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## **The Impact of Drought on Household Food Security in the Limpopo Basin of Semi Arid Southern Africa: The Case of Kgatleng District in Botswana**

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### **Abstract**

The Limpopo Basin is important to Botswana's agriculture in terms of its land area of 80118 square kilometers. Climatic conditions in the Basin have ranged from droughts to floods in some years. The semi-arid nature of the Basin with the resultant low crop yields under rain-fed conditions has meant that communities in the area have adapted various strategies with regard to their access to food. These coping strategies are likely to undergo severe strains during periods of extreme weather patterns such as droughts. A household survey was conducted in two villages of Kgatleng District within the Basin in February 2005 with the objective of studying the coping strategies of selected households during drought in order to improve on coping mechanisms of communities in the Basin. The numbers of households selected by simple random sampling for study in the two villages were 61 and 45, respectively. The findings of the study indicated that during the drought in 2004 respondents' sources of supplies were the shops, crop production and government provision. Coping mechanisms of households and differences in coping strategies in the two villages have been highlighted. The study recommends, among others, that the measures already in place to provide food security for households in drought prone areas in the Basin and in Botswana in general, need to be strengthened to ensure that households' vulnerability to food insecurity during periods of climate change such as drought is minimized.

### **Introduction**

The Limpopo Basin is important to Botswana's agriculture in terms of its land area. The area of the basin forming part of Botswana is 80118 square kilometres. This area as a percentage of the total area of the Limpopo Basin is 19.9 and as a percentage of the total area of the country it is 13.8. The average annual rainfall in the basin area in Botswana ranges from 290 mm to 555 mm with a mean of 425 mm. (<http://www.fao.org/docrep/W4347E/w4347e0p.htm>, p.2). The semi-arid nature of the basin with the resultant low crop yields under rain-fed conditions has meant that communities in the area have adapted various coping strategies with regard to their access to food. The coping strategies of communities in the Basin are likely to undergo severe strains during years of extreme weather patterns such as droughts.

Among the policy objectives of Botswana's National Agricultural Policy during the national Development Plan 9 (2003/04-2008/09) is the objective of "Improvement in food security at the household and national levels; emphasis will be laid on household food security" (Republic of Botswana, 2003, p. 187). The results of this study will therefore be of interest to the Government of Botswana as efforts are made to

improve the food security status of households, especially in vulnerable areas such as the Limpopo Basin in Kgatleng District in Botswana.

### **OBJECTIVE OF THE STUDY**

The objective of the study was to examine the sources of food and the food security coping strategies of selected households in Kgatleng District in Botswana in order to develop strategies that could be used to improve the coping mechanisms of communities in the Limpopo Basin.

### **Research Methodology**

A household survey was conducted in February 2005 in the villages of Mmathubudukwane and Malotwana in the Kgatleng District within the Limpopo Basin in Botswana. The number of households selected by simple random sampling for interview were 61 and 45 in the two villages, respectively. The types of data collected with the aid of a questionnaire included experiences of food shortages in households during drought, coping strategies of households to food shortages, institutions that assist in securing food for needy households, and food relief programmes in the study area. Household data were analyzed using the SPSS software package.

## Results of the Study

### *Sources of Food in the Study Area*

Table 1 shows the main sources of food for Mmathubudukwane and Malotwana. The table shows that respondents on the whole obtained about 83 per cent (n = 106) of their food supplies through purchases from the shops during periods of drought. About 10 per cent of households that were interviewed in the two villages obtained their food supplies through their own output in the form of food production while close to 7 per cent of households obtained their food supplies through government provision. A comparison of sources of food supplies in the two villages shows that households in Mmathubudukwane obtained a greater proportion (86.9%, n = 61) of their food supplies from the shops in the village compared to 77.8 per cent for Malotwana. However, households that were interviewed in Mmathubudukwane obtained a lesser proportion (8.2 %, n = 61) of their food supplies through food production and also obtained about 5 per cent of their food supplies through government provision. Malotwana, which is situated in a more arid area, obtained a greater proportion (13.3 %, n = 45) of

food supplies through food production. It, however, relied more on government provision for its food supplies (8.9 %, n = 45)

### *Experiences of Food Shortages in Households in the Study Area*

Table 2 shows that on the whole almost 72 per cent of households in the study area in Kgatleng District reported that they experienced food shortages at one time or another during the year. There were almost equal proportions of households that indicated that they experienced food shortages during the course of the year. The most common period during which food shortages were experienced, as reported by about 36 per cent of households (n = 106), was from the middle of the month to the end of the month during each month. About 15 per cent of households reported that they experienced food shortages throughout the year while close to 7 per cent of households reported that they experienced food shortages during the ploughing season from the middle of the month to the end of the month. The months of June and September were mentioned by two households in Mmathubudukwane village as months when food shortages were also experienced.

**Table 1 : Main sources of food in Mmathubudukwane and Malotwana Villages, Kgatleng District**

Source of Food	Mmathubudukwane		Malotwana		Combined Villages	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Shops	53	86.9	35	77.8	88	83
Food Production	5	8.2	6	13.3	11	10.4
Government Provision	3	4.9	4	8.9	7	6.6
Total	61	100.0	45	100.0	106	100.0

Source: Field survey, February 2005

**Table 2: Experience of Food Shortages in Households in Mmathubudukwane and Malotwana Villages**

Category	Mmathubudukwane		Malotwana		Combined Area	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Yes	44	72.1	32	71.1	76	71.7
No	17	27.9	13	28.9	30	28.3
Total	61	100.0	45	100.0	106	100.0

Source: Field survey, February 2005.

### *Food Security Coping Strategies of Households in the Study Area*

About 29 per cent (n = 106) of respondents indicated that their immediate response to food shortages in the household was to rely on neighbours, friends and relatives to provide them with food items that were in short supply. Other respondents (5.7 %, n = 106) worked on labour based drought relief projects (LBDRP) to generate cash income to purchase food and other necessities while others (5.7 %, n = 106) relied on food relief from the government through the government health clinics. About 24 per cent of respondents (n = 106) indicated that whenever there was adequate rainfall there was food throughout the year otherwise they bought food from the shops. Other respondents (9.4 %, n = 106) indicated that they had less food stress when there was access to more money. There was almost an even split in opinion as to whether strategies for dealing with food stress differed based on the seasons. While 50.5 per cent of those (n = 99) who responded to the question asked thought the strategies did not change with the seasons because they relied on the same source throughout the year, about 49.5 per cent of respondents, on the other hand, indicated that the strategies for dealing with food stress changed with the seasons.

Table 3 shows the various responses on whether food shortages had declined or intensified in the last five years. The majority of respondents (90.6 %, n=106) indicated that food shortages had intensified, only 1.9

per cent of respondents thought that food shortages had declined, while 5.7 per cent of respondents could not tell whether food shortages had declined or not.

### *Institutions that Assist in Securing Food for Needy Households During Drought*

About 82 per cent of respondents (n = 106) confirmed that there were institutions in the community that assisted in securing food for needy households while 18 respondents indicated that no such institutions existed.

The institutions mentioned as helping to secure food for households included those for destitutes, orphans and sick people and general government schemes to assist the food insecure. Other institutions that were mentioned included the Local Council, the Red Cross and home-based care groups. Only about 24 per cent of respondents belonged to the above institutions.

Respondents who were members of some of the above institutions, cited benefits such as assurance of free food rations throughout the year, access to food for the sick and vulnerable members of the community such as pregnant mothers, orphans and other vulnerable children especially those under five years of age. Some of the reasons given by respondents for not being members of the institutions that helped households to have access to free food rations included circumstances being inadequate to qualify an individual for the food ration programme.

Table 3: Whether food shortages have declined or intensified in the last five years

Category	Mathubudukwane		Malotwana		Combined Area	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Declined	2	3.3	0	0.0	2	1.9
Intensified	55	90.2	41	91.1	96	90.6
Don't know	3	4.9	3	6.7	6	5.7
No response	1	1.6	1	2.2	2	1.9
Total	61	100.0	45	100.0	106	100.0

Source: Field survey, February 2005

### **Conclusions**

The findings of the study have indicated that some households in the study area do experience food stress during periods of climate change such as drought. Despite the fact that most households used various coping mechanisms to provide food security during periods of climate change, there were others that were vulnerable to food stress. Therefore, measures already in place to provide food for households in drought prone areas in Botswana such as the destitutes' programme, vulnerable groups and school feeding programme, the emergency plant protection programme, and the labour-intensive public works programme, need to be strengthened to ensure that

households' vulnerability to food insecurity during periods of climate change like drought is minimized (MFDP, 1995, pp. 31-33).

### **References**

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