Does Subsistence Agriculture Play a Crucial Role in Food Security in Swaziland?

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Abstract
Subsistence agriculture occupies about 74% of total arable land of Swaziland and offers employment to about three quarters of Swaziland's population. In spite of the active involvement of the majority of Swazi populace in farming coupled with relative climatic conditions for rain-fed agriculture, Swaziland is among one of the countries in Southern Africa which often experiences food insecurity. Understanding the role played by the subsistence sector to the household's food security status and its dynamics is central to food security policies and strategies of the country as regards requirement for external food aid. Using a farm management data on 120 randomly selected households from seven chiefdoms, this study, therefore, examines the extent to which the subsistence agricultural production contributes to the households' food security.

 The results show that on average, the estimated net available food for consumption (5987498 kcal/year) per household was more than the average estimated minimum household's food requirement (4443255 kcal/year). Nevertheless, on the basis of individual households' assessment, 31% of the sample were food insecure. The results further reveal that 63% of all the households experienced food shortages mostly in the period leading just before the harvest period. Hence, in the real sense of the definition of food security it is concluded that subsistence agriculture is capable of ensuring food security to only 37% of the sampled households.
Key words: Food Security, Subsistence Agriculture, Swaziland, Sustainability.

1.   Introduction

Agriculture in Swaziland is dualistic consisting of subsistence agriculture practised on Swazi Nation Land (SNL) and commercial agriculture found on Title Deed Land (TDL). The subsistence agriculture, however, dominates in terms of both cultivated land and the number of people involved in farming in the country (MOAC, 2005). It accounts for 74% of the total arable land and about three quarters of Swaziland's population depend primarily on it for their households' food security. Food security at household level can be defined as a situation in which all household members have sustained access to sufficient quantity and quality of food to live an active and healthy life (FAO, 2004). Despite the relative good climatic conditions for arable farming in Swaziland and the dominance of the subsistence farming, Swaziland is among one of the countries in Southern Africa which often experience food insecurity. Understanding of the potential role played by the subsistence sector to the household's food security status and its dynamics is central to food security policies and strategies of the country as regards requirement for external food aid. The later is influenced by the availability of local food on the one hand (e.g. in the market or from own production) and the purchasing power and opportunities allowed to the affected households on the other hand (Roger, 1986; Banda, 2003). According to Garret and Ruel (1999) subsistence agriculture is vital for the survival of most rural households. Subsistence agriculture is referred to as an agricultural system in which the farmers' primarily production decision is based on meeting the households' food consumption needs. Only a small percentage (usually ranging from 10% to 30%) of the annual household's total farm produce is sold. Subsistence agriculture is further characterized with the use of less productive or simpler farming techniques. Most subsistence farmers today are found in developing countries. The main aim of this study is to determine the extent to which the subsistence agricultural sector in Swaziland contributes to the country's households food security.

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2.   Analytical framework

The assessment of food security requires data on food consumption and food requirements of the population studied. To determine the total food requirement per household, the initial reference value of 2100 kilocalories per person per day as recommended by World Health Organization (WHO) and the U.S. Committee on international nutrition was used in this analysis to compute the total average household food requirement for the study population (UNWFP, 2002)   This estimate according to the two bodies covers the energy needs of a typical population in a developing country to live an active and healthy life (FAO, 2006). Adjustments from this standard figure are made to accommodate different ages and gender. Pregnant and lactating women for example, need an extra 285 and 500 kcal/day, respectively which had to be accounted for in the computation of the total household food requirement. The estimated adjusted figure is then multiplied by 365 days and by the total number of consumer units per household to arrive at each household's annual total food consumption requirement. The consumer unit is used as a human unit of measure because from the stance of nutritional evaluation, it is essential to know that caloric requirements differ according to the age and sex of the individuals.

To determine the net annual available food for consumption from the households' total subsistence crop output, each food type produced and measured in kilograms was converted into kilocalories using the Atwater general conversion factor system derived by Southgate and Durnin (1970). From the total of all crops in kilocalories, the equivalent amounts of all crops in kilocalories sold, received as gifts, purchased and also those given out as gifts were deducted to arrive at the net balance for the households' consumption for the year.

3.   Data and Analytical Methods

The data for this analysis come from 2006 farm management survey of 120 households randomly selected from seven chiefdoms constituting Lamgabhi Constituency in Swaziland. The area is located in the middle veld and experiences relative suitable climatic and soil conditions for rain-fed agriculture. Most households in the area depend on subsistence agriculture for their livelihood. A structured questionnaire was used to obtain the data through personal interviews with the heads of households at their homesteads. Information on various aspects of the farm households was solicited. The main analytical tool used is descriptive statistics. The means of net households' food balance and the households' food consumption requirements were estimated and compared. Frequency distributions of certain vital variables were derived.

4.   Results and Discussion

4.1   Household characteristics.

Table 1 presents some key sample households' characteristics which provide the basic information needed to understand the food security status of the households. The households had an average size of 7.49 people which in terms of consumer units came to 5.72. On average, there was almost equal share of males (50.2%) and females (49.8%); more adults (58.1%) than children (41.9%) per household. The average age of heads of households was 56.2 years, suggesting that most households are headed by elderly people. About half of the heads had attained formal education of up to standard seven. Only a small number (18.3%) of households were found to be headed by females.

Table1: Average household characteristics of sample, Lamgabhi, Swaziland, 2006

Characteristic	Average Number	Percent of Total
Sample Size	120	100
Household size	7.49 [3.85]*	
Number of which are:		
Pregnant	0.18 [0.39]	2.5
Lactating	0.22 [0.47]	2.9
Household consumer unit[1]	5.72 [2.88]	
Household Composition by: **Sex**		
Male	3.75 [2.09]	50.2
Female	3.73 [2.04]	49.8
Age		
Children (<16 years)	41.9 [2.02]	41.9
Adult (>16years)	58.1 [2.06]	58.1
Female headed households	22	18.3
Male headed households	98	81.7
Age of head of household	56.2 [12.49]	
Literacy rate of head of household	7.4 [5.06]	49.5

[1] Defined as the human unit of measure for nutritional energy requirements calculated from household size.

* Standard deviation in parenthesis.

4.2   Estimated food requirement per household

The estimated average household food consumption requirement was 4,443, 255 kcal/year (Table 2). It must be noted that this is considered to be the minimum food energy required for a household to be considered food secure. The households should be able to retain this amount of food energy to live an active and healthy life.

Table 2: Estimated average household consumption requirement, Lamgabhi, Swaziland, 2006

Variable	Consumer unit	Pregnant	Lactating
Average household consumer unit	5.72	0.18	0.22
Consumer energy requirement (Kcal/day)	2100	285	500
Average household energy requirement (Kcal/day)	12012 [a]	51.3 [b]	110 [c]
Total average household consumption Requirement (Kcal/day) = a + b + c	12173.3		
Total average household consumption requirement (Kcal/year) = (a + b + c)*365days	4443254.5		

4.3 Total crop output and net balance food balance for household consumption

Table 3 presents the average yields for the various crops, their uses, amounts purchased and the net available for consumption per household. As seen in the table, the net available food from all the crops available for consumption per household per year was 4,636,656 kcal. Sorghum is the most single important contributor, accounting for 52.2% of the total. It is followed by beans with a share of about 32%.

Table 3: Estimated total crop output and quantity retained for consumption per household, Lamgabhi, Swaziland, 2006

Crop	Mean Quantities of Crops in kg/year					Net available for household consumption		% share of each crop
	Produced	Sold	Given Out	Purchased	Received	Total (kg/year)	(Kcal/year)	
Maize	779	183.2	51.6	23.5	42.3	610	2440610	52.2
Beans	411.6	131.6	12.9	84.7	15.8	361.3	1470491	31.5
Sorghum	9.0	0.5	1.4	3.7	4.8	15.6	62868	1.3
Pumpkins	26.8	1.8	2.9	0.2	6.7	29	103530	2.5
Sweet Potatoes	55.8	4.9	1.7	0.8	5.3	58.5	244640	5.0
Other (Vegetables)	30.2	2.1	4.7	62.3	2.4	88.1	314517	7.5
Total							4636656	100

4.4 Potential Contribution of subsistence farming to household's food security

Table 4: Estimated total food energy from subsistence agriculture and average household food requirement , Lamgabhi, Swaziland, 2006

Variable	Food Energy (Kcal/year)
A. Average net crop balance (kcal/year)	4 636 656
B. Quantity of meat consumed per household (kcal/year)	1 350 842
C. Total food energy from subsistence agriculture (kcal/year) = A + B	5 987 498
Estimated average household's food consumption requirement (kcal/year)	4 443 254.5

As shown in Table 4, the average household in the study area had 5 987 498 kcal/year available for consumption, exceeding the average minimum required food energy (4 443 254.5 Kcal/year) by about 26%. This, theoretically, would imply that the households in the area were able to meet their minimum food requirements and hence considered food secure. However, on the basis of individual households' assessment, about 31% of the sample households were found to be food insecure (Table 5). The data in Table 5 also reveal that about 63% of all the households experienced food shortages, implying that only about 37% of all the samples were food secure. Food shortages among the households were more predominant in the period between January and March. March is normally the last month in terms of periods of food shortages because it is the maize harvesting season.

Table 5: Food security profile for sample households, Lamgabhi, Swaziland, 2006

Food Security Status:	No. of Households	Percent of total Sample
Food Secure	83	69.2
Food Insecure	37	30.8
Households affected by food shortages	76	63.3
Households which did not experience food shortages	44	36.7
Frequency of food Shortages by affected households		
Occasionally(< 30days)	66	86.8
Frequently (>30 days)	10	13.2
Food Shortage Periods		
Jan – March	45	59.2
April – June	7	9.2
July – September	5	6.5
October – December	19	25

5.   CONCLUSIONS

This paper examined the extent to which household agricultural production (subsistence farming) contributes to household food security. The results show that on average, the estimated net available food for consumption (5987498 Kcal/year) per household was more than the average estimated minimum household's food requirement (4443255 Kcal/year). Nevertheless, on the basis of individual households' assessment, 31% of the sample were food insecure. The results further reveal that 63% of all the households experienced food shortages mostly in the period leading up to the harvest period. Hence, in the real sense of the definition of food security it is concluded that subsistence agriculture was capable of ensuring food security to only 37% of the sampled households.

References:

Banda, J.W. (2003): Current and Projected contribution of Livestock production to Food security and Sustainable livelihoods in the crop-livestock systems in Malawi. Bunda College of Agriculture, Malawi.

Food and Agriculture Organisation (FOA, 2004): The role of social relations in farmer seed systems and reconstruction of agricultural production in a post-disaster situation, FAO, Rome, Links Project Case Study No. 2.

FAO. (2006): Sustainable Food Security for All by 2020. Germany.

Garrett, J. L. and Ruel, M. (1999):"Are determinants of rural and urban food security and nutritional status different? Some insights from Mozambique", World Development, vol. 27, no.11.

MOAC (2005): Comprehensive Agricultural Sector Policy. (Draft). Government of Swaziland, May 2005.

Roger, W.H. (1986): Household food security : Concepts and Assessments, Food Studies Group. Oxford.

UNWFP. (2002): Food and Nutrition Needs in Emergencies. Geneva, Switzerland.

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