

*Original Research Article*

## **Crop farmers' coping strategies for mitigating conflicts with cattle herders: Evidence from Osun State, Nigeria**

Banji Olalere **Adisa**, Michael **Famakinwa**, Kolawole Adelekan **Adeloye**,  
Abolade Oluwapelumi **Adigun**

*Department of Agricultural Extension and Rural Development, Obafemi Awolowo University Ile-Ife, Nigeria*

**Correspondence to:**

**M. Famakinwa**, Department of Agricultural Extension and Rural Development, Obafemi Awolowo University Ile-Ife, Nigeria. E-mail: mfamakinwa@oauife.edu.ng, ORCID ID: 0000-0003-1355-1656

### **Abstract**

Farmer-herder conflict constitutes a severe threat to community peace, development, agricultural production and socio-economic life of rural dwellers especially crop farmers, thereby forcing them to utilise some coping strategies to survive the crises and cushion the effects. Therefore, the paper assessed the causes, effects, and coping strategies utilised by crop farmers to mitigate the effects of conflict with cattle herders in rural communities of Osun State, Nigeria. A total of 120 crop farmers (the more vulnerable ones) were selected across the state and quantitative data were elicited from them using a structured interview schedule. Descriptive and inferential statistics were used to analyse the data. Results show that respondents had a mean age of  $44.16 \pm 14.77$  years and farming experience of  $20.16 \pm 11.23$  years, and 75.7% had formal education. Loss of crops (mean = 1.63) and reduction in farmers' output and income (mean = 1.52) were the major effects of conflict, while strategies adopted include tightening farm security (mean = 2.93), praying for peace (mean = 2.91) and seeking help from friends and relatives (mean = 2.91). About half (48.6%) utilised the coping strategies at a high level to mitigate conflict with cattle herders. There was a significant relationship between the coping strategies utilisation and the years of residence ( $r = 0.224$ ), farming experience ( $r = 0.201$ ) and effects of conflict ( $r = 0.567$ ). The study concluded that although crop farmers utilised different coping strategies to mitigate the effects of herders' conflict problem-solving types were most adopted. It is therefore recommended that government and other donor agencies should provide relief materials to crop farmers during conflict situations to enable them to cope with the effects of the conflict and resume their normal economic activities.

**Keywords:** causes; effects; farmer-herder conflict; livelihood activities; socio-economic life

### **INTRODUCTION**

Conflict is perceived as a serious disagreement or argument about something important that leads to the breakdown of law and order (Collins, 2016; Dietz and Albert, 2016). According to Alabi and Famakinwa (2017), conflicts pose severe threat to community peace, stability, and development, as well as having serious consequences for tribal harmony, particularly in a multi-ethnic and multi-tribal country like Nigeria.

Ndubuisi (2018) and Okoro (2018) explained that if a conflict is not effectively managed, it can degenerate into violent and destructive clashes, and become counter-productive which could threaten national security and integration. On a positive note, if conflicting parties are able to deal with their incompatibilities, it could lead to a new and productive social or political organisation (Okoro, 2018).

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Imo (2017) observed that conflicts between herders and farmers have been a prevalent feature of economic livelihood in West Africa. Farmer-herder conflict in Nigeria has a long and complex historical background. According to Kwaja and Ademola-Adelehin (2018), climate variability, environmental degradation, and socio-political upheaval have shifted pastoralist migratory patterns and increased tensions between farmers and herders. These changes have increased confrontations between farmers and herders, leading to violent conflict, deaths, forced displacement and migration, erosion of inter-communal relationships, as well as the destruction of agricultural and livestock outputs (Mercy Corps, 2015). Other factors attributed to violent confrontation between farmers and herders in Nigeria as submitted by Audu (2014); McGregor (2014); Shehu (2018), and Akanle et al. (2021) include water scarcity, desertification, porous national borders, crop damage, farmland destruction, indiscriminate bush burning, and politicization of issues among others. Imo (2017), Shehu (2018) and Akanle et al. (2021) have also linked the farmer-herder conflict in Nigeria to global warming and climate change, as well as the accompanying desert encroachment. All these factors have led to a reduction in arable and grazing lands, causing cattle herders to migrate to the south in search of pasture for their animals. In fact, the farmer-herder conflict in recent times has taken another dimension of ethnic and religious colorations. It has posed much of serious negative implications for Nigeria's national integration; and has also heightened the level of insecurity and food shortage. The economic effects of these conflicts have led to a loss of lives, displacement of farmers, loss of production, loss of houses and property, infrastructural damage, and scarcity of agricultural products among others (Alao et al., 2019; Obaniyi et al., 2020; Mercy Corps, 2015; Bello, 2013).

According to Okoro (2018) and Akanle et al. (2021), conflicts/clashes in Nigeria are growing more intense and are becoming pervasive. The intensity and frequency of conflicts depend on economic and environmental factors (Aliyu, 2015; Alao et al., 2019). In fact, every part of Nigeria has experienced one or another form of farmer-herder conflict. Even the states in the Southern part of the country that used to be peaceful had witnessed numerous conflicts associated with the grazing activities of herdsman. Ajibefun (2018) also revealed that serious conflict has erupted between farmers and herders in Southwestern Nigeria, where farmers can no longer farm and live peacefully. The crisis came to a climax in Osun State when some cattle herders attacked one of the government-owned

farm settlements located between Esa-Oke and Ijebu-Ijesa where about 120 acres of economic crops were destroyed (Makinde, 2018). Besides, it was reported that crops worth millions of naira were destroyed by herders as a result of their grazing activities in another two separate communities in Osun State.

Several policy interventions have been put in place by the government and other stakeholders like local community leaders, security agents, and civil society organisations to address the rising tensions, so as to ensure peaceful co-existence and build inter-communal relationships between herders and farmers. These policy interventions include the creation of grazing reserves in 1965 by then Northern regional government, the establishment of the national commission for nomadic education to integrate nomadic pastoralists into society, the deployment of security agents to restore peace to the warring communities, enactment of anti-open grazing law in the middle belt and southern states of Nigeria, and establishment of state-owned security agents among others as reported by Kwaja and Ademola-Adelehin (2018) and Njoku (2021). Unfortunately, conflicts still persist in many communities of Nigeria unabated (Ogbe and Ogali, 2022). Consequently, these conflicts are having serious negative implications on community peace, agricultural production, and security of lives and properties of rural dwellers especially crop farmers, thereby forcing them to employ various strategies to survive the threat and remain in agricultural production activities for a continuous supply of food crops and other products for the country. Although there is a quantum of literature on the causes and effects of farmer-herders in Nigeria, only a few scholars such as Urmar and Urmar (2013); Chikaire et al. (2017) and Obaniyi et al. (2020) centered their studies on coping strategies adopted to mitigate the effects of farmer-herder conflict in Nigeria. They reported the use of local vigilantes, building fences/pegs around their farms, charms, praying for peace, and spraying pesticides on crops. However, there is a dearth of empirical evidence of the level of utilisation of these coping strategies among farmers to mitigate the effects of the conflicts and the relationship between the effects of farmer-herder conflict and the coping strategies employed for mitigation of the effects, hence, the need for this study. This research was therefore designed to address these specific objectives:

- i) profiled the socio-demographic characteristics of crop farmers;
- ii) identified the causes of conflict and the effects on their socio-economic life; and

iii) identified and determined the level of utilisation of coping strategies employed by crop farmers in the study area.

The study is of importance because of the serious negative implications of farmer-herder conflict on food security and national security; and it would provide relevant information for government, policymakers, development agencies, and other relevant stakeholders on causes and effects of farmer-herder conflict, identify different coping strategies adopted and the extent to which they are using these strategies to cushion the effect of conflict and finally the study would proffer possible solutions to the lingering crises.

### **Theoretical Framework**

This study was built on climate-based eco-scarcity theory, a neo-Malthusianism, propounded by Homer-Dixon in 1994 which explores the multiple ways by which climate change may lead to environmental scarcity and, consequently, the likelihood of violent conflict and other social problems through a variety of social mechanisms such as migration (Friedrichs, 2014). In Nigeria, the occurrence of climate change that causes land degradation and desertification, leading to scarcity of pastures and water in the Northern part is forcing the cattle herders to migrate to the Southern part in search of greener pastures and water for their animals resulting in competition over land and water with crop farmers which often escalates into violent conflict over these resources. In order to mitigate the effects of farmer-herder conflicts, crop farmers have to adopt some strategies to cushion the effects of this menace on their survival.

## **MATERIALS AND METHODS**

### **The study area**

The research was conducted in Osun State, Southwestern Nigeria. The state has 30 Local Government Areas (LGAs) divided into 3 Agricultural Zones by the Osun State Agricultural Development Programme (OSSADEP). They are: Iwo, Ife/Ijesa and Osogbo zones. The predominant inhabitants of the study areas are Yoruba. The main economic activity of the inhabitants of the state is farming. They engage in mixed cropping and the commonly cultivated crops include maize, cassava, yam, rice, cocoyam, tomato, plantain, banana, leafy and fruit vegetables cocoa, kola, citrus, and oil palm among others. Animals such as poultry, pigs, sheep, goats, and cattle are reared for consumption and sale. Besides agriculture, other income-generating activities include trading, food

processing, local soap making, mat weaving, cloth weaving, cassava processing, oil palm processing, tailoring, carpentry, basket weaving, pottery, and other small-scale businesses.

### **Sampling technique**

The population for this study was the crop farmers in the study area. Only crop farmers were used as respondents for this study because they are more vulnerable to attacks, and are more affected by herder-farmer conflicts. Crop farmers were selected in all the OSSADEP zones using a multistage sampling procedure. Purposive selection of one LGA was carried out at the first stage from each of the agricultural zones where the incessant clashes are most prominent in recent times namely; Boripe from the Osogbo zone, Iwo from the Iwo zone, and Ife North from Ife/Ijesa zones. Purposive selection of three communities from the selected LGAs based on incessant clashes with cattle herders was done at the next stage, that is; Aba Eesa, Ipole, and Idi Ogungun from Boripe, Obamoro, Igege and Ogbaagba from Iwo, Aba Igbira, Akinlaalu and Onikan/Adetutu from Ife North. Finally, a proportionate sampling technique was carried out to select 120 respondents for the study, that is, 13 from Aba Eesa, 15 from Ipole, 12 from Idi Ogungun, 14 from Obamoro, 11 from Igege, 16 from Ogbaagba, 13 from Aba Igbira, 14 from Akinlaalu and 12 from Onikan/Adetutu.

The study investigated the socio-economic characteristics of crop farmers to test whether there is a significant relationship between this and coping strategies utilised to mitigate the effects of conflicts or not. It also tests whether there is a significant relationship between utilisation of coping strategies and the effects of conflicts on crop farmers. The research instrument used for this study was a well-structured interview schedule. It contained closed-ended questions used to elicit quantitative data from the respondents based on the set objectives. It was developed by the researchers based on past empirical literature. Content validity and construct validity were carried out by the use of experts. The research instrument was given to experts in the Department of Agricultural Extension and Rural Development and other relevant fields like psychology to critically examine, review and determine the appropriateness of the questions drawn in measuring those variables included in the study. Their suggestions, corrections, and ideas were employed in reconstructing the instrument prior to the field survey. This was prepared in the English language which was translated into the indigenous language for the illiterate farmers. Information gathered by the researchers was processed

using Statistical Package for Social Sciences (SPSS) version 23 while appropriate descriptive statistics (frequency counts, percentages, means) and inferential statistics (Chi-square and Pearson Product Moment Correlation analyses) were employed to analyse the data.

### Measurement of variables

The dependent variable for this study was utilisation of coping strategies by crop farmers during and after conflict with cattle herders. Three groups of coping strategies (problem-oriented coping strategies, emotion-oriented coping strategies, and social-support coping strategies) as used by Umar and Umar (2014) were adopted for this study. Utilisation level of coping strategies was measured by asking the respondents to indicate the frequency of using these coping strategies to mitigate the effects of incessant conflict with cattle herders on a four-point scale rating from often used (3), occasionally used (2), rarely used (1) and never used (0) point. To determine the level of utilisation of coping strategies, the utilisation scores were scaled-up using an equal interval approach. The range of the utilisation score was calculated and divided by three to categorise the respondents into high, moderate, and low levels of utilisation as used by Alabi et al. (2020). Effects of conflict were measured by asking the respondents to indicate the extent to which incessant conflict with cattle herders has affected their activities using their responses from a three-point scale, ranging from to a large extent (2), to a less extent (1) and not at all (0) as used by Yekinni et al. (2017). Furthermore, the respondents were asked to indicate perceived causes of conflicts as listed. Each affirmative response was scored 1 point; otherwise, zero point was scored.

## RESULTS AND DISCUSSION

### Socio-demographic characteristics of respondents

Results in Table 1 reveal that the mean age of crop farmers was  $44.2 \pm 5.8$  years. This implies that the majority of the crop farmers were active and mature, and could determine appropriate strategies to use in order to cope with the impacts of conflict with cattle herders in the study area. This substantiates the findings of Famakinwa et al. (2017) that the majority of crop farmers in Osun State, Nigeria was in their middle age of 44.1 years. The majority (75.6%) were male, which implied that crop farming was a male-dominated enterprise greater tendency of males' involvement in conflict than females due to their energy and aggressiveness; therefore, they are regarded as the

protectors and defenders of every rural community. Above half (54.2%) of the respondents practiced Christianity and 41.7% practiced Islam, suggesting that Christianity and Islam were the two prominent religions among crop farmers. This is expected to influence their responses to conflict with cattle herders since both religions advocate love and peaceful co-existence among their followers. Also, the mean year of residence was  $20.2 \pm 7.3$  years, implying that respondents have a good knowledge of their environments and know the best coping strategies to use when the need arises. The majority (75 %) had a formal education; it implies that the majority were literate as this could have influenced their conflict resolution. This agrees with the findings of Undiyaundeye and Basake (2017) who reported that educated people are more likely to understand how to handle issues than illiterates. The mean crop farming experience was  $22.2 \pm 5.1$  years, this implies that respondents have gathered enough experience in crop farming. This is congruent with the findings of Fasina (2017) who reported that farmers had farming experience and hence will be able to settle conflicts amicably. In addition, the result indicates that information about crop farming in the study area was mainly through peers/friends (75.6%), extension agents (74.7%) mass media (71.4%), and research institutes (67.6%). This implies that the majority of the respondents assessed information on their farming activities from different sources.

### Causes of conflicts

The result in Table 2 reveals that respondents mostly identified encroachment on farmland by cattle herders (94 %) as the most prominent cause of conflict in the study area. This is due to the scarcity of pastures in the Northern part of Nigeria which often force herders to move down to the South where pastures are believed to be available in abundance. This often made them encroach into farmlands for purpose of feeding their animals which are usually resisted by crop farmers leading to violent conflict (Akanle et al., 2021; Olaniyan et al., 2015). Destruction of crops (93.3%) was another major cause of violent conflict between farmers and herders. It has been reported that some herders intentionally allow their cattle to graze on crops which is the main source of farmers' livelihood without any cause. Any attempt by farmers to stop them often leads to violent conflict (Okoro, 2018). Contamination of streams by herders' cattle (92.5%) to a large extent aggravated farmer-herder conflicts in the study area. Since crop farmers depend on streams for their consumption and farming activities, attempts to contaminate these available streams by herdsmen cattle

**Table 1.** Socio-demographic characteristics of crop farmers (n = 120)

Variables	Frequency	Percentage	Mean	S.D
<b>Sex</b>				
Male	91	75.6		
Female	29	24.4		
<b>Age (years)</b>				
<30	26	21.7	44.2	5.7
31-40	27	22.5		
41-50	26	21.7		
51-60	27	22.5		
>60	14	11.7		
<b>Marital status</b>				
Single	17	14.2		
Married	93	77.5		
Widowed	7	5.8		
Divorced	3	2.5		
<b>Religion</b>				
Christianity	65	54.2		
Islam	50	41.7		
Traditional	5	4.2		
<b>Years of residence</b>				
0-10	44	36.7	20.2	7.3
11-20	23	19.2		
21-30	21	17.5		
31-40	14	11.7		
41-50	7	5.9		
>50	11	9.0		
<b>Education</b>				
No formal educ.	27	22.5		
Primary	16	13.3		
Secondary	58	48.3		
Tertiary	19	15.8		
<b>Crop farming experience (years)</b>				
0-10	38	31.7	22.18	6.04
11-20	32	22.7		
21-30	25	20.8		
31-40	17	14.2		
41-50	6	5		
>50	2	1.7		
<b>*Source of Information on crop farming</b>				
Research institutes	81	67.6		
Extension agents	90	74.7		
Peers/friends	91	75.6		
Mass media	86	71.4		

\*Multiple responses, Source: Field Survey, 2020

**Table 2.** Causes of conflicts

*Causes	Frequency	Percentage
Encroachment on farmland by cattle herders	113	94.0
Destruction of crops	112	93.3
Contamination of stream by cattle	111	92.5
Sexual harassment of women by herdsmen	108	90.0
Lack of social cohesion and understanding	99	82.5
Indiscriminate bush burning by herdsmen	93	77.5
Disregard for traditional authorities	85	70.8
Indiscriminate defecation by cattle on roads	80	66.7

Source: Field survey, 2020 \*Multiple responses

**Table 3.** Effects of conflicts on crop farmer

Effects	Ranked Mean
Loss of crop on the farm	1.70
Reduction in farmers' output and Income	1.63
Loss of produce	1.56
Insecurity/loss of community peace	1.45
Displacement of farmers and family	1.42
Acquisition of weapon	1.39
Increase in prices of farm produce	0.46
Loss of properties/houses	0.40
Loss of lives	0.32

Source: Field Survey, 2020

due to scarcity of water caused by climate are usually greeted with violent confrontations (Akanle et al., 2021). Sexual harassment of women by herdsmen (90%) was also considered one of the major causes of conflict. It has been reported in many different communities in the study area that herders had one time or another attempted to rape and even raped farmers' wives and daughters on their farms while they were working alone. This has often degenerated into conflict.

**Effects of farmer-herder conflict**

Information presented in Table 3 shows that loss of crops on the farms (mean = 1.70), reduction in farmers' output and income (mean = 1.63), and loss of produce in storage (mean = 1.56) were the major effects of conflicts on the crop farmers. This is obvious because continuous farmer-herder conflicts have led to the loss of crops, a reduction in the number of farm products, and revenue being generated by farmers due to the destruction of crops by cattle herders in other parts of the country. This eventually results in a shortage of food supply to markets since many urban residents depend on the available products for consumption. This is evident in the tremendous price hike of food commodities across the country. This is similar to the

finding of Alao et al. (2019) and Obaniyi et al. (2020) who argued that the conflict has continued to reduce the quantity of farmers' output and loss of income due to the destruction of crops by cattle herders. Other effects of conflicts on farmers include insecurity/loss of community peace (mean = 1.45), displacement of farmers and families (mean = 1.42), and acquisition of weapons to defend themselves (mean = 1.39). As a result of incessant conflicts, the security of rural dwellers in many farming communities has been threatened, which makes people lose trust in the government in providing security for them. Apart from this, many farmers, especially women have stopped going to distant farms for fear of attack or even left their farms completely for personal safety; while some result in acquiring small and light arms to defend themselves from attack by herders during the conflict. This has led to a proliferation of weapons in rural communities in Nigeria. All these facts suggest that armed conflicts have devastating and serious effects on the livelihood activities, socio-economic life of crop farmers, food security, and national security if government and security agents fail to curb this hydra-headed menace. This result gives credence to the reports of Bello (2013), Aliyu (2015), Alao et al. (2019), and Obaniyi et al. (2020).

**Table 4.** Coping Strategies Adopted by Farmers

Coping strategies	Ranked Mean
<b>Problem-oriented</b>	
Tightening farm security	2.93
Early harvest of crops	2.90
Buying foodstuffs	1.93
Shifting to another job	1.88
Borrowing money for survival	1.78
Selling farms	1.68
Using charms	0.43
<b>Emotion-oriented</b>	
Praying for peace	2.91
Preparing for the worst	1.41
Appeasing other parties	1.25
Accepting conflict as fate	0.49
<b>Social support seeking</b>	
Helps from friends and relative	2.81
Seeking assistance from local leaders	1.75
Seeking litigation	0.92
Assistance from the local government	0.78

Source: Field Survey, 2020

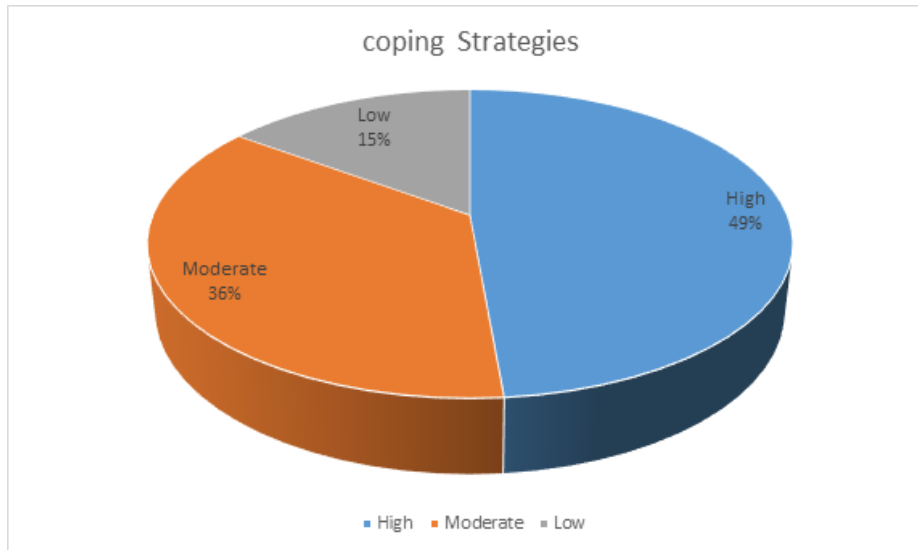
**Coping strategies used by farmers**

Results in Table 4 show that respondents employed multiple coping strategies to mitigate the negative impacts of farmer-herder conflict. This is because no single technique is sufficient to bring the needed relief to the damage/suffering caused by conflict. Tightening farm security (mean = 2.93) and early harvest of crops (mean = 2.91) were often utilised among the problem-oriented coping strategies adopted by crop farmers during farmer-herder conflicts in the study area. This suggests that crop farmers were security conscious by tightening the security of their communities and farms to prevent attacks from cattle herders. This is in line with the finding of Chikaire et al. (2017) that crop farmers adopted tightening farm security and early harvest of the crop as coping strategies to mitigate the effects of conflict in Abia State, Nigeria. Besides, they believe that early harvest of their crops would prevent the loss of crops to cattle. Praying for peace (mean = 2.91) was often utilised among emotion-oriented coping strategies adopted by the respondents. This is not surprising because it indicates the level of religious attachment of crop farmers in the study area and the belief that only God can stop conflict and has extraordinary power to bring peace into any society or village. This conforms to the submission of Umar and Umar (2014) and Obaniyi et al. (2020). Seeking help from relatives and friends (mean = 2.91) to ameliorate the effects of conflict was the only support-seeking coping strategy often utilised by crop farmers in the

study area while seeking assistance from local leader leaders (mean = 1.75) was occasionally used. The fact that most of the farmers claimed to seek assistance from relatives and friends may reflect the severity of the impacts of conflict on the farmers’ sources of livelihood. Having to rely on relatives and friends for sustenance can be demoralizing and embarrassing to farmers as this may be costly for farmers to bear. This agrees with the results of Chikaire et al. (2017) and Obaniyi et al. (2020). Evidence from this finding shows that crop farmers used problem-oriented coping strategies more than any other coping strategies because they were more vulnerable to conflict than herders, thereby approaching conflict from a problem-solving perspective. This is similar to the submission of Umar and Umar (2014) who reported that farmers view the conflict from a problem perspective.

**Level of utilisation of coping strategies**

Further analysis in Figure 1 indicated that the level at which a somewhat larger proportion (48.6%) of the respondents used strategies to cope with the effects of farmer-herder conflict was high while it was moderate for 36.4 percent and low for a few (15%) of them. This implies that the majority of the crop farmers used a combination of different strategies so much to cope with the effects of incessant conflict with the cattle herders to safeguard their socio-economic life and livelihood activities. This concurs with the findings of Umar and Umar (2013) who reported that farmers



**Figure 1.** Level of coping strategies adopted during farmers-cattle headers' conflict  
Source: Field Survey, 2020

**Table 5.** Chi-square analysis of socio-demographic characteristics and coping strategies

Variables	Chi-square coefficient ( $\chi^2$ )	D.F	p-value
Gender	3.563	2	0.171
Marital status	12.95*	6	0.044
Religion	6.38	4	0.173
Occupation	0.557	2	0.757

Source: Field Survey, 2020

**Table 6.** Results of correlation between some selected socio-demographic and famers coping strategies adopted farmers-cattle headers' conflict

Variables	Correlation coefficient	p-value
Age	0.173	0.600
Household size	0.157	0.088
Years of residence	0.224*	0.014
Farming experience	0.201*	0.029

Source: Field Survey, 2020

generally adopted many strategies, as no single technique is sufficient to alleviate the suffering caused by conflict.

**Test of hypotheses**

The result in Table 5 shows that only marital status ( $\chi^2 = 12.95$ ;  $p \leq 0.05$ ) had a significant association with the utilisation of coping strategies during farmers-cattle headers conflict. Since the majority of the crop farmers were married there is a tendency for them to employ coping strategies to mitigate the effects of conflict in order to cater to their family members. Also in Table 6, years of residence ( $r = 0.224$ ;  $p \leq 0.05$ ) and farming experience ( $r = 0.201$ ;  $p \leq 0.05$ ) of the

respondents were positively and significantly related to crop farmers' utilisation of coping strategies during crop farmers-cattle herders' conflict. This implies that respondents with longer years of experience might likely use the coping strategies better to alleviate the effects of conflict than those that had less experience. This is in agreement with the findings of Kehinde (2011) who reported that farming experience and years of residence of farmers had a significant relationship with coping strategies utilised during farmers-cattle herders' clashes in Nigeria.

The results in Table 7 below show the result of the second hypothesis that there is no significant relationship between coping strategies utilisation and



**Table 7.** Results of Correlation between effects of farmers-cattle herders' conflict and coping strategies

Variable	r	r <sup>2</sup>	p-value
Effects of conflict	0.567**	0.322	0.000

Source: Field Survey, 2020

the effects of conflict. The effect of conflict with cattle herder ( $r = 0.567$ ;  $p\text{-value} \leq 0.01$ ) had a positive and significant relationship with the utilisation of coping strategies by the respondents. This indicates that the higher the coping strategies utilisation, the higher the effects of conflict on crop farmers. This means that when the effect of conflict with cattle herders is small, they make use of few coping strategies but when the effects of the grazing activities of cattle herders are biting harder on them, they would need to make use of a combination of different coping strategies to cushion the effects of conflicts.

### CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this study, encroachment on farmland by cattle herders, destruction of crops, and contamination of streams by cattle were the major causes of conflict. Besides, crop farmers indicated that conflicts had negatively impacted their socio-economic lives through the loss of crops on the farms, and reduction in farmers' output and income. They admitted that tightening farm security, praying for peace, and seeking assistance from friends and relatives were the often utilised coping strategies to ameliorate the effects of conflicts. The study concluded that crop farmers used multiple coping strategies to mitigate the effects of farmer-herder conflict. The study recommends that since farmer-herder conflict is inevitable, government and other relevant stakeholders should provide relief materials for crop farmers during a conflict situation, to enable them to cope with the effects of conflict and resume their normal economic activities. Besides, public campaign enlightenment should be organised by relevant government agencies to educate both farmers and herders on the need to cohabit peacefully and respect one another. Apart from these, the government should adopt community policing to safeguard the lives and properties of rural dwellers. Agricultural extension messages should have elements of coping strategies with a view to further enhancing crop farmers' capability to cope with any sudden security challenges; the state government should enforce anti-opening grazing law to prevent further conflict; the federal government should collaborate with the state and local governments to

build up alternative responses that can utilize dialogue and mediation as de-escalation techniques with the conflicting parties and finally, the federal government of Nigeria should establish cattle ranches and grazing reserves all over the northern states of Nigeria.

### CONFLICT OF INTEREST

The authors declared no conflicts of interest with respect to the research, authorship, and publication of this article.

### ETHICAL COMPLIANCE

The authors have followed ethical standards in conducting the research and preparing the manuscript.

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