

Research Article

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Assessment of crop farmers coping strategies to pastoralism/nomad activities in Nigeria

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Abstract: This study examined the coping strategies of crop farmers to pastoralist activities in Odo-Otin Local Government Area of Osun State, Nigeria. A multistage sampling technique was used to select 120 farmers. The data were collected using a well-structured questionnaire and interview and were analysed using descriptive and inferential statistical tools. The result revealed various levels of damage caused to food security by the pastoralist as follows: compaction of soil (84%), damage and eating of the crops on the field (79%), indiscriminate bush burning leading to fire outbreak on farms (73%), stealing of farm produce by herders (73%), pollution of water points (54%), killing of farmers (13%) and others. The result further revealed the coping strategies used by crop farmers: praying for peace (98%), early harvesting (95%), early planting (92%), multiple farm plots (91%), group farming (90%), relocating farm (77%), police intervention (60%), government intervention (9%), NGO intervention (9%) and insurance (4.2%). The results of Chi-square analysis showed that there is a significant relationship between the educational status ($X^2 = 13.06$, $P = 0.01$) and coping strategies used against pastoralist activities. Therefore, it is recommended that the government should formulate a policy that will stimulate peace among crop farmers and pastoralist to sustain food security and reduce poverty among rural dwellers, thereby transforming the rural environment into an attractive centre.

Keywords: pastoralist, crop farmers, rural, coping strategies, food security

1 Introduction

Agriculture is a major player in ensuring food security of any nation. A nation that cannot feed itself is at the mercy of other nations that are food secured. The Food and Agricultural Organization (FAO) (2009) reported that there are about one billion people who are not food secured globally. Conway (2012) and Swaminathan (2012) also corroborate the finding of the Food and Agricultural Organization (FAO) (2009–2013) that the majority of the people who are food insecure live in the developing countries like Nigeria.

Lal (2013) emphasised various causes of food insecurity, which are as follows: population increase that has been estimated from 7 billion in 2011 to 9.2 billion in 2050, insufficient water for cultivation, depletion in soil nutrient, climate change and land competition for urbanisation. However, this finding has neglected the importance of community, stakeholders and national peace in ensuring food security. This is the gap in knowledge that this research work intends to fill, as agricultural production among other things leads to food security, while effective agricultural production is only feasible under a favourable environment. The fact is that no nation's food security agenda can be implemented without proper coordination of the human and environmental resources under a conducive and peaceful community medium. Similarly, all factors of food production require cooperation of the stakeholders in a community system for effective and efficient production. In other words, the efficiency and effectiveness of food production in any nation determined the extent of food security status level that the nation can attain.

Thus, it is important to assess the damaged cause by clashes within the community on food security and also to examine the way the communities have been coping with this unfortunate economy disaster. The knowledge of what is prevalent in this study area will help the administrators at state and federal levels to determine the method to be used in establishing lasting peace in the developing state economy.

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Furthermore, it is the state of peace and harmony in any country that will determine whether a nation will be food secured in the year 2030, in which sustainable development goal must be achievable. Nigeria is one of the nation facing crises due to conflicts with other regions. It must be noted that no nation can thrive well under a chaos environment as it needs a peaceful environment to produce sustainable food crops, ensuring food security. Nigeria had encountered and still encountering clashes of grave extents among several ethnic and nonsecular communities across the states. These clashes fluctuate in nature based on the causes of the crises, whether there are internally generated crises or externally influenced crises, but all have negative effect on the food security status of a country. Momale (2003) asserted that crises occurred between identical resource users or clusters of users in a community. He further cited an example of crises that occurred between foresters and farmers, and herders and farmers. The truth is that Nigeria is endowed with numerous resources, but security of these resources is a major concern, as the nation has not been able to control external aggression and territorial boundary crises. Adisa (2012) discovered that the farmer's and herdsman's clashes have remained the foremost dominating resources use clashes in Federal Republic of Nigeria. This has caused a lot of setbacks in the food production and in the agricultural sectors in general. Many cities have been destroyed as a result of clashes, and many households have been frustrated from farming because of intrusion of herdsman into limited and scarce resources (Adebayo 1997; Breusers 1998; Bermadet 1999; Ofuoku and Isife 2010). Whenever the clash occurs, food production of the particular area is reduced, thereby reducing the gross domestic product (GDP) of the nation. The effects of these crises are unemployment, food scarcity, high poverty rate and high mortality rate.

Furthermore, Tonah (2006) reported that clashes among farmers and herders were a typical part of the economy in the geographical area. According to him, before the twentieth century, the menace was restricted to the savannah belts of the geo-political zone. Meanwhile, cattle raising was basically within the Sudan and Sahel Savannah belts of Nigeria before scarcity of grass, which is seasonal in nature. This scarcity of grassland was the result of drought and non-availability of land for grazing, which led to overgrazing and other socio-economic factors. As a result of these scarcities, the Fulani herders always move from one geographical area to another zone, especially to the Guinea savanna zone. This movement has been reported to have resulted in

several clashes among the arable crop farmers and the herders. Also, since the 1980s, when there was border adjustment and relocation of an oversized range of pastoralists into the perimeters of the forest zones of the geographical area, there has been an incessant increase in the speed of crop farmers–herders clashes and these clashes have had devastating effects on the economy of this country (Ukaegbu and Agunwaba 1995; Tonah 2006).

According to Abbas (2009), the contention for land was the most important cause of clashes between the Fulani pastoralists and farmers. Also, Coser (2000) examined the urgency of clashes among the Fulani herders and farmers. He emphasised on the availability of resources and community differentiation. Various studies (Ofuoku and Isife 2010; Kehinde 2011; Abubakar 2012; Adisa 2012) that have been carried out on clashes between agropastoralist and the farmers have not really given lasting solutions to the causes of the clashes. Also, the previous researches (Momale 2003; Vanderlin 2005; Ofuoku and Isife 2009, 2010; Adisa 2012) have been geographically in nature and locational based. The fact is that the cause of clashes and the extent of damage caused by the clashes differ from one region to another. This make this research work unique as it covered a new geographical location that has not yet been studied, and also, this research aimed to identify types of damages that crop farmers incurred recently. Hence, this study will provide the government, non-governmental organisation and policy makers with information on the area of intervention in compensating the crop farmers who are victims of the clashes. Also, it will provide an estimate of the loss in the zone and the extent of the food losses and reduction in gross domestic product. Moreover, this study also covered the coping strategies of the farmers in the zone, and the effect of these clashes on food security can also be estimated. Therefore, this study will add to knowledge on the importance of a community peaceful environment on food security. Recently, there have been a number of clashes between farmers and Fulani herdsman throughout Nigeria, which have cumulated in violent clashes and loss of lives and properties. For instance, the study conducted by Nweze (2005) in Kogi State, Nigeria, reported that 27 people lost their lives due to conflicts between nomadic herdsman and farmers from 1996 to 2002.

This become a serious threat in Osun State, Nigeria, when some Fulani herdsman stormed the Osun State Government Farm Settlement and burnt down about 120 acres of plantain, oil palm trees, cassava, mango trees and other economic trees that had been planted. Therefore, the following objectives were set.

Figure 1: Map of Osun State, showing the study area. Source: <https://www.nairaland.com/1898164/land-people-osun-history-facts>.

Asaba, Ijabe and Ila Odo. The reason why equal numbers of respondents were selected from six villages was to maintain the uniformity of the population size in the villages.

2.3 Measurement of variable

The instrument for collection of data was a well-structured questionnaire for the literate respondents, while interview schedules were used to support the non-educated or illiterate respondents. The variables measured were socioeconomic characteristics variables, which included age, gender, marital status, educational status, farming experience, farm size, household size, etc. The variables were measured as follows: age, farmers were asked for their actual age and later ranked into scale; gender, farmers were asked to tick their gender (male or female)—male (1), female (2). Gender and marital status were measured at nominal levels of measurement. For marital status, farmers were asked to select among the variables (married, single, divorced, widowed, separated). Also, for educational status, farmers were asked to select from tertiary education to non-informal education. These were ranked from the least to the highest. The farming experience, farm size and household size variables were all measured at interval level of measurement. The exact number given by the respondent was recorded. Another variable measured was the assessment of the damaged caused by the pastoralist activities, and this was measured as nominal variable: yes or no. Finally, the third objective is to determine the level of usage of the coping strategies adopted by farmers and was measured using a three Likert-type scale: often used (3), used (2) and not used (1).

2.4 Data analyses

The data collected (socioeconomic characteristics, damage by the nomads and the level of coping strategies were recorded) using well-structured questionnaires were analysed using descriptive statistics such as percentage, mean and frequency counts, while inferential statistics were used to test the hypothesis via a Chi-square test.

3 Result and discussion

3.1 Socioeconomic characteristics of the respondent in the study area

The results revealed that the majority (75%) of the respondents were male, with the highest age range between

Table 1: Socio-economic characteristics of the respondent in the study area

Variable gender	Frequency (120)	Percentage (100)
Male	93	77.5
Female	27	22.5
Age range	28	23.2
20–29		
30–49	66	55.1
50–69	26	21.6 (mean = 39 years)
Marital status		
Married	96	80.0
Single	21	17.5
Divorced	1	0.8
Separated	1	0.8
Widowed	1	0.8 (mean household size = 6)
Farm size	104	86.6
1–5 ha	15	12.6
6–10 ha		
11–15 ha	1	0.8 (mean = 3.2 ha)
Level of education	4	3.3
Non-formal education		
Adult education	7	5.8
Primary school	32	26.7
Secondary school	49	40.8
Tertiary	28	23.3

Source: field survey 2019.

30 and 49 (55.1%), while the mean age was 39 years (Table 1). The implication of this is that the majority of the respondents are of a young age, active and productive, and this may have a positive effect on the use of coping strategies to defend their community against the unlawful entrance on their agricultural land. Moreover, agricultural operation such as growing of arable crops like cassava, cowpea, rice, sweet potatoes, maize, yam, millet and others require physical strength engagement of males in land preparation, planting weeding, harvesting and processing. This corroborates the finding of Adisa (2012) who discovered that the majority of the arable farmers in Kwara State are male, but contradicts the finding of Agbamu (2014) who reported that cassava farmers in Delta State are mainly women, as about 60% of them were females.

The results also revealed that the majority (80%) of the respondents are married. The large percentage of married male and female arable crop farmers indicated that most of the farmers in the study areas had families of their own, who can supply them a labour force on their farm, thereby reducing the cost of the production of labour. Also, the large family may also serve as a defence for the family against the invasion of external enemies such as herdsmen to their farm.

This finding supported the study by Obaniyi et al. (2019) who found that most arable crop farmers in South West, Nigeria, of which Osun State is a part, were married. The average farm size was 3.2 hectares, and the majority of the respondents own farms between 1 and 5 ha (86.6%). The implication is that the arable farmers have a reasonable number of hectares of farmland under cultivation. By extension, it means that they would have to provide extra security to keep their arable crop farm safe from cattle pastoralist. The mean household size was six persons. This implies a large household size. With this household size, the farmers would be able to have some people to contribute to farm labour and consequently decrease the cost of hiring labour and increase the net income from their farms. The result further shows that the majority (90%) of the arable farmers can read and write, because they have at least finished primary school education.

However, these findings disagreed with that of Rashid (2012) who found out that most of the arable crop farmers in Kwara State have their highest level of education in non-formal education.

3.2 Activities of Nomads

The activities and the damage caused by nomad/pastoralist are summarised in Table 2 in the order of the impact as follows: the compaction of soil (84%) was the highest, damage and eating of the crops on the field (79%) and the third was indiscriminate bush burning leading to fire outbreaks on farms (73%). Other damages were as follows: stealing of farm produce by herders

(73%), overgrazing of the fallow land (70%), land degradation (63%), pollution of water points (54%), land erosion (49%), total invasion of the farm (43%), killing and maiming of the farmers (13%), sexual harassment of the women (7%) and kidnapping of the farmers (5%). All these activities in one way or another contribute to the food insecurity status of the nation. Arable crops cannot thrive well in the compacted soil, because the nutrients of the soil may not be available for the crop development. According to Ofuoku and Isife (2010), soil compaction affects soil physical properties, plant growth, root growth and yield of crop. Also, crop eating or being destroyed at a juvenile stage by cattle has caused 100% loss to the arable crop farmers and hence decreased the Gross Domestic Product and Gross National Product of the nation, thereby causing poverty and food insecurity of the nation. This finding corroborates the work of Ofuoku and Isife (2010) in Delta State of Nigeria who asserted that conflict between Nomadic Herders and farmers caused a lot of damage, such as contamination of streams by cattle, destruction of crops, zero grazing of land, disregard for local traditional authorities, female harassment, harassment of nomads by a host community's youths, indiscriminate bush burning, defecation by cattle on roads, cattle theft and straying of cattle.

Moreover, the burning of the farmer's farm contributes to global warming and climate change. Climate change is a global threat to the vision for 2030, which stipulates the reduction of carbon emissions to the barest minimum of less than 1.5°C (Obaniyi et al. 2019; Intergovernmental Panel of Climate Change (IPCC) 2007; Lal 2013). The consequences of all these activities is gradual reduction in the gross domestic product (GDP) and gross national product (GNP) and can result in national disaster, unemployment, food crises, hunger and poverty.

Table 2: Activities of nomads

Statement	Yes	
	Frequency (120)	%
Growing crops damage	95	79.2
Pollution of water points	65	54.2
Indiscriminate bush burning leading to fire outbreak in farm	87	72.5
Stealing of farm products	88	73.3
Killing and maiming of farmer	15	12.5
Soil erosion	59	49.2
Overgrazing of fallow land	84	70.0
Land degradation	76	63.3
Kidnapping of farmers	6	5.0
Compaction of soil	101	84.2
Sexual harassment of women	8	6.7
Total invasion of farms	52	43.3

Source: field survey 2019. Sum to nearest percentage.

3.3 Coping strategies used by farmers

The coping strategies used by arable crop farmers against the activities of nomad/pastoralist are presented in Table 3. The result reveals that praying to god/gods (98%) for peace was ranked first, followed by early harvesting (95%). The third was early planting of their crops (92%), which was followed by going to the farm in groups (90%). According to them, god/gods has power to stop the crises and they believe that prayer to God has a supernatural power to bring peace into the community. Other coping strategies used include relocation of the farm (77%), police intervention

Table 3: The level of usage of coping strategies by farmers

Strategies	Often used (%)	Used (%)	Not used (%)	Rank
Using charms	6.7	5.8	88.3	5th
Going to farm in groups	58.3	31.7	10.0	
Shifting to another job	7.55	8.3	84.2	
Planting of toxic plant	18.3	9.2	72.5	
Encouraging settled the herdsmen to take up farming	16.7	9.2	74.2	
Cultivating small area of land	24.2	12.5	63.3	3rd
Early planting	69.2	23.3	7.5	
Avoid planting in dry season	25.8	16.7	57.5	
Avoid planting swamp rice	20.8	9.2	70.0	
Avoid planting along river borders	18.3	5.0	76.7	
Selling farms	6.7	3.3	90.0	1st
Preparing for the worst	20.0	13.3	66.7	
Praying for peace	73.3	25.0	1.7	
Early harvesting	70.0	25.8	4.2	
Multiple farm plots	64.2	27.5	8.3	
Relocate farm	39.2	38.3	22.5	4th
Increase farm	54.2	31.7	14.2	
Appeasement	44.2	41.7	14.	
Supplementary occupation(s) engage in off farm activities	29.2	9.2	61.7	
Sleeping on farms	14.2	13.3	72.5	
Animal rearing/livestock production	12.5	5.8	81.7	80.7
Help from union/association	7.5	12.5	80.7	
Help from relations/friends	27.5	23.3	49.2	
Help from local leaders	17.5	9.2	73.3	
Sought litigation	15.8	5.8	78.3	
Help from government	3.3	5.8	90.8	95.8
Insurance policy	3.3	0.8	95.8	
Bank credit	0.8	4.2	95.0	
NGO support	4.2	5.0	90.8	
Police	32.	30.	37.5	

Source: field survey, 2019.

(62%), help from relative/friends (51%), planting of poisonous substances on the farm (27%), help from local leaders (26%) and bribing the herdsmen (25%; Table 3). The implication of these strategies is that they are all at cost. For instance, relocation of the farms will cost the farmers the expenses such as cost of land, land preparation, seedlings, quality, seeds and other planting materials, labour capital and others. Similarly, securing an intervention of policemen will cost the crop arable farms some expenses such as buying fuel for the vehicle that will convey them to the location of the crises. Depending on relatives, friends and local leaders for sustenance may be demoralising and embarrassing as such assistance may be at a cost that farmers may not be able to bear.

Furthermore, 21% of the arable crop farmers sought litigation against the herdsmen, 20% sought help from a union association, 16% abandoned their farms, while 10% engaged in selling their farms. All these coping strategies are not free, for instance, to get lawyers to file a suit against

a pastoralist/nomad may be difficult because of political undertone and the poverty level of arable crop farmers (Table 4). Therefore, there is a need for the government to defend the strong hold of humanity, which is food without prejudice and partiality. In addition, Table 3 presents that only few (9.2%) of crop farmers benefited from NGO intervention, while only 9% benefited from government intervention. The number of arable crop farmers who obtained bank credit was very low (5%) and those who engaged in an insurance policy was very insignificant (4.2%; Table 3). This scenario may be as a result of lack of information dissemination among the arable crop farmers in the area. Government and non-governmental organisations should hereby contribute to the development of the community by adequate provision of lost items back to farmers through laudable programmes such as provision of inputs, subsidy and credit to these victims of disaster. Likewise, sensitisation programmes by extension personnel should be funded by the government in the area.

Table 4: Result of Chi-square analysis showing the relationship between socioeconomic characteristics of arable crop farmers and their coping strategies

Characteristics	X^2 -value	D_f	P-value	Decision
Age	0.48	1	0.49	NS
Religion	1.58	4	0.46	NS
Level of education	13.06	5	0.01	S
Ethnic group	5.25	4	0.36	NS
Status	11.47	6	0.02	S
Primary occupation	7.92	4	0.24	NS
Type of association	2.71	4	0.61	NS

Source: field survey, 2019.

Therefore, it is important to formulate a policy that will bring back peace to the region and ensure that both parties adhered to it.

3.4 Relationship between socioeconomic characteristics of arable crop farmers and usage of coping strategies

The result of Chi-square analysis showed that there is a significant relationship between the educational status ($X = 13.06$, $P = 0.01$) and the coping strategies used. The more educated the farmers are, the more they adopted coping strategies. This finding is in agreement with the findings of Adisa (2012) who found educational attainment as a factor that affected adoption of an innovation. This further established the fact knowledge is power, because farmers who are educated have a high sense of exposure to different methods of coping with sudden disasters; on the other hand, uneducated farmers have knowledge of indigenous way of handling issues.

4 Conclusions

Based on the analysis of the data and the findings, the following conclusions were drawn: farmers were traumatised and this has caused a set back to the economy, and hence achieving the sustainable development goal of zero hunger by 2030 will be a mirage if nothing is done about the re-occurrence of this unfortunate incident of frequent clashes. Therefore, it is recommended that the government should formulate a policy that will stimulate peace among crop farmers and nomads to sustain food security and reduce poverty among rural dwellers, thereby transforming

the rural environment into an attractive centre. Moreover, the government should ensure extension agents are always available to enlighten the farmers on how to cope with the activities of nomads on their farms, through farm insurance and a cooperative group society. Furthermore, the government should provide a grazing area for nomad activities and formulate policy for peace. Finally, the government should compensate the arable crop farmers who are victims of the incident and command the nomad to move to their restricted area of grazing.

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