AN INVESTIGATION OF HOUSEHOLD FOOD INSECURITY COPING STRATEGIES IN UMBUMBULU

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Abstract

This study set out to investigate the food insecurity coping strategies of sample households from the Embo community in the Umbumbulu district of KwaZulu-Natal. A total of 151 Ezemvelo Farmers' Organisation and 49 non-EFO members were interviewed in two rounds, beginning in October 2004 and March 2005. The total sample included 200 respondents from 176 households. A survey questionnaire was used to collect data on socio-economic characteristics, food consumption patterns and application of consumption coping strategies. The study used the Coping Strategy Index to establish the food security status of the households by calculating and comparing the Coping Strategy Index Scores of households.

Households applied short-term food consumption coping strategies to cope with food shortages and resorted to short-term income coping strategies when they experienced income shocks. Coping strategies employed by households were effective in mitigating food insecurity. Most strategies applied by most households were not detrimental to livelihoods and did not compromise future household food security. Food insecurity increased the frequency and severity of application of coping strategies employed by households.

Households ate less preferred foods, skipped days without eating and ate wild foods. These coping strategies were particularly dangerous to households as proper nutrition is critical for ensuring healthy and productive lives. Food security interventions need to support beneficial coping strategies currently employed by households. Relevant stakeholder like the Departments of Health and Social Development need to target nutritional interventions through workshops and training with vulnerable households.

Supporting protective coping mechanisms entails protecting entitlements to land, water resources and productive and non-productive assets. Agricultural production improved the incomes and food consumption of the sampled households. Sustainable agricultural production should be promoted and sustained at household level. The Ministry of Agriculture and local development agencies should assist the community by providing production inputs, for example, provision of vegetable seeds, mechanisation, infrastructure and information on improved production techniques to encourage greater productivity and wider engagement in agriculture. Home gardens could make

valuable contributions to family food supply and income. The Ministry of Agriculture and local development agencies should give more advice through extension and training services, providing support through negotiation of contracts with suppliers.

While agriculture may play a major role in the reduction of food insecurity, attention should also be given to the promotion of non-farming activities, particularly those that can reduce food insecurity. The community and households should actively engage in the design and implementation of policies government policies and strategies for farm and non-farm interventions.

Declaration

I, Mfusi Mjonono declare that:

- The research reported in this mini-dissertation, except where otherwise indicated, is my original research.
- This mini-dissertation has not been submitted for any degree or examination at any other university.
- This mini-dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from those persons.
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Signed: …… …….Date…….

Mfusi Mjonono

As supervisor, I agree to submission of this mini-dissertation for examination.

Signed: …….....Date…….

Prof Sheryl L Hendriks

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

THE PROBLEM AND ITS SETTING

1.1 Introduction to the research problem

A few, but growing number of studies indicate that food insecurity, hunger and poverty exist in South Africa (May and Woolard, 2007; Human Science Research Council, 2004; Pauw and Mncube, 2007). However, there are few studies in South Africa that empirically estimate the extent of food insecurity and household vulnerability and describe household coping strategies employed by rural households (Hendriks, 2005). Therefore, the evidence available is critically scant. Examination of the effectiveness of food insecurity coping strategies in achieving food security in South Africa has not been attempted (Hendriks, 2005).

The study is relevant and timely, especially at present when there is little understanding of the coping strategies employed by households facing food insecurity in KwaZulu-Natal. This study is therefore vital to better understand how households respond to household food insecurity. Knowing the full picture and the true extent of food insecurity in KwaZulu-Natal will assist in the development of more effective and meaningful policies and programmes to address food insecurity. It is imperative to know how households cope with food insecurity to enable evaluation and development of timely and socially relevant intervention programs. This information could be used to develop effective and efficient food indicators for analysis, monitoring and evaluation.

1.2 Statement of the research problem

This study investigates coping strategies applied by households to mitigate the effect of food insecurity in the Umbumbulu community in KwaZulu-Natal and evaluates whether these strategies are beneficial or detrimental to the long-term food security status of households.

1.3 Sub-problems

In order to examine the perceived coping strategies employed by Umbumbulu households, the researcher has identified the following questions or sub-problems:

Sub-problem one: What are the food insecurity coping strategies employed by Umbumbulu households to mitigate food insecurity?

Sub problem two: To what extent are food insecurity coping strategies effective in mitigating food insecurity?

Sub problem three: Does a decrease in food security result in increased frequency application and severity of coping strategies?

Sub problem four: Could food insecurity coping strategies be used to indicate food insecurity?

1.4 Study assumptions

The Coping Strategy Index (CSI) was used as a proxy for food insecurity in this study and it is assumed that the index is a valid proxy measure (Maxwell *et al*, 2003). It is assumed that the study

respondents were truthful and honest in reporting the application of coping strategies when they suffered income shocks and food shortages. Despite the fact that researchers were conversant with the local language, there is always a risk of loss of information in the process of translation. It was assumed that translation was accurate.

1.5 Study limitations

The findings in the study may not be universally applicable. Coping strategies vary between countries and communities, reflecting the differences in asset composition, government policy, availability of external assistance, culture and tradition (Maxwell *et al*, 1999). This study focused mainly on coping strategies employed by households when they experience income shocks and food shortages. The study did not investigate the nutritional status of the households, although the questions related to these issues were asked to understand the sample households.

1.6 Organisation of the mini-dissertation

The current chapter outlines the introduction to the study, statement of the research problem, importance of the study, study assumptions and study limitations. Chapter two presents a review of related literature. It reviews the concept of food security/insecurity, vulnerability to food insecurity, poverty and food insecurity, the household food security situation in South Africa, food insecurity coping strategies, level and severity of coping strategies and the Coping Strategies Index (CSI). Chapter three outlines the study methodology. Chapter four presents the description of sample households used in the study. Chapter five presents the results and discussion. Chapter six presents the conclusions and recommendations.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

This chapter looks at the origin of the concept of food insecurity, the issue of poverty and food insecurity, vulnerability to food insecurity, measurements of food insecurity, the household food security situation in South Africa, and various food insecurity coping strategies employed by households to mitigate the incidence of food insecurity in order to understand the context and application of household food security coping strategies.

2.2 The concept of food insecurity/security

The concept of food security has evolved over time. Food security as an issue became prominent in the 1970s and has been a topic of considerable attention since then (Maxwell *et al*, 1999). Food security is defined in different ways by international organisations and researchers (Kidane *et al*, 2005). Since the World Food Conference of 1974, definitions of food security focused on national food security or increase in food supply (Food and Agriculture Organisation (FAO), 1996). After the 1943 Hot Springs Conference on Food and Agriculture, the concept of food security meant adequate and secure supply of food for all (FAO, 1996). Food security was understood in terms of availability and supply of cereals (Maxwell *et al*, 1999). The bulk of literature defined the concept of food security from a supply perspective. However, this kind of thinking was narrow and confined to production as the key to meeting food security demands. Definitions of food security evolved after the 1996 World Food Summit and the definitions of food security focused on achieving food

security at the individual, household, national, regional and global levels when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet dietary needs (FAO, 1996). The focus of attention was primarily on food supply problems with assuring the availability, and to some degree, the price stability of basic foodstuffs at international and national levels (Devereux *et al,* 2004).

A useful working definition for food security is as follows: "**food security** exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious foods which meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996). A household is food secure when it has both physical and economic access to adequate food for all members (Sharma, 1992). Food secure households are described as having access to income through various sources such as remittances, off-farm employment and other income-generating activities (Sharma, 1992). To ensure access to food security, an adequate amount of food must be within the physical reach of vulnerable households, whether sourced through own production or the market (Carletto *et al,* 2001; Malambo, 1992).

The opposite of food security is food insecurity, which is the lack of access to an adequate diet, which can be either temporary (transitory food insecurity) or continuous (chronic food insecurity) (Devereux *et al,* 2004). "**Food insecurity** exists when people do not have adequate physical, social or economic access to food" (FAO, 1996). Food insecurity is due to the unavailability of food, insufficient purchasing power, inappropriate distribution or inadequate utilisation at household level (Devereux *et al,* 2004).

Food insecurity is usually categorized as *chronic* and *transitory*. "**Chronic food insecurity** is a long-term or persistent inability to meet minimum food consumption requirements" (World Food Programme, 2009, page 2). Chronic implies an individual is consistently unable to obtain sufficient quantities of nutrients. As a rule of thumb, food insecurity lasting for at least six months of the year can be considered chronic (World Food Programme, 2009). "**Transitory food insecurity** is a short-term or temporary inability to meet minimum food consumption requirements, indicating a capacity to recover" (World Food Programme, 2009, page 2). Transitory is a temporary reduction in sufficient nutrient intake. As a rule of thumb, short periods of food insecurity related to sporadic crises can be considered transitory (World Food Programme, 2009).

It is important to distinguish between chronic and transitory food insecurity as they are likely to require different types of response, in terms of both content and duration (Devereux, 2006). Typically, chronic food insecurity calls for interventions that address underlying and basic causes of food insecurity and that last for several years. Transitory food insecurity may require shorter-term interventions that address immediate and underlying causes, but interventions tackling basic causes of food insecurity may also be important to prevent repeated transitory food insecurity, which may lead to chronic food insecurity (Devereux, 2006).

Chronic and transitory food insecurity can be **severe** or **moderate**. *Severity* can fluctuate over time, either seasonally or owing to a shock, so both chronic and transitory food insecurity can shift between severe and moderate states (World food Programme, 2009). The combination of the temporal and severity dimensions leads to a 2 x 2 classification illustrated in the figure 2.1.

		Temporal dimension	
		Chronic ←	**Transitory**
Severity dimension	**Moderate** ↕	**Moderate chronic** food insecurity	**Moderate transitory** food insecurity
	Severe	**Severe chronic** food insecurity	**Severe transitory** food insecurity

Figure 2.1: Severity dimension of chronic and transitory food insecurity (World Food Programme, 2009, page 3).

According to WFP (2009) citing Devereux (2006), there are strong negative synergies between chronic and transitory food insecurity, and between moderate and severe food insecurity:

- **Transitory -** chronic: repeated shocks can provoke food insecurity ratchets, eventually forcing households into destitution and chronic poverty and food insecurity. Seasonal or cyclical food insecurity is a form of recurrent transitory food insecurity, which can eventually result in chronic food insecurity if households progressively deplete their assets (WFP, 2009).
- **Moderate** - severe: chronically food-insecure households are more vulnerable to such deterioration than the transitorily food-insecure (WFP, 2009).

2.3 Poverty and food insecurity

McClelland (2000) argues that poverty is experienced where people have low living standards compared with others; cannot afford to buy necessities and experience real deprivation and hardship in everyday life. The incidence of poverty is estimated against the poverty threshold, which is the

minimum annual income needed to satisfy food requirements and other basic needs (Pauw and Mncube, 2007; Rose and Charlton, 2001; May and Woolard, 2007). There is no direct correspondence between income-based measures of poverty and food insecurity (Pauw and Mncube, 2007; McClelland, 2000). Poverty can be measured in different ways. Commonly it is expressed in relation to a poverty line, a defined income which is updated regularly (Pauw and Mncube, 2007; May and Woolard, 2007). Poverty lines estimate the per capita needed to cover household essential needs (Pauw and Mncube, 2007; Rose and Charlton, 2001).

Food insecurity is a slightly different concept encompassing poverty, health and social issues (Rose and Charlton, 2001; von Braun *et al,* 2003). Food insecure households may try to cope with food insecurity by reducing meal sizes, skipping meals, or even going without food for one or more days. However, when food is extremely limited, the means to cope with food insecurity lead to severe food insecurity (von Braun *et al,* 2003).The relationship between poverty and food insecurity is a complex one. There are strong, direct relationships between food insecurity, hunger and poverty (Bhattacharya *et al*, 2002). Eradicating food insecurity and poverty requires an understanding of the ways in which these two injustices interconnect (Baulch and Hoddinott*,* 2000; von Braun *et al,* 2003). Hunger and malnourishment prevent poor people from escaping poverty, diminishing their ability to learn, work, and care for themselves and their family members (von Braun *et al,* 2003). Food insecurity exists when people are undernourished as a result of the physical unavailability of food, their lack of social or economic access to adequate food, and/or inadequate food utilisation (FAO, 2003; von Braun *et al,* 2003).

Hunger or nutritionally insufficient diets may be cause by many factors. The factors may range from insufficient income and physical constraints to acquiring food requirements; regional food

shortages; or social and political circumstances (Bhattacharya *et al*, 2002). Malnourishment also leads to poor health, causing individuals to fail to provide for their families (Bhattacharya *et al*, 2002). If left unaddressed, hunger sets in motion an array of outcomes that perpetuate malnutrition; reduce the ability of adults to work and produce healthy children; and erodes children's ability to learn and lead productive, healthy and happy lives (von Braun *et al,* 2003). Therefore, the terms poverty and food insecurity are not necessarily synonymous but have a strong inter-relationship (Bhattacharya *et al*, 2002; Rose and Charlton, 2001; von Braun *et al,* 2003).

2.3.1 Poverty and food security in South Africa

The results of the official Income and Expenditure Surveys (IES) conducted in 1995 and 2000 suggested that both poverty and inequality increased in South Africa between 1995 and 2000 (Statistics SA, 2002). According to Pauw and Mncube (2007), the poverty threshold, or poverty line, is the minimum level of income deemed necessary to achieve an adequate standard of living in a given country. Poverty in South Africa is similarly geographic and gendered. The causes of rural poverty in South Africa stem from historically generated power inequalities (Francis, 2006; Pauw and Mncube, 2007). Seventy-four per cent of poor people live in rural areas. Women are more likely to be poor than men (Human Science Research Council, 2004; Francis, 2006). About 58 per cent of South Africans were estimated to fall below the threshold of R250 per capita monthly income (Statistics SA, 2000). Poor people in South Africa are at risk of being caught in deeply entrenched poverty traps involving mutually reinforcing and cascading cycles of vulnerability and impoverishment (May and Woolard, 2007; Adato *et al*, 2006). Nearly one third of the population earn less than R1 000 per month per household, while only 18 per cent of the population spend more than R3 500 per month per household (National Department of Agriculture, 2002). The proportion

of people living in poverty in South Africa has not changed significantly between 1996 and 2001 (May and Woolard, 2007). However, those households living in poverty have sunk deeper into poverty and the gap between the rich and poor has widened (Human Science Research Council, 2004).

Limpopo and the Eastern Cape had the highest proportion of poor people, with 77 and 72 per cent of their populations living below the poverty line respectively (Table 2.1). KwaZulu-Natal has the largest poverty gap (for this the HSRC has used a measure called the poverty gap that measures the required annual income transfer to all poor households to bring them out of poverty) followed by the Eastern Cape and Gauteng (HSRC, 2004; May and Woolard, 2007). The Gauteng province's poverty gap has grown the fastest between 1996 and 2001, than all other provinces. It is clear that poverty exists in South Africa. Poverty exacerbates food insecurity.

Table 2.1: Poverty indicators by province (HSRC, 2004, page 2)

Province	No. of poor persons (millions)	% of population in poverty	Poverty gap (R billion)	Share of poverty gap
Eastern Cape	4.6	72%	14.8	18.2%
Free state	1.8	68%	5.9	7.2%
Gauteng	3.7	42%	12.1	14.9%
KwaZulu-Natal	5.7	61%	18.3	22.5%
Limpopo	41	77%	11.5	14.1%
Mpumalanga	1.8	57%	7.1	8.7%
North West	1.9	52%	6.1	7.5%
Northern Cape	0.5	61%	1.5	1.8%
Western Cape	1.4	32%	4.1	5.0%
South Africa	**25.7**	**57%**	**81.3**	**100%**

2.3.2 Poverty and food insecurity coping strategies

World-wide around 852 million men, women and children are chronically hungry due to extreme poverty; while up to two billion people lack food security intermittently due to varying degrees of poverty (FAO, 2003). Poverty makes people more vulnerable to shocks. Vulnerability to shocks exacerbates poverty and leads to vulnerability to future shocks (Chaminuka *et al,* 2006; Rose and Charlton, 2001). Baulch and Hoddinott (2000) suggest that poverty in any one year varies in response to asset endowments. Baulch and Hoddinott (2000) suggest that transitory poverty may be due to an inability to cope with shocks, while chronic poverty may be due to a low endowment of assets and a lack of ability to convert these assets into income. Eradicating poverty and food insecurity requires an understanding of the ways in which these two injustices interconnect (Baulch and Hoddinott*,* 2000, von Braun *et al,* 2003). Hunger and malnourishment prevent poor people from escaping poverty, diminish their ability to learn, work, and care for themselves and their family members (FAO, 2003; von Braun *et al,* 2003).

2.4 Vulnerability to food insecurity

Vulnerability is defined by Devereux (2002) as the degree of exposure and sensitivity to livelihood shocks. Vulnerability is a forward-looking concept based on the notion that the food security outcome of households is conditional on a number of risk factors at different levels (Ellis, 2003; Alwang *et al,* 2001). In other words, vulnerability to food insecurity can be seen as a continuum on a scale ranging from food secure to being hungry as illustrated in Figure 2.2 (Alwang *et al,* 2001). Households adopt food insecurity coping strategies when experiencing food shortage or food shock (Figure 2.1). The outcome of adopting food insecurity could lead to improvement of food security

(success) or could lead to food insecurity (failure). Vulnerability is a concept that is often widely used in divergent ways (Alwang *et al,* 2001).Vulnerability and insecurity are often used interchangeably to describe situations in which people are not able to cope with threats to their well-being without experiencing loss (Dercon, 2000). People are vulnerable when a shock that they would otherwise recover from with relative ease is catastrophic and has results that are hard to reverse (Devereux, 2002; Ellis, 2003). Vulnerability to food insecurity reflects the capacity of households to cope with risk or shocks.

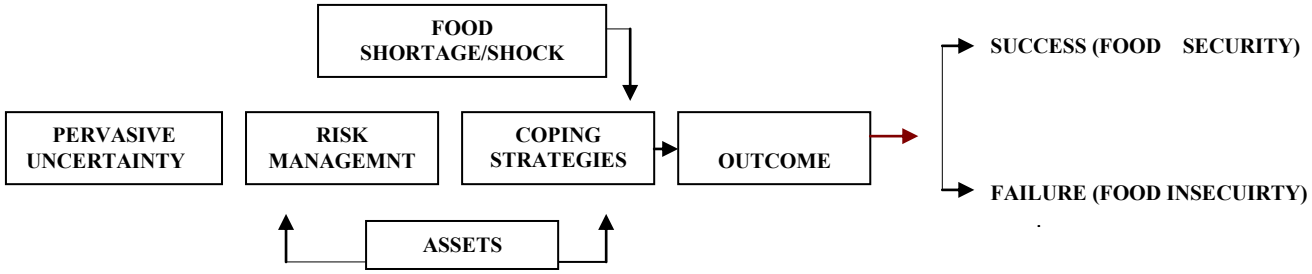

Figure 2.2: Vulnerability as risk a continuum and coping strategies (Ellis, 2003, page 3).

Vulnerability is not uniform and affects different social groups. Particular groups may be vulnerable for different reasons. Gender plays a significant part in these different vulnerabilities. Women are often more vulnerable than men and this includes women as carers in HIV/AIDS households (Ellis 2003). Factors leading to vulnerability differ across these groups. Some of them are to do with household demographics and intra-household food distribution issues, some to do with social and institutional access rights to assets (usually land), some to do with depletion of available household labour, some to do with lack of livelihood options (Ellis, 2003). The identification of vulnerable groups are important to develop effectively targeted interventions.

Table 2.2: Vulnerable groups and vulnerable populations (adapted from Ellis, 2003)

Social groups	Vulnerability
Children under the age of 5	Vulnerable especially to under-nutrition, malnutrition and infectious diseases
Lactating mothers	Vulnerable to under-nutrition in the context of nursing babies
The elderly	Vulnerable due to loss of assets, or ability to use their assets productively, or additional burdens of care for the ill and orphans due to HIV/AIDS)
Widows and divorced women	Vulnerable due to loss of access rights to land, lack of time to cultivate land, and loss of previous partner's contribution to household livelihood
Female headed households	Vulnerable for the same reasons as the preceding category
People with disabilities	Lack of access to production or earning opportunities; social exclusion
Families with members with HIV/AIDS or other chronic illnesses	Vulnerable due to lack of labour, and disposal of assets to cover medical costs
Remote rural populations	Vulnerable due to too much reliance on a single livelihood source, lack of diversification options, high transport costs, poor information

Against the predictability of recurrent and periodic risk, households adopt various precautionary strategies (risk management strategies) that typically include diversification of livelihoods, consolidation of stocks and savings, and social investment (Ellis, 2003). Vulnerability links closely to sustainable livelihoods frameworks that emphasise the importance of assets. As a livelihood strategy, building assets gives individuals or households greater capacity to deal with risk both before and after the advent of a risky event or shock (Busse, 2006; Devereux 2002; Hoddinott, 2004). Assets can be seen as risk management strategies that provide households with buffers against uncertain events (Devereux 2002; Alwang *et al,* 2001). Poor asset bases and weak livelihood systems are indications of household vulnerability (Busse, 2006).

2.5 Vulnerability and resilience

Vulnerability is the complex interaction between external threats and events and the internal capacity of a community or household to withstand or mitigate external threats (du Toit and Zirvogel, 2004). To analyse vulnerability to food insecurity, one needs to understand risk, sensitivity and resilience. Resilience refers to the ability of an ecological or livelihood system to "bounce back" from stresses or shocks (Ellis, 2003). Livelihood resilience is defined as the ability of an individual or household to recover from, or to withstand changes in the social or physical environment, and the ability to adapt to changing circumstances and ensure security of their livelihoods (Alwang *et al,* 2001). Low resilience can result either from failure to recover fully from an earlier shock or from adverse trends that erode household assets and opportunities over time. Resilience is determined by the potential effectiveness of risk management strategies (prevention, mitigation and coping) (Lovendal *et al,* 2004). The ability of an individual to cope with and manage risk is referred to as resilience. An individual with substantial assets and/or a diversified asset portfolio is generally more able to manage and cope with risk and is thus more resilient than an individual with limited assets.

The basis of the term 'resilience' lies in ecology. It has been defined as 'the ability of systems to absorb change and still persist' (Holling, 2001:17). Definitions of resilience in traditional ecological theory fall into two categories: those which see it as a return to a 'normal' state of the ecosystem and those which are based on the magnitude of change which a system can absorb (Gunderson *et al,* 2002). These definitions concentrate on stability at a presumed steady state, and they emphasise resistance to a disturbance and speed in returning to an equilibrium point (Holling, 2001). Social

resilience refers to the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change (Adger 2000:347).

Resilience is the capacity to absorb sudden change and the ability to deal with surprises or cope with disturbances (Adger, 2000; Gunderson *et al*, 2002). A sustainable and vibrant livelihood system enables people to pursue robust livelihood strategies that provide, in effect, 'layers of resilience' that not only enable people to cope with change, but create the potential to translate adversity into opportunity (Adger, 2000).

Individual resilience reflects the ability of individuals to cope with 'disturbances', through, for example, their education embodied in their human capital (Gunderson *et al,* 2002). Resilience may be socially differentiated. That means it is not a uni-dimensional or static notion. Different groups are able to cope with disturbances to varying degrees (Ellis, 2000). This differentiation may occur between and within communities, depending on lineage, gender, age and may even extend down to the household level (Ellis, 2000). Resilience is also temporally layered: it changes over time, reflecting the integrity of the livelihood system and the strategies that are feasible in particular locations at particular junctions in history (Adger, 2000). Strengthening livelihood resilience is the solution to waves of adversity (Allison *et al*, 2001). Poor and marginalized people have thin layers of resilience and are consequently vulnerable to adversity (Adger, 2000). The livelihood strategies they pursue are differentiated responses to disturbances, based on their access to assets and institutions that together comprise their livelihood resilience (Allison *et al*, 2001).

The most robust livelihood system is one that displays high resilience and low sensitivity; while the most vulnerable displays low resilience and high sensitivity as illustrated in Figure 2.3 (Ellis, 2003). Resilience and sensitivity permit livelihoods to be described as a gradation from being highly robust to highly vulnerable, with respect to food security outcomes (Ellis, 2003). Livelihood resilience is a measure of the capacity of an individual and/or their household to cope with the aftermath of a given hazard and to recover their earning or livelihood pattern (Cannon, 2000).

		Resilience to food insecurity	
		High	**Low**
Sensitivity to food insecurity	**High**	Vulnerable	High vulnerable
	Low	Robust	Vulnerable

Figure 2.3: Resilience and sensitivity as vulnerability dimensions (Ellis, 2003, page 7).

Livelihood resilience may involve the maintenance of a current livelihood situation as it is, or moving on to a new and resilient stage of vulnerability. Such resilience does not exclude change, in fact, resilience may require change in order to withstand shocks, and the utilisation of a changing situation for one's own benefit is a sign of resilience (Blaikie *at al*, 1994).

2.6 Measuring vulnerability to food insecurity

There is no established consensus in literature regarding the most appropriate approach to vulnerability analysis. Most vulnerability analyses focus on poverty, rather on food insecurity (Scaramazzino, 2006). Traditional approaches to vulnerability analysis tend to emphasise the role of assets in reducing vulnerability (Scaramazzino, 2006). For example, Cater and May (2001)

determined vulnerability to poverty through identification of asset variable. To define indirect measures of vulnerability, it is necessary to understand what is required to ensure access to food, the threats to access systems and how threats and shocks impact on resilience (Hendriks and Maunder (2006). Many development agencies, including FAO, analyse vulnerability to food insecurity based on various sustainable livelihood approaches (Devereux *et al,* 2004). Sustainable livelihoods approaches focus on assets. Quantitative work has also found that access to assets is an important determinant of poverty and the ability to cope with hardship. It may be worthwhile to use quantitative measures of different assets (including physical capital, human capital, commons, public goods and social capital) to proxy vulnerability to food insecurity (Scaramazzino, 2006). Assets in general are likely to enable households to cope. An analysis of vulnerability to food insecurity therefore needs to look at both what causes assets levels to fall **and** coping strategies to deteriorate (Hendriks and Maunder, 2006).

The World Bank uses a risk-based approach for assessing household vulnerability to food insecurity (World Bank, 2005). The "Social Risk Management" framework of the Bank considers the sources of vulnerability and the ability of the community to manage the associated risk. The emphasis is largely on minimizing risk exposure, although a major weakness in the approach is the absence of the consideration of those risks that stem from insufficient ownership or access to assets. The FAO (2005) identifies currently vulnerable groups in terms of geographic location, and seeks to determine the causes of their vulnerability to food insecurity. FANTA (2003) uses the coping strategy index, asset index and household income sources as indicators that capture vulnerability to food insecurity.

In summary, a fundamental difficulty with most existing approaches to vulnerability measurements is that they are essentially *static*, and are therefore not fully appropriate to measure the dynamic

aspects of risk (Scaramazzino, 2006). According to Hendriks and Maunder (2006), to measure vulnerability to food insecurity, it is essential to develop an empirical measure capable of distinguishing the food secure from the food insecure before an attempt can be made to predict how future threats could shift households along the continuum of food security to food insecurity.

2.7 The household food security situation in South Africa

In per capita terms, South Africa is an upper middle-income country (Pauw and Mncube, 2007). Despite this relative wealth, about 43 per cent of South African households experience poverty and continuing vulnerability (du Toit and Zirvogel, 2004). Food supplies at a national level in South Africa are adequate to feed the entire population (de Klerk *et al,* 2004). However, a number of studies have revealed evidence of under-nutrition among certain segments of the population (Rose and Charlton, 2001). This means the country produces its main staple foods, exports its surplus food, and imports what it needs to meet its food requirements (de Klerk *et al,* 2004). Yet, the picture at the level of households is very different. An increase in national food production does not guarantee food security. Despite South Africa being considered self-sufficient in respect to food production, food insecurity continues to remain a substantive developmental challenge (de Klerk *et al,* 2004). A substantial number of households purchase food to meet dietary requirements (de Klerk *et al,* 2004). The food insecurity situation in South Africa is likely to increase due to the impact of the HIV/AIDS pandemic and increases in food prices (Hendriks, 2005).

The Human Science Research Council (2004) conducted a study that focused primarily on policy issues that have to be adequately addressed by respective Departments that may be important for discussion between respective parties in developing strategies to address poverty and expenditure

plans for the medium term. The study reported that approximately 1.5 million South African children suffer from malnutrition, 14 million people are vulnerable to food insecurity and 43 per cent of households suffer from poverty (Human Science Research Council, 2004; Rose and Charlton, 2002).

The study conducted by the Human Science Research Council (2004), also revealed that malnutrition persists as one of the primary contributors to child morbidity and mortality in South Africa. The Human Science Research Council study showed that the number of households without enough money to feed children and who could no afford to feed children could indicate that household food security in South Africa has declined between the periods 1994-1995 and 1996-98 (Table 2.2).

Table 2.3: Subjective assessment of food insecurity in South Africa by province and area of residence, 1994-99 (HSRC, 2004, page 27)

	Did not have enough money to feed children in household		**Could not afford to feed children in the household**		**Children aged <7 went hungry because there was not enough money to buy food**	
	1994	**1995**	**1996**	**1997**	**1998**	**1999**
Western Cape	18.2	23.1	22.9	20.6	25.7	18.0
Eastern Cape	61.5	42.8	39.2	31.8	47.0	31.2
Northern Cape	35.1	27.3	25.6	22.8	26.9	13.8
Free State	47.8	32.4	17.5	31.2	28.7	26.5
KwaZulu-Natal	33.3	35.2	25.4	27.2	32.2	26.9
North West	45.2	25.3	20.2	27.6	26.6	25.1
Gauteng	36.3	22.0	27.7	18.7	22.0	14.6
Mpumalanga	41.4	39.5	24.5	29.0	33.7	32.0
Limpopo	51.3	43.7	28.2	24.0	30.2	16.1
Urban	34.1	-	25.5	22.3	26.4	19.1
Rural	49.2	-	29.1	29.9	37.2	27.7
National	**41.0**	**31.7**	**27.0**	**25.5**	**31.1**	**23.4**

Food insecurity is highest among the African population and rural households. Provinces with high stunting rates are also provinces with large rural population. The stunting rates for individual provinces are as shown in Table 2.4 below. The NFCS (2000) indicated that a large majority of households were food insecure and that energy deficit and micronutrient deficiencies were common, resulting in a high prevalence of stunting. The children least affected (17%) were those living in urban areas. These results were used as motivation for the introduction of mandatory fortification in South Africa. The Northern Cape and Free State show high stunting rates of 31% and 30% respectively (Bonti-Ankomah, 2001). The majority of South African households live in poverty with a limited variety of foods available in their homes (National Food Consumption Survey (2000). In South Africa the cause of hunger and malnutrition is not due to a shortage of food but rather an inadequate *access* to food by certain categories of individuals and households in the population ((Bonti-Ankomah, 2001).

Table 2.4: Stunting rate among children between ages 1-9 years (National Food Consumption Survey Group, 2000)

Province	Percentage
Northern Province	23
Eastern Cape	20
Free State	30
KwaZulu-Natal	18
North-West	24
Northern Cape	31
Mpumalanga	26
Western Cape	14
Gauteng	19
South Africa	22

There are an estimated 14 million households vulnerable to food insecurity in South Africa (Machethe, 2004) and an estimated 2.2 million food insecure households in South Africa (Ministry of Agriculture, 2006). South Africa has also been one of the most unequal countries in the world in terms of income distribution which became even more concentrated in the hands of the few after the fall of apartheid : the Gini coefficient rose from 0.69 in 1996 to 0.77 in 2001 (HSRC, 2004). Poverty is a distinctly rural phenomenon with an estimated 75% of South Africa's poor living in rural areas (Eastwood *et al,* 2006).

South Africa has a well-developed system of social security and the reach of the social grant safety net has expanded rapidly over the past five years (Booysen, 2004). At least 12 million South Africans in a population of more than 47 million receive some form of social grant. Old Age Pension, as in many countries, provides income security for older people in South Africa and it is one of the three main categories of social grants in the country (Booysen, 2004). People who qualify for old age pension include any South African citizen, 60 yrs old (for females) or 65 yrs old (for males). The child support grant is probably the only grant that benefits the child directly. This was introduced in 1998 to replace the state maintenance grant (Booysen, 2004).

South Africans' food security, particularly the urban and rural poor, is under threat as they grapple with the highest food inflation rate (National Agricultural Marketing council, 2008). From July 2007 to July 2008 the year-on-year increase in the Consumer Price Index for Food was 17.8 percent (National Agricultural Marketing Council, 2008). This is the highest rate of food inflation experienced in the country since January 2003. The urban poor are among the worst affected as they

do not have access to food, unlike the rural poor, who have access to land to grow food to support themselves and their families (National Agricultural Marketing Council, 2008).

2.8 Food insecurity coping strategies

Various sources have attempted to define coping strategies. Devereux (2001) defines coping strategies as a response to adverse events or shocks. The definition by Snel and Staring (2001) captures the broad notion of coping strategies, namely that "all the strategically selected acts that individuals and households in a poor socio-economic position use to restrict their expenses or earn some extra income to enable them to pay for the basic necessities (food, clothing, shelter) and not fall too far below their society's level of welfare" (Snel and Staring, 2001, page 10). The latter definition implies that coping strategies involve a conscious assessment of alternative plans of action. The definition is based on the assumption that within the limited options available to households, the households are asset managers with freedom of choice in relation to their actions (Devereux, 1993; Ellis, 2003). This does not necessarily mean that their choice of strategies is always successful in achieving their intended objectives. In fact, the coping strategies often have unintended negative effects.

Ellis (2000) defines coping strategies as the methods used by households to survive when confronted with unanticipated livelihood failure. Coping comprises tactics employed when confronted by disasters, such as drawing down on savings; using up food stocks; receiving gifts from relatives; benefiting for community transfers; sales of livestock and other assets sales (Ellis, 2000). The strategies pursued by households differ in several aspects, that is, within the household and between households (Majake, 2005; Maxwell *et al*, 2003). Due to varying degrees of wealth among

households, different coping behaviours are adopted by households at different poverty levels. However, some coping strategies are common to all households, although the extent to which such strategies enable a household to remain afloat depending on the assets at their disposal (Devereux, 2001). Above all, the general tendency is that the lower the household asset status, the more likely the household would engage in erosive responses such as selling off of productive assets such as farm implements (Corbett, 1988; Devereux, 2001; Hoddinott, 2004).

2.8.1 Consumption and income coping strategies

Households experience an income shock and a drop in consumption if at least one of the following events took place: a member loses his job; a member experiences a substantial drop in his earnings; serious illness; crop failure; loss of livestock and a family business experiences a substantial drop in revenue (Gaviria, 2001; Notten *et al* 2007; IFAD, 2007). According to IFAD (2007), coping ability can be defined as reducing fluctuations in income. Faced with an income or food shock, households my either protect their food consumption by purchasing or receiving food from other sources such as friends and relatives (Davies, 1993; Corbett, 1988).

Literature distinguishes between risk management (income soothing) and risk coping strategies (consumption soothing). The former attempts to reduce the ex-ante risk impacts e.g. through income diversification (Dercon, 2000; Busse, 2006). Households smooth income by making conservative production or employment choices and diversifying economic activities. In this way, households take steps to protect themselves from adverse income shocks before they occur (Murdoch, 1995). Risk coping strategies deal with consequences (ex-post) of risk (Busse, 2006). Households smooth consumption by borrowing and saving, adjusting labour supply and employing formal and informal

insurance arrangements. These mechanisms take force after shocks occur and help insulate consumption patterns from income variability (Murdoch, 1995). Risk-coping strategies involve self-insurance (through precautionary savings) and informal group-based risk-sharing (Dercon, 2000; Davies, 1993). Households can insure themselves by building up assets in 'good' years, to deplete these stocks in 'bad' years (Dercon, 2000). Households may modify their food consumption by reducing/modifying food or reduce the number of consumers (Dercon, 2000; Corbett, 1988). Consumption soothing strategies generally increase as income generating strategies coming under strain (Dercon, 2000).

2.8.2 Shocks and household food insecurity coping strategies

Shocks refer to sudden and unexpected occurrences (Davies, 1993, May and Woolard, 2007). The exposure to shocks triggers coping strategies and a household's coping capacity results in either failure or success to attain food security (Davies, 1993). The ability to respond to shocks is determined by the degree of vulnerability of a household (Ellis, 2003; Devereux, 2001). Households are vulnerable when they are unable to cope with and respond to risks, stresses and shocks (Ellis, 2003). The ability of households to respond to risks and shocks can be substantially weakened by multiple or successive shocks (Busse, 2006). Responses to shocks and the ability to cope with vulnerability depend on the level of available assets. The inability to buffer food security shocks leads households to draw on liquidity or assets (Busse, 2006; Devereux, 2001).

Without doubt, drought, floods, conflicts shocks are the root causes of a substantial proportion of both acute and chronic vulnerability in the SADC region (FAO, 2003; Dercon, 2000). Shocks can

have persistent effects only in the presence of poverty traps (FAO, 2005; Baulch and Hoddinott, 2000). Potential shocks can affect growth of households due to the volatility that repeated shocks generate (Collier *et al,* 2006). Strategies to reduce vulnerability to shocks such as drought and other disasters should be based on a sound understanding of coping strategies (FAO, 2005; Busse, 2006). Work shocks, according to Gittinger *et al* (1990), occur when quantity/availability of work changes abruptly, for example because of illness or the effects of drought on employment. This situation of vulnerability leaves the household more susceptible to "shocks" such as loss of income due to retrenchment (FAO, 2003; Dercon, 2000). Households may also suffer from food shocks as a consequence of periodic drought; changes the composition of households and lack of access to alternative sources of income (Gittinger *et al*, 1990).

Livelihood strategies are severely undermined by the high prevalence of rates HIV/AIDS infections in the country. HIV/AIDS has adverse effects on the ability of households to pursue sustainable livelihoods. AIDS is likely to generate significant shocks on productive capacity, purchasing power and per capita food availability (Busse, 2006). Households affected by AIDS are at risk nutritionally and it becomes increasingly difficult to preserve health (Chaminuka *et al,* 2006). HIV/AIDS has reduced the ability of nations to prevent and mitigate food emergences (FAO, 2005). Households and communities affected by the HIV/AIDS pandemic often devise means of coping with the pandemic itself and the associated problems (Chaminuka *et al,* 2006). In response to the multiple impacts, households across South Africa have responded to adapt to the conditions caused by HIV/AIDS through evolving strategies that attempt to mitigate the impacts caused by the epidemic (de Klerk *et al,* 2004). These strategies, along with behaviours such as migration or begging, indicate the nature of the household's vulnerability (Coates *et al,* 2006). Households under

stress from hunger, poverty or diseases adopt a range of strategies to mitigate the impact of HIV/AIDS through complex multiple livelihood strategies (HSRC, 2004). These strategies may entail choices that are essentially erosive and non-erosive. Households are often forced to liquidate accumulated assets to meet medical costs of the sick or funeral expenses of the dead, compromising future livelihood and food security.

2.8.3 Food shortage and household food insecurity coping strategies

Different coping strategies are adopted within different societies but the general sequence of adoption of progressively desperate strategies is common (Majake, 2005; Maxwell *et al*, 2003; Corbett, 1988; Watt, 1983). Coping strategies of households are influenced by factors such as economic status, gender and age (Devereux, 2001) and are either erosive or non-erosive (Maxwell *et al*, 2003; Devereux, 1993; Watt, 1983). The continuum of coping strategies begins with a household head experiencing anxiety about food insufficiency, leading to decisions to reduce the household's food budget by altering the quantity or variety of food consumed by the family (Corbett, 1988; Maxwell *et al*, 2003; Ellis, 1998). As the situation worsens, adults in the household begin to experience hunger due to reduced food intake to protect children and in most severe circumstances, both children and adults experience hunger (Ellis, 2000). The strategies are typically adopted in a sequence beginning with those that cause the least discomfort, followed by progressive drastic measures (Corbett, 1988; Watt, 1983; Ellis, 1998).

2.8.4 Categorisation of coping strategies

Coping strategies are often categorised into three stages and describe the sequential phases of coping with food insecurity (Corbett, 1988; Ellis, 2000; Maxwell *et al*, 2003). However, households do not always apply coping strategies in the sequence set out below (Majake, 2005; Devereux, 1993). This sequence first seeks to protect the future income generating capacity of the household, even if current consumption is compromised (Ellis, 2000). It is only as the last resort that assets critical for future survival are sold or abandoned to starve off starvation (Ellis, 2000; Maxwell, 1996). The three categories of coping strategies are discussed below.

2.8.4.1 First stage: Non-erosive coping (insurance strategies)

The *first stage* of coping with food insecurity is marked by the initial shortage of food, or inability to provide sufficient quantities of food to all members of the household (Maxwell *et al*, 2003; Senefeld and Polsky, 2005). This stage is also characterised by the following: taking out loans; reduction in dietary intake; consumption of cheaper foods and reduction of the frequency of meals (Watt, 1983; Corbett, 1988). When food access lessens or resources wane, adaptations employed might be dietary change; reduction in the number of meals per day (rationing); relying on wild foods; seeking wage labour to increase income; and borrowing food or money from relatives (Senefeld and Polsky, 2005; Devereux, 1993; Corbett, 1988; Maxwell *et al*, 2003). These strategies are considered as first stage strategies (Corbett, 1988; Maxwell, 1996). During this stage, responses developed by the population are reversible and in principle do not damage livelihoods and future productive capacity

and primarily aim to prevent destitution (van der Kam, 2000). Devereux (1993) more precisely names these strategies accumulation and adaptation coping strategies.

2.8.4.2 Second stage: Erosive coping (crisis strategies)

The *second stage* of coping strategies is characterised by the sale of assets (non-productive and productive assets); loans; sale of large stock, land and tools (Frankenburger, 1992; Corbett, 1988; Watt, 1983). The responses in this stage are less reversible as households are forced to use strategies that reduce their productive assets and threaten their future livelihoods (van der Kam, 2000). During the second stage, the food crisis begins to threaten asset preservation (Corbett, 1988; Watt, 1983; Hoddinott, 2004). The assets that are sold at this stage are those related to income generation, such as farming equipment, land and cattle. According to Corbett (1988), stage two is indicative of productive asset sales and a shift of priority from asset prevention to food consumption (van der Kam, 2000; Hoddinott, 2004). Sale of productive assets has severe implications for the future productive potential of households and long-term food security. Sale of productive assets leads to the last stage of coping (Frankenburger, 1992; Corbett, 1988). Erosive coping behaviors (such as selling of productive assets) cause further loss of household assets. Selling assets in response to shocks permanently lowers future food consumption (Hoddinott, 2004). Households that resort to unsuitable coping strategies such as selling of productive assets or taking high interest loans represent a crucial area of concern for those working with the most food insecure populations (Coates *et al*, 2006). The incidence of asset disposal shows vulnerability to food insecurity (Devereux *et al*, 2004).

2.8.4.3 Stage three: Failed coping (distress strategies)

At stage three, the food crisis has prolonged; leading to a dire situation. Destitution, dependency on charity and out-migration are indicative of this stage (Corbett, 1988). Everything at this stage could be sold. According to Frankenburger (1992), although the disposal of all assets ensures survival, it severely jeopardises the future security of the household. At this stage all coping mechanisms have been completely exhausted and people are dependent on food aid for immediate survival (van der Kam, 2000).

2.9 Measuring household food security

Food security is multidimensional. There is no unique, gold standard to measure food security. Each analytical method and tool has different strengths and weaknesses and a varying ability to comprehensively embrace the multiple dimensions of food security and livelihoods. It is therefore imperative to be aware of the strengths and weakness to choose the most appropriate method/tool or combination of methods and tools to measure food insecurity. Collecting data for a complete analysis of food security can be a virtually impossible task in a situation where household composition is variable and the concept of a household itself is subject to varying interpretation (Maxwell, 1996).

Various methods have been used to monitor food security, from national food balance sheets, rainfall and marketing data, to household level measures and individual anthropometric measurement (Maxwell and Frankenberger, 1992). Hoddinott (1999) compared four outcome

indicators of food security namely individual food intake; household energy acquisition; dietary diversity and an index of household coping strategies through correlations, contingency tables and regression prediction models. Table 2.3 lists some of methods commonly used to measure household food security. Table 2.3 is included to show comparisons between these various methods used to measure household food security.

2.9.1 Coping Strategy Index (CSI)

The Coping Strategy Index (CSI) is an indicator of household food security that is user friendly, generates accurate information and is relatively quick and easy to analyse (Maxwell *et al*, 2003). The CSI was designed as a rapid household food security assessment and food aid monitoring tool for use in emergencies (Maxwell, 1996). The indicator was developed to avoid the problems of collecting household food procurement data and the high data collection costs of 24-hour recalls (Collins, 2004; Maxwell *et al*, 2003; Senefeld and Polsky, 2005). CSI makes use of the way in which households cope with acute food shortages as a means of comparatively assessing changes in household food security between and within groups over time (Majake, 2005; Collins, 2004). The CSI is relatively quick and easy to administer and straightforward to analyse.

Table 2.5: Comparison of methods of measuring household food security (Hoddinott, 1999)

Method	Description	Method of generating data	Advantages	Disadvantages
1. Individual food intake data	This method measures the amount of energy or nutrients consumed by an individual in a given time period.	The method is observational and recall.	It provides accurate measures of individual energy intake and therefore the most useful measure of food security status of an individual. It is possible to determine whether food security status differs within household, because the data is collected on an individual basis.	These measures of intakes need to be made repeatedly, ideally for seven consecutive days. It requires highly skilled enumerators who can observe and measure quantities quickly and accurately.
2. Household energy acquisition	This is the energy or nutrients available for consumption by household members over a defined period of time.	The principal person responsible for preparing meals is asked how much food she prepared over a period of time. After accounting for processing, this is turned into a measure of the calories available for consumption by the household.	The level of skill requires by enumerators is less than that one needed to obtain information on individual intakes. It takes 30 minutes per household to obtain the data.	This method generates a large quantity of numerical data that needs to be carefully checked both in the field and during data capturing. Requirements to process the data are also higher
3. Dietary diversity	This is the sum of the number of different foods consumed by an individual over a specified period.	One or more persons within the household are asked about different items they have consumed in a specified period.	It is easy to train enumerators to ask these questions. Individuals generally find them easy to answer. Asking questions typically takes about 10 minutes per respondent.	The simple form of this measure does not record quantities.
4. Indices of Household Coping Strategies	This is an index on how households adapt to the presence or threat of food shortages.	The most knowledgeable person in the household regarding food preparation and distribution within the household is asked a series of questions.	It is easy to implement and takes less than three minutes per household. It directly captures notions of adequacy and vulnerability.	It is a subjective measure and different people have different ideas, comparison across households or localities is problematic. Poor households tend to report smaller quantities of food than richer people. This is misleading, if richer and poor household report eating smaller quantities; this does not imply an equal increase in food insecurity.

As listed by Maxwell *et al* (2003), the Coping Strategy Index includes four categories: dietary changes (e.g. eating less preferred food); short-term measures to increase household food availability (borrowing, gifts, consuming seed stock); short-term measures to decrease number of people to feed (short-term migration) and rationing, or managing the shortfall (mothers prioritizing children/men, limiting portion size, skipping meals, skipping eating for whole days etc.). The information obtained is then weighted according to the frequency and perceived severity of each behavior (Maxwell *et al,* 2003; Senefeld and Polsky, 2005). The weighted scores are summed to give an index that reflects current and perceived future food security status (Maxwell *et al,* 2003).

The CSI is mostly effective in situations where there are difficulties in acquiring rapid valid and reliable figures for income, expenditure and production data and where there is high data collection cost to 24-hours recalls (Maxwell, 1995). When used in combination of early warning indicators and food aid end-use monitoring tools, the CSI provides accurate indication of the way in which households respond to food aid interventions (Maxwell *et al,* 2003). According to Collins (2004), the CSI was employed by WFP to monitor changes in the food security status of refugee populations from the Democratic Republic of Congo, Burundi and in Western Tanzania in response to shocks such as market closures, movement restrictions, and reductions in relation to size. In the Kenya Pilot Study, the CSI accurately reflected current food security status and was also a good predictor of future food security status (Maxwell *et al,* 2003). According to Maxwell (1995), the CSI is readily understandable by both policy makers and non-specialists.

2.10 Review of more recent South African studies on food insecurity coping strategies

This sub-section reviews the resent studies of food insecurity coping strategy related work in South Africa. The available literature on food insecurity coping strategies shows that food security exists among households in South Africa (Majake, 2005; Hendriks, 2005; HSRC, 2004; Monde, 2003). In Qwaqwa, food insecure households commonly employed food consumption coping strategies (Majake, 2005). The objective of the study conducted by Majake (2005) was to evaluate the impact of food security packages on households in Qwaqwa. A survey of 60 households, half of whom received food security packages was conducted between April and June 2004. The study showed that the strategies employed by households to survive included most severe coping strategies, eating from dust bins and sending households out to beg. Relying on less preferred foods such as eating porridge with tea, jam or animal fat were identified as the least severe strategies employed by households in Qwaqwa (Majake 2005).

Oldewage-Theron *et al* (2006) observed similar strategies for coping with food security in the study conducted in the Vaal Triangle. The objective of this study was to determine household food security and coping strategies of an informal settlement in the Vaal Triangle. The households employed food consumption coping strategies to cope with food insecurity. The coping strategies used were: limiting the variety of foods served (practiced by 75 per cent of households); limiting portion sizes (80 per cent of households); skipping meals (60 per cent of households) and maternal buffering (76 per cent of households). The study concluded that the area is a poverty-stricken community with household food insecurity where the caregivers changed their food consumption patterns to cope, resulting in compromised nutrition Oldewage-Theron *et al* (2006).

The study conducted by Maliwichi *et al* (2002) in Khayelitsha also showed that households employed consumption coping strategies to alleviate food insecurity. The aim of this study was to investigate the coping strategies of households in Khayalitsha, Cape Town to ensure household food security. The findings showed that 70 per cent of the households in the informal settlement used short term coping strategies including borrowing money (from friends or relatives) to buy food; borrowing food from neighbours or friends; purchasing food on credit; relying on help from friends/neighbours and maternal buffering (i.e. mothers limiting their food intake to ensure children get enough food to eat.

Ziervogel *et al* (2006) conducted a study in Sekhukhune. In Sekhukhune, many households have developed a wide range of coping and adaptation strategies in response to changing conditions that affect their livelihoods and well-being (Ziervogel *et al*, 2006). The objective of Ziervogel *et al* (2006) study was to identify and assess integrated and cross-sectoral adaptive management opportunities. A total of 597 individuals were interviewed across five municipalities. The study showed that household employed short-term coping strategies that included the following: relying on piecework; eating less preferred food; reducing number of meals a day; limiting portion size of meals; borrowing food; eating elsewhere and purchasing food on credit.). The summary of South Africa case studies on food security coping strategies is provided in Table 2.4.

Table 2.6: Summary of South African case studies on food insecurity coping strategies

Case Study	Survey Sample	Survey method	Data analysis tool/s	Study results on coping strategies
Oldewage-Theron *et al*, (2006) in the Vaal Triangle.	357 randomly selected caregivers and 149 children aged 9-13 years old.	A food frequency questionnaire and 24-hour recall.	Data were statistically analysed for means and standard deviations.	Limiting the variety of foods served (75 per cent of the households), Limiting portion sizes (8 per cent of the households), skipping of meals (68 per cent of the households) and maternal buffering (76 cent of the households).
Majake (2005) in Qwaqwa.	60 households	A face-to-face interview technique.	Coping Strategy Index (CSI)	Eating from dust bins. Sending households out to beg. Relying on less preferred food preferred foods such as eating pap with tea, jam or animal fat.
Maliwichi *et al* (2002) in Khayelitsha.	20 Households	A questionnaire with open ended/closed questions and a 24 hour food recall.	Data were statistically analysed for means and standard deviations.	The findings showed that 70 per cent of the households in the informal settlement used short term coping strategies including borrowing money (from friends or relatives) to buy food, borrowing food from neighbours / friends, purchasing food on credit, relying on help from friends / neighbours and maternal buffering (i.e. mothers limiting their food intake to ensure children get enough food to eat).
Ziervogel *et al* (2006) in Sikhukhune.	A total of 597 individuals across five municipalities.	A survey questionnaire.	BIOGEME discrete choice analysis software package.	Relying on piecework, eating less preferred food, reducing number of meals a day, limiting portion size of meals, borrowing food, eating elsewhere and purchasing food on credit.

2.11 SUMMARY

To summarise, the literature reviewed suggests that although South Africa is considered self-sufficient in respect of food production, food insecurity continues to remain a substantive developmental challenge. There are several strategies that households adopt when faced with conditions of food insecurity. The adoption of particular mechanisms such as reduction in food consumption, migration and sale of assets depends not only on the severity of the food insecurity created by the external shocks but also on the pre-crisis food security situation of the household. Households are likely to adopt coping strategies when faced with food shortages.

Adopting any of the coping strategies as a permanent behaviour (described above), has implications for households and their members; hence there is a need to study these strategies. For instance, changes in food consumption patterns, due to a reduction in the number of meals or a decline in the quality of food consumed, can be detrimental to the health of household members, especially the well being of children on the long-term. Similarly, sale of livestock could make poor and insecure households more vulnerable and push them (further) into poverty. Therefore, studying and anticipating these strategies becomes important. Only when we are able to anticipate the reaction of the food insecurity, can we design pre-emptive measures to strengthen the resilience of households against shocks without them having to suffer the adverse consequences of resorting to potentially harmful coping mechanisms.

CHAPTER 3

METHODOLOGY

3.1 Background of the study area

The study was conducted among households from Embo, a rural community in the Umbumbulu District of KwaZulu-Natal, South Africa. The map of the Embo community is provided in Figure 3.1. The Embo community was part of the former KwaZulu homeland before 1994. The area is located in a moist coastal hinterland region, which is approximately 40 kilometres from the coastal city of Durban, with a favourable climate to grow a wide range of crops (Camp, 1995). The area has a year round growing season. Only fifteen per cent of the Umbumbulu district has high potential for annual cropping (Hendriks *et al,* 2005 citing Camp, 1995). The main crops grown are maize, dry beans and potatoes. Crops grown include: sweet potato, *amadumbes* (taro), landrace baby potatoes, bananas, chillies, groundnuts and some sugarcane. A further nine percent of the district is arable but less favourable for annual cropping (Hendriks *et al,* 2005 citing Camp, 1995)

3.2 Population and sample selection

The study was based on secondary data collected as part of larger project (Hendriks *et al,* 2005). The sample group of 200 households was made up of 151 Ezemvelo Farmers' Organisation (EFO) members (48 certified and 103 partially certified) and 49 non-members. The EFO members were small-scale commercial farmers who were certified to produce vegetables organically (Hendriks *et al,* 2005). The partially certified members included households in the process of converting to organic production. The non-EFO respondents comprised of households whose members did not join the

EFO, but who reside in the same area as EFO members. Fully certified and partially certified respondents were identified from certification records held at the University of KwaZulu-Natal and a list maintained by EFO's executive committee. The non-EFO control group comprised households whose members did not participate in the EFO (non-adopters), but who were close neighbours of EFO members. Non-members were drawn from lists of households constructed for each of seven neighbouring tribal wards.

3.3 Data collection

This study used data collected with the use of a structured questionnaire (Appendix A). Two consecutive household surveys from Embo were conducted (Appendix A and B), beginning October 2004 and March 2005 (Hendriks *et al,* 2005). A total of 151 EFO members were interviewed (48 certified and 103 partially members) about agricultural production and household consumption and demographics. Some households had multiple EFO members but a single household questionnaire was completed per household. The same questionnaire was completed by 49 non-EFO members. The population for the non-EFO members was stratified into wards (strata). A simple random sampling of ten cases was drawn from each stratum to ensure geographic spread of the sample (Hendriks *et al,* 2005). The best person to be asked about household coping strategies is the person in charge of preparing food and seeing to it that members eat (Maxwell *et al,* 2003). The desired respondents for the questionnaire were the heads of households, defined as the primary decision makers within the household concerning food and income decisions. Therefore, the person who responded to the consumption questionnaire in each household was the person responsible for household food purchases and food preparation (Hendriks *et al*, 2005).

The households were asked for information on their personal and household characteristics such as age, gender, years of schooling and proportion of household income from farming. In March 2005 a panel survey was conducted with the same households using the survey questionnaire in Appendix B. The households were asked about the coping strategies they resorted to during food shortages and related shocks. The CSI was chosen for the study to obtain the real picture of how people perceived and coped with food shortages.

Table 3.1: Study sub-problems, data collected and analysis used

Sub-problem	Data collected	Analysis
1. What are the household food insecurity coping strategies employed by households to mitigate food insecurity?	List of coping strategies obtained from the respondents. List of income shocks.	Coping Strategy Index. Descriptive statistics.
2. To what extent are food insecurity coping strategies effective in mitigating food insecurity?	Household's demographics (income, age, education). List of coping strategies obtained from the respondents.	Coping Strategy Index. Descriptive statistics.
3. Can a decrease in food security result in increased frequency and severity of coping strategies?	List of coping strategies obtained from the respondents.	Coping Strategy Index. Descriptive statistics (frequencies and means).
4. Could food insecurity coping strategies be used as a food security indicator?	List of coping strategies obtained from the respondents.	Coping Strategy Index. Descriptive statistics (frequencies and means).

3.4 Data analysis and treatment

This section indicates the data collected and the analysis applied to address the sub-problems mentioned in chapter one. The summary of the sub-problems and data collected to address these is provided in Table 3.1. The survey results were statistically analysed using the Statistical Package for

Social Sciences (SPSS) version 13.0. Basic demographics are reported using frequencies and descriptive statistics. Bivariate (Spearman) correlations were conducted on several variables. In addition, multivariate analyses were used to determine predictive relationships and *t*-tests were conducted to determine differences between groups. For analysis of coping strategies, the study used the CSI. The CSI is a tool used to analyse how often household apply consumption coping strategies over a period of 30 days (Maxwell *et al*, 2003).

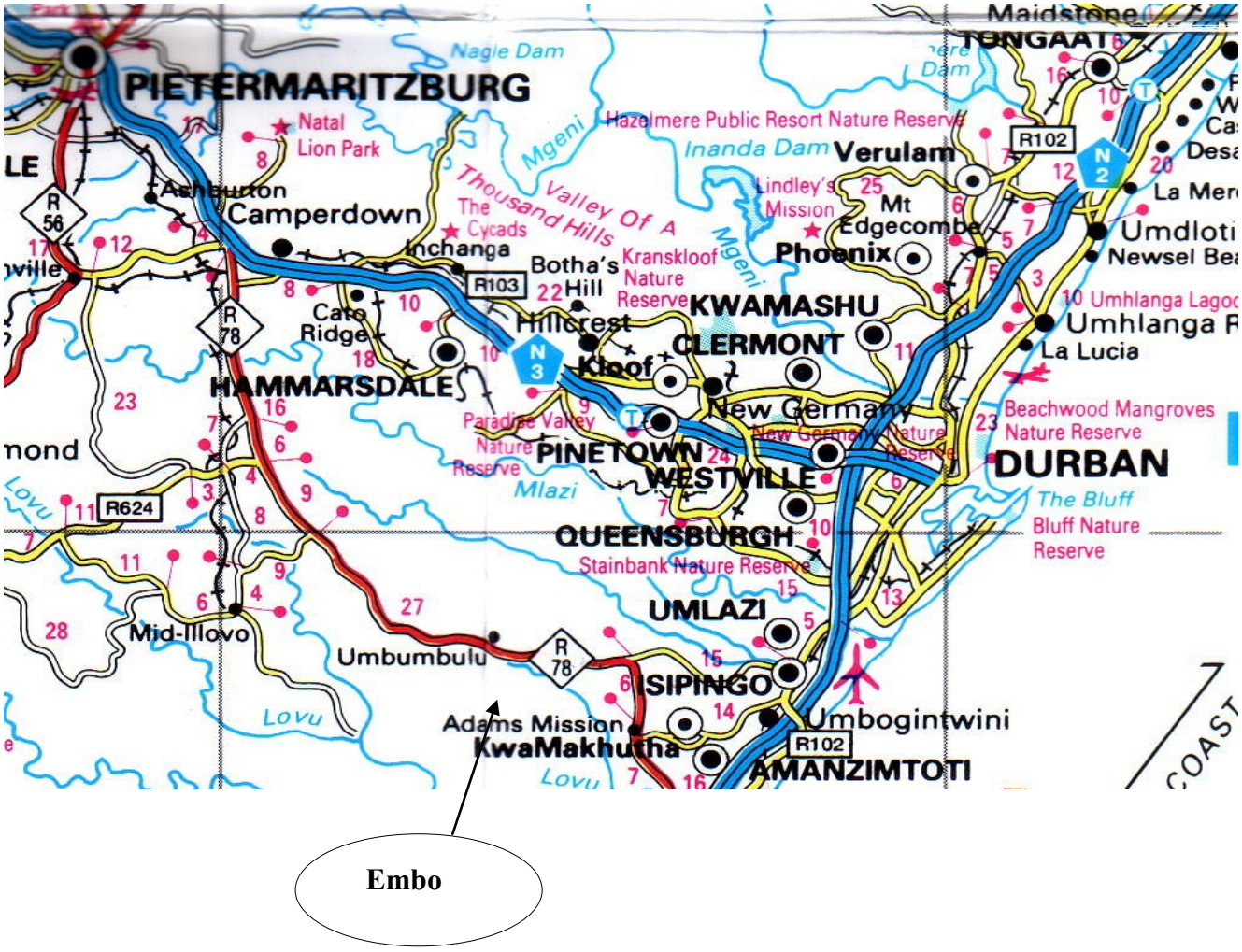

Figure 3.1: Map showing the regions and the location of the study site (Braby, undated)

3.4.1 Creating the Coping Strategies Index and deriving the CSI score

The first part of the analysis of the coping strategies was to obtain the list of consumption coping strategies employed by households in the community (Table 3.2). Households at Umbumbulu used a range of coping strategies to cope with food shortages. These strategies were short-term consumption coping strategies that are immediate responses to derive a sensitive measure to acute food shortage. Households in Umbumbulu reported eleven consumption coping strategies they used to mitigate the effect of food shortage. These are discussed in chapter 5.

Table 3.2: List of consumption coping strategy questions

1. Have you relied on less preferred and less expensive foods in past 30 days?
2. Have you borrowed food, or relied on help from friends or relatives in the past 30 days?
3. Have you purchased food on credit in the past 30 days?
4. Have you gathered wild food in the past 30 days?
5. Have you consumed seed stock held for next season in the past 30 days?
6. Have you sent household members to live elsewhere in the past 30 days?
7. Have you limited portion sizes at mealtimes in the past 30 days?
8. Have you restricted consumption of adults so children can eat in the past 30 days?
9. Have you reduced the number of meals eaten in a day in the past 30 days?
10. Have you skipped entire days without eating in the past 30 days?
11. Have you sold farm implements to purchase food in the past 30 days?

3.4.2 Frequency of coping strategy application

Following the establishment of the locally generated consumption coping strategies list, a households survey was used to quantify how frequently, during the last seven days, households had resorted to using each strategy because they did not have enough food or enough money to by food. The mid-point of each range was then entered into the database and used as the frequency measure in the

calculation of the Coping Strategy Index (CSI) for each household. The frequency descriptions are provided in Table 3.3.

Table 3.3: Frequency description of coping strategy application (after Maxwell *et al*, 2003)

	Frequency of application per week				
Description	Never	Hardly at all	Once in a while	Pretty often	Every day
Number of days	0/week	<1 day	1-2 days	<6 days	7 days
Mid – point	0	0.5	1.5	4.5	7

3.4.3 Severity ranking

After listing the coping strategies, the respondents (EFO and non-EFO members) grouped and ranked the coping strategies according to the level and severity (Table 3.4). The level and severity of strategy application was established by finding the relative frequency of applying the strategies. Strategies were grouped into categories by severity to compare how households perceived the severity of different strategies.

3.4.4 Calculating the Coping Strategy Index score

For each coping strategy, the frequency of application of the strategies was multiplied by the relevant severity weighting of that strategy. The sum of this product for all eleven coping strategies is the CSI score.

3.4.5 Income shocks coping strategies

The second part of the analysis of the coping strategies was to obtain the list of income shock coping strategies employed by households in the community (Table 3.4). Households at Umbumbulu used a range of coping strategies to cope with income shocks. These strategies were income diversifying coping strategies that household employed when experienced income shocks within the household. Income shocks were analysed using descriptive statistics. To test the relationship between the CSI and various coping strategies (both income shock coping strategies and consumption coping strategies) employed by the households, bivariate (Spearman) correlations were used.

Table 3.4 List of income shock coping strategy questions

Borrowed money from relatives
Borrowed money from stokvels
Reduced food consumption
Reduced spending
Received help from friends and relatives
Took on additional work
Used own cash savings
Sold livestock
Sold of other assets
Reduced or stop dept payment

CHAPTER 4

DESCRIPTION OF THE SAMPLE INTERVIEWED IN THE EMBO COMMUNITY

This chapter provides a description of the sample households used in the study. The socio-economic variables are analysed and tested using independent samples t-tests. The variables analysed were household demographics (number of male and females); average household size; household income; ownership of productive and non-productive assets (cattle, goats, sheep, chicken/ducks, horses or donkeys, jewellery, television, fridge, radio and motorbike). The analysis and interpretation of the socio-economic variables is discussed below.

4.1 Demographics of the households used in the study

This section describes the household characteristics of EFO members and the sampled non-members to provide background information regarding their socio-economic status and livelihoods. The age of the household head varied from 27 to 85 years with a mean household head age of 51 years. Approximately 45 per cent and 55 per cent of household heads were female and males respectively. The mean number of females per household was four and the mean number of males per household was three (Table 4.1). The mean number of females per household was five and four for EFO members and non-EFO members respectively. Household size ranged from one to 25 persons with a mean household size of eight members. The mean size of EFO members and non-EFO members was eight and seven respectively. The illiteracy rate was found to be 74 per cent (people without any primary of basic education). The remaining 21 per cent of the households had education levels between one and thirteen years of schooling. The EFO members had an average of five years of

schooling compared to non-EFO member who had an average four years of schooling. The overall number of years of schooling per respondent was fours years for the combined sample.

Table 4.1: Characteristics of the households studies in Umbumbulu, November 2004, N=200

Characteristics	Mean		
	EFO member N = 49	Non-EFO member N =151	Total number of households
Household age	50.0	52.6	50.6
Education of household head (years of completed schooling)	4.0	3.0	3.7
Number of males per household	3.8	2.7	3.6
Number of females per household	4.5	3.9	4.4
Size of the households	8.3	6.6	7.9
Mean number of years of schooling	5.0	4.0	4.5

The main sources of household incomes were wages, state pensions and remittances. The mean monthly household income was R1570 from wages and R1059.20 from remittances respectively (Table 4.2) for the whole sample. A t-test showed no significant relationship between monthly income of female and male-headed households.

Table 4.2: Mean monthly income of the households studied in Umbumbulu, November 2004, N= 200

Monthly Income (R/c)	Mean		
	EFO member (n=151)	Non-EFO member (n=49)	Total (n=200)
Income from wages and salary	1560.30	1460.00	1531.65
Income from remittances	1113.86	874.88	1059.20

Farming was the major source of income for the households; about 99 per cent of the household derived some income from farming (Figure 4.1). For partially certified members who had recently joined the organisation, organic sales of vegetables averaged R249 per annum, ranging from R35 to R2000 during the year prior to the survey. Organic sales vegetables contributed about 60 per cent of total farm income. Farm income for EFO members was significantly higher than for households in other groups (partially certified and non-EFO member). Annual sales of vegetables averaged R988 per household, ranged from R89 to 5194 per annum.

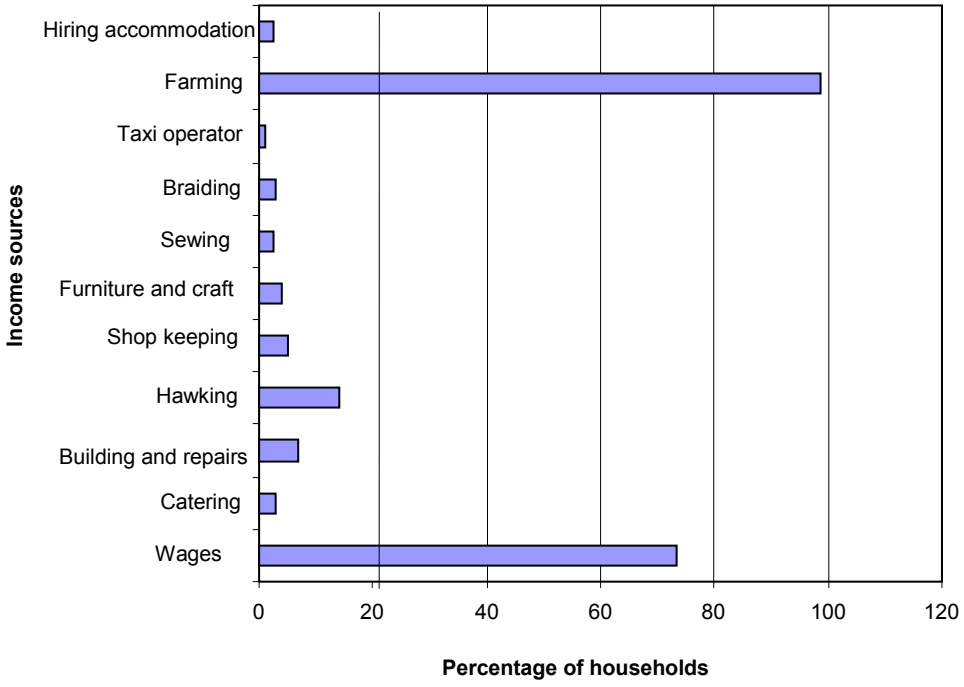

Figure 4.1: Income sources of households studied in Umbumbulu, November 2004, N=200.

Households generally had low levels of savings. About 15 per cent of households had savings of less than R500 (Figure 4.2). Only two per cent of the households had savings of more than R5000 per annum (Figure 4.2). A t-test showed no significant differences between the amount saved by female and male-headed households.

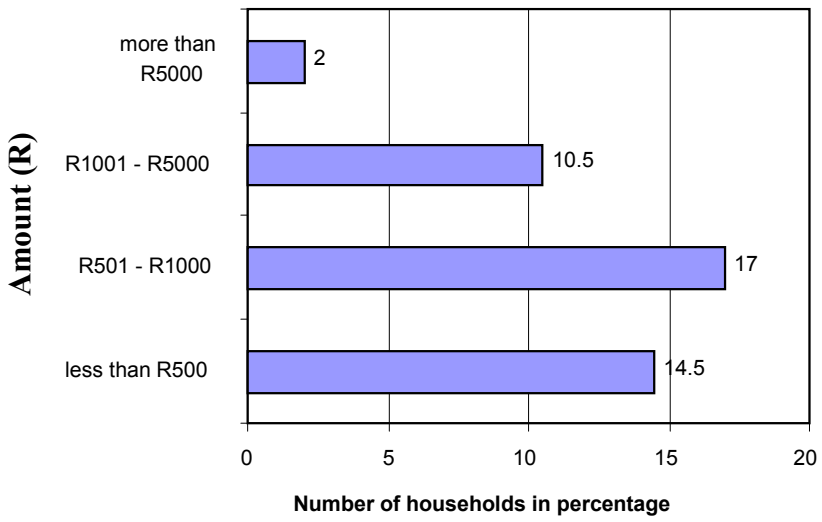

Figure 4.2: Current level of savings of households studied in Umbumbulu, November 2004, N=200.

4.2 Agricultural production systems

Two production systems namely crop and livestock production systems were found in the area. Both production systems were important sources of food and income for households. Income from farming activities (as discussed section 4.1) appeared to be an important source for households. In particular, potato sales represent a significant share of household income.

Crop area available per household ranged from none to nine hectares with a mean of one hectare per household (Browne *et al,* 2007). Maize, beans and potatoes were the main crops grown. Other crops grown included *amadumbes*, sugarcane, bananas, chillies and peanuts. The EFO farmers produced and marketed baby potatoes from a landrace of the Irish potato passed down through generations of

farmers in the area (Hendriks *et al,* 2005). According to Hendriks *et al* (2005), potato is an important commercial crop for farmers and is ranking second as an income source after *amadumbe (taro).*

The average annual income from farm activities were R357, R339 and R988 for non-members, partially certified members and certified EFO members respectively. EFO farmers sold the produce to Woolworths through an organic pack house and; to hawkers from Isipingo; informal traders and community members (Hendriks *et al,* 2005). Farmers reported crop quality losses, rotting, sprouting, shrinking, greening and insect damaged.

Livestock production plays an important role as a source of food and income for the households. Liquid assets, such as small animals, are often used by poor rural households for consumption smoothing and as a form of insurance against the risk of food entitlement failure. Livestock production also acts as a buffer during food shortages. Cash can be generated from sale of livestock products and used to buy food and other household requirements.

Table 4.3 shows that households owned productive assets in the form of livestock. About 43 per cent of households owned cattle; 45 per cent owned goats; 33 per cent owned chickens/ducks; five per cent owned donkeys/horses and about 0.5 per cent owned sheep (Table 4.3). About seven and six per cent of the households also indicated that they slaughtered goats and cattle respectively. It is important to note that in this study, households slaughtered productive assets for festivities. It is expected that food insecure households would concentrate on satisfying the food needs of households first.

Table 4.3: Percentage of households owning productive assets in Umbumbulu, November 2004, N=200

Type of livestock	Percentage of households			
	Owned	Sold	Slaughtered for food	Slaughtered for festivities
Cattle	42.5	8.0	6.0	8.5
Goats	45	7.5	7.0	10.5
Sheep	0.5	-	-	-
Chickens/ducks	33	4.0	29	7.0
Donkeys/horses	5.0	-	-	-

About eight per cent of households sold cattle and goats and about four percent sold chickens and ducks (Table 4.3) Meat is an important component of household food nutrition and meat consumption is an indication of that household meat its a food and nutrition requirement. About 29 per cent of households indicated that they slaughtered chickens for food consumption (Table 4.3).

4.3 Ownership of assets by households

Asset ownership and/or disposal provided valuable information for identifying food insecure households. Asset levels and changes in asset ownership over time are indicators of prevailing vulnerability, particularly if it is possible to clearly identify distress sales (Ellis, 2003; Devereux *et al*, 2001). According to Monde (2003), a characteristic of more successful rural households is the fact that they own more and improved agricultural implements. The overall low ownership of assets might be an indication that households concentrate on cultivation of food gardens to produce food and ensure food security. About 16 per cent of the households owned a plough (Figure 4.3). A small percentage of households (one per cent) owned planters, harrows or cultivators.

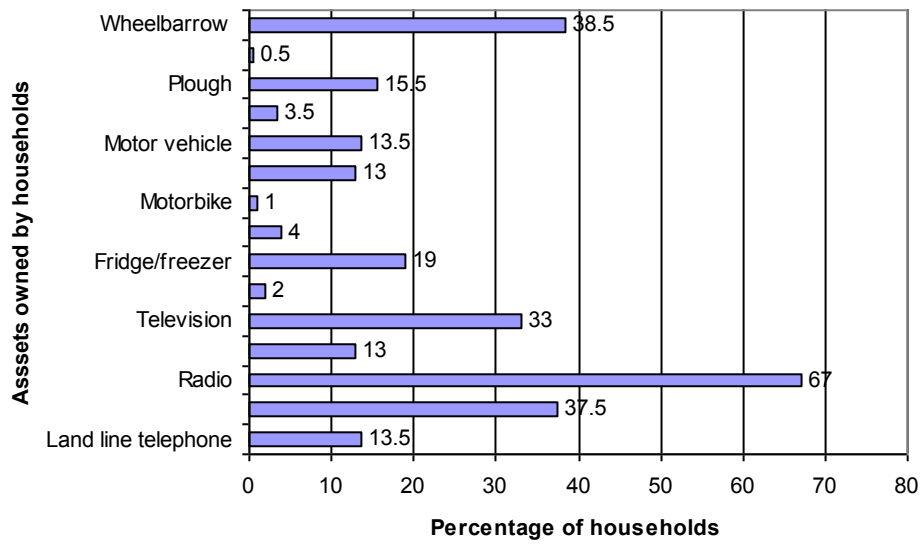

Figure 4.3: Percentage of households owning non productive assets in Umbumbulu, November, 2004, N=200.

Generally, the low ownership of agricultural implements is a cause of concern. Households indicated that farming was their major source of income. This might imply that households relied on hired implements. Apart from ownership of agricultural implements, households owned various non-productive assets (Figure 4.3). A t-test showed no significant difference between the ownership of non-productive assets and asset ownership between the female and male-headed households.

Asset ownership is an important indicator of the degree of household food insecurity. Disposal of assets is often mentioned as a very important coping strategy for households exposed to shocks. Disposal of assets of non-productive assets, such as household items, appliances and agricultural implements, often indicate extreme vulnerability. It is important to note that in this study 53 per cent of the households indicated that they sold non-productive assets as a strategy to mitigate the incidence of income shocks. Liquid asset divestment, to cope with temporary food shortages, can be

interpreted as a sound indicator of vulnerability (Devereux, 2001). Households sold liquid assets during food shortages and this indicates vulnerability to food insecurity among the surveyed households.

CHAPTER 5

RESULTS AND DISCUSION

This study set out to investigate the food insecurity coping strategies of Umbumbulu households. The study explores the coping strategies that Umbumbulu households resort to during food shortages. Data was collected for various coping strategies that households resorted to during food shortages. A list of coping strategies was obtained and the frequency of application of coping strategies by sampled households. Spearman's correlations were performed to see the contribution of each strategy to the Coping Strategy Index (CSI) and determining food insecurity.

5.1 Coping strategies employed by Umbumbulu households

Households employ coping strategies when confronted by food shortages and in response to shocks. The first research sub-problem was to explore what coping strategies were employed by households when faced with food shortages. The most prevalent coping strategies were identified through household surveys and by using the Coping Strategy Index (CSI). Households in Umbumbulu identified 11 consumption coping strategies they used to mitigate the effect of food shortages. The responses of the households to questions on the application of consumption copings strategies are shown in Table 5.1.

5.1.1 Consumption coping strategies identified by households

When confronted with an economic and social environment that limits or changes access to food, respondents made compromising changes to their diets. Sixty-seven per cent of the sampled households consumed seed that is kept for planting next season to meet food needs. Altering meal patterns was also expressed. Fifty-two per cent (Table 5.1) of households indicated that they used the strategy of borrowing food, or relying on help from friends or relatives as means of ensuring that there was food for household members. Borrowing food, or rely on help from friends or relatives is indicative of strong social networks among rural households (Majake, 2005; Monde, 2003). Thirty-three per cent of households purchased food on credit as a strategy to ensure food availability (Table 5.1). Purchasing food on credit is a short-term coping strategy with the potential of putting a household in a more vulnerable position in the long-term (Majake, 2005; Maxwell, *et al*, 2003).

The analysis revealed that about 64 per cent of sampled households relied on less preferred and less expensive foods when they faced food shortages over the previous 30 days. A decrease in the quantity of food intake was expressed more directly than a decrease in the frequency of food consumption, although both were noted to be occurring. About 21 per cent of households revealed that adults reduced the number of meals eaten a day and 33 per cent of households limited portion sizes at meal times when they faced food shortages over the previous 30 days.

Households relying on less preferred and less expensive foods may be consuming foods that are inadequate for living healthy and active lives. These compromises were expressed as being divergent from the cultural norms and expectations for the typical diet. Both males and females stated that it was rare that households went without meals for the entire day, as usually relatives or close friends

would help out. About four per cent of the sampled households went for days without eating (Table 5.1). About 66 per cent of households gathered wild foods, hunted or harvested immature crops to meet food needs (Table 5.1).

Table 5.1: Percentage of households that employed different consumption coping strategies over the previous 30 days, March 2005, N = 200

Coping strategies	Households using the strategy (%)
Consumed seed held for next season	67.0
Relied on less preferred and less expensive foods	63.5
Borrowed food, or rely on help from a friend or relative	52.0
Gathered wild food, hunt or harvest immature crops	36.0
Purchased food on credit	33.0
Limited portion size at meal times	32.5
Reduced number meals eaten in a day	20.5
Restricted consumption of adults in order for small children to eat	14.0
Send households members to berg	16.5
Sent household members to eat elsewhere	7.0
Went out entire days without eating	4.0

5.1.2 Frequency application of consumption coping strategies by households

This section discusses the frequency application of consumption coping strategies. About 25 per cent percent of households (Table 5.2) indicated that they hardly (less than one a week) applied the strategy of relying on less preferred or less expensive foods. About 19 and 11 per cent of households applied the strategy of relying on less preferred and less expensive foods sometimes (one to two days a week) and often (three to six days a week) respectively (Table 5.2). About nine and ten per cent of

households hardly (<one day) and sometimes (one to two days) applied this strategy respectively (Table 5.2). About 78 per cent (Table 5.2) of households used the least severe coping strategy of limiting portion size at all times as a strategy to mitigate food shortages and 21 per cent of households hardly applied this strategy (less than once a week).

Table 5.2: Frequency application of coping strategies in Umbumbulu, March 2005, N=200

Coping strategies	Frequency of application per week by percentage of households using strategy (n=200)				
	Never	<1 day	1-2 days	3-6 days	7 days
Relied on less preferred and less expensive foods	38	24.9	19.5	10.5	6.0
Limited portion size at meal times	78	8.5	9.5	2.0	0
Reduced number meals eaten in a day	66	21	8.0	3.0	0.5
Borrowed food, or rely on help from a friend or relative	46.5	19	25	7	0.5
Purchased food on credit	65.5	12	14	4	3
Sent household members to eat elsewhere	91	4	2	1	0
Consumed seed held for next season	31.5	13.5	29.5	17.5	6.5
Restricted consumption of adults in order for small children to eat	84.5	10	3.5	0.5	0
Sent households members to berg	82.0	7.5	6.5	2.5	0
Went out entire days without eating	94.5	2.5	1	0	0
Gathered wild food, hunt or harvest immature crops	62.5	6	23	7	0

About 14 per cent of households sometimes (one to two days a week) applied the strategy of purchasing food on credit (Table 5.2). Few households (7 per cent) used sending a household member to eat elsewhere as a strategy to ensure food access to some of the household members and this strategy seldom (less than day a week) (Table 5.2). Three per cent of households applied the strategy of purchasing food on credit seven days a week (every day). Seven per cent of households sent households members to eat elsewhere less than once a week (Table 5.1). Severe strategies used by households to mitigate the incidence of food shortages were consuming seed stocks held for the

next planting season; restricting consumption of adults in order for small children to eat; feeding working members of households at the expense of non-working members and begging food from neighbours or relatives (Table 5.1). A t-test showed no significant differences in the application of moderately severe coping strategies (consuming seed stock held for the next season; restricting consumption of adults in order for small children to eat, begging food from neighbours or relatives) between female and male headed-households. About 67 per cent of households consumed seed stock for the next season as a strategy to mitigate against food insecurity (Table 5.1). About 30 and 18 per cent of the households applied this strategy one to two days and three to six days a week respectively (Table 5.2). About seven per cent of households applied the strategy of consuming seed for the next planting season every day (seven days a week) in the past 30 days Although few households (14 per cent) used the strategy of restricting consumption of adults in order for small children to eat, one per cent of the households applied this strategy three to six days a week (Table 5.2).

Ten per cent of households applied the strategy of restricting consumption of adults in order for small children to eat, less than one day a week in the past 30 days (Table 5.2). Table 5.1 shows that about four per cent of households used the strategy of skipping an entire day without eating as a strategy to overcome food shortages and about three per cent of the households applied this strategy less than one day a week (<one day) (Table 5.2). Thirty-six per cent of households indicated that when the food situation within the household worsened, they used the severe strategy of gathering wild foods, hunting or harvesting immature crops to ensure that there was food for household members (Table 5.1). Twenty-three per cent of households used the strategy of gathering wild food, hunt or harvest immature crops one to two days per week (Table 5.2). About seven per cent of households applied the strategy of gathering wild foods, hunting or harvesting immature crops three to six days a week.

Going entire days without eating was uncommon among the households and this is evident in Table 5.1 where few household (about four per cent) indicated the application of this strategy. T-tests revealed that there was no significant difference in the application of most severe coping strategies; going entire days without eating and gathering wild food, hunting or harvesting immature crops between female and male-headed households.

5.1.3 Level and severity of food insecurity coping strategies

The eleven coping strategies employed by Umbumbulu households were categorised by level of severity as perceived by households. Results of the analysis on the levels of severity of coping strategies are given in Table 5.3.

5.2 Income shocks coping strategies identified by Umbumbulu households

Households at Umbumbulu were asked about the coping strategies they used to cope with income shocks. Households identified ten coping strategies during income shocks. Part of a household's management process in the face of food insecurity is the practice of selling off assets and borrowing food, money or other assets. Borrowing money from stokvels (about 53 per cent of the households) and selling off other non-productive assets (about 53 per cent) were mostly used by households to cope with income shocks over the past year (Table 5.4). Households sold assets, employing an erosive coping strategy, which is an indication that households were highly vulnerable to food insecurity. About 45 per cent of households reduced food consumption and sold livestock respectively as strategies to cope with income shocks (Table 5.4).

Table 5.3: Level and severity of food insecurity coping strategies in Umbumbulu, March 2005, N=200

Severity of strategy	Households using the strategy (%)
Least severe	
Relied on less preferred and less expensive foods	63.5
Limited portion size at meal times	32.5
Reduced number meals eaten in a day	20.5
Moderately severe	
Borrowed food, or rely on help from a friend or relative	52.0
Purchased food on credit	33.0
Sent household members to eat elsewhere	7.0
Severe	
Consumed seed stock held for next planting season	67.0
Restricted consumption of adults in order for small children to eat	14.0
Sent household members to beg neighbours or relatives	16.5
Most severe	
Went out entire days without eating	4.0
Gathered wild food, hunt or harvest immature crops	36.0

Table 5.4: Description of income shock coping strategies in Umbumbulu, November 2004, N=200

Coping strategy	Households using the strategy (%)
Sold of other assets	52.5
Borrowed money from stokvels	52.5
Reduced food consumption	45.0
Sold livestock	45.0
Borrowed money from relatives	33.5
Reduced or stop dept payment	31.5
Took on additional work	26.0
Received help from friends and relatives	23.0
Reduced spending	11.0
Used own cash savings	3.0

The practice of selling assets such as jewelry and machinery occurred, and generally preceded the practice of borrowing money from friends. Few households, about three per cent, drew on own cash savings as a strategy to cope with income shocks (Table 5.4).

5.3 Catergorisation of coping strategies

Coping strategies are employed to mitigate the effects of not having enough food to meet the household needs. Some coping strategies are positive means of overcoming food crisis, for example savings that can be called upon and family networks for sharing. However, for many poor people coping strategies are negative - that is, they have a long-term detrimental effect on livelihoods and resilience. Categorisation of income shock coping strategies is presented in Table 5.5. The coping strategies are categorised between erosive coping strategies, meaning that the strategies were detrimental to future food security of households and non-erosive coping strategies, meaning that the strategies were not detrimental to future food security of households.

Non-erosive coping strategies were employed by Umbumbulu households when there is an income shock and included the following: reducing food consumption; receiving help from friends and relatives; taking on additional work; using own cash savings and reducing or stop dept payment. Households resorted to erosive coping strategies of borrowing money from relatives to buy food; borrowing money from stokvels to buy food; reducing spending, selling of livestock assets and selling of non-productive assets when confronted by food shortages. Selling off assets is commonly considered the most severe income and consumption strategy (Corbett, 1988).

Table 5.5: Categorisation of households non-erosive and erosive coping strategies in Umbumbulu, March 2005, N=200

	Non-erosive coping strategies	Erosive coping strategies
Income shocks coping strategies	Reduced food consumption Received help from friends and relatives Took on additional work Used own cash savings Reduced or stop dept payment	Borrowed money from stokvels Borrowed money from relatives Sold off non productive assets Reduced spending Sold livestock
Consumption coping strategies	Relied on less preferred and less expensive foods Limited portion size at meal times Reduced number meals eaten in a day Borrowed food, or rely on help from a friend or relative Sent household members to eat elsewhere Restricted consumption of adults in order for small children to eat Sent households members to beg	Purchased food on credit Consumed seed held for next season Went entire days without eating Gathered wild food, hunt or harvest immature crops

Borrowing money from local credit societies is considered the most severe strategy for both males and females, as the households then also have to pay back the interest accrued. Reducing spending on basic services such as health and education could have long-term detrimental effects and increase food insecurity. Going entire days without eating might also have a negative effect on the health of households. Consuming seed held for the next season and harvesting immature crops could have an effect on the next season's food production and lead to food shortages and food insecurity.

5.4 Coping Strategy Index scores of households

Given that the CSI monitoring tool is a comparative tool, rather than an absolute measure of food insecurity, the CSI score alone has no meaning (Maxwell *et al,* 2003). However it establishes a baseline within a sample and a comparative measure from which changes in food security among

households can be monitored over time (Maxwell *et al* 2003, Corbett 1988). Cross-sectional comparisons of food security status can be made between households and subgroups within the population. Comparing CSI scores and averages gives a good picture of overall household food security and establishes baseline for monitoring trends and the impact of interventions (Maxwell *et al,* 2003; Devereux, 2001). The analysis under 5.4.1 uses the mean CSI score to compare the relative food insecurity between households defined by one or more household characteristics. The comparisons describe associations between household demographics and comparable food security status (who is comparatively food insecure).

5.4.1 CSI scores and gender of household heads

The analysis of the CSI score reveled that female-headed households had a lower CSI score than male-headed households (Figure 5.1). . The CSI score of female-headed household was lower than the CSI score of male-headed household (Figure 5.1). The interpretation of the score indicates that male-headed households were more food insecure than female-headed households. Differences in the CSI score between female and male-headed households were not statistically significant (at both $P \leq 0.01$ level and $P \leq 0.05$ levels of significance), meaning that there were no significant differences on the CSI score between the female and male-headed households although the CSI scores of the male-headed households were higher than the CSI scores of the female-headed households.

The higher levels of food security for female headed households could be explained by various factors. Female-headed households had, on average, fewer members (on average seven members), better levels of education (four years of education) and higher incomes per month (average R1763.98

per month) than their male counterparts. The male-headed households had more members (nine members), lower levels of education (three years of education) and lower incomes per month (R1254.24). In summary, male-headed households were more vulnerable to food insecurity than female-headed households.

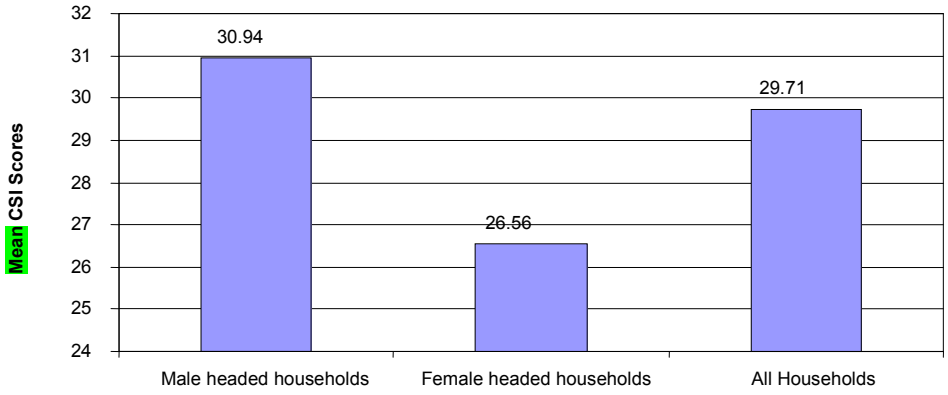

Figure 5.1: Mean Coping Strategy Index scores by gender of the households, March 2005, N=200.

5.4.2 CSI scores and EFO membership

A comparison of CSI scores for EFO and non-EFO members suggested that EFO members had lower levels of food insecurity than the non-members. Their estimated mean CSI scores for EFO members and non-EFO members were 28.64 and 33.05 respectively (Figure 5.2).

The interpretation of the scores indicates that EFO members (n=151) were more food secure than the non-EFO members (n=49). The better food security situation of the EFO members might be attributed to various factors. Although the EFO members had larger household sizes (eight members

per household) than the non-EFO members (seven members per household), the EFO members had higher incomes, particularly from farming than other households. The average annual income from farm activities were R357, R339 and R988 for non-EFO members, partially certified members and certified EFO members respectively. The EFO members had an average of five years of schooling compared to non-EFO member who had an average four years of schooling. In summary, EFO members were less vulnerable to food insecurity than non-EFO members, showing that additional income from farming benefited EFO members.

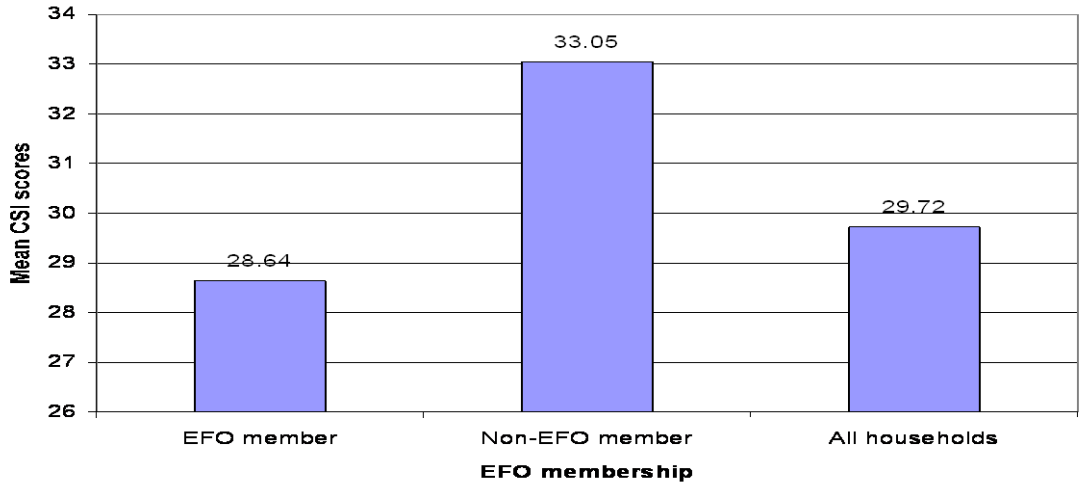

Figure 5.2 Mean Coping Strategy Index scores and household membership, March 2005, N=200.

5.4.3 Correlation of consumption coping strategies with CSI

Spearman's correlation showed that food shortage coping strategies were significantly correlated to the CSI score at $P \leq 0.01$ and $P \leq 0.05$ levels. These strategies were the following: relying on less preferred and less expensive food; limiting portion size at meal times; reducing number of meals

eaten a day; borrowing food or relying on help from friends or relatives; purchasing food on credit; gathering wild food, consuming seed stock held for the next planting season; restricting consumption of adults in order for small children to eat; sending household members to eat elsewhere; sending households to berg; going entire days without eating; and gathering wild food, hunting or harvesting immature crops.

There was a strong and positive correlation ($P \leq 0.01$) between the least severe coping strategies of relying on less preferred and less expensive foods and reducing the number of meals eaten in a day with CSI score. Application of least severe strategies indicated food insecurity among Umbumbulu households. There was also a strong and positive relationship ($P \leq 0.01$) between the moderately severe coping strategies of borrowing food or relying less on help for a friend or relative and purchasing food on credit with CSI score (Table 5.6). Although credit use is assumed to be detrimental for the food insecure and vulnerable households, credit used to purchase food was used by the household. Coping strategies of consuming seed held for the next season and restricting consumption of adults in order for small children to eat were strongly correlated to the CSI score of the household.

The strong and positive correlation of the consumption coping strategies to the CSI implies that households continued to apply the coping strategies despite using their income and consumption of food from their own production. The study indicated that as CSI score increased, households relied more often on consumption coping strategies showing high level of food insecurity. Households with low CSI score applied consumption coping strategies less frequently than households with high CSI score.

Table 5.6: Spearman's correlation coefficients for consumption coping strategies and cumulative Coping Strategy Index, March 2005, N = 200

Coping strategies	Spearman's correlation-CSI
Relied on less preferred and less expensive foods	0.380**
Limited portion size at meal times	0.589**
Reduced number meals eaten in a day	0.471**
Borrowed food, or rely on help from a friend or relative	0.671**
Purchased food on credit	0.327**
Sent household members to eat elsewhere	0.116
Consumed seed held for next season	0.303**
Restricted consumption of adults in order for small children to eat	0.451**
Sent households members to berg	0.345**
Went entire days without eating	0.228**
Gathered wild food, hunt or harvest immature crops	0.167*

P = Sig. (2-tailed) results

* Significant at P<0.05 level (2-tailed)

** Significant at P<0.01 level (2-tailed)

5.4.4 Correlation of income shocks coping strategies with CSI

Spearman's correlation showed that borrowing money from relatives; reducing spending; selling of livestock and reducing or stopping debt payments were positively and significantly correlated to the CSI score (Table 5.7). The strong positive correlation of income shock coping strategies to the CSI implies households continued applying these coping strategies despite using their income generated and food consumption from own production. The findings imply that income shocks increased the food insecurity of households in Umbumbulu and made them more vulnerable to food insecurity.

Table 5.7: Spearman's correlation coefficient for income shocks coping strategies and Coping Strategy Index, March 2005, N=200

Income shock coping strategies	Spearman's correlation-CSI
Borrowed money from relatives	0.161*
Borrowed money from stokvels	0.086
Reduced food consumption	0.087
Reduced spending	0.058*
Received help from friends and relatives	0.126
Took on additional work	0.114
Used own cash savings	0.129
Sold livestock	0.157*
Sold of other assets	0.108
Reduced or stop dept payment	0.189**

P = Sig. (2-tailed) results

* Significant at P<0.05 level (2-tailed)

** Significant at P<0.01 level (2-tailed)

5.4.5 Correlation of the CSI with household income

Farming, catering, hiring accommodation, building and repairs, hawking and sewing were significantly related to the CSI score (Table 5.8). Farming, building, repairs, catering and hawking were negatively correlated to the CSI. Hiring out accommodation was strongly related to the Coping Strategy Index. The negative and statistically significant correlation between these income sources and CSI indicates that income from these sources buffered households from food insecurity.

5.4.6 Correlation of CSI with production assets of the households

Ownership of goats, sheep chicken/ducks and donkey/horses was not significantly correlated to the CSI score (Table 5.9). Ownership of cattle was significantly correlated to the CSI score (Table 5.9). The significant and negative correlation of cattle ownership to the CSI score means that ownership of cattle minimised the need to apply coping strategies. Households indicated that selling livestock was a strategy they applied when they were faced with income shocks.

Table 5.8: Spearman's correlation coefficient for sources of income and Coping Strategy Index, March 2005, N=200

Income sources	Spearman's correlation-CSI
Wages/salary income	-0.030
Farming	-0.296**
Hiring out accommodation	1.000*
Catering	-1.000*
Building or repair houses	-0.771*
Hawking	-0.819**
Sewing	1.000**
Shop keeping	-0.745
Making furniture or handicrafts	-0.943
Braiding hair	a
Taxi operator	a

P = Sig. (2-tailed) results

* Significant at P<0.05 level (2-tailed)

** Significant at P<0.01 level (2-tailed)

Table 5.9: Spearman's correlation coefficient for productive assets owned by the households, November 2004, N=200

Productive assets	Spearman's correlation-CSI
Cattle	-0.142*
Goats	0.107
Sheep	0.108
Chickens/ducks	0.083
Donkey/horses	0.058

P = Sig. (2-tailed) results

* Significant at P<0.05 level (2-tailed)

In conclusion, the positive and significant correlation of the CSI score to consumption coping strategies, income shocks, sources of income and ownership of productive assets indicates that these strategies effective in mitigating the food insecurity situation for the Umbumbulu households.

The next chapter draws conclusions emanating from the results and discussions of the study.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

This study set out to investigate coping strategies applied by households to mitigate the effects of household food insecurity in the Umbumbulu community and evaluated whether these strategies were beneficial or detrimental to long-term household food security. This chapter provides the conclusions and recommendations drawn from the findings from investigations of the following four sub-problems:

- What are the household food insecurity coping strategies employed by Umbumbulu households to mitigate food insecurity?
- To what extent are food insecurity coping strategies effective in mitigating food insecurity?
- Does a decrease in food security result in increased frequency and severity of coping strategies?
- Could food insecurity coping strategies be used to indicate food insecurity?

Food was not adequately available year-round for most households. Households experienced food shortages leading to a need to apply consumption coping strategies. Household income was not adequate to meet household food requirements. Households suffered income shocks. Households in Umbumbulu employed short-term consumption coping strategies to mitigate the incidence of food shortages. When confronted with food shortages that limited or changed access to food, households made compromising changes to their diets. When confronted by income shocks, households also employed various coping strategies, mainly income diversifying strategies, aimed at soothing

household income. Households in Umbumbulu applied consumption and income soothing strategies as a means of managing food shortfalls, income shocks and ensuring livelihoods that are sustained.

Positive correlation of CSI scores and the application of coping strategies indicated low levels of food security. Most coping strategies employed were not detrimental to livelihoods and future food security and indicated some resilience to income shocks. A decrease in food security resulted in increased frequency and severity of coping strategies employed. Analysis showed that due to food shortages, some coping strategies were applied frequently, some of these were severe. The degree of severity of coping strategies adopted varied, indicating different levels of food insecurity. The application of severe coping strategies indicated household food insecurity.

Food insecurity coping strategies were used to indicate food insecurity among households. Correlations between the CSI, sources of income and asset ownership indicated that Umbumbulu households were food insecure. A simple comparison of CSI scores showed that EFO members had lower CSI scores and were more food secure than non-EFO members due to the fact that EFO members had higher average annual incomes and were more educated compared to non-EFO members. Income smoothing strategies smoothed consumption shocks, while vulnerability to consumption shocks reduced as per capita crop income increased.

6.1 Recommendations

Food security interventions need to support beneficial coping strategies that support resilience. Households in the study area engaged in agricultural production that improved the incomes and food

consumption.. Sustainable agricultural production should be promoted and sustained at household level. The KwaZulu-Natal Department of Agriculture and Environmental Affairs and local development agencies need to assist the community by providing production inputs, for example, provision of vegetable seeds, mechanisation, infrastructure and production techniques. This can encourage even households with limited access to land to cultivate mixed gardens around their homesteads. Home gardens can make valuable contributions to the family food supply and income. The KwaZulu-Natal Department of Agriculture and Environmental Affairs and local development agencies should give more advice through extension and training services, providing support through negotiation of contracts for households to sell their products and improve household income. While agriculture may play a major role in the reduction of food insecurity, attention should also be given to the promotion of non-farming activities, particularly those that reduce food insecurity. The community and households should actively engage in the design and implementation of policies and strategies for farm and non-farm interventions.

6.2 Recommendations for further research

The study has focused mainly on understanding the coping strategies of the sample households in the study area. The study did not investigate the causes of food shortages and income shocks. Further research is required to study the causes of food shortages and various income shocks. There is a need for additional longitudinal data to understand causality in relationships and the impact of food security. More comprehensive research studies, with adequate time allocation and adequate considerations of both crop and livestock based food sources are required for a better understanding of household security. Further investigation into the ways in which households have applied specific

coping mechanisms to deal with the food insecurity is required to better understand the coping strategies and to design appropriate support programmes.

Current food security policies and strategies at national, regional and local levels need to be researched to investigate if policies have adequately addressed food insecurity coping strategies and the impact these strategies could have in enhancing food and livelihood security of households.

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APPENDIX A : SURVEY QUESTIONNAIRE

Embo/EFO HOUSEHOLD AND CONSUMPTION QUESTIONNAIRE 2004

The information captured in this questionnaire is strictly confidential and will be used for research purposes by staff and students at the University of KwaZulu-Natal to inform EFO farmers and stakeholders how they might improve their organic farming venture. Respondents do not have to answer questions – answers are voluntary. The respondent should be the *de facto* (actual) household head.

Conhhno – consumption questionnaire household number
Hhcaseno – consumption questionnaire case number

Interviewer:_____

Date: _____

UNIVERSITY OF KWAZULU-NATAL

Respondent's name:	**Hhrespnm**	Household number:		GPS coordinate:	

hhtotno – total number in household Hhtotm – total number males in household Hhtotf – total number females in household hhm0-12m – males aged 0-12 month hhf0-12m – females aged 0-12 months hhm12m-5 – males aged 1-5 yrs hhf12m-5 – females aged 1-5 yrs hhm6-16 – males aged 6-16 hhf6-16 – females aged 6-16 hhm17-65 – males aged 17-65 hhf17-65 – females aged 17 to 65 hhm+65 – males aged >65 hhf+65 – females aged >65	Write the names of all household members									
	1…… HEAD	2…..	3…..	4…..	5…..	6…..	7…..	8…..	9…..	10…..
1. Is …… Male or female	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F	☐ M ☐ F
2. If the household head is a female is she widowed? genhhhd – gender of head of household ghhfwid - If a female, is she widowed	☐ Y ☐ N									
3. Age in years	____	____	____	____	____	____	____	____	____	____
4. Highest level of completed schooling or educational hhsch0yr –no of members of hh with 0 yrs schooling hhsch1yr–no of members of hh with 1 yrs schooling hhsch2yr–no of members of hh with 2 yrs schooling hhsch3yr–no of members of hh with 3 yrs schooling hhsch4yr–no of members of hh with 4 yrs schooling hhsch5yr–no of members of hh with 5 yrs schooling hhsch6yr–no of members of hh with 6 yrs schooling hhsch7yr–no of members of hh with 7 yrs schooling hhsch8yr–no of members of hh with 8 yrs schooling hhsch9yr–no of members of hh with 9 yrs schooling hhsch10y–no of members of hh with 10 yrs schooling hhsch11yr–no of members of hh with 11 yrs schooling hhsch12y–no of members of hh with 12 yrs schooling	____	____	____	____	____	____	____	____	____	____

hhsch13y–no of members of hh with 13 yrs schooling										
5. Occupation (no in household of each) 1 = WAGE EMPLOYED **WAGEMP** 2 = FARMER HHFARMER **hhfarmer** 3 = SELF-EMPLOYED **SELFEMP** 4 = HOUSEKEEPER **hhkeeper** 5 = PENSIONER **PENSIONR** 6 = DISABLED **DISABLED** 7 = UNEMPLOYED BUT SEEKING WORK **UNEMPSKW** 8 = SCHOLAR **SCHOLAR** 9 = INFANT OR CHILD (0 – 6 YEARS) **INFANT** 10 = VAGRANT **VAGRANT**	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10
6. Wage or salary income (Rands per month) **hhtotinc (no including income clearly from farming)**	______	______	______	______	______	______	______	______	______	______
7. Income remitted by migrants and commuters (Rands per month) **hhtotrem – total amount come into household – not only from migrant**	______	______	______	______	______	______	______	______	______	______
8. If the household head is a migrant or weekly commuter, who is the *de facto* household head? **hhmigran – is the household head a migrant worker** **defactog – what is the gender of the de facto HoHH** **defactoa – what is the age of the de facto HoHH**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

9. During the past year did any household member earn income through any of the non-farm enterprises listed below? If yes, report the income from each activity. (TOTAL AMOUNT LISTED)	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N
9.1 Hiring out accommodation hiraccom	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.2 Hiring out contractor services or equipment DELETED	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.3 Milling grain DELETED	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.4 Baking, brewing or selling meals catering	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.5 Building or repairing houses buildrep	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.6 Block making, stone- or metalwork DELETED	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.7 Hawking hawking	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.8 Shop-keeping shopkeep	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.9 Repairs and maintenance of cars DELETED	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
9.10 Making furniture or handicrafts furncraf	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Sewing (sewing clothes) **Braidin (braiding hair)** **Taxiope (taxi operator)**	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

10. Does …. have a savings account (i.e. bank, post office, stockvel etc)? If yes, please provide the following information: **hhsaving – number in household with savings**	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N	☐ Y ☐ N
10.2 Current level of savings (Rands) (total number for each category) 1 = less than R500 svto500 2 = R501 – R1000 sto1000 3 = R1001 – R5000 sto5000 4 = more than R5001 smr5001 DK = do not know savdk	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ DK

11. Housing attributes

Number of rooms to sleep in	*noromms*
Does the household have electrical power?	☐ no electricity **noelect** ☐ solar power **solarpwr** ☐ generator **generatr** ☐ Eskom power **eskompwr**
Main source of drinking water:	☐ stream/river **stream** ☐ unprotected spring **unpsprng** ☐ protected spring **pspring** ☐ borehole **borehole** ☐ rain tank **raintank** ☐ stand pipe **standpip**

12 *On-farm improvements*

Improvement	Financed privately (Y or N)	Year	Financed by an outsider (Y or N)	Year
Irrigation	irrfinpr	irrfpyr	deleted	deleted
Lime	deleted	deleted	limfinos	limfoyr
Fencing for crops	fenfinpr	fenfpyr	fenfinos	fenfoyr
Crop storage silo	deleted	deleted	deleted	deleted
Water tanks	watfubor	watfpyr	watfinos	watfoyr
Chicken house	chsfinpr	chsfpyr	chsfinos	chsfoyr
Livestock fencing for manure collection	manfinpr	manfpyr	manfinos	manfoyr
Other: Please specify				

13. Which of the assets listed below does the household own (only items in working order)?

☐ Y ☐ N	Land line telephone in the dwelling **landline**
☐ Y ☐ N	Cell phone **cellphon**
☐ Y ☐ N	Radio **radio**
☐ Y ☐ N	Hi-fi / music centre **hificntr**
☐ Y ☐ N	Television **televis**
☐ Y ☐ N	Personal computer **Deleted**
☐ Y ☐ N	DVD / VCR (video player) **dvdvcr**
☐ Y ☐ N	Maize mill **deleted**
☐ Y ☐ N	Fridge/freezer **fridge**
☐ Y ☐ N	Bicycle **bicycle**
☐ Y ☐ N	Motorbike **motobike**
☐ Y ☐ N	Trailer/cart **deleted**
☐ Y ☐ N	Sewing machine **sewmach**
☐ Y ☐ N	Motor vehicle in running order **motorveh**
☐ Y ☐ N	Generator **generat**
☐ Y ☐ N	Plough **plough**
☐ Y ☐ N	Planter, harrow or cultivator **planter**
☐ Y ☐ N	Wheelbarrow **whlbarro**
☐ Y ☐ N	Tractor **deleted**

14. Land tenure security

14.1 What rights can the household exercise on its own cropland? (tick where appropriate):

Right / Response	Build structures	Plant trees	Erect fences to exclude others:		Bequeath/leave to children	Lease out	Sell
			Summer	All year			
No 0	bldstruc	plnttree	fensum	erfenaly	bequeath	leaseout	selcplnd
Yes, **with consent** from local authority 1							
Yes, **without approval** from local authority 2							

14.2. Crop damage caused by livestock (tick where appropriate)

14.2.1		Did livestock stray into your cropland after you planted it last season? If no, go to question 14.2.6 **lscpland**		☐ Y ☐ N
	14.2.2	If yes, were your crops damaged by the livestock? **lscpdam**	☐ Y ☐ N	
	14.2.3	If yes, did you seek redress or help from the traditional authority? **redress**	☐ Y ☐ N	
	14.2.4	If yes, were you awarded compensation for the damage? **damcomp**	☐ Y ☐ N	
	14.2.5	If your crops were damaged and you did not seek legal redress (help), did the owner of the livestock pay you any compensation for the damage? **owncomp**	☐ Y ☐ N	
14.2.6		Are there rules limiting the number of livestock that people may graze on communal land? grazerls		☐ Y ☐ N
	14.2.7	If yes, are penalties applied to people who exceed the limit? **grazepen**	☐ Y ☐ N	

15 Livestock

Livestock and livestock products	Cattle	Goats	Sheep	Pigs	Chickens /ducks	Donkey/ horses	Other: specify
Number currently owned by all household members	catown	goaown	shpown	deleted	chiown	donwon	
Approximate value of livestock (Rands)	catvalue	goavalue		deleted		donvalue	
Number sold during past year	catnosld	goanosld	deleted	deleted	chinosld	deleted	
Total income from animal sales during past year (Rands)	catincom	goaincom	deleted	deleted	chiincom	deleted	
Animals slaughtered for food in past year	catslfd	goaslfd	deleted	deleted	chislfd	deleted	
Animals slaughtered for festivities in past year	catslfes	goaslfes	deleted	deleted	chislfes	deleted	
Total income form product sales? Eg eggs, skin, manure, milk (Rands in past year)	catinpro	goainpro	deleted	deleted	deleted	deleted	

16 Credit and cash loans

Question	Transaction
Amount of cash borrowed or credit used (Rands)	cashborr
Main purpose of loan or credit 1 = Car repairs, 2= Furniture, 3= Education, 4= Education & Food, 5= Food, 6 = Festivities, 7 = Household Items, 8= Road Building	loanpurp
Source of loan or credit 1 = Burial Club, 2= Friends, 3= Local money lender, 4= Pension, 5= shop, 6= Stokvel	loansour
If security was required by the lender, what security was provided 1= Assets purchased, 2= Dividends, 3= Forest, 4= Guarantor, 5= none	loansec

17 Income shocks

How does the household cope with major income shocks (e.g. drought, death of a bread winner, job loss, etc.) (Please tick where appropriate)

Sell livestock ossellls	☐ Y ☐ N
Sell other assets isselloa	☐ Y ☐ N
Use own cash savings issaving	☐ Y ☐ N
Borrow money from relatives isborrel	☐ Y ☐ N
Borrow money from stokvel isborsv	☐ Y ☐ N
Receive help from friends or relatives ishlpoth	☐ Y ☐ N
Take on additional work ismorwrk	☐ Y ☐ N
Reduce spending isdecspn	☐ Y ☐ N
Reduce food consumption isdeccon	☐ Y ☐ N
Reduce or stop debt repayments isstppay	☐ Y ☐ N
Other: Please specify	☐ Y ☐ N

18. In this section, we look at the patterns of food **consumption for all resident household members**. This should include all the food they have eaten. It should not include food that has been bought for resale or exchanging for commercial purposes. Below is a list of different kinds of food that people may have eaten in the past **MONTH**.

Food Item	Was [..] eaten by this household in the past *month*? Yes No	If yes, what was the value of [..] eaten from *purchases* in the past month? Rand	What was the value of [..] eaten received as *gifts* in the past month? Rand	What was the value of [..] eaten received as *payment* in the past month (including rations)? Rand	What was the value of [..] eaten from *own production* in the past month? Rand
Maize grain / **samp**	**maizeat**	**maizvalu**	**maizgift**	**maizpay**	**maizownp**
Mealie Meal / Maize Flour **meal**	**eat**	**valu**	**gift**	**deleted**	**ownp**
Rice **rice**	**eat**	**valu**	**gift**	**deleted**	
White / Brown Bread **bred**	**eat**	**valu**	**gift**	**deleted**	
Wheat Flour **flou**	**eat**	**valu**	**gift**	**deleted**	
Breakfast Cereal – cornflakes, oats **cerl**	**eat**	**valu**	**deleted**	**deleted**	
Dried Peas / Lentils / Beans **drdp**	**eat**	**valu**	**gift**	**pay**	**ownp**
Potatoes **pot**	**eat**	**valu**			**ownp**
Tomatoes **tom**	**eat**	**valu**			**ownp**
Sweet Potatoes **spt**	**eat**	**valu**			**ownp**
Madumbes **mad**	**eat**	**valu**			**ownp**
Vegetable Oil **oil**	**eat**	**valu**	**gift**	**deleted**	**ownp**
Peanuts/ Other nuts **pean**	**eat**	**valu**	**deleted**	**deleted**	**ownp**
Peanut butter **pnbt**	**eat**	**valu**	**deleted**	**deleted**	**ownp**
Margarine/Butter / Other Fats **marg**	**eat**	**valu**	**gift**	**deleted**	**ownp**
Cheese **ches**	**eat**	**valu**	**gift**		
Jam **jam**	**eat**	**valu**	**gift**		
Fresh Milk/ Steri Milk / UHT **milk**	**eat**	**valu**	**deleted**	**deleted**	
Sour Milk/ Maas/ Yoghurt **maas**	**eat**	**valu**	**gift**	**deleted**	**ownp**

Food Spending and Consumption (Continued)

Food Item	Was [..] eaten by this household in the past *month*? Yes No	If yes, what was the value of [..] eaten from *purchases* in the past month? Rand	What was the value of [..] eaten received as *gifts* in the past month? Rand	What was the value of [..] eaten received as *payment* in the past month? Rand	What was the value of [..] eaten from *own production* in the past month? Rand
Baby Formula **baby**	babyeat	babyvalu			
Milk Powder/coffee creamers **mlkp**	eat	valu			
Sugar **sug**	eat	valu	gift	deleted	
Mutton / Beef / Pork / Goat meat **meat**	eat	valu	gift	deleted	ownp
Tinned meat / Processed meat / Polony **tinm**	eat	valu			
Offal **ofal**	eat	valu	deleted	deleted	deleted
Chicken **chic**	eat	valu	gift	deleted	ownp
Eggs **egg**	eat	valu			ownp
Fresh Fish **ffsh**	eat	valu			ownp
Tinned Fish **tfsh**	eat	valu			
Pumpkin / squash **pumk**	eat	valu			ownp
Green mealies **gmea**	eat	valu			ownp
Green vegetables / Tinned vegetables **gveg**	eat	valu			ownp
Carrots and beetroot / Tinned vegetables **carr**	eat	valu			ownp
Other vegetables / Wild vegetables / Imifino **othv**	eat	valu			ownp
Bananas **ban**	eat	valu	gift	deleted	ownp
Apples, peaches, guavas etc. **appl**	eat	valu	gift	deleted	ownp
Citrus fruit (orange, lemon, nartjies) **citr**	eat	valu	gift	deleted	ownp
Soft drinks (Coke etc) **sftd**	eat	valu			
Tinned fruit **tfru**	eat	valu			
Meals prepared outside home (take aways) **tawy**	eat	valu	gift	deleted	
Other food expenditure / consumption **othf**	eat	valu	deleted	pay	deleted

	Were any [..] ? Yes No	If yes, what was the total value in the past month? (Rand)
Meals Given to Guests	☐ Y ☐ N **mlstogue**	**mltogval**
Meals Received as Guests	☐ Y ☐ N **mlsfrogu**	**mlfrgval**

19 Regular Non-Food Spending

FOR EACH ITEM, ASK: In the past **MONTH**, about how much did the residents of the household spend on [..] ?

PERSONAL ITEMS:		**Rands per month**
Cigarettes, tobacco	☐ Y ☐ N	**cigscst**
Beer, wine, spirits	☐ Y ☐ N	**beercst**
Entertainment (cinema, sports, music, lottery, etc)	☐ Y ☐ N	**entercst**
Personalised care items: cosmetics, soap, shampoo, haircuts, and so on	☐ Y ☐ N	**carecst**
Newspapers/stationery, envelopes, stamps	☐ Y ☐ N	**statcst**
Telephone (rental + calls + prepaid) including cell phone	☐ Y ☐ N	**telecast**
REGULAR TRANSPORT COSTS:		
Petrol, oil and car/bakkie service	☐ Y ☐ N	**tranocst**
Buses, taxis, and trains	☐ Y ☐ N	**tranpcst**
MISCELLANEOUS:		
Washing powder etc.	☐ Y ☐ N	**washcst**
Crèche/Childcare	☐ Y ☐ N	**crechcst**
Religious and membership dues of organisations	☐ Y ☐ N	**relegcst**
Informal taxation and donations	☐ Y ☐ N	**taxdncst**
Domestics, gardeners and other household labour	☐ Y ☐ N	**laboucst**
ENERGY, WATER AND MUNICIPAL RATES:		
Water	☐ Y ☐ N	**watercst**
Electricity	☐ Y ☐ N	**eleccst**
Other energy sources (wood, paraffin, charcoal/coal, candles, gas, purchasing/charging batteries, diesel oil for generators, other)	☐ Y ☐ N	**energcst**

20 Occasional Non-Food Spending

FOR EACH ITEM, ASK: In the past **YEAR**, about how much did the household spend on [..] ?

HOUSEHOLD ITEMS:		**Rands per year**
Kitchen equipment, like pots and pans, lamps, torches etc.	☐ Y ☐ N	kitchcst
Home maintenance and repairs to the dwelling	☐ Y ☐ N	maintcst
Bedding, sheets, blankets and towels	☐ Y ☐ N	beddcst
Furniture and other household appliances	☐ Y ☐ N	furncst
CLOTHING AND SHOES:		
Shoes and clothes for children (excluding school uniforms)	☐ Y ☐ N	shoeccst
Shoes and clothes for adults	☐ Y ☐ N	shoeacst
Material to make clothing, curtains, and other items	☐ Y ☐ N	matercst
HEALTH AND CARE:		
Medical Aid Scheme/Medical Insurance Fees	☐ Y ☐ N	medacst
Dentists, doctors or nurses (not covered by Medical Aid/Insurance)	☐ Y ☐ N	dendocct
Hospital/Clinic fees (not covered by Medical Aid/Insurance)	☐ Y ☐ N	hospcst
Medical supplies, for example, medicines, bandages and so on (not covered by Medical Aid/Insurance)	☐ Y ☐ N	medscst
Traditional healer's fees	☐ Y ☐ N	tradhcst
PERSONAL AND OTHER ITEMS:		
Jewellery, watches, other luxury goods	☐ Y ☐ N	luxgdcst
Ceremonies (weddings, funerals, etc.)	☐ Y ☐ N	ceremcst
EDUCATION:		
School fees and tuition	☐ Y ☐ N	schftcst
University/College fees	☐ Y ☐ N	univecst
Books and Uniforms (including stationery)	☐ Y ☐ N	bkunicst
Other School Expenses (transport, meals at school, boarding fees, contributions to school buildings, extra costs for teachers, extramural activities, other)	☐ Y ☐ N	schexcst
LIFE AND PROPERTY INSURANCE:		
Life insurance, funeral policies, burial societies	☐ Y ☐ N	insltcst
Short-term insurance (e.g., car, property & fire, crop)	☐ Y ☐ N	insstcst

21 Which months of the year did your household: (*Tick the appropriate boxes)*

	Aug 03	Sept 03	Oct 03	Nov 03	Dec 03	Jan 04	Feb 04	Mrch 04	April 04	May 04	June 04	July 04
Buy all maize consumed by the household? **buyal**	**buyalaug**	**buyalsep**	**oct**	**nov**	**dec**	**jan**	**feb**	**mar**	**apr**	**may**	**jun**	**jul**
Supplemented home produced maize with bought maize meal? **suppm**	**suppmaug**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Borrowed food / received food from others? **borfd**	**borfdaug**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Had to eat wild food through hunting / gathering? **wldfd**	☐	☐	☐	☐	☐	☐	☐	☐	☐	deleted	☐	deleted
Begged for food? **begfd**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Have to work for food in kind? **wrkfd**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	deleted
Received food as a gift? gift	deleted	☐	☐	☐	☐	☐	☐	☐	deleted	deleted	☐	☐
Experience hunger? **hungr**	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Thank you for participating in this survey.

APPENDIX B : SURVEY QUESTIONNAIRE FOR ROUND TWO

Embo/EFO HOUSEHOLD AND CONSUMPTION QUESTIONNAIRE 2005

The information captured in this questionnaire is strictly confidential and will be used for research purposes by staff and students at the University of KwaZulu-Natal to inform EFO farmers and stakeholders how they might improve their organic farming venture. Respondents do not have to answer questions – answers are voluntary. The respondent should be the *de facto* (actual) household head.

Interviewer: _____

Date: _____

Hhresp – respondent name on behalf of household
1=yes
2=no
-1 = missing info
-2 = respondent didn't know
-3 = not applicable

Label to be stuck here with Household number, etc.	GPS coordinate:	

1. COPING STRATEGIES

In the past 30 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:	Put ● in the column to indicate the respondent's answer				
	All the time? Every day	Often? 3 – 6 times a week	Sometimes? 1 – 2 times a week	Hardly at all? Less than once a week	Never?
a. Rely on less preferred and less expensive foods? **cstrely**	**4**	**3**	**2**	**1**	**0**
b. Borrow food, or rely on help from a friend or relative? **csthelp**	**4**	**3**	**2**	**1**	**0**
c. Purchase food on credit? **cstcredt**	**4**	**3**	**2**	**1**	**0**
d. Gather wild food, hunt or harvest immature crops? **cstgathr**	**4**	**3**	**2**	**1**	**0**
e. Consume seed stock held for the next season? **cstseed**	**4**	**3**	**2**	**1**	**0**
f. Send household members to eat elsewhere? **cstsend**	**4**	**3**	**2**	**1**	**0**
g. Send household members to beg? **cstbeg**	**4**	**3**	**2**	**1**	**0**
h. Limit portion sizes at mealtimes? **cstsizes**	**4**	**3**	**2**	**1**	**0**
i. Restrict consumption by adults in order for small children to eat? **cstchild**	**4**	**3**	**2**	**1**	**0**
j. Reduce the number of meals eaten in a day? **cstnomls**	**4**	**3**	**2**	**1**	**0**
k. Go entire days without eating? **cstnoeat**	**4**	**3**	**2**	**1**	**0**

2. In this section, we look at the patterns of food **consumption for all resident household members**. This should include all the food they have eaten. It should not include food that has been bought for resale or for commercial purposes. Below is a list of different kinds of food that people may have eaten in the past **MONTH**.

Food Item	Was [..] eaten by this household in the past *month*? Yes 1 No 2	If yes, what was the value of [..] eaten from *purchases* in the past month? Rand	What was the value of [..] eaten received as *gifts* in the past month? Rand	What was the value of [..] eaten received as *payment* in the past month (including rations)? Rand	What was the value of [..] eaten from *own production* in the past month? Rand
Maize grain / **maiz**	maizeat2	Maizval2	Maizgif2	Maizpay2	Maizown2
Mealie Meal / Maize Flour **meal**	eat2	valu	gft2	pay2	own2
Rice **rice**	eat2	val2	gft2	pay2	
White / Brown Bread **bred**	eat2	val2	gft2	pay2	
Wheat Flour **flou**	eat2	val2	gft2	deleted	
Breakfast Cereal – cornflakes, oats **cerl**	eat2	val2	gft2	deleted	
Dried Peas / Lentils / Beans **drdp**	eat2	val2	gft2	pay2	own2
Potatoes **pot**	eat2	val2			own2
Tomatoes **tom**	eat2	val2			own2
Sweet Potatoes **spt**	eat2	val2			own2
Madumbes **mad**	eat2	val2			own2
Vegetable Oil **oil**	eat2	val2	gft2	pay2	own2
Peanuts/ Other nuts **pean**	eat2	val2	gft2	deleted	own2
Peanut butter **pnbt**	eat2	val2	gft2	deleted	deleted
Margarine/Butter / Other Fats **marg**	eat2	val2	gft2	deleted	deleted
Cheese **ches**	eat2	val2	gft2		
Jam **jam**	eat2	val2	gft2		
Fresh Milk/ Steri Milk / UHT **milk**	eat2	val2	gft2	deleted	
Sour Milk/ Maas/ Yoghurt **maas**	eat2	val2	gft2	deleted	own2

Food Spending and Consumption (Continued)

Food Item	Was [..] eaten by this household in the past *month*? Yes No	If yes, what was the value of [..] eaten from *purchases* in the past month? Rand	What was the value of [..] eaten received as *gifts* in the past month? Rand	What was the value of [..] eaten received as *payment* in the past month? Rand	What was the value of [..] eaten from *own production* in the past month? Rand
Baby Formula **baby**	Babyeat2	babyval2			
Milk Powder/coffee creamers **mlkp**	eat2	val2			
Sugar **sug**	eat2	val2	gft2	pay2	
Mutton / Beef / Pork / Goat meat **meat**	eat2	val2	gft2	deleted	own2
Tinned meat / Processed meat / Polony **tinm**	eat2	val2			
Offal **ofal**	eat2	val2	gft2	deleted	deleted
Chicken **chic**	eat2	val2	gft2	deleted	own2
Eggs **egg**	eat2	val2			own2
Fresh Fish **ffsh**	eat2	val2			own2
Tinned Fish **tfsh**	eat2	val2			
Pumpkin / squash **pumk**	eat2	val2			own2
Green mealies **gmea**	eat2	val2			own2
Green vegetables / Tinned vegetables **gveg**	eat2	val2			own2
Carrots and beetroot / Tinned vegetables **carr**	eat2	val2			own2
Other vegetables / Wild vegetables / Imifino **othv**	eat2	val2			own2
Bananas **ban**	eat2	val2	gft2	deleted	own2
Apples, peaches, guavas etc. **appl**	eat2	val2	gft2	pay2	own2
Citrus fruit (orange, lemon, nartjies) **citr**	eat2	val2	gft2	deleted	own2
Soft drinks (Coke etc) **sftd**	eat2	val2			
Tinned fruit **tfru**	eat2	val2			
Meals prepared outside home (take aways) **tawy**	eat2	val2	gft2	deleted	
Other food expenditure / consumption **othf**	eat2	val2	gft2	deleted	deleted

	Were any [..] ? Yes No	If yes, what was the total value in the past month? (Rand)
Meals Given to Guests	☐ Y ☐ N **mlstogu2**	**Mltogva2**
Meals Received as Guests	☐ Y ☐ N **mlsfrog2**	**Mlfrgva2**