



Analysis of Food Insecurity Coping Strategies: Empirical Evidence from Family Farmers in Jigawa State, Nigeria

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Abstract

This study analysed the food insecurity coping strategies adopted by family farmers in Jigawa State, Nigeria in attempts to attenuate food shortages. A representative sample of 266 farm families was selected across 8 council areas of the State and was profiled into food secure and food insecure families, using the acceptable food security index of 2730Kcal/person/day. Data were collected with the aid of questionnaire between July, 2017 to February, 2018. Results showed that 93% of the family heads were male, with average age of 45 years. Furthermore, 90% of them were married with mean family size of 12 members who were dependent on annual income of N45,100/caput. Incidence of food shortages was a year round phenomenon but at its peak in the second and third quarters of the years. Prime coping strategies adopted by farm families were; reducing the number of meals per day; restriction of consumption by adults to feed the children; reliance on the use of less preferred and expensive food; feeding only the working members of the family in times of food imbalances and limiting meal portion at mealtime. To move the families beyond these daily adjustments to a food security continuum, measures that can increase agricultural production and income opportunities are essential.

Keywords: Food insecurity, Family farming, Households, Coping strategies, Food shortages

Introduction

The right to food is one of the fundamental human rights enshrined in the United Nations Human Rights Commission and it has become a theme song at various global fora: World Food Summits of 1974, 1996, 2002, 2009, 2010 and 2011; International Conference on Nutrition, 1992; UN Millennium Summit, 2000; and 2015 post-millennium summit of the United Nations. At every gathering, the attention was drawn to the need to find sustainable approaches to reduce the incidence of food insecurity. Nigeria as a member nation, subscribed to this tenet and made the pursuit of food security a fundamental objective and an expected outcome of development policies (Akinyele, 2009; Adekanye and Ojediran, 2013; Uma *et al.*, 2014; Metu *et al.*, 2016). Years after the affirmation to end hunger and malnutrition, statistics attest that Nigeria is still plagued with the problems of severe poverty and food insecurity (Otaha, 2013; FAO, 2013; Uma *et al.*, 2014; Metu *et al.*, 2016). For instance, the Global Hunger and Global Food Security indexes, 2017 ranked Nigeria 84th out of 119 countries and 98th out of 113 countries on the basis of food availability respectively. These ratings placed Nigeria under countries with serious hunger problems (von Grebmer *et al.*, 2017; The Economist, 2017).

Apparently, the absence of the fundamentals that guarantee food security show great propensity to rural areas where majority of family farmers in Nigeria reside (Adebo and Falowo, 2015). When faced with food insecurity, family farmers tend to adopt, consciously or unconsciously, different

copied mechanisms to stay afloat food crisis. These strategies are widely regarded as early warning indicators of the food insecurity (Maxwell and Caldwell, 2008) and they vary with farm families' baseline situation, the severity of crisis, and with the family's stage in coping with the crisis (Ngidi and Hendriks, 2014). It is worthy to note that non-stressed families also apply coping options to maintain a steady supply that will ensure that access to food is not lost (Maxwell *et al.*, 2003; Barrett, 2010; Hendriks, 2016). Thus, this study aimed at examining the socioeconomic characteristics of family farmers with reference to adaptation of certain food coping strategies and to identify and analysis food insecurity coping strategies adopted by farm families to ameliorate the effects of food insecurity.

Conceptual issues: Family farming in principles is a way of life that is closely associated with family values (FAO, 2014). Smallholder family farms are indeed the 'managers' of most of natural resources in most part of the world and are critical to global food production (MacGillivray, 2015). In spite of their key role in agricultural production, and support to the livelihoods of billions worldwide, extreme poverty and food security challenges are more pronounced among this segment of the population (Barrett, 2010; MacGillivray, 2015; Sibhatu and Qaim, 2017).

The dynamic nature of food security however, has individuals or families to anticipate the possibilities of food shortage and routinely take precautions to attenuate the risks. In preparation, families take various precautionary (coping) measures to avoid hunger and starvation, provide buffers against shocks, and at times, attempt to maintain a steady supply (Maxwell *et al.*, 2003; Barrett, 2010; Ngidi and Hendriks, 2014). According to Maxwell and Caldwell (2008), households attempting to limit the short-term effects of food shortages go through a number of progressive stages of coping options. According to Ellis (2000), coping strategies are regarded as the methods used by households to survive when confronted with unanticipated livelihood failure, and are pursued in accordance to the families' poverty levels (Mjonono *et al.*, 2009).

The application of coping strategies starts short-term mitigation measures, ranging from changing the dietary habits to managing the shortfall through rationing and skipping of meals (Maxwell and Caldwell, 2008; Ngidi and Hendriks, 2014) which according to van der Kam (2001) are considered reversible.

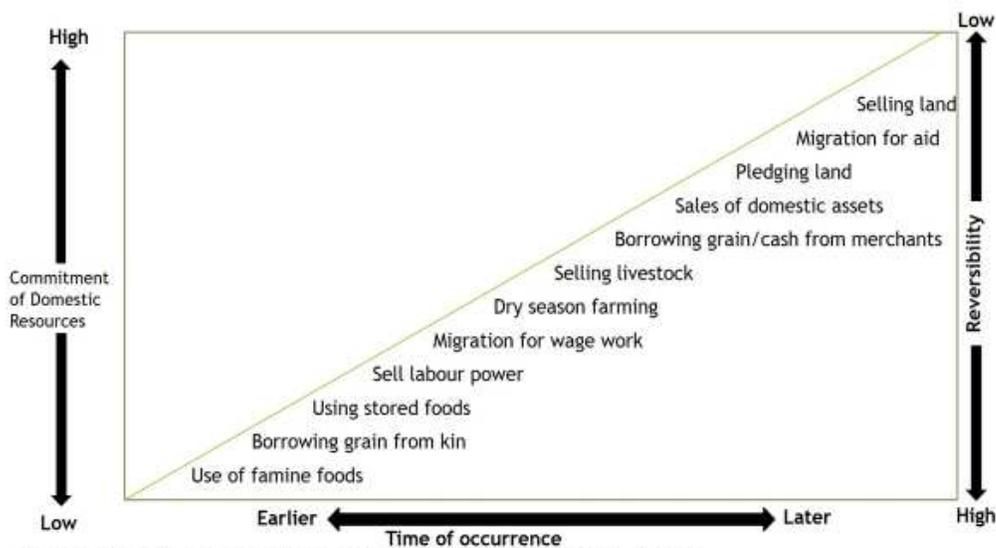


Figure 1: A Model of Response to Food Shortage. Adapted from Watts, (1988)

How be it, persistence food shortage tends to force them to embark on erosive and irreversible coping mechanisms that threaten the sustainability of livelihood activities of the households (Maxwell and Caldwell, 2008; Ngidi and Hendriks, 2014) such as selling of households' productive assets and migration (Figure 1).

Methodology

Jigawa State, located North-West Nigeria lies between Latitudes 11.00° to 13.00° North and Longitudes 8.00° and 10.15° East. The state enjoys highly prized natural resource (fertile land) of Sudan-Savannah and Guinea-Savannah zones and is home to about 5.83 million people (NPC, 2016) and 628,010 farm families (Village Listing Survey, 2016). Eighty-five percent (85%) of this population resides in rural areas and over 90% is predominantly engaged in subsistence agriculture (Sanusi, *et al.*, 2013; MTSS, 2013).

A sample of 266 farm families in 16 villages across 8 council areas was selected and profiled into food secure (112) and food insecure (154) using food security index on a food insecurity threshold of 2,730 Kcal/capita/day. A staggered interview schedule, between July 2017 to February 2018 was conducted to evaluate food consumption situations over time. Structured questionnaire was used to elicit information on socio-economic characteristics, food consumption patterns and coping strategies from the head of the family or any other knowledgeable member of the food families. At each visit, a 7 days' recall of all food consumed as well as the diverse coping options taken to attenuate food shortages or to maintain continuous food supply were collected using a twenty standard set of simple questions, constructed to capture both food and non-food consumption strategies adopted during lean periods (Maxwell *et al.*, 2008; Mohiuddin *et al.*, 2016). Scores were assigned (0-7) for the responses to reflect the number of times a strategy was used with 'NA' for a not-applicable situation (Maxwell and Caldwell, 2008; WFP, 2015) and a mean was taken to represent the usage of each strategy.

Results and Discussion

Socio-economic characteristics of the respondents

Empirical evidence of socio-economic characteristics showed that 95.45% of the food insecure farm families were male-headed (Table 1). This could be attributed to cultural and religious inclinations that define the role of women in both the social and agricultural activities (Amaza *et al.*, 2007; Otaha, 2013; Matemilola and Elegbede, 2017). This result is corroborated by the findings of Guirkinger and Platteau (2014), FAO (2016) and Theriault *et al.* (2017) who affirmed that extended farm households headed by a patriarch takes preeminence in West Africa. With the mean age of 45 years was statistically different from zero ($p < 0.001$) and it was discovered that about 65% of the respondents were aged 50 years and below, agreeing with the findings of FAO (2016). This implies that farm family heads were active, productive and virile (Babatunde *et al.*, 2007).

Analysis of marital status and family size showed that 91% (53% polygamous) of the family heads were married with average family size of 12 members (above national average of 4.6 persons). Given the complementary role of spouses in ensuring food security (Waite and Gallagher, 2000; Anyanwu, 2013), this study proves otherwise. The prevalence of polygamy (Yelwa, 2014) in this regard has inverse relationship with food security. This according to Anyanwu (2013) and Owoo (2018), polygamy tends to increase the family's vulnerability to poverty and food insecurity. In the same vein, large family size has been shown to impact negatively on food security (Babatunde *et al.*, 2007; Ayantoye, 2009; Olayemi, 2012; Anyanwu, 2013; Tefera and Tefera, 2014; Hamad and Khashroum, 2016; Abdullah *et al.*, 2017). Furthermore, the result showed significant different

between food secure and food insecure families and it was shown that, more than half (52.6%) of the family heads had no formal education, contrary to the findings of FAO (2016) on vulnerability and food security analysis survey in Northern Nigeria. Such deviation can be explained by the educational backwardness of the state (least among educationally disadvantaged states in Nigeria, MoE/ESSPIN, 2014). Considering the influence of education on food security status (Burchi and De Muro, 2007; Idrisa et al., 2008; Hamad and Khashroun, 2016), it can be inferred that the chances of such families being food secure are limited. In the same vein, the mean family size of 12 persons was significant at zero, implying that high family size increases the family’s propensity to food insecurity.

Table 1: Socio-demographic Characterization of Farming Families (n=266)

Variables	Food secure (N=112)		Food insecure (N=154)		Pooled (N=266)		t-test
	No	%	No	%	No	%	
Gender							
Male	100	89.29	147	95.45	247	92.86	2.85
Female	12	10.71	7	4.545	19	7.14	
Age (Years)							
≤20	1	0.89	1	0.65	2	0.75	5.03***
21-30	20	17.86	11	7.14	31	11.65	
31-40	32	28.57	25	16.23	57	21.43	
41-50	40	35.71	54	35.06	94	35.34	
51-60	13	11.61	43	27.92	56	21.05	
>60	5	4.46	20	12.99	25	9.40	
Mean	41.67		48.08		45.38		
Marital Status							
Single	6	5.36	7	4.55	13	4.89	2.01
Monogamous	56	50.00	57	37.01	113	42.48	
Polygamous	42	37.50	87	56.49	129	48.50	
Divorced/widowed	8	7.14	3	1.95	11	4.14	
Education (Years of formal education)							
None	7	6.25	14	9.091	21	7.89	4.30**
Quranic	36	32.14	83	53.9	119	44.74	
Primary	15	13.39	20	12.99	35	13.16	
Secondary	37	33.04	25	16.23	62	23.31	
Tertiary	17	15.18	12	7.792	29	10.90	
Family Size (No.)							
≤5	21	18.75	7	4.54	28	10.53	8.12***
6-10	66	58.93	51	33.12	117	43.98	
11—15	22	19.64	46	29.87	68	25.56	
16-20	3	2.68	22	14.29	25	9.398	
≥21	0	0	28	18.18	28	10.53	
Mean	8.44		14.08		11.70		
Farm Size (Ha)							
≤2	24	22.43	26	17.81	50	19.76	1.25
2.1 – 5	59	55.14	76	52.05	135	53.36	
5.1 – 8	20	18.69	33	22.60	53	20.95	
8.1 – 11	2	1.87	9	6.16	11	4.35	
≥11.1	2	1.87	2	1.37	4	1.58	
Total	107	100	146	100	253	100	
Mean	4.08		4.54		4.57		

Source: Field Survey, 2018

Farm Family income and livelihood activities

Income is considered as a major determinant of family expenditure and food security attainment. The mean annual income of ₦ 45, 110/caput/annum (Figure 1) that characterized the earnings of the farm families falls far below the national minimum earning of ₦216,000/caput/annum and there calibrated poverty line of ₦ 450 (\$1.25). Studies have shown that low income has adverse effect on family’s food security status. In fact, the level of food deprivation, coping options and food choices are dependent on income and as such, a weak financial base leads to food insecurity (Derrickson, 2000; Aidoo et al., 2013; Esturk and Oren, 2014). The livelihood options at the disposal of the respondents revealed that 37.95% and 21.26% of the income accruing to them were obtained from crop and livestock enterprises respectively (Figure 2). This result affirms the assertion that majority of families in the state earned their income from agricultural sector (Gender-Baseline, 2006).

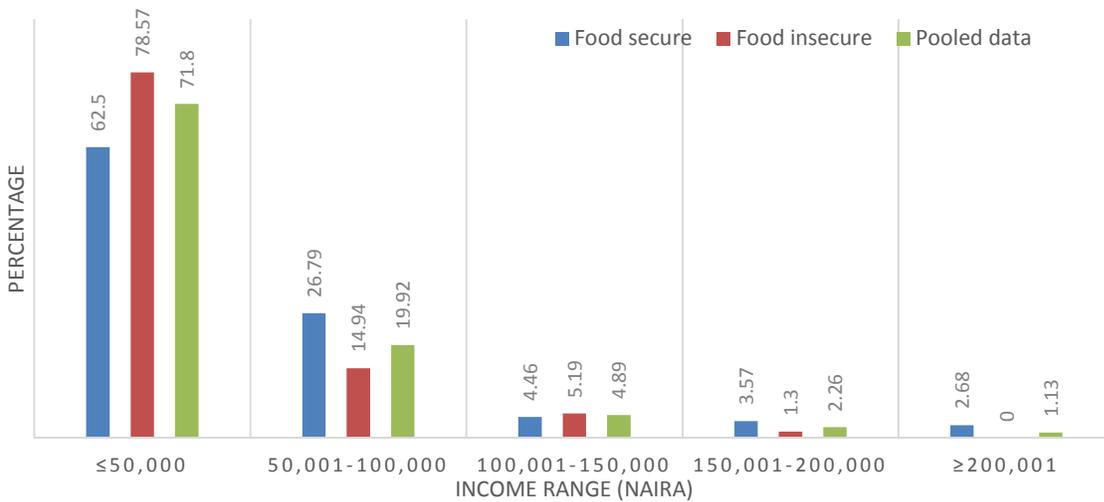


Figure 1: Families’ per capita income (Naira) (Source: Field Survey, 2018)

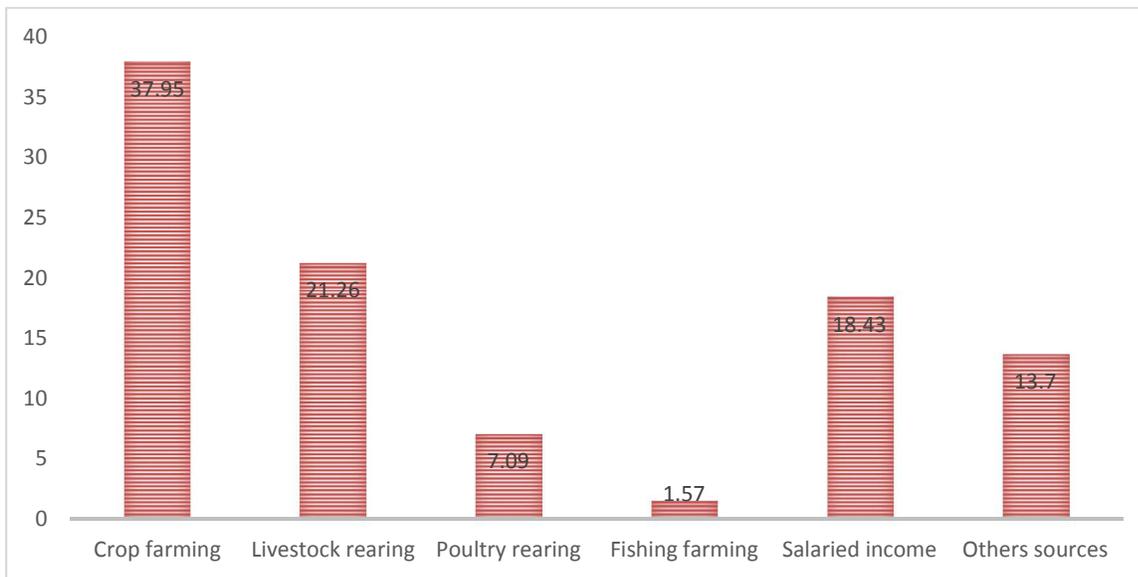


Figure 2: Family farmers’ livelihood options (Source: Field Survey, 2018)

Experience of food shortage

Food shortages, except in hunger situations, do not occur all year-round; there are lean and surplus periods of food supply under the normal supply cycles. The study revealed that 95.86% of the farm families experienced food shortages at some points of the year (Table 2). Further analysis depicted that 41.34 and 34.63% experienced food shortages in the second quarter and third quarters of the year respectively. These periods coincide with the off-farm season when farmers are in eager expectation of rains to kick start another farming year and intense farming activities in the state (Sanusi *et al.*, 2013). This agrees to the findings of Ayantoye (2009) and Agboola (2005) who averred that households experienced food shortage prior to harvest.

Table 2. Distribution of respondents based on the seasons of food shortages

Response	Frequency	Percentage
Experience of food shortages		
Never	11	4.14
Experienced	255	95.86
Total	266	100
Period of shortage		
January-March	41	14.49
April-June	117	41.34
July-September	98	34.63
October-December	27	9.54
Total	283*	100

Source: Field Survey, 2018. *Multiple responses

Analysis of Coping Strategies

The analysis of coping strategies showed that 63.79% of the locally constructed coping strategies were used with varying degree of applications (**Figure 2**). The proportion (63.79%) of the households deployed all the available coping strategies in varying degree of applications, which an indication of the existence of food shortages food insecurity. On average, 32.58% of the coping options were used between 1-2 days whereas 30.95% of the coping strategies were used at least for a period of three to six days/week. This result is in consonance with the findings of Ngidi and Hendriks (2014) who reported the application of coping strategies in the same manner in South Africa.

Further analysis (**Figure 3**) showed that the following food insecurity coping strategies were used at least, for a period of three days and above per week: ‘reducing the number of meals per day’ (M=3.16); ‘restriction of consumption by adults to feed the children’ (M=3.33); ‘relied on the use of less preferred and expensive food’ (M=2.51); ‘feeding only the working members of the family in times of food imbalances’ (M=2.82) and ‘limiting meal portion at mealtime’ (M=3.64). By implication, increased magnitude of the coping strategy index (mean value) shows overt reliance of families on such strategies to attenuate food shortage. This result agrees with the findings of Adekoya (2009) in Nigeria; Ngidi and Hendriks (2014) in South Africa, Gupta *et al.* (2015) in India and Farzana *et al.* (2017) in Bangladesh who discovered independently, these strategies among the most frequently used coping options.

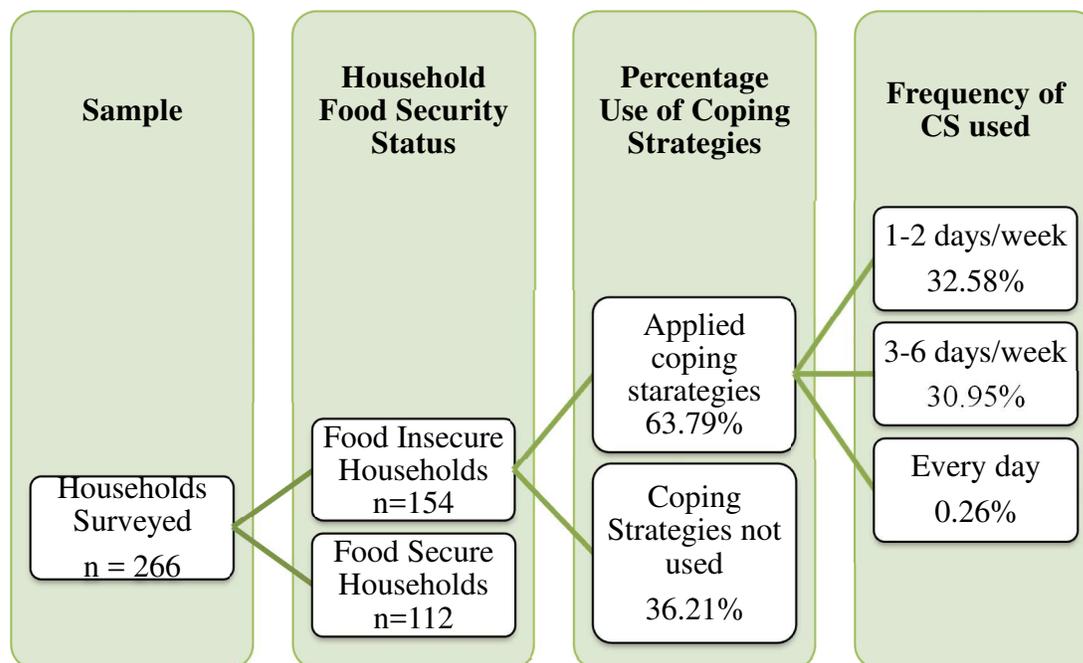


Figure 2: Profiling the use of coping strategies

A number of coping strategy options such as buying of food on credit (M=1.79), relying or borrowing from friends and relatives (M=1.76), borrowing money to buy food (M=2.05), selling of animals or other household assets in exchange for food (M=2.21), skipping an entire day without food (M=1.93) to ‘allowing children to work for extra income’ (M=1.89) were among those that were used, at least twice a week. The use of these strategies implies that the families’ assets are sufficient to prevent the use of erosive and detrimental coping strategies.

The use of non-detrimental coping strategies which allows families to quickly recover as soon as the shocks of food shortage improves range from ‘sourcing for temporal jobs outside their communities to feed the family’ (M=1.28) to sending of family members to eat/beg for food elsewhere’ (M=1.06). By and large, reported cases of reduced quality, variety or desirability of diets or disrupted patterns of eating and reduced food intakes are overt indications of food insecurity.

Conclusion

Family farming in Jigawa state is essentially patriarchal and subsistence in nature. Although its primary aim is to provide the food need of members, such farmers have not been able to produce enough food to guarantee food security. The inability of family farmers to meet up with this obligation is a reflection of a weak financial base, limited livelihood opportunities and inherent socio-economic attributes that reduced food availability. Thus, family farmers in the state resort to the use of diverse coping mechanisms to attenuate the incidences of food shortages. Primarily, the use of coping strategies decreased the vulnerability of food stressed families. Most coping options employed in pursuance of food security were; reducing the number of meals per day, restriction of consumption by adults to feed the children, reliance on the use of less preferred and less expensive food, feeding only the working members of the family in times of food imbalances and limiting meal portion at mealtime. To realize the full potential of family farmers in ensuring food security,

at least at the family level, seasonal agriculture that is predominantly dependent on nature should be augmented with irrigation farming. This will not only ensure all year round production, but will expand the livelihood and income opportunities of family farmers in the area.

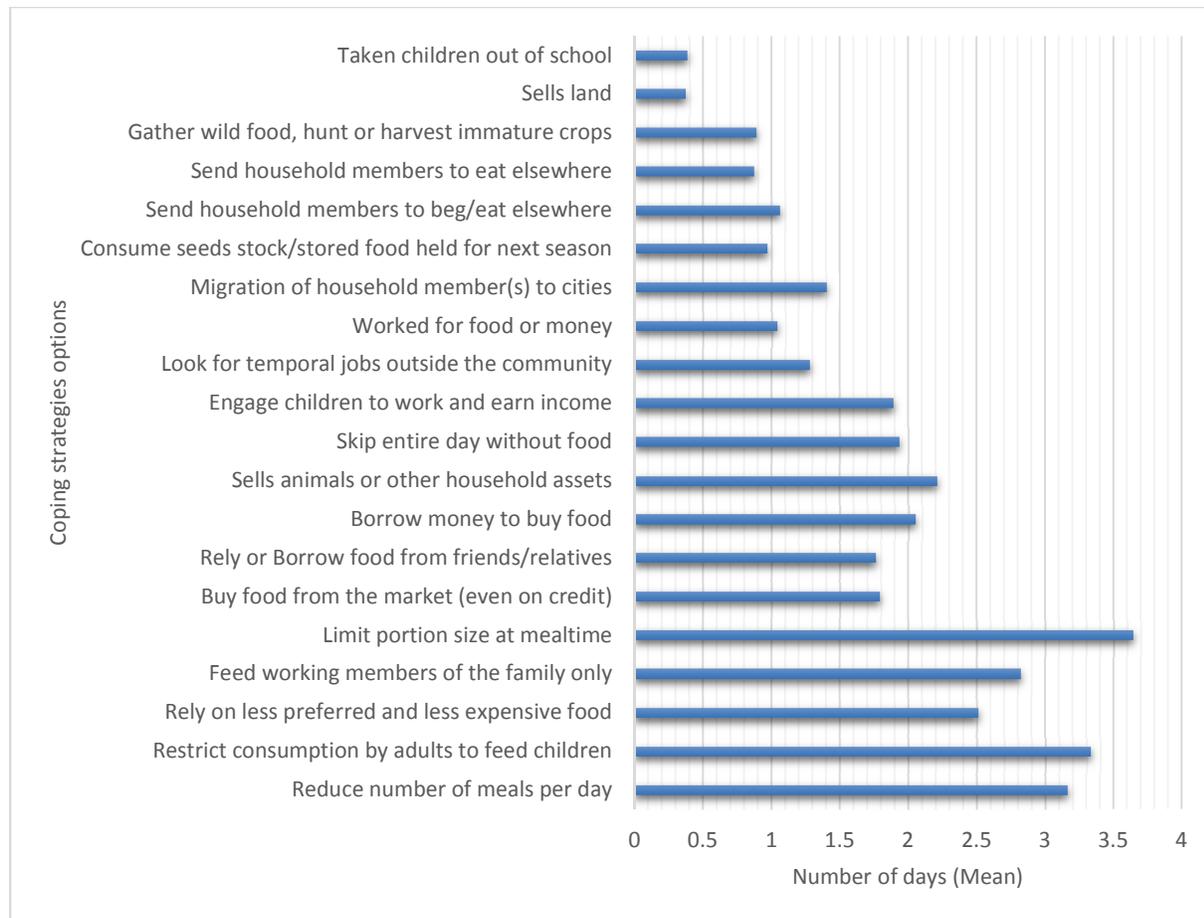


Figure 3: Coping Strategy options adopted by Family Farmers

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