

## **Coping strategy among crop and livestock farmers in agrarian community of Fashola, Oyo state, Nigeria**

**\*Ajayi M. O., Akintola A. J. and O. J. Babayemi**

*Department of Animal Science, University of Ibadan, Nigeria*

**\*Corresponding author:** moajayi5@gmail.com **Phone number:** +2348066116150

**Target Audience:** Regulatory bodies, Policy makers, Animal Scientist, Extension Agent

### **Abstract**

*Conflicts among crop farmers and herdsmen are rampant in farming communities of Nigeria, affecting food security and sustainable livelihood of the country. A study assessing the coping strategies of crop and livestock farmers in the agrarian community of Fashola Agriculture Development Project (ADP) cluster, Oyo, Oyo state was conducted. A total of 200 crop and livestock farmers from 14 villages were randomly selected using an open-ended questionnaire to elicit information. Data were analyzed using descriptive statistics. The results showed that both livestock and crop farmers were predominantly male (100%), married (100%), modal age (21-30) and >50years of age for both livestock and crop farmers, respectively. The average household size of the pastoralists and crop farmers ranged between 6 and 10. The modal herd size of livestock farmers ranged from 46 to 65. The predominant breed of cattle reared was White Fulani by 98% of the pastoralists and grazing (100%) was the dry season feeding method. Major challenges encountered by the pastoralists were cattle poisoning (85%) and insufficient feed in dry season (100%). Majority (100%) of crop farmers reported farm invasion by animals and reduction in crop yield (100%). The major strategy adopted for peaceful co-existence by crop farmers was tolerance (65%) and compensation (52%) by the pastoralists. It can be concluded that the crop and livestock farmers in Fashola community have adopted measures to resolve the internal crop-livestock conflicts amongst them.*

**Keywords:** Cattle invasion; Conflicts; Herd composition; Pastoralist; Peaceful co-existence

### **Description of Problem**

Herder-crop farmers' conflict had been on the increase since the 20<sup>th</sup> century in West Africa (1) and is speedily snowballing in Nigeria, threatening the lives and property particularly in the rural farming communities, where natural resources are dependent. It does not only negatively have impact on the livelihood of the poor resource farmers who are vulnerable but also culpable of worsening the food security in Nigeria and elsewhere.

There have been several reports on the causes of conflicts between the two parties, a report by (2) stated that conflict between crop and livestock farmers is ethnic, religion and political based as the mostly affected states are

those in the middle belt of the country. The report of (3) revealed that the main source of conflict between crop and livestock farmers was caused by land related issues, (4) opined that most of the crisis are caused by cattle invading crop farms. According to (4), over 40million worth of crops are lost annually in the South-south geopolitical zone as a result of cattle invasion on crop farms most especially in Edo and Delta states. In the recent time, about 13 cases of farmer-herders conflicts were reported to have claimed about 300 lives across the states in Nigeria(5).

The enabling environment in terms of abundant lush grasses, crop residue, fresh water, ready market and absence of

trypanosomiasis in the southern part of the country have increased the influx of pastoralists together with their herds to this area. These pastoralists are the custodian of 80% cattle production in Nigeria, which is the main available source of animal protein in Nigeria (6, 7). In the same vein, (8) reported that Nigerian agricultural production is managed by rural-based small scale arable crop producers, who produced about 80% of total energy and protein crop requirements.

Many a times many herding and farming communities had developed interrelationship through the practice of exchanging things for mutual cohabitation, (9) reported that the relationship between crop and pastoralists is characterized by conflict and complementary. This is in line with (10), who opined that the relationship is characterized by cooperation, competition and conflicts.

Therefore, the need to explore information from an agrarian community where both parties live is essential as there is paucity of information on coping strategy between crop farmers and the pastoralists. Fashola is constituted by crop and livestock farmers living in the same environment, it is important to identify the challenges faced by both and how these parties are able to overcome the teething challenges. Therefore, this study was conducted to investigate the coping strategies between crop and livestock farmers in the agrarian community of Fashola.

### **Materials and Methods**

The study was carried out at Fashola community in Oyo town, Oyo state, Nigeria. Fashola Community (FC) is an agrarian community where agropastoralists have their settlement and cohabit with indigenous crop farmers. The FC is under the delineation

cluster of Agriculture Development Projects of Oyo state, Nigeria. The study area lies between latitude of 7° 51'9.25"N and longitude of 3°55'52.50"E. The climate is equatorial, notably with dry and wet seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0 °F), almost throughout the year.

The area was purposely chosen for the study because of the high population of both livestock and crop farmers operating together. The crop farmers grow staple food like cereals (millet, maize) and root crops (cassava and yam) due to the texture of the surface soil, which is sandy and/or sand loam suitable for growing these types of crops. The study area is characterized with large expanse of land with abundant grasses thereby encourages the livestock farmers to inhabit in FC. In Fashola cluster, 14 villages were randomly selected for the study. The villages were Eseke, Akele, Egbeda, Tente, Olorunda, Alarape-aladiye, Iponrin-sangodeyi, Olodo, Balale, Abatuntun, Ilutuntun, Ajadi, Odogun oke and Kagun. The villages were about 5-10 kilometers apart of each other.

The use of well structured open ended questionnaire comprising mixtures of questions with predefined answers and respondents were free to say whatever they have adopted.

Two hundred questionnaires were administered to 100 crop farmers and 100 livestock farmers each and the data collected were analysed using SPSS to obtain the frequency and the percentages.

**Table 1:** Socio-economic characteristics of crop and livestock farmers in Fashola cluster, Oyo

	Crop Farmers		Herders	
	Frequency	Percentage	Frequency	Percentage
<b>Sex</b>				
Male	100	100	100	100
Female	0	0	0	0
<b>Age group</b>				
Below 21	0	0	1	1
21-30	7	7	44	44
31-40	30	30	32	32
40-50	18	18	14	14
Above 50	45	45	9	9
<b>Marital status</b>				
Single	0	0	0	0
Married	100	100	100	100
<b>Educational level</b>				
No education	56	56	78	78
Primary education	24	24	22	22
Secondary education	19	19	0	0
Tertiary education	1	1	0	0
<b>Religion</b>				
Islamic	65	65	100	100
Christianity	33	33	0	0
Traditional	2	2	0	0
<b>Tribe</b>				
Yoruba	98	98	0	0
Benue	2	2	0	0
Fulani	0	0	34	34
Bororo	0	0	66	66
<b>Primary Occupation</b>				
Livestock rearing	0	0	100	100
Crop Farming	100	100	0	0
<b>Secondary Occupation*</b>				
Trading	24	38		
Crop farming			94	94
Casualworker with Wamco	1	1	15	15
Artisan	35	55	10	10
Driving	4	6	0	0
<b>Household size</b>				
1-5	15	15	20	20
6-10	69	69	65	65
11-15	18	18	12	12
> 15	8	8	3	3
<b>Farm size</b>				
< 5 acres	17	17	94	100
5-9 acres	21	21	0	0
10-14 acres	19	19	0	0
15-19 acres	11	11	0	0
>19 acres	32	32	0	0

## Result

Presented in Table 1 are the socio-economic characteristics of crop and livestock farmers in Fashola cluster of Oyo town. The result showed that the respondents (100%) were male and married (100%). The modal age for livestock farmers (44%) was between 21-30 years and above 50 years for crop farmers (45%). About 78% and 56% of the pastoralist and the crop farmers, respectively had no formal education while 1% among the crop farmers had tertiary education. The Bororo had the highest percentage of tribe (66%) among the pastoralist while 98% of the crop farmers were Yoruba's and were all indigenes of Fashola. Two major religions practiced by the respondents were Islam practiced by 100% of

the pastoralist and 65% of the crop farmers while 33% of the crop farmers were Christians. A greater percentage (69%) of the crop farmers and 65% of the pastoralists had a family size which ranged between 6 and 10 household members. The study showed that the primary occupation of the pastoralist (100%) was livestock rearing while that of the crop farmers (100%) was crop farming. The respondents engaged in other occupation which is secondary, 94% of the pastoralist also engaged in crop farming with an average farm size of 5 acres and 55% of the crop farmers were artisans. It was also observed that 32% of the crop farmers owned a farm size above 19 acres while 17% had below 5 acres per farmer.

**Table 2: Herd composition of the pastoralists in Fashola cluster**

Variables	Respondent	
	Frequency (n = 100)	Percentage (%)
<b>Types of animals reared*</b>		
Cattle only	13	13
Cattle and sheep	87	87
Poultry bird	8	8
<b>Breeds of cattle reared</b>		
White Fulani	98	98
Sokoto gudali	2	2
<b>Breeds of sheep reared</b>		
Yankassa (n=87)	87	100
<b>Breeds of poultry bird reared</b>		
Fulani ecotype	8	8
<b>Herd size</b>		
15-30	19	19
31-45	5	5
46-65	20	20
66-80	14	14
81-90	12	12
96-110	12	12
>110	18	18
<b>Purpose of rearing the animals*</b>		
Sale on hoof	100	100
Milk production	100	100

(Source: Field survey, 2018.)

\*Multiple responses

**Table 3: Water source and feeding pattern for livestock reared in Fashola cluster, Oyo**

Variables	Respondent	
	Frequency (n = 100)	Percentage (%)
<b>Source of water for animals*</b>		
River	60	60
Stream	40	40
Borehole	7	7
Dam	53	53
<b>Raining season feeding pattern</b>		
Grazing	100	100
<b>Dry season feeding pattern*</b>		
Grazing	100	100
Cut and carry	12	12
Crop residue	88	88
Cassava peel	93	93

Table 2 illustrates the herd composition of the pastoralists in Fashola cluster. The result showed that 87% of the respondents reared cattle along with sheep, 13% reared cattle only and 18% reared poultry birds. The breeds of cattle reared by respondents were Sokoto gudali and White Fulani with percentage of respondents rearing Sokoto gudali and White Fulani as 2% and those respondents rearing only White Fulani as 98%. Yankassa was the breed of sheep reared and Fulani ecotype was the only breed of poultry bird raised. The modal herd size (20%) ranged from 46-65 with 18% accounting for animals more than 110 in the herd. The purposes of rearing the animals as illustrated in Table 2 were for milk (100%) and cattle sale (100%).

Table 3 shows the water source and feeding pattern for livestock reared by the pastoralists in Fashola cluster. It was observed that the water source for the animals in the study area were river (60%), borehole (7%), dam (53%) and stream (40%). Wet season feeding pattern for livestock was grazing only (100%) and dry season feeding pattern was the combination of grazing (100%) utilization of

crop residues (88%), cassava peel (93%) and feeding of tree branches (12%).

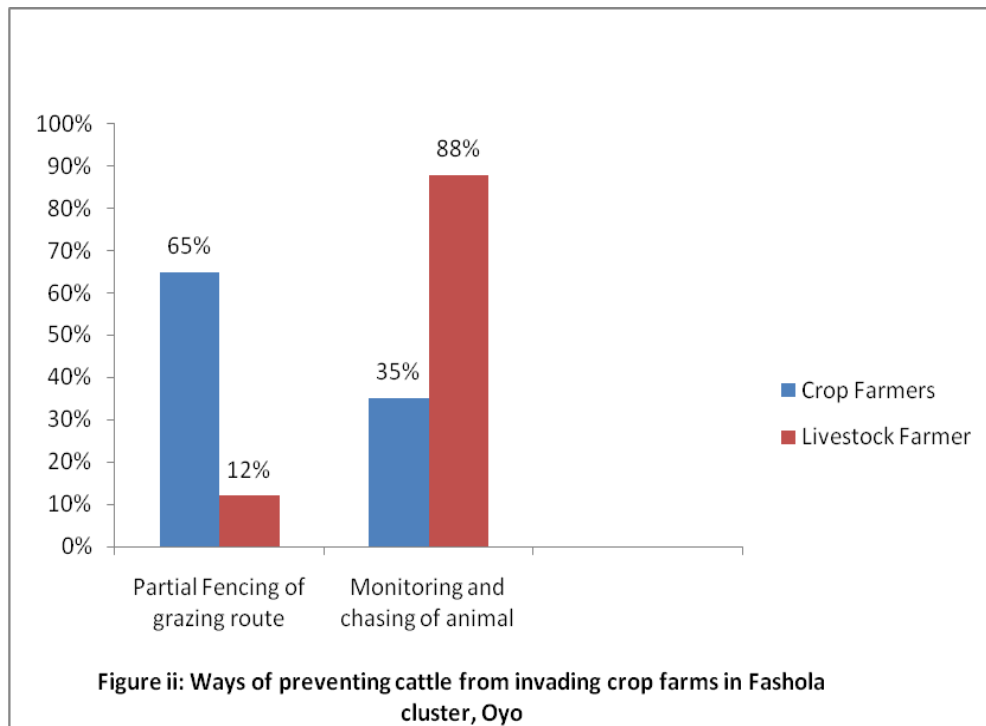
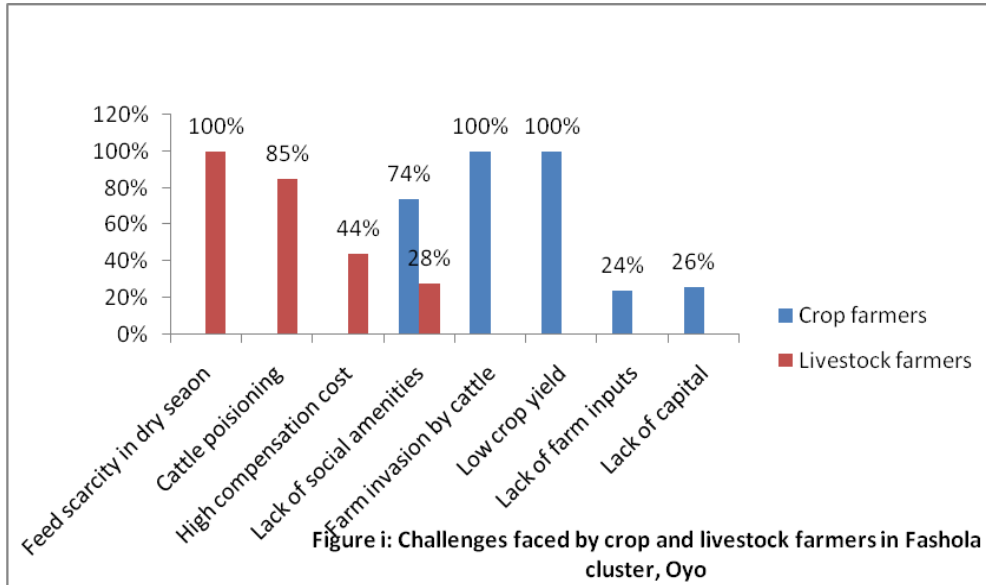
Exemplified in Figure 1 are the challenges faced by livestock and crop farmers in Fashola cluster. The pastoralist (100%) identified scarcity of feed during the dry season while 85% experienced cattle poisoning. The crop farmers claimed that farm invasion by cattle (100%) and low crop yields (100%) were their major challenges. Lack of social amenities was a common challenge mentioned by both the crop (74%) and livestock farmers (28%).

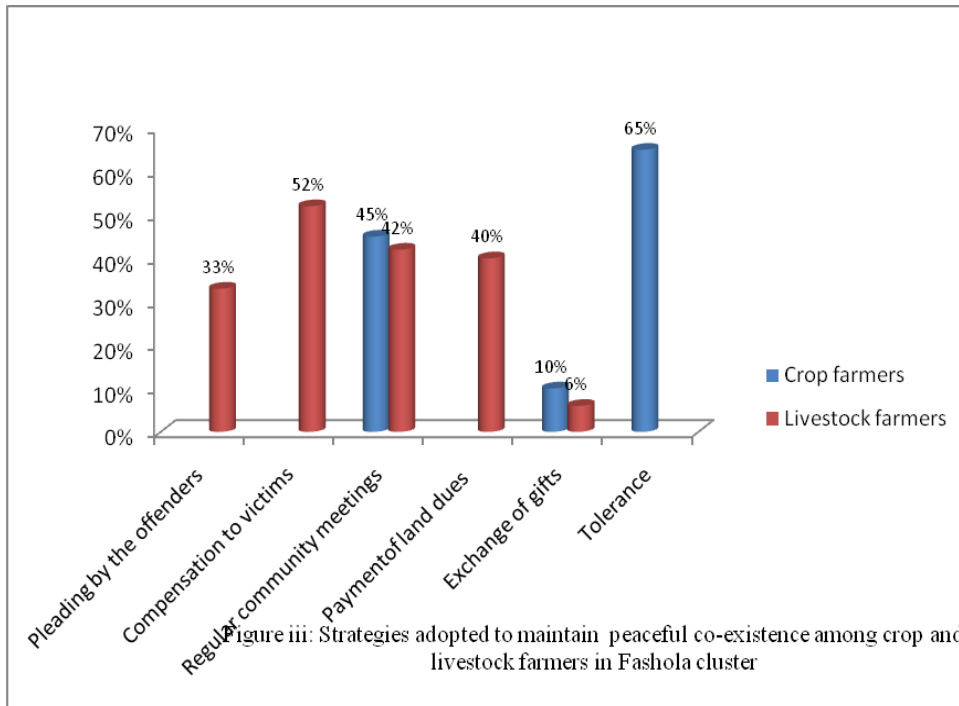
Figure 2 shows measures put in place to prevent cattle from invading crop farms in the agrarian community. About 12% of the livestock farmers and 65% of the crop farmers adopted construction of partial fence to demarcate the grazing routes and crop farms while 88% of livestock and 35% of crop farmers adopted monitoring and chasing of stray animals to prevent cattle invading crop farms.

Figure 3 presents methods adopted for maintenance of peaceful co-existence among

crop and livestock farmers in Fashola cluster. Tolerance (65%) by the crop farmers, compensation to the victims (52%), regular community meetings, livestock farmers (45%)

and crop farmers (42%), timely payment of land dues (40%) and pleading (33%) were adopted by livestock farmers who were victims in the study area.





(Source: Field survey, 2018)

## Discussion

The 100% of the respondents both crop and livestock farmers being male (Table 1) agrees with what (11) reported that ruminant production and marketing in northern Nigeria is a male affair as females are rarely allowed in the operations. (12) also reported the same sex distribution pattern in Mubi area of Adamawa State Cattle market and attributed it to the fact that cattle rearing and marketing task could be tedious along with the culture that do not allow their females to go out for such business engagements.

An age differential was observed between the crop and livestock farmers. The modal age of 21-30 years among the livestock farmers was in accordance with (13), who reported a mean age of 25 of the pastoralist. The age range may be due to the fact that the primary occupation of the Fulani is herding which they

engage with at an early age and also because the pastoralists had more strength and vigour to manage the animals to cover a longer distance in search of feed and water. Majority of the crop farmers in the area of the current study were above 50 years of age and this corroborate the submission of (14). The involvement of the youths in traditional agriculture is dwindling as the younger generation regards general agriculture as a non-attractive job, preferring to go in search of white collar jobs and enjoyment of the basic amenities of the city as reported by (15). Educationally, the crop farmers were ahead of the livestock farmers as 24%, 19% and 1% of the crop farmers had primary, secondary and tertiary education, respectively as compared to those livestock farmers (22%), who had primary education as their highest qualification. The low educational level among

the pastoralist could be due to their involvement in transhumance at an early age of their lives. This observation could be likened to the findings of (16) who reported that around the age of seven, a Fulani boy is circumcised followed by a small ceremony or gathering in their household, shortly after this time, they begin performing herding or farming activities.

The main religion practiced by the entire respondent was Islam, as only 33% of the crop farmers were Christians. This high percentage may be because the pastoralist hailed from the northern part of the country as a larger percentage of the northerners in Nigeria are Muslims. Livestock rearing was observed to be the primary occupation of the pastoralists as the result was also in accordance with the findings of (17, 18) that Fulani is synonymous with cattle ownership and grazing, while their primary occupation is herding. Arable crop farming was the primary occupation of the crop farmers, with special focus on cassava, maize, yam and vegetable cultivation. This agrees with the findings of (19) who reported that the cultivators among whom the pastoralists live were traditionally subsistence farmers.

Other secondary occupation by the pastoralists was crop farming which was practiced by 94% on an average farm size of five acres. This result agrees with (20) who reported that pastoralists are increasingly turning into agro-pastoralists. The purpose of planting was for family consumption and the crops grown were maize, millet guinea corn and little cassava most especially in the wet season. They also engaged in mat and basket weaving while some were casual workers in certain milk collection center in the area. The crop farmers also engaged in other business, indicating-that crop farming alone might not be enough for maintenance of livelihood of farmers. Majority of the respondents had a house hold size between 6 and 10, which is in

line with the report of (18), who reported a household size of 6.15 for the Fulani pastoralist and this may be because they seldom use artificial birth control and they are also polygamous (21). About 62% of the crop farmers had farm size above 10 acres as farm land ownership is based on inheritance which is shared among families. The large proportion of land used for farming was observed to have encroached into the cattle grazing route thereby giving room for cattle invasion into crop farms.

The rearing of cattle together with sheep was mostly practiced by 87% of the respondents and this could be due to the docile nature of sheep and the ease of herding them along with cattle.

The predominant breed of cattle reared was White Fulani and may be because of the unique characteristic of White Fulani, being able to walk a long distance in a pastoral management as reported by (22), or because it is more tolerant to heat as compared to N'Dama and Gudali, and also more resistant to dermatophilosis than the Muturu and N'Dama breeds, resistant to intestinal helminth parasites, and has low mortality rate. All the respondents that reared sheep reared Yankassa breed which was in line as established by (23) that Yankassa breed of sheep have the unique ability to adapt and maintain themselves under harsh environment.

The modal herd size ranged between 45 and 65 animals with about 18% having a larger herd size above 110 animals. It was observed that the ratio of herder to the number of animals herd was 1 to 50. This may be one of the possible causes of invasion in the study area as it may be difficult for one person to control 50 cattle at a time under a grazing system in an open terrain. The purpose of rearing the animals are for milk production and sales of animals on hoof which corroborates with the report of (22) that White Fulani is a dual purpose breed being used for milk, and



draught. The dairy potential of White Fulani is better than most zebus, and is comparable to Kenana of the Sudan. They are good beef animals, which fatten quite well in feedlots and on natural pastures.

Water and feed are vital components in livestock production, water determines the residence of pastoralist in an environment. Sources of water for the animals were rivers, streams, borehole and dam this is in line with what (24) cited that most farms in rural settlements do not have access to a town water supply pushing them to consider alternative sustainable sources of water. The study also revealed that wet season is characterized with abundant forages and the grazing orbit during the wet season is often within 5km of the homestead as also reported by (25). At this period of the year, the herds are kept away from the cropped farmlands. Instantly after harvest, the cattle are allowed to graze on crop residues and harvest remains. It was observed that the pastoralists are faced with the challenge of feed for animals in the dry season and this happens to be the period when animals usually invade crop farms due to the insufficient availability of feed which is in accordance with the findings of (26). The practice during this period was that herds were split into portions and deployed to other areas with greener pasture. Available harvest remains of cassava and maize stovers were grazed on and tree branches especially that of *Darwinius masillae* were cut for the animals. Cassava peels were purchased sometimes or animals taken to garri processing plants to feed on the peels of cassava. Pastoralists paid crop farmers for grazing their crop residues and also purchased cassava peels from them. The cost of such residues (such as corn cobs, corn stovers, soybean hulls and so on), is determined by the crop type and the relationships that exist between the pastoralist and the farmers. In the study area in Baale village, crop residues and harvest remains were

free while graziers pay for cassava peels. This result corresponds with that of (27), who said that crop residues could be harvested and preserved as feed for animals or sold during the critical period of feed scarcity especially in the mid-to-late dry season.

The major challenges faced by the pastoralists were feed scarcity during the dry season and cattle poisoning. The scarcity of feed most especially in the dry season was confirmed by the pastoralist to be on the increase due to the reduction in rainfall and prolonged dry season experienced in the recent time. This could be linked to the impact of climate change on the environment. The shortage of feed was reported by both the pastoralist and the crop farmers to be the factor responsible for animal invasion into crop farm when there is no alternative. It was also reported that the pastoralist valued the life of their animals more than people's lives and properties. The pay back for crop farm invasion was observed to be cattle poisoning as 85% of the livestock farmers experienced it. This commensurate with what (28) gathered that crop farmers were accused of putting poisonous tubers of cassava and other items on the grazing tracks in some part of Oke-Ogun in Oyo state. Other challenges faced by pastoralist were high compensation price and lack of infrastructures. The occurrence of cattle invading the crop farm was predominant which was partly responsible for the low crop yield as indicated by all the crop farmers. This agrees with the report of (29) that reduction in crop yield affected the income of crop farmers due to cattle invasion. This affected the savings, credit payback ability, as well as food availability and economic welfare of consumers who depend on these farmers for food supply. Cattle invasion occurrence may be as a result of the non availability of demarcated grazing routes, the cohabitation of crop farmers and livestock farmers in the same environment, prolonged dry season leading to

scarcity of feed during the dry season and no preparedness by the pastoralist on how to get feed for their ever increasing herd. The ratio of herder to the number of grazing animals could also be responsible for the animal invasion. Other challenge faced was lack of social amenities but the emphasis was much on the crop farmers who claimed that there was no portable water for domestic use.

Monitoring and chasing were methods adopted by crop and livestock farmers to prevent cattle from invading crop farms in the study area. The livestock farmers hired caretakers to carefully monitor the herd based on a standing agreement. The case of cattle invasion into crop farms was ascertained to be mostly caused by migratory pastoralist or newly hired caretakers who were not familiar with the terrain. A pastoralist also established that invasions were done on purpose by heartless herds' men especially in dry seasons when there was scarcity of forages for the animals to graze. Such nonchalant cattle caretakers and pastoralists deliberately often lead their animals to crop farms where devastation of the crop is noticed. Partial fencing of grazing route was also done by both parties by erecting planks at both ends of the crop farms (demarcation) to serve as warning to prevent animals from invading crop farms. This agrees with what (30, 31, 32) reported that, the Fulani herdsman makes very good use of sign language, the cane and verbal instruction to drive the animals, with faster animals taking the lead.

Although, in the 1960s, the government of Nigeria tried to introduce legislation to guarantee grazing routes for the herdsman and to ensure that farmlands were protected but the laws were never enacted, leaving communities to handle related issues related. Tolerance was mostly adopted by the crop farmers to maintain peaceful co-existence with the livestock farmers. Compensation to victims depending on the degree of damage was adopted by the

crop farmers. Regular meetings were organized by village head to deliberate about an issue of concern and how to live together peacefully which was also reported by (13).

### **Conclusion and Applications:**

The study revealed that:

1. Major challenges faced by crop farmers were invasion of crop farms by grazing cattle resulting into low productivity, also 85% of the pastoralists reported the case of cattle poisoning which had a cumulative economic loss on the side of farmers and the country
2. The age of the crop farmers were seen to have contributed to the peaceful co-existence between the crop and livestock farmers, as majority of the farmers were above 50 years and tend to tolerate the livestock farmers, compensations and regular meetings was also held by both parties to giving room for peaceful co-existence in the community.

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