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Challenges of herdsman-farmers' conflict in livestock production in Nigeria: Experience of pastoralists in Kogi State, Nigeria

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Herders-farmers' conflict is wide spread and a formidable challenge to livestock production in Nigeria. The study examined challenges faced by pastoralists in conflict with farming communities. A total of 72 Fulani pastoralists from transit camps were used. Data were collected by use of structured interview schedule, focus group discussion and personal observation and analysed using descriptive statistics and factor analysis. The majority (95.8%) of pastoralists were male, married (80%) with mean age of 39 years and average household size of 11 persons. Herding was mainly for prestige and commercial purposes with average farm size of 240 cattle. Conflicts between pastoralists and crop farmers were caused by socio-economic, security, production practices and institution related factors. Consequently, pastoralists had the problems of insecurity of human and animal lives, displacement and economic losses leading to poor productivity. Therefore, we recommend that all stakeholders (government, non-governmental organizations, extension agencies, rural institutions among others) should intensify efforts to build cooperative and peaceful coexistence between farmers and pastoralists through public enlightenment, education and campaign in agrarian communities. Government and NGOs should promptly intervene with aids/compensation to reduce vulnerability, persistence and further spread of conflict of pastoralist-farmer conflict in communities.

Key words: Displacement, economic, environment, livelihood, resource, security.

INTRODUCTION

Globally, livestock contributes about 40% to the agricultural gross domestic product (GDP) and constitutes about 30% of the agricultural GDP in the developing world (World Bank, 2009). It plays crucial and multiple roles in the livelihood of people ranging from

food supply, family nutrition, incomes, employment, livelihoods, safety net, draught animal power, manure and sustainable land use for agricultural production (Otte and Knips, 2005; Perry and Sones, 2007; Freeman et al., 2007; Herrero et al., 2010; Pell et al., 2010); and accounts

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for almost 30% of human protein consumption (Steinfeld et al., 2006). According to Rosegrant et al. (2001), demand for livestock products particularly milk and meat in sub-Saharan Africa is expected to grow by 3.2 and 3.9% per annum between 1997 and 2020 due to increasing population, income growth and urbanization. Similarly, Thornton (2010), reports that food demand for livestock products will nearly double in sub-Saharan Africa and South Asia, from some 200 kcal per person per day in 2000 to around 400 kcal per person per day in 2050. Unfortunately, United Nation (UN) (2014), reports show that the trend of increased demand is currently not matched by a similar growth in local production within Africa. In sub-Saharan Africa, productivity remains low and average yields per animal are lower than those in other developing regions (Otte and Knips, 2005).

Livestock sector is plagued by several challenges such as lack of adequate supplies of quality feed and pasture, diseases, weak market network, unavailability of adequate water and poor veterinary services (Kassam, 2009; Peeling and Holden, 2004; Mutibvu et al., 2012). Pell et al. (2010), reiterate that the sector is constrained by institutions, markets and policy as well as technical issues. More recently concern on herdsman-farmers' conflicts has appeared in literature and policy discourse as one of the formidable challenges facing livestock production (particularly ruminant) in many developing countries.

Manu et al. (2014) opine that conflict emanates from the insatiable nature of human wants; and competitions for scarce resources are the foremost causes of community or inter-group conflicts. Resource use conflicts/clashes according to Adisa and Adekunle (2010), are becoming fiercer and increasingly widespread in Nigeria. A study of 27 communities in central Nigeria by Nyong and Fiki (2005) shows that over 40% of households surveyed had experienced agricultural land-related conflicts, with respondents recalling conflicts that were as far back as 1965 and 2005. Sunday Trust Newspaper as reported by Okoli and Atelhe (2014), shows that about 13 cases of farmer-herdsman conflicts across states of the federation which claimed 300 lives of the citizens. In Kogi State, there have been cases of conflicts between herders and crop farmers in Igalamela/Odolo, Ibaji/Ofu local governments and host of other local governments over crop destruction by cattle, killing of herders and stabbing of farmers following reprisal attack on different occasions.

The majority of pastoralists in Kogi State involved in the livestock industry are Fulani, accounting for about 90% of cattle herd ownership, which makes up 3.2% of the GDP (Koster and de Wolff, 2012). According to Fabusoro (2004), they are the major cattle breeders, providing the main source of meat, the most available and inexpensive source of protein. Fulani pastoralists migrated into Hausa land from the Senegalese Valley in the Western Sudan (Fabusoro, 2007). They first settled in the Sudan/Sahel

savanna in Northern Nigeria and were forced out by the deteriorating environmental condition, land degradation and the recurrent drought in the Sudan/Sahel savanna during 1960 to 1970. This accounted for the exodus of pastoralists from their home base to the Guinea savanna and even beyond to the forest fringes in the southern part of Nigeria (Fabusoro, 2007). According to Adisa and Adekunle (2010), and Baba (personal communication) the migration of nomadic pastoralists follows a systematic pattern, dictated by variations in rainfall, grazing stock, pasture and water. Gbaka (2014) reiterates that while continually moving toward pasturage, water sources, salt licks, livestock market, the nature of the terrain that allows for un-impeded movement, protective mechanisms for their livestock against the vagaries of nature, they sometimes avoid the tsetse flies, harsh weather, tribal enemies, livestock bandits, tax assessor, and hostile social environments. Besides, such movement serves as a drought coping strategy which historically helps many pastoralists to manage uncertainty and risk in arid lands and to addresses socio-economic objectives such as access to a diverse range of market opportunities. The migratory nature of the pastoralists is a source of potential conflicts as there is intense competition between pastoralists and farming communities.

Similarly, Gefu and Kolawole (2002), observe that arable crop farmers have not only intensified the use of land but also have been exploring other frontiers for farming. Consequently, farmlands that are normally allowed to fallow for natural rejuvenation of the soil are fast disappearing due to intensification of farming activities; so also are grazing lands such as fadama low-land areas, which have traditionally provided dry season grazing to pastoralists. Blench and Dendo (2003) report that expansion of both fadama and horticulture had negative consequences for pastoralists because the southern dry season movement characteristic of Nigerian pastoralists depended on unimpeded access to riverbanks, where grass could be found when the surrounding land was largely devoid of forage. This often generates contention over grazing land, water points and, in some cases, over property rights like land ownership.

Pastoralist-farmers' conflict in Nigeria has persisted and stands out a threat to national food security, livestock production and eradication of poverty with pastoralists often regarded as the most vulnerable. Pastoralist-farmer conflicts not only have a direct impact on the lives and livelihoods of those involved, they also disrupt and threaten the sustainability of agriculture and pastoral production in West Africa (Moritz, 2010). The two groups make their livelihood within the same geographical, political, and socio-cultural conditions, which may be characterized by resource scarcity (Braukämper, 2000) or political inequality (Bassett, 1988) and population pressure. Pastoralists are believed to be more vulnerable compared with farmers because their cattle can be confiscated and/or seized and released only on payment

of a fine. Besides, sometimes they are in the minority and could lack political power to their advantage. Unlike farmers who are increasingly integrated and with appreciable power to maneuver issues, pastoralists often lack western education, stay with increasingly inappropriate models of land tenure and are unable to work within the political system to their advantage (Blench and Dendo, 2003). Additionally, many development initiatives and programmes for addressing rural poverty and resilience have exacerbated the problem of conflicts with greater risk for pastoralism in the Nigeria. Therefore, the study examined challenges of herders-farmers' conflict for livestock production in Kogi State. It specifically sought to:

1. Describe the socio-economic characteristics of pastoralists in Kogi State;
2. Examine conflict factors as perceived by pastoralists and
3. Ascertain challenges faced by pastoralists in Kogi State.

METHODOLOGY

The study was carried out in Kogi State, Nigeria. The state lies between latitudes 6° 33' and 7°49'N and longitudes 6°45' and 7° 49'E. It has a population of 3,278,487 inhabitants (National Population Commission, 2006) with large expanses of fadama lowlands in river basins and stretches of tropical rainforest in the south and western belt of the state. Agriculture is the principal means of livelihood of about 85% of the population with the dominant crops being yam, maize, cassava, cocoyam and tree crops. Other occupations of the inhabitants of the state include fishing done by communities living along the river banks and trading. The livestock kept include cattle, sheep, goats and chicken on free range basis. The migrant pastoralist graze herds mostly in grassy areas of fadama lowlands and the river banks.

The population of the study constituted all Fulani pastoralists in the state. A survey design was used for the study. Out of the 21 local government areas (LGAs) in the state, 16 LGAs are mostly associated with farmer-herder conflict. Nine were purposively selected for the study, representing the three primary agricultural zones of the state. In each LGAs which consists of four transit camps, two herders were randomly selected from each transit camp giving a total of eight herders from each LGAs. This gave a total of 72 pastoralists used for the study. Data were collected through use of structured interview schedule, focus group discussion and personal observation. The respondents provided information on their socio-economic characteristics in the areas of sex (male or female), age in years, marital status measured at nominal levels (married, widowed, divorced and single); educational level elicited as no formal education, primary education, secondary school attended, secondary school certificate (completed secondary school), tertiary (ND, HND, NCE, BSc); Koranic education, and M.Sc./ PhD. Household size was measured by the number of persons living under the same roof and feeding from the same pot. The respondents further indicated the farm size (number of livestock reared), ownership of the herds they reared (hired herder, owner herder, relation of owner) and the motive for animal reared. Information on membership of social organization and source of farm labour (family members, hired labour) were elicited.

Respondents provided their annual farm income from herding

operation in Nigeria naira.

Respondents were requested to indicate on a four point Likert type scale of very great extent (4), great extent (3), some extent (2) and no extent (1) the causes of conflict with crop farmers. Possible causes listed include damage to crops by cattle, blockage of cattle routes with crop farms, pollution of source of water by the pastoralists and others. To identify the challenges of conflict on livestock production by pastoralist, a list of possible challenges of conflict was made available. Respondents were requested to indicate the perceived seriousness of the challenges on a four point Likert type-scale as follows: Very serious (4), serious (3), fairly serious (2), not serious (1). Analysis was conducted using descriptive statistics and factor analysis using principal component method with varimax rotation of Kaiser Normalization. Factor analysis is used mainly to determine some underlying pattern or relationship that exist among variables; discovering a new set of factors; or confirming existing factors as being the true factor(s) (Kleinbaum and Kupper, 1978). The factor loading high under each factor variable (Beta weight) represents a correlation of variables to the identified factors and has the same interpretation as any correlation coefficient. However, only variables with loading of 0.40 and above (10% overlapping variance) (Comrey in Chukwuone et al., 2006) were used in naming factors. Also factors that loaded in more than one places were discarded.

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

Table 1 shows that Fulani pastoralists were predominantly males (95.8%) with mean age of 39 years. Majority (81.7%) of pastoralists were within active years of economic and productive age. This is probably due to the nature of herding work which requires much physical exertion of energy. The dominance of male pastoralist confirms the labour specialization in which herding is the exclusive role of male members of the family. Traditionally, herding is the sole duty of male members of Fulani pastoralist family. In the Fulani culture, labour is specialized, that is, men's work differs from that of women and that of the adult differs from that of the children. Traditionally, female household members are solely charged with culinary responsibilities, weaving and mat making, sales of dairy products and care of disabled animals. Most (80.3%) of the pastoralists were married with average household size of 11 persons. The large family size could be attributed to the teaching of the Islamic faith which permits four wives per adult man and dependence on their biological children for herding operation. A greater proportion (58.0%) of the pastoralists had no western formal education as against 66.2% that had Islamic education. This could affect the attitude and conflict behavior of respondents due to differences in belief and value system.

The majority (81.7%) of Fulani pastoralists owned between 100 and 300 cattle. The average herd size of cattle was 240. Relatively, the herds' size of the pastoralists is large. It is not surprising because Kogi State is naturally endowed with large expanses of unfarmed lands of savanna grassland attractive to

Table 1. Percentage distribution of respondents by socio-economic characteristics of pastoralists.

Socio economic variable	Percentage	Mean
Sex		
Male	95.8	
Female	4.2	
Age		
Below 21	11.3	
21 - 30	15.5	
31 - 40	36.6	38.9 yrs
41 - 50	18.3	
51 - 60	12.7	
61 - 70	4.2	
Above 70	1.4	
Marital status		
Married	80.3	
Widowed	1.4	
Single	18..3	
Educational levels		
No formal education	58.0	
Non formal Islamic education	33.8	
First school leaving certificate	42.0	
Senior school leaving certificate	1.4	
BSC/HND	-	
Formal Islamic education	66.2	
Household size		
Below 10	46.5	
10-19	33.8	
20-29	12.7	11.4
30-39	6.0	
Herd size		
Below100	7.0	
101-200	59.2	239.6
201-300	15.5	
301-400	4.2	
401-500	7.0	
Above500	702	
Ownership of cattle		
Herders	50	
Hired workers	20	
Children	30	
Production motive		
Symbol status	80.8	
Income	19.2	
Membership of organization		
Fulani Youth Association of Nigeria	16.9	
Mayeiti Allah cattle breeders Association	83.1	
Income/year (Naira)		
Below300,000	43.7	
300,001-400,000	18.3	700,000.00
400,001-500,000	8.5	
500,001-600,000	7.0	
Above600,000	22.5	

Table 2. Conflict factors as perceived by pastoralists.

Conflict factors	Socio-economic	Security	Production system	Institutional
Sexual harassment	-0.12	0.82	0.13	0.23
Blocking water source	-0.06	0.57	0.51	-.04
Farming across cattle routes	-0.01	0.09	0.74	-0.06
Farming in fadama areas	-0.33	-0.63	0.37	-0.11
Cultural differences	-0.49	-0.00	-0.19	0.37
Proximity	0.76	0.40	0.05	-0.05
Language barrier	-0.79	-0.36	-0.10	0.06
Limited grazing resources	0.63	-0.24	-0.19	0.23
Farm fragmentation	-0.56	-0.20	0.02	0.28
Farmlands left fallow	0.075	0.005	0.78	0.00
Commercialization of crop residue	-0.47	-0.07	0.54	0.28
Declining influence traditional leaders	0.66	0.46	0.09	0.03
Population growth	-0.61	-0.07	0.20	0.08
Burning of rangeland	0.75	0.03	0.10	-0.12
Claim of citizenship	-0.20	-0.06	-0.08	0.73
Claim of land ownership	-0.35	-0.16	-0.16	-0.60
Farmers beat up herdsmen	0.69	0.00	-0.22	-0.04
Attack of Fulani women	0.05	0.89	0.09	-0.14
Setting traps for herds by farmers	-0.34	-0.51	0.07	0.34

nomadic pastoralists. It has a large expanse of fadama lowlands in the river basins and stretches of tropical forest in the south and western belt of the state suitable for production livestock. This attracts herders to the state, encourages population growth of herds and resultant competition for resources. Consequently, proximity to farming communities and the mere sight of such large number of cattle in the farms can be frightening, unwelcoming and may be a source of conflict. Fifty percent of herders owned cattle, while 30.0 and 20.0% of cattle were owned by hired workers and children, respectively. This suggests that the large stock of herds usually seen grazing fields do not in most cases belong to a single owner but an aggregation of family stock grazed by either the household heads, their children or hired workers. This system of herding also aggravates the problem of conflicts that results from straying animals abandoned by poorly remunerated herdsmen.

The majority (80.8%) of Fulani herdsmen claimed that their herding motive was as a symbol status and for commercial purposes and 19.2% claimed it was for income purpose only. Culturally, ownership of cattle among Fulani pastoralists is a symbol of social status. The greater number of cattle owned, the higher the social status of an individual in a Fulani society. All (100.0%) Fulani herdsmen were members of organizations; while 83.1% belonged to Mayeiti Allah Cattle Breeders' Association (MACBA), 16.9% belonged to Fulani Youth Association of Nigeria (FYAN). The respondents have social affiliation within their societies. This could be a useful tool for conflict management, if effectively

mobilized and institutionally supported. Moreover, membership of social organizations in rural areas is of immense value if such organizations could help members accomplish tasks an individual cannot achieve alone (Ekong, 2010). For instance, Miyetti Allah cattle breeders' association helps to improve herding goals of Fulani nomads in Nigeria beyond the level of an individual herdsman.

Herdsmen-farmer conflict factors

Table 2 shows Varimax rotatory factor matrix of conflict factors as perceived by pastoralists. Four factors were extracted namely socio-economic, security, production practices and institutional factors.

Socio-economic factor

Issues that correlated with socio-economic factors included burning of range land (0.75), farmers beaten up (0.69), limited grazing resources (0.63), farm fragmentation (0.56), population growth (-0.61), language barrier (-0.79) and cultural differences (-0.49). It is surprising that cultural differences, language barrier and population growth have inverse relationship with the latent factor, that is in opposition, perhaps due to low perception of these factors as causes of conflict by the respondents. They constitute key structural factors enumerated by Moritz (2010) as underlying causes of

pastoralists-farmers conflict; which may not be perceived at facial look. In practice, increase in cultural and language divides among disputants worsen the problems of communication and acceptance; and subsequently, exacerbates potential for conflict. Also growth in population of human and livestock increases pressure on land and competition over resources use.

Similarly, limited grazing resources, farm fragmentation, burning of rangeland and attack of herdsman by crop farmers showed positive relationships and significant contributions to the causal factor. For instance, farm fragmentation, which characterized most rural production systems could impede easy control of herds by herdsman. Burning of rangeland often used by pastoralists as a quick option for access to fresh pasture during the dry season intensifies conflict, particularly when fires spread into neighbouring farms causing crop destruction and damage of farm land. Sometimes herdsman are attacked by youth from farming communities due to refusal to comply with agreements, disregard for traditional institutions, and persistent destruction of human life and property. Moreover, limited grazing lands often associated with intensification of farming activities and population growth results to uncontrolled herding by pastoralists. Animals stray into crop farms leading to destruction of crops and farm land. Gefu and Kolawole (2002), observes that arable crop farmers have not only intensified the use of land but have also been exploring other frontiers for farming like expansion of cultivated lands and use of irrigation for dry season production. Farmlands that used to be fallowed for natural rejuvenation of the soil are fast disappearing. Sidi (2009), opines that as arable land are getting scarcer, while demand for grazing areas is on the increase, the unrestricted movement of herders and their cattle would eventually be seen as a threat to crop farmers

Security factor

Conflicts are caused by threats to life and property. Factors that loaded high were sexual harassment (0.82), attack of Fulani women (0.89), setting traps across cattle routes (0.51) and farming in fadama areas (-0.63). Insecurity of household members and animals of pastoralists were largely associated with widespread conflicts in most rural communities in Nigeria (Olabode and Ajibade, 2010; Okoli and Atelhe, 2014). The lives of pastoralists revolve around their livestock and so they could resist any attempt to jeopardize their life or health through animal rustling or traps along cattle routes. Traditionally, *fadama* land in Nigeria is used for rainy season crop production and left fallow for most part of the dry season for livestock grazing. Most herders found relief in pasturing their animals in the uncultivated wetlands during the dry season, but with the advent of

the dry season irrigation projects, herders have been denied access to this dry season grazing resource (Gefu and Kolawole, 2002) and attempts by herders to graze livestock in such land have resulted to fierce conflict. However, herdsman knowledge of farms in the *fadama* areas and avoidance of traps set on cattle routes could minimize conflict with crop farmers. Moral indiscipline of crop farmers toward Fulani women could present an increased potential for conflict with herdsman.

Production practice

Factors that loaded high under production practices of farmers were fallow farmlands (0.78) and farming across cattle routes (0.74). The presence of farms on cattle routes and fallow farmland increase potential for conflict between crop farmers and herdsman. This could be traced to the collapse of the agreement in the 1970s over the use of agreed migration routes in the country, when farmers felt they own land across which cattle move in search of pasture (Blench, 2010). Sometimes, farmers are attracted by the high quantity of manure to farms across cattle routes. Thus, as cattle migrate southward, they wander into the newly created farms resulting in conflict between farmers and herders. Moreover for an average Fulani-herdsman, pastoralism is a way of living, which is reckoned with as a mark of common heritage. In effect, any threat to his herds amounts to a threat, not only to his survival but also to his common destiny (Okoli and Atelhe, 2014). This creates a high risk of conflict between the two resource users. Sometimes, farmers leave their land fallow to allow for revitalization of soil nutrient particularly where there are patches of lands and this serves as grazing land for pastoralists. Consequently farm lands are exposed to destruction by animal hooves and degradation over time. This could spur conflict behaviour and aggravates conflict situation as farmers contend with pastoralists to protect their land.

Institutional factors

This include factors that are related to claim of citizenship (0.73) ownership of land (-0.60). The problems of land ownership and citizenship appear to be critical and persistent issues in herdsman-farmers conflict in Nigeria. Fulani herdsman believe that nobody owns land (land is God's gift) and so, they see land as common property and with this conception of land ownership, they violate avenues that could engender mutual coexistence with farming communities (personal communication). In most communities in Nigeria, herders are given temporary settlement right, which they often over stay and subsequently demand equal right of tenure and exploitation. This eventually results to conflict in almost all states of the federation. Land is the resource base of

Table 3. Challenges of conflict in livestock production.

Challenges	social	Displacement	Economic
Break down of law and order	-0.31	0.34	-0.11
Unsafe grazing fields	-0.38	-0.46	0.18
Poor animal health	0.68	-0.07	-0.39
Cattle abandonment	-0.28	0.75	0.21
Displacement	0.05	0.69	0.16
Insufficient food for livestock	0.34	-0.31	-0.04
Insufficient beef supply	0.21	-0.02	-0.60
Over concentration of cattle	-0.25	-0.08	0.03
Outbreak of hunger/diseases	.0.13	0.05	-0.30
Loss of lives	0.69	0.09	0.44
Loss of income	-0.39	-0.49	-0.06
Loss of animal	0.20	-0.04	0.74
Migration of herders	0.44	0.58	0.07
Forced ejection	-0.06	0.70	-0.19
Poisoning of livestock water source	0.06	0.47	0.50
Destruction of lives and property	0.23	0.33	0.75
Increased number of widows and orphans	0.12	0.28	0.15
Destruction of mutual trust	0.76	-0.03	0.04
Proliferation of fire arms	0.74	0.06	0.00

pastoralists and according to Sandford and Habtu (2000) are used with specific access mechanism and tenureship. Tenuche and Ifatimehin (2009) reported that it is a source of major conflict in Benue State, accounting for about 30% conflicts in the state. The problem of insecure land tenure system can further hampers equitable resource management which could lead to conflict.

Challenges of herdsman-farmers' conflict in livestock production

The principal component analysis identified three major challenges of herdsman-farmers' conflict to livestock production. They included insecurity of life, displacement and economic factors (Table 3).

Social challenge

The results show that conflict between pastoralists and farming communities resulted to destruction of mutual trust (0.76), proliferation of small arms (0.74), poor animal health (0.68) and migration of herders (0.44). In the past, herdsman and crop farmers had an interdependent relationship based on the local exchange of dairy products for grain, cereal residues and fertilization of farmland through animal dung and the periodic sale of animals. Mwamfupe (2015) opines that it is characterized by both conflict and complementarity and is actually two faces of the same coin. However, when conflict between

the two resource users occurs, it affects the mutual trust that might have existed before the outbreak of conflict, causing either side to view the other with contempt and some level of mistrust. Conflict breaks down symbiotic relationship and harmony required for peaceful co-existence for enhanced crop and livestock production. A good number of herdsman owned firearms as a means of self defense and are always battle ready. This confirms a new dimension of militancy introduced into farmer-herder conflict (Abbas, 2009), which is associated with the involvement of aggressive Udawa and Bokoloji pastoralists from northern Borno. This can result to loss of human and animal lives leading to frustration and decline in productivity of pastoralists. Furthermore, conflict increases health risk for pastoralists and their livestock because of ejection and forced migration of herdsman, whose movement is determined by availability of veterinary services, subdued tsetse fly environment and other productive resources. Also movement close to dense population adversely affects their survival because it results in scarcity of grazing land and over concentration of cattle in an area.

Thus, the pastoralists are often considered more vulnerable in conflict situations than crop farmers in an environment of absence or poor access to veterinary services and health facilities resulting in the loss of lives and poor animal health. Overall, conflict negatively impacts on the social, human and physical livelihood assets of pastoralists. It leads to loss of productive resources, affinity and common voice critical for the wellbeing and survival of pastoralists.

Pastoralists' displacement

Conflict largely affects movement and migration of herdsmen and their livestock. Factors that loaded under this were cattle abandonment (0.75), forced ejection (0.70), displacement of herdsmen (0.69), loss of income (-0.49) and unsafe grazing field (-0.46). Conflict in agrarian communities negatively affects access to grazing fields, lives and property which may lead to abandonment of cattle and relocation of herdsmen. Forced ejection of herdsmen could be as a result of uncompensated damages done in farming communities where they were previously accepted before outbreak of conflict. Cumulatively, these have ripple effects both on the productive resources, productivity of livestock, and income, food, nutrition and health security of pastoralists. Displaced herdsmen often lose requisite livelihood assets ranging from pasture land, animals/foundation stock, labour, health facilities, market, banks, and group alliance. Also livelihood decision is disrupted and made more vulnerable to conflict and other environmental factors. It could further precipitate to over concentration of cattle in other locations and consequently, increase the area of the conflict. According to Zinicita (2011), the negative effects of conflict are an increase in stress for the disputants, decrease in production, degradation of relationship, worsening cooperation, and increase in restricted areas and possibilities of violent conflict. The resultant effects may be breakdown of social, economic and political structure of farming communities.

Economic factors

The variables that had significant influence were wanton destruction of lives and property (0.75), loss of animals (0.74), and insufficient beef supply (-0.60). Conflict leads to wanton destruction of properties, human and animal lives which impacts on availability and access to sufficient beef, income and wellbeing of herdsmen. The result confirms Gbaka (2014) who observed that significant loss of lives and property has occurred in many parts of Nigeria including Katsina, Plateau, Taraba, Kwara, Nasarawa, Adamawa, Gombe, Yobe and Kebbi States. In the Guinea Savannah area of Kwara State, scholars also reported that out of about 150 households interviewed, 22 reported losses of livestock, while eight households reported loss of human lives due to pastoralist-farmers conflicts (Olabode and Ajibade, 2010; Fiki and Lee, 2004). Pastoralists experience huge economic losses from incessant conflicts with farming communities which subsequently affects investment in production. In addition to loss of properties, life and animals, often much income is expended in the payment of compensation and arbitration of cases. Invariably, the livelihood capabilities and productivity of livestock are undermined and compromised.

Conclusion

Conflict between pastoralist and farmers in agrarian communities presents a formidable challenge to livestock production in Nigeria. It is associated with both structural issues like population, cultural, political and ethno-religious differences as well as unproductive conflict behaviors and struggle for livelihood survival by the disputants. The results point to problems of incompatibility of livelihood strategies, competition for access and use of natural resources such as land and water. Pastoralist-farmers' conflict has production and economic consequences for herding. Pastoralists' assets both in terms of human, physical, social, economic are affected, hence productivity and sustainability of the sector will be compromised. Therefore, we recommend that all stakeholders (government, non-governmental organizations, extension agencies, rural institutions among others) should intensify efforts to build cooperative and peaceful coexistence between farmers and pastoralists through public enlightenment, education and campaign in agrarian communities. Government and NGOs should promptly intervene with aids/compensation to reduce vulnerability, persistence and further spread of conflict of pastoralist-farmer conflict in communities. Also, the need to enforce policies that ensure strict compliance to grazing reserve and migration routes is an imperative for sustainable management of herdsmen-farmers' conflict in agrarian communities.

CONFLICTS OF INTERESTS

The authors have not declared any conflict of interests.

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