

Analysis of Agricultural Extension Methods Used by Extension Workers for Conflict Resolution among Agro – Pastoralists in Adamawa State, Nigeria

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Abstract

The study was conducted to analyze the agricultural extension methods used in conflict resolution among agro – pastoralists in Adamawa State, Nigeria. A multi – stage random sampling technique was used to select 160 respondents who were administered interview schedules. Data were analyzed using descriptive statistics (frequencies and percentages) statistics and inferential (multiple regression) statistics. The study indicated that livestock destruction of farmlands was the major (50.63%) source of conflict among the respondents. The results revealed that the major (55.0%) source of conflict resolution among the respondents was community leaders in conflict resolutions. The study showed that truce was the most important type of conflict resolution used by respondents (59.38%). Majority (82.5%) of the respondents preferred face to face extension contact methods used for learning conflict resolution. All the positive significant relationship at 5% levels indicated that, an increase in each of these extension methods is likely to increase in conflict resolutions among agro – pastoralists. The study recommended that extension working environment should be strengthened with motivational mechanism to achieve the desired impact on conflict resolution among agro – pastoralists in the study area.

Key words: Sources of conflict, Conflict Resolution and Agro – Pastoralists, Adamawa State, Nigeria

1.0

INTRODUCTION

Pastoralism is still the dominant system of cattle production in Adamawa state, this traditional system is breaking down because of population explosion which had increased in recent decades and cycles of yearly decrease of rainfall. Drought and shortage of fertile land seems to constitute part of the problems faced by farmers in the region. Several authors have postulated that problems of population pressure can be ameliorated through change in farmer's attitude towards the development of crop-livestock farming. This is because population pressure and climatic changes in the region had caused major changes in the pattern of livestock ownership and agricultural production. An increasing proportion of livestock in Adamawa State is now owned by crop farmers, who invest their surplus revenue from crop sales and change state to animal production.

Farmers also take advantage of low livestock prices during drought period to acquire animal from poor pastoralist. This process fostered crop-livestock integration in to mixed farming without consideration on its effects on social and economic development; it has also threatened the peaceful co-existence between crop farmers and pastoralists that require extension education for conflict resolution. Pastures in the crop area and crop residues hitherto accessible to pastoralists are used by village-based livestock, while labour and other productive inputs are shared between livestock and crop production. Even marginal pasture lands have been converted to crop cultivation due to population pressure making pastoral livestock rearing difficult. The pastoralists are now becoming sedentary pastoralists and eventually agro-pastoralist, who produce crop and raise cattle principally due to decline in grazing on natural pastures. Feeling of insecurity, mistrust and hatred among crop farmers and pastoralists alike affect social and economic life of citizenry which leads to further conflicts. These results in farmers migrating from one place to another leading to increased low productivity.

In Nigeria for instance, the grain needed for urban consumption in the three states of Kano, Jigawa and Katsina increased from 62,000 tons in 1952 to 585, 000 tons in 1991 (Tiffen, 2001). The resulting increased production of crop and its residues on farm have changed the feeding strategies of human and animal from commercial compounded feed field crops and its bye product. These changes had strong impact on urban incomes higher than rural incomes, and also there were increase in demand for livestock products, such as meat and milk (Godwoli, 1998). The increase for livestock products created competition between crop and livestock supply for human use. These relationships between crop and livestock demands require a closer integration of cropping and livestock rising. To take advantage of growing urban markets for crops and livestock products expansion, farmers require more grazing land for better production of crop-livestock mix. It was observed that a better relationship has a possibility of beneficial and rapidly increasing interaction between urban and rural sectors as in Europe, America and Asia (Tiffen, 2003). The concept of extension education as stressed by Dixon and Gibbon, (2001) as an informal out of school system of education, designed to help rural people to satisfy

their needs, interest and desires. Sulaiman, (1998) referred to extension as a process whereby end users (pastoralists) are organized through formal and informal education to acquire knowledge to improve on their living standards. Umoh, (2006) highlighted that agricultural extension educates pastoralists and their households on better position for them to make sure that they have enough information to make decision which are appropriate for the particular conflict circumstance at the farm and household level of the agro – pastoralist communities which depend on it.

Consequently, herd size tends to decline with period of settlement, and more involvement in crop farming. This situation calls for extension education to identify areas of conflicts and resolutions for peaceful co-existence of the agro pastoralists in their communities for livestock and crop enterprise combination in order to improve on agricultural development.

1.1 Objectives of the Study

The main objective of the study is to analyze agro pastoralists' conflict resolution through agricultural extension methods in Adamawa state, Nigeria. While the specific objectives were to:

- i. identify the sources of conflict among the respondents in the study area,
- ii. identify the sources of conflict resolutions among the respondents in the study area,
- iii. investigate the types of conflict resolution among the respondents in the study area,
- iv. examine pastoralist preferences for extension methods use in learning conflict resolution among the respondents in the study area, and
- v. determine the relationship between selected extension methods and conflict resolution among the respondents in the study area.

2.0

METHODOLOGY

2.1 Study Area

The study area was Adamawa state, located in the North-eastern part of Nigeria between latitude 8°N and 11°N and longitudes 11.5°E and 13.5°E (NPC,2006). To the east of the state is the Republic of Cameroun, while Taraba, Borno and Gombe states share border with Adamawa state to the south-west, north and north-west respectively. The population of Adamawa state stood at 3.17 million and the total area of the state is approximately $38,741\text{km}^2$ with about 226.04km^2 being arable (NPC,2006).

Adamawa state climate is characterized by distinct a dry and rainy season which is typical of tropical climate. The dry season starts in November up to April while the rainy season starts in April and end in October. August and September are usually the wettest months with rainfall ranging from 700mm to 1600mm; the maximum temperature can be as low as 18°C between December and January. Relative humidity is as low 25% in March to as high as 80% in August. The major vegetation formations in the State are Southern guinea savannah, Northern guinea savannah and the Sudan guinea savannah. Within each formation is an interspersed of thick tree Savannah, open grass savannah and flinging forests in the river-valley.

Majority of the people are farmers who. Cultivate different variety of crops and rear of animals. The major crops of economic importance in the state include maize, millet, sorghum, rice, yam, cowpea and groundnut. Animals such as cattle, sheep and goats are predominant in livestock production. The farming system in the area extends from mono-cropping to mixed farming. The state is divided into four zones under the Agriculture Development Programme (ADP) namely Mubi, Gombi, Mayo-Belwa and Guyuk.

2.2 Sources of Data

The primary source of data for the study was interview schedule, which was administrated to the respondents. The use of materials from National Commission for Nomadic Education Library and the Internet served as the secondary source of information.

2.3 Sampling and Analytical Techniques

A multi-stage random sampling technique employed to select respondents for data collection for the study. The first stage was the random selection of two (2) Local Government Areas (LGAs) from each of the four Agricultural Development Project (ADP) administrative zones. This brings a total of 8 LGAs selected. In the second stage three villages were randomly selected from each of the eight LGAs, making a total of 24 villages. The third stage involved random and proportionate selection of seven agro - pastoralists from the 24 villages for the study. Therefore, the total sample size for the study was 168, however only 160 of the interview schedules were used for the analysis as the remaining eight were not properly filled. Both descriptive and inferential statistics were used to analyze the data for the study. Descriptive statistical techniques such as frequency and percentages used to categorize and summarize the data.

2.4 Multiple Regression Analysis

The multiple linear regression technique was used to determine individual and combined effects of the independent (extension methods) variables on the dependent (conflict resolution) variable in the study. The multiple regression model was explicitly expressed as:

$$Y = a + a_1 X_1 + a_2 X_2 + a_3 X_3 + a_4 X_4 + a_5 X_5 + a_6 X_6 + U \dots\dots\dots(i)$$

Where Y= conflict resolution

- a = Constant
- X₁ = Farm and home visits
- X₂ = Demonstrations
- X₃ = Educational campaign
- X₄ = Group Discursions
- X₅ = Meetings
- X₆ = Radio and Television
- U = Error term

Four functional forms of the regression models were tried namely: linear, double – log, exponential and semi – log. Exponential log was chosen as the lead equation based on the magnitude of R², statistical significance of the co – efficient and the expected *a priori* of the results.

3.0 RESULTS AND DISCUSSION

3.1 Major Sources of Conflict among Respondents

In this study area, the respondents were asked to indicate their major sources of conflict. The respondent's major sources of conflicts are presented in Table 1. The result revealed that 21.88% of the respondents indicated that livestock passage through their farmlands were their major source of conflict. Majority (50.63%) of the respondents revealed that destruction of farms by the livestock were their major source of the conflict. While, 16.88% and 10.63% of the respondents were of the view that land ownership and rivalry respectively were the sources of conflict in the study area. This was in agreement with that of Hussein (1998) who noted that crop damage was the main cause of conflict between herders and farmers in Northern Nigeria.

3.2 Sources of Conflict Resolution by Respondents

The distribution of respondents according to their sources of conflict resolution was presented in Table 2. The result revealed that about 14.40% of the respondents indicated that extension agents were their major sources of conflict resolution. Majority (55%) of the respondents reported that community leaders were their major source of conflict resolution. About 8.75% of the respondents reported that police were their major source of conflict resolution, while 16.25% of the respondents revealed that friends and relatives were their sources of conflict resolution. About, 5.60% of the respondents reported that cooperative union and NGOs' were the major sources of conflict resolution in the study area. The study showed that majority of the respondents use community leaders as their source of conflict resolution, implying that they had respect for community leaders.

3.3 Types of Conflict Resolution Used by Respondents

The distribution of respondents according to the types of conflict resolution used in the study area is presented in Table 3. The result revealed that majority (59.38%) of the respondents indicated that they use truce method in resolving their conflicts, while 7.5% of the respondents used displacement method. Furthermore, 3.75% used super ordination method, 18.745 of the respondents used compromise method, while 10.63% of the respondents used tolerance in resolving their conflicts in the study area. Thus, the study showed that truce was the most important method of conflict resolution in the study area.

3.4 Preferences of Extension Methods for Learning Conflict Resolution

The distribution of farmers by preferred method of transfer of conflict resolution technique by extension agents is presented in Table 4. The result revealed that majority (82.5%) of the respondents preferred face to face method with extension agents for learning conflict resolution, 2.5% preferred telephone calls for learning conflict resolution, 9.37% preferred group discussion, and 4.375% of the respondent preferred meeting in transferring knowledge gain on conflict resolution by extension agents. The study indicated that face to face method was the most preferred method of learning conflict resolution by respondents.

3.5 Relationship between Extension Methods and Conflict Resolution

The results explain that the adjusted R² of 0.715 connotes that 71.5% of the variables in conflict resolution were explained by the changes in independent (extension methods) variables in Table 5. This result implies that, as the farm and home visits increased, conflict resolution ability of respondents also increases.

Table 5 reveals that demonstration and education campaign had estimated variable was significant at 5% levels. This implies that an increase in demonstration and education campaign results in corresponding increase in conflict resolution ability of respondents. This could be due to the fact that these extension methods are likely to enhance teaching and learning about conflict resolution among agro pastoralists. The table reveals that there is an inverse and significant relationship between group discussion and conflict resolutions. Table 5 reported that a unit increase in group discussion results in decreased conflict resolution ability of respondents. This relationship was inverse, and the implication was that when there was increase in group discussion, it could likely to generate more conflict due to the fact that people of different interest, sentiment and social back ground who come together to discuss conflict situation. All the positive significant relationship at 5% levels indicate that, an increases in each of these extension methods is likely to increase in conflict resolution among agro – pastoralist. This could be possible because agro –pastoralist consist of diverse farmers in terms of socio - cultural background. Extension works that were in constant contact with agro- pastoralists could be aware of their interest and so select suitable extension methods for conflict resolution.

4.0 CONCLUSION AND RECOMMENDATIONS

The study reported that, there were diverse sources of conflicts among the respondents which range from; livestock passage through farmlands, livestock destruction of farmlands, Based on the findings of the study, the following recommendations were made:

1. Rigorous identification, provision of adequate grazing reserve and stock route need should be considered by the Local, State and Federal Government of Nigeria.
2. Provision of essential water reservoirs, on livestock routes, and veterinary clinic are pre – requisite for conflict eradication between the crop and livestock owners.
3. An adequate number of qualified and competent agricultural extension agents should be provided and motivated in order to achieve the desired impact on conflict resolution in the study area.

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APPENDICES

Table 1: Distribution of respondents by major sources of conflict (n = 160)

Variable	Frequency	%
Livestock passage through farmland	35	21.88
Livestock destruction o farmlands	81	50.63
Land ownership decision	27	16.88
Potential Rivalry	17	10.63

Source: Field Survey, 2013

Table 2: Distribution of respondents by major sources of conflict resolution (n = 160)

Variable	Frequency	Percentage (%)
Extension workers	23	14.40
Community leaders	88	55.00
Police	14	8.75
Friend and Relations	26	16.25
Cooperative Union & NGOs	09	5.60

Source: Field Survey, 2013

Table 3: Distribution of respondents by types of conflict resolution used(n = 160)

Variable	Frequency	Percentage (%)
Truce	95	59.38
Displacement	12	7.50
Super ordination	6	3.75
Compromise	30	18.75
Tolerance	17	10.63

Source: Field Survey, 2013

Table4: Distribution of respondents by preferred extension methods for learning conflict resolution (n = 160)

Variable	Frequency	Percentage%
Face to face	132	82.5
Telephone calls	4	2.5
Group Discussion	15	9.38
Meeting	7	4.37
Radio & Television	2	1.25

Source: Field Survey, 2013

Tables 5: Relationship between extension methods and conflict resolution

Extension methods	Semi log	Linear log	Double log	Exponential log
Constant	.01102	.07136	13123	32252
Farm and home visits	.04348**	.04272**	.04871**	.04643**
Demonstration	.02463**	.01632**	.01522***	.03005**
Education campaign	.04131**	.04751**	.05001**	.03224**
Group discussion	-.02121**	.03494**	.04141**	-.02128**
Meetings	.03543**	.025367**	.03624**	.02542**
Radio and television	.00433***	-.00456***	.0056***	.04302**
R ²	0.642	0.546	0.602	0.645
Adjusted R ²	0.524	0.423	0.461	0.715
F-ratio	43.311	17.112	19.560	22.688

Source: Field survey, 2013

*** Significant at 0.01

** Significant at 0.05