

## Home Gardening and Food Security Status of HIV/AIDS Affected Households in Mpophomeni, KwaZulu-Natal Province, South Africa

L. J. S. Baiyegunhi\* and K. E. Makwangudze

*School of Agricultural, Earth and Environmental Sciences - University of KwaZulu-Natal,  
P. Bag X01, Scottsville 3209, Pietermaritzburg, South Africa*

**KEYWORDS** Impact. Home Garden. Food Security. HIV/AIDS. HFIAS. Linear Regression

**ABSTRACT** Home gardening is one activity being used by government and non-governmental organisations to create self-reliance and independency among HIV/AIDS affected households in developing countries. This study examined the impact of home gardening on the food security status of HIV/AIDS-affected households in the Mpophomeni Township KwaZulu-Natal Province. Data were collected using a structured questionnaire and focus group discussion from a purposive sample of 33 HIV/AIDS-affected households, 23 of which are participants of home gardening project and from key informants. The Household Food Insecurity Access Scale (HFIAS) was used to determine household food security status. The result revealed that about 4% of the HIV/AIDS affected households were food secure, 22% were mildly food insecure, 39% were moderately food insecure while 35% were severely food insecure. However, the result of the regression model shows that home gardening is statistically significant in enhancing household food security in the study area. Implication for policy were discussed.

### INTRODUCTION

The KwaZulu-Natal (KZN) province has the highest prevalence of Human Immune Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) in South Africa with estimated 26.4% of its working population being HIV positive compared to 15.9% for the rest of the country (Matthews et al. 2008). Unemployment levels and income poverty are also relatively high compared to the national average, with two-fifths of the labour force unemployed and one third of its population living below the poverty line of US\$2 per person per day in 2008 prices (Thurlow et al. 2009; Borat et al. 2012).

The HIV/AIDS epidemic is affecting all spheres of human activity and performance. It depletes financial capital (that is, savings and investments), social capital, as it affects demography of the family and human capital as labour is lost through the death of the productive member of the family (Hlanze et al. 2005). AIDS affects agricultural productivity and subsequently household food security; HIV/AIDS-infected persons are limited in generating income or producing food for their households (Wiesmann 2006). Due to the socio-economic impact of HIV/AIDS, food and nutrition security has become

even more of a priority for households and communities (Kadiyala and Gillespie 2003), therefore leading to a synergetic relationship between HIV/AIDS infection and food insecurity.

Food security is achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO 1996). Food security encompasses three main components namely: availability, access and utilisation. Food availability is measured by the production and supply of food; food access is measured by the income level and food utilisation focus on nutrition that is, diversity of the food (Masuku and Sithole 2009). HIV-affected households are at risk of food insecurity and malnutrition as the sick members are unable to work, income declines, expenditure on health increases and care giving burdens increase (Piot and Pinstrup-Andersen 2002). Studies have shown that food insecurity and malnutrition may increase susceptibility to HIV as well as vulnerability to AIDS impacts (FAO 2003; Cohen 1998; de Waal and Whitehead 2003). HIV/AIDS affected households are more vulnerable to food insecurity than non-affected households because of its social, financial, human, physical and natural impact on their livelihood assets.

In order to cope with these impacts, households have adopted certain response mechanism

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\*Address for correspondence:  
Telephone: +2733 260 5437,  
E-mail: Baiyegunhil@ukzn.ac.za

which have however, lead them to sink deeper into poverty (Rugalema 2000; Van Liere 2002; de Waal 2002). Organisations and communities have also come up with a number of programmes to help affected households recover from the shock brought about by AIDS. A number of interventions have been incorporated with income generating activities such as home gardening. Home gardens are being used to mitigate or help the affected households cope with the shock of HIV/AIDS (Donahue and Williamson 1999). Although home gardening is a supplementary food production system and not a primary food source. It provide a direct food source and facilitates a diversity of nutritionally rich foods such as roots, tubers, green leafy vegetables, condiments, nuts, legumes and fruits and its use is increasingly becoming popular as small pieces of land are used for this practise (Musotsi et al. 2008). A number of organisations whose focus is on HIV/AIDS affected households have introduced home gardening projects with the aim of empowering households to be self-reliant and food secure (Donahue and Williamson 1999).

The introduction of home gardens as a mitigation response is aimed at ensuring household food security but not much research has proved their sustainability. Promotion of gardening as a nutrition or community development strategy is controversial, with strong advocates and opponents (Marsh 1998). Critics have pointed to poor project design, management and monitoring, unrealized expectations and lack of sustainability. However, the dearth of literature on the extent to which home gardens is improving the resilience of households is of concern. This study examines the impact of home gardening on the food security status of HIV/AIDS affected households in the Mpophomeni Township, KwaZulu-Natal Province. This study focused on the Masibumbane HIV/AIDS Mission homestead garden project, whose aim is to improve household food security and provide means of income generation for self-reliance for the HIV/AIDS affected households (Masibumbane Mission 2007).

## MATERIAL AND METHODS

The study was conducted in Mpophomeni, a peri-urban township in KwaZulu-Natal Province. Mpophomeni which means "home of the falls" is located outside Howick, 120km west of

Durban (Masibumbane 2007). It was established in 1972 to provide housing for people who were moved from the areas of Howick West, Cedara, Merrivale, Zenzele Location, Tweedie, Lion's River and Lidgetton. The population was estimated at about 35000 people, with more than 80% unemployment rate in 2007, with those in formal employment working in Howick, Pietermaritzburg and Durban (Masibumbane 2007). Mpophomeni, marketed as part of 'Zulu tourism experience', is surrounded by waterfalls and is close to the Midmar Dam (Mathambo and Richter 2007).

Mpophomeni Township was purposively selected for the study, as there is high incidence of poverty, high unemployment rate and high prevalence of HIV/AIDS which is largely attributed to oscillatory migratory labour patterns. At one time, up to 25 people were dying a week due to HIV/AIDS or other related illness (Masibumbane 2007). Also, there is a large presence of organisations (such as Friends for Life, Stay Together, *Hlanganani*, *Isibani*, *Masibumbane*, *Sakhisizwe*, *Zenzeleni*, and *Zibambeleni*), which help households to mitigate the HIV/AIDS impact. The *Masibumbane* was purposively selected because of their involvement in home gardening projects.

Masibumbane HIV/AIDS Mission is a registered Non-Profit and Public Benefit Organisation made up of Christians with a mission to provide a sustainable, holistic care for people living with HIV/AIDS and empowering their families/orphans to be self-reliant (Masibumbane 2007). In line with Masibumbane's mission statement, eleven projects have evolved for the holistic care and empowerment of the clients and their children. This study examines the home gardening project where clients are taught how to grow small organic vegetable garden that can sustainably provide vegetables like spinach, kale, cabbage, carrots, turnips, beans or peas within 12 weeks. In summer, the households often generate additional income from the sale of surplus produce.

A structured questionnaire was used to collect data on households demographic and socio-economic characteristics, their home gardens activities and household food security from 23 purposively selected households who are clients of the Masibumbane Mission who participants of the home gardening project. A random sampling method was also used to select a con-

trol group of 10 households affected by HIV/AIDS who are not participants of the home gardening project. This is to allow for comparison and to draw conclusions about the impact of home gardening on food security of the HIV/AIDS affected households. Four key informants working on the home garden project were also interviewed through a panel discussion. These are the founder of the project, the project coordinator, and the two field workers who provide clients with the necessary training on the home gardening.

To measure households' food security status, the Household Food Insecurity Access Scale (HFIAS) was used. The HFIAS is used to measure the impact of food security programs on the access component of household food insecurity. The method is based on the idea that the experience of food insecurity (access) causes predictable reactions and responses that can be captured and quantified through a survey and summarised in a scale. The HFIAS has nine questions; each of which has a recall period of four weeks (30 days) (see Appendix I). These questions are based on a household's experience of problems regarding access to food in three domains of food security (access) found to be universal across cultures (Coates et al. 2007). The domains represented are:

- ♦ Anxiety and uncertainty about the household food supply;
- ♦ Insufficient quality (includes variety and preferences of the type of food);
- ♦ Insufficient food intake and its physical consequences.

The HFIAS consists of two types of related questions, which are the occurrence and the frequency of occurrence questions. Each participant was asked whether any of the nine questions was relating to their situation. If they experienced the item, they were asked the frequency of occurrence question, that is, if it had occurred rarely (once or twice in the past month), sometimes (three to ten times in the past month) or often (more than ten times in the past month). The scale ranges from zero - which is never - to 3 which is often so that the lowest possible score will be zero and the highest 27. The higher the score the more food insecure the household is.

HFIAS Score (0-27) = Sum frequency code (Q1 + Q2 + Q3 + Q4 + Q5 + Q6 + Q7 + Q8 + Q9)

The continuous scores were used to classify households into four categories representing

food-secure, mildly, moderately and severely food-insecure according to the categorisation scheme recommended by the HFIAS Indicator Guide as shown on Figure 1 to give the Household Food Insecurity Access Prevalence (HFI-AP).

A food secure household experienced none of the food insecurity (access) conditions, or just experienced worry, but rarely. HFIAS category = 1 if [(Q1a=0 or Q1a=1) and Q2=0 and Q3=0 and Q4=0 and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]

A mildly food insecure (access) household worried about not having enough food 'sometimes' or 'often', and/or 'rarely' ate a monotonous diet or less preferred food. The household did not cut back on quantity nor experience any of the three most severe conditions, going for a whole day without eating, going to bed hungry or running out of food. HFIAS category = 2 if [(Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1) and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0].

A moderately food insecure household sacrificed quality more frequently by eating a monotonous diet or less preferred food 'sometimes' or 'often', and/or had started to cut back

Question	Rarely	Sometimes	Often
	1	2	3
1			
2			
3			
4			
5			
6			
7			
8			
9			

Key

	Food secure		Moderately food insecure
	Mildly food insecure		Severely food insecure

**Fig. 1. Categories of household food insecurity (access)**

Adapted from Coates et al. 2007

on quantity by reducing size of meals or number of meals 'rarely' or 'sometimes'. HFIA category = 3 if [(Q3a=2 or Q3a=3 or Q4a=2 or Q4a=3 or Q5a=1 or Q5a=2 or Q6a=1 or Q6a=2) and Q7=0 and Q8=0 and Q9=0].

A severely food insecure household had deteriorated to cutting back meal size or number of meals 'often', and/or experienced any of the three most severe conditions, going a whole day without eating, going to bed hungry or running out of food, even as frequently as 'rarely'. Any household experiencing one of these three conditions, even once in the past 30 days was considered as severely food insecure. HFIA category = 4 if [Q5a=3 or Q6a=3 or Q7a=1 or Q7a=2 or Q7a=3 or Q8a=1 or Q8a=2 or Q8a=3 or Q9a=1 or Q9a=2 or Q9a=3] (Coates et al. 2007).

A linear regression model was used to identify factors which influence HIV/AIDS affected household food insecurity. The HFIA score for individual households was used as the dependent variable, and as a proxy for the household food security because the HFIA score is a continuous variable and is more sensitive to capturing smaller increments of changes over time than the HFIA (Coates et al. 2007; Knueppel et al. 2009). A higher HFIA score is an indication that a household is food insecure. The model is expressed in its explicit form as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu \quad (1)$$

where; Y = HFIA score of household

$X_1$  = age of household head (years)

$X_2$  = number of years of schooling (years)

$X_3$  = household size (number)

$X_4$  = household monthly income (Rands)

$X_5$  = food monthly expenditure (Rands)

$X_6$  = participation in home gardening (Participant =1; Otherwise =0)

$\mu$  = the error term

The apriori expectations for the explanatory variables in the models are presented in Table 1.

## RESULTS

Following Coates et al. (2006), the Household Food Insecurity Access Prevalence (HFIA-P) was used to categorise of households into food security status based on their responses to anxiety and uncertainty about food supply and frequency of use (Table 2).

A linear regression model was used to estimate the determinant of household food insecurity. The result of the model gives an R-square value of 0.683 implying a 68.3% of the variables included in the model are important in explaining household food insecurity. The estimates of the regression model is presented in Table 3.

**Table 1: Apriori expectations for the explanatory variables used in the model**

<i>Variables</i>	<i>Definition and measurement</i>	<i>Expected signs</i>
Age of household head	Age of household head in years	+/-
Education	Number of years of schooling (years)	+
Household size	Household size in numbers	+
Household monthly income	The amount in Rands received as remittances/grants/pension	+
Monthly food expenditure	The amount in Rands spent on food items in a month	+/-
Participation in home gardening	Dummy variable (D= 1 if participating, 0 if otherwise)	-

*Based on apriori expectations*

**Table 2: Food security Status of HIV/AIDS affected households in Mpophomeni**

<i>Food security categories</i>	<i>Home garden participants</i>		<i>Non participants</i>		<i>All Households</i>	
	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>	<i>No</i>	<i>%</i>
Food secure	1	4.4	1	10	2	6.0
Mildly food insecure	5	21.7	-	-	5	15.2
Moderately food insecure	9	39.1	4	40	13	39.4
Severely food insecure	8	34.8	5	50	13	39.4
Total	23	100	10	100	33	100

*Source: Field survey 2010*

**Table 3: Estimated coefficients of the linear regression model for household food insecurity**

<i>Variables</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-statistics</i>	<i>Prob</i>
Age of household head	0.058	0.149	0.390	0.070
Education	-1.132	0.557	-2.032**	0.041
Size of household	1.126	0.552	2.040**	0.013
Household monthly income	-2.101	0.764	-2.750***	0.005
Monthly food expenditure	0.105	0.062	1.682*	0.071
Home gardening	-0.154	0.091	-1.698*	0.064
Constant	0.109	0.226	0.482	0.063

Note: \*\*\*, \*\*, and \* denote statistical significance at the 1, 5 and 10% levels, respectively.

## DISCUSSION

The HFIAS result revealed that out of the home gardening participating households, only about 4% were food secure, 22% were mildly food insecure, 39% were moderately food insecure while 35% were severely food insecure - these are households who often go for a day (24 hours) without eating, go to bed hungry or run out of food for more than ten days in one calendar month. While for those without home garden only about 10% were food secure, none were mildly food insecure, 40% were moderately food insecure while 50% were severely food insecure - these are households who often would go for a day without eating, go to bed hungry or run out of food for more than ten days a month. For all the sampled households, only about 6% were food secure, 15% were mildly food insecure, 39% were moderately food insecure while 39% were severely food insecure - these are households who often go for a day (24 hours) without eating, go to bed hungry or run out of food for more than ten days in one calendar month. However, from the focus group discussions, participant pointed out that the weekly food packs received from the mission is making impact on household food availability.

The result of the linear regression model show that the coefficient of education measured by the number of years of schooling is statistically significant and negatively related to household food insecurity. This indicates that the more the number of years spent in school by the household head, the more food secure is likely the household. This could be attributed to the fact that education is expected to lead to increased earning potential and also influence the livelihood options meaning that the highly educated had high incomes and more purchasing power to buy food for their families. Gordon and Craig

(2001) asserted that there are several forces that reinforce the effect of education on incomes; education increases skill levels required for some rural non-farm activities and contributes to increased productivity.

The coefficient of household size is statistically significant and positively related to household food insecurity. Households with large family size are more likely to be food insecure compared to those with smaller family size. A possible explanation for this could be the fact that most HIV affected households consist of extended family members, which as in many developing countries is a source of support and care during illness especially HIV (Mwinituo 2006). Also majority of the households relied on food packs given by the mission. These packs often contain the same basic food items for all households irrespective of the its size and as a result, households with many members are food insecure as they had more mouths to feed and much pressure is exerted on the limited resources available at households level.

The coefficient of household income/remittances is statistically significant and negatively related to household food insecurity, indicating that as the income/remittances increase households become more food secure and the possibility of being food insecure decreases. Increasing incomes implied that households would have a higher purchasing power to buy food thereby ensuring that the household have access to food. According to May et al. (1995), diversified income base can help reduce household vulnerability to income shock and could be a proxy for household's ability to respond to economic changes. In south Africa, income has been identified as the principal determinant of household food security (Kirsten et al. 2003).

The coefficient of household food expenditure is statistically significant and negatively

related to household food insecurity, indicating that with an increase in household food expenditure, there is more likelihood that the household will be food insecure. This could be a result of the rising food prices which limit the quantity a poor HIV/AIDS affected household could purchase. Rising food prices, particularly of maize and wheat which are the staple of the poor pose serious problems to food security in South Africa, since most poor households are net buyers of food (Altman et al. 2009). Home gardening is a supplementary food production system and not the household's primary source of food.

However, the coefficient of household participation in home gardening is statistically significant and negatively related to household food insecurity, indicating that as households participate in home gardening there is a likelihood they become more food secure and the possibility of being food insecure decreases. A possible explanation could be that HIV/AIDS affected household cultivates a greater diversity of vegetables and consume more essential food items from their gardens, and supply produce are sold to generate additional income for the households especially during the winter months. This is consistent with the findings in Ghana that home gardens contribute significantly to dietary diversity in HIV positive rural household (Akrofi et al. 2010).

### CONCLUSION

This study examined the impact of home gardening on the food security status of HIV/AIDS affected households in the Mphophomeni Township, KwaZulu-Natal Province. Using the Household Food Insecurity Access Scale (HFIAS) to determine household food security status and a linear regression model to identify factors which influence HIV/AIDS affected household food security. From the results of the study, it can be concluded that home gardening; a supplementary food source to HIV/AIDS affected households, has a significant contribution to HIV/AIDS affected households' food security in Mphophomeni Township even though the majority of the household are either in mildly food insecure, moderately food insecure and severely food insecure. This shows that great attention should be given to home gardening in rural households especially in situation where they are affected by HIV/AIDS.

### RECOMMENDATIONS

In order to reduce the socio-economic impact of the HIV/AIDS epidemic in the study area, especially household affected by HIV/AIDS, this study recommended that government in partnership with the Masibumbane mission should scale-up its operations and activities, and put in place measures to encourage more participation in home garden projects, this will not only increase yield and ensure adequate food availability to the households but also enhance the health status of the household members, especially those affected by HIV/AIDS. It is also important to take into consideration household size when giving out food packs/parcels. This will ensure that households get enough food parcels for its members. This will improve the current food insecurity status of the HIV/AIDS affected household in the Mphophomeni Township.

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**Appendix 1: Household Food Insecurity Access Scale (HFIAS) Measurement Tool**

<i>Question</i>	<i>Response options</i>	<i>Code</i>
1. In the past four weeks did you worry that your household would not have enough food?	0 = No (skip to Q2) 1 = Yes	
1a. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
2. In the past four weeks, were you or any household member not able to eat the kinds of food preferred because of lack of resources?	0 = No (skip to Q3) 1 = Yes	
2a. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
3. In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q4) 1 = Yes	
3.a How often did this happen	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
4. In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q5) 1 = Yes	
4.a How often did this happen	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
5. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q5) 1 = Yes	
5.a How often did that happen	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
6. In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1 = Yes	
6.a How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
7. In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q8) 1 = Yes	
7.a How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
8. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q9) 1 = Yes	
8.a How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
9. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No 1 = Yes	
9.a How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	