INVESTIGATING HOUSEHOLD FOOD INSECURITY COPING STRATEGIES AND THE IMPACT OF CROP PRODUCTION ON FOOD SECURITY USING COPING STRATEGY INDEX (CSI).

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Abstract

This study set out to investigate the food insecurity coping strategies employed by sample households from the Embo community in the Umbumbulu district of KwaZulu-Natal. It also set out to establish if participation in agriculture improved household food security. 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. The main findings related to the application of coping strategies were that households applied short-term food consumption coping strategies to cope with food shortages. While agriculture may play a major role in the reduction of food insecurity, the food insecurity problem in South Africa cannot be solved by promoting agriculture alone. Attention should also be given to the promotion of non-farming activities, particularly those that are associated with the smallholder agricultural sector.

Key words: Food security, coping strategies, coping strategy index; crop production

Introduction

South Africa is classified as an upper middle-income country with one of the most skewed distributions of income in the world (Machethe *et al.* 1997). Food insecurity and poverty are realities in rural and peri-urban areas of South Africa (Hendriks *et al,* 2006). Hendriks (2005) explain that South Africa is nationally food secure, but available data in 1999 suggests that between 58.5 and 73 percent of South African households experience food insecurity and 15.9 per cent consume less than the adequate energy requirements. About 24 to 28 percent of children under nine years of age are affected by stunting and whilst 3.7

percent experience wasting respectively. May *et al* (2000) stated that in 1990, 83 percent of African households in rural South Africa lived below the national poverty line. In this light, Machethe (2004) mentioned that crop production could be the best vehicle to reduce rural food insecurity and poverty.

A few, but growing number of studies indicate that food insecurity, hunger and poverty exist in South Africa (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). This calls for an urgent need to investigate the strategies employed by rural households in South Africa in order to aid design of appropriate policies and programs that are dedicated to help alleviate food insecurity. This background information serves to consolidate the overall need to investigate household food insecurity coping strategies and the impact of crop production on food security.

Review of related literature

Food security is defined as a situation where all people at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (Hoddinott, 1999). Clearly South Africa, regardless of its relative wealth and well-developed economy, is still beset with prevalent poverty and food insecurity (Hindson *et al*, 2003). Many poor South Africans are faced with the challenge of rapidly growing unemployment, and they struggle to fight food insecurity and eradicate poverty (Machethe, 2004). Machethe (2004) observed that crop production is one of the most important ventures in subsistence agriculture for many rural households.

Crop production as an intervention to mitigate food insecurity and poverty

If properly managed, agriculture can have a positive impact on poverty alleviation, food security, rural/ urban population distribution, and the environment. FAO (2007) suggests that agricultural indirect contributions to the welfare and their mechanisms are not well

understood, seldom analysed in the context of development, and rarely reflected in national and rural development policy strategies. The ultimate goal of roles of agriculture project is therefore to provide policy makers with the information they need to create agricultural incentives, and make sound investment decisions, conducive to sustainable development (FAO, 2007). Furthermore, Machethe (2004) noted that the level of farm income increases relative to total household income, suggesting that agriculture remains an important source of income, even though households derive a significant proportion of their income from non-farm sources.

Food insecurity 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 expense 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). The latter definition implies that coping strategies involves a conscious assessment of alternative plans of action. 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. The strategies pursued by households differ in several aspects, that is, within the household and between households (Maxwell *et al*, 2003). Due to varying degrees of wealth among households, different coping behaviors 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 depend 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 productive assets such as farm implements (Hoddinott, 2004).

Consumption and income coping strategies

Literature distinguishes between the risk management (income soothing) and risk coping strategies (consumption soothing). The former attempts to reduce the ex-ante risk impact e.g. through income diversification. Faced with an income or food shock, households may either protect their food consumption by purchasing or receiving food from other sources (Davies, 1993). Risk coping strategies deal with consequences (ex-post) of risk. Risk-coping strategies involve self-insurance (through precautionary savings) and informal group-based risk-sharing (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 (Corbett, 1988). Consumption soothing strategies generally increases as income generating strategies coming under strain.

Methodology

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.

Results and discussions

The objective of this study was to measure the impact of crop production on household food security and to investigate the coping strategies employed buy households. This chapter presents the findings of the study. The following five sub-problems were explored:

- Which crops were produced over a year
- What proportion of food consumed was from own production
- Did crop production lead to food security in Umbumbulu?
- What are the household food insecurity coping strategies employed by Umbumbulu households to mitigate food insecurity?

What proportion of food consumed is from own crop production?

Households in Umbumbulu sourced most of their food from purchases (Table 1.1). The results from Umbumbulu are in line with the findings of Msaki (2006) that most households obtained foods through purchases, followed by own food production, then gifts and payments. Umbumbulu households consumed only 4 percent of food from own production (Table 1.1). Households from Umbumbulu did not consume sufficient food from their own production. This could be attributed partly to the sale of produce to purchase other foods or the purchase of other non food goods that are deemed more important by the households, or it could be that households did not produce sufficient for consumption. The latter confirms FAO's (2007) study which indicated that there are few households in developing countries where gardens produce enough food to meet all consumption requirements.

Table 1.1: Household per capita per month consumption of food from various food sources at Umbumbulu March 2005, (N = 200)

Sources of food consumed in the past month from various sources	Average value of food consumed from various sources (R/capita/month)	Per capita per month consumption of food from various sources (R/capita/month)	Percentage of food consumed per capita per month (%)
Purchases	752.12	119.39	93.03
Own production	33.20	33.20	4.18
Received as gifts	18.11	2.92	2.28
Received as payments	6.25	0.66	0.51
Total value of food consumed per capita per month	809.68	128.33	100

Although crop production is the second most important source of food, the results indicate a minimal contribution from own produced crops towards total food consumed by sampled households. Thus only a small case can be made for crop production as a potential contributor to food security in Umbumbulu.

Did crop production lead to food security in Umbumbulu?

Although participation in crop production reduced food shortages somewhat, the percentage of food insecure households was still high. Umbumbulu EFO farmers consumed less of their own production because they were able to sell their own produce. This allowed them to use the money to purchase food, however this did not solve their food security problems as they were found to be prone to food insecurity. Crop production alone was not sufficient to improve the food security situation among the households. Wild foods and vegetables, and non-farm activities also played a significant role in ensuring household food security.

What are the household food insecurity coping strategies employed by Umbumbulu households to mitigate food insecurity?

The study showed that households employed coping strategies to mitigate food shortages which resulted from insufficient crop production. These strategies were the following: relying on less preferred/inexpensive food; borrowing food, or relying on help from friends or relatives; gathering wild food, hunting or harvesting immature crops; consuming seed stock held for the next season; sending household members to eat elsewhere; limiting portion size at meal times; restricting adult consumption in favour of small children; reducing the number of meals eaten in a day; skipping entire days without eating and begging from neighbours or friends. The results indicated that as CSI scores increased, households relied more often on the consumption coping strategies. Households with low CSI scores applied these consumption coping strategies less frequently than households with high CSI scores. The overall indication of the results of this section is that the frequency to apply coping strategies was minimised through income from sales of produce and consumption of food from production. Therefore income from sales of produce and consumption of food from own production buffered households from food insecurity.

Table 1.2: Frequency of coping strategies undertaken at Umbumbulu (n = 200), March 2005

Frequency of coping strategies	Numeric values for the relative frequency	Proportion of household using the coping strategy							
		Rely on less preferred /inexpensive food	Borrow food or money	Purchase food on credit	Receive help from relative/friend	Limit portions sizes	Leave food for child	Reduce meal number	Skip meals
Everyday	7	24.90	19.30	12.20	19.00	21.30	10.20	8.60	2.60
3 - 6 days/week	4.5	19.80	25.40	14.20	25.00	8.10	3.60	9.60	1.00
1 - 2 days/week	1.5	10.70	7.60	4.10	7.50	3.00	0.50	2.00	0.00
not more than once / week	0.5	6.10	0.50	3.00	0.50	0.50	0.00	0.00	0.00
Never happened	0	38.60	47.20	66.50	46.50	67.00	85.80	79.7	96.40
Proportion used as a strategy		61.40	52.80	33.50	53.50	33.00	14.20	20.30	3.60

Coping Strategy Index (CSI) scores of households

Given that the CSI monitoring tool is a comparative tool, rather than absolute measure of food insecurity, the CSI score alone has no meaning (Maxwell *et al,* 2003). However it establishes a baseline within sample comparative measure from which changes in food security among households can be monitored over time (Maxwell *et al* 2003). 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 (Devereux, 2001). The analysis below 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).

Correlation of consumption coping strategies with CSI

Spearman's correlation showed that food shortage coping strategies were significantly correlated to the cumulative CSI scores of households. The strong and positive correlation of the consumption coping strategies to the cumulating CSI implies households continued to apply the coping strategies despite using their income and consumption of food from their own production.

Table 1.3: 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)

The study indicated that as CSI scores increased, households relied more often on the consumption coping strategies showing high level of food insecurity. Households with low CSI scores applied these consumption coping strategies less frequently than households

with high CSI scores. The oval implication of this section is that household in Umbumbulu were generally food insecure.

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 stop debt payment were positive and significantly correlated to the cumulative CSI score (Table 1.4). The strong and positive correlation of income shock coping strategies to the cumulating CSI implies households continued to apply these coping strategies despite using their income and consumption of food from their own production.

Table 1.4: Spearman's correlation coefficients for consumption coping strategies and cumulative Coping Strategy Index, March 2005, N = 200

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)

The findings in this section imply that income shocks increased the food insecurity of households in Umbumbulu and made them more vulnerable to food insecurity.

Correlation of CSI with income of the households

Farming, catering, hiring accommodation, building and repairs, hawking and sewing were significantly related to the cumulative CSI (Table 1.5). Farming, building and repairs, catering and hawking were negatively and statistically correlated to the CSI. Hiring out accommodation was strongly related to the cumulative coping strategy index. The negative and statistically correlation between these income sources and CSI indicates that income from these sources buffered household from food insecurity.

Table 1.5: 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	1000*
Catering	-1000*
Building or repair houses	-0.771*
Hawking	-0.819**
Sewing	1000**
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)

Conclusions and recommendations

Generally, households in Umbumbulu were engaged in commercial and/or home production. The gardens did not provide sufficient food for household consumption to impact positively on food security status. Low production reduced the availability of crops for household consumption and opportunities for income generation. Households did not produce sufficient quantities of crops throughout the year, and they supplemented

purchased food with food obtained from production, food received as gifts from relatives, as payments and from non-farm activities.

Households in Umbumbulu employed short-term consumption coping strategies to mitigate the incidence of food shortages. Most of the coping strategies employed by household were effective in mitigating the food insecurity situation. The coping strategies employed were mostly not detrimental to livelihoods and future food security and this is an indication of resilience to income shocks. The coping strategies employed by households were reversible, i.e. they were not detrimental to livelihoods and future food security situation of the households. However, some of the copping strategies were not reversible, meaning that they were detrimental to the livelihoods and future food security situation of the households.

While agriculture may play a major role in the reduction of food insecurity, the food insecurity problem in South Africa cannot be solved by promoting agriculture alone. Attention should also be given to the promotion of non-farming activities, particularly those that are associated with the smallholder agricultural sector. A strategy that pays attention to the strengthening of farm/non-farm linkages is likely to yield better results in terms of employment and income generation. To guide the design and implementation of commercial and home gardens, households need to develop clear and consistent policies, strategies, processes and procedures, and (a sound) monitoring and evaluation framework.

Acknowledgements

The authors thank the Ford Foundation, South Africa (Grant number 1035-1796), the National Research Foundation (GUN 2069798) for funding, and members of the Ezemvelo Farmers' Organisation and Embo community for their willing participation in the survey.

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Type of the paper

Peer Review

Theme

4. Food, Fibre, Energy and The Environment

Word Count

3478 words

Declaration

I, Mfusi Mjonono and Mjabuliseni Ngidi declare that the research reported in this paper except where otherwise indicated, is our original research and this paper has not been published to any journal.

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