



SUSTAINING NATURAL RESOURCES THROUGH FARMER-GRAZER CONFLICT RESOLUTION IN SANTA SUB-DIVISION, CAMEROON

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ABSTRACT-----

In the North West Region of Cameroon, specifically in Mezam Division, disputes between farmers and grazers over land ownership have been a persistent and controversial issue, according to Fisiy (1992). For this reason, it is essential to have legal protection against such disputes. The study's focus is on resolving farmer-grazer conflicts in the Santa subdivision in the northwest of Cameroon in order to sustain natural resources. A quantitative approach using a questionnaire was employed, whereas semi-structured interviews and observation were included in qualitative study approaches. Both public and unofficial sources of secondary data, as well as the internet, were employed equally. After the data was coded and analyzed, the following findings were obtained: Although encroachments into grazing land are one of the contributing elements to disputes between farmers and grazing in this area, other variables also play a role. As a result, the grazers accuse the farmers of encroaching on their grazing property, while the farmers accuse the grazers of trespassing and encroaching. The primary cause of conflicts is not limited to disputes over drinking water supplies. Second, "The primary players in resolving farmer/grazer conflicts in the study area are not MBOSCU and administrative authorities." The findings indicated that farmers and grazers are regarded as one of the primary actors in conflict management, in addition to the actors already stated. The majority of people no longer trust the government and would rather talk things out to resolve their disagreements and live in harmony with the community. Thirdly, farmer-grazer confrontations have repercussions beyond a decrease in food production, such as causing division and hostility. Tensions, activity cessation, and the depletion of natural resources are among them. Lastly, "A dispute between a farmer and a grazer that can sustain natural resources cannot be resolved only by dialogue." Though communication appears to be the most significant, other crucial actions include the demarcation of farming and grazing area.

KEY WORDS: *Farmer-Grazer Conflict; Natural Resources; sustainability-----*

INTRODUCTION

There is pressure to manage natural resources at higher levels of top-down, command-and-control management as the human population rises and natural resources diminish. Conflicts between farmers and grazers can have catastrophic consequences, including the loss of life and property, depletion of natural resources, instability, food shortages, and long-term poverty. Conflicts make it difficult for grazers and crop producers to coexist together in the same community (Pelican, 2012). Additionally, Rashid (2012) noted that disputes have a significant impact on households' sociopsychological, economic, and production aspects.

The North West Region of Cameroon has had rapid population increase leading to a constant outward colonization of land for settlement or for crop cultivation in the seven divisions of the region. This has generated problems with the nomadic cattle rearers who have settled in these lands since 1903. Competition over access to natural resources is at the centre of sustained conflict between ethnic Indigenous Mbororo pastoralists and most of the subsistence farmers in the Santa Sub-Division of the North West Region of Cameroon. According to Fisiy (1992), Conflict between grazers and farmers over land ownership has been a contentious and perennial problem in the North West Region of Cameroon particularly Mezam Division, making legal protection against conflict over land ownership imperative. This goes a long to pose a problem on the sustainability of natural resources.

In the North West Region of Cameroon, and specifically in the Santa Sub-Division, the ethnic Mbororo cattle herders and non-Mbororo subsistence farmers are constantly at odds over the usage of natural resources including land and water. The main causes of these conflicts, according to Rashid (2012), Kelsy and Knox (2012), and Manu



et al. (2014), are competition for land and water resources for both agricultural and non-agricultural uses, the growth of the human and animal populations, the rights to access resources, and the scarcity of grazing resources.

In Africa the importance of land in development is underline by the fact that approximately 60% of the population derives its livelihood and income mainly from farming, livestock production and related activities like spiritual rites.

In the North-West Regions of Cameroon and Santa Sub-Division in particular, most of the lands formerly used for livestock production are taken over by the farmers to feed the teeming population. This has led to severe decline in the herd size making beef a scarce commodity. The extensive grazing system formerly enjoyed by the Mbororo pastoralists in Santa Sub-division is fast disappearing making life difficult for the indigenous communities depending solely on livestock for their livelihood. Grass fields farmers frequently accused Mbororo herders of causing farm damage, and threaten to drive them away (Harshbarger 1995). At the same time, the colonial and post-colonial government was unable to establish satisfactory procedures to resolve or avoid farmer-herder conflicts (Njeuma and Awasom 1990). Faced with this conflict leading to loss of cattle, grazing land, damage of crops, loss of life and drop in the level of scholarisation amongst other factors makes our work on conflict resolution to sustain natural resources very important.

More than 70% of Cameroon's cattle are owned by pastoralists who engage in extensive grazing, making the Santa Sub-Division grass field one of the country's primary livestock-producing regions. As a result of these animals' frequent encounters and extensive grazing in the grass field, farmer-grazer confrontations have become increasingly common in recent years, destroying both farmers' and grazers' lives and property. Both sides are fighting for additional land to exploit, which leads to these wars. Conflicts between farmers and grazers in this area have had a detrimental effect on the growth of the local community. Agricultural operations in the grasslands are becoming more difficult due to competition for limited land resources, as farmers and herders fight over land for grazing and farming, respectively. In light of this, it is reasonable to wonder how resolving these disputes will preserve natural resources.

This research work is aimed at solving farmer-grazer conflict to sustain natural resources. In this perspective the main objective of this study is to solve farmer-grazer conflict to sustain natural resources.

Location of study area

Santa Sub-Division is one of the five sub-divisions that make up the Mezam Division of the North West region of Cameroon. It is fairly a hilly area, with the vegetation being mostly of the grass or shrub savanna. The soils for the most part are volcanic, with a few pockets of Loam, alluvial or swampy soils located in the few narrow plains or river valleys. The climate is marked by two distinct seasons; the dry and rainy seasons. The rainfall ranges between 2000 to 3000mm per annum

Administratively, Santa Sub-Division is Sub-divided into 12 villages that include Akum, Alatening, Bafuchu, Baba II, Mbei, Njong, Pinyin, Baligham, Awing, Santa and Bamock amongst others. The total population is estimated at 73,406 following 2019 statistics from the rural council. Santa Sub-Division covers a Surface Area of 533 km² with a population density of 137.72 persons/km².

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The work is inscribed in the framework of farmer grazer conflicts and its consequences on local population. It extends to how resolving these conflicts will sustain natural resources in the study area.

Literature related to causes of Farmer-Grazer Conflicts

The ongoing conflict between ethnic Mbororo cattle herders and non-Mbororo subsistence farmers is caused by the struggle for control of natural resources, such as vegetation, land, and water. Competition for the use of land and water resources for both agricultural and non-agricultural purposes (Rashid, 2012; Kelsey & Knox, 2012; Manu et al., 2014), the growth of the human and animal populations (Gefu & Kolamole, 2002), the insufficiency of grazing resources, and values, cultures, and beliefs are the main causes of these conflicts. Conflicts between farmers and grazers are also caused by disagreements over resource ownership and climate change (Sone, 2012; Arias and Ibanez, 2012; Ajuwon, 2004; Fasona and Omojola, 2005).



Literature related to consequences of farmer-grazer conflicts

These disputes can have catastrophic repercussions, ranging from the loss of material, financial, and social assets to prolonged poverty, food crises, and insecurity. Additionally, conflict hinders the ability of crop farmers and nearby grazers to coexist (Pelican, 2012). According to Rashid (2012), conflict has a significant impact on households' sociopsychological, economic, and production aspects. Words like "settler," "native," "non-native," "host community," "foreigner," "native foreigner," "stranger element," "squatter," "non-squatter," "immigrant," "migrant," "indigene," and "non-indigene" are frequently used in Nigeria to characterize, stigmatize, or stereotype the "other" as a group that "does not belong." In certain regions of North West Cameroon, it even restricts milk production (Ndambi et al., 2008). In this part of the country, milk production is an activity principally carried out by Mbororo women. This is why Fonjonget al. (2010), argued that sustained farmer-grazer conflicts undermine women's ability to ensure household food security. Manu I.N et al (2014) focused on the effects of farmer-grazer conflicts on rural development in the North-West Region of Cameroon.

Literature related to mitigation measures of farmer-grazer conflicts

The age at which animals reach the market (500kg Body Weight) was lowered from 7.2 years to 4.1 years in one of the conflict-prone regions of Cameroon's North West by rehabilitating meadows and using fodder banks to supplement grazing (World Bank, 2012). However, Ndikintum (2008) discovered that implementing a night paddock manuring strategy improved Small Babanki by lowering disputes between farmers and grazers. The study also found that night paddock manuring increases productivity and lowers poverty, which benefits households with grazers as well as crop farmers. An example of a win-win arrangement between grazers and farmers is the practice of dry season grazing on farm fields, followed by crop production during the rainy season (Gefuet al., 2002). The rice fields in the Ngoketunjia division of Cameroon's northwest also employed this configuration.

Theoretical framework

Here, the theories that permitted understanding of certain aspects of the study are presented. Amongst others, the theories of conflict and planned behavior are highlighted.

Conflict theory

Conflict, in the words of Hornby (1995), is a major dispute, argument, struggle, or clash of serious wishes or opinions. A society is said to possess the following traits according to the conflict theory: coercion, division, antagonism, dissent conflict, mal-integration, and change. According to Klein and Ritti (1980), conflict can be caused by a variety of factors, such as disparities in priorities, values, tasks, and attitudes as groups compete for control of limited resources.

Conflict can occur when group leaders have different viewpoints or when one group has a tendency to take advantage of the other, claims Ekong (2003). Conflicts resulting from commercial interactions have also brought about change. According to Pelican (2000), the Fulbe grazers and their neighboring crop farmers face interethnic relations issues of integration and ethnic strife. The pastoral Fulbe have had a positive and negative connection with crop farmers ever since they moved into the North-West's grasslands.

In his research in the Mezam division, Haman (2002) proposed that pastoralism itself is linked to the destiny of pastoralists. Therefore, it became evident that pastoralism is a serious problem in areas with extremely high population densities and growth, where pastoralists have no control over the grazing pastures they occupy. By removing sources of discontent, conflict aids in the stabilization and integration of members in loosely structured groups. One way to assert and determine the relative intensity of antagonistic interests in an interaction setting is through internal conflict. In order to create consensus and achieve equilibrium, conflict serves to highlight areas of dissatisfaction and proposed remedies (Charles, 2005).

METHODOLOGY

The preservation of natural resources by means of resolving disputes between farmers and grazers is examined in both space and time. Both quantitative and qualitative research methodologies were employed in order to achieve the goals and test the hypotheses. A questionnaire was used to help the quantitative method, asking respondents to provide numbers in order to be further examined on the results. The qualitative approach was carried out using semi-structured interviews that included a lot of open-ended questions about how to resolve disputes between farmers and grazers.

The sample of 356 including 170 farmers and 195 grazers was randomly chosen, taking into the total population of 73000 inhabitants of the sub-division, so as to enhance representation.



The data from questionnaires was analysed by tallying the responses of respondents per question in the questionnaire administered. This gave us the percentages of the different responses. The chi square statistical testing of hypothesis was the major method for this work.

RESULTS AND DISCUSSIONS

Farmer-Grazer Conflict Causes

The primary reasons of disputes between farmers and grazers are listed in Table 1. More farmers believe that cattle trespassing and agricultural encroachment are the primary sources of conflict. The primary cause, according to the herders, is encroachment into farming and grazing areas. As a result, the grazers accuse the farmers of encroaching on their grazing property, while the farmers accuse the grazers of trespassing and encroaching.

Table 1: Main causes of farmer-grazer conflicts in Santa Sub-Division

Causes	Respondents		Percentage
	Farmers	Grazers	
Encroachment on farm land	20	80	27.40
Encroachment on grazing land	25	50	20.54
Blocked access to water source	40	35	20.54
Trespass on farm land	40	10	13.70
Others	25	50	20.54
Total	155	225	100

Source: Field inquiry 2022

According to families headed by women, the primary reasons for farmer-grazer conflicts were primarily related to land use. The primary reason is encroachment on farmland, which is followed by trespassing on farms and encroaching on grazing land. All of the responders gave the same explanations. As a result, encroachment into either farmer or grazer territory is the primary cause of disputes in the research matrix. The other category includes poisoning of cattle, carelessness of the herdsmen, financial influence, land tenure systems mismanagement or unfair treatment of farmers and grazers by the administration during conflicts. This helps to provoke further conflicts

The first hypothesis of our work stated that “The main cause of farmer/grazer conflict is encroachment into grazing land in Santa Sub-Division”. The Null hypothesis, Ho is therefore stated as, Encroachments into grazing land is the main cause of farmer while the alternative hypothesis, Ha is that “Encroachments into grazing land is not the main cause of farmer-grazer conflicts.

To test this hypothesis, information was extracted from Table 1 to create a contingency table, from which the chi-square value was computed, yielding 58.01. Using our degrees of freedom (df = 4), our predefined alpha level of significance (0.05), and our chi square statistic ($\chi^2 = 58.01$). Entering the Chi square distribution table with 4 degrees of freedom and reading along the row we find our value of χ^2 58.01 lies above the critical value which is 9.488. When the computed χ^2 statistic exceeds the critical value in the table for a 0.05 probability level, then we can reject the null hypothesis of equal distributions. Since our χ^2 statistic (58.01) is more than the critical value for 0.05 probability level (9.488) we can accept the alternative hypothesis that “Encroachments into grazing land is not the only cause of farmer-grazer conflicts”.

This finding can be explained by the fact that though encroachments into grazing land constitute part of the causes of the farmer/grazing conflicts in the region of study there are other factors act in combination. The farmers are therefore accusing the grazers of trespass and encroachment whilst the grazers on their side are accusing farmers of encroaching on to their grazing land. Struggles over sources of drinking water are not left out of the root cause of conflicts: This finding go in line with Aredo (2005) and Sone (2012) who concluded that farmer-grazer clashes are due to the destruction of farmlands, particularly around Menchum and Donga Mantung divisions.

Actors involved in managing farmer-grazier conflicts

It was important to find out those involved in conflict management as far as famer/grazer interactions within Santa Sub-Division are concerned. The results are presented on table 2.



Table 2: Major actors involved in conflict management

Actors	Respondents		Percentage
	Farmers	Grazers	
Administration	30	20	13.70
Traditional rulers	20	30	13.70
MBOSCUDA	5	60	17.80
Farmers	65	35	27.40
Grazers	30	70	27.40
Total	150	215	100

Source; Field inquiry 2022

It was important to identify the various actors involved in the management of conflicts in Santa Sub-division. It was realized that farmers and grazers themselves constitute an important actor in managing crisis when they occur. These actors were evaluated at above 54%. This was followed by MBOSCUDA at 17%. The traditional rulers and the administration at 13% each. The administration includes the divisional officer, security forces, and officials of the ministries of agriculture and that in charge of livestock. All these actors participate at their own level when need be to solve conflicts between farmers and grazers within Santa Sub-Division.

In order to appreciate the level of management of conflicts, it was necessary to find out if there are institutions or policies put in place to manage or prevent conflicts. A question in this light was posed and the results indicate that over 54.80% of the respondents were aware that policies exist but 45% were ignorant of the existence or applicability of these policies. They argue that even when the policies exist, the administration always talls it to their advantage. It therefore does not profit them, reason why in some cases they prefer to settle disputes amicably amongst themselves rather than take the cases to the administration.

Assessing the scope of MBOSCUDA's involvement in wars and other domains was one of the study's objectives. Let's start with that. 78% of the interviewees have some knowledge of MBOSCUDA, however they may not be aware of the full extent of their operations. Only 59% of these respondents were aware of MBOSCUDA's services, though. The findings demonstrated that MBOSCUDA is well-known among the grazers for its literacy and capacity-building programs, advocacy for Mbororos' rights, and, to a lesser extent, conflict resolution. In contrast to grazers, farmers are more familiar with MBOSCUDA for its conflict resolution services before it organizes training or literacy classes.

The men initially learned about MBOSCUDA through its capacity-building services, which were followed by the planning of awareness campaigns. The third service that respondents stated MBOSCUDA provides is conflict resolution. However, the women were familiar with MBOSCUDA's work in the areas of Mbororos rights campaigns and capacity building. According to them, MBOSCUDA has been helping them resolve conflicts in a big way. According to reports, 69% of respondents believe that MBOSCUDA's actions have benefited them; this is especially true for men. When comparing farmers and grazers, among those who are aware of MBOSCUDA, 70% of grazers find its services beneficial, while 57% of farmers are also highly favorable.

With this issue raised, it was very interesting to evaluate the intervention of the administration as far as solving farmer/grazer conflicts were concerned. A question in this light was posed and results showed that over 60% of the population thinks that the actions of the administration is positive but about 17.81% thinks that it is negative. This can be explained by the fact that once a case is taken to the administration, it is the highest bidder who turns to win the case irrespective of who was right or wrong, reason why in most cases they prefer to settle their crises amicably amongst them rather involve the administration.

Another set of actors involved in farmer/grazer conflicts were noted to be security forces. These security forces include the national police force and the national gendarmerie. As one of their missions to maintain peace and order, they are called upon to intervene when crises arose between farmers/grazers within the administrative unit. In this regard, a question was asked to appreciate their intervention as far as farmer/grazer conflicts are concerned. Another group of actors were identified to be the farmers themselves. As far as farmer intervention of farmers is concerned, it is evaluated at average above 68% of the respondents. Farmers do their best to amicably solve conflicts especially because they see cases as time consuming and financial waste. They then prefer to receive any token for their destroyed crops in order to move ahead than spending weeks or months going after cases, which might never become profitable. The farmers prefer dialogue in a majority of cases.



The grazers were not left as far as actors in farmer/grazer conflicts were concerned. The grazers were noted to be in a majority Moslems and the Borroro community though some natives equally engage in cattle rearing. Most of the grazers are not ready or willing to prevent conflicts or even solve amicably. Just about 27% holds that their intervention is positive. With their economic strength, most of the grazers are always ready to go an extra mile in collaborating with the administration to make the farmers uncomfortable. They pay huge sums of money to buy justice, to have access to grazing land even if it is farming land. They get this land from administrators and traditional rulers who are in most cases not the landowners. All of this instigates further and continuous conflicts

Hypothesis two stated that “MBOSCUDA and administrative authorities are the main actors managing farmer/grazer conflicts in the study area” since we used the chi square test of independence to verify this hypothesis, we have to state the Null and the alternative hypothesis. The Ho: MBOSCUDA and administrative authorities are the main actors of farmer/grazer conflicts.

Ha: MBOSCUDA and administrative authorities are not the main actors of managing farmer/grazer conflicts in the study area.

In order to verify this hypothesis data was taken from table 34, to constitute a contingency table where the chi-square statistics was calculated to give a chi square statistic ($x^2 = 66.05$), our predetermined alpha level of significance (0.05) and our degrees of freedom ($df = 4$). Entering the Chi square distribution table with 4 degrees of freedom and reading along the row we find our value of x^2 66.05 lies above the critical value which is 9.488. When the computed x^2 statistic exceeds the critical value in the table for a 0.05 probability level, then we can reject the null hypothesis of equal distributions. Since our x^2 statistic (66.05) is more than the critical value for 0.05 probability level (9.488) we can accept rather the alternative hypothesis that; “MBOSCUDA and administrative authorities are not the main actors of managing farmer/grazer conflicts in the study area. The results showed that in addition to the above-mentioned actors, the farmers and the grazers are considered one of the main actors in managing conflicts. Most of them have lost confidence on the administration and prefer to dialogue in order to sort out their differences amongst themselves and live happily in the community. This is consistent with the way that Fonjong et al. (2010) view this problem in terms of power dynamics, wherein neither farmers nor herdsmen have the financial clout to affect administrative choices due to what is referred to as the administration's rent-seeking behavior or a corrupt and bribery-plagued system. This is confirmed by Menjo (2002), who concludes that "public officials continue to take advantage of the ignorance of the local population to perpetuate their rent-seeking behavior" in one of the North West Region's district regions. Moritz (2013) reached the same conclusion after seeing that Northern Cameroon's traditional and administrative institutions are reluctant to settle disputes between farmers and grazers.

Impacts of farmer grazier conflicts in Santa sub-division

In order to break down the understanding of the impacts of farmer/grazer conflicts, analyses were done on each of the actors. In this light, the consequences were evaluated on the farmers and grazers independently. The results of the question posed in this regard are presented on table 3.

Table 3: Consequences of conflicts on famers

Consequences	Respondents	Percentage
Loss of crops	70	41.18
Hatred for grazers	45	26.47
Drop in productivity or abandon of activity	65	32.35
Total	170	100

Source Field inquiry 2022

As far as the consequences on farmers are concerned, they suffer from crop loss at 41%, which leads to a drop in productivity at 32%. The farmers turn to develop hatred for grazers, which leads to intimidation, physical attack, injuring of cattle and even death. These conflicts create associated disputes over access to resources such as water and land by farmers and grazers in a community, which they are bound to cohabit.

As the actors in farmer/grazer confrontations, it was crucial to observe the degree of heat experienced by the grazers. Table 4 displays the investigation's findings.



Table 4: Consequences of Farmer/Grazer Conflicts On Grazers

Consequences	Respondents	Percentage
Frustration	75	50.00
Hatred for farmers	40	26.67
Loss of cattle and money	35	23.33
Total	365	100

Source Field inquiry 2022

As to the grazers, most of them become frustrated at 50% because their cattle are sometimes poisoned and killed and they or the cattle are sometimes physically attacked. This leads to hatred towards farmers and this might lead to illegal detention or intimidation. The grazers' lose huge sums of money to pay for the crops destroyed or to bribe the administration to work things out for their benefit.

It was an important aspect of this work to evaluate the impact of farmer/grazer conflicts on natural resources within Santa Sub-Division. The results of this inquiry are presented on table 5

Table 5: Consequences of conflicts on natural resources

	Respondents	Percentage
Pressure on water/land	300	82.20
Loss of biodiversity	30	58.22
Restriction to land/water	35	9.58
Total	365	100

Source Field inquiry 2022

The consequences of these conflicts were equally evaluated on natural resources and this ranged from pressure on the resources at 82.20% while biodiversity loss due to overgrazing or over cropping is common. This is because of the limited land. There are also restrictions to access to water and land at 9%. This shows that when conflicts take place, not only do the farmers and grazers suffer, the land and the water resources also suffer from overexploitation and loss. Resolving these conflicts therefore will help preserve land and sources of clean water.

I was not out of place for the conflicts to be evaluated on the population. The results of the inquiry are presented on table 6.

Table 6: Consequences of conflicts on the population of Santa Sub-Division

Consequences	Respondents		Percentage
	Farmers	Grazers	
Create tension	100	200	82.20
Abandon of grazing activity	5	30	9.58
Abandon of farming	20	10	8.22
Total	125	240	100

Source Field inquiry 2022

The results indicated an 82% response to tensions within the community. The effects of these conflicts from the economic point of view is devastating. Affected households spend much money in conflict resolution process. Crops valued at FCFA 50000 on average were destroyed in each farmer field by cattle. In a smaller number of cases affecting grazers, funds were lost because of livestock lost or injured cattle being treated. Sometimes these conflicts lead to abandoning of either grazing or farming activities at less than 10%. Some farmers abandon for other activities within or out of the sub-division. These conflicts therefore in some cases encourage rural exodus.

The third hypothesis of this work stated that "Disunity, hatred and drop in food crop production are the main consequences of farmer/grazer conflicts within Santa Sub-Division". The Null hypothesis can thus be stated as Ho: disunity and tensions are the main consequences of farmer/grazer conflicts within the study area. The Alternative hypothesis on its parts is that Ha: Disunity and hatred as well as drop in food production are not the main consequences of farmer-grazer conflicts

In order to verify this hypothesis, data from table 6 was used to build up a contingency table from where the chi-square statistics was calculated to give a chi square statistic ($\chi^2 = 2.28$), our predetermined alpha level of significance (0.05), and our degrees of freedom ($df = 2$). Entering the Chi square distribution table with degrees of freedom and reading along the row we find our value of $\chi^2_{0.05, 2}$ lies above the critical value which is 5.991. When the computed χ^2 statistic exceeds the critical value in the table for a 0.05 probability level, then we can reject the



null hypothesis of equal distributions. Since our χ^2 statistic (20.28) is more than the critical value for 0.05 probability level (5.991) we can accept our alternative hypothesis that “. Disunity and hatred as well as drop in food production are not the only consequences of farmer-grazer conflicts. Included is tensions, abandon of activity and destruction of natural resources. This is related to Fonjong et al. (2010), who contended that ongoing disputes between farmers and grazers make it more difficult for women to guarantee food security in the home. Families and the country as a whole suffered as a result of the farmer-grazer dispute in Nigeria's Bauchi state. The repercussions of farmer-grazer confrontations in Bauchi state include significant financial losses, decreased productivity, social insecurity, and children not attending school. Financially, both farmers and grazers suffer, with farmers suffering the most (Sulaiman and Ja'afar-Furo, 2010). Water quality deteriorates as a result of competition for water use and the ensuing conflict (World Bank, 2012).

Measures to solve conflicts

The question was however posed to the actors of farmer/grazer conflicts mitigation methods and the results are presented on table. They were asked the question of what can be done to help farmers and grazers live and carry out their activities without being a threat to each other.

Table 7: proposals to remedy farmer/grazer conflicts in Santa Sub-Division

Proposal	Respondents		Percentage
	Farmers	Grazers	
Farmers should fence their farms	5	20	6.85
Grazers should practice ranching	20	5	6.85
Grazing and farming land should be demarcated	35	30	17.80
Farmer/Grazers should dialogue	80	120	54.79
Others	30	20	13.70
Total	170	195	100

Source Field inquiry 2022

As proposals, a 54.79% proposed dialogue between farmer/grazers, meanwhile other suggested measures such as demarcating grazing land from farming land. Others encourage grazers to fence their farms. This will go a long way to reduce the tension between farmers and grazers which in most cases profit neither the population nor the natural resources.

The table clearly indicates that dialogue is the best option to avoid and solve issues that might arise between farmers and grazers in an agro-pastoral environment such as Santa Sub-Division.

Dialogue between the two direct parties, the farmer and grazer is often the first spontaneous step in resolving a conflict. Usually when either a farmer or grazer intrudes into the other’s activity, conflict erupts. Dialogue is initiated by any party in an attempt to resolve the problem. In the case of intrusion by a grazer into a farmland, the farmer may assess the damages recorded and bring the attention of the grazer on the need for compensation in dialogue

Hypothesis four of our work was stated as “The resolution of farmer-grazer conflicts by dialogue can help to sustain natural resources. The Null hypothesis could thus be stated as Ho: Dialogue is the main way out of conflicts between farmers and grazers. The Alternative hypothesis is thus Ha: Dialogue is not a solution to farmer/grazer conflicts that can sustain natural resources”. Data from table, was used to compose a contingency table in order to evaluate the hypothesis using the chi-square statistics. We now have our chi square statistic ($\chi^2 = 26.76$), our predetermined alpha level of significance (0.05), and our degrees of freedom (df =4). Entering the Chi square distribution table with 4degrees of freedom and reading along the row we find our value of χ^2 26.76 lies above the critical value which is 9.488. When the computed χ^2 statistic exceeds the critical value in the table for a 0.05 probability level, we can reject the null hypothesis of equal distributions. Since our χ^2 statistic (26.76) is more than the critical value for 0.05 probability level (9.488), we can rather accept our alternative hypothesis that “Dialogue is not a solution to farmer/grazer conflicts that can sustain natural resources”. Other important measures are demarcation of grazing and farming land amongst others, even though dialogue seems to be the most prominent.

Recommendations

The following tactics that arise from these gender concerns must be promoted in order to improve the agrarian stability of this production basin: Financial support from governmental institutions, non-governmental organizations, and other sources - Offering agriculture inputs including manure, fertilizer, and seedlings for hire



purchase Field extension agents' follow-up; the creation of a marketing strategy that ensures price stability and strong profitability Improved farming methods must be implemented in light of the growing population and shrinking farmlands. Farmers should use enhanced seeds and agricultural products to implement intensive farming.

To deal with the increasing population pressure on Cameroon's grass fields, pastoralists should implement a sustainable and intense grazing system.

In times of scarcity during the dry season, they should start producing fodder by cultivating *Bracharia* and *Guatemala*.

Through the Agro-pastoral Commissions, which are in charge of allocating land and resolving disputes, the government ought to step in. This will both legally and practically redraw the lines separating farmlands from grazing areas.

Law enforcement officials could accomplish this by ensuring that certain boundaries are upheld. For a variety of reasons, including remoteness, system complexity, and a lack of appreciation for their significance, government research and extension services have paid less attention to and provided fewer advantages to integrated crop and animal farming in the Santa Highlands. Nonetheless, the system is a significant component of this production basin's agricultural industry. Strengthening the ability of Sub-Divisional authorities and the Santa Rural Council to identify issues, barriers, and opportunities for farm development through participatory means and to support government or private extension and research services in the Santa highlands should be the top strategic priorities for the future.

CONCLUSION

The management of farmer-grazer conflicts in Santa sub-division reveals the intricate relationship between conflict resolution mechanisms and sustainable natural resource management. Through this study, it becomes clear that effective conflict resolution between farmers and grazers not only promotes social harmony but also plays a crucial role in preserving the region's natural resources for future generations. The traditional and modern conflict resolution approaches implemented in Santa have demonstrated that when stakeholders work together, it is possible to achieve both peaceful coexistence and environmental sustainability.

The success of various conflict resolution initiatives in Santa sub-division provides valuable lessons for similar agro-pastoral communities facing resource-based conflicts. The implementation of strategies such as demarcated corridors, seasonal grazing arrangements, and participatory land-use planning has shown that sustainable solutions must address both immediate conflict triggers and long-term resource management concerns. Moreover, the integration of traditional authority structures with modern administrative mechanisms has created a more robust and culturally appropriate conflict resolution framework.

However, the sustainability of these achievements requires continued commitment from all stakeholders – farmers, grazers, traditional authorities, and government institutions. Investment in capacity building, strengthening of local institutions, and adoption of improved agricultural and grazing practices must remain priorities. The experience of Santa sub-division demonstrates that successful natural resource management is inextricably linked to effective conflict resolution mechanisms and stakeholder collaboration.

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