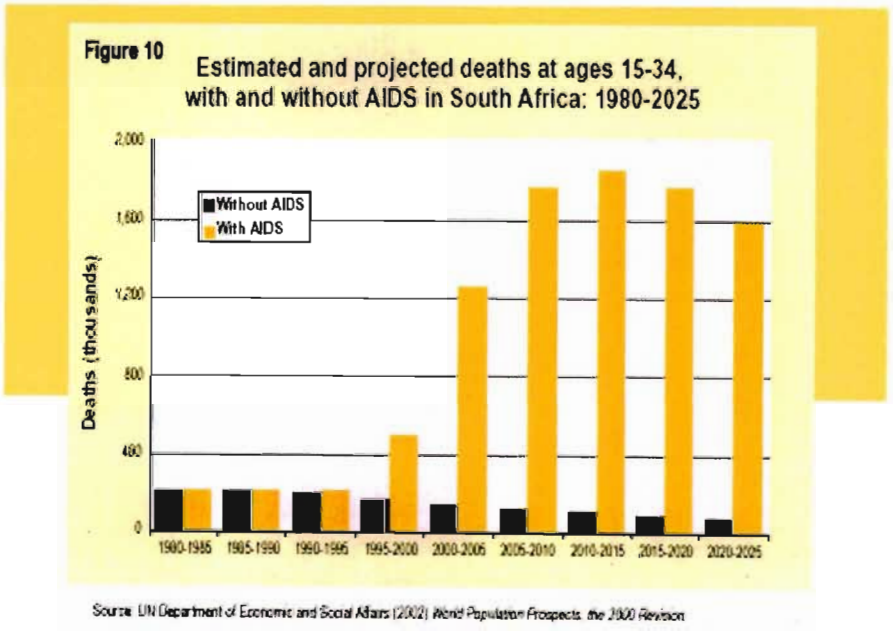
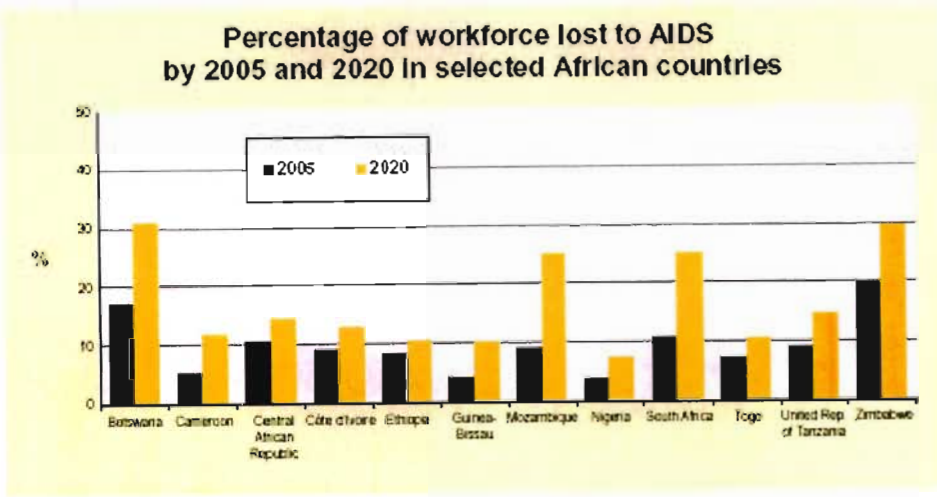


Figure 14: Estimated and projected deaths at ages 15-34, with and without AIDS in South Africa: 1980 – 2025. Source: http://www.unaids.org



Sources: ILO (2000) POPILO population and labour force projection; UN Department of Economic and Social Affairs. Population Division (1998) *World Population Prospects: the 1998 Revision*

Figure 15: Percentage of workforce lost to AIDS by 2005 and 2020 in selected African countries.

Source: http://www.unaids.org

South Africa's response to the AIDS epidemic has been slow, characterized by poor coordination and limited intersectoral collaboration which includes regional, provincial and national departments, as well as government and NGO institutions (*The South African STD/HIV/AIDS Review*, 92; Lemke, 2001).

Cohen (2000) comments on the South African livelihood-AIDS dilemma by stating:

> "How [does one] achieve the sustainable development essential for an effective response to the epidemic under conditions where the epidemic is destructive of the capacities essential for the response?"

Targeting food insecurity is important and is aimed at reducing the vulnerability of households to poverty and malnutrition. Due to the fact that people's health status determines their capacity to work, their developmental skills and education it also thus affects the returns to their labour. If people are malnourished, a poverty cycle is then effected, because the capacity to work and returns to labour then determine their income-generation and food supply. A negative cycle may thus cause food insecurity, vulnerability to economic shocks and resultant malnutrition. HIV/AIDS is yet another force to contend with when attempting to develop a healthy workforce able to competently undertake their work commitments. Figure 16 shows the vicious cycle of

malnutrition and HIV which undermine health and the ability to work, thus destroying lives in their most productive years.

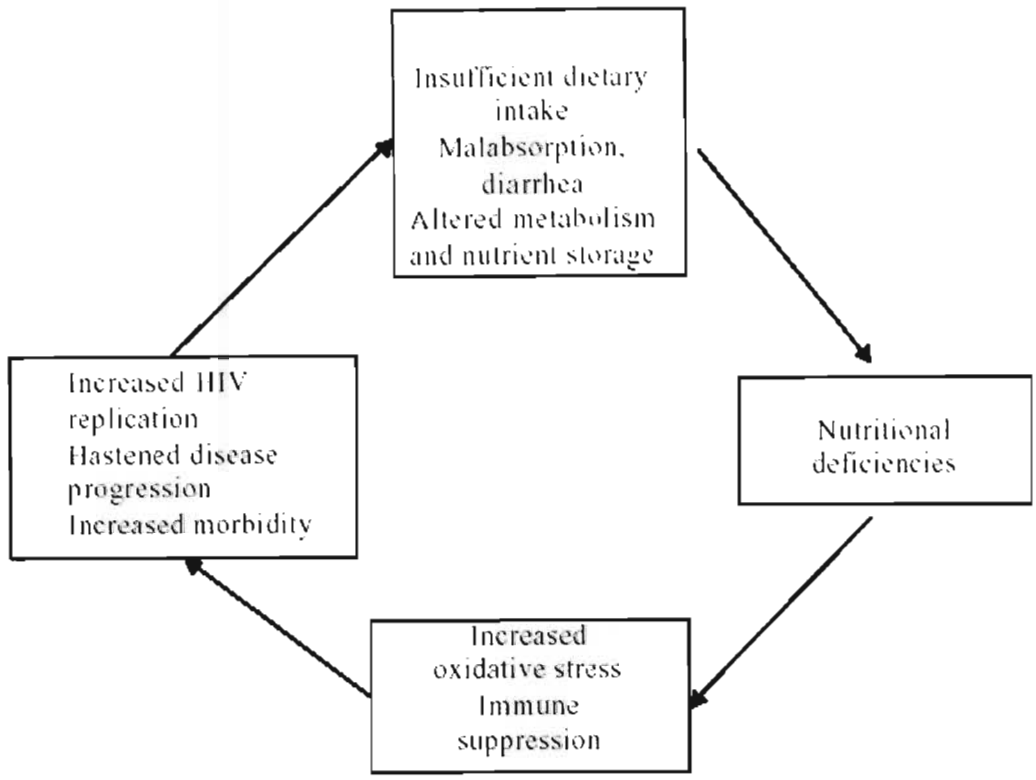


Figure 16: The vicious cycle of malnutrition and HIV

Source: Sembe and Tang (1999)

The lack of basic micro-nutrients in the diet can cause learning disabilities, mental retardation, poor health, low work capacity, blindness, and premature death. The result is not only personal loss and distress, but in the developing world with the high HIV prevalence, this constitutes a very serious labour, agricultural and public health problem. An epidemic evolves through different phases (Haddad and Gillespie, 2001), as depicted in Figure 17 on the following page and as can be seen, irrelevant of whether the HIV infection rate in South Africa is in an accelerating or decelerating phase, the proportion of the population at risk of food insecurity, HIV and malnutrition is increasing.

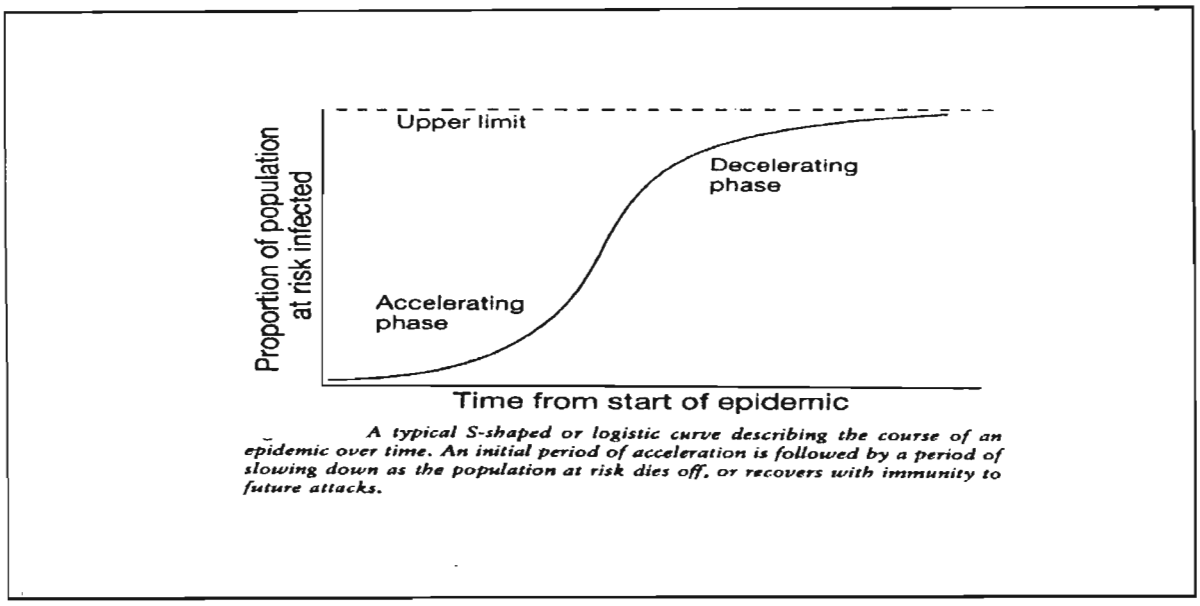


Figure 17: The evolution of an epidemic

Source: Haddad and Gillespie (2001)

Section 3.1.3 discussed the impact of AIDS on food security and livelihoods. It is thus exceptionally important that South Africa takes stock of its response to the HIV/AIDS epidemic and the impact of this on food security - particularly in rural areas. Rural subsistence farming, although marginalized, is foundational to the livelihoods of many, and is interlinked to the South African economy via its migrant labour system. It is hoped that present and future research in the field of food security and HIV in South Africa will cause a continuous momentum for public and personal involvement in the crisis, enhancing the capacity of the country to deal with the pandemic.

3.3 SIMILAR RESEARCH IN SOUTH AFRICA

Food security is becoming a well researched topic in South Africa. The growth in research in this area has mirrored a growing national and international interest in the poverty-related difficulties experienced in rural areas, formerly known as 'homelands' or 'bantustans' which have lacked socio-economic and infrastructural investment in the past. Before the new democratic dispensation, there was an absence of credible data regarding living conditions in these areas, partly due to the official South African government excluding these areas in national policy making, and secondly, because the release of publications regarding rural livelihoods and poverty were determined by

the 'whims of the bantustan heads' (May, Carter, Haddad and Maluccio, 2000). The new integrated government initiated a national census as well as smaller secondary surveys in these areas for policy making purposes. Rural areas in South Africa share many similarities, with subsistence farming characterising the basis of most livelihoods. Interest in household food security has also developed alongside growing concerns for community networks impacted by HIV/AIDS. An overview of research conducted in the food security field includes:

- government and regional policy publications
- United Nations, international and local non-governmental organisational research
- university research units
- miscellaneous research documents

3.3.1 Government and regional policy publications

In November 1997 the government published a discussion document detailing plans for a national food security policy. This document was drafted by a food security working group who represented the Agricultural Policy Unit within the Department of Agriculture and Land Affairs. The final document, 'an integrated food security strategy for South Africa' was published in July last year. Aside from detailing the historical origins of poverty and food security challenges in South Africa, the document addresses priority concerns for the future and includes an implementation plan. The stated objectives of the policy include increasing household food production and trading, improving income generation, job creation, nutrition and food safety nets for emergency periods, a plan to improve information management and food supply monitoring and finally, plans to develop an integrated approach to development based on partnerships and stakeholder dialogue. Stakeholders would include other government departments as well as international and local NGO's. Moves towards this integrated strategy approach to policy making and implementation can be seen in other government departments as well. The Department of Health published a policy document for improving the nutritional status of all South African citizens and for reducing the prevalence of malnutrition in children. Improving household food security is considered one the main strategies the health department's plan. Collaborative research between the government and

NGO's has increased noticeably. Recent international conferences have included food security as items of discussion. These were (i) The World Summit on Sustainable Development held in Johannesburg in August/September 2002. The conference detailed its objectives towards poverty eradication and the increase of 'food availability and affordability'. This was documented in 'Resolution 2', the plan for the implementation of the final report. (ii)The Barcelona summit held on the 15th March 2003 included a commitment from the European Union to increase aid to developing countries and a commitment to become more involved in the concerns of developing countries and the concerns of their governments. (iii)The Round table workshop hosted by the Southern African Regional Poverty Network, the Human Sciences Research council, the FAO, Oxfam and the GTZ-SNRD (German Technical Cooperation – Sector Network Rural Development, Africa) attempted to facilitate the South African government and other stakeholders in discussions for defining future actions for mitigating HIV/AIDS through rural and agricultural development. Food security was a main focus of this and it was decided that government initiatives and research were to inform policy decisions alongside regional food security monitoring. The SADC food security monitoring unit have their headquarters based in Harare and publish a quarterly bulletin. Most of the information is informative at a national food security level, although 'Statistics South Africa' includes a few household food security indicators as well. (http://www.saafost.org.za/Hulse-.html.
http://www.sadc-fanr.org.zw; http://www.gov.za/reportd/2002/foodpol.pdf;
http://www.nda.agric.za/docs/policy98.htm#Onethree;
http://www.doh.gov.za/docs/index.html).

3.3.2 United Nations, international and local non-governmental organisational research

Although previously based at the SADC headquarters in Harare, the FAO has decided to open another office in South Africa. The stated aim of this move is to develop policies that will assist household food security and agricultural reform. Many other United Nations organisations are developing policy and programmes for food security in South Africa, these include the publishing arm of the United Nations world food programme and IFPRI. Recent papers on food security published by

IFPRI in South Africa research urban challenges to food and nutrition security; gender and intrahousehold aspects of food policy and targeted interventions to reduce and prevent poverty (http://www.ifpri.org/srstaff/haddadl.htm). Other international humanitarian organisations involved in research include Oxfam, the Food and Nutritional Technical Assistance Project (FANTA) which is funded by USAID and Save the Children. Local research publications include papers by Operation Hunger, which details their change in the management of poverty alleviation from direct food aid to development programmes aimed at building the capacity of rural communities to maintain and improve their food security levels. (http://www.irinnews.org; http://www.fantaproject.org; http://www.developmentgateway.org; http://www.fao.org/News/1998/980303-e.htm; Breslin et al.; 1997).

3.3.4 University Research

The University of Natal, Pietermaritzburg has developed a food security programme in collaboration with the agricultural sciences and agribusiness department. The programme aims to equip students with the skills necessary to design and implement policy, as well as to identify and analyse food security issues. It is anticipated that as more students develop these skills, further localised research in the field of agriculture, nutrition and food security would be increasingly conducted. (http://www.hs.unp.ac.za/commres/staff.html#Staff%20and)

3.3.5 Other Research

The topical nature of food security and the related issues of HIV/AIDS, marginalisation and poverty eradication mean that food security remains high on the research agenda with a number of journal articles publishing food security research, and contributing different aspects of this to the field. Research includes assessments of the national nutrition programme and other interventions to improve food security, gender entitlements and intra-household allocation of income and food utilisation, household migration patterns and urban-rural interactions and the impact of HIV on food security in both urban and rural areas. Stephan Devereaux and Simon Maxwell (2002) have

recently combined present research available in the field into a book that they have edited titled 'Food security in sub-Saharan Africa'. As such, food security remains topical and will certainly remain a challenge for developing countries (and Africa in particular), will the spread of HIV and the effect that it has on household make-up, labour and productivity and food access and availability.

3.4 CONCLUSION

The HIV/AIDS pandemic has had a severe impact on food security, particularly in sub-Saharan Africa. Chapter two laid out the focus areas for research conducted in food security since The World Food Conference of 1974. These included the background and development of household food security research; the causes of food insecurity and resultant malnutrition; indicators of food insecurity; gender and entitlement and food insecurity and famine. Chapter three assessed the impact of HIV/AIDS on household food security attempting to clarify this in the context of the five focus areas. Research conducted in this field in South Africa was described, linking food security to HIV/AIDS, gender, education and crime as well as giving the reader an overview of governmental policies and the research of international and local organisations, universities and development workers attempting to combat the disastrous impact of HIV/AIDS on food security. The literature review was written as an attempt to give the reader clarity regarding the relevant food security concepts and indicators applied to Ingwavuma, KwaZulu-Natal as seen in chapter 4.

CHAPTER 4
QUALITATIVE ANALYSIS

4.1 THE STUDY AREA

4.1.1 KWAZULU-NATAL

KwaZulu is a province on the east coast of South Africa, stretching from Port Edward in the south, to the Mozambique border in the north. The western and northern borders of KwaZulu-Natal are formed by the Drakensberg and Lebombo mountain ranges, separating KwaZulu-Natal from the Free State, Mpumalanga and Swaziland.

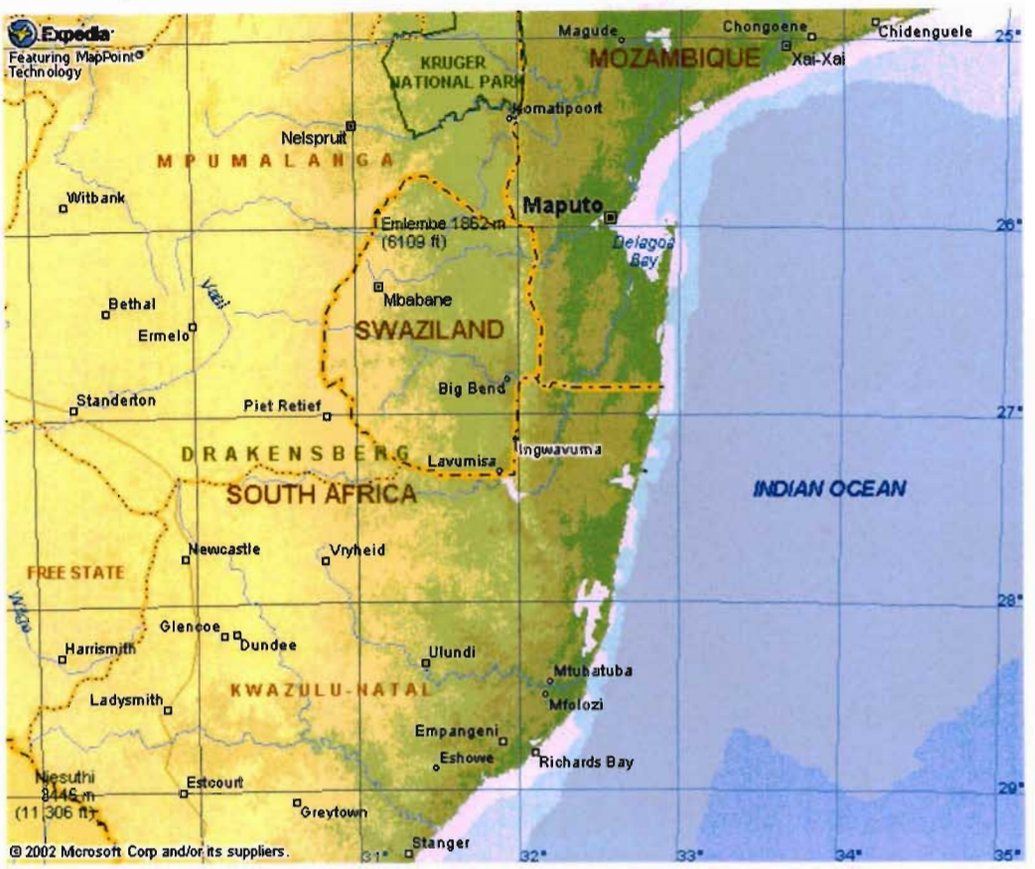


Plate 1: The Study Area (by kind favour 'Mosvold Hospital, Ingwavuma')

The interior of the province is known for steel and coal production. The coastal belt yields sugar cane, forestry, tea plantations and tropical fruit, and some mineral mining occurs in Richards Bay. Further east, the coast is home to a world heritage site, the St Lucia estuary which contains the highest vegetated dunes in the world and wetland eco-systems, in the north east, the soil becomes sandy savannah, providing a natural African climate and bushveld habitat for the many game parks situated there, as seen in plate 2.

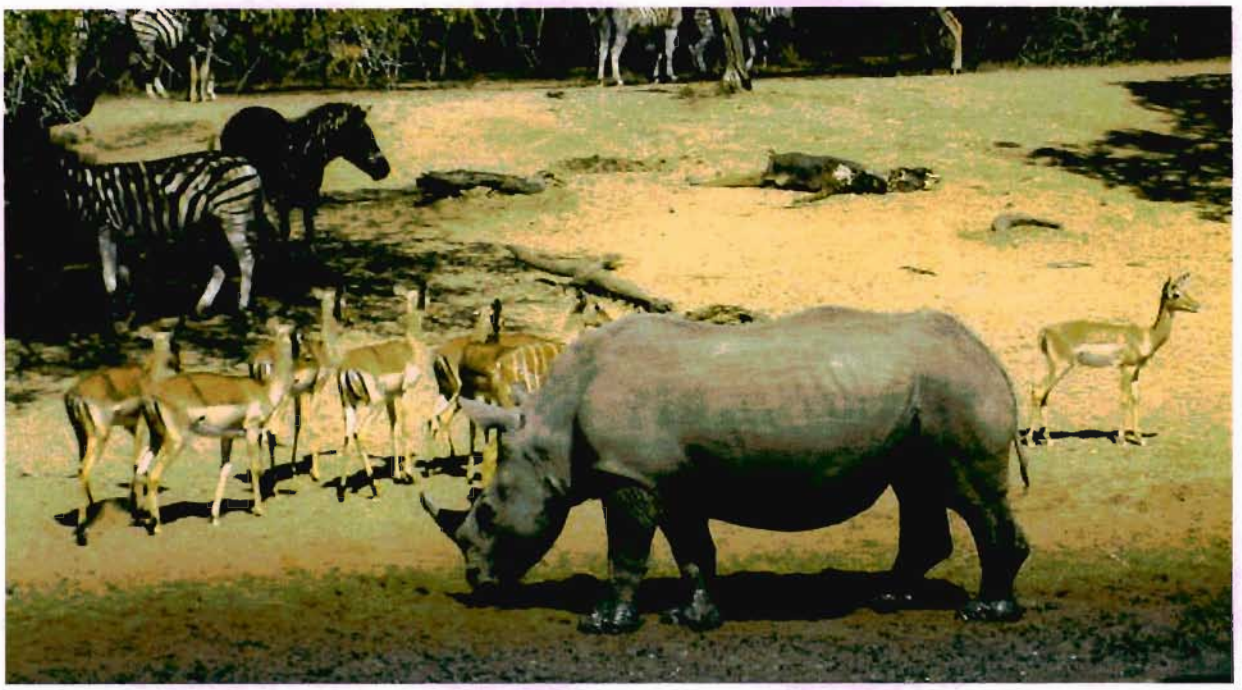


Plate 2: Wildlife found in game parks near Ingwavuma, the study area situated in KwaZulu Natal

KwaZulu-Natal is South Africa's most populace province, with around nine million people. The principal language, particularly in the eastern part is isiZulu, followed by English and Afrikaans. The population is ethnically diverse, and eighty two percent of the population would be classified 'black', seven percent 'white' and one percent 'Asian'. KwaZulu Natal also contains the largest number of Indians residing outside the 'sub-continent', most are located nearer to Durban which is the largest coastal city in KwaZulu Natal. KwaZulu-Natal has joint provincial capitals in Pietermaritzburg and Ulundi, essentially reflecting the two main languages and cultures (Zulu and 'English and Afrikaans') that coexist. The eastern side of KwaZulu-Natal is formed under the governance of the Zwelithini monarchy (specifically provided for in the national constitution), and the 'KwaZulu-Natal Kingdom' essentially falls under the jurisdiction of tribal authorities and chieftainships.

4.1.2 INGWAVUMA

The Ingwavuma district is situated within this part of Northern Kwazulu-Natal, bordering game parks in the east, Mozambique in the north, and Swaziland on the west. The western border is created by the Lebombo mountain range as seen in

plate 3. The Ingwavuma town is situated within these mountains, next to the Ingwavuma river.

Plate 3: The Lebombo Mountains in which the Ingwavuma town is situated

The Ingwavuma district is a large land mass totalling 200,000 hectares with an estimated 130,000 people residing in traditional homesteads. The area has been described as one of the poorest in South Africa. Many people work in the migrant labour system with the men in particular travelling to work in the gold and diamond mines in Gauteng. They may stay there for months on end, although men migrating to urban areas, generally return home monthly.

Only thirty percent of the wage-earning population are employed in the area, with one-third of the abled men and eighty percent of women unemployed. In general, only thirty percent of all the population have education above grade 5. Income in the area is sourced from remittances, disability grants, pensions and social welfare grants. This income is a very important source of revenue for the community and whole households can depend on one source of income for all their needs. Survival depends on subsistence farming. The main crop is maize, seasonal vegetables are grown too. Until the new government's election in 1994, infrastructure in the area was grossly under-provided.

The Ingwavuma town housed a post office, a magistrate's office, a hospital, shop, town board, and a few small businesses. Since then, the main gravel road linking the town has been partially tarred and the town has expanded.

Plate 4: Aerial view of traditional homesteads (by kind favour 'Mosvold Hospital, Ingwavuma')

Plate 5: Closer aerial view of a traditional homestead (Mosvold Hospital, Ingwavuma)

Plates 4 and 5 above show typical homesteads in the area. Houses are traditionally made from mud, sticks and stones. Roofing is made from thatch although corrugated iron is becoming more common. The ground around the houses is cleared of grass or

bush - thus a place safe from snakes. Footpaths interlink homesteads, leading to rivers for water collection, to other homesteads, to the family's fields (which might be nearby or nearer a river bank), and to the main road.

Ingwavuma has a high rate of HIV infection, and as such, may be considered a 'community at risk'. In this region, one in three people between the ages of 15 and 30 have HIV/AIDS. The ramifications of this are beginning to be felt, and as the epidemic progresses and more people develop full blown AIDS, individual cases of HIV might well impact the level of wellbeing in the entire community. (http://www.fotch.org.uk/IOC/crisis.html).

4.2 THE SAMPLE COLLECTION PROCESS

The data examined in this research has been principally derived from surveys conducted in Ingwavuma during November and December 2001. The sample frame and contents of the survey are summarized below.

4.2.1 Sample frame

From the approximately 122,000 people living in the district, 91 households were selected for interviews. This sample frame was further divided into two sub-samples, one of 50 households and the other of 41 households. The latter comprised households with one or more AIDS orphans (i.e. children orphaned through the AIDS-related death of their parents) and who were abiding with relatives, neighbours or other members of the community. The other sub-sample (the 'control') comprised homesteads within the Ingwavuma district who did not contain any orphaned children. (A 'child' is considered as being below the age of 19). The hypothesis underlying this study was that `non-orphan' households would have lower household occupancy and dependency ratios and would thus be more food secure than `orphan households'.

The sampling method used for the control group was 'cluster sampling'. Cluster sampling is a technique where the population of an area is divided into groups (clusters) and a random sample of these groups is selected. Cluster sampling is generally used when researchers are not able to get a complete list of the names and locations of the members of the population but are able to use a list of groups of

the population. Cluster sampling is generally considered as more economical and practical than random or stratified sampling (http://www.cas.lancs.ac/uk glossary.vl.1/samp.htm1).

This method was used in Ingwavuma as only a map of the health wards in the district was available and the areas shown were quite far apart in terms of travelling time. Due to the monetary and time constraints, 19 areas within 10`cluster' localities were chosen. These may be viewed in Table 3, and pictures of the main interviewers in plates 6 and 7.

Location of household	**No of households visited per area**
Isihlangweni	2
Ezinkkhambeni	3
Okhalweni	7
Bhambanana	9
Mbundwini	5
Kwamthanti	20
Mlotheni	3
Mahlabeni	3
Makhanes	7
Mabhanoyini	3
Nondabuya	6
Lindizwe	3
Eshlongweni	2
Esigodini	3
Nyathini	5
Oshabeni	1
Mwayi	5
Munywana	1
Eziphosheni	3
Total	**91**

Table 3: Sampling Area for households by ward

Plate 6: Hlengiwe conducting an interview

Plate 7: Marcus interviewing mothers at a mini-market

In the study, an attempt was made not to fall prey to common biases occurring with survey analyses. The biases are:

- *tarmac bias*: where houses that are easily accessible from a main road are interviewed;
- *dry season bias*: ensures easy travelling to destinations because roads are not wet and muddy, but does not reflect the household food insecurity season;
- *elite bias*: is the preferential targeting of wealthier and generally more educated people who may give a false impression regarding `normal' community livelihoods;
- *male bias*: males tend to dominate rural decision-making yet are normally not the food producers in rural homes. The information that they give may thus not accurately reflect scenarios faced by rural women.
- *week/weekend bias*: in migrant labour circumstances, males tend to return to the rural areas and interviews with them may not reflect the weekly events faced by women in their absence;
- *site bias*: quick visits often only allow for a good impression of a place, longer term contact might allow one a clearer picture.

Attempts to follow the survey strategy were however hampered by the weather. Most of the Ingwavuma district can be accessed by a normal sedan car as there are gravel roads leading into most of the wards. However, during the rainy season (and time of the data collection), many of the roads become impassable even for 4 by 4s as the rivers rise, flooding the muddy roads. Access to areas thus become problematic because the Toyota Tazz used by the research team became repeatedly stuck in muddy roads (and needed a full service and exhaust replacement after just six days of data collection), as it had rained continuously before and during that period. Two weeks later, the research team was operational with a 4x4 (see plates 8 and 9 below) but by this stage many roads had become impassable. In an attempt to avoid `tarmac bias', the research was then limited to six wards where households far from main roads could be accessed. Thus the second part of the research was limited to the Ingwavuma town, Okulwini ward, Nyathini ward, Ndumu district and Nondabuyo ward.

Plate 8: Very dirty Toyota Tazz used in first weeks

Plate 9: 4 X 4 (and my father) after a day's data collection

All the interviews and meetings were conducted during the week, thus avoiding `week bias' and `male bias'. Wealthier homes were screened out of the interview process, as their relevance to this study was minimal because high-income households are of a trivial proportion to the larger community. The possibility of skewed results from this incorporation into the study was another factor for their screening. As such, `elite bias' was also avoided.

Cluster sampling was even less feasible for the `orphan cases'. Initially, cluster areas were visited and the community were consulted regarding their knowledge of orphan families. This worked well for random sampling within the cluster areas, but households became impossible to access as the rain continued. Thus, the strategy changed to

include a bias, as the research team then visited schools, obtained the pupils who lived in accessible areas and used them to point out the homesteads where they lived. Not only did this bias include 'area bias', but a 'financial bias' too, as such households could clearly afford to send their children to school, which was not the case for many of the 'non-orphan' households interviewed prior to this.

4.2.2 Quantitative data collection

The formal questionnaire was based on an equation of household food security identified by Foster (1992). In the formula, `hh' stands for household. The formula is:

(hh food consumption requirement - hh food production)
x price of bought food =
income and liquid assets available to purchase food.

A list of indicators as highlighted by Frankenberger (1992) reflects each element in the equation. It is the interplay among such indicators as well as the liquidity of the assets that determine whether a household will remain secure.

The indicators utilized in the study as proxies for each indicator included:

Household food consumption requirement:

- number of people in the household
- age, sex and working status of individuals
- health status of individuals
- activity status of individuals.

Household food production:

- quantity and type of home-produced food and length of time that it will be sufficient for the family's needs
- rain sufficiency
- pest damage
- animal foods eaten

- storage capacity and damage.

Price of food

- Price foodstuffs bought monthly by households (foodstuffs that are not grown)
- Price of food bought from local stores or neighbours consumed as staple foods during lean months.

Income and liquid assets available to purchase food:

- cash crops produced
- saleable stock
- monetary income based on:
  - work for income
  - pension
  - remittances
  - crafts for sale
  - trade
  - fishing
  - hunting
  - small business
  - sale of firewood
  - collection of wild foods
  - fruit trees/home grown.
- asset ownership:
  - radio
  - television
  - stove
  - fridge
  - car
  - watch
  - jewellery
  - bed
  - sofa
  - bicycle
  - table and chairs

-loan accounts with burial clubs, saving clubs, stokvels, banks or microlenders

Identification of the underlying indicators of this formula were also attempted. These related to:

- acquisition of seed for planting
- availability and cost of tools
- difficulties in production encountered by the household
- animal husbandry and diseases
- coping mechanisms in the face of food insecurity
- family illness, death, and the costs of medical treatment. (The above can be viewed in both the English and Zulu versions of the questionnaire used for the data collection, as seen in Appendix 1 and 2).

Women were generally chosen as interviewees because they are mostly concerned with domestic affairs, which include the production of food, cooking, child care and food preparation. Men were interviewed when women were not available and for additional information about their views of household organization and their perceptions of community concerns. In some cases, men seemed to respond to their position as the head of the household and main decision-maker and thus chose to act as spokesman.

For the data analysis, answers were coded to establish categories of variables. In the final stage of data analysis, the categories were entered into SPSS (Statistical Packages for the Social Sciences, and the codes applied to the raw data can be viewed in appendix 4).

4.2.3 Qualitative Observation

Non-participant observation was used in the data captured by both my father and myself. The framework used for this may be viewed in Appendix 3. The observation involved recording the household assets, organization, location and nearness to water

sources, facilities and fields. Other important observations included food storage methods and livestock possession.

These observations were then compared with the questions asked by the interviewer, and added to the overall picture gained through various research methods. Once my father joined the `research team', GPS readings for the households were included; it is thought that this will be useful in organizing a database of the area.

Throughout the month's research, discussions were held with the research team on a daily basis in an attempt to unravel and explore reasons for the agricultural and food practises of the local inhabitants. Within the first week of the data collection, it was decided that a social worker would benefit the research, and was thus invited to join the team. The reason for this was that in interviewing households the team was discovering many cases of food insecurity as well as families with many difficulties that in our understanding, could easily be overcome if put in contact with a social worker. For example, some families had new babies - born at home without birth certificates, inoculations and the knowledge of their entitlement to free health care and income benefits. Other families, who were clearly food insecure themselves, were caring for AIDS orphans without the knowledge of their right to foster care grants and free education for the children. The involvement of the social worker thus was of mutual benefit as many situations and problems that the team encountered needed to be communicated to the social welfare department in Ingwavuma, which had recently been stationed in the area. Since we could not personally assist people, we felt it necessary to introduce them to someone who could and with whom the families could develop a long-term relationship.

At the end of the research a forum was conducted at one of the schools in Ndumu. People in any type of leadership role in the area were invited and the people who attended comprised a social worker, three male headmasters, two female headmistresses, a ward councillor, an `induna' (local traditional chief), a Catholic priest, an AIDS orphan NGO field-worker, a doctor from the local hospital, a town planner, a manager of a local `income generating NGO' and myself. Feedback was given regarding the research that we had conducted in the area and a general discussion was held regarding issues of food security and in particular, issues pertaining to the care of the AIDS orphans in the community. The meeting ended with a plan to mobilise

local leadership to tackle issues and to network together in realising resources that could benefit the community. A plan of action was devised, and the minutes of the meeting and the proposed strategy can be viewed in Appendix 5.

Thus, both a quantitative and a qualitative approach to the data collection was used. Although the primary analysis of this study is socio-economic, and thus quantitative, the qualitative aspects are described in order to give the reader a better grasp of the underlying reasons for the households' socio-economic status.

4.3 CHARACTERISTICS OF THE SAMPLE.

4.3.1 The head of the household.

Sixty-seven percent of the interview respondents were female and twenty four percent were male. Table 4 below shows the make-up of households in terms of their household heads in the area, with almost half being a `mother', 32 fathers, and the remaining 16 being `another person'.

Household Head	Frequency	Percent
Father	32	35
Mother	42	46
Grandfather	3	3
Grandmother	5	5
Another person	8	9
Total	90	99
not certain	1	1
Total	**91**	**100**

Table 4: Frequency table of the household head according to household role.

The issue of household head is very important, as household heads will make the decisions about intra-household entitlements, resource provision and use. These will include seed selection and food quantity, planting, preservation, preparation and storage decisions as well as general household income allocation. As has been stated before, the nutritional wellbeing of individuals within households, especially children and the elderly thus depends on decisions made by the household head. Although research has shown that female headed households are considered to be more food

secure (by virtue of the fact that women allocate proportionately more resources for food), they have also been deemed poorer when compared with male headed households as they do not have a male residing there who could contribute to the family income. The person fulfilling the function of household head might reflect important characteristics pertaining to the family, generally fathers 'at home' (not working away from home would fulfil this position), and if neither mother or father were the household head, then both might be living away from home, or in the case of orphan households, may have died. The fact that 42 of the 91 household heads (46%) were 'mothers' is of interest. In discussions with people in the area, it was understood that the father would still be considered to be the household head if he were working away from home. He would be consulted on matters regarding household food production, schooling, housing construction and other issues via post or telephone. Decisions would not be made until consultation with him had occurred, and the money that he sent home might be allocated to specific needs as stipulated by him in previous conversations. As such, a forty six percent 'mother' headed household ratio points to the fact that fathers are not present. This may be due to many factors, short-term liaisons, permanent migrations, spouse separations and illness and death.

Number of People	Male	Female	Total
1 to 5	10	19	**29**
6 to 10	23	20	**43**
11 to15	1	7	**8**
16 to 20	1	1	**2**
Total	**35**	**47**	**82**

Table 5: Frequency table of the household head according to gender.

Table 5 tabulates the size of the household according to male and female headship. There are 35 male headed households and 47 female headed households, thus in general, male and female headship might seem fairly equal, however there are more female headed households overall highlighting this issue once again. Households in the occupancy range of 11-15 people were female to male headed 7:1. Such figures are alarming, pointing to high dependency ratio's in households less likely to receive income from an employed male. Thus a burden of poverty carried by the female head alone, perhaps with the support of an extended family network. Another factor of concern would be if these female household heads were the spouses of men who had

died from HIV. If the male partner had infected his spouse with the disease, then there is an increased risk of her contracting AIDS and possible death. Such a situation reduces the productive capacity of the household especially if the rest of the household are dependents, undermining its food security and threatening its survival.

Household Head	Non-orphan hh	Orphan hh	Total
Father	22	10	**32**
Mother	26	16	**42**
Grandfather	2	1	**3**
Grandmother		5	**5**
Another person		8	**8**
Total	**50**	**40**	**90**

Table 6: Frequency table of the person fulfilling the position of the household head.

Table 6 highlights the differences between the person fulfilling the position of household heads for the `orphan' and `non-orphan' households. None of the `non-orphan' households received headship from anyone other than fathers, mothers and grandfathers. Thirteen of the 40 'orphan households' were headed by a `grandmother' or 'another person'. The food security of orphans residing with their grandparents is unsustainable in the light of the possible death of the elderly and the loss of the pension which would presumably have been providing for the household. Grandparents are more likely to die sooner than a parental figure. A further 16 of the 40 orphans are headed by their 'mother' figure, (we presume that this is figurative as the research team ensured that orphans had experienced the death of both of their parents). These figures point to households at risk over time as the HIV/AIDS epidemic increases.

4.3.2 Household occupancy

Half of the households (51%) comprise 6-10 people. This figure has remained unchanged since the VARA Report in 1989, when census statistics showed the average household ratio to be 6-10 people per household. Thirty-five percent of households are smaller, averaging 1-5 people per household and the rest (14%) range from 11-20 people per household. Chart 1 and Table 7 on the following page illustrate this graphically.

Number of People	Frequency	Percent
1 to 5	32	35
6 to 10	46	51
11 to15	9	10
16 to 20	2	2
20 or more	2	2
Total	**91**	**100**

Table 7: Household Occupancy Range.

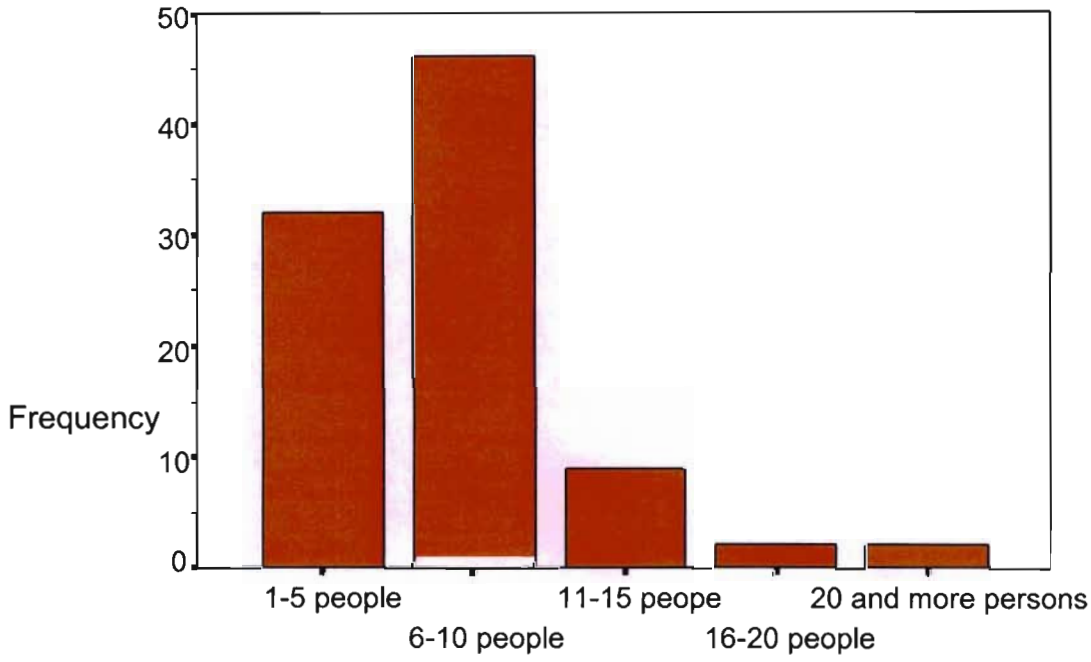


Chart 1: Bar chart of household occupancy range

The above information is further analysed in tables 8 and 9 below which differentiate the household occupancy ratios between the 'orphan' and 'non-orphan' subgroups of the sample.

Number of People	Non-orphan hh	Orphan hh	Total
1 to 5	20	12	**32**
6 to 10	26	20	**46**
11 to15	4	5	**9**
16 to 20		2	**2**
20 or more		2	**2**
Total	**50**	**41**	**91**

Table 8: Household occupancy range for 'orphan' versus 'non-orphan' households

'Orphan or Not' Household	Mean	Sample Size	Std. Deviation
non-orphan hh	7	50	3
orphan hh	9	41	5
Total	**7**	**91**	**4**

Table 9: Mean of Household occupancy range for 'orphan' versus 'non-orphan' households

Once again, clear differences between the two groups can be noted. Forty percent of the 'non-orphan' households fall into the smallest occupancy range of one to 5 people. This is compared to only twenty nine percent for the 'orphan' cohort. The higher occupancy groups contain no 'non-orphan' families at all; they are made up solely of 'orphan families'. This distinction is highlighted by the means (and medians which were identical) for each subgroup. The 'non-orphan' mean is 6.58 people per household, reflecting an unchanged occupancy range since the VARA census in 1989. The mean occupancy range for the 'orphan' cohort is 8.54 people per household. Clearly the extra 2 people per household are the 'orphans' and are thus dependents meaning an increased dependence ratio in these households. It is predicted that as the epidemic grows, dependency ratios will rise accordingly, which seems to be the case in this analysis. Thus, at this early stage of the analysis, the first part of the hypothesis underlying the study can be considered relevant, viz. That 'orphan' households do have higher dependency ratios when compared to 'non-orphan' households and it is anticipated that this will have an effect on food security for households who are experiencing increasing household dependency ratios.

4.3.3 Food production

Twelve percent of households claimed not to grow food. In reality however, only three households were not producing any food for household consumption at all. Those who were in actual fact producing food may have perceived differently as they might have believed that the food they grew was insufficient for their needs, (for example one household comprising thirteen people only grew about 50 kg of maize in a year), thus requiring them to purchase most of their food. An employee of the Department of Agriculture explained that the main reason for a lack of household food production to such an extent tended to be because of a lack of financial resources (money for seed, labour, equipment for planting and ploughing) rather than due to a lack of land. In other cases it may have been due to households comprising mostly elderly people, who would have derived their livelihood from their pensions. There may have been other reasons too, but the three households who had clearly not grown food were left out of the rest of the `food production' analysis and only 88 households were analyzed for this section.

Plate 10: The average size of a maize crop in November.

Maize is the main food crop grown in Ingwavuma as is clearly shown in chart 2 and in plate 10.

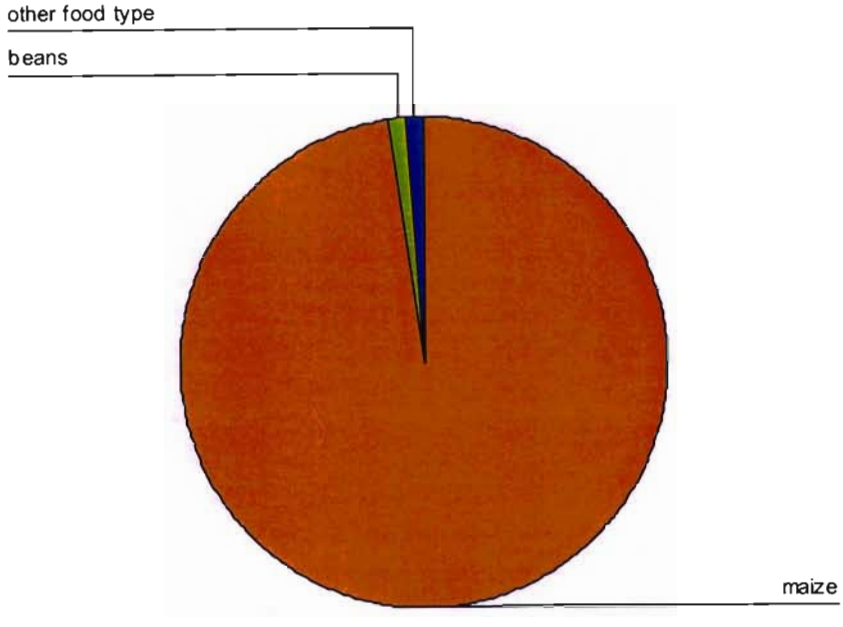


Chart 2: Main crop produced by households in Ingwavuma

Maize is the staple diet of households, particularly during and after the harvesting months. Maize might be supplemented with purchases of mealie meal or bread during the planting months, but generally the diet is based on maize as the staple food. The soil in Ingwavuma is a mixture of rich fertile loam near river banks and in the mountains, and very shallow sandy soil on the Makhatini flats. Maize is a hardy plant that grows satisfactorily in both of these environments.

Fifty-six percent of households supplement their diet of maize with home-grown or shop purchased seasonal vegetables and meat. Only one household stated that almost all of their consumption was maize. A quarter said that half of their food requirement was satisfied by their home grown staple.

Charts 3 and 4 show the second and third crops produced by homesteads. Chart 3, the second crop contributes to half or less of the general diet in the area, and chart 4 shows the foods produced for infrequent consumption.

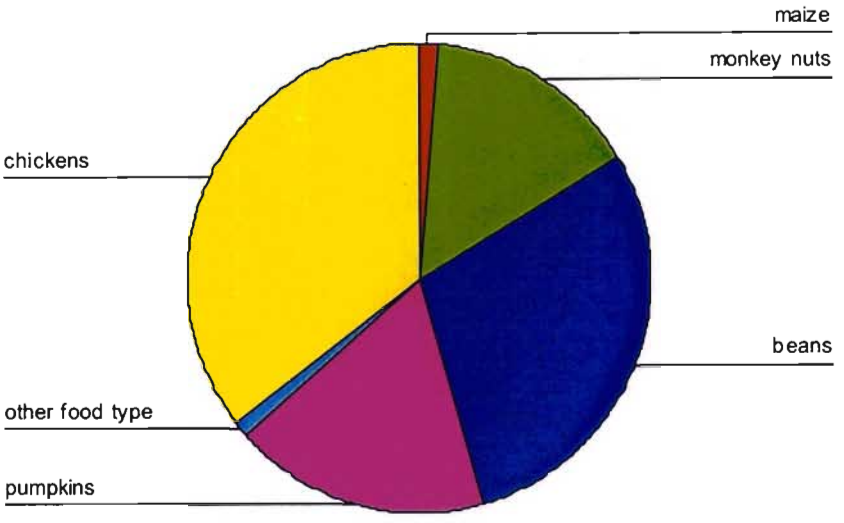


Chart 3: Second crop produced by households in Ingwavuma

Seasonal vegetables comprising beans, pumpkins, monkey nuts (eaten with wild spinach) and 'other' (tomatoes, carrots and potatoes) are produced to supplement the staple.

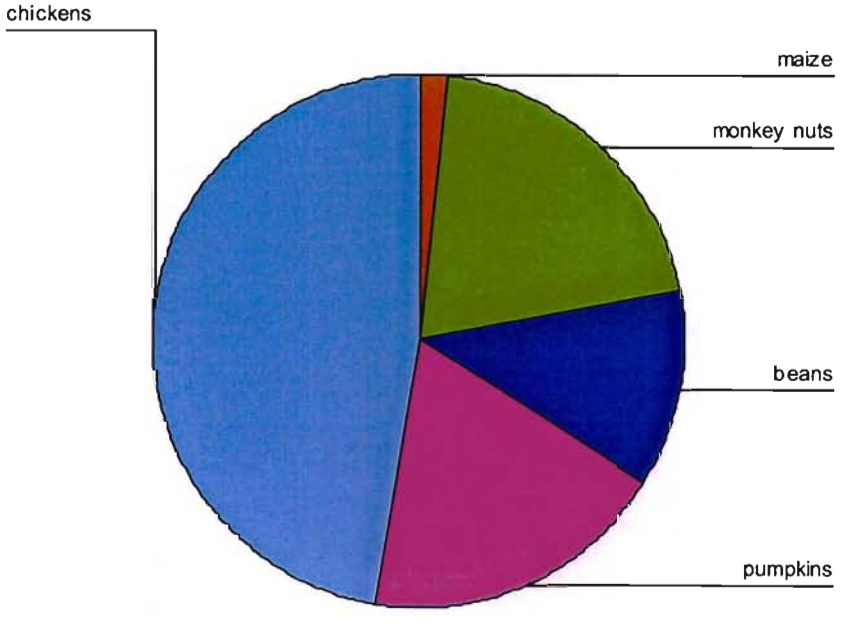


Chart 4: Third crop produced by households in Ingwavuma

In the above chart, the portion attributed to chickens may confuse readers. A large proportion of community raise chickens, but they are slaughtered and eaten infrequently.

4.3.4 Planting, harvesting and consumption

The South African spring occurs in September (although the weather is temperate throughout the year). Spring rains fall during the July to September months in Ingwavuma and thus the planting season begins with the rainfall. Most maize is planted during the spring months (September to December) although winter vegetables may be planted any time between April and August .

One can see this when comparing the bar-charts of the planting months for crop 1 as compared with crop 3 in charts 5 and 6.

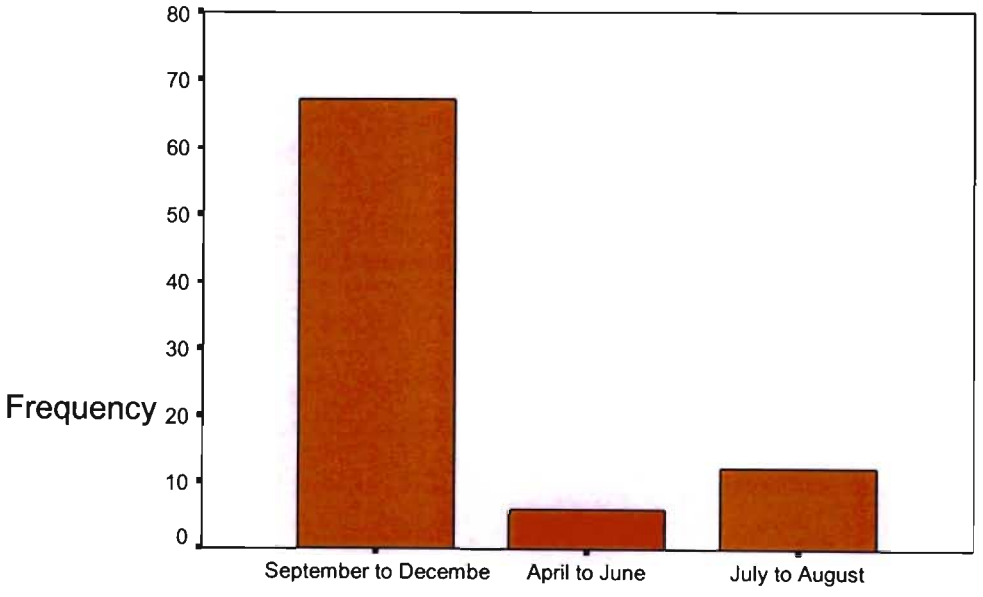


Chart 5: Planting months for the main crop produced by households in Ingwavuma

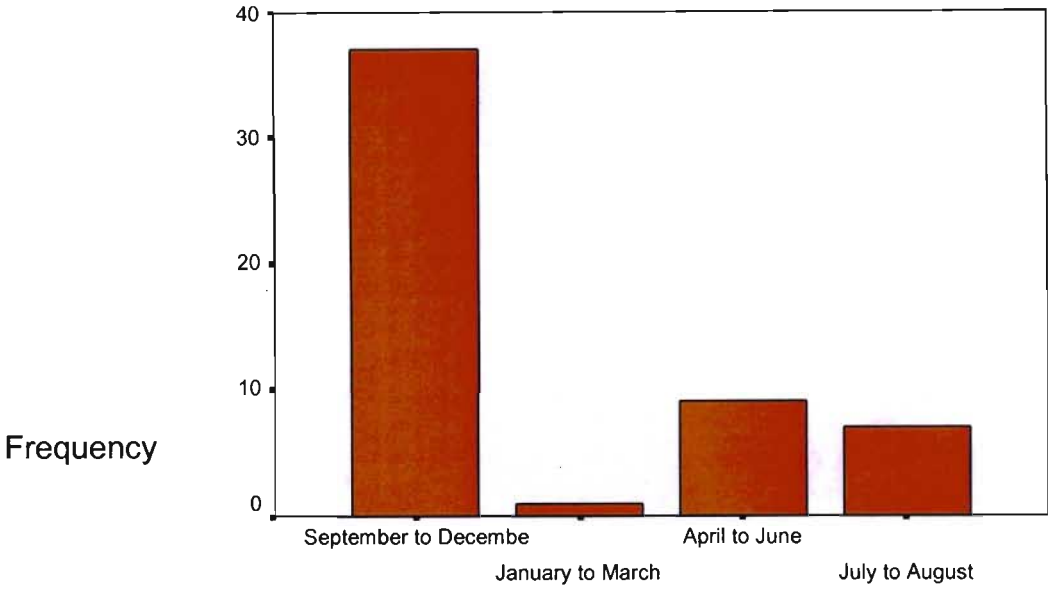


Chart 6: Planting months for the second and third crops produced by households in Ingwavuma

Crops two and three show more planting of pumpkins, beans, peanuts and spinach during autumn and winter and can be considered to be easily planted throughout the year. Most of the planting does however occur during the September to December months because of the spring rainfall, which corresponds to the beginning of the planting season and the ploughing of the fields. There is no autumn / winter rainfall, so seasonal vegetables, although planted during the winter months, are planted on a much smaller scale than the cultivation of crops planted during spring

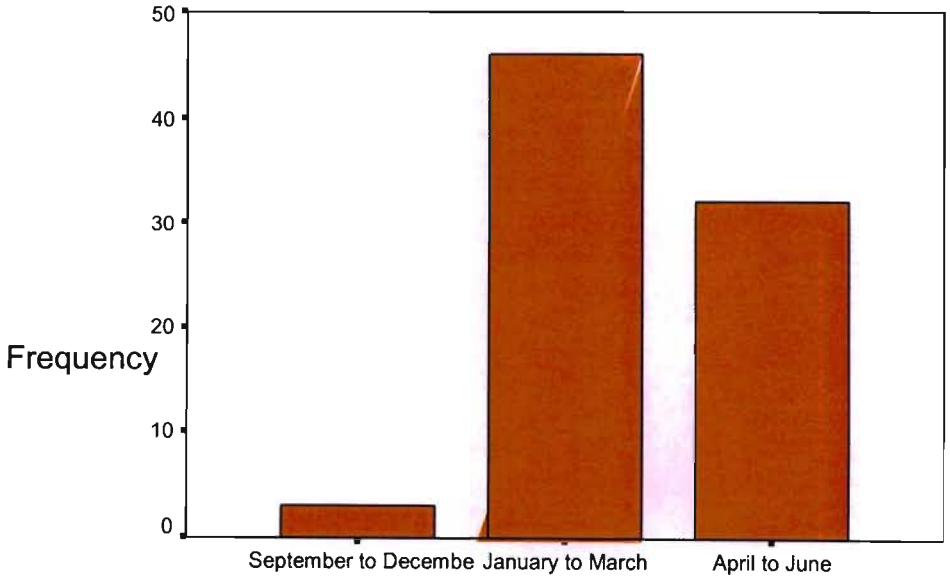


Chart 7: Harvesting months for the main crop produced by households in Ingwavuma

Maize in particular is harvested between January and March. Harvesting continues right until June. This six months of the year would be considered `food sufficient/plentiful' for most households as there would be maize continuously ripening over this period. The same applies to seasonal vegetables. Families who planted less maize would, however, harvest it for a shorter period of time, and the crop would sustain them for a shorter period until perhaps, April or May.

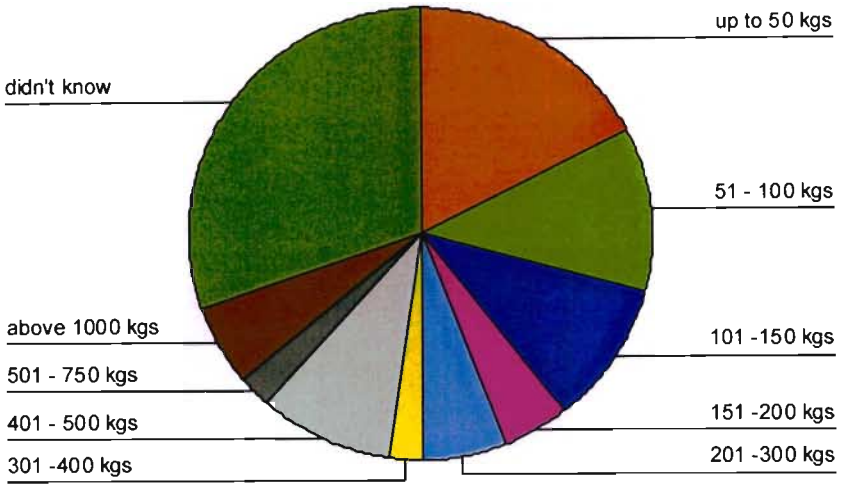


Chart 8: Quantity of food produced by households in Ingwavuma

The range of quantity of food produced as shown by Chart 8 is very variable. A large proportion of people only seemed to harvest up to 100 kg over the year, this seems a small amount that would sustain the households for a short period of time. Various reasons have been given for this. Although there is more than enough land for households to grow crops in excess of their needs, people wait until the rains come to begin ploughing their fields. If the rains come late or not at all, fields are left unploughed and families cultivate smaller areas with less food being planted. Linked to this issue of ploughing, households tend to rely on mechanised forms of ploughing in preference to cattle, used twenty to thirty years ago. The main form of mechanisation is a few tractors, owned within the community for which people pay R50 for the ploughing of their fields, (this generally takes a few hours of labour). As soon as the rains come, there is a high demand for the tractor's services and families can wait up to a month for it. Some families hire labour to plant their crops. This method is generally used by smaller families who cannot resource the help of an extended family member, and

once again, there is a dearth of labour when in high demand. This is a strange concept to fathom, in an area with high unemployment rates and may need to be unravelled and understood in greater detail outside this study. Obviously, the impact of HIV/AIDS on a labour supply would exacerbate this situation. Other issues relevant to the size of the crops produced relate to irrigation, the availability of tools and access to seeds which will be addressed later.

As stated before, the main months of consumption of maize are January to March, correlating to the harvest period. Maize can be dried and ground for storage and cooked well into the winter months. In addition, food Crops 2 and 3, (beans pumpkins, nuts and spinach), are harvested between April and June.

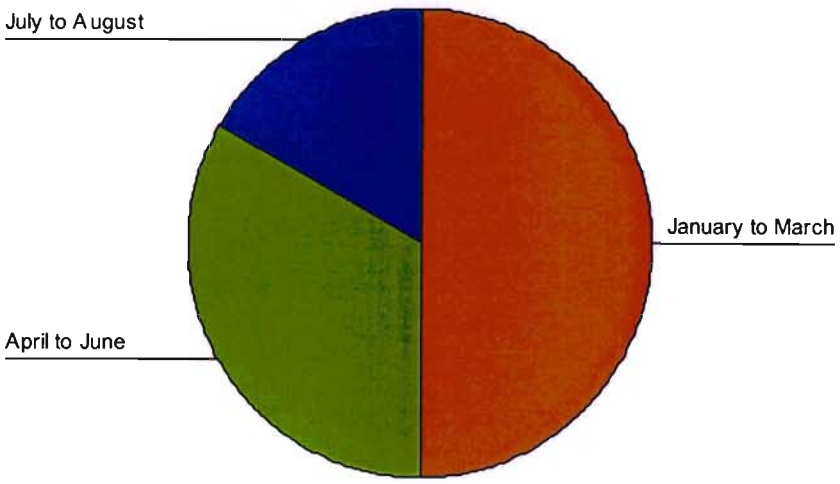


Chart 9: Main months of maize consumption by households in Ingwavuma

Chart 9 illustrates this well. Although a small portion of the community gather sufficient harvested food for the winter months, the winter period does signal the beginning the 'hungry / lean' period in Ingwavuma, where food supplies are more scarce and where consumption becomes income dependent. It is worth noting that no-one stated that their crops would last them through the September to December period.

4.3.5 Agricultural difficulties: water, pests and storage

Rainfall and irrigation

Sixty-five percent of respondents considered the rainfall to be sufficient for their needs. Twenty percent considered the rainfall to have been in excess (generally these were people whose fields lay near river banks which were prone to flooding). Ten percent considered the rain to have been insufficient for the harvesting of good crops.

An interesting and perplexing result was observed when asking households about the nearness of water sources to their fields, and thus their ability to supplement the rainfall when insufficient. Eighty-nine percent of households stated that their water source was nearby a medium walking distance. Only ten percent however, stated that they could or would use this water to supplement the rainfall. We observed a case highlighting this difference when interviewing two households who were direct neighbours, and the same distance to a water source. The first household had only started planting maize in early October, as the household head stated that she had waited for the rains to come. She said that she was disappointed that it had come so late and she could only expect a small harvest. The second household, perhaps half-an-acre away had a field approximately 800m x 500m full of healthy half-grown maize. The household head stated that she had begun planting maize in early August, and had held a daily vigil of watering the crops herself from the river for two months. She was pleased with her crop, and said the size never varied from year to year and that she did not wait for the rains to come. Of the ten families who had felt that the rain was insufficient, there were 8 who could clearly not have been able to supplement the rain, as their water sources or fields were simply too far away. Four of these households were in the Bhambanana area, three in Kwamthanthi and one in Nondabuya. Regardless of such, the research indicates an investment in irrigation would reduce household's dependency on the yearly rainfall and would be clearly beneficial for the ascertainment of food security for the community as a whole.

Damage to the crops due to pests

Ninety percent of households had experienced damage to their crops from pests. Cutworm, borer beetles, aphids and large livestock (goats and cattle) were considered to be the main problems. Other problems included moles and food rotting during

storage. Fifty-six percent said that damage caused by pests was less than half the crop, thirty percent said `half the crop' and a further twelve percent stated that almost all of their crop had been destroyed in this way. Pests thus seemed to be a very serious problem for household food security. Chart 10 shows the frequency of pest damage to crops. Most people stated that this damage occurred during the year.

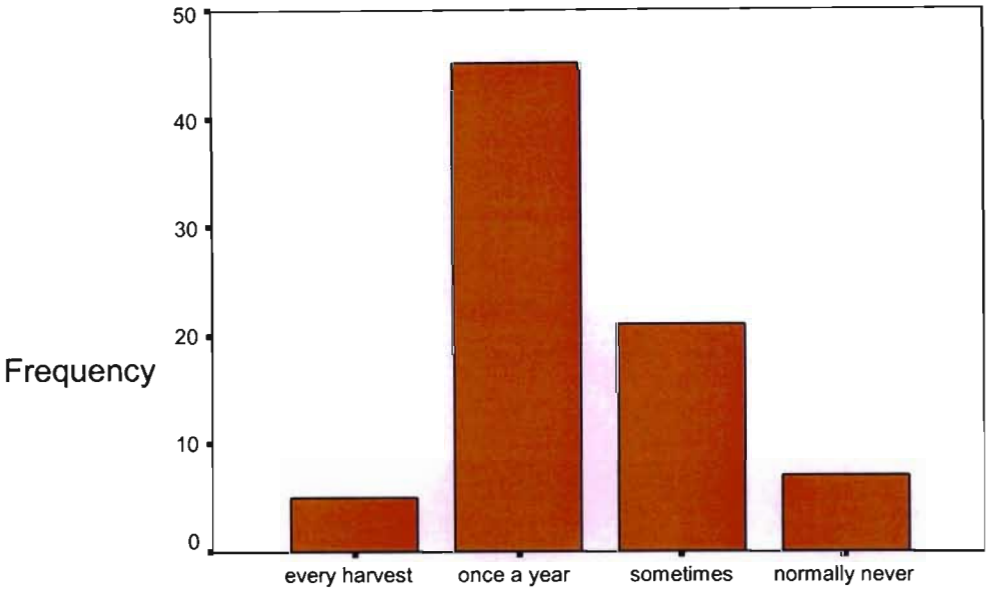


Chart 10: Frequency of pest damage to crops

Only two households did not store the food that they grew. Ninety-seven percent of the food stored is maize with pumpkins, monkey nuts and beans stored as well.

Below in plate 11 and 12 are pictures of storage methods. The raised hut is the most common storage method for maize; thirty percent of households used this. The hut is essentially `a hut on stilts'. Livestock are thus not able to climb up and eat the crop. The second popular method for maize was to use a separate room (hut) for storage. These huts may have concrete flooring - or might simply be earthen. Tin water tanks (often placed on top of roofs for water collection) are another popular form of storage. These might be raised above the ground, and the maize stored within might be dried cobs or

young mealie pips. A large number of the dried mealie cobs are kept in hessian sacks. The final and common method of storage was to place the hessian sacks full of mealie cobs in the rafters of the roof. Generally these rafters were above the family fire and so the cobs have a tasty `smoked' effect.

Plate 11: A storage hut

Plate 12: Storage below the ground

Chart 11 shows the frequency of storage method for the seasonal vegetables raised by the household. Hessian sacks, buckets and separate rooms seemed to be the most popular methods of storage.

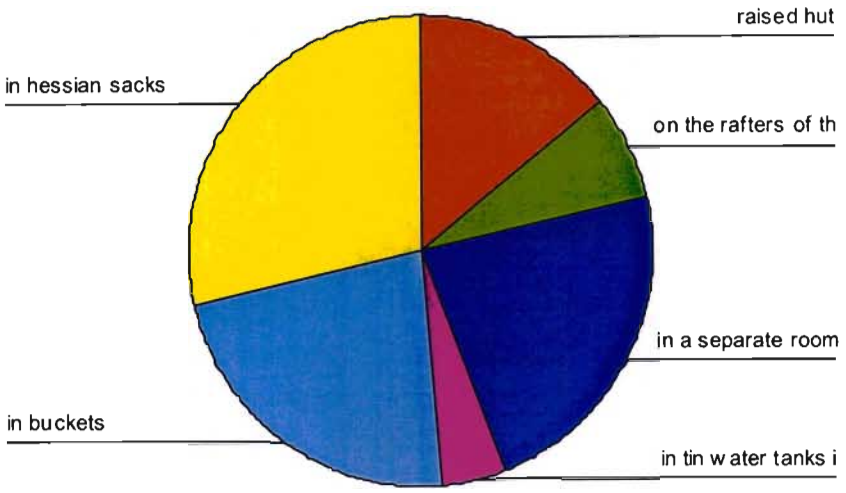


Chart 11: Frequency of choice of storage method

Ninety-five percent of households lost food during storage. Forty percent lost half or more than half of their stored crop. As such, food storage is an important factor for the attainment of food security for households, and improving the quality of storage should be addressed. There did not seem to be a specific method of storage more pone to damage. Households seemed to have lost food to rotting, animals or pests in all of the storage places they used. In discussions about this issue with Mr Mthembu, the head of agricultural training in Ingwavuma, a number of factors were seen to contribute to the loss of the crop during storage. He stated that the land is often not prepared properly during the ploughing period and thus the crop tends to rot in the fields or when being stored. Secondly, pesticides are commonly available for borer beetles, aphids and other insects but households lack the finances to purchase them. Airing and drying out the maize and vegetables was not always carried out properly. This he attributed to ignorance. Finally, he stated that many people, sufficient funds allowing, could use improved seeds that were less susceptible to rotting. Certain commercial industries have begun to give free better quality and higher yield seeds to one ward within Ingwavuma, but these are not available to everybody. His 'best plan' scenario would be

a combination of free seed distribution accompanied by skills training and cropping demonstrations that would lift the overall food security of the community and that would aim at improving agricultural ability, develop self-management and reduce dependence on income flows and aid.

Seed

Although one ward in Ingwavuma receives free high quality seed, the present scenario for most households is that half purchase their seed for planting from the local shops. A third saved seed from the previous year's crop to reuse for planting. The remaining households bought seeds from other places (perhaps urban areas) or 'borrowed' and bought them from neighbours. These ratios can be noted in Chart 12.

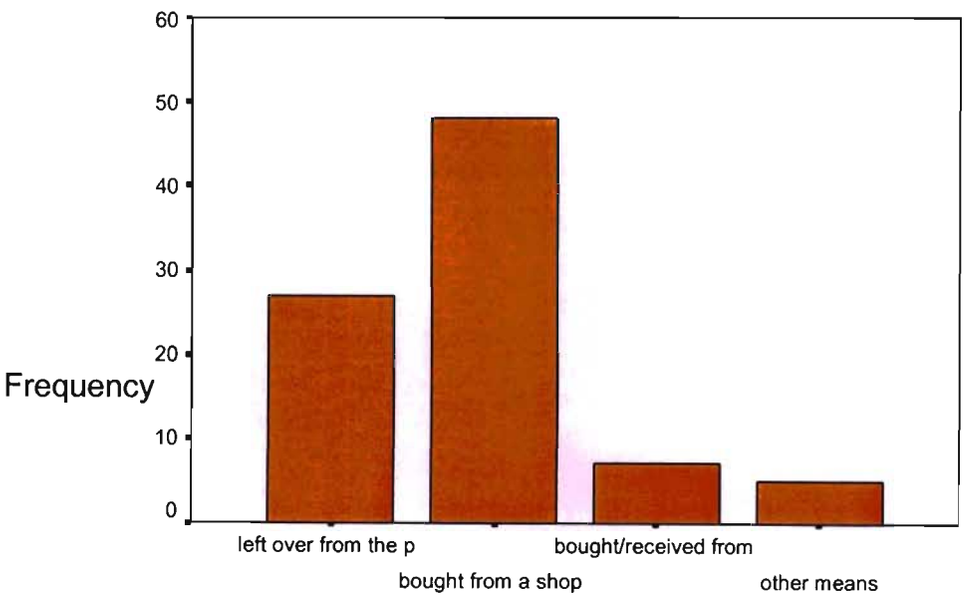


Chart 12: Seed supply

Eighty percent of households stated that they would plant more crops if they had more seed to do so. Similarly, eighty percent expressed the need for more tools for ploughing fields and hoeing maize. As stated earlier, many have to borrow tools and equipment which can mean that the planting process becomes frustratingly slow for people in a queue to borrow equipment and tools. Those with large fields paid R50 to use a tractor for a few hours. Respondents stated that they could wait for up to a month for the tractor's services.

Animals

Eighty percent of households owned livestock. Most of the families kept chickens, with thirty percent owning cattle. Eleven households owned between one and five cattle per household, five owned about eight cattle and two households owned over 20 each. The majority of the households keeping chickens kept 5-10 chickens, with a few households owning up to 30. One household kept a pig, and two households kept ducks.

Families keeping animals do slaughter and eat them from time to time, through seemingly seldom. Families ate between 2 and five chickens over an entire year. Interestingly, those with cattle seemed to slaughter them more often, partly because they had large families to feed, but also because they had the financial resources to do so. One family had slaughtered six cattle and numerous chickens in the previous twelve months. The family, although large and with many dependents, had numerous sources of income with the household head being the headmaster of a local school. Few families sold animals, thus contrary to expectations. Unless the household had a form of livestock business, animals have not formed a source of income to families although this is not the case for chickens, as those who raise them for resale seemed to run thriving businesses.

According to Mr Mthembu, the lack of livestock industry in the area was not the desired state of affairs. Numerous attempts have been made to develop entrepreneurial activities and the sale of animals. Four auctions had been organised for purchasing of cattle and sheep, but these had received little interest with Ingwavuma providing little competition to places closer to urban areas that had, over the years developed more successful ventures.

Larger livestock is thus normally kept by larger wealthier households able to slaughter and eat it, for lobola (dowry) purposes or for parties such as weddings and graduations. Half of all livestock owners said that their animals had become ill during the year. Many could identify and name the illnesses. Others stated that their animals had simply fallen ill and died. A large number of diseases in animals are associated with tickbites and worm infestations, as well as 'Newcastles Disease' for chickens.

4.3.6 Crops for Sale

Only one family in all the interviewed households sold some of their maize crop. This family comprised a father, mother and one baby and they owned a large field. The husband did not have formal employment and was a very keen farmer. His wife then used to wake early in the mornings and walk to the Ingwavuma town, where she would sit near the shops roasting the mielies that he had harvested and selling them to people passing by. The husband was very satisfied and clearly proud of the income that they were making. There are a number of reasons why people do not produce more food for enterprise purposes. These relate to prior issues of water availability, storage and pest problems as well as a lack of tools and seed. It is understandable that if the harvest does not sustain the household for a desired period, people will not engage in selling their precious supply. Secondly, almost all households are growing the same crops which are sustaining them for similar time periods, thus there is not much of an intra-community market for food. The lady selling roasted maize had found a small market niche that could only be filled with a few people, and the security of her livelihood at drought periods was tenuous. Another reason for the lack of crop sales relates to the culture of the bantu community, which resists selling food to those in need. Neighbours may barter but will generally give food to others when asked. When questioned about the possibility of growing crops to sell to the community, one lady responded: "let them grow for themselves". Lack of demand from and access to commercial markets is given as the reason why cash crops are not grown in the area. Ingwavuma, bordering Mozambique is far from urban markets. Commercial organisations, keen to utilise the large availability of land would need to heavily invest in the area in tools, equipment, irrigation, seed and human capital in particular. Besides this, the mainly white farmers along the eastern coast of KwaZulu-Natal are already supplying cash crops for exports successfully. In this sense, Ingwavuma can be considered to be a marginalised area. Efforts to secure commercial contracts are still being attempted by the Department of Agriculture.

4.3.7 Household livelihood: income and assets.

Income and Assets

As stated earlier, a household head working away from home would be consulted on matters regarding the allocation of income and household resources as well as household food production, schooling, housing construction and other issues via post or telephone. Decisions would not be made until consultation with him had occurred and the money he sent home would be allocated to specific needs as stipulated by him. The monetary amount of the remittances sent home to families varied greatly in the community. Observations during the data collection process pointed to a clear difference in households with at least one source of income and those with none at all.

Forty eight percent of the sample owned radios, thirteen percent televisions, seventeen percent stoves and seven percent fridges. Most of the stoves and fridges would be gas fired, and televisions would be run via diesel generators. Few households received municipal electricity although some households, closer to the 'official Ingwavuma town' may have received electrification over the past few years. Few households chose to use alternative sources of electrification, like solar panels.

Only sixty four percent of the sampled community owned beds, the rest slept on the floor on 'xansi's' a woven grass mat, easily made by household members. A grandmother weaving a 'xansi' may be viewed in plate 12 below. Eighteen percent owned a lounge sofa and a quarter of households owned a set of a table and chairs.

Plate 12: A grandmother weaving a 'xansi' – grass mat.

Few households engaged in banking practises, whether formal or informal. Six percent held savings at a formal lending institution, presumably either the local post office or the iThala Bank, situated in the mountains at the town. It would be expected that those in closer proximity to the town might use these services more regularly than the more rurally situated homesteads. Four percent of households held a savings club membership, fifteen percent with a burial club and only one person had borrowed money from a micro lender. As such, Ingwavuma is not reflective of other peri-urban parts of South Africa where financial transactions occur more frequently, this is attributed to the rural position and low inflow of funds into the area which has kept the population agriculturally dependent and thus marginalised from economic industry and trade.

Income generation activities

The table 10 below shows the level of income receiving or generating activity in Ingwavuma, according to the interviewed sample.

Income generation activity	Yes	No	Percent receiving income
Work for income'	29	62	32
Pension' payment	34	57	37
'Remittances' in household	22	69	24
Fishing within household	13	78	14
Hunting in household	5	86	5
Business run by household	14	77	15
'Sale of firewood' in household	7	84	8
Fruit trees in household	4	87	4

Table 10 : Income generating activities in Ingwavuma

Around thirty percent of households received income in the form of wages from permanent work, pensions and remittances. It is unfortunate that this sample reflects the same levels of employment when compared to census information collected ten years ago. Permanent employment levels have thus not changed in the area over the last ten years signifying a lack of incorporation of Ingwavuma into the South African economy although attempts have been made to develop the area, particularly since the change to democracy and the creation of the Lebombo Spatial Development Initiative. http://www.uthungulu.org.za/ A fifth of households engage in crafts, thirty-five percent in small inter-household trade and bartering, and fifteen percent run businesses – thought mainly to be small 'spaza' shops or chicken industries. Households located near to tributaries of the Ngwavuma river tend to fish and those situated near forested woods collect wild fruit and sell firewood.

Expenses

Typical household expenditures include transport costs, salt, soap, fuel (mainly kerosene), medication from clinics and traditional healers, school fees and clothing. Seventy percent of the households spent around R50 on school fees for the year, with the other thirty percent spending a range from R100 to R400 depending on the number of schooling children in the household. Similar ratios of 'orphan' to 'non-orphan' households were found to pay school fees, although the bias in the sampling process meant that only schooling orphans were included in the study. 'Non-orphan' households which were interviewed a week or two earlier, did not include this bias.

Income and Orphans

An interesting aspect came to light when analysing flows of income into households and comparing the 'non-orphan' and 'orphan' cohorts. Orphan households were in

the main, shown to be wealthier and to own more assets than 'non-orphan' households. This result is almost solely due to the bias introduced into the study during the sample selection and data collection. 'Non-orphan households' were interviewed first via random cluster sampling. Orphans were obtained through schools. Schooling children in Ingwavuma are clearly living in households that are receiving income flows, and this was not the case in many of the 'non-orphan' households interviewed. There may have been other factors contributing to this however. Firstly orphans may be absorbed into wealthier homes where flows of income are occurring and where it is felt that they might be well cared for. Another reason is that the extended family, especially those working in cities may begin contributing to the 'new' household, or may increase their contributions from amounts sent home before. Thirdly, the government has begun allocating foster-care grants to households that take responsibility for orphans. This money is slow in being realised, but once the grant is processed the funds are more than enough to care for the needs of the children. They are, when compared to average household earnings, wealth creating. This has naturally caused consternation within the community, as they are difficult to obtain, but once granted are a pathway to increased wealth placing a divide between the 'impoverished but now wealthy' orphans and the community who were caring for them before. In spite of these issues, our observation did not show orphan households to be more food secure than the average household. The Ingwavuma district is a poor area, with the majority of households being subsistence/ deficit farmers. Families dabble in entrepreneurial activities such as selling crafts, fruit or firewood. When experiencing lean periods, the household will reduce their dietary intake accordingly. This situation although reflective of December 2001 is rapidly changing as the HIV/AIDS epidemic progresses and is being felt in the daily activities of those who live there and are impacted by the effects of the epidemic.

4.3.8 Food Supplementation and Income Intensification Activities

The table 11 below highlights the food reduction activities that households engage in, as can be viewed in the table. Households without a 'financial buffer' will tend to reduce the number of meals eaten in a day (which was the most common decision), or the only older members of the family might reduce meals. Other food reduction

activities include collecting wild fruit, eating basic foods or borrowing from neighbours.

reduce number of meals eaten per	81
older members eat fewer meals	60
eat only basic foods	6
collect wild fruit or roots	1
borrow from neighbours	1
other	1
Total	72
no response	10

Table 11 : Food Reduction activities in Ingwavuma

Income intensification questions were asked of households in order to assess their level of vulnerability during lean months, which is when their home produced crop is not able to sustain their household food consumption requirement. As stated earlier, due to the poverty and marginalisation of the Ingwavuma community in general, it was anticipated that households stating that they were having to access income to supplement their home grown food with extra sources of income might find it extremely difficult to achieve if no one in the household had obtained permanent or temporary work. This was shown to be true in the data analysis as sixty three percent of households stated that they would not anticipate being able to obtain any work at all, if needed. Thirty two percent stated that they might be able to have contacts in cities or might be able to work in neighbours fields, but that such income would only sustain them for one extra month. Only two percent of the sample stated that they would be able to source an income for three months, and another two percent for six months. These figures point to a community at risk of severe food insecurity if they were to experience a crop failure. They would certainly fall into the 'fragile household' category as described in chapter two, potentially suffering transitory food insecurity shocks from time to time depending on the quantity and quality of their harvest. It would therefore seem that Ingwavuma would require a form of food security monitoring similar to the work undertaken in Mozambique and Botswana, which monitor harvests and structural, seasonal and climatic conditions and predicts the level of food security expected at the next harvest. The following chart describes the periods during which households tend to supplement their home grown harvest with income dependent purchases or when they engage in food reduction activities.

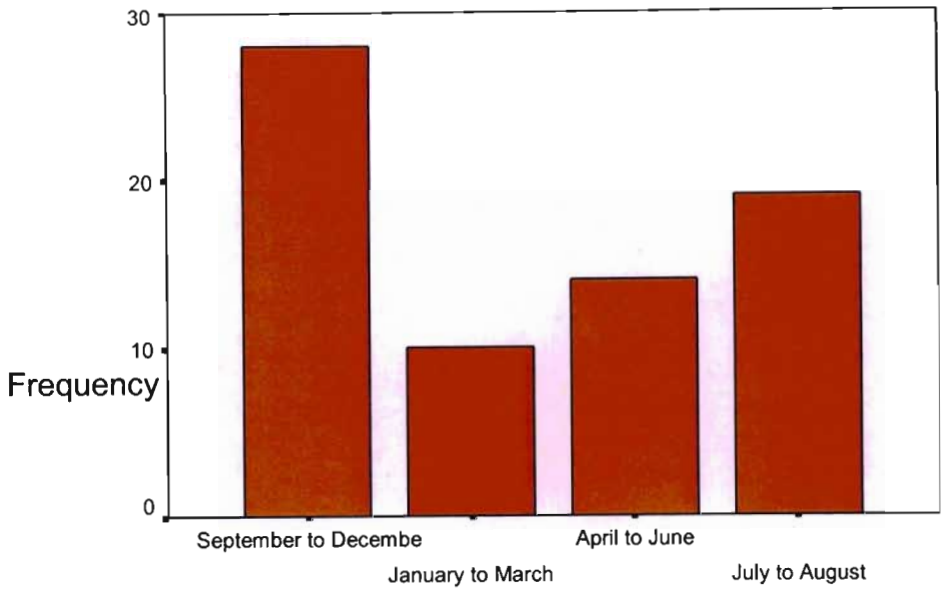


Chart 13: Months of the year when food supplementation is required

Most households, experience their 'lean period' during September to December' (this follows from earlier descriptions of the harvest cycles in South Africa). The home produced supplies of food tend to last families from January (the start of the harvest period) until (i) April, for households who have produced relatively little of their food consumption requirement, (ii) July to August, for households whose household supplies last them six months and until (iii) September, for the most food secure households. Ninety four percent of households stated that they needed to purchase food during the 'lean period'.

The most common food reduction activity that households engage in during this period is reducing the number of meals eaten in a day. Only ten percent of the sample stated that they would not need to do this. Thereafter, other food reduction activities included older members only eating fewer meals, the household eating only the staple (maize), borrowing from neighbours, collecting wild fruit or leaving home to search for work. Only four percent stated that they would sell their livestock.

4.3.9 Livelihoods, Illness, Death and AIDS Orphans

According to Mr Mthembu, who is working at the Department of Agriculture;

> 'the number of orphans are increasing daily, and caring for them will be come a very big problem over the next ten years'.

The focus of the conversation at the time of the quote above related to the capacity of the Ingwavuma community structure to maintain rural livelihoods, threatened by increasing household occupancy ratios and food insecurity, the financial challenge of keeping children at school and the loss of livelihood skills with the death of parents. Mr Mthembu commented on one or two cases where deceased HIV positive husbands had been involved in practises of polygamy, not uncommon in Ingwavuma, and had thus left two or even three households without their main source of income, and the potential of the wives being HIV positive as well. Although agricultural and subsistence farming has tended to be the main source of food security in Ingwavuma, he commented on the lack of motivation amongst the youth to learn such skills and noted with concern the increasing lack of agricultural skills amongst young adults. A number of initiatives for the development of agricultural youth clubs had been undertaken by the Department of Agriculture, but had met with little interest or success. Grandparents have thus remained the main form of labour harvesting the family food supply, this is obviously unsustainable in the long term as the elderly will become ill and die. Seventy percent of households containing orphans had experienced ill health, compared to fifty percent in the 'non-orphan' households. All illnesses in orphan households had been treated in hospital, with twenty two percent of the illnesses in 'non-orphan' households being treated by a traditional healer, at a clinic or via a period of convalescing at home. The majority of the deaths occurring in both cohorts of households were the death of the 'spouse' (50% of all deaths), twenty five percent 'mother' and twenty percent 'father'. Unfortunately the relationship with whom this coding referred was not recorded and can thus not be considered as a reflection of characteristics of death in the community; however a study of the epidemiology of ill health and death in the community would be very valuable. It was extremely difficult to gauge the ages of those who were ill and had died. Our interviews pointed to a worldview wholly unconscious of the age of its household members, and respondents were often unable to even suggest a period or range of years as a proxy for the age of the ill or deceased member. The only clarity received depended on whether the person was a baby or a pensioner, and

as such, this information did not help to clarify potential implications from patterns of death and disease in the community.

The meeting at St Phillips Primary School raised many pertinent issues regarding the community's capacity to deal with the ill health and death in the community, and the problems of caring competently for AIDS orphans. The headmaster of the school, a different 'Mr Mthembu' explained that orphans had been identified in schools primarily because of their lack of school uniforms. Five headmasters had gathered together when noting the relatively large numbers of orphans in their schools and had created an orphan committee mandated to record information pertaining to orphans and to develop a form of surveillance of orphans in their schools. The first list produced by this team can be viewed in Appendix 5. One of the obvious shortfalls of such a system of surveillance was that orphans too poor to attend school at all would not be included. Further obstacles to dealing with the care of orphans were raised by the community social worker (Gugu Dubazane), who explained that children without birth or death certificates could not be registered for foster care placement and that the difficulties of obtaining birth, death and fostering certificates were enormous. Work alongside this by the Ingwavuma Orphan Care Organisation has been to develop food gardens and agricultural training for orphans in particular, to purchase school uniforms and to begin a building project to house orphans and affected families. Food parcels are also distributed to the many families unable to cope with the demand of their increased family size. Ingwavuma Orphan Care has also taken over the financial management of the home based care project which employs twenty one carers who live in the community and visit and support their neighbours. They are presently caring for over 300 patients who include children with AIDS and parents of soon-to-be orphans, and as such attempt to combat the effects of the disease and to keep the ill and soon-to-be orphaned children as healthy as possible. This will go a long way to helping the fabric of the community remain stable and to ensure that the livelihood in homes where parents are dying is maintained. As an area predominantly engaged in subsistence farming therefore, the status of each breadwinner's nutritional wellbeing in the household will play a major role in the person being able to combat the physical impact of HIV and to be productive in planting and harvesting food for their family. Thus, the typical problems facing an area like this, (dependent on subsistence farming and having large numbers of HIV/AIDS related deaths) will include labour shortages and asset depletion; a loss of formal and informal institutional networks (like tribal

methods of industry and small business enterprises); and a loss of farming and community knowledge will need ensure that these are consistently tackled so that the livelihoods of the community are maintained and strengthened.

4.4 CONCLUSION

Early in the chapter the inclusion of orphans in households in Ingwavuma and the resultant increased dependency ratios caused by the inclusion of these orphans was discussed. The chapter also predicted that these household dependency ratios will rise alongside the growth of the HIV/AIDS epidemic, further affecting food security and livelihood sustainability. The chapter thus concludes by stating that factors that would undermine food security in the area should be adequately addressed and this would include the immediate availability of food supplies to fragile households, the training and development of agricultural skills in the area, particularly in schooling environments and the identification of methods that could develop and enlarge the caring capacity of the community's social fabric in terms of the absorption of AIDS orphans into households. The analysis undertaken in chapter four is developed further in chapter five via the use of a logit regression model, which is used as a predictor of food security and which incorporates the impact of AIDS orphans in the model.

CHAPTER 5
LOGISTIC REGRESSION ANALYSIS

5.1 INTRODUCTION

The descriptive overview of the previous chapter forms the basis for the logistic regression analysed in this chapter, which incorporates many of the variables presented in there. The model will use these variables to construct predictors of food insecurity in Ingwavuma, noting the impact of the absorption of HIV/AIDS orphans into a household as well as other variables such as number of occupants per household, person fulfilling the position of the household head, quantity of the staple produced, damage to crops from pests and during storage, family wealth illness and death which are anticipated to have a significant impact on the consistency of a household's access to 'sufficient food at all times for a healthy life'. The chapter begins by introducing the explanatory and dependent variables in the model, and then presents the methodology used and the results and discussion that follow.

5.2 DESCRIPTION OF DATA AND MODEL USED FOR ANALYSIS

5.2.1 Description of the data used in the model

As previously noted, the null hypothesis underlying this research purports that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans. The premise underlying this hypothesis is that families who have not adopted AIDS orphans will have smaller household occupancy and thus household dependency ratios, as the food supply available to the family will thus be shared amongst fewer people. The data gathered during the data collection process was obtained with this research question in mind. The premise underlying the hypothesis was also developed in view of the fact that HIV generally kills the more productive members of the family, reducing the food security of those who reside in households where dependency ratios are increasing, or where household members might be dependent on HIV positive breadwinners who may become ill and unproductive over time. Another reason is that orphaned children might reside with grandparents who are elderly and unable to work or to

stretch their pensions to cover the food requirements of the growing household, thus causing the household food security status to be more vulnerable.

The information which informed the hypothesis was essentially derived from the three phases that Haddad and Gillespie (2001) detailed regarding a community impacted by HIV. As discussed in chapter three, phase 1 may occur when a few of the older productive breadwinners become ill or die. Families might `import' labour from friends or the community to replace the lost labour or to care for the sick. Children may be recalled from school and both children and adults might work longer hours in the fields. The next phase may incorporate methods of farming that depend on less labour, so families may cultivate roots, tubers and small livestock. When mortality increases further there may be nothing to be done with the land except to sell it, leave it fallow and migrate to the cities.

As stated in chapter four, Ingwavuma has a high rate of HIV infection, and as such, may be considered a 'community at risk'. In this region, one in three people between the ages of 15 and 30 have HIV/AIDS. The ramifications of this are beginning to be felt, and as the epidemic progresses and more people develop full blown AIDS, individual cases of HIV might well impact the level of wellbeing in the entire community, reflecting the phases of food insecurity described above. (http://www.fotch.org.uk/IOC/crisis.html).

The model chosen to express the hypothesis underlying the research was a logit model. A logit model is a regression model in which the dependant or response variable is dichotomous in nature, taking a value of a '0' or a '1' (Gujurati, 1995). In this model there are two alternatives that will be assessed, namely; are households in Ingwavuma food secure or food insecure? The dependent variable in this model is allocated a '0' for food insecure and a '1' for food secure. Our expectation would be that households containing orphans would be food insecure whereas those without orphans would be food secure.

Logit transformations are generally defined as:

$$Li = \ln (Pi / 1 - Pi) = Zi$$
$$= B1 + B2Xi$$

where Li is the logit model, and is the log of the probability of the odds ratio

(Pi / 1 – Pi) caused by a change in Xi. The properties of the logit model will include a linear change in L with X, although the probabilities will not be linear. As P ranges from '0' to '1', the logit (L) will range from -∞ to + ∞, and is thus not constrained by the limit of the range of the probabilities. The logit model is thus interpreted as follows: B2 (the slope) will measure a change in L for a unit change in X, identifying the log odds in favour of the dependent variable as the independent variable increases or decreases. Although B1 is an intercept term, its value may not be meaningful (Gujurati, 1995). The logit probability density function is symmetrical at around zero, and is asymptotic to an upper value. The underlying statistical assumptions of the logit model are less restrictive than other models, and although it may have a heteroskedasticity bias, it is free from the heteroskedasticity problems associated with ordinary least squares (OLS) and generalised least squares (GLS) (Sonka and Dixon, 1979)

5.3 THE EMPIRICAL MODEL ESTIMATED

The model for analysis is based on the original equation by Foster (1992) who defined food security as:

(household food consumption requirement minus household food production) multiplied by the price of bought food = income and liquid assets available to purchase food

The logit model was thus defined as:

Yi = f (C; F; W;P)

where C denotes the household food consumption requirement; F household food production; W household income and family assets (wealth) and where P is an indicator of household productivity.

C is the variable denoting the household food consumption requirement. Included in this variable is firstly the 'number of occupants per household' which is intended to

highlight household dependency ratios. The second variable included in C is the person fulfilling the position of the household head and this is included because research shows that female headed-households tend to be more food secure although male headed households are generally wealthier overall. There was some difficulty ascertaining the status of the household head with certainty in all 91 interviews. Generally, a father or male relative will still retain his position as household head even if spending months away from the family's rural homestead. The migrant labour system has lead to looser ties between couples but in general we were satisfied that the person considered or claiming to be the household head was actually engaged in most of the decision-making in the family. Father, mother, grandfather, grandmother and uncle or aunt were all included as potential heads of households in the analysis. Finally, the inclusion of a dummy variable 'orphan or not' was intended to signify whether or not the household contained orphans.

F is the vector of variables indicating household food production and the first indicator chosen indicates the quantity of the staple produced. It was originally planned that all three main foods harvested by the family would be included in the analysis; however, the staple food (maize) was more reflective of the food supply produced by the households as the quantity of the staple food produced was clearly so much greater, revealing that other food stuffs, like beans and pumpkins were often considered to be items of luxury and variety, rather than possible substitutes for the staple. Families described the quantity of maize that they had produced based on the number of hessian sacks that they had filled with mielie cobs. These were converted into kilograms and ranged from 0 to 1500 kilograms, surprisingly little when needing to supply a household's dietary requirements for a year. Families were considered to be food insecure if they produced less than 500 kilograms of maize per year, and food secure if producing more, according to our observations. Somewhere between fifty and five hundred kilograms seemed to be the main quantity produced in many of the interviewed households. Virtually none of the interviewed households were able to describe, even in numbers of hessian sacks, the quantities of the secondary foodstuffs that they had produced. Quantity produced would have been impacted by factors that would have determined the total harvest, like rainfall, and are thus assumed to be innate, calculated within the variable.

The second and third variables included in the 'F' (household food production) vector were damage to crops from pests and during storage. During the data collection it was noted that many of the respondents stated that they experienced a high loss to their crops from pests such as aphids and from damage to their crop during storage. The damage to the crop during storage was often due to food rotting. In some cases, respondents stated that almost all of their crops had been lost, this thus became an important variable to consider as such a situation would clearly impact on the food supply available to the household.

W indicates family wealth and is firstly made up of three flow variables, namely the receipt of a household income, pension or remittance as well as relatively liquid assets which could be sold in desperate circumstances. These included a television, a car, fridge or a stove. The third variable included was the number of animals consumed by the household in the past months. It was noted that households generally tended not to eat their livestock. They would do so only if large in size and with a number of forms of income, meaning that they viewed their livestock as a source of food rather than as a store of wealth, contrary to most households in the area. In the area as a whole, livestock, particularly cattle and goats are considered to be a 'store of wealth' and are not only bought for this purpose, but are given and received during the family negotiations of a dowry – called 'lobola'. As such, the animals retain their 'store of wealth' and are often tended by young boys. Cattle or goats may be eaten at a celebration, like a wedding, but are seldom consumed in 'normal circumstances', unless the household tended to be very large and with several forms of household income, thus meaning that the loss of the monetary value of the livestock was of secondary importance to the quality of the household's consumption.

The final two variables included form the value 'P', considered to be an indicator of household productivity. These were an illness and a death in the family having occurred during the previous few months. It is believed that illness in the home might reduce income (due to increased absence from work) and might hamper food security due to a reduced ability to plant, water and harvest. It was extremely difficult to gauge the ages of those who were ill and had died. Our interviews pointed to a worldview wholly unconscious of the age of its household members, and respondents were often unable to even suggest a period or range of years as a proxy for the age of the ill or deceased member. As stated previously, the only clarity that we received depended on

whether the person was a baby or a pensioner. Due to this, all family illness and deaths were included regardless of age. Another reason for the inclusion of all ill and deceased household members regardless of age is the link of infectious diseases between household members, particularly if impacted by HIV. It might well be that an HIV positive baby dies before its mother, although her economic productivity would have already begun to decline. Recent studies of workers in Kenyan tea plantations point to the productivity of workers suddenly declining around three years before death.

Three different variables were used as proxies for the household's food security status, (the dependant variable). Food insecurity would be defined as a lack of sufficient food to meet the household's dietary requirement throughout the year. The proxies were used due to the fact that all the interviewed households were directly asked whether or not they considered themselves to be food insecure and to our surprise, almost all replied in the affirmative. It is anticipated that there were a number of reasons for this. Firstly, the data collection occurred during the middle and essentially towards the end of the 'lean period' when many and probably most households were in a phase of supplementing their harvest with shop purchased food, in addition, certain households were taking steps to reduce their food intake, in a manner of reducing the number of meals eaten per day, collecting wild fruits or only eating very basic foods. Secondly, although clearly informed that the data collection was going to be used as information for a 'book' about Ingwavuma, respondents might have hoped to receive a form of direct aid and believed that in communicating a desperation of need, (which was later proven false through community discussions, observation and interviews with neighbours), that they would have greater chances of receiving this 'handout'.

Three different proxies for food insecurity (the dependent variable) were thus used in the logit regression. These were:

- The necessity of a household to engage in food reduction activities which may have included reducing the number of meals eaten a day; some members eating fewer meals; eating only basic foods; collecting wild fruits or roots; looking for work or to earn money and borrowing from neighbours/family.
- Households stating that they needed to supplement their food requirements with extra income dependent purchases. As stated previously, Ingwavuma has been described as one of the poorest in South Africa. Many people work in the migrant labour system with the men in particular travelling to work in the gold and diamond

mines in Gauteng. Due to the remoteness and lack of industry in the area, only thirty percent of the wage-earning population are employed in the area, with one-third of all abled men and eighty percent of women unemployed. Households stating that they were needing to access income to supplement their home grown food with extra sources of income might find it extremely difficult to achieve if no one in the household had obtained permanent or temporary work. A number of the households stated that a family member had left the homestead in order to search for work, although a number of the households were recipients of incomes, remittances or pensions from at least one source. From our observations, the households which did not were clearly more vulnerable to food insecurity if their stores of home grown produce ran out.

- The third proxy used for food insecurity was the proportion of the home grown staple sustaining the household. It was initially anticipated that the smaller the proportion of the home grown staple consumed in the household's diet, the more food secure the household would be due to their consumption of a variety of food and thus a nutritiously balanced diet. The opposite was found to be true however, families consuming proportionately more of their home grown staple tended to be families who had produced more food overall and who were therefore more food secure, as their produce sustained them for many more months of the year, reducing their dependency on potentially erratic sources of income on which they would have otherwise have had to depend to supplement their diet.

The regression model was thus developed as follows:

Li = B1 +B2D2 + B3D3 + B4D4 + B5D5 + B6D6 +B7X1i + B8D7 + B9D8 + B10D9 +B11D10 + B12D11 + B13D12 + B14D13 + B15D14 + B16D15 +B17D16 +ui

The variables in the regression were:

Li : 1 = food secure
0 = food insecure

D2: 1 = orphan
0 = non-orphan in household

D3: 1 = Father is Household Head
0 = otherwise

D4: 1 = Mother is Household Head
0 = otherwise

D5: 1 = Grandmother is Household Head
0 = otherwise

D6: 1 = Uncle or Aunt is Household Head
0 = otherwise

(Omitted reference category: 1 = Grandfather as Household Head, 0 = otherwise)

X1i: No of Occupants in the Household

D7: Quantity of Staple Produced: 1 > 500kg, 0 <500kg

D8: Pest Damage to the Home Grown Crop: 1 = small damage to crop
0 = otherwise

D9: Pest Damage: 1 = severe damage to crop
0 = otherwise
(Omitted reference category: 1 = damage to half the crop, 0 = otherwise)

D10: Damage to the Home Grown Crop during Storage: 1 = small damage to crop
0 = otherwise

D11: Storage Damage: 1 = severe damage to crop
0 = otherwise
(Omitted reference category: 1 = damage to half the crop, 0 = otherwise)

D12: Animals eaten: 1 = Household does consume livestock
0 = otherwise

D13: Income: 1 = Household does receive an income
0 = otherwise

D14: Assets: 1 = Household does own assets (these included a television, fridge, stove or a car).
0 = otherwise

D15: Illness: 1 = Household member ill during the last 12 months
0 = otherwise

D16: Death:1 = Household member died over past months
0 = otherwise

For the 'Head of Household' explanatory variables, the 'D-1' categorisation rule was used to reduce perfect collinearity in the model; and 'household head equals grandfather' was used as the reference (omitted) category. The reason for this was that grandfather headed households were thought to be smaller in size, households not containing many orphans (as noted during the data collection process), as well as households receiving a pension, thus a form of income. It was anticipated that these households might lie somewhere in the middle of the range of the observed cases, perhaps poorer than households with several forms of incomes or many hands to work in the fields, but better off than households which received no income and had many mouths to feed. The other omitted categories in the model were 'pest damage is equal to half the crop and damage to crop during storage is equal to half the crop' in the anticipation that as middle values, (damage being half the crop rather than mild or severe – thus a 'middle value') might reflect the differences in the severity of the included variables and as such, the use of this apriori information might ensure the correct signs for the co-efficients of the dummy variables in the regression analysis.

The table on the following page expresses the anticipated relationships (signs) between the dependent and the independent (explanatory) variables in the model.

ANTICIPATED SIGN FOR THE CO-EFFICIENT OF THE EXPLANATORY VARIABLE	FOOD INSECURE	FOOD SECURE	RELATIONAL SIGN
DEPENDENT VARIABLE			
PROXY 1: PROPORTION OF STAPLE CONSUMED BY THE HOUSEHOLD	**0** =0.5 or less	**1** = almost all	
PROXY 2: FOOD REDUCTION ACTIVITIES UNDERTAKEN BY THE HOUSEHOLD	**0** = reduce food	**1** = no response	
PROXY 3: FOOD SUPPLEMENTATION ACTIVITIES UNDERTAKEN BY THE HOUSEHOLD	**0** = supplement food	**1** = no response	
INDEPENDENT VARIABLE			
Orphan or not: 1 = orphan, 0 = non-orphan in household	1	0	negative
Household Head 1: 1 = Father, 0 = otherwise	0	1	positive
Household Head 2: 1 = Mother, 0 = otherwise	either		either
Household Head 4: 1 = Grandmother, 0 = otherwise	1	0	negative
Household Head 5: 1 = Aunt or Uncle, 0 = otherwise	1	0	negative
(Omitted reference category: 1 = Grandfather, 0 = otherwise	0	1	positive
No of Occupants:	increase in number		negative
Quantity Produced: 1 > 500kg, 0 <500kg	0	1	positive
Pest and Storage Damage: 1 = small damage to crop, 0 = otherwise	0	1	positive
Pest and Storage Damage: 1 = severe damage to crop, 0 = otherwise	1	0	negative
(Omitted reference category: 1 = damage to half the crop, 0 = otherwise			
Animals eaten: 1 = Household does consume livestock, 0 = otherwise	0	1	positive
Income: 1 = Household does receive an income, 0 = otherwise	0	1	positive
Assets: 1 = Household does own assets, 0 = otherwise	0	1	positive
Illness: 1 = Household member ill over past months, 0 = otherwise	1	0	negative
Death:1 = Household member died over past months, 0 = otherwise	1	0	negative

Table 12: Anticipated sign for the co-efficient of the explanatory variable

Households were coded '1'if they contained orphans and '0' if they did not, one therefore anticipated a negative relationship between the orphan explanatory variable and food security as one would anticipate households containing orphans (coded 1) to be food insecure (coded 0). The explanatory variables for the household head included the omitted variable, household head equals grandfather. It was anticipated that a household with a grandfather as head might have less home grown food available, due to its smaller and elderly makeup, and would rely more heavily on food purchased with the pension. Father headed households might be more food secure in comparison, especially if the father was employed in permanent work. Similarly, mother headed households would be expected to be more food secure if her husband was working in the cities and if she was receiving a remittance and it would also be expected that neither households would be caring for grandchildren, which might be highly probable in the case of both grandparent headed households. Both father and mother headed households are thus attributed positive signs when compared with grandfather headed households (the omitted category). If the mother is the 'de facto' household head, she may be receiving no income at all and might then be far more food insecure when compared to the reference category. Mother headed households were thus attributed a negative (food insecure) sign as well. Grandmother headed households would be expected to be similar in nature to grandfather headed households, although many of the grandmother headed households in the sample contained orphans, thus increasing their dependency ratios and reducing the disposable income obtained from the grandmother's pension as well as the food supply available to the family. Similarly, most uncle and aunt headed households contained orphans, thus a negative albeit food insecure relationship when compared to the reference variable. It was expected that the 'number of occupants' would be highly negatively correlated to food security, with increasing dependency ratios decreasing the household members share of available food. 'Quantity of maize produced' was coded as '0' for 'less than 500 kilograms of home produced staple'. This would be expected to be positively correlated with food insecurity, as households who produced less food, tended to be income dependent for their food supply. As stated previously, income sources in Ingwavuma tend to fluctuate depending on the development work in nearby cities and as such, are highly undependable, causing a household to be more vulnerable and food insecure. The impact of a small damage to crops due to pest and storage damage would be expected to leave households food secure when compared with the omitted variable,

(the loss of half the crop), the loss of almost all the crop would thus leave households highly food insecure when compared with the omitted variable. A mild damage to crops was thus attributed a positive (food secure) sign and a severe loss to home grown crops denoted with a negative sign. 'Animals eaten' was anticipated to be symbolic of family wealth, as was 'income' and 'assets owned', thereby denoted positive signs where as the illness or death of a family member, particularly an economically productive household member might cause the household to become more vulnerable, and was thus attributed a negative sign. The expected relationships between the dependent and explanatory variables are compared with the actual regression results in the following section.

5.4 RESULTS AND DISCUSSION

The results of the regression highlight the influence that the explanatory variables have in determining the food security or insecurity of households in Ingwavuma, as expressed by the three food insecurity proxies. These are the food reduction and supplementation activities that households undertake, as well as the proportion of the home produced staple available for satisfying the household's consumption requirement.

Tables 13, 14 and 15 on the following pages show the regression output for each proxy for food security. Table 13 shows the 'proportion of the home produced staple consumed by the household' and tables 14 and 15' the food reduction' and 'food supplementation' activities undertaken by the households respectively. All three models had statistically significant chi-squared goodness-of-fit at the
P = .000 level, meaning that almost all the variation in the dependent variable was explained by the logistic regression. All of the explanatory variables were significant at the 95% level, with a number of variables significant at a 99.98% level. The tests were conducted using a two-tailed student t-test for the individual significance of each parameter. The tables comprising the regression results include the statistical significance of each regression co-efficient, and may thus be viewed below.

PROXY 1: PROPORTION OF STAPLE EATEN BY THE HOUSEHOLD

0 = FOOD INSECURE = EATING ½ OR LESS OF THE HOME PRODUCED STAPLE (MAIZE)
1 = FOOD SECURE = EATING ALMOST ALL OF THE HOME PRODUCED STAPLE (MAIZE)

91 unweighted cases accepted.
0 cases rejected because of missing data.
892 cases are in the control group.
Parameter Estimates (LOGIT model: (LOG(p/(1-p))) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.	Stat Significance
ORPHAN.N	-.09918	.14669	-.67617	0.95 (2 tailed)
HH.HEAD1	-.86119	.32457	-2.65328	0.998 (2 tailed)
HH.HEAD2	-.64798	.31601	-2.05047	0.98 (2 tailed)
HH.HEAD4	-.79370	.35262	-2.25084	0.98 (2 tailed)
HH.HEAD5	-.84218	.36655	-2.29758	0.98 (2 tailed)
NO.OCCUP	-.04380	.01669	-2.62424	0.998 (2 tailed)
QUA.PROD	.18052	.14685	1.22924	0.95 (2 tailed)
PEST1	.16160	.13622	1.18634	0.95 (2 tailed)
PEST3	-.24078	.20716	-1.16230	0.95 (2 tailed)
STORAGE1	-.21410	.15514	-1.38002	0.95 (2 tailed)
STORAGE3	-.07913	.17799	-.44461	0.95 (2 tailed)
ANIM.ETN	.17866	.13971	1.27883	0.95 (2 tailed)
INCOME	-.20146	.12932	-1.55788	0.95 (2 tailed)
TVSFRCAR	-.13375	.13033	-1.02625	0.95 (2 tailed)
ILLNESS	.24141	.13667	1.76641	0.95 (2 tailed)
DEATH	.09828	.13090	.75078	0.95 (2 tailed)

Intercept	Standard Error	Intercept/S.E.
-1.15590	.39454	-2.92972

Pearson Goodness-of-Fit Chi Square = 384.699 DF = 74 P = .000

Since Goodness-of-Fit Chi square is significant, a heterogeneity factor is used in the calculation of confidence limits.

Table 13: Logit Regression results for the first proxy for food security: proportion of the home grown staple consumed by the household.

PROXY 2: FOOD REDUCTION ACTIVITIES UNDERTAKEN BY THE HOUSEHOLD

0 = FOOD INSECURE (THE HOUSEHOLD DOES HAVE TO REDUCE THEIR FOOD INTAKE)

1 = FOOD SECURE (NO RESPONSE)

91 unweighted cases accepted.

0 cases rejected because of missing data.

892 cases are in the control group.

MODEL Information

Parameter Estimates (LOGIT model: (LOG(p/(1-p))) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.	Stat Significance
ORPHAN.N	-.12709	.14656	-.86715	0.95 (2 tailed)
HH.HEAD1	-.78669	.32406	-2.42761	0.998 (2 tailed)
HH.HEAD2	-.65779	.31639	-2.07906	0.98 (2 tailed)
HH.HEAD4	-.81755	.35482	-2.30411	0.98 (2 tailed)
HH.HEAD5	-.78385	.36719	-2.13470	0.98 (2 tailed)
NO.OCCUP	-.04267	.01691	-2.52405	0.998 (2 tailed)
QUA.PROD	.14292	.14740	.96957	0.95 (2 tailed)
PEST1	.15728	.13755	1.14344	0.95 (2 tailed)
PEST3	-.14313	.20307	-.70484	0.95 (2 tailed)
STORAGE1	-.16741	.15662	-1.06892	0.98 (2 tailed)
STORAGE3	.04468	.17936	.24909	0.95 (2 tailed)
ANIM.ETN	.09517	.14079	.67599	0.95 (2 tailed)
INCOME	-.23968	.12889	-1.85953	0.95 (2 tailed)
TVSFRCAR	-.21641	.13194	-1.64024	0.95 (2 tailed)
ILLNESS	.19194	.13704	1.40067	0.95 (2 tailed)
DEATH	.15772	.13103	1.20377	0.95 (2 tailed)

Intercept	Standard Error	Intercept/S.E.
-1.15247	.39563	-2.91296

Pearson Goodness-of-Fit Chi Square = 422.745 DF = 74 P = .000

Since Goodness-of-Fit Chi square is significant, a heterogeneity factor is used in the calculation of confidence limits.

Table 14 : **Logit Regression results for the second proxy for food security: Food Reduction Activity**

PROXY 3: FOOD SUPPLEMENTATION ACTIVITIES UNDERTAKEN BY THE HOUSEHOLD

0 = FOOD INSECURE (THE HOUSEHOLD DOES HAVE TO SUPPLEMENT THEIR FOOD WITH INCOME DEPENDENT PURCHASES)

1 = FOOD SECURE (NO RESPONSE)

91 unweighted cases accepted.

0 cases rejected because of missing data.

892 cases are in the control group.

Parameter Estimates (LOGIT model: (LOG(p/(1-p))) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.	Stat Significance
ORPHAN.N	-.17177	.14604	-1.17621	0.95 (2 tailed)
HH.HEAD1	-.82976	.32359	-2.56421	0.998 (2 tailed)
HH.HEAD2	-.70396	.31617	-2.22651	0.98 (2 tailed)
HH.HEAD4	-.82132	.35410	-2.31945	0.99 (2 tailed)
HH.HEAD5	-.78984	.36556	-2.16065	0.98 (2 tailed)
NO.OCCUP	-.04111	.01686	-2.43816	0.998 (2 tailed)
QUA.PROD	.09065	.14842	.61073	0.95 (2 tailed)
PEST1	.19516	.13737	1.42064	0.95 (2 tailed)
PEST3	-.07105	.20224	-.35131	0.95 (2 tailed)
STORAGE1	-.17137	.15649	-1.09512	0.95 (2 tailed)
STORAGE3	.07966	.17831	.44672	0.95 (2 tailed)
ANIM.ETN	.11120	.13978	.79555	0.95 (2 tailed)
INCOME	-.21384	.12858	-1.66314	0.95 (2 tailed)
TVSFRCAR	-.19815	.13108	-1.51161	0.95 (2 tailed)
ILLNESS	.12916	.13636	.94717	0.95 (2 tailed)
DEATH	.19449	.13111	1.48340	0.95 (2 tailed)

Intercept	Standard Error	Intercept/S.E
-1.12335	.39530	-2.84174

Pearson Goodness-of-Fit Chi Square = 411.184 DF = 74 P = .000

Since Goodness-of-Fit Chi square is significant, a heterogeneity factor is used in the calculation of confidence limits.

Table 15: Logit Regression results for the second proxy for food security: Food Supplementation Activity

The similarities in the signs of the co-efficients in the regression analysis compared to the anticipated signs of the co-efficients may be viewed in table 16 below. Signs that reflected the anticipated relationships included (i) the negative impact on food security of the inclusion of orphans in a household; (ii)'uncle' or 'aunt' as household head being food insecure when compared with the more food secure 'grandfather' reference variable; (iii) increasing 'number of occupants' per household reducing the level of food security in a household. This explanatory variable was also highly significant, at a 99,98% level of statistical significance according to the student t-test. (iv) Fourthly, 'quantity produced' showed a positive correlation to food security, it can thus be concluded that households producing greater quantities of the household staple (maize) are more food secure. (v) Fifthly, the 'damage to crops from pests' reflected previous assumptions, although this was not replicated when applied to damage to crops during storage. (vi) Finally, food secure households reflected the assumption that they do consume livestock in 'normal circumstances' as opposed to special occasions for poorer households. Variables that did not reflect the anticipated relationships included 'father, mother and grandmother as household head', damage to crops during storage, income, ownership of assets and illness and death. These will be explored in greater detail with regard to each explanatory variable included in the regression.

ANTICIPATED VERSUS ACTUAL SIGNS IN THE LOGIT REGRESSION ANALYSIS:

EXPLANATORY VARIABLE	ANTICIPATED SIGN	ACTUAL SIGN PROXY 1	ACTUAL SIGN PROXY 2	ACTUAL SIGN PROXY 3
Orphan or not:	.---	.---	.---	.---
Household Head 1:	.+	.---	.---	.---
Household Head 2:	.+ ---	.---	.---	.---
Household Head 4:	.---	.---	.---	.---
Household Head 5:	.---	.---	.---	.---
No of Occupants:	.---	.---	.---	.---
Quantity Produced:	.+	.+	.+	.+
Pest Damage: mild	.+	.+	.+	.+
Pest Damage: severe	.---	.---	.---	.---
Storage Damage: mild	.+	.---	.---	.---
Storage Damage: severe	.---	.---	.+	.+
Animals eaten:	.+	.+	.+	.+
Income:	.+	.---	.---	.---
Assets:	.+	.---	.---	.---
Illness:	.---	.+	.+	.+
Death:	.---	.+	.+	.+

Table 16: Anticipated versus actual signs in the co-efficients of the logistic analysis

5.4.1 Impact of Orphans

The **'orphan or not'** variable was negatively correlated to food security and was statistically significant at the 95% level. All three proxies for food insecurity were

negatively correlated to households comprising orphans, as anticipated, and being statistically significant lead to the rejection of the null hypothesis which would state:

'h0: b2 = 0'

that the inclusion of orphans in households does not reduce food security. The rejection of the null hypothesis at a 95% statistically significant level means that we accept the original hypothesis underlying the research, which purports that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans. Furthermore, it can be deduced that orphan households tend to be characterised with food reduction and food supplementation activities, as well as less than half of the household's consumption requirement being home grown, leaving the household dependent on sources of income for their food security. In separate analyses of correlation relationships between 'orphans or not' and other explanatory variables included in the logit regression, the presence of orphans was found to be highly positively correlated to 'aunt or uncle' and 'grandmother headed households'. The significance of these relationships was at the 0.05 level for grandmother and at the 0.01 statistically significant level for 'uncle/aunt headed households', using a 2-tailed Pearson correlation test. The presence of orphans was also positively correlated and significant at the 0.05 level with 'number of household occupants'. These issues are important when attempting to address food insecurity in Ingwavuma, not only in terms of present research but in the context of the future development of the entire community. As the disease develops through its window period, individuals may change from healthy and productive adults to sufferers of ill-health and even death. In view of the high present rates of HIV infection (of around thirty percent in Ingwavuma), the impact of this change in individual well-being will be experienced by the entire community, and might potentially reflect the phases of food insecurity for 'communities at risk' as described by Haddad and Gillespie (2001). The epidemic is not thought to have reached its peak yet, but this research clearly indicates that households containing orphans are **already** more food insecure and vulnerable. Orphans are thus shown to reside with grandparents who are elderly, and may be unable to work or to stretch their pensions to cover the food requirements of the growing household. It is also possible that 'aunts' or 'uncles' might themselves be HIV positive, which might further reduce the food security of those who reside in households where dependency ratios are increasing, or where the HIV positive

breadwinners may become ill and unproductive over time. The estimated slope co-efficients for the 'orphans or not' variable in the regression suggests that for a unit increase in the absorption of orphans in a household, the probability of increased food insecurity is 18.7% for the likelihood of the household having to increase its food supplementation activity, 13.5% the likelihood of the household engaging in food reduction activities and 10.4% the likelihood of the household not producing sufficient maize to satisfy its household consumption requirement. These figures are estimated using the antilogs of the regression analysis, (minus one and multiplied by 100 to obtain the percentage for each variable).

5.4.2 Household Head

In all three regression analyses, all the household heads (i.e. father, mother, grandmother and aunt or uncle) were negatively correlated (food insecure) when compared to the reference variable – grandfather as household head. In the case of the father headed households, the result was statistically significant at a 0.9998 level in all three regressions. 'Grandmother as household head was also food insecure when compared to the reference category and this was statistically significant at a 99% level in the third (food supplementation) regression analysis. These results were surprising, and in particular as 'father' as household head showed a statistically significant negative relationship to 'grandfather' as household head at the 99.98% level.

In terms of this, ilt might well be that fathers labelled as 'household heads' were based at home and were thus unemployed, with the household consequently receiving no form of income. This was a clear cause of vulnerability and during the data collection process, it was noted that households with one small source of income were clearly less vulnerable than households who had no financial 'buffer'. The result does not however explain why 'father headed households' would tend to have only half or less of the consumption requirement supplied by the home grown staple, and would require further research.

A different and interesting finding is that 'father headed households' tended to be negatively correlated with income, negatively correlated with the consumption of livestock in ordinary circumstance, but positively correlated to the ownership of

household assets. These assets were specified in the regression as a television, stove, car or a fridge. The same correlation tests found that mother-headed households tend to be positively correlated to income and negatively correlated to the ownership of assets. The finding tends to support the view that the fathers in these households are not involved in the permanent migrant labour system, but also supports previous research which found that income controlled by women is more likely to be spent on food. Research (as described in chapter 2) has shown that women were found to allocate proportionately more of their income on food, especially food for their children. This has meant that households with female-controlled income sources are generally more food secure.

'Grandmother and grandfather' headed households tended to receive incomes, with grandfather headed households consuming livestock, but not owning assets as opposed to grandmother headed households who did consume livestock but did not own assets. Of some concern is the finding that 'uncle and aunt' headed households exhibited the same characteristics as father headed households. This is of particular concern in the light of the government's policy to provide foster care grants to the carers of orphans. If orphans are as highly correlated to the 'uncle or aunt' headed households as shown by the Pearson correlation test, and if these household's tend to be food insecure with incomes received being allocated to the attainment of assets rather than the attainment of food security, then presumably the government's objective of food security for orphans is not being achieved as planned. Further research in this area would be of value. Grandfather headed households tended to be expressed as food secure in the regression analysis, however it is worth noting that these types of households are vulnerable to the death of the grandfather and thus the loss of the pension, as are grandmother headed households, found to be highly correlated to the care of orphans.

5.4.3 Number of occupants:

This was also negatively correlated to food security and was statistically significant at the 99.98% level in the regression, as previously stated. It was also previously noted that the 'number of occupants' in a household was positively correlated to 'orphans in a household' – a result that was statistically significant at the 0.05 level using the Pearson correlation test. The number of occupants in a household is one of the factors

exerting the most significant impact on food security in the regression analysis. Once again, this finding supports the research that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans. The premise underlying this hypothesis is that families who have not adopted AIDS orphans will have smaller household occupancy and thus household dependency ratios, and the food supply available to the family will thus be shared amongst fewer people. It is also worth noting the value of this finding for future household food security for Ingwavuma as a community, when more of the 33% HIV positive but presently productive breadwinners begin to die of AIDS, and is worth considering in the light of the government's present policy of 'home-based and community care' for orphans and for HIV positive family members. Haddad and Gillespie (2001) note the potential decimation and fragmentation of whole communities as the impact of HIV/AIDS takes its toll on the lives of individuals. In view of the present level of HIV in Ingwavuma as a community, it would be worth assessing whether the strategy of 'home based care' is capable of caring for orphans adequately, as it will mean that the number of occupants in households, (who will essentially be dependents), will continue to increase over the next 10 years. The estimated slope co-efficients for the 'number of occupants per household' variable in the regression suggests that for a unit increase in the number of occupants in a household, the probability of increased food insecurity is 4,2% for the likelihood of the household having to increase its food supplementation activity, 4,4% the likelihood of the household engaging in food reduction activities and 4,5% the likelihood of the household not producing sufficient maize to satisfy its household consumption requirement.

5.4.4 Quantity of food produced:

As anticipated, the quantity of food produced increased food security meaning that households producing more of the staple were less dependent on having to supplement their food requirement with inconsistent income-dependent sources of food. It also meant that they were less likely to have to engage in reducing their food intake during 'lean harvest periods'. This finding is valuable, highlighting household food production as a main indicator of food security, and shows the detrimental impact of the perceptions of the present generation of rural students who consider education to be a key out of their rural lifestyle and thus work in fields (which

maintains food security for families and passes skills and knowledge to younger household members) to be sacrificed in preference to a schooled education, which at present leaves many rural South Africans 'under qualified for a modern economy' (Lemke, 2001). It would thus seem that in Ingwavuma, a schooled education and the acquisition of skills for household food production should be viewed as complementary requirements for the younger generation and given an equal weighting in the resources provided for their development. In general, it might be argued that in a world that is becoming increasingly globalized, such skills might be unnecessary – however, it could also be argued that until Ingwavuma, as a marginalised rural area is incorporated into the global realm of economics and trade, subsistence farming is the only food security and form of survival available to the community. At the same time however, the long-term sustainability of the community's food security is being undermined by the impact of HIV, destroying the lives of the presently productive members of the community. Unless the younger generations are taught how to be economically productive themselves, the loss of adults in their most productive years might well diminish the transfer of taught wisdom and the role model education from one generation to the other. Both the reduction of transferred knowledge and the loss of schooling for children to care for their family members might mean that future livelihoods are sacrificed to maintain current livelihoods and human capital skills are not transferred to the next generation. As previously noted, this scenario will not impact a few select households, but due to the rate of infection in the area, might well affect the livelihood and social fabric of the entire community.

5.4.5 Damage to Crops due to Pest Problems and During Storage

Both the mild and the severe damage to crops due to pests reflected the anticipated relationships to food security when compared with the reference variable, (damage to half the crop). The impact of a small damage to crops due to pest and storage damage would have been expected to leave households food secure when compared with the omitted variable, (the loss of half the crop), the loss of almost all the crop would thus leave households highly food insecure when compared with the omitted variable. A mild damage to crops was thus attributed a positive (food secure) sign and a severe loss to home grown crops denoted with a negative sign. Surprisingly, the mild and severe damage to the crop during storage did not reflect the expected relationships. A mild damage to the crop during storage was found to cause food insecurity in all three

proxy regressions, although neither food reduction or food supplementation activities seemed to need to be undertaken when the damage to the crop during storage was severe. Although more difficult to interpret these results, in view of the fact that the quantity of the staple produced was a main indicator of food security, the community would do well to ensure that damage to the crop is minimised because, as shown in the results of the 'pest damage' regressions, food insecurity increases as households experience increasing damage to their crops. Ensuring freedom from damage to the household crop production would seem to be a straightforward method of improving food security in the area. Agricultural training and the provision of pesticides might also prove cost-effective when compared to the provision of handouts (like food parcels - a present government strategy) or other methods of direct aid. The Ingwavuma Orphan Care organisation is training people in agricultural production through the development of 'community gardens' and they are targeting orphan households for this training in particular. Improved access to irrigation and mechanised ploughing might also enable larger plots of land to be cultivated.

5.4.6 Wealth: Livestock consumed, income received and assets owned

Although the results of the regression confirmed that larger animals tend to be consumed in food secure households, the results of 'income received' and 'assets owned' was surprising. There may however, be reasons for this, reflective of the observations made during the data collection process and noted in the section pertaining to the household head. It was observed that although wealthier households did tend to be more food secure (not reflected in the logit regression) income was often allocated for non-food related purposes, such as school fees, building materials and the purchase of household assets. The logit model seems to indicate that household assets are not considered to be liquid, i.e. sold for cash during periods of need, - perhaps households become acquainted with the pattern of twice yearly lean period and simply adjust their consumption patterns accordingly. The logit model did not seem to indicate income as a predictor of food security and this raises a concern as to whether the present government system of foster-care grants available to carers of orphans would in fact lead to the improvement of total household welfare, or whether carers might use the income for alternative uses. Perhaps in general, it might be used for both. On one or two occasions, we noted that the carer who was receiving the foster care grant was not living with her mother, with whom she had left the child. On another

occasion the team contemplated the frustration expressed by families who not look after orphans, but who considered themselves to be equally dependent on household food production as their neighbours, who had been enabled to purchase household assets with the foster care grant. The system of foster care grants has also created competition between family members and neighbours, vying for the fostering role. Although uncertain of other alternatives and convinced that in many cases the foster care grant is a life line for those who are destitute, it is also worth considering whether this situation of home based care and fostering is sustainable in the long term with the general level of HIV in the community. In the end it might be that as more productive household members become ill and are unable to support their families, that the access to a household income source may become increasingly valuable and vital for ensuring food security.

5.4.7 Illness and Death

It was surprising once again to note that illness and death were not reflective of the causes of food insecurity in the regression model. Separate correlations did indicate a positive relationship between orphans, illness and death. It may well be that there was a high level of illness and death in both cohorts, leading to a weaker relationship in the regression. Separate binary correlations pointed to a negative relationship between food supplementing activities, illness and death as well as with food reduction activities. Ill health and the proportion of the staple produced were shown to have a negative relationship when tested in a Pearson correlation. It would be of value for theses issues to be researched further.

5.5 CONCLUSION

The regression developed in this model thus shows the main indicators of food insecurity in Ingwavuma, highlighting the need for the further development of practices that would ensure that the impact of the HIV epidemic is minimized. These include agricultural practises that would increase of the quantity of food produced within households, practises to ensure that income allocated to and received by households is utilised for food security and the welfare of the whole family and methods to monitor the number of dependents residing in vulnerable households.

CHAPTER 6
CONCLUSION

6.1 SUMMARY AND CONCLUSIONS

This study aimed to introduce the key concepts and indicators of food security within an agricultural community and to set this in the framework of international and rural subsistence in South Africa in order to identify the impact of HIV on food security in Ingwavuma. The objectives of the study were achieved in the previous qualitative and quantitative chapters of the research, (chapters four and five respectively), and the main conclusions are summarised below.

The first objective of the study aimed to assess the main characteristics of the structure of households, in terms the management of the food consumption requirement by the household head, relative to the household dependency ratio. The study showed that the forty six percent of households in Ingwavuma were headed by a 'mother' figure, which pointed to the fact that fathers are not present in households in Ingwavuma and was thought to be due to many factors, which might have included short-term liaisons, permanent migrations, spouse separations and illness and death. More female headed households in the larger household occupancy ranges highlighted this issue once again. Households in the occupancy range of 11-15 people were female to male headed 7:1 and such figures are alarming, pointing to high dependency ratio's in households less likely to receive income from an employed male and thus a burden of poverty carried by the female head alone. Another factor of concern would be if these female household heads were the spouses of men who had died from HIV. If the male partner had infected his spouse with the disease, then there is an increased risk of her contracting AIDS and possible death. Such a situation reduces the productive capacity of the household especially if the rest of the household are dependents, undermining its food security and threatening its survival. None of the `non-orphan' households received headship from anyone other than fathers, mothers and grandfathers but thirteen of the forty 'orphan households' were headed by a `grandmother' or 'another person'. The food security of orphans residing with their grandparents is unsustainable in the light of the possible death of the elderly and the loss of the pension which would presumably have been providing for the household.

Grandparents are more likely to die sooner than a parental figure. A further 16 of the 40 orphans were headed by their 'mother' figure, (we presume that this is figurative. These figures point to households at risk over time as the HIV/AIDS epidemic increases.

In terms of the allocation of income received by the household, the findings in the research tended to support the view that income controlled by women is more likely to be spent on food. 'Father headed households' tended to be negatively correlated with income, negatively correlated with the consumption of livestock in ordinary circumstances, but positively correlated to the ownership of household assets. And these assets were specified in the regression analysis in chapter five as a television, stove, car or a fridge. The same correlation tests found that mother-headed households tend to be positively correlated to income and negatively correlated to the ownership of assets. Surprisingly, 'uncle and aunt' headed households exhibited the same characteristics as the father headed households and this was of particular concern in the light of the government's policy to provide foster care grants to the carers of orphans. If orphans are as highly correlated to the 'uncle or aunt' headed households as the results showed, and if these household's tended to be food insecure with incomes received being allocated to the attainment of assets rather than the attainment of food security, then presumably the government's objective of food security for orphans is not being achieved as planned.

The second objective of the research was to assess the level of dependency on income related purchases of food compared to the level of food production generated within the household itself. Due to the general level of employment in the area, it was originally anticipated that households stating that they were having to access income to supplement their home grown food with extra sources of income might find it extremely difficult to achieve if no one in the household had obtained permanent or temporary work. This was shown to be true in the data analysis as sixty three percent of households stated that they would not anticipate being able to obtain any work at all, if needed. Thirty two percent stated that they might be able to have contacts in cities or might be able to work in neighbours fields, but that such income would only sustain them for one extra month. Only two percent of the sample stated that they would be able to source an income for three months, and another two percent for six months. These figures point to a community at risk of severe food insecurity if they were to

experience a crop failure. It was also found that the quantity of food produced increased food security meaning that households producing more of the staple were less dependent on having to supplement their food requirement with inconsistent income-dependent sources of food. It also meant that they were less likely to have to engage in reducing their food intake during 'lean harvest periods'. This finding was considered to be valuable, highlighting household food production as a main indicator of food security. In terms of the sustainability of future livelihoods, particularly in the light of the increasing loss of life and transfer of intergenerational agricultural skills anticipated with the HIV epidemic, it would seem that in Ingwavuma, a schooled education and the acquisition of skills for household food production should be viewed as complementary requirements for the younger generation and should be given an equal weighting in the resources provided for their development. At the same time however, it should be noted that the long-term sustainability of the community's food security is presently being undermined by the impact of HIV as the productive members of society die, leaving households with finite resources to care for increasing numbers of dependents. As previously stated, this scenario will not impact a few select households, but due to the rate of infection in the area, might well affect the livelihood of the entire community.

The third objective aimed to assess the impact that illness, death and the adoption of AIDS orphans had on the dependency ratio within a household and its resultant level of food security. The research showed that there was a high level of illness and death in both cohorts of the sample, seventy percent of households containing orphans had experienced ill health in the months prior to the data collection, compared to fifty percent in the 'non-orphan' households. All illnesses in orphan households had been treated in hospital, compared to eighty percent of the illnesses in 'non-orphan' households. Its is expected that ill health and death in households will contribute to a reduced level of productivity and thus food security because of the afflicted household members not being able to be as physically active when working in the family's fields, or requiring increased numbers of absentee days from paid work. Aside from this, schools have experienced increasing numbers of orphans attending classes and the Ingwavuma Orphan Care Organisation have recently had to take over the financial management of the home based care project which supports over 300 patients, including children with AIDS and the parents of soon-to-be orphans. The impact of the increasing numbers of orphans leads to increasing household

dependency ratios. In the logit regression, the households containing orphans were found to be negatively correlated to food security and this result was statistically significant at the 95% level, causing us to accept the original hypothesis 'that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans'. Furthermore, it can be deduced that orphan households tend to be characterised with food reduction and food supplementation activities, as well as less than half of the household's consumption requirement being home grown, leaving the household dependent on sources of income for their food security.

The final objective of this analysis was to develop a predictive model for food security in the Ingwavuma community with regard to the present level of livelihood management and the impact of the HIV/AIDS epidemic. This was achieved in all three models of food insecurity which had statistically significant chi-squared goodness-of-fit at the P = .000 level, meaning that variation in the dependent variables was explained in the logistic regressions. In the models, the 'number of occupants' in a household was positively correlated to 'orphans in a household'. The number of occupants in a household was one of the factors exerting the most significant impact on food security in the regression analysis. It is also worth noting the value of this finding for future household food security for Ingwavuma as a community, when more of the 33% HIV positive but presently productive breadwinners begin to die of AIDS, and is worth considering in the light of the government's present policy of 'home-based and community care' for orphans and for HIV positive family members. The estimated slope co-efficient for the 'number of occupants per household' variable in the regression suggests that for a unit increase in the number of occupants in a household, the probability of increased food insecurity is 4,2% for the likelihood of the household having to increase its food supplementation activity, 4,4% the likelihood of the household engaging in food reduction activities and 4,5% the likelihood of the household not producing sufficient maize to satisfy its household consumption requirement.

Thus the research concludes by accepting the hypothesis on which the study was based, and states that families who have adopted HIV/AIDS orphans will be food insecure when compared with families who have not adopted AIDS orphans due to the 'non-orphan' families having smaller household occupancy and thus household

dependency ratios, as the food supply available to the family would be shared amongst fewer people.

6.2 LIMITATIONS OF THE STUDY

The first flaw noted relates to the bias created in the study when the research team visited schools to obtain pupils who lived in accessible areas, this created not only an 'area bias', but a 'financial bias' too as such households could clearly afford to send their children to school. In view of the fact that this was not the case for many of the 'non-orphan' households interviewed during the previous weeks when the roads had not been flooded, the data collected therefore clearly showed some innate flaws and future research would do well to compare 'orphan' and 'non-orphan' cohorts more similar in nature.

Another possible flaw in this research might relate to the 'vested interests' of the respondents, which may have caused the results shown in chapters four and five to be far more desperate than the true situation. Although clearly informed that the data collection was only going to be used as information for a 'book' about Ingwavuma, respondents might have hoped to receive a form of direct aid and believed that in communicating a desperation of need, (which was later proven false through community discussions, observation and interviews with neighbours), that they would have had greater chances of receiving a 'handout'. At the same time however, our own observations did point to many 'households on the margin,' clearly impoverished, and without many assets or obvious supplies of food. No household refused our search of their homestead and all of them showed us the areas in which their supply of food was stored. The meetings held with members of the community at the school, with the head of the Department of Agriculture and with employees of the Social Welfare Department all expressed extreme concern about the growing numbers of deaths and orphaned children in the community.

At times the analysis has pointed towards contradictory evidence which has not been explored, but which would be important information to understand. For example, the reasons why households wait for the rains to come, rather than to self-irrigate their crops when water sources seem to be relatively close has not been clarified. Another

perplexing issue is why households claim that they do not have enough labour to work in the fields during the planting and harvesting periods even though seventy percent of the abled community are unemployed. Reasons might point to the lack of interest expressed by the youth to engage in crop production, but there might also be many other underlying factors. Once again further research in this area might enable these issues to be clarified.

6.3 FUTURE RESEARCH

The most obvious need for research aimed at improving the livelihood conditions in Ingwavuma would be the development of a food security monitoring system similar to the work undertaken in Mozambique and Botswana. A predictive model that highlights periods when a particularly 'lean harvest' is expected will ensure that the most vulnerable households are cared for. A surveillance system that monitors the epidemiology of illness and death in Ingwavuma, highlighting changes in household dependency ratios would further enhance the ability of organisations to tackle the impacts of the HIV epidemic in the area, and would enable government policy to address the community's most pressing needs.

A second need is for subject specific research that would address the targeting of 'households at risk' which would include those with grandparent household heads and household heads who are HIV positive. This would be of great value, ensuring that these households do not fragment with the death of the main breadwinner or recipient of income. Obviously this would be extremely difficult to do because of the stigma attached to HIV but it would still be a very valuable project.

A third future study that would be valuable is an analysis of the impact of foster care grants on household food security. The study showed that the system of foster care grants had inherent problems but it is also not known what other viable alternatives are available for the care of orphans in a rural community. In many cases the foster care grant did seems to be a life line for those who were destitute, but it is also worth considering whether the situation of home based care and fostering is sustainable in the long term with the general level of HIV and thus potential increase in dependency ratios in the community, and as stated earlier, epidemiological studies would enable a clearer analysis of this.

Fourthly, the study pointed to household's involvement in the informal economy, such as craft-making, small scale animal husbandry, bartering and micro-industries such as 'spaza' shops and building construction. Although many eco-tourism related initiatives have been developed with the formation of the Lebombo Spatial Development Initiative, Ingwavuma has still remained unaffected to a large extent. Further research into the development of the area as a whole and the training and retraining of the untapped labour supply would be of great benefit to the community.

Finally, research into methods to improve the agricultural base in the area, which would develop a motivation for food production skills in the youth and involve Ingwavuma in the greater agricultural sphere of the country would be enormously useful in developing the capacity of the community to provide for itself. This could be complemented with research into farming methods, including infrastructure and irrigation.

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APPENDIX 1

Questionnaire number: _____

STRUCTURAL QUESTIONNAIRE

District: Ingwavuma /_____ Date:_____

Locality:_____ Interviewer:_____

CONSENT:
INTERVIEWER TO INTRODUCE HIMSELF/HERSELF , PROVIDE AN EXPLANATION OF THE QUESTIONNAIRE AND OBTAIN VERBAL CONSENT TO ASK THE QUESTIONS. PREFERABLY ASK THIS OF THE HOUSEHOLD HEAD, IF AVAILABLE: MALE OR FEMALE. ALSO ASK THEM WHETHER THEY HAVE ANY QUESTIONS ABOUT IT THAT THEY WOULD LIKE TO ASK.

AN EXAMPLE:
" Hello, my name is ..... . I am gathering information regarding health and agricultural practises from the Ingwavuma area. I would like to ask you to please take 30 minutes to answer these questions. It is not obligatory for you to talk to me and there is no penalty if you do not want to participate. I will be writing down the answers of the questions on this paper to help me remember what you have said as I will be visiting many households in the area. Are you willing to take the time to answer the questions? Do you have any questions?"

NB NB INTERVIEWER MUST NOT GO THROUGH EACH OPTION WHEN READING THE QUESTIONAIRRE. ONLY READ OUT THE QUESTION AND CROSS THE ANSWER RELEVANT TO THAT OF THE RESPONDENT.

1. HOUSEHOLD CHARACTERISTICS AND RESPONDENT'S DETAILS

1.1 Respondent's gender:

* male	* female

1.2 Who is the head of this household?_____

1.3 Could you please indicate the number of people living in this household, their relationships to you, age, gender and education levels.

Number of people living in the household?_____

Relationship to respondent	gender	age	working status, employed/pension	education level

1.4 Does this household have members living away from home?

* yes	*no

If yes: please fill in the following chart:

Relationship to respondent	gender	age	working status, employed/pension	education level

2. FOOD PRODUCTION FOR HOUSEHOLD CONSUMPTION

2.1 Does this household grow food to eat?

* yes	*no

###If yes, please answer questions 2.2 to 2.19

###If no, please state why._____

_____

###and start section 3.

2.2 What are the four main foods that you eat during the following months, please take into account animal foods as well.

	food 1	food 2	food 3	food 4
January to April				
May to August				
Septem to Decem				

2.3 Cite, in descending order of importance, the five foods that your family grow to eat. Estimate what quantities of each food makes up your meals.

+++ ---------- - - -

food 1	food 2	food 3	food 4	food 5
name:	name:	name:	name:	name:
* <50%	* <50%	* <50%	* <50%	* <50%
*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%
* >96%	* >96%	* >96%	* >96%	* >96%

2.4 For the top four foods above, please tell us the planting months, harvesting months and the amount that you produce, eat and sell.

	food 1	food 2	food 3	food 4
name:				
planting months:				
harvesting months:				
quantity produced:				
amount eaten:				
months eaten:				
quantity sold:				

2.5 Do you consider that in general, (over the years) the rain you have for your harvest is :

*insufficient	*sufficient	*excess

2.6 If insufficient, can you supplement this rain with water that you fetch.

* yes	*no

Where does your household get its water from?_____

2.7 How far away is the source?

* short	* medium	* far

2.8 Have there been any pests, plagues or diseases that have damaged those five food crops?

* yes	*no

###If yes, please answer following questions 2.9 to 2.11. If no, move to question 2.12.

2.9 What are these pests or diseases? When did the damage happen?

food 1:	
food 2:	
food 3:	
food 4:	
food 5:	

2.10 Estimate the amount of damage caused by the pests, plagues or diseases that damaged any of those five food crops?

food 1	food 2	food 3	food 4	food 5
name:	name:	name:	name:	name:
* <50%	* <50%	* <50%	* <50%	* <50%
*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%
* >96%	* >96%	* >96%	* >96%	* >96%

2.11 Does this type of damage normally occur:

*every harvest	* once a year	* sometimes	* normally never

2.12 Does this household store the food that it grows.

* yes	*no

###If yes, please answer the questions 2.13 and 2.14. If no, move to question 2.15.

2.13 How does this household store the food that was planted?

food 1:	
food 2:	
food 3:	
food 4:	
food 5:	

2.14 How much of the food is lost during storage?

food 1	food 2	food 3	food 4	food 5
name:	name:	name:	name:	name:
* <50%	* <50%	* <50%	* <50%	* <50%
*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%
* >96%	* >96%	* >96%	* >96%	* >96%

2.15 What are the difficulties that this household encounters in the production of enough food for all the household members ?

1 *
2 *
3 *

2.16 Where do you get the seeds for these crops?_____

2.17 If you had more seed for planting, would this change the amount of food that you plant?

* yes	*no

Why?_____

2.18 What tools do you use for your farming? Where do you get them from?_____
_____

2.19 Is a lack of tools a problem for you?

* yes	*no

3. PRODUCTION OF CASH CROPS / FOOD GROWN FOR SALE ONLY

3.1 Does this household grow food for that is for selling only?
(... different to the crops mentioned in question 2?)

* yes	*no

###If yes, please answer questions 3.2 to 3.6.
###If no, please state why._____
_____
and move to Section 4.

3.2 Cite, in order of importance, the crops/ fruits that are grown for income only. Estimate their importance as a percentage of the income that is received.

+++ ---------- - - -

cash crop 1	cash crop 2	cash crop 3	cash crop 4	cash crop 5
name:	name:	name:	name:	name:
* <50%	* <50%	* <50%	* <50%	* <50%
*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%	*51 - 95%
* >96%	* >96%	* >96%	* >96%	* >96%

3.3 For the top four foods above, please tell us the planting months, harvesting months and the amount that you produce and sell.

CASH CROPS:	cash crop 1	cash crop 2	cash crop 3	cash crop 4
name:				
planting months:				
harvesting months:				
quantity produced:				
PESTS:				
q,tity lost to pests/diseases				
types of pests/diseases				
time of pests/diseases				
how common are they?				
STORAGE:				
storage method				
q.tity lost in storage				
SALES:				
quantity sold:				
where sold?				
when sold?				

3.4 What are the difficulties that this household encounters in the production of these cash crops?

1 *
2 *
3 *

3.5 Where do you get the seed from for these crops?_____

3.6 If you had more seed for planting, would this change the amount of these foods that you plant?

* yes	*no

Why?_____

4. ANIMALS.

4.1 Do you own any animals?

* yes	*no

If yes, please fill in the table below.
If no, please state why?_____
_____
###and move to Section 5.

4.2 TABLE:

LIVESTOCK NAMES:	number owned presently	number sold this year	number eaten this year	number bought this year
cattle				
sheep/ goats				
chickens				
pigs				
ducks				
other				
other				

4.3 Have any animals been sick or died in the last year?

* yes	*no

If yes, How many_____

4.4 What was the reason for their illness?_____

5. MONETARY INCOME

5.1 Which of the following are income-earning or food supplementing activities of this household? Please add in any others not mentioned.

WORK TYPE	MORE DETAILS	MONTHS OF CONSUMPTION COVERED BY THIS ACTIVITY
work for income		
pension		
remittances		
crafts for sale		
trade		
fishing		
hunting		
small business		
sale of firewood		
collection of wild foods		
fruit trees/ home grown		
other		
other		
other		

6. FOOD INSECURITY PERIODS

6.1 If you had a crop failure, would you be able to do more of the above activities to supplement the food requirements of your household?

* yes	*no

6.2 If yes, how for how many months would this work sustain your food requirements?

*none	*one month	*a few months(3)	* 6 months	*12 months

6.3 In which months of the year is it important to supplement your grown food? ie.. (When your grown food is finished)_____

_____

6.4 Can you do these food supplementing activities in those months?

* yes	*no

Explain?_____

6.5 When your household food supply is low or finished, what actions do you take?
(tick appropriate)

	details	details
reduce number of meals eaten a day		
some members eat fewer meals		
eat only basic foods		
collect wild fruits or roots		
look for work/ earn money		
borrow from neighbours/family		
sell livestock or household items		
go to a relief organisation		
other		
other		
other		

6.6 If you were able to find markets to sell the normal food that you plant and eat, would you think it a good idea to sell it?

* yes	*no

Explain?_____

6.7 Do you think that there would be other types of foods that would sell better?

* yes	*no

Explain?_____

7. ASSETS OWNED BY THE HOUSEHOLD

7.1 Does this household own any of the following assets?

ASSETS	number owned
radio	
television	
stove	
fridge	
car	
watch	
jewelry	
bed	
sofa	
bicycle	
car	
table and chairs	

7.2 Do you have an account with, belong to or have a loan with a :

burial club	* yes	*no
savings club	* yes	*no
stokvel	* yes	*no
bank	* yes	*no
microlender	* yes	*no

8. EXPENSES OF THE HOUSEHOLD

8.1 What expenses does this household have to pay?
Choose from the table below.
Answer as is easiest for the respondent: yearly / monthly or daily

	amount per year	amount per month	amount daily
food			
transport			
soap			
salt			
fuel: wood, coal,kerosine			
cigarettes			
alcohol			
school fees			
medication/ traditional healer			
household items			
clothing			
furniture			
other			
other			

9. ILLNESS

9.1 Has anyone in this household suffered illness in the past month?

* yes	*no

If yes, please fill in the next table.

9.2 TABLE:

age of person	type of illness	treatment hospital/ healer	medications taken	cost of treatment

9.3 Has any household member who was living elsewhere come home ill?

* yes	*no

9.4 How many?_____

9.5 Has any household member died in the last year?

* yes	*no

9.6 Relationship with the respondent?_____

APPENDIX 2:

Inhlolovo yesingaki: _____

STRUCTURAL QUESTIONNAIRE

Isifunda: Ingwavuma /_____ Usuku:_____

Indawo:_____ Umbuzi:_____

IMVUME:
UMBUZI KUMELE AZETHULE, ANIKEZE INCAZELO NGENHLOLOVO, ACELE IMVUME NGOMLOMO YOKUBUZA IMIBUZO.KUNGANGCONO ACELE ENHLOKWENI YEKHAYA UMA EKHONA OWESILISA NOMA OWESIFAZANE. UPHINDE UBABUZE UKUTI BANAYO YINI IMIBUZO NGALENHLOLOVO ABA NGATHANDA UKUYIBUZA

ISIBONELO:
" Sanibona, Igama lami ngingu..... Ngiqokelela ulwazi mayelana nenqubo yezempilo nezolimo zasendaweni yase Ngwavuma. Bengithanda ukucela ukuba uthathe imizuzu Engamashumi amathathu uphendula le mibuzo. Awuphoqelekanga ukukhuluma nami futhi akukho nhlawulo uma ungathandi ukuzibandakanya. Ngizobhala phansi izimpendulo zemibuzo kuleliphepha ukungisiza ngikhumbule okushiwo njengoba ngizobe ngihambela imizi eminingi kulendawo.
Ungakwazi ukuthatha isikhathi uphendula imibuzo, ngabe unakho ofisa ukukabuza.

KUBALULEKILE UKUTHI UFUNDE KAPHELA IMIBUZO EQONDENE NALOWO OBUZWAYO BESE UBEKA UPHAWU MAQONDANA NEMPENDULO.

1. IZIMPAWU ZEKHAYA NEMININGWANE NGALOWO OBUZWAYO

1.1 ubulili balowo obuzwayoi:

* owesilisa	* owesifazane

1.2 ubani inhloko yalelikhaya?_____

1.3 Linganisa isibalo sabantu abahlala kulelikhaya, nihlobene kanjani, iminyaka, ubulili namazinga emfundo.

Inani labantu abahlala kulelikhaya?_____

ubuhlobo	ubulili	iminyaka yobudala	usebenzaphi	izinga lemfundo

1.4 Akhona yini amalungu alelikhaya ahlala kude nekhaya?

* yebo	*cha

Uma ekhona: gcwalisa lelishadi elilandelayo

ubuhlobo	ubulili	iminyaka yobudala	usebenzaphi	izinga lemfundo

2. UKUKHIQIZWA KOKUDLA KWEKHAYA

2.1 Kutshaliwe ukudla kulelikhaya na?

* yebo	*cha

###uma kunjalo, ucelwa uphendule imibuzo 2.2 kuya ku 2.19

###uma kungenjalo, ucelwa uchaze ukuthi kungani. _____

_____

bese uqala ingxenye 3.

2.2 Yiziphi izinhlobo ezine zokudla enikudlayo ngalezizi khathi zonyaka ezilandelayo, ucelwa ufake nokudla okuyinyama ngokunjalo

	ukudla 1	ukudla 2	ukudla 3	ukudla 4
January to April				
May to August				
Septem to Decem				

2.3 Khombisa kuya ngokubaluleka kusuka kokuningi kuyakokucane ukudla okuhlanu okutshalwa umndeni wakho.Yenza isilinganiso sokudla ngakunye okwenza isidlo senu.

+++ ---------- - - -

ukudla 1	ukudla 2	ukudla 3	ukudla 4	ukudla 5
igama:	igama:	igama:	igama:	igama:
isigamu	isigamu	isigamu	isigamu	isigamu
ngaphezu kwesigamu	---	ngaphezu kwesigamu	ngaphezu kwesigamu	ngaphezu kwesigamu
cishe konke	cishe konke	cishe konke	cishe konke	cishe konke

2.4 Ekudleni okungenhla okune kokuqala yisho izikhathi, zokulima, zokuvuna kanye namanani akhiqizwayo, okudliwayo nawo kudayiswa.

	ukudla 1	ukudla 2	ukudla 3	ukudla 4
igama:				
izinyanga zokutshala:				
izinyanga zokuvuna:				
amanani omkhiqizo:				
amanani okudliwa:				
izinyanga zokudla:				
amanani adayiswayo:				

2.5 Ngokubona kwakho eminyakeni edlule imvula injani esivunweni sakho:

*ayanele	*yanele	*yedlulele

2.6 Uma inganele, uyakwazi ukwenezezela ngamanzi akhiwayo na.

* yebo	*cha

Liwatholaphi amanzi ikhaya lakho?_____

2.7 Kukude kangakanani?

* eduze	* buqamama	* kude

2.8 Kuke kwabakhona izinambuzane noma izifo ezihlasele ukudla okutshalayo lokhu okuhlanu okubaliwe?

* yebo	*cha

Uma kunjalo, ucelwa uphendule imibuzo 2.9 kuya ku 2.11. Uma kungenjalo dlulela kumbuzo 2.12.

2.9 Yiziphi lezinambuzane nezifo na? Wenzakala nini lomonakalo?

ukudla 1	
ukudla 2	
ukudla 3	
ukudla 4	
ukudla 5	

2.10 Linganisa amanani omonakalo odalwe kulezizilimo ezinhlanu ezibaliwe?

ukudla 1	ukudla 2	ukudla 3	ukudla 4	ukudla 5
igama:	igama:	igama:	igama:	igama:
isigamu	isigamu	isigamu	isigamu	isigamu
ngaphezu kwesigamu ---		ngaphezu kwesiga	ngaphezu kwesigamu	ngaphezu kwesigamu
cishe konke	cishe konke	cishe konke	cishe konke	cishe konke

2.11 Loluhlobo lomonakalo lujwayele ukwenzeka na:

*zonke izivuno	* kanye ngonyaka	* qabukela	* akujwayelekile

2.12 Lelikhaya liyazigcinela ukudla okulinywayo na.

* yebo	*cha

###Uma kunjalo, ucelwa uphendule imibuzo 2.13 no 2.14.Uma kungenjalo dlulela kumbuzo 2.15.

2.13 Likugcina kanjani ukudla ebekutshaliwe lelikhaya na?

ukudla 1	
ukudla 2	
ukudla 3	
ukudla 4	
ukudla 5	

2.14 Kungakanani ukudla okonakalayo ngesikhathi kubekiwe?

ukudla 1	ukudla 2	ukudla 3	ukudla 4	ukudla 5
igama:	igama:	igama:	igama:	igama:
isigamu	isigamu	isigamu	isigamu	isigamu
ngaphezu kwesigamu ---		ngaphezu kwesiga	ngaphezu kwesigamu	ngaphezu kwesigamu
cishe konke	cishe konke	cishe konke	cishe konke	cishe konke

2.15 Iziphi izingqinamba enihlangabezana nazo ekukhiqizeni ukudla okwanele amalungu onke ekhaya ?

1 *
2 *
3 *

2.16 Niyitholaphi imbewu yalezitshalo na?_____

2.17 Uma ningaba nembewu eneziwe, ningawashintsha na amanani okudla enikutshalayo?

* yebo	*cha

Kungani?_____

2.18 Nisebenzisa maphi amathuluzi okulima? Ngabe lamathuluzi?_____

_____

2.19 Ngabe ikhona yini inkinga yokuntuleka kwamathuluzi ?

* yebo	*cha

3. UKUKHIQIZWA KOKUDLA KOKUDAYISWA

3.1 Lelikhaya liyakutshana na ukudla kokudayiswa kuphela?
(... okuhlukile kulokhu okubalwe embuzweni 2 ?)

* yebo	*cha

###Uma kunjalo, ucelwa uphendule imibuzo 3.2 no 3.6.
###uma kungenjalo, ucelwa uchaze ukhuti kungani. _____
_____
bese uqala ingxenye 4.

3.2 Khombisa ngamazinga okubaluleka, izitshalo noma izithelo ezitshalelwa imali kuphela. Linganisa ukubaluleka kwazo ngengxenye yemali etholwayo.

+++ ---------- - - -

ukudla kokudayiswa 1	ukudla kokudayiswa 2	ukudla kokudayiswa 3	ukudla kokudayiswa 4	ukudla kokudayiswa 5
igama:	igama:	igama:	igama:	igama:
isigamu	isigamu	isigamu	isigamu	isigamu
ngaphezu kwesingamu ---		ngaphezu kwesingam	ngaphezu kwesingamu	ngaphezu kwesingamu
cishe konke	cishe konke	cishe konke	cishe konke	cishe konke

3.3 Ekudleni okune kokuqala ngenhla, ucelwa ukuba usitshele izinyanga okulinywa ngazo, okuvunwa ngazo amanani akhiqizwayo nadayiswayo.

UKUDLA KOKUDAYISWA:	ukudla kokudayiswa 1	ukudla kokudayiswa 2	ukudla kokudayiswa 3	ukudla kokudayiswa 4
ingama:				
izinyanga zokutshala				
izinyanga zokuvuna				
amanani omkhiqizo				
IZINAMBUZANE:				
amanani alokho okudliwa yizinambu zane nokufayo				
izinhlobo zezinambuzane nezifo				
isikhathi sezinambuzane nezifo				
zivame kangakanani				
INDAWO YOKUBEKA				
indlela yokubeka				
amanani alahleka ekugcinweni				
UKUDAYIDA				
amanani adayiswayo				
indawo yokudayisa				
isikhathi sokudayisa				

3.4 Yiziphi izinkinga enihlangabezana nazo ekukhiqizeni izitshalo enizidayisayo?

1 *
2 *
3 *

3.5 Niyitholaphi imbewu yalezitshalo na?_____

3.6 Uma ningaba nembewu eneziwe, ningawashintsha na amanani okudla enikutshalayo?

* yebo	*cha

Kungani?_____

4. IZILWANE.

4.1 ninayo imfuyo na?

* yebo	*cha

###Uma kunjalo, ucelwa uphendule imibuzo 4.2 no 4.4.
###uma kungenjalo, ucelwa uchaze ukuthi kungani. _____
_____
bese uqala ingxenye 5.

4.2 TABLE:

IGAMA LESILWANE	isibalo eninaso manje	amanani adayisiwe kulonyaka	amanani adliwe kulonyaka	amanani athengiwe
izinkomo				
izimvu / nezimbuzi				
izinkukhu				
izingulube				
amadada				
ezinye				
ezinye				

4.3 Zikhona izilwane ezigulile noma ezifile kolonyaka odlule?

* yebo	*cha

Uma zikhona zingaki _____

4.4 Kwakuyini isizathu sokugula kwazo?_____

5. INGENISO YEMALI

5.1 Yiziphi kwezilandelayo izindlela zokwenza imali noma ukwenezelela ukudla eniziseben: (Ungengeza nokunye okungabalwanga.)

SEBENZA	EMINYE IMININGWANE	UKUDLA KWEZINYANGA EZINGAKI NGALENDLELA
ukusebenzela imali		
impesheni		
umholo inkokhelo		
ukudayisa imisebenzi yezandla		
uhwebo		
ukudoba		
ukuzingela		
ibhizinisi elincane		
ukudayisa izinkuni		
ukukha izithelo zasendle		
izithelo ezitshalwe ekhaya		
okunye		
okunye		
okunye		

6. ISIKHATI SOKWESWELEKA KOKUDLA

6.1 Uma izitshalo zingamilanga, uyakwazi ukwenza ezinye zalemisebenzi ezingenhla ukuze wenezezele ukudla emadenini?

* yebo	*cha

6.2 Uma kunjalo, lolohlobo lomsebenzi luzigcina izinyanga ezingakanani izidingo zenu zokudla?

*azizigcini	*eyodwa	*ezimbalwa(3)	* 6 eziyisithupha	*12 unyaka

6.3 Eziphi kulezinyanga zonyaka okubaluleke ngazo ukwenezezela ekudleni okutshalwayo? (okusho ukuthi ukudla okutshaliwe kuyaphela)_____

_____

6.4 Uyakwazi ukusebenzisa lezindlela zokwengeza ukudla ngalezozinyanga?

* yebo	*cha

Chaza?_____

6.5 Uma ukudla sekukuncane noma kuphela yiyiphi mizamo eniyithathayo?
(khetha okuyikho)

	landa ngemininingwane	
nciphisa izikhati zokudla ngosuku		
amanye amalunga adla kambalwa		
yidla ukudla okuthile kuphela		
qukelela izithelo zemvelo nezimpande		
funa umsebenzi ongenisa imali		
boleka komakhelwane nomndeni		
dayisa imfuyo nezinto zasendlini		
uya enhlanganweni esizayo		
okunye		
okunye		
okunye		

6.6 Uma ningathola indlela yokudayisa ukudla okujwaayelekile enikutshalayo nenikudlayo ningabona kuyicebo elihle ukukudayisa na?

* yebo	*cha

Chaza?_____

6.7 Ngokubona kwakho ngabe zikhona ezinye izinhlobo zokudla ezingadayisa kangcono na

* yebo	*cha

Chaza?_____

7. IZIMPHLA ZASEKHAYA

7.1 Ngabe lapha ekhaya ninakho lokhu na?

ASSETS	bangaki
umsakazo	
umabonakude	
isitofu	
ifriji	
imoto	
iwashi	
ubucwebe	
umbhede	
usofa	
ibhayisekili	
itafula nezitulo	

7.2 Ngabe uyimemba yalezinhlangano ezilandelayo?

umasingcwabisane		* yebo	*cha
inhlangano yokonga	imali	* yebo	*cha
stokfela		* yebo	*cha
bhange		* yebo	*cha
imali ebolekwa nge	zalo	* yebo	*cha

8. IZINDLEKO ZEKHAYA

8.1 Yiziphi izindleko ezikhokhelwa I lelikhaya?
Khetha ethebulini elingezansi.
Okuphenduleka kalula kumphenduli: ngonyaka / ngenyanga noma ngosuku.

	amanani ngoyaka	amanani ngenyanga	amanani ngosuku
ukudla			
izinto zokuthutha			
insipho			
sawoti			
izinto zokubasa			
ugwayi			
utshwala			
imali yesikole			
imithi/ ukwelashwa			
izinto zasendlini			
izingubo zokugqoka			
impahla yasendlini			
okunye			
okunye			

9. UKUNGULA

9.1 Kukhona oseke wagula kulelikhaya kulenyanga edlule?

* yebo	*cha

Uma kunjalo, uyacelwa ukuthi ugcwalise i thebula elingezansi

9.2 TABLE:

iminyaka yomuntu	isifo	ukwelashwa esibhedlela/inyanga	umuthi owaphuzwa	kwabiza malini ukumelapha

9.3 Ukhona kumalungu akulelikhaya owayehlala kwenye indawo owabuya ekhaya egula?

* yebo	*cha

9.4 Bangaki?_____

9.5 Kukhona owashona kulonyaka odlule kumalungu akulelikhaya?

* yebo	*cha

9.6 Uhlobene kanjani nomphenduli?_____

APPENDIX 3

Photo number:_____ Questionairre number_____

OBSERVATION QUESTIONNAIRE

1. ACCESSIBILITY OF THE HOMESTEAD:
- normal, no problems
- temporary problems of rain
- difficult, 4x4 needed

2. CLOSENESS TO THE ROAD:
- near
- medium
- far

3. CLOSENESS TO A WATER SOURCE:
- near
- medium
- far

4. AGE OF THE RESPONDENT:
- 10 --- 20
- 21 --- 30
- 31 --- 40
- 41--- 50
- 51 --- 60
- > 61

5. HOUSING:
- mud with thatched roof
- mud and plaster
- mud and brick / cement
- cement walls with tin roof
- other poorer
- other wealthier

6. ASSETS:

ITEM:	YES	NO
radio		
bicycle		
wooden door		
bed / cushion / sofa		
watch		
table and chairs		
fridge		
stove		
car		
television		
telephone		
farming tools		
animals in area		

7. ELECTRICITY: yes no

8. COOKING SOURCE:_____

9. COOKING IMPLEMENTS:_____

10. HOUSEHOLD ITEMS OF NOTE: **eg bedding arrangements etc**_____

_____

11. FOOD IN STORAGE: yes no

_____

12. PLOT: number of plots:_____

near

medium

far

PLOT	LENGTH	WIDTH	PRESENT STATE OF HARVEST
1			
2			
3			

APPENDIX 4

CODING FOR QUESTIONAIRRE

1.1 Respondent's gender:

Variable name Gender/ Resp.1.1
Coding male=1
female=2

1.2 Who is the head of this household?

Variable name Head of hsehold.1.2
Coding Father=1
Mother=2
Grandfather=3
Grandmother=4
Uncle=5
ETC=6

1.3 Could you please indicate the number of people living in this household, their relationships to you, age, gender and education levels?

Variable name No. Hsehold Occupancy.1.3
Coding Just type in the number

Variable name Relation/Resp.1.3 (Means relationship to respondent with ref: to question 1.3)
Coding Father=1
Mother=2
Grandfather=3
Grandmother=4
Uncle=5
ETC=6

Variable name Gender
Coding male=1
female=2

Variable name working status
Coding employed=1
pension=2

Variable name education level
Coding Primary=1
Secondary=2
University=3
None=4
ETC=5

1.4 Does this household have members living away from home?

Variable name	Members Away	(Means members away from home)
Coding	Yes=1	
	No=2	

Variable name	Relation/Resp.1.4	(Means relationship to respondent with ref: to question 1.4)
Coding	Father=1	
	Mother=2	
	Grandfather=3	
	Grandmother=4	
	Uncle=5	
	ETC=6	
	No response=7	(Takes care of people who have answer No to question 1.4)

Variable name	Gender.1.4	(Means Gender with reference to question 1.4)
Coding	male=1	
	female =2	
	No response=7	(This takes care of people who have answer No to quest 1.4)

Variable name	Age1.4	(Means Age with reference to question 1.4)
Coding	Just type in the Age	
	No response=7	(This takes care of people who have answer No to quest 1.4)

Variable name	working status1.4	(Means working status with reference to question 1.4)
Coding	employed=1	
	pension=2	
	No response=7	(This takes care of people who have answer No to quest 1.4)

Variable name	education level 1.4	
Coding	Primary=1	
	Secondary=2	
	University=3	
	None=4	
	Etc=5	
	No response=7	(This takes care of people who have answer No to quest 1.4)

2.1 Does this household grow food to eat?

Variable name	grow food.2.1
Coding	Yes=1
	No=2

2.2 What are the four main foods that you eat?

Variable name	food eaten/grown	(Means main foods grown or eaten for family consumption)
Coding	Maize=1	
	Monkey nuts=2	
	Beans=3	
	Pumpkins=4	
	Spinach=5	
	meat=6	
	chicken=8	
	other=9	
	No response=7	(This takes care of people who have answer No to quest 2.1)

2.3 Cite, in descending order of importance, the five food groups that your family grow to eat. Estimate what quantities of each food makes up your meals.

Variable name	food type eaten	
Coding	Maize=1	
	Monkey nuts=2	
	Beans=3	
	Pumpkins=4	
	Spinach=5	
	meat=6	
	chicken=8	
	other=9	
	No response=7	(This takes care of people who have answer No to quest 2.1)

Variable name	food eaten: amount	
Coding	less than half=1	
	half=2	
	almost all=3	

2.4 For the top four foods above, please tell us the planting months, harvesting months, and the amount of food that you produce, eat and sell.

Variable name	food name	
Coding	Maize=1	
	Monkey nuts=2	
	Beans=3	
	Pumpkins=4	
	Spinach=5	
	ETC=8	
	No response=7	(This takes care of people who have answer No to quest 2.1)

Variable name	planting months	
Coding	September to December=1	
	January to March=2	
	April to June =3	
	July to August=4	
	No response=7	

Variable name harvesting months
Coding September to December=1
January to March=2
April to June =3
July to August=4
No response=7

Variable name quantity produced
Coding Just type in the kilogram conversion
No response=7 (This takes care of people who do not know)

Variable name amount eaten
Coding Just type in the kilogram conversion
No response=7 (This takes care of people who do not know)

Variable name months eaten
Coding September to December=1
January to March=2
April to June =3
July to August=4
No response=7

Variable name quantity sold
Coding Just type in the kilogram conversion
No response=7 (This takes care of people who do not know)

2.5 Do you consider that in general, (over the years) the rain you have for your harvest is:

Variable name rain sufficiency
Coding insufficient=1
sufficient=2
excess=3

2.6 If insufficient, can you supplement this rain with water that you fetch.

Variable name rain supplement
Coding yes=1
no=2
no response=7 (This takes care of people who answered sufficient or excess in Q 2.5)

2.7 How far away is this household's water source?

Variable name distance water source
Coding short=1
medium=2
far=3

2.8 Have there been any pests, plagues or diseases that have damaged your crops?

Variable name pest problems
Coding yes=1
no=2

2.9 What are these pests or diseases?

Variable name pest names
Coding cutworm=1
beetles/ aphids?=2
moles=3
food rotting=4
other=5
No response=7 (Takes care of people who have answer No to question 2.8)

2.10 Estimate the amount of damage caused by the pests, plagues or diseases that damaged those five food crops.

Variable name pest names
Coding cutworm=1
beetles/ aphids?=2
moles=3
food rotting=4
other=5
No response=7 (Takes care of people who have answer No to question 2.8)

Variable name pest damage: amount
Coding less than half=1
half=2
almost all=3
No response=7 (Takes care of people who have answer No to question 2.8)

2.11 Does this type of damage normally occur:

Variable name pest damage: frequency
Coding every harvest=1
once a year=2
sometimes=3
normally never=4
No response=7 (Takes care of people who have answer No to question 2.8)

2.12 Does this household store the food that it grows?

Variable name storage decision
Coding yes=1
no=2

2.13 How does this household store the food that was planted?

Variable name storage place
Coding raised huts=1
hut roof=2
room=3
tanks=4
buckets=5
No response=7 (Takes care of people who have answer No to question 2.12)

2.14 How much of the food is lost during storage?

Variable name food eaten/grown
Coding Maize=1
Monkey nuts=2
Beans=3
Pumpkins=4
Spinach=5
ETC=8
No response=7 (Takes care of people who have answer No to question 2.12)

Variable name quantity lost/storage
Coding less than half=1
half=2
almost all=3
No response=7 (Takes care of people who have answer No to question 2.12)

2.16 Where do you get the seeds for these crops?

Variable name seed supply
Coding left over from previous year=1
shop=2
neighbours=3
ETC=4
No response=7 (Takes care of people who have answer No to question 2.12)

2.17 If you had more seed for planting, would this change the amount of food that you would plant?

Variable name planting/seed
Coding yes=1
no=2

2.19 Is lack of tools a problem for you?

Variable name tools/lack
Coding yes=1
no=2

3.1 Does this household grow food that is for selling only?

Variable name	cash crops
Coding	yes=1
	no=2

3.2 Cite, in descending order of importance, the crops that are grown for income only. Estimate their importance as a percentage of the income that is received.

Variable name	food type eaten	
Coding	Maize=1	
	Monkey nuts=2	
	Beans=3	
	Pumpkins=4	
	Spinach=5	
	no response=7	(Takes care of people who have answer No to question 3.1)
	ETC=8	

Variable name	food eaten: amount	
Coding	less than half=1	
	half=2	
	almost all=3	
	no response=7	(Takes care of people who have answer No to question 3.1)

3.3 For the top four foods above, please tell us the planting months, harvesting months, and the amount of food that you produce sell.

Variable name	food name	
Coding	Maize=1	
	Monkey nuts=2	
	Beans=3	
	Pumpkins=4	
	Spinach=5	
	ETC=8	
	no response=7	(Takes care of people who have answer No to question 3.1)

Variable name	planting months	
Coding	September to December=1	
	January to March=2	
	April to June =3	
	July to August=4	
	no response=7	(Takes care of people who have answer No to question 3.1)

Variable name	harvesting months	
Coding	September to December=1	
	January to March=2	
	April to June =3	
	July to August=4	
	No response=7	(Takes care of people who have answer No to question 3.1)

Variable name quantity produced
Coding Just type in the kilogram conversion
No response=7 (Takes care of people who have answer No to question 3.1)

Variable name pest damage: amount
Coding less than half=1
half=2
almost all=3
No response=7 (Takes care of people who have answer No to question 3.1)

Variable name pest names
Coding cutworm=1
beetles/ aphids?=2
moles=3
food rotting=4
other=5
No response=7 (Takes care of people who have answer No to question 3.1)

Variable name storage method
Coding raised huts=1
hut roof=2
room=3
tanks=4
buckets=5
No response=7 (Takes care of people who have answer No to question 2.12)

Variable name quantity lost/storage
Coding less than half=1
half=2
almost all=3
No response=7 (Takes care of people who have answer No to question 2.12)

Variable name quantity sold
Coding Just type in the kilogram conversion
No response=7 (Takes care of people who have answer No to question 3.1)

Variable name place sold
Coding local market=1
neighbours=2
other=3
No response=7 (Takes care of people who have answer No to question 3.1)

3.5 Where do you get the seeds for these crops?

Variable name seed supply/cash crops
Coding left over from previous year=1
shop=2
neighbours=3
ETC=4
No response=7 (Takes care of people who have answer No to question 3.1)

3.6 If you had more seed for planting, would this change the amount of food that you would plant?

Variable name planting/seed/cc
Coding yes=1
no=2
No response=7 (Takes care of people who have answer No to question 3.1)

4.1 Do you own any animals?

Variable name animals owned
Coding yes=1
no=2

4.2 Table:

Variable name Animal names
Coding cattle=1
sheep/goats=2
chickens=3
pigs=4
ducks=5
etc=6
etc=8
No response=7 (Takes care of people who have answer No to question 4.1)

Variable name number owned presently
Coding Just type in the number
No response=7 (Takes care of people who have answer No to question 4.1)

Variable name number sold this year
Coding Just type in the number
No response=7 (Takes care of people who have answer No to question 4.1)

Variable name number eaten this year
Coding Just type in the number
No response=7 (Takes care of people who have answer No to question 4.1)

Variable name number bought this year
Coding Just type in the number
No response=7 (Takes care of people who have answer No to question 4.1)

4.3 Have any animals been sick or died in the last year?

Variable name animals owned
Coding yes=1
no=2
No response=7 (Takes care of people who have answer No to question 4.1)

5.1 Which of the following are income-earning or food supplementing activities of this household?

Variable name income activities
Coding work for income=1
pension=2
remittances=3
crafts for sale=4
trade=5
fishing=6
hunting=8
small business=9
sale of firewood=10
collection of wild foods=11
fruit trees/ home grown=12
other=13
other=14
No response=7 (Takes care of people who have answer None to question 5.1)

Variable name months income covered
Coding September to December=1
January to March=2
April to June =3
July to August=4
No response=7 (Takes care of people who have answer None to question 5.1)

6.1 If you had a crop failure, would you be able to do more of the above activities to supplement the food requirements of your household?

Variable name income intensification
Coding yes=1
no=2

6.2 For how many months would this work sustain your food requirements?

Variable name months intensification
Coding none=1
one month=2
3 months =3
6 months=4
12 months=5
No response=7 (Takes care of people who have answer No to question 6.1)

6.3 In which months of the year is it important to supplement your grown food?

Variable name food supplement months
Coding September to December=1
January to March=2
April to June =3
July to August=4
No response=7 (Takes care of people who have answer No to question 6.1)

6.4 Can you do these food supplementing activities in those months?

Variable name food supplement possibility
Coding yes=1
no=2
No response=7 (Takes care of people who have answer No to question 6.1)

6.5 When your household food supply is low or finished, what actions do you take?

Variable name income activities
Coding reduce number of meals eaten a day=1
some members eat fewer meals=2
eat only basic foods=3
collect wild fruits or roots=4
look for work/ earn money=5
borrow from neighbours/family=6
sell livestock or household items=8
go to a relief organisation=9
other=10
other=11
other=12
No response=7 (Takes care of people who have answer No to question 6.1)

6.6 If you were able to find markets to sell the normal food that you plant and eat, would you think it a good idea to sell it?

Variable name markets for cc
Coding yes=1
no=2

6.7 Do you think that there would be other types of foods that would sell better?

Variable name	cash crop variety
Coding	yes=1
	no=2

7.1 Does this household own any of the following assets?

Variable name	household assets
Coding	radio=1
	television=2
	stove=3
	fridge=4
	car=5
	watch=6
	jewelry=7
	bed=8
	sofa=9
	bicycle=10
	car=11
	table and chairs=12
	none=7

Variable name	asset number owned
Coding	Just type in the number

7.2 Do you have an account with, belong to or have a loan with a :

Variable name	loan accounts
Coding	burial club=1
	savings club=2
	stokvel=3
	bank=4
	microlender=5
	none=7

8.1 What expenses does this household have to pay?

Variable name	household expenses
Coding	food=1
	transport=2
	soap=3
	salt=4
	fuel: wood, coal,kerosine=5
	cigarettes=6
	alcohol=8
	school fees=9
	medication/ traditional healer=10
	household items=11
	clothing=12
	furniture=13
	other=14
	other=15
	none=7

Variable name amount per month
Coding Just type in the number
No response=7 (Takes care of people who have answer None to question 8.1)

9.1 Has anyone in this household suffered illness in the past month?

Variable name illness
Coding yes=1
no=2

9.2 Table:

Variable name Age (Means Age with reference to question 9.1)
Coding Just type in the Age
No response=7 (This takes care of people who have answer No to quest 9.1)

Variable name treatment
Coding hospital=1
healer=2
home=3
other=4
No response=7 (This takes care of people who have answer No to quest 9.1)

Variable name cost of treatment
Coding Just type in the Amount
No response=7 (This takes care of people who have answer No to quest 9.1)

9.3 Has any household member who was living elsewhere come home ill?

Variable name illness from far
Coding yes=1
no=2

9.4 How many?

Variable name no.sick from afar
Coding Just type in the number
No response=7 (This takes care of people who have answer No to quest 9.3)

9.5 Has any household member died in the last year?

Variable name death
Coding yes=1
no=2

9.6 Relationship with the respondent?

Variable name	dead relative/resp	
Coding	Father=1	
	Mother=2	
	Grandfather=3	
	Grandmother=4	
	Uncle=5	
	ETC=6	
	No response=7	(This takes care of people who have answer No to quest 9.5)

APPENDIX 5:

MINUTES OF MEETING HELD AT ST PHILLIPS PRIMARY SCHOOL NDUMU
NOVEMBER 12 2001

1. ATTENDANCE REGISTER

NAME	TITLE/SCHOOL/DEPT	CONTACT DETAILS
Beni Williams	Mosvold Hospital/ Ingwavuma	035 5910133
Liz Schroeder	University of Natal/ Pietermaritzburg	liz@surelink.co.za
Des Morgan	Pietermaritzburg / Church Network	033-3460470
Armon Gumede	Thelamama Primary School	072 1747 792
Johnson Gwala	Ingwavuma Orphan Care	072 2424 782 / 035-5910122
MZ Tembe	Ndumo Development Committee	082 4307 126
Delani P Mabika	Councillor DC 27	082 3457 951
J J Mthethwa	Mthanthi School	082 2511 946
Gugu Dubazana	Social Welfare Ingwavuma	072 3416 949
Agatha Ndlazi	Makhana Primary School	082 5032 473
N P Gumede	St Phillips Primary	035 5910157
N D Mthembu	St Phillips Primary	035 5910157
Cammilus McGrane	Catholic Mission	035 5910013
Dr Ann Barnard	Mosvold Hospital	082 7466 936
Mike Schroeder	Development Consultant	082 5106 820
F W Malwane	Emunywana Primary School	082 9531 165

2. FINAL DECISION PROCESS OF THE MEETING:

Please note:
THE DIRECT WAY FORWARD IS FOR MR MTHEMBU, JOHNSON AND ANN BARNARD TO CONTACT ONE ANOTHER TO SET A TIME FOR THE NEXT MEETING AND TO THEN SPREAD THE NEWS TO THE REST OF THE ATTENDANCE REGISTER.

Please note: the name for the follow up sessions of the above group will be termed "the AIDS GROUP MEETING'. = AGM

AIDS TARGETTING STEPS:

1. Mr Mabiga to hold a meeting with local Ndumu indunas :
   - with the intent of explaining the need for an awareness of orphans in their wards
   - to motivate the indunas to identify and collect information about orphans in their areas
   - to tell them to then give the information about the orphans to local headmasters who will follow up in those situations
   - Mr Mabiga is responsible for ensuring that the indunas are informed about AIDS related meetings (ie.."the AIDS GROUP MEETINGs' [AGMs] in the future) and that they are feeding information about orphans in Ndumu to local headmasters.

2. Mr Mthembu (of St Phillips) is responsible for ensuring that the local headmasters / (headmasters representatives) are informed about AIDS related meetings (ie."the AGMs' in the future) and checking that they are receiving information about orphans in Ndumu from the indunas.

* Mr Mthembu is to hold regular meetings with headmasters to discuss problems and possible solutions to orphan issues in their schools.
* Mr Mthembu is then to represent the headmasters in reporting back their findings to "the AGMs' held in the future.

3. Future AGMs are to be held bi-monthly (every second month) with as many of the 'attendance register' people as possible attending . Thus these AGMs will include doctors, headmasters, indunas, councillors,the Ingwavuma Orphan Care, Ndumo Development Committee, Social Welfare, Catholic Mission etc

4. In a few months time, a far larger meeting is to be held that will incorporate almost **all potentially relevant people in the community** with the hope that representatives will also begin to support the regular bi-monthly AGMs. This meeting might be held as a forum expressing the work and findings of the AGM to date and inviting the support and involvement of other parties. People to be invited should include:
   - All traditional leaders, ward leaders and portfolio committees
   - Home Affairs
   - Other Church ministers/priests
   - Nompilo
   - All headmasters
   - Etc

5. **Steps 1 – 4 are to be repeated in other wards/ areas of the DC27 ...eg..Ingwavuma, Manyaseni, Manguzi areas.**
- Father Camillus is to spearhead the process in the Manyaseni area.
- Other people are to be approached in other areas. Perhaps Johnson Gwala could spearhead similar meetings in the areas where he works.

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3. MAJOR ISSUES RAISED ON THE 12 NOVEMBER AGM TO BE CONSIDERED IN FUTURE NDUMU MEETINGS (AGMS).

* a need for a mobile home affairs or a home affairs that bases itself at local schools so that Birth and Death Certificates can be registered and families handed over to Social Welfare for Foster Care grants.
- psychologists / counsellors to do home visits and to visit orphans in schools.
- The building to be funded by Social Welfare
- Survey / database to be compiled of orphan / AIDS affected families in DC27.
- Possible smaller interventions: payments of school fees
- Uniforms to be provided for orphans / poor.
- Gugu to speed up the birth / death certificate issue by working through the teachers and giving them forms for families who could be applying for foster care grants/ ID's / Birth and death certificates.

4. MINUTES OF THE MEETING HELD 12 – 11 – 2001

1. Introduction

2. Prayer

3. Mr Mthembu gave a history about his findings of orphans in St Phillips and then 5 other Ndumu Schools. Orphans in his own school had been primarily identified through a lack of school uniforms. The Headmasters of these schools then created an orphan committee for those schools. A list of the orphans in the schools was drawn up, inclusive of birth and parental death details if available.

4. Gugu Dubazane , a social worker from Social Welfare spoke about the difficulties faced in processing foster grants for orphans.
   - Children without birth or death certificates cannot be helped
   - Processing of birth certificates is very difficult and take a long time.
   - Home Affairs has little manpower to process ID's, BC's and DC's.
   - Mother's can register children in their own names, but cannot register them in the father's names if single.
   - Foster care placement will be given to neighbours, extended family or older siblings if both parents have died. But if one parent is still alive then placement is quite difficult unless parents specify foster parents whilst they are alive
   - A foster grant is R430 per child per month not exceeding 6 children per family. A foster family can foster a child up to 18years of age. In child-headed households, they can be fostered until the age of 21.
   - The Magistrates Court process 4 cases a week, (20 a month) on average.
   - All certificates must be applied for from Home Affairs.
   - Death Certificates can be ascertained if a family member fills a form that is verified/ confirmed by the local induna.

5. Johnson Gwala spoke about his work for the Ingwavuma Orphan Care where he also works with children under 18 years and those who have been orphaned or impoverished by AIDS.
   - He mentioned the possibility of a Home Affairs being set up in Ndumo, and municipalities applying for mobile Home Affairs to be set up for ID documents.

   Dr Barnard also spoke about about the history of the Ingwavuma Orphan Care Project, and the work that she and Johnson had done in Ingwavuma. This included:
   - Fundraising
   - 3 food gardens and a block making project
   - money available for school fees and uniforms
   - a building project for orphans and affected families needing homes.
   - Money given to Home Affairs for computerisation
   - Food parcels and help with birth certificates, IDs and death certificates.

6. The meeting then progressed to a discussion of the possible ways forward and the experiences of the councillors, priest, indunas and headmasters. The summary of this is available in section one which summarises the way forward as defined by the group. Liz Schroeder summarised this for the group and the meeting ended in prayer and photos, with the expectation that Johnson, Dr Barnard and Mr Mthembu would be in contact for the organising of the next meeting.