COPING STRATEGIES UTILIZED AMONG SMALL RUMINANT FARMERS DURING THE DRY SEASON IN EKITI STATE, NIGERIA

OLORUNYOMI Oluwatoyosi Evelyn, James Olaniyi OKUNLOLA, Jonathan Akinsola AKINWALE
Federal University of Technology, Akure, Ondo State, Nigeria

Abstract: The study assessed use of coping strategies by small ruminant farmers during the dry season in Ekiti State. A multistage sampling procedure was used in the selection of one hundred and twenty (120) respondents. The result of the study revealed that the average age of the respondents was 47 years and females (78.3 percent) dominate small ruminant rearing in the study area. Coping strategies used during dry season include use of stored crop residue (23.1 percent), use of fresh forage (20.3 percent), increased ration of feeds per meal (19.3 percent) and herd thinning (18.4 percent). There was no significant relationship between constraints to the use of the coping strategies and attitude of farmers towards the use of the coping strategies ($r = -0.03$, $p = 0.72$). The study concludes that Crop/livestock combination will go a long way in ensuring crop residue availability during the dry season.

Keywords: Coping strategies, Crop residues, Dry season, Feed dearth, Small ruminants

INTRODUCTION

Small ruminants refer to goats (*Capra hircus*) and sheep (*Ovis aries*) and in Nigeria, they are raised to obtain important products such as meat and skin (Aina, 2012). They are raised using the extensive production system as an age-long tradition and there has been the incorporation of SR rearing with crop farming (Ajala *et al.,* 2008). SRs are investments that can easily be converted to cash. They serve as nourishment for individuals through provision of meat, milk and skin and have low maintenance requirements as well as high reproductive efficiency (Ademosun, 1992; Aina 2012).

While SRs are found all over Nigeria, their large scale production is restricted by certain factors, one of which is seasonal changes that causes scarcity of feed and feeding materials (Lamy *et al.,* 2012). Bamigboye *et al.* (2013) noted that in Nigeria, rangelands for animals to graze only blossom in the rainy season while in dry season they become standing hay. This leaves animals with abundance of feed in the wet season and severe shortage of feed in the dry season. Feed stuff quantity, quality and especially availability directly influence its intake by SRs (Rinehart, 2008). Feed intake in turn, influences weight and condition of the animals, their reproductive capacity as well as mortality rate (Ajayi *et al.* 2005). Mirkena *et al.,* (2010) defined adaptability of an animal as the ability to survive and reproduce within a defined environment or the degree to which an organism, population or species can remain/become adapted to a wide range of environments by physiological or genetic means. Over the years, small

ruminants have developed mechanisms of enduring the stress brought on by seasonal changes. In spite of this natural adaptation tendency of SRs, production is still highly affected and SR farmers are saddled with the responsibility of finding ways to mitigate the effects of dry season feed shortages. This study was therefore designed to assess coping strategies adopted by small ruminants' farmers during the dry season in Ekiti State, Nigeria.

The main objective of the study was to examine the coping strategies utilized by SR farmers during dry season in Ekiti state, Nigeria. Specifically, the study sought to;

1. describe the socio-economic characteristics of small ruminant farmers;
2. identify the coping strategies used by the respondents during dry season;
3. examine the attitude of farmers to the use of coping strategies; and
4. ascertain some constraints to the use of the coping strategies.

The following hypotheses were tested;

Ho_1: there is no significant association between socio-economic characteristics of respondents and their utilization of coping strategies.

Ho_2: there is no significant relationship between constraints to the use of coping strategies and attitude of farmers to the coping strategies.

MATERIAL AND METHOD

The study, carried out in Ekiti State, Nigeria, used the multistage sampling procedure. The first stage involved systematic selection of three (3) local government areas (LGAs), namely Ado, Irepodun/Ifelodun and Ekiti East LGAs out of the sixteen (16) LGAs in Ekiti State. The second stage was random selection of two (2) communities from each of the three LGAs resulting in a total of six (6) communities. The third stage involved grouping the communities into four (4) wards out of which two (2) wards were randomly selected. Afterwards, ten (10) SR farmers were randomly selected from each ward, resulting in ten (10) respondents per ward. Hence, the sample size of the study was one hundred and twenty (120). Structured questionnaire was used to collect relevant data from respondents. SPSS was used to analyze data gathered to obtain descriptive statistics (frequencies, means, percentages) as well as inferential statistics (Pearson Product Moment Correlation).

RESULTS AND DISCUSSIONS

Socio-Economic Characteristics: The socio-economic characteristics of the SR farmers in table 1 show 30.8% of the respondents were between 31 and 40 years of age, 26.7% were between 41 and 50 years while 18.3% were between 51 and 60 years. Only 6.7% of the respondents were less than 31 years and 17.5% were older than 60 years. Meanwhile, the mean age of the respondents was 47 years. This corroborates the findings of Oluwatayo and Oluwatayo (2012) that found 48 years as the average age of small ruminants' farmers in Southwest Nigeria. This indicates that the farmers are expected to be energetic and able to have the required strength to manage sizeable herd

size. Further finding from table 1 shows majority of the respondents (78.3%) was female, while majority (73.4%) had less than 11 years work experience. Also, 83.4% of the respondents have herd size of between 1 and 6 with mean herd size of 5. Female dominant in small ruminant production supports Osho and Fasina (2013) who discovered female dominated ownership in small ruminant production in Ondo and Ekiti states. Meanwhile, the finding contradicts Hassan, Mbap and Naibi (2015) that obtained majority (73.3%) of male ownership in small ruminant production in Nassarawa state.

Table 1.

Distribution of small ruminant farmers according to socio-economic characteristics

Variables	Frequency	Percentage (%)	Mean (X)
Age (years)			
<31 years	8	6.7	47
31 - 40	37	30.8	
41 - 50	32	26.7	
51 - 60	22	18.3	
61 - 70	12	10.0	
>70 years	9	7.5	
Sex			
Male	26	21.7	
Female	94	78.3	
Experience (years)			
<11 years	88	73.4	9
11 – 20	24	20.0	
21 – 30	6	5.0	
31 – 40	1	0.8	
41 – 50	1	0.8	
Herd size			
1 – 6	100	83.4	5
7 – 12	19	15.8	
13 – 18	1	0.8	

Source: Field survey, 2017

Utilization of Coping Strategies: The coping strategies utilized by the SR farmers are presented in table 2. Findings of the study reveal that the use of harvested crop residue was mainly (90.0%) utilized as a coping strategy for dry season feed deficit. This could be traced to one quarter of the respondents being farmers or processors which suggests a link between crop-livestock enterprise combination. About 79.2% percent of the respondents utilized harvesting of fresh forage for their animals. The reason is that the system has been the traditional practice and fodder legumes are of considerable nutritional value as livestock feed during the dry season (Jamala *et al.,* 2013). Increased ration (size) of feeds per meal was utilized by 75.0% of the SR farmers. This finding may be as a result of scarcity of green forage used in supplementing the feeds in the dry season. Also, 71.2% utilized herd thinning so as to reduce the number of animals that would be cared for in the dry season. In utilizing this method, some farmers do give their animals to fellow rearers who are capable of

feeding the animal during dry season with definite sharing formula on expenses incurred.

Table 2.

Utilization of Coping Strategies

Coping Strategies	Frequency	Percentage (%)
Use of harvested crop residues	108	90.0
Harvesting of fresh forage	95	79.2
Increased ration (size) of feeds per meal for all	90	75.0
Herd thinning	86	71.7
Eating less preferred feeds	41	34.2
Sourcing feeding materials from neighboring communities	17	14.2
Skipping one meal a day	15	12.5
Reduced ration food for bucks/kids	15	12.5

Multiple responses exist
Source: Field survey, 2017

Small Ruminants Attitude to the Coping Strategies: The results in table 3 indicate that SR farmers were of favorable attitude (with mean value of 3.39 and above) to statements like "There is need to look for alternate ways of feeding SRs during the dry season" ($\bar{x}$ = 4.28), "Dissatisfaction with dry season feed shortages led to the use of the coping strategies" ($\bar{x}$ =4.09), "It is difficult to use the coping strategies" ($\bar{x}$ = 4.01) On the other hand, they were found to be unfavorable to extension services ($\bar{x}$ = 3.03) likely because only a few of them have ever been in contact with extension agents. Also, non-utilization on the part of many respondents was because they were unskilled and not knowledgeable about the coping strategies ($\bar{x}$ = 2.48). The farmers were not favourably dispose to emulating other farmers ($\bar{x}$ = 2.26) probably because contact farmers were not in place and they had no one looking up to them for guidance. In all, 34.2% of respondents had favorable attitude to the use of coping strategies to feed animals during dry season while 65.8% were unfavorable. The results may be as a result of the stress in finding alternatives to feeding the animals during the dry season.

Constraints to the Use of the Coping Strategies: Results in table 4 show the constraints associated with the use of coping strategies in small ruminants' production. Competitions by large ruminants for cut and carry fresh forage ($\bar{x} = 2.60$), lack of storage space for fodder and/or crop residues ($\bar{x} = 2.00$) and increased feed supplementation cost ($\bar{x} = 1.91$) were the very severe constraints. Other severe constraints were high time consumption ($\bar{x} = 1.78$) and the attendant stress of getting fresh forage or feed sourcing from neighbouring communities ($\bar{x} = 1.74$) were severe constraints to the use of the coping strategies. The stance of majority of the farmers was that the constraints faced could only be ameliorated through the divine intervention of God. Other suggested ways of combating the challenges were; increment of the shelf life of crop residues and setting aside pasture grounds solely for small ruminants.

Table 3.

Small ruminant farmers attitude to the use of coping strategies

S/N	Attitudinal statements	SA	A	U	D	SD	$\bar{X}$	Decision
1.	There is need to look for alternate ways of feeding SRs during the dry season	38	80			2	4.28	Favourable
2.	Use of coping strategies is burdensome	15	14	8	70	13	3.43	Favourable
3.	There are material resources for using coping strategies	46	51	6	3	14	3.93	Favourable
4.	Coping strategies reduces my income	1	3	12	53	51	4.25	Favourable
5.	I use coping strategies because I am role model to other farmers	1		11	59	49	1.80	Unfavourable
6.	Relatives and friends influence my use of coping strategies	3	33	1	56	27	2.41	Unfavourable
7.	Dissatisfaction with dry season feed shortages led to my use of coping strategies	27	85		8		4.09	Favourable
8.	It is difficult to use coping strategies	3	9	3	74	31	4.01	Favourable
9.	I use coping strategies because I am skilled and knowledgeable about it	3	20	18	70	9	2.48	Unfavourable
10.	Use of coping strategies is stressful	14	33		60	13	3.21	Unfavourable
11.	The use of coping strategies is out of emulation of someone else	2	28	2	55	33	2.26	Unfavourable
12.	There is no need for the use of coping strategies	7	10	1	88	14	3.77	Favourable
13.	Use of coping strategies increases my revenues from ruminant rearing	23	56	30	8	3	3.73	Favourable
14.	Coping strategies are not economically sustainable	4	3	2	95	16	3.97	Favourable
15.	Coping strategies are not suitable for my management system	14	16	2	57	31	3.63	Favourable
16.	Extension services do not support the use of coping strategies		43	35	38	4	3.03	Unfavourable
	Grand Mean						3.39	

Key: >3.39 = Favourable, ≤3.39 = Unfavorable
Source: Field Survey, 2017

Table 4.

Constraints to the Use of the Coping Strategies

Constraints	Very Severe	Severe	Not Severe	$\bar{x}$	Decision
Competitions by large ruminants for cut and carry fresh forage	24	8	3	2.60	VS
Lack of storage space for fodder and/or crop residues	17	27	17	2.00	VS
Increased feed supplementation cost	4	13	6	1.91	VS
High time consumption	3	32	14	1.78	S
Attendant stress of getting fresh forage or feed sourcing from neighboring communities	1	47	18	1.74	S
Competition by pseudo-ruminants for cut and carry fresh forage	2	12	19	1.48	NS
High cost of crop residues	2	5	14	1.43	NS
Grand Mean				1.85	

Key: >1.85 = Very Severe (VS), 1.50-1.85 = Severe (S), ≤1.49 = Not Severe (NS)
Source: Field Survey, 2017.

Test of Hypotheses

Ho_1: there is no significant association between socio-economic characteristics of respondents and their utilization of coping strategies.

Analysis of data collected in table 5 shows that there was a significant association between socio-economic characteristics of respondents and the utilization of the coping strategies. It was revealed that there was negatively significant relationship between age and increased ration of feeds for small ruminants (x^2 = -0.23, p ≤0.05) as well as age and reduced ration of feed for bucks/kids (x^2=-0.22, p ≤0.05). This suggests that SR farmers become less active in breeding as they grow older. Age was positively significantly correlated with herd thinning (x^2 = 0.24, p ≤0.05). This suggests that the farmers reduce the size of the herd they manage as they grew older. The experience of the farmers was significantly correlated with utilization of harvesting of fresh forage (x^2 = 0.23, p ≤0.05) and eating less preferred feeds (x^2 = 0.28, p ≤0.05). It is likely that their years of experience in ruminant production made them realize the value of forages in animal feed digestibility and productivity and that eating less preferred feeds would sustain the animals till they get more preferred feedstuffs. Herd size had significant correlation with only herd thinning (x^2 = 0.22, p ≤0.05). The implication of this is that the more the herd size, the higher the probability of adopting herd thinning. The small ruminant farmers can raise only small number of animals at a time under their low cost system; hence they utilize herd thinning to regulate increase in the herd size.

Table 5.

Correlation between Selected Socio-economic Characteristics of Respondents and utilization of Coping Strategies

Variables	Age			Experience			Herd Size		
	r-values	p-values	Decision	r-values	p-values	Decision	r-values	p-values	Decision
Increased ration (size) of feeds per meal for all	-0.23*	0.01	S	0.07	0.42	NS	-0.06	0.52	NS
Harvesting of fresh forage	-0.17	0.61	NS	0.23*	0.01	S	-0.16	0.08	NS
Skipping one meal a day	0.11	0.22	NS	0.17	0.07	NS	0.07	0.48	NS
Reduced ration of feed for bucks/kids	-0.22*	0.01	S	0.10	0.27	NS	-0.17	0.07	NS
Sourcing feeding materials from neighboring communities	0.14	0.12	NS	-0.13	0.16	NS	-0.03	0.75	NS
Herd thinning	0.24**	0.01	S	0.18	0.05	NS	0.22*	0.02	S
Eating less preferred feeds	0.08	0.41	NS	0.28*	0.00	S	-0.07	0.47	NS
Use of harvested crop residues	-0.04	0.68	NS	-0.08	0.41	NS	-0.06	0.54	NS

Source: Field Survey, 2017.
*Correlation is significant at 0.05 level
** Correlation is significant at 0.01 level

Ho_2: there is no significant relationship between constraints to the use of coping strategies and attitude of farmers to the coping strategies.

Result presented in table 6 shows that the constraints to the use of the coping strategies had no significant relationship with the attitude of farmers towards the coping strategies in the study area. This indicates that farmers' use of coping strategies is not subject to presence of constraints to use of coping strategies.

Table 6.

Correlation between Constraints to the Use of Coping Strategies and attitude of Farmer towards the Coping Strategies

Constraints to Use Coping Strategies and Farmers Attitude	Pearson Correlation	-0.033
	Sig. (2-tailed)	0.718
	N	120

p>0.05

Source: Field survey, 2017

CONCLUSIONS

The small ruminant farmers are interested in alternate ways of feeding their small ruminants during the dry season feed deficit period. The use of a combination of the coping strategies was found to be practiced by the small ruminant farmers. They

are hindered in the use of some of the coping strategies by competition from large ruminants for harvested fresh forage, storage space for crop residues among others. The female small ruminant farmers should diversify into the processing of food crops and use the by-product as feed for their animals. Crop/livestock combination will go a long way in ensuring crop residue availability during the dry season. Research institutions should look into ways of improving and prolonging the shelf life of crop residues without them losing all their beneficial nutrients.

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