African Journal of Agriculture and Food Security Vol. 1 (5), pp. 093-099, November, 2013. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Socio-economic factors affecting smallholder farming and household food security: A case of Thulamela local municipality in Vhembe District of Limpopo Province, South Africa

S. A. Oni[1]*, L. L. Maliwichi[2] and O. S. Obadire[3]

[1]Department of Agricultural Economics and Extension, School of Agriculture, University of Venda, South Africa. [2]Department of Family Ecology and Consumer Science, School of Agriculture, University of Venda, South Africa. [3]Centre for Rural Development and Poverty Alleviation, School of Agriculture, University of Venda, South Africa.

Accepted 26 August, 2013

Most smallholder farmers in the Thulamela local municipality of the Vhembe District have failed to achieve food security in spite of considerable investment in agriculture by the South African government. Many of the programmes failed before they even took off due to some socio-economic constraints. Hence, this study was designed to establish the determinants of household food security and identify critical factors that can be adopted by smallholder farmers in addressing the problems of household food insecurity. A sample of 41 smallholder farmers were randomly selected to participate in the research work using simple random sampling techniques from a list of 120 agricultural projects obtained from the Agricultural Service Centre of Thohoyandou. Structured questionnaire was used to collect the data from the respondents. The study revealed that about 73% of the respondents do not eat the type of food they prefer while 15% of households experienced a worst situation scenario in form of not having enough food to eat. The study finding underscores the need to create an enabling environment for smallholder farmers to improve their levels of productivity through appropriate government policies and strategies and the beneficiaries of government initiatives should be involved in the planning and implementation. Government initiatives need to focus on planning and implementation of smallholder farming, infrastructure/technology development and making land available for smallholder farming.

Key words: Household food security, smallholder farming, poverty, rural livelihood.

INTRODUCTION

Food security and insecurity are terms used to describe whether people have access to sufficient quality and quantity of food. Poverty, health, food production, political stability, infrastructure, access to markets and natural hazards are some of the determinants of food security. While famine and hunger refer to the effects of the non-availability of food, food security indicates the availability of food (Ayalew, 2006).

The 1996 World Food Summit (WFS) adopted a more complex term by defining “Food security, at the individual, household, national, regional and global levels as being 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). This definition was refined in The State of Food Insecurity 2001 document as follows: “Food security is a situation that exists when 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” (FAO, 2002).

The international community has accepted these increasingly broad statements of common goals and implied responsibilities but its practical response has been to focus on narrower and simpler objectives which

*Corresponding author. E-mail: Stephen.Oni@univen.ac.za. Tel: (+27) 015 962 8629. Fax: (+27) 015 962 8598.

are to organise international and national public action. The declared primary objective in international development policy discourse is increasingly the reduction and elimination of poverty. The 1996 WFS exemplified this direction of policy by making the primary objective of international action on food security by halving the number of hungry or undernourished people by 2015. (FAO, 1996)

Food insecurity has been described as “a condition in which people lack basic food intake to provide them with the energy and nutrients for fully productive lives” (Cox et al., 2001) . A critical examination of these definitions, especially in the context of smallholder farming, suggests that there are many factors embedded in what food security or insecurity entails. Smallholding farms are characterised by low income generation, small size land utilisation, lack of proper inputs and lack of resources, all of which limit productivity and further increase level of poverty. Low level of managerial and technical skills and inadequate training were identified as the major determinants of low level of productivity and household food insecurity. People living in poverty often cannot produce or buy enough food to satisfy their needs and so are more susceptible to disease. Sick people are less able to work or produce food. The United Nations (UN) Standing Committee on Nutrition concluded that nutrition is an essential foundation for poverty alleviation and also for meeting Millennium Development Goals (MDGs) related to improved education, gender equality, child mortality, maternal health and diseases (POST, 2006). Recent estimates of the Food and Agriculture Organisation (FAO) show that the number of undernourished people increased from 848 million to 923 million from 2003/05 to 2007, largely owing to the food price crisis (FAO, 2008). Over a billion people live on $1 a day or less (United Nation, 2005). The number of undernourished increased even further in 2008 as prices continued to rise and the financial crisis hit due to global economic melt down. Food price hikes have also raised micronutrient deficiencies, with negative consequences for nutrition and health, such as impaired cognitive development, lower resistance to disease and increased risks during childbirth for both mothers and children. Food security is also seen as a prerequisite for economic development. Losses in labour productivity due to hunger can cause 6 - 10% reduction in per capita gross domestic product (GDP), while under-nourishment and pre- birth of young children is associated with poor cognitive development, resulting in lower productivity and lifetime earnings potential (POST, 2006).

Appropriately one third of South African households are involved in small-scale farming but agriculture does not contribute more than 4 percent to their total incomes even though farming requires very high time com-mitments from family members (Schmidt, 2005; Hendrcks and Maunder, 2006).

This study investigated the socio-economic issues surrounding the state of food security of smallholder farmers in the Thulamela local municipality of Vhembe district. It sought the view of smallholder farmers on the level of availability of food at the household level and identified factors affecting the sustainability of farming projects. Food insecurity and poverty in South Africa have prevailed for several centuries as a result of apartheid policies that were designed specifically to create conditions that were unfavourable to the well being of black people (Limpopo Department of Agriculture, 2002). These historical legacies created the present situation where majority of black farmers are vulnerable to food insecurity in spite of the good food security situation at national level.

MATERIALS AND METHODS

Data types, sources and collection

This study made use of primary and secondary data. The secondary data was collected from various official reports of government which included Department of Agriculture, the Agricultural Service Centre in Thohoyandou; Thulamela local municipality and Statistics of South Africa 2000, 2002 and 2004 census reports; private and public institutions, policy documents, research papers on internet and related books.

The primary data was obtained from field surveys that were conducted in selected villages in Thulamela municipality. This included personal observations of the researcher’s use of structured interviews, informal discussions with affected individuals and the use of a structured questionnaire administered to the 41 respondents selected for the study.

Sampling method

The study employed the systematic random sampling procedure for primary data collection whereby 41 projects were selected from a list of 120 agricultural projects. The process involved writing all names of the projects on pieces of papers, placing them in a container and randomly picking the 41 of them. These formed the number of respondents who participated in the research for data collection.

Data analysis

The collected quantitative data such as number of people living in households and total income of households were analysed using the statistical package for social scientists (SPSS) for windows version 14.0. This was done in order to obtain descriptive statistical data and representation of results. Qualitative data covering household food pattern in the last 3 years was presented in terms of opinions in a logical and systematised manner.

Statistical calculations such as means, variances, frequency tables, standard deviations, standard error of mean and regression analysis were done. Non-parametric statistics and tests were undertaken with the assumption that the characteristics of household food security variables were either significant at $p < 0.001$ (***), $p < 0.01$ (**) or at $p < 0.05$ (*) levels (Table 2). The following model was specified:

$$Y = f(X_1, X_2, \ldots, X_n)$$

Where, Y = Dependent variable (Food security)

Table 1. Types of farming practiced in Thulamela municipality of Vhembe district.

Farming type	Frequency	(%)
Vegetable garden	20	32.0
Fruits	13	20.6
Crops	13	20.6
Poultry	7	11.0
Fishery	3	4.7
Piggery	2	3.2
Cattle	5	7.9
Total	63	100.0

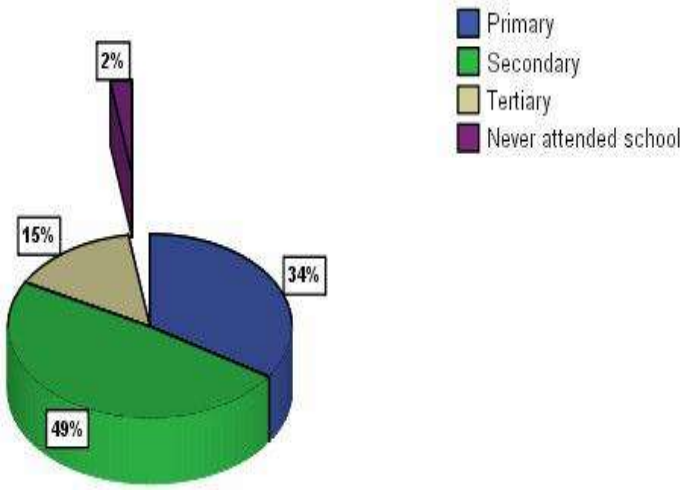

Figure 1. Educational level of smallholder farmers in Thulamela municipality.

X_1, X_2, …, X_n = independent variables (sex, age, educational level, income level, household size, number of year in farming, etc)

RESULTS AND DISCUSSION

Socio-economic descriptors of the respondents

Male respondents (54%) and their female counterparts (46%) had almost equal participation in smallholder farming in the study area (Table 2) The high percentage of male headed families observed in the study suggested that participation of farmers in the study area depends on the perception by the male members of the community because most of the women did not own land

Education was not a major constraint to the participation in farming activities in the study area as almost all the farmers interviewed (98%) had acquired formal education. The farmers could read and write as well as correctly follow technical recommendations (Figure 1). Households with an educated head are more likely to be food secured than uneducated head but this was not the case in this study which may be due to other factors.

The number of people in a household ranged from one to more than ten. The study revealed that more than half (54%) of the households had between 6 and 10 members (Table 2) . It was observed that the households with more than ten members (7%) had primary education or had never been to school, which showed that households with fewer members had higher education (Table 3).This study revealed that most respondents (90%) were involved either fully or on part time basis in smallholder farming.

About 63% of the household adults between the ages of 18 and 50 were involved in farming which is run as a family business. 17% were involved full time, while 27% were part time. In most cases, farmers did not pay wages to their family members instead they provided food, education and paid for other expenses.

Some of the households interviewed were engaged in one or more types of smallholder farming enterprises (Table 1). Vegetable garden was common to most of them alongside their main farming enterprises and this was responsible for multiple entries in the analysis, giving a high percentage (49%) of smallholder farmers in vegetable garden. Some households were engaged in other types of enterprises referred to as backyard garden, which is actually next to the residence of the household.

The challenges faced by the respondents

Farmers were faced with quite a number of challenges that hindered them from producing enough food that could last a year. Most of the respondents said they kept farming records (70%), yet the outcome was not impressive. They lacked access to credit to start off. Lack of markets and infrastructure were also critical. About 37% believed that availability of water for farming and grazing camps for livestock were necessary, while 29% believed that provision of infrastructure, and 18% believed markets will improve their food production levels.

More than half of the respondents (68%) earned a total income of less than R10,000[1] (Figures at the exchange rate of Rand (R) to $0.13 US Dollar) while only 2% earned between R51,000 and R100,000 as income from their farming activities as shown in Figure 2. The entire respondents had their primary economic activity based on farming with about 90% on a full time basis, therefore, having no alternative means of getting additional income. Income was inversely associated with food insecurity status with the percentage of households with income less than R10,000 which increased markedly and the percentage of households with incomes greater than R51,000 which decreased. Households had various food needs, but when the income was not sufficient to meet the minimum level of household needs, this meant that

Table 2. Characteristics of household food security components.

Characteristics	(%)	Chi square	Significant level	Comment
Educational level		20.756	0.000	***
Primary	36.6			
Secondary	46.3			
Tertiary	14.6			
Never attended school	2.4			
Total income		42.610	0.000	***
Between R51,000 - 100,000	2.4			
Between 21,000 - 50,000	14.6			
Between 10,000 - 20,000	14.6			
Less than 10,000	68.3			
Household food produce		23.500	0.005	**
Less than 50%	73.2			
More than 50%	17.0			
Households spending pattern		27.000	0.000	***
Spend money on food but cannot manage food properly	7.3			
Spend money on food, send children to school but not for a long time	58.5			
Spend money on food, send children to school for a long time	14.6			
Spend money on food, send children to school for long time and buy luxury items	17.1			
Number living in household		13.805	0.001	**
Between 1 and 5	39.0			
Between 6 and 10	53.7			
More than 10	7.3			
Household with sufficient income to meet food purchase		4.122	0.042	*
Income is sufficient to meet food purchase	34.1			
Income is not sufficient to meet food purchase	65.9			
Household food statement		29.317	0.000	***
Household have enough to eat and the kinds of food we want	12.2			
Household have enough but not kinds of food we want	73.2			
Household sometimes do not have enough food to eat	14.6			
Reasons for enough food but not the kinds of food we want	68.3	66.750	0.000	***
Not enough money for food	2.4			
Too hard to get to store	4.9			
Kinds of food not available	2.4			
Good quality food not available	68.3			

*** Significant at 0.001 level (2-tailed); ** Significant at the 0.01 level (2-tailed); * Significant at the 0.05 level (2-tailed).

the household was in a food insecurity status. About 66% of the households interviewed in this study were found to be food insecure.

The study findings revealed that due to food security or insecurity in the households of the respondents, there were differences in their spending patterns. In Figure 3, 8% of the households could afford to spend money on food but could not manage food properly, about 60% spent money on food, sent their children to school but not at the required time, about 15% could afford to spend

Table 3. Mean household food security by socio-economic factors.

Social-economic factor	% of food poverty line			
	n	(%)	Mean	Standard error of mean
Sex			1.46	0.079
Male	22	53.7		
Female	19	46.3		
Income levels of household (R)			4.49	0.131
Between 51,000 - 100,000	1	2.4		
Between 21,000 - 50,000	6	14.6		
Between 10,000 - 20,000	6	14.6		
Less than 10,000	28	68.3		
Household size			1.68	0.95
Between 1 and 5	16	39.0		
Between 6 and 10	22	53.7		
More than 10	3	7.3		
Educational levels of household			1.85	0.119
Primary	15	36.6		
Secondary	19	46.3		
Tertiary	6	14.6		
Never attended school	1	2.4		
Number of years in farming			2.66	0.83
Less than 1	1	2.4		
Between 1 and10	12	29.3		
More than 10	28	68.3		
Household food trend			2.05	0.118
Increasing	10	24.4		
Decreasing	18	43.9		
Constant	12	29.3		

n = Number of respondent.

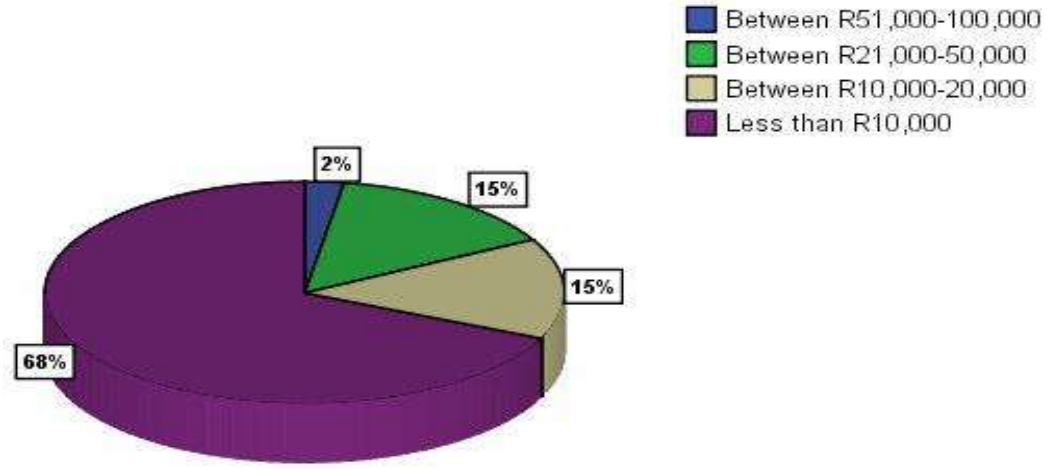

Figure 2. Total Incomes of smallholder farming households in Thulamela. One South African Rand (R) = US $0.13; July 2008 figure.

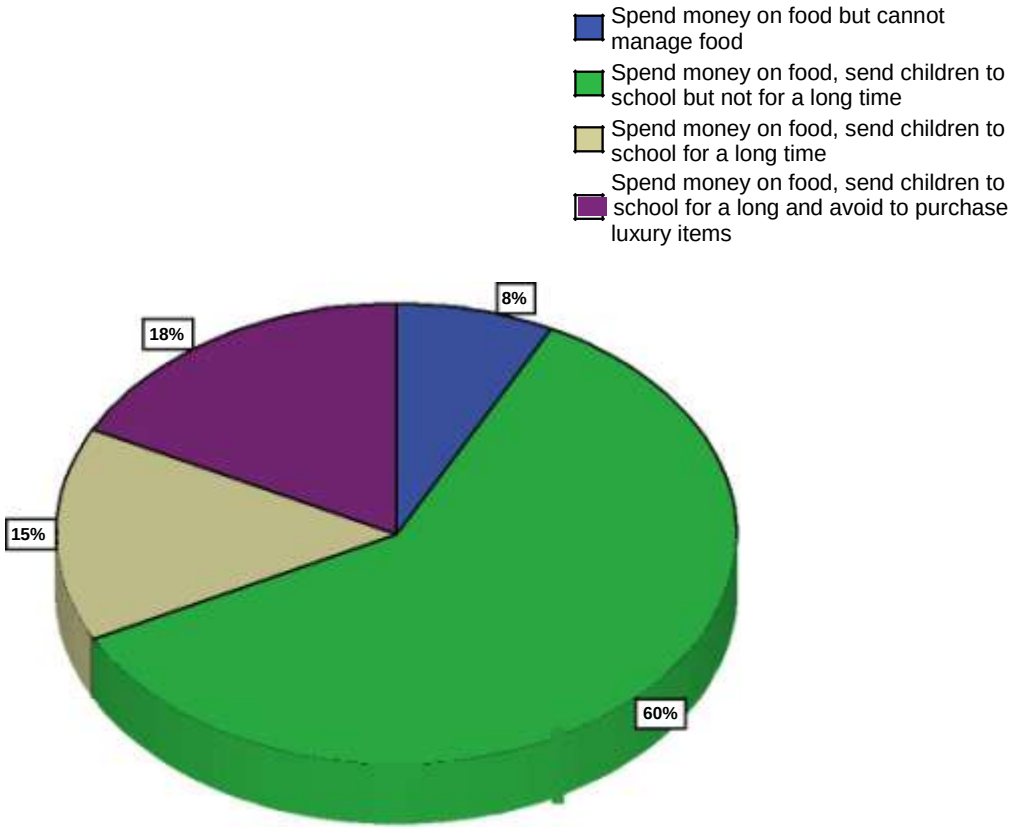

Figure 3. Smallholder farming households' spending pattern in Thulamela municipality in the last 3 years.

money on food, sent their children to school for a long time while about 18% could afford to spend money on food, sent children to school for a long time and could also afford luxury items like television, furniture, etc.

Sustainability of farming

Although, organisations such as the Department of Agriculture, Health and Welfare, Labour, Agricultural Research Council, British Embassy, Land Bank, ABSA, Eskom, and Equal Opportunity Foundation, provided funding, infrastructure, training, advice and so on to smallholder farmers to create jobs for the unemployed household members, the poorest of the poor, the disabled, women and youth, these efforts showed little or no impact on the sponsored smallholder farmers. This might be due to lack of proper monitoring by the sponsoring organisations.

Despite the fact that they were funded by different organisations and provided with infrastructure such as borehole, yet, they could not break even after many years of operations. This was due to lack of clear organisation policy, duplication of services, lack of managerial skills and marketing problems. That was why over 62% of the respondents could not produce enough food to last a year. (Table 2)

Slightly more than half (51%) of the households interviewed had other fields near their houses where they practised other types of farming. This may be due to lack of enough land areas for them to expand their farm size. One of the aims of smallholder farming was to create employment for the community especially youth and women who were classified as adults between the ages of 18 and 50. About 59% were employed in smallholder farming with about 22% working on a full time basis.

Characteristics of households' food security

There were two distinct groups categorised as food secure and food insecure. The food secure group consisted of individuals who answered "in agreement or yes" to all the food security perception items; while a food insecure group, comprised individuals who answered "not in agreement or no" to one or more of the household food security perception items, such as; "Does the household produce enough food to last 1 year? Is farming project profitable? Is income earned by the household sufficient? Does household have sufficient food to eat? Does the household have other fields? Has food consumption in the household improved due to farming? Does the

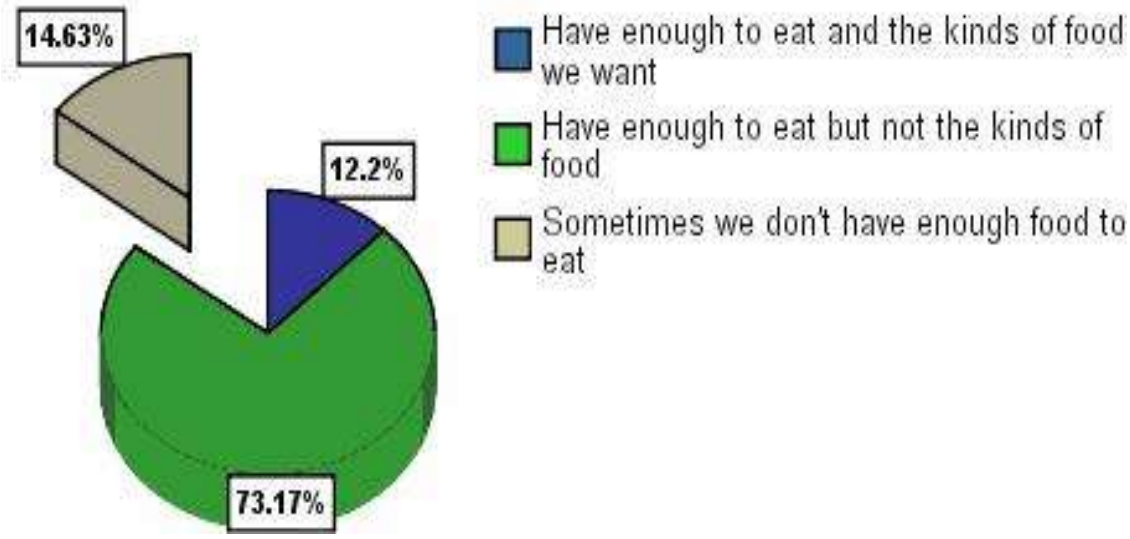

Figure 4. Household food statements of respondents.

household eat all kinds of food they want? What is the household food trend in the last 3 years?" Food insecurity was most often experienced at the household levels. Based on the conceptual framework, about 73% did not eat the kinds of food they wanted, while 15% of households experienced a worst situation scenario in the form of sometimes not having enough food to eat (Figure 4). This could best be described as hunger or transitory food insecurity (Ayalew, 2006). This may be because they did not have enough money for food, or it was too hard to get to the stores, or other unspecified reasons.

Generally, however, over 70% of the respondents agreed that their household food consumption has improved. The study showed that about 63% of households had sufficient food to eat but different reasons may be responsible for households not getting the kinds of food they wanted. This study revealed that about 88% was due to the fact that they do not have enough money to purchase the kinds of food they wanted (Figure 3), while only 12% were due to other reasons.

It was revealed in this study that food availability in any household had a pattern within a time frame which either increased, decreased or was at a constant level. The percentage of households in the last three years with an increased food pattern (25%) was much lower than the percentage of those that experienced decrease (45%). This attested to the fact that most households experienced food insecurity at household levels. There were various reasons for this observed household food trend. About 40% agreed that it was due to high prices of food items and 32% said this was because of the low income of the household.

Drastic situations required drastic actions. In this regard, most households (56%) agreed to a coping strategy that substituted expensive food items with cheaper ones so as to save some money that could have been spent on expensive food items but some of these cheap substituted food items might have been sub-standard and of low nutritional values. The summaries of the food security situation of the households in the study area are shown in Table 3 by using the mean and standard error of mean which represents the percentage of food poverty line (Donald and Charlton, 2001). In Table 2, the characteristics of household food security components in relation to their significant levels are listed.

Policy recommendations

Project planners and policy makers need to shift their attention from the important question of how to help women to the central question of how to help men and women. More effective projects can be formulated only through a better understanding of the totality of local gender asymmetries and relations.

Low levels of education could sometimes be associated with failure to perform some basic managerial tasks (Cronje et al., 2003). Perhaps government agencies including extension services can make a meaningful contribution by addressing skills in their training programmes.

Observations and elicited information show that most of the respondents are farming for commercial reasons yet not many of them were making profit from their farming activities. In reality, most of the farmers consume a larger proportion of their farm product at the household levels. The immediate need for food can compromise the future viability of these households in developing the small food production businesses that would raise them out of a subsistence level existence. Most of the training received by the smallholder farmers was inadequate, hence this

study recommends that:

1. Issues related to farm management, keeping of farm records, agricultural technology and production skills should be emphasised in the training programmes by the Department of Agriculture on a regular basis. Funding institutions should have clear organisational policy, efficient service delivery mechanisms, proper monitoring, evaluation plans and project performance analysis strategy for the sponsored smallholder farming projects so as to prevent 'white elephant' projects. Lasting positive impact is dependent on community members' motivation and capacity to keep applying their training, knowledge, caring for their livestock, gardens, and expanding their food production beyond subsistence.
2. It was observed from the study that most of the farmers still engaged in other farming activities alongside their main farms. This may reduce effectiveness, cause distraction and lack of concentration to the farmers and therefore, reduce their productivity. One of the reasons for this other farms may be the problem of land needed to expand their main farm land. The government and stake-holders should provide land and communal livestock grazing camps to the smallholder farmers. There should be improved access to production resources through enabling policies that will ensure access to land and improved tenure support. They should also plan programmes that support the variable needs of small-holder farmers and community gardens that often allow mixed farming and undertake a variety of enterprises.
3. The study revealed that the number of youth and women employed in the smallholder farming has increased considerably. Food production programmes take time to yield sufficient food and in the case of food insecure households, there is the risk that immediate and short-term needs for sufficient food consumption become urgent before the project has had time to produce enough food and this could compromise the expected outcomes. But with little or no income generated by most of these smallholder farmers, the majority of these youth and women can only be given a part time employment. It is recommended that access to credit could improve farmers' ability to hire laborers to work during the esta-blishing phase before the benefits from farming accrue as they progress in their farming.
4. It was observed from this study that most of the smallholder farmers interviewed relied on crude imple-ments for their farming activities. Important activities such as ploughing, weeding, planting and harvesting should be mechanised. It has been proved that technology increases agricultural production. The formation of farmers groups to create awareness and jointly use these mechanised tools as the way forward to enhance the farmers' performance is recommended. Programmes that increase the access of food insecure households and communities to resources such as land, environmental sustainable technologies, credit, training and markets should be introduced.
5. It was observed that there is not a single feed mill producing fish feeds in the study area. All the households that are into this type of farming travel as far as Polokwane or Johannesburg, sometimes without success, to get feed for their fingerlings or growing fish. It is recommended that the government should intervene by setting up a depot for feed mills (poultry, piggery, fishery, etc) or invite investors to establish the industry in the area.

REFERENCES

Ayalew M (2006). What is food security and famine and hunger? Paper presented for the National Disaster Prevention and Preparedness Conference, Addis Ababa, Ethiopia.

Cox PG, Mak S, Jahn GC, Mot S (2001). Impact of technologies on food security and poverty alleviation in Cambodia: designing research processes. pp. 677-684 in S. Peng and B. Hardy [eds.] "Rice Research for food security and poverty alleviation." Proceeding the International Rice Research Conference, 31 March-3 April 2000, Los Banos, Philippines. Los Banos (Philippines): International Rice Research Institute, p. 692.

Cronje J, Du Toit GS, Marais K, Motlatla K (2003). Introduction to Business Management. 6th Edition, Southern Africa: Oxford University Press.

Donald R, Charlton KE (2001). Prevalence of food poverty in South Africa: results from a large, nationally representative survey. Public Health Nutrition: 5(3): 383-389. DPI: 10.1079/PHN2001320.

FAO (1996). United Nations World Food Summit organised by the Food and Agriculture Organisation held in Rome in 1996.

FAO (2002). The State of Food Insecurity in the World 2001. Rome: FAO, pp. 4-7.

FAO (2008). International commodity prices database. Available at www.fao.org/es/esc/prices/PricesServlet.jsp?lang=en

Hendricks SL and Maunder EMW (2006). Identification of food security indicators for FIVMS.ZA. Unpublished paper prepare for World Food Programme, African Centre for Food Security, University of KwaZulu-Natal, Pietmaritzburg.

Limpopo Department of Agriculture (2002). Revitalisation of smallholder irrigation schemes: A business plan for the revitalisation of smallholder irrigation schemes in the Limpopo Province. The Department, Polokwane, p. 48.

POST (2006). Food security in developing countries. The Parliamentary Office of Science and Technology (POST), London. pp. 1-4.

Schmidt K (2005). Food security in South Africa: Crop production as an intervention, the case of substance fishers. Available online at: www.aidc.alternativedevelopmentinformationcentre.fssa. Accessed on: 22/11/09.

United Nations (2005). Halving hunger: It can be done? Task Force on Hunger, UN Publications, Geneva.