Drivers and Socio-Economic Implications of Farmer-Grazier Conflicts in the Ndu Sub-Division, North West Region-Cameroon

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ABSTRACT

A key global factor that has neutralized the prospects of agricultural production most especially in developing countries is the incidence of farmer-grazier conflict that has become a new reality in Ndu Sub-Division. This study examines the drivers and socio-economic implications of farmer-grazier conflicts in Ndu Sub-Division. It was an investigatory and interrogatory study that adopted the mixed research design, involving the qualitative and quantitative research techniques. Primary data were sought from 300 farmers (food crop farmers, pastoralists and agro-pastoralists) using questionnaires, interview guides, field observations and interrogations; complemented by secondary data extracted from published related articles, magazines and databases. Quantitative data were analyzed using inferential statistical techniques, while qualitative data were analyzed using descriptive techniques. The results showed that a majority (64%) practice crop production, 30% are into pastoralism while 6% practice mixed farming. More so, farmer-grazier conflicts have been fluctuating over the years with about half (40%) occurrence in the months of August-October and march-April (30%) which are characterized by intense agricultural activities, while 30% occur randomly across other months. The struggled to amass land by farmers, resource scarcity, and land tenure besides crop destruction by animals are the main drivers of these conflicts. The socio-economic implications of these conflicts center on falling agricultural production, poverty, forceful migration and interruption of social cohesiveness. The work concludes that agriculture remains a panacea and a springboard to the population in Ndu Sub-Division, and recommends that objective and holistic measures such as the intensification of alliance farming system, land use planning and effective conflict resolution platforms be design to defuse conflicts and revamp staple agricultural activities in this Sub-Division

Keywords: Drivers, farmer-grazier conflicts, socio-economic implications, Ndu Sub Division, Cameroon.

INTRODUCTION

Due to the purpose of food security, many agrarian communities in the world today are characterized by mixed farming system (food crop production and livestock production). One of the common farming practices is agro-pastoralism which refers to a livelihood strategy that involves growing of crops and keeping of livestock by the local communities (Amos, 2013). This kind of livelihood significantly relies on rainfall patterns and the availability of natural pastures. Across the African continent, 268 million people practice pastoralism, both as a way of life and a livelihood strategy, contributing between 10 to 44 percent of the GDP of African countries (Abbass, 2012). The practice of these agricultural systems largely depends on the rainfall patterns as well as the availability of pastures (Brandstrom *et al.*, (1979). In Africa, data from the 2014-2015 and 2016-2017 annual agricultural censuses showed that agro-pastoralism is practiced throughout Tanzania's mainland with Mwanza region having the highest number of agro-pastoral operators (National Bureau of statistics (NBS), 2016 & 2018). In Mali, over 70% of the labour force is employed in the agricultural sector and livestock sector account for more than 40% of the GDP in agriculture (FAO, 2015).

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With regards to the perennial and the intergenerational benefits that agro-pastoralism offers to many agrarian communities, it has been fraught by protracted conflicts between food crop farmers and herders. As stated by Flintin *et al.*, (2021), farmer-grazier conflicts in Africa have received heightened attentions in the media, academic circles and policy-making contexts, with attendants concerns about increasing and intensifying levels of conflicts between groups. This was also stressed by the African Union (2018), indicating that conflicts between food crop farmers and herders in the African union has taken more lives than terrorism, and the statistics documented by the Guardian report of 2018 revealed that in the West region of Africa, conflicts between the aforementioned farmers have resulted to the death of more than 15.000 people. It has however been noted that most of these agro-pastoral conflicts have occurred in Nigeria whereby Akinwotu (2021) described it as the "country's deadliest security crisis."

Additionally, the struggled to amass land for grazing has been one of the principal causes of farmer-grazier conflicts in most African states and this has been common in Nigeria which is home to the largest pastoralists group in West Africa (UNOWAS, 2018). As established in the findings of IEP (2015), the Fulani militants in Nigeria have very localized goal which is mainly to seek greater access to grazing lands for their livestock. No media has consistently given a narrative on the actual cause of farmer-grazier conflicts in most African regions but the scientific papers of Boateng (2022), corroborated by Sun (2022) and Chime (2021) revealed that the deliberate destruction of crops by pastoralists, cattle rustling by bandits, destruction of farmlands, and the terrorization of farmers by non-resident herders who invade farming areas illegally and climate induced scarcity of pasture and water are the main drivers of farmer-grazier conflicts in most regions of Africa.

At the national level, farmer-grazier conflicts have been recurrent in most agricultural landscape across Cameroon. For example, a large fraction of subsistence farmers in the Adamawa and Northern regions of Cameroon have borne the brunt of farmer-grazier conflicts living many individuals homeless and instigating forceful migration into hostile areas such as the Sub-Saharan Africa (FAO, 2018). Furthermore, the Fungong division is a classic example of areas characterized by protracted farmer-grazier conflict in Cameroon, common between the Fulani who left Nigeria, flee and forcefully colonized the area (Amos, 2013). Ndu Sub-Division with it heterogeneous population is not an exemption of farmer-grazier conflict. The area has been plagued by these conflicts overtime and they have instigated enmity, tension, grievances, and unfriendly competitions within communities. The reasons for these conflicts and their socio-economic implications formed the core of this work.

Statement of the problem

Ndu Sub-Division overtime has been a lucrative agrarian community with livelihoods of the local populations hinging on agro-pastoralism. These activities have been instrumental to the local population through employment opportunities, income generation, and the sustenance they offer. Food crop farming has been the prior activity conceived by the Wimbum (natives) and thereafter, a diversification option was adopted, involving livestock farming by the Mbororos (none-natives). Down memory lane, the practice of these farming systems was collaborative and with symbiosis among farmers. Today, the increase in scale and intensification of livestock farming and the sedentary approaches adopted by most livestock owners have upset the interdependence among farmers. Large expanses of farmlands have been amassed by livestock owners who through bribery and corruption gain favoritism from the customary councils considered by food crop farmers as corruptive commissions. This faulty practice has rendered a majority of food crop farmers with unsustainable portions of arable lands. At present, arable lands which were temporarily apportioned to the Mbororo natives for grazing, especially during transhumance have become inventories of mosque structures and permanent Muslim settlements thus, leading to reductions in the sizes of arable land for food crop farmers. Mistrust, tensions and retaliations have been the fabrics among these farmers. The wealthy pockets of the Mbororos have always swept the plethora of complaints laid by food crop farmers to state authorities under the carpets, ensuring that solutions remain unsubstantial. Rapid environmental changes have instigated resources deficiency (pasture, moisture and soil fertility), fueling situation whereby farmers cherished grazing fields in utilizing virgin soils so as to spike harvests, meanwhile, livestock owners struggle to exploit the available wetlands and exposed crop fields so as to secure animal resources. The infringement of boundaries has been viral and an emblem for potential conflicts. Besides, severe tussle begins whenever animals break into farmlands and destroy crops. Food crop farmers at times neglect the agro-pastoral resolution commissions,

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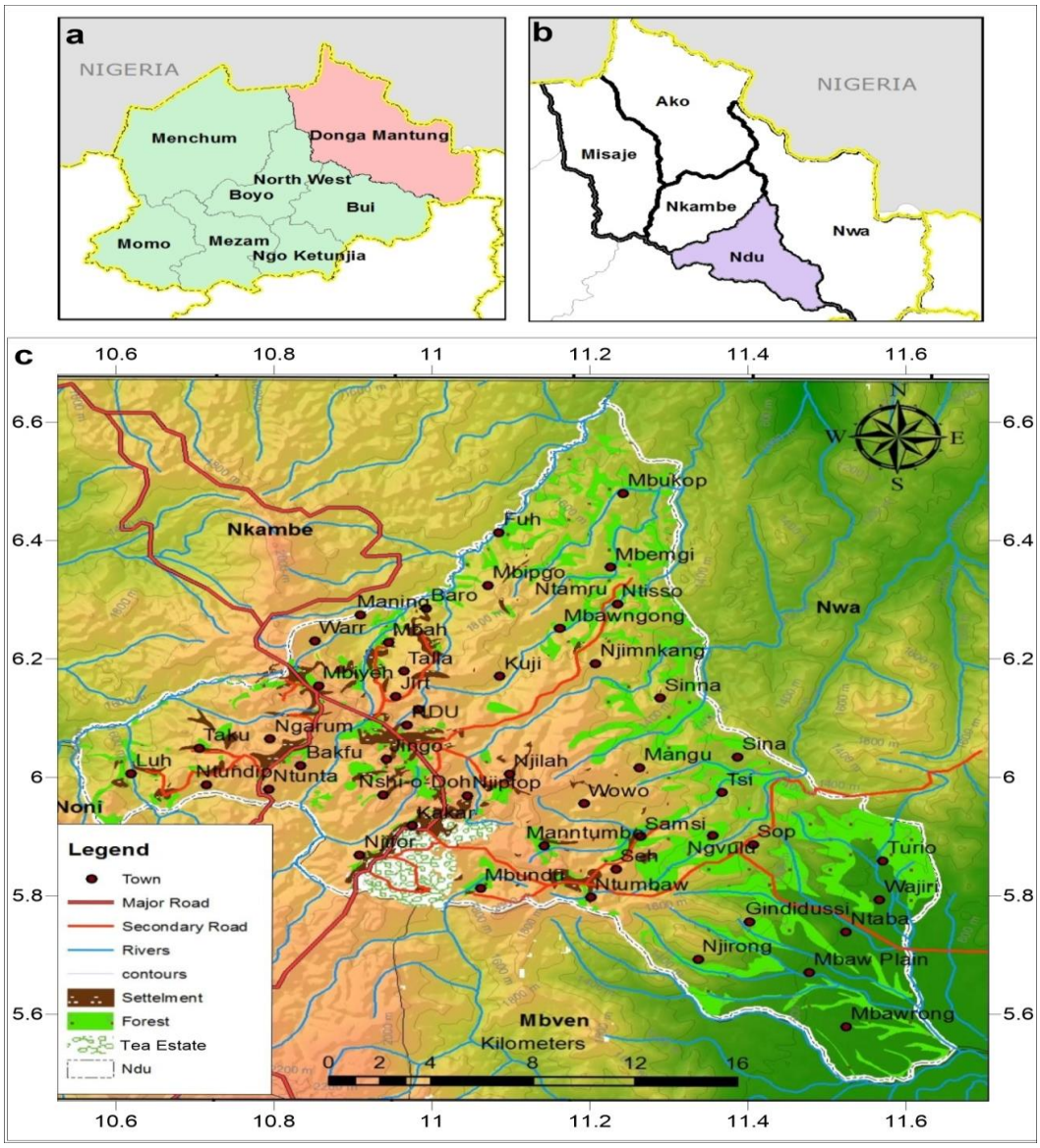
terming them as being corruptive and go into physical confrontations with herders and herds. They described the current situation as neglect of customary rights, concluding that their feelings of belonging and the perennial benefits they derive from this worthwhile agro-ecological zone have been dwarfed. This paper therefore identifies the causes and socio-economic implications of these conflicts and proposes sustainable measures which can revamp symbiosis among these farmers and promote sustainable food production.

Location of Study Area

Ndu Sub-Division lies between Latitude 6º20" and 6º40" North and Longitude 6º25" and 11º20" East of the Green Which Meridian. It covers a total surface area of 1350sqkm. Ndu is bounded to the North by Nkambe Central, to the West by Nwa Sub-Division, to the East by Nkum Sub-Division, to the South by Mbiame (Bui Division), to the Southwest by Nkum Sub-Division (Bui division). It is the headquarters of Ndu Sub-Division (Ndu Council, 2010).



Map 1: Location of Ndu Sub-Division

a=Donga-Mantung Division in North West Region

b=Ndu Sub-division in Donga Mantung Division

c=Layout Map of Ndu Sub-Division

Source: Adapted from the Topographic Map Sheet of Nkambe (Nformi, 2016)

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LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

A study by Bukari *et al.,* (2018) in Ghana estimated that over 40 farmers have died from farmer-herder clashes in the Agogo area, while Konkomba farmers killed over 40 Fulani herders in the Gushiegu area. As stated by Alhassan (2017) and compounded in Yakubu *et al.,* (2020) In numerous incidents, violence between farmers and herders has been triggered by the destruction of farmlands by cattle or by the pollution of shared water resources (Tade and Yikwabs 2019, Otu *et al*., 2020). Furthermore, violent clashes between farmers and graziers are becoming more frequent and intense because of climate-induced drought, land scarcity and tenure insecurity, agricultural expansion, and commercial land grabbing (Kuusaana and Bukari 2015, Akov 2017). As stated in Bukari and Schareika (2015) and Olaniyan *et al.,* (2015), drought, desertification, decreasing grazing land, and declining water resources are forcing herders to move into new territories near farmlands and agricultural communities, triggering fresh clashes and reigniting old ones. While intensive competition over declining resources, especially land and water, is at the core of these conflicts, sometimes territory, religion, language, ethnicity, and land rights also play important roles in encouraging them. In the perspective of Kuusaana and Bukari (2015), across the Sub-Saharan region, drivers of farmer-grazier conflict center around cultural differences, while Bukari *et al.,* (2018) stated that stereotypes and biases, land tenure, insecurity, and climate induced environmental factors, remained the main cause of these conflicts. Scholars like Adams et al., (2019) and Walwa (2020), concluded that the struggle over land-based resources is a major driver of these conflicts, while Dimelu et al., (2016) and George *et al.,* (2021), added that, as land, grass, and water become scarce, farmers and herders compete among themselves to outsmart each other. Furthermore, large-scale land acquisitions have also restricted land use for both farmers and herders, triggering conflicts among farmers, herders, and investors (Bukari et al 2018).

In June 2018, the British Broadcasting Corporation reported that 86 people had died, and 50 houses had been burnt in Nigeria's plateau state due to violent clashes between farmers and Fulani herders (BBC News 2018). Otu *et al.,* (2022) noted that women are amongst the most affected in the protracted conflicts between the farming and pastoralists communities, with many of them displaced, widowed, and generally suffering economic, social and psychological violence in several communities. George *et al.,* (2021) noted that larger-scale violence renders large areas dangerous and insecure and drives farmers and herders into smaller spaces, contributing to 'resource scarcity', and fueling farmer-herder conflict. 'The growing farmer-grazier conflict poses geopolitical and socioeconomic stressors like population displacement, terrorism, economic stagnation, impacts to infrastructure, and social unrest' (PNNL, 2022).

RESEARCH METHODOLOGY

The study was investigatory and interrogatory in nature and adopted the mixed research design, involving the quantitative and the qualitative techniques. The investigatory approach paved ways for enquiries on the factors responsible for farmer-grazier conflicts in the area, while the interrogatory approach facilitated inquiries on land allocation strategies among farmers within Ndu Sub-Division. After an accomplished field reconnaissance survey, areas characterized by intensive and extensive agro-pastoral activities and those that have witnessed farmer-grazier conflicts were demarcated. Developed questionnaires were administered to 300 farmers selected through stratified random sampling technique involving food crop farmers, pastoralists and agro-pastoralists. Other primary data sources were interview guides, focused group discussions, field observations and interrogations, complemented by secondary data extracted from consultative online and offline libraries, published related articles, Newspapers and agro-based institutions (MINEPIA and MBOSCUDA). Data collected during field survey were assigned codes and themes and imputed on Excel Spreadsheet Version 19 and exported to SPSS Version 20.0 where a normality check was conducted. Inferential statistical technique facilitated analysis of quantitative data while the descriptive statistical technique addresses the qualitative data. Frequencies, percentiles, standard deviations, ranges and relationships were obtained. Derived outcomes were presented on pie-charts, histograms, graphs and figures. Photographs taken during fieldwork displayed the state at present. Ethic-wise, permission was sought from the various heard of clans and other traditional rulers before consulting some village forums for data collection especially those on farmer-grazier conflicts. Furthermore, people's responses were kept confidential while measures against Covid-19 and Cholera pandemic were strictly implemented. The study area was too large making it difficult to move from one village to another thus, a field assistant was hired to ease data collection. Also, significant cultural differences among

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the farmers coupled with the protracted Anglophone crisis made collaboration and data collection very difficult. With regard to these, some data were collected through referrals and others through phone calls

RESULTS

Under results, the socio-economic characteristics, different farming systems and agricultural species have been analyzed along with the seasonal and annual trends of farmer-grazier conflicts in Ndu Sub-Division. Furthermore, the causes and the implications of these conflicts have been analyzed, beside farmer's adaptation strategies.

Socio-demographic characteristics of farmers

The main aspects of socio-demographic characteristics analyzed in this paper are the gender, ages, and household sizes (Table 1)

Table 1: Socio-demographic characteristics farmers

Variables	Dimension	Frequency	Percentage (%)
Gender	Male	120	40
	Female	180	60
Age-ranges	<20	40	13.3
	20-40	90	30
	41-60	128	42.7
	>60	42	14
Monthly income	<50.000frs	213	71
	50.000fr-100.000frs	70	23.3
	>100.000Frs	17	5.7
Household size	<3	10	3.3
	3-5	123	41
	6-8	130	43.3
	9+	37	12.3
Education level	No Education	10	3.3
	Primary	143	47.7
	Secondary/High school	93	31
	University	11	3.7
	Informal education	54	18

Source: Fieldwork (2024)

As regards the information on Table 1, 60% of farmers were females meanwhile 40% were males. The disparity in this selection was due to the fact that women do more of agricultural activities than men in the area. As concern their ages, 42.7% were of ages 41-60, 30% were 20-40, 14% above 60 years while 13.3% were below 20. A majority were of the working age because agro-pastoral activities demand enormous labour and strength. As to their monthly incomes, 71% earns less than 50.000 FRS, 23.3% earns from 50.000-100.000FRS, whereas 5.7% earns above 100.000 FRS. Regarding their household sizes, 43.3% constitutes a household size of 6-8 persons, 41% are 3-5 persons in a household, 12.3% are 9 and above while 3.3% are those of less than 3 persons. Notably, 47.7% attended primary education, 31% attended secondary, and 18% attended informal education. More so, 3.7% were university graduates and 3.3% had no education

Agro-Pastoral Practices and Systems in Ndu Sub-Division

During the course of the study, prior investigations were conducted on the species of agro-pastoral production practiced in Ndu Sub-Division. Analysis revealed the results as presented on Figure 1.

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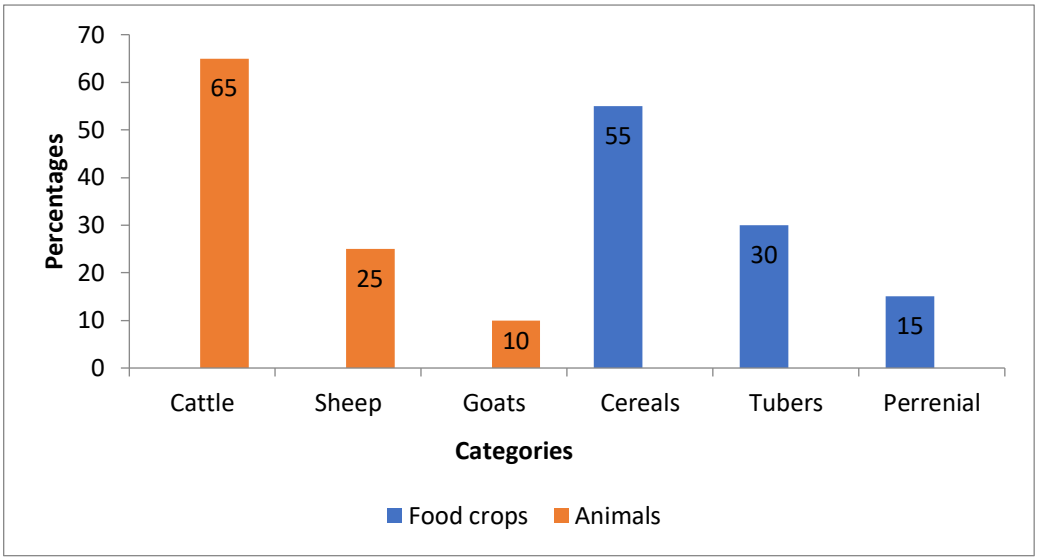

Figure 1: Species of agro-pastoral practice in the Ndu Sub-Division

Source: Fieldwork (2024)

As presented on Figure 1, 65% of livestock farmers are cattle graziers, 25% rear sheep while 10% keep goats. Regarding food crop production species, 55% of farmers cultivate cereals such as maize, soya beans and beans, 30% grow tubers such as cocoyam and potatoes, while 15% grow perennial crops such as banana and plantains. This analysis was succinct by investigations on the common agricultural systems practiced in the area. Results revealed that farmers practiced different systems of agro-pastoralism (Figure 2).

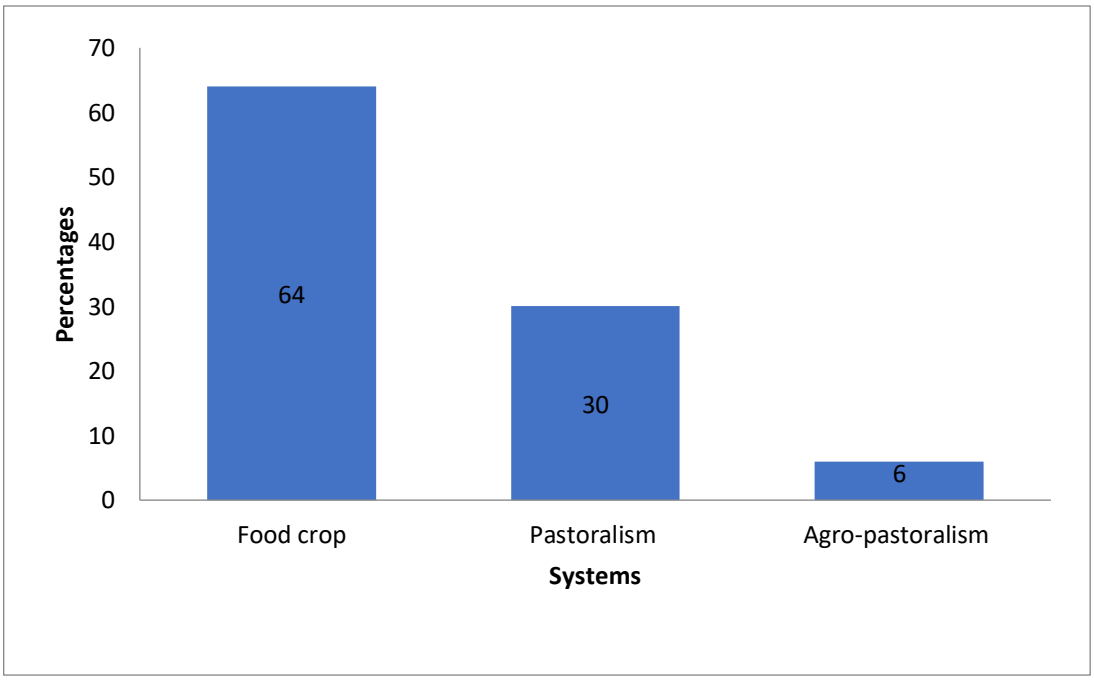

Figure 2: Common agricultural systems practiced in the Ndu Sub-Division

Source: Fieldwork (2024)

Figure (2) reveals that 64% of the populations are pure food crop farmers cultivating cereals, tubers and perennial crops, 30% are pastoralists who do rear animals such as cattle, sheep and goats while 6% are agro-pastoralists involving food crop production and livestock keepers. Considering the food crop practicing methods/techniques, 70% of the farmers are into mixed-cropping, 14% are into agro-forestry and 10% constituted mixed farming. More so, approximately 6% practice crop rotation. Furthermore, pastoralists practice more of transhumance (54%), nomadism (40%) and ranching (6%).

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Plate 1: Different farming fields in the Ndu Sub-Division

Source: Fieldwork (2024)

Plate 1 (a) shows an overview of crop fields cultivated by food crop farmers in Kakar village while plate 1 (b) shows evidence of livestock grazing field in Sop village within Ndu Sub-Division.

Causes of farmer-grazier conflicts in Ndu Sub-Division

Through structured interviews, surveys, interrogations and questionnaires as well as direct field observations, findings revealed that there are many factors responsible for farmer-grazier conflicts in Ndu sub-division. The most common and tedious factors are discussed in the subsequent paragraphs.

i. Crop damage and animal rustling: Most of the farmer-grazier conflicts are caused by animals destroying of crop fields which are often either done intentionally by livestock herders who direct animals into crop fields or when animals stray, break and destroy crop fields. There are periods with abject pasture scarcity in most grazing communities in Ndu Sub-Division whereby herders in the course of frustration intentionally direct their animals into people's farmland to eat up farm products. Such ill practices usually result into serious retaliation by food crop farmers who happened to be victims. They either confront them physically or take them to any local council or directly reporting to some legal offices such as that of the Senior Divisional Officer or police stations of Ndu Sub-Division. Farmer-grazier conflicts are also spike by animal rustling whereby unknown individual batched into grazing fields or animal ranches and steal animals. However, crop destructions by animals remained a principal cause of farmer-grazier conflicts in this area, unlike animal rustlings (Plate 2)

Plate 2(a&b): Proves of crop fields encroached by animals in Ndu Sub-Division

Source: Fieldwork (2024)

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Plate 2 (a) shows a piece of cropland destroyed by stray animals while plate 2 (b) shows crop farmland encroached by a herd of cattle. Both plates also show the vulnerability of fenceless farmlands to animal destructions in the area**.** Such encroachment usually results to a serious crop damage and food crop farmers often retaliate by either physically attacking the cattle with local tools or kill them with a poisonous substance.

ii. Competition for land acquisition: Because of the segregation that exists in Ndu Sub-Division among farmers, there are series of conflicts resulting from the struggle over land acquisition. Food crop cultivation is mostly done by the Wimbum who are the natives of the area while livestock keeping is done by the Mbororo who are non–natives. Because of the increase in the scale of farming activities and animal herds, which have been associated by rapid environmental changes, land has become insufficient to contain both farming practices. Because of land scarcity, food crop farmers who claimed their customary rights of land ownership and expect greater proportions of the arable land usually go into conflicts with the Fulani who are insidiously acquiring mass portions of land through bribery and by forceful acts. Wetlands and marshlands have become competitive spots characterized by tensions, grievances and mistrusts among these farmers. There have also been perpetual boundary issues among these farmers as one tries to extend the scale of either farming or grazing area to the other's site which sometimes leads into confrontation, resulting to the death of, animals, herders or food crop farmers. (Plate 3)

Plate 3: Infringements of crop and grazing fields in Ndu Sub-Division

Source: Fieldwork (2024)

Plate 3 (a&b) show evidences of boundary fringed between food crop fields and grazing areas in Ndu Sub-Division (a. Njirngo & b. Tallah, villages). From these photos, it is observed that farmlands have rapidly fused into grazing fields blending the existing boundaries and exposing crops to animal destructions (a potential for farmer-grazier conflicts). With this exposure, since mostly of the farmlands are not fence, animals easily extend beyond limits and encroach cropping fields.

iii. Resource scarcity: A principal driver of farmer-grazier conflict**s** in Ndu Sub-Division is resource scarcity. The natural vegetation, rivers, and marshlands that existed in the area years ago that promoted this remunerative agricultural practice is no longer available today. Most grazing zones are void of staple pasture and sufficient water sources fully needed by food crop farmers and herders. False and late onset of rainfall, pronounced breakings during the raining season and seasonal fluctuations remained classic characteristics within these farming zones; affecting food crop production and irreversible decline in herd sizes. The current interests of most farmers circulate around suitable environments with staple pasture and water resources which are limited in their numbers and sizes. The mad rush among farmers to colonize these resourceful areas has resulted to poorly and disproportionate allocations, triggering tensions, mistrust and serious conflicts among farmers. Plate (4) shows proofs of resources scarcity in the area

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Plate 4: Manifestations of seasonality on agricultural fields in the Ndu Sub-Division

Source: Fieldwork (2023)

Plate 4 (a) shows abject degradation of pastures and moisture deficiency within grazing zones while 3 (b) shows the severity of seasonality on farmlands. During such periods, farmers move toward areas with the needful resources with contracting roles which spur controversies among them. For instance, livestock keepers forcefully move into wetlands to seek pastures for their animals and in the course of doing this, they trespass boundaries while livestock divert into nearby farmlands and destroy seasonal crops. On the other hand, due to soil moisture deficiency in upland environments, food crop farmers move into nearby wetlands which are dominated by livestock keepers. In the course of cultivation, they extend farmlands beyond their limits in order to enhance crop yields, and this results into serious conflicts with livestock keepers.

iv: Land tenure and the claimed of property rights: The native claimed of customary rights over the entire land in Ndu Sub-Division by the Wimbum has spiked many conflicts with the non-natives Mbororos. This encourages conflicts because such conception has made the Wimbum natives to neglect some prominent projects which could be done around farming zones in order to limit the destructive capacities of livestock. An example of such an activity is fencing of food crop areas to prevent livestock invasion. On the contrary, the Mbororos claim that the land they occupied was officially and legally handed to them by state authorities. Because of this misapprehension, they have been operating in the area without consulting or collaborating with the Wimbum populations claimed land ownership. The claim of the Wimbum natives over land ownership is therefore based on an intrinsic/inherent perspective while the Mbororo claims center on political perspective. These contrasting views have over the years initiated serious competitions and disputes among farmers.

Trends of farmer-grazier conflicts in Ndu Sub-Division

Due to different values and beliefs, personal clashes, role ambiguity, power imbalance and regulatory challenges, farmers have experienced different trends, magnitudes, and scale as well as different seasons characterized by farmer-grazier conflicts in Ndu Sub-Division. Farmer-grazier conflicts have been analyzed into yearly and seasonal trends as presented in the subsequent paragraphs

i. Annual trends of farmer-grazier conflicts in Ndu Sub-Division

Farmer-grazier conflicts in Ndu Sub-Division have been fluctuating within the years with few conflicts between 1995-1990 (Graph 1). This is explained by the fact that during these years, there were little agricultural activities coupled with the low population occupying this Sub-Division. Also, there were extensive grazing fields which could serve many livestock keepers whom by then had fewer animals. More so, farmlands

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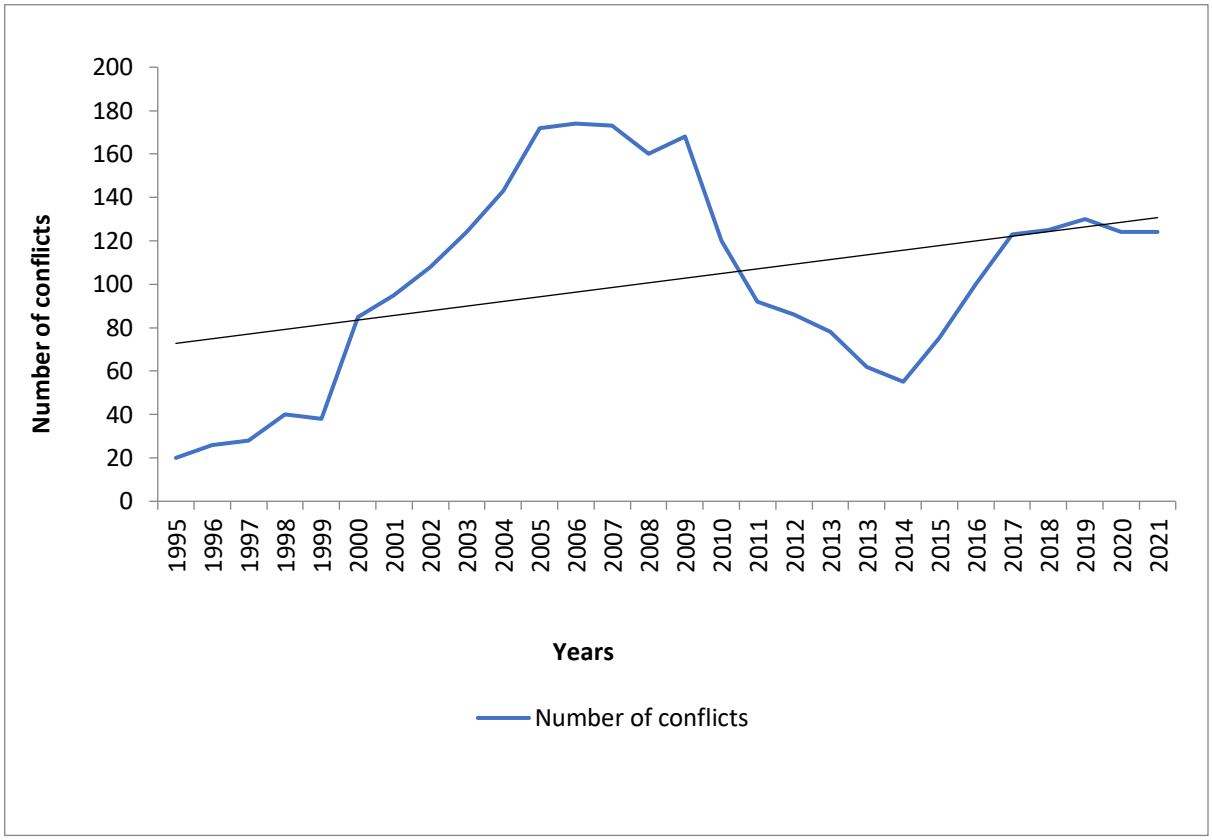
were still fertile and food crop farmers had little intentions of neither encroaching on grazing lands nor wetlands which are today hotspots of conflicts in these communities



Graph 1: Annual trends of Farmer-grazier conflicts in Ndu from 1995-2021

Source: Ndu Council's Data (2022)

In respect to Graph (1), from the year 2000-2008, the population of farmers increased and there were needs for the extension of farming lands to spike harvest while livestock herds also added as the Ako livestock keepers flee from Nigeria's hostility for safety in Cameroon occupying parts of this Sub-Division with their livestock. The struggle to amass land for cropping as well as grazing purposes, resulted into many clashes between farmers and graziers. From the year 2009-2015, the rate of farmer-grazier conflicts dropped due to the introduction of modern farming techniques whereas livestock keepers could grow artificial pastures such as the "Guatemala specie" for their animals and there were collaborations between the pair of farmers as the council encourages the alliance form of farming system where farmers could allow animals to be grazed on their farms after harvest. It was advantageous that while animals are being grazed, their feces fertilize cultivated crop fields. In the year 2016 up till date, the population growth has been astronomical both in terms of human population and livestock numbers and has oversized the carrying capacity. Another peculiar factor that has instigated these inflated farmer-grazier conflicts is the protracted Anglo-phone crisis that has involved those two farmers as counter-fighters for political interest. At times, animals are intentional directed into farmlands to destroy crops for political agendas as both farmers are pure enemies needing momentary supports from the various stakeholders to gain more controlled over land.

ii. Monthly trends of farmer-grazier conflicts in Ndu Sub-Division

As presented on Graph (2), there are contrasting four phases in the occurrence of farmer-grazier conflicts in Ndu sub-Division. Severe (40%) farmer-grazier conflicts occurs in the month of August-October (post-harvest months) because some food crop farmers do not harvest their farm yields in the expected period due to late planting and replanting of seeds. As such, some of the livestock keepers liberate their animals immediately after few of the food crop farmers have harvested their farm products. At this point, livestock keepers believe that the continuous keeping of their animals in confinements is more of a task. The unconfined animals however, stray randomly, break fences, encroach and destroy crops in areas yet to be harvested.

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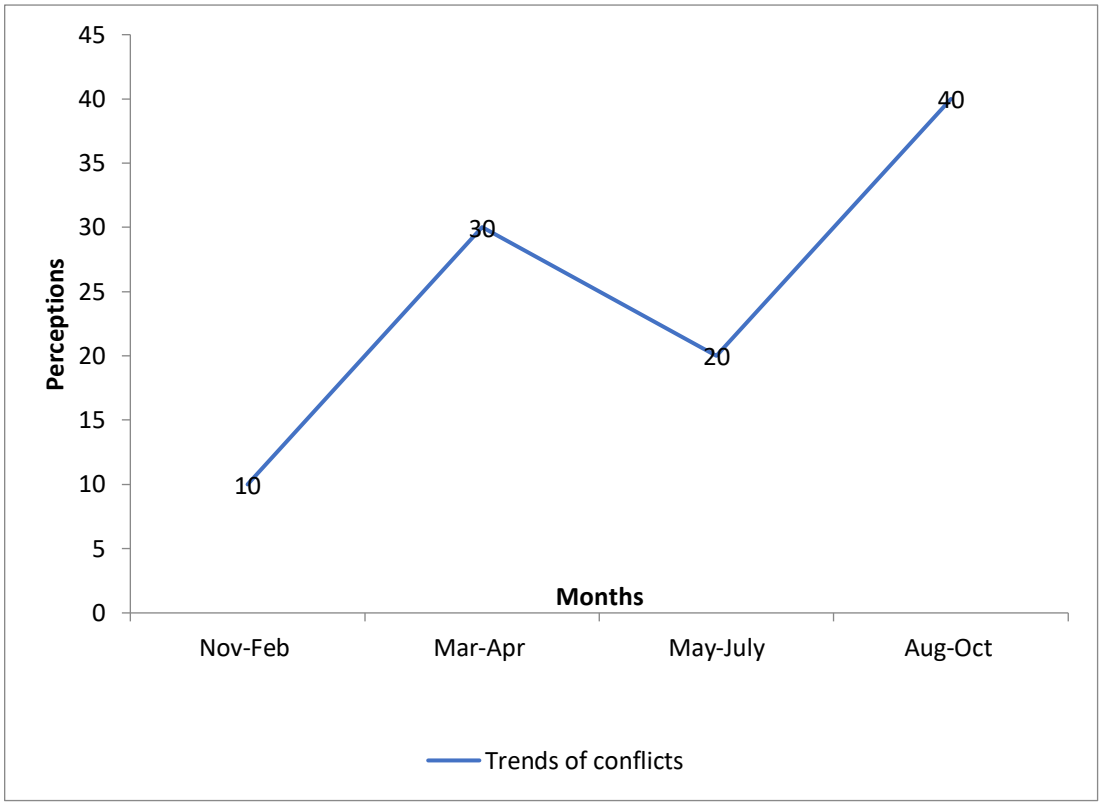

Graph 2: Monthly trends of farmer-grazier conflicts in the Ndu sub-Division

Fieldwork (2024)

Many farmer-grazier conflicts (30%) also occur in the transitional months (March-April). Here, conflicts emerged due to the fact that these months (from mid-march) are characterized by the onset of rainfall, immediately follow by "sowing of seeds" by farmers. On the contrary, after the planting of these seeds, there are always frequent dry spells such that most of the sowed seeds delayed to germinate while some randomly germinate. Because of this, most livestock keepers refused to confine their animals and these animals go about destroying the germinated seeds especially those in wetlands and fluvial zones that are always characterized by sufficient moisture that supports seed germination.

Furthermore, in the Months of April-July (weeding/harvesting months) conflicts (20%) also take place because animals forcefully break into unfenced farmlands and eat up crops considered to be more nutritive to natural pastures by herders. At times, crop destruction during these periods is intentionally done by herders especially when food crop farmers are not around. From November-February, there are fewer farmer-grazier conflicts mostly especially in communities where farmers practiced dry season cultivation such as the growing of cow piece and groundnuts. During these periods, the destruction of tubers such as yam and cocoyam, also bring about arguments and tensions among farmers.

Socio-Economic Implications of Farmer-Grazier Conflicts

Farmer-grazier conflicts in Ndu Sub-Division have multiple effects both on the local community, food crop farmers and livestock keepers as presented below:

General challenges imposed by farmer-grazier conflicts

Farmer-grazier conflicts are often characterized by severe and multitudes of socio-economic repercussions. Within the context of Ndu Sub-Division (Figure 3), the most pressing ones are: reduction in agricultural production as indicated by 23.3% of the farmers. This is because conflict scared people from expanding their areas of cultivation, as well as the extent of grazing which do affect the outputs and income generated from the activities.

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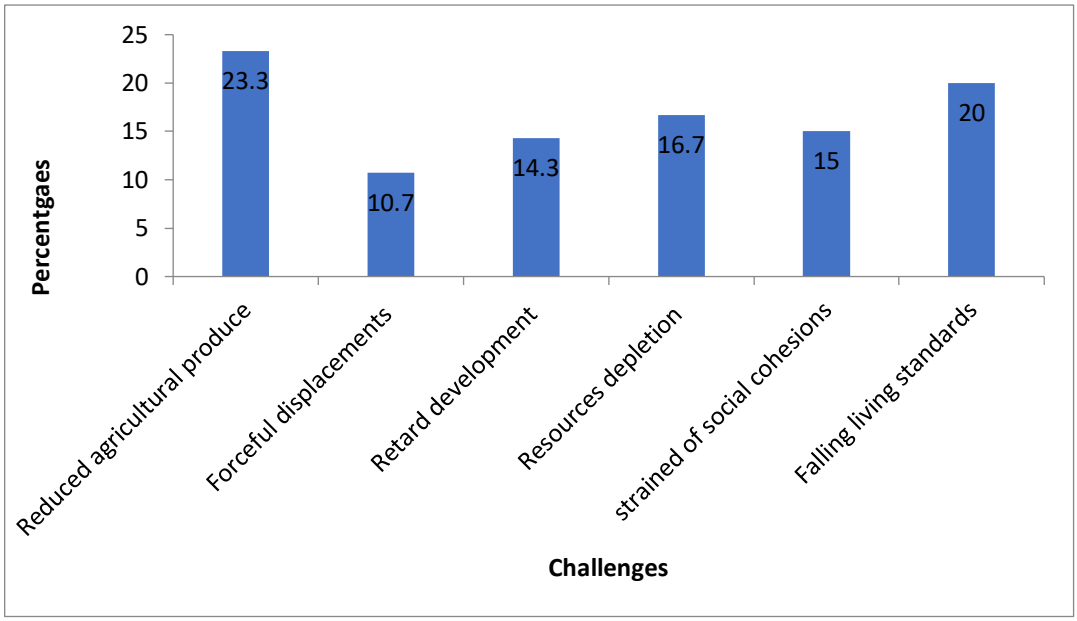

Figure 3: Socio-Economic Implications of Farmer-Grazier Conflicts in Ndu Sub-Division

Source: Fieldwork (2024)

Also, because of these conflicts, there is falling living standards of farmers (supported by 20%) as most resources are wasted in the course of conflicts through series of complaints, and waste of man-hours that could have been invested in productive activities. 16.7% of farmers pointed that because of disagreements among farmers, there is rapid depletion of agricultural resources instigated by the mad-rush and unsustain exploitations practices by local farmers. In another dimension, 15% of the farmers complained that hostility among farmers disrupt social cohesion limiting marriages, inter-tribal interactions and trade exchange between farmers. 14.3% of the farmers expressed dissatisfactions that farmer-grazier tensions have retarded development in many communities, detailing that trading among farmers' interdependency and local cooperative societies no longer exist today. More so, 10.7% of farmers raised alarm that hostilities amongst farmers have provoked forceful migrations most especially among women thus, eradicating their lucrative rural value chains.

Estimated income loss from crop damage by animals

Investigations were also done on the income farmers loss due to crop damage by animals either at their germination or maturity stages, as well as, within farm-based levels. These losses have been calculated on a seasonal basis (Figure 4).

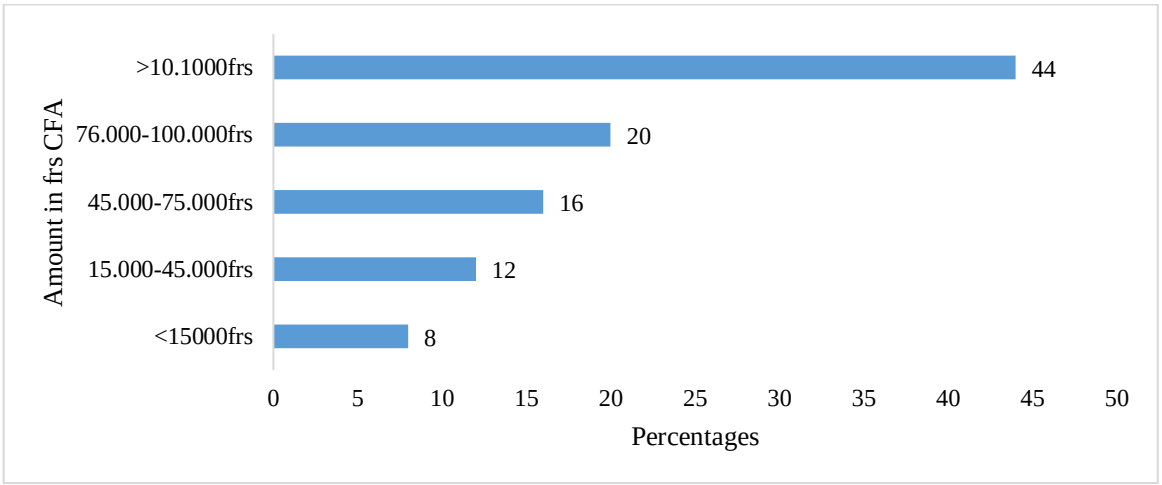

Figure 4. Estimate income farmers losses incurred by food crop farmers

Source: Fieldwork (2024)

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From Figure 4, a majority (44%) of farmers acknowledge that because of farmer-grazier conflicts, they often incur crop damages which result to a loss of more than 100.000frs. This is because while crops are being damage by animals, there are times that graziers do physical damages on crops by clearing them with a machete, 20% complained that they loss about 76.000 to 100.000frs and 16% said that they loss about 45.000 to 75.000frs. Furthermore, 12% pointed out that they loss 15.000frs to 45.000frs and 8% said that they loss less than 15.000frs. The high losses incurred by food crop farmers underscore the intensity of farmer-grazier conflicts in the area.

Estimated number of cattle killed during conflicts

Further findings were done particularly on the number of cows which food crop farmers killed seasonally in the course of retaliation for crop destructions. The investigation was precisely on cows because they are the dominant species being reared by the Fulani/Mbororos in the area (Figure 5)

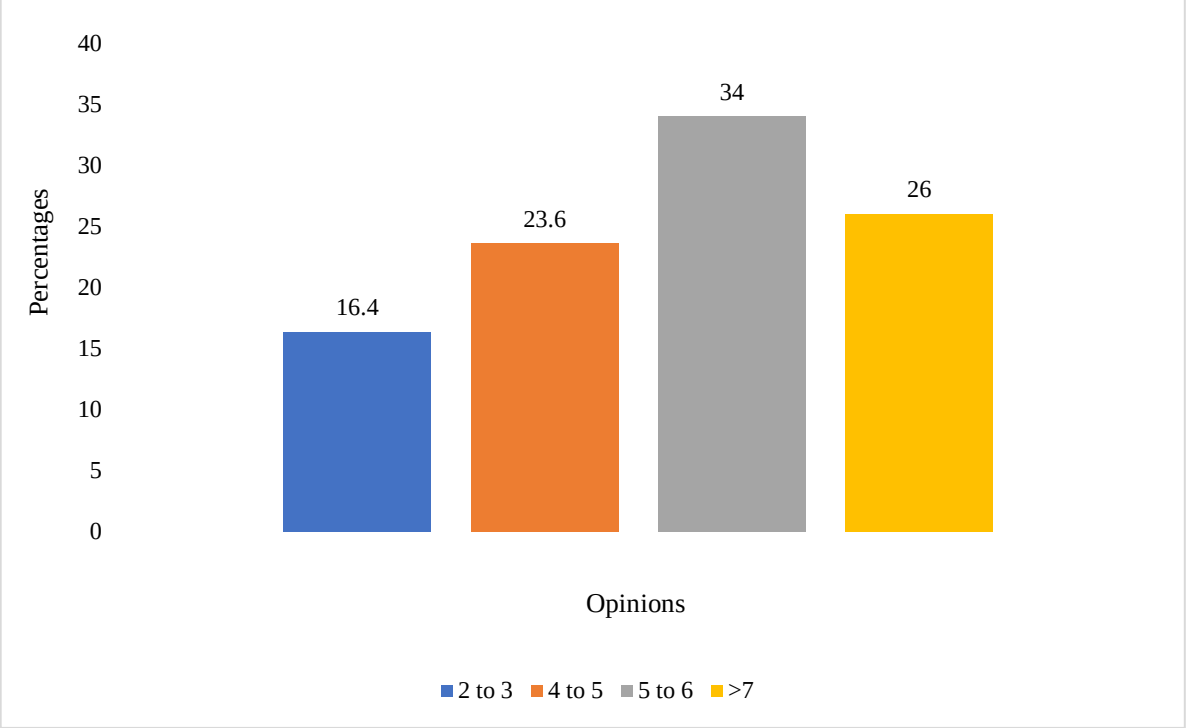

Figure 5: Estimated Number of cows killed on seasonal basis

Source: Fieldwork (2024)

From Figure 5, a majority (34%) of livestock keepers acknowledge that for every season when there is conflicts with food crop farmers, about 5 to 6 cows are usually killed, 26% of them said that more than 7 cows are usually killed while 23.6% pointed that about 4 to 5 are usually killed. Lastly, 16.4% confirmed that about 2 to 3 cows are usually killed. It should however, be noted that there are about 50 herds of cattle in Ndu Sub-Division and averagely, if 4 cows are being killed seasonally from a single herd, it means that approximately 200 cows are killed seasonally in Ndu Sub-Division due to farmer grazier conflicts. Also, a mature cow cost a minimum of 250.000frs and if 4 cows are killed, it means the farmer incurs a loss of 1000.000frs. It should also be noted that, the killing of cows reduce the availability of organic manure for food crop farmers, limits the availability of protein food, as well as, the income local councils generate from the tax commonly referred to as “Jangali Tax.’’

Adaptation measures to farmer-grazier conflicts in the Ndu Sub-Division

At the local level, farmers have in one way or the other implemented measures to either prevent incidences which will lead to farmer-grazier conflicts or those pertaining to deal with existing conflicts phenomenon. Viral conflict adaptation strategies in this area are as presented on Figure 4

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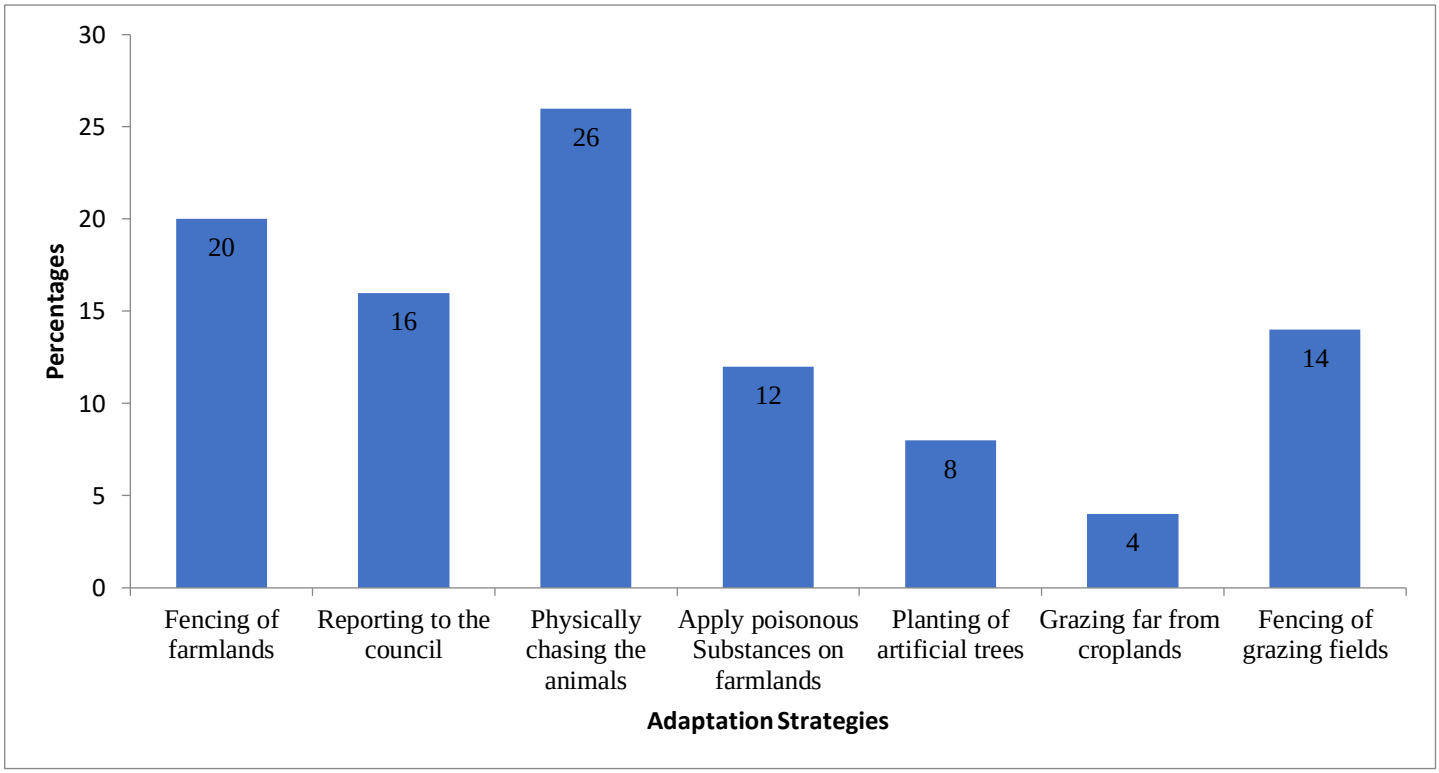

Figure 4: Farmers' adaptation measures to farmer-grazier conflict in Ndu Sub-Division

Source: Fieldwork (2024)

As presented on Figure 4, the physical chasing of livestock from farming areas by food crop farmers is the common adaptation measures as reported by 26% of farmers. Most farmers are keen in checking their area of food crop production and to make sure that animals are kept far-off from destroying their crops, 20% of food crop farmers besides livestock keepers said that they have constructed fence around farming and grazing zones respectively. With this fence, animals are grazed in confinements while crops freely grow up on marginal lands without destructions until they are harvested, meanwhile 16% of farmers (food crop) stated that they table complaints to the authorities in case of any crop destruction for compensations. Additionally, 14% of livestock keepers revealed that they have planted artificial pasture where they graze their animals while 12% of food crop farmers revealed that they do trap stray animals by spraying poisonous chemicals on their farmland and 8% of the farmers confirmed that they are practicing the alliance farming system. Lastly, 4% of livestock farmers said that they have move far away from food crop fields to graze animals so as to avoid the encroachment of crop fields.

DISCUSSION OF FINDINGS

Ndu Sub-Division comprises of agrarian communities characterized by thriving and staple agro-pastoral activities executed on steep slopes (grazing) and gentle slopes and marshlands (cropping) by farmers. There are however significance differences between the farmers in terms of religion, cultural and ethnicity. Pastoralism is practiced more by the Fulani/Mbororo while food crop production is done by the Wimbum natives. The Wimbum tribe were the first to settle in this area and they embraced cropping while the later settled Fulani were welcome with livestock as a means of diversification. The with the increasing changing nature and trends of socio-economic activities, fewer Wimbum native rear domestic animals such as goats and sheep while the Fulani practice mixed farming with small scale cropping. Livestock activities were well concentrated on uplands where the soil fertility was low while cropping was done on flat surfaces, wetlands and flood plains. These findings were captured in the study of Amawa (2001) who noted that the undulating topography of Ndu Sub-division attracted farmers with diverse interest. Livestock keepers were beneficiaries of upland environments and mountains while food crop farmers colonized wetlands and flat surface. Also, in the study of Nkemasong and Yinkfu (2022), they noted that most agricultural were done along flood plains and wetlands due to insufficient moistures that amplified crop failure on steep and hilly environemnts.

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Rapid environmental changes instigated by population exposure, exacerbated by climate change, changing socio-economic livelihoods and the uncontrolled exploitation of environmental resources have resulted to limited resources availability In Ndu Sub-Division. Some of these declining resources are water, pasture and arable lands, evidenced in intensive livestock keeping areas like Mbongong, Ntumbaw, Ntabah, and Ntaye. These resources are degrading because of the rapid increase in population and the increase in farm sizes and animal herds. As such, each of the farmers struggle to amass and secured these scarce resources, thereby unsustainably exploiting them. The fast and uncontrolled exploitation of resources in Ndu Sub-Division, have directly affected the environmental conditions such as climate, which intends amplifies their degradations. The fast exploitation of environmental resources needed by the duo farmers have resulted to tensions, grievances and conflicts amongst in Ndu Sub-Division. Such cases are viral in Sop, Ntambaw and Mbongong villages which are typical areas with large practice of agro-pastoralism. These findings are concise with those of Amos (2013) and reflected in Nkemasong *et al., (*2022), who in assessing the implications of environmental changes on agro-pastoral activities in the Menchum and challenges of transhumance practice in Ndu Sub-Division, respectively generally noted that the unrestrained anthropogenic activities such subsistence farming, settlement expansions and rapid resource exploitation, compounded by climate variability, were the principal factors responsible for the decline in environmental resources, provoking confrontations between agro-pastoralists up-to-date. In the previous study of Charity (2017) in the same geographical area, he noted that most farmers were extending farmlands to grazing areas and livestock keepers were encroaching cropping zones and these resulted to the fused of farmlands and creating disagreements between the farmers. It is however, established from field findings that increasing population, farming sizes, animal herds, climate variability and the disagreement between both farmers are the main causes of conflicts between agro-pastoralists in this agro-ecological zone.

Findings revealed that, In Ndu Sub-Division, the unsustainable practices by farmers, whereby, food crop farmers are forcefully encroaching grazing fields to increase the area coverage of cultivation, likewise, the intruding of crop fields by livestock keepers and the incidences of crop destruction by livestock have instigated perennial conflicts which keep multiplying on seasonal and annual bases with severe socio-economic repercussions on the local developments, social cohesion, falling living standards, and declining food production. Today, the symbiosis that existed between the two farmers long ago in Ndu Sub-Division, has been wipeout, and the two farmers do not collaborate and exchange products anymore. With this incidence, agricultural products have become very limited and very expensive as livestock keepers can no longer grant crop farmers organic manure to enhance soil fertility and spike harvest; crop farmers are also limiting the accessibility to their residuals, and because of that, animal nutrition has been lowered and there is declining reproduction in most grazing areas in Ndu Sub-Division. Inter-tribal marriages between the two farmers are considered as planned acts of violence as both farmers are so skeptical of the other. Socialization has been impossible and the two farmers live in segregated communities with strict restriction on interreacting with each other. In Ndu Sub-Division, schools are separated as the Wimbum natives prefer to be within catholic, Baptist or government schools, while the Fulani focus in Islamic schools created in their communities. The recurrent 2024 incidences in the Sop village in Ndu Sub-Division that resulted to the killing of more than 4 Wimbum natives, with proper destructions and looting of stores by the Fulani, clearly defined the landmark and apex of farmer grazier-conflict in the area. The rural value chains of women that hinges on agro-pastoral activities in Ndu Sub-Division, have been dwarfed and their roles in the society have been dwarfed with many domestic challenges as they are heads of most households in these communities and faced with limited opportunities and supports. Strictly speaking, the brunt of farmer-grazier conflict has been burnt by both farmers, proximal communities, strangers and the administrative setup in this Sub-division as it brings about severe insecurity and limited cooperation within the entire community. All these findings streamline in the scientific papers of (Yakubu *et al.,* 2020; Akov, 2017; Out *et al.,* 2020; and George *at al.,* 2021)

Results have revealed that in Ndu Sub-Division, both farmers always implement measures to deal with the conflicts such as the construction of fence around farming and grazing areas, grazing animals far-off from cropping fields and implementation of physical tussle with each other, and compensation of crop damages. These measures are temporary and yield little successes as conflicts keep escalating. The killing of animals where pastures are sprayed with poisonous substances is the worst adaptation measure because there is always retaliation from livestock farmers either by further destroying the rest crop fields, enter provision stores illegal and loot goods or confronting crop farmers and tussling. Most crop farmers are very poor and they do

construct very weak fences that can easily be destroy by animals, while far off areas are becoming void of pastures; making adaptation measures very difficult. At times, In Ndu Sub-Division, animals are easily rustle in far off areas and animals do a lot of destruction between the corridors before reaching those far off areas. They divert into farm lands, unauthorized grazing fields and use water resources own by other herders, which lead to more tensions. These findings are consistence with that of Brottem & Brooks (2018) and Azuaga (2020) corroborated by Nkemasong *et al.*, (2022) who expressed that most at times, crop do extensive farming activities along established livestock corridors, making it easier for animals to divert and consume them. They further indicated that livestock farmers due to carelessness, allow animals to divert into farmlands, especially in periods of limited pastures and destroy crops, some intentionally break fences and send in their animals into crop fields. Furthermore, uncompensated crop damage by livestock creates grievances among farmers, who tend to perceive pastoralists as wealthier than they are that such incidences always result into disputes.

Paradoxically, a greater proportion of the populations assume that climate change, population increase, and limited collaboration between farmers are the actual causes of these protracted farmer-grazier conflicts in Ndu Sub-Division. The nitty-gritty of these conflicts is that negative political agendas such as the struggle for sovereignty, campaigns and corruption within conflict resolution platforms, traditional councils and the judiciaries are those provoking these conflicts in Ndu Sub-Division. More so, in Ndu Sub-Division, the Wimbum native have also relent their efforts in implementing more adaptation measures as they rely more on their customary rights to land ownership, while the Fulani belief in raid and their relationships with political leaders. Although the environment is rapidly changing and resources becoming limited, if the two farmers can enhance cooperation and adopt the alliance farming system, they activities will strive amidst the unprecedented environmental degradation. Brottem and McDonnell (2020); Krätli and Toulmin (2020) have debunked the conclusions that climate change and resources scarcity are the main causes of farmer-grazier conflicts by clearly stating that governance, politics and relationships are the actual causes of these conflicts. More so, Tade and Yikwabs (2019) and Dimelu (2016), have pointed that collaboration and the creation of transparent commissions are panaceas to most farmer-grazier conflicts.

CONCLUSION

Agro-pastoralism has been a legacy to the increasing population in Ndu Sub-Division over the years. The visibility of this is established on employment opportunities, income generation and the sustenance it offers besides, enhancing the shift from temporal fields of cultivations to permanent ones. On the contrary, these lucrative farming types have been fraught by farmer-grazier conflicts which have been trending until this point in Ndu Sub-Division. Attempted resolution mechanisms have always been impalpable as wealthier Mbororos always stretches their hands below the table to seek favor from dialogue platforms and agro-pastoral commissions in Ndu Sub-Division. The practice of the duo farming systems could have been more beneficial if there was fairness in land resources allocation that have been cardinal factors to this integrated activity. The selective attention and favoritism given to the Mbororos over land allocation in Ndu Sub-Division, have made the Wimbum natives of the area to feel alienated and deprived of their customary rights, thus electing disputes. Inter-communal relations, local development, food production and rural value chains of women have been hampered by these conflicts. However, regarding the fact that food crops are needed more often by the local population unlike livestock products, more land should be allocated to food crop farmers coupled with the fact that they are innate owners. Although livestock farming generates foreign and national incomes to the local governments, that only should not jeopardize the endemic agricultural activities executed by the locals of the area. However, if those two farming types must be synonymously practiced, sustainable policies and strategies must be well designed and implemented; especially in the context of land allocation so as to prevent the up shoot of conflicts.

RECOMMENDATIONS

Considering the fact that agro-pastoral farming remains the principal activity to the population in Ndu Sub-Division, the following sustainable recommendation measures should be implemented in the area to unite the duo farmers and promotes gainful agro-pastoral activities. Firstly, the alliance farming system should be forcefully imposed by the local council on food crop farmers and livestock keepers to promote a beneficial collaboration between them. The councils should also do a proper land use planning for these farmers to

eliminate conflicts. Also, the municipal councils and other conflict resolution commissions should be transparent in resolving conflicts between these farmers by avoiding favoritism and bribery. Farmers should also be train on modern farming systems such as agro-forestry, intensive and mixed farming methods. More so, grazing and farming fields, should be well fenced with barb wires to avoid animals from breaking in and causing destructions. Additionally, some inclusive natural areas should be conserved with artificial pastures like Guatemala planted within ranges. Marshlands should also be protected for food crop farming activities. Conflict resolution platforms should be created with representation from food crop farmers and livestock keepers; with a bottom-top approach implemented, especially during decision making. Food crop farmers should be encouraged to keep other animal species such as Guinea pigs, poultry, rabbit, piggery and sheep. This will reduce their dependency on cattle manure which is increasing becoming inaccessible. The government should agro-pastoral institutions such as schools and training centers to train farmers on modern farming methods and on how to mange their differences. The local council should also seek assistance and advices from successful communities that have integrated food crop and livestock activities.

REFERENCES

1. Abbass, I. M. (2012). "No Retreat No Surrender: Conflict for Survival between Fulani Pastoralists and Farmers in Northern Nigeria." European Scientific Journal 8, no. 1: 331-46.
2. Adams, E. A., Kuusaana, E. D., Ahmed, A., and Campion, B. B. (2019). Land dispossessions and water appropriations: political ecology of land and water grabs in Ghana Land Use Policy 87 104068
3. African Union (AU, 2018) 'Conflicts between pastoralists and farmers on the continent take more lives than terrorism', 18 September (https://au.int/en/pressreleases/20180918/conflicts-between-pastoralists-andfarmers-continent-take-more-lives)
4. Akinwotu, E. (2021) 'Trail's end: the days of roaming free are numbered for Nigeria's herders. The Guardian, 27 October (www.theguardian.com/global-development/2021/oct/27/days-of-roaming-free-are-over-fornigeria-herders)
5. Akov, E.T. (2017). The resource-conflict debate revisited: untangling the case of farmer–herdsman clashes in the north central region of Nigeria Afr. Secur. Rev. 26 288–307.
6. Alhassan, I. A. (2017). Land-use conflicts between settler farmers and nomadic Fulani herdsmen in the Kwahu North District, Ghana Contemp. J. Afr. Stud. 4 127–54
7. Amawa S.G (2001): Variation in Spring Discharge on the Mbum plateau, (N.W Region of Cameroon), In Lambi(ED) Readings in geography, Unique Printers Bamenda
8. Amos F.Z, (2013): Environmental changes and their implications for Agro-Pastoral Activities in Menchum Division (North West Region of Cameroon), Unpublished Msc Thesis Department of Geography Unversity of Buea
9. Boateng, J.A. (2022) 'Ejura Traditional Council declares war on Fulani herdsmen'. Modern Ghana, 17 February (www.modernghana.com/news/1139726/ejura-traditional-council-declares-war-on-fulani.html)
10. Bond, J. (2014) 'A holistic approach to natural resource conflict: the case of Laikipia County, Kenya' Journal of Rural Studies 34: 117–127 (www.sciencedirect.com/science/article/pii/S0743016714000217)
11. Brandström P, Hultin J, Lindström J. (1979). Aspects of agro-pastoralism in East Africa. Nordiska Afrikainstitutet.
12. Brottem, L. & McDonnell, A. (2020). Pastoralism and Conflict in the Sudano-Sahel: A Review of the Literature
13. Brottem, L. (2016). Environmental change and farmer-herder conflict in agro-pastoral West Africa. Human Ecology, 44(5), 547–563
14. Brottem, L. and Brooks, B. (2018) "Crops and livestock under the sun: Obstacles to rural livelihood adaptations to hotter 21st century temperatures in eastern Senegal," Land Degradation & Development 29, 1: 118-126
15. Bukari, K. N., Sow, P. and Scheffran, J. (2018). Cooperation and co-existence between farmers and herders in the midst of violent farmer-herder conflicts in Ghana Afr. Stud. Rev. 61 78–102
16. Chime, V. (2021) 'From Nigeria's farmer–herder clashes to the Sahel crisis – is climate change worsening conflicts in Africa?', The Cable, 19 April (www.thecable.ng/from-nigerias-farmer-herder-clashes-tothesahel-crisis-is-climate-change-worsening-conflicts-in-africa)

17. Cottyn, I. and Meester, J. (2021) '"Of cattle and conflict" – rethinking responses to pastoralism-related conflicts. CRU Policy Brief. The Hague, Netherlands: Clingendael (www.clingendael.org/sites/default/files/202108/Policy_brief_Rethinking_responses_pastoralism_related_conflicts)
18. Dimelu, M. U., Salifu, E. D., and Igbokwe, E. M. (2016). Resource use conflict in agrarian communities, management and challenges: a case of farmer-herdsmen conflict in Kogi State, Nigeria J. Rural Stud. 46 147–54
19. Dworkin, R.W. (2000). Sovereign virtue: Equality in theory and practice. Cambridge, Harvard University Press
20. Flintan, F., Robinson, L. and Bello, M.A. (2021). A review of tenure and governance in the pastoral lands of East and West Africa. Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises (SPARC). London: ODI
21. George, J., Adelaja, A., Awokuse, T. and Vaughan, O. (2021) 'Terrorist attacks, land resource competition and violent farmer–herder conflicts' Land Use Policy 102 (105241)
22. George, J., Adelaja, A., Awokuse, T., and Vaughan, O. (2021). Terrorist attacks, land resource competition and violent farmer-herder conflicts Land Use Policy 102 105241
23. Institute for Economics and Peace (IEP, 2015) Global Terrorism Index, 2015: measuring and understanding the impact of terrorism. Sydney: IEP
24. Izumi (1999). Liberalization, gender and the land question in Sub-Saharan Africa. In: Sweetman, Caroline ed. Women, land and agriculture. London, Oxfam
25. Krätli, S. and Toulmin, C. (2020) Conflit entre agriculteurs et éleveurs en Afrique sub saharienne? London: IIED
26. Kuusaana, E. D., and Bukari, K. N. (2015) Land conflicts between smallholders and Fulani pastoralists in Ghana: evidence from the Asante Akim North District (AAND) J. Rural Stud. 42 52–62
27. NBS. (2016). 2014/15 Annual Agricultural Sample Survey Report. Available from: www.nbs.go.tz/nbs/takwimu/Agriculture/Annual_Agricultural_Sample_Survey_Report2014_15.pdf] [Accessed: February 4, 2021]
28. NBS. (2018). 2016/17 Annual Agriculture Sample Survey: Crop and Livestock Report.. Available from: www. nbs.go.tz/nbs/ takwimu/Agriculture/ Annual_ Agricultural_Sample_Survey_ Report 2016_ 17.pdf.] [Accessed: February 4, 2021]
29. Out, B., Impraim, K. and Twumhene, P. (2020). New dimensions of farmer–herder conflict in the Afram Plains of Ghana: implications for human security J. Appl. Secur. Res. 15 484–97
30. Pacific Northwest National Laboratory (PNNL, 2022) 'Climate security'. Washington, DC: PNNL (www.pnnl. gov/climate-security)
31. Pacific Northwest National Laboratory (PNNL, 2022) 'Climate security'. Washington, DC: PNNL (www.pnnl. gov/climate-security)
32. Rawls, J. (1999). A theory of justice. Oxford, Oxford University Press.
33. Tade, O., and Yikwabs, Y. P. (2019) If you kill me, you take the cow': victimization experiences of farming and herding communities in Nasarawa State, Nigeria J. Aggress. Confl. Peace Res. 11 273–80
34. The Sun (2022) 'Agony of survivors of farmers-herders' crisis in North Central', 17 May, The Sun (www.sunnewsonline.com/agony-of-survivors-of-farmers-herders-crisis-in-north-central/)
35. United Nations Office for West Africa and the Sahel (UNOWAS, 2018) 'Pastoralism and security in West Africa and the Sahel: towards peaceful coexistence'. Dakar, Senegal: UNOWAS
36. Walwa, W.J. (2017). Land use plans in Tanzania: repertoires of domination or solutions to rising farmer–herder conflicts? J. East. Afr. Stud. 11 408–24
37. Yakubu, S. M., Musa, M . W., Bamidele. T. E., Ali, M.B., Bappah, M. T., Munir, R .T., and Manuwa, A. (2020) Effects of farmer-herder conflicts on rural households food security in Gombe State, Nigeria J. Agric. Ext. 25 11–20