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Effect of Fulani Herdsmen Grazing Activities on Food Crop Production among Farm Youth in Nigeria

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Abstract. This study investigated the effect of herdsmen grazing activities on food crop production among farm youth in Nigeria. Data were collected from 120 farm youth through a structured interview schedule with a multi-stage selection process. Data analysis was done using appropriate statistics. The results reveal mean age and experience in the farming of the youth were 29.03± 1.9 years and 11.11 ±7.22 years, respectively. Many (69.2%) of them were male with at least 77.5% having primary school education, and 60.88% had experienced the occurrence of Fulani herdsmen grazing activities in the past three years. In addition, 98.3% experienced high effect of Fulani herdsmen grazing activities on their food crop production. Verbal warning (mean = 2.96) ranked highest among coping strategies adopted by farm youth, followed by local security (mean = 1.94) among others. At $p<0.01$, the perception of the grazing activities ($r = 0.595$), experience in farming ($r = 0.411$), and coping strategies ($r = 0.446$) had a substantial association with the effect of the Fulani herdsmen grazing activities on food crop production. The study then concluded that the Fulani herdsmen grazing activities had a high effect on the food crop production of the farm youth.

Keywords: coping strategies, farm youth, food crop production, fulani herdsmen, grazing activities

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1. Introduction

Agriculture is arguably the most important part of Nigeria's economy. Unemployment in the country by giving jobs to over 35% of the country's population. Agriculture, comprising food crop production, is the bedrock of Nigeria's economy [1]. It is the foremost source of means of support; it has four common aspects which are crop production, fishing, forestry and rearing of livestock. One of the barriers facing the sector is the effect of grazing activities on the crop farms, especially, currently gaining prominence in many parts of the country, Southern part inclusive. This is a severe challenge since Nigeria has a great herd of cattle population in the hand of herdsmen [2]. While the farm youth are notable for crop production, the grazing activities of the Fulani herdsmen often impede on their farming activities. A farm youth, in this context, according to [3], is a child born on the farm, socialized into farming and found to have developed adequate, cultural

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capital suitable for farming right from his or her tender age. This category of youth is about 40% of over 140 million of Nigerian population [4].

Studies like [5] – [8] focused on conflict between herdsmen and farmers, however, no empirical studies have addressed the effect of herdsmen grazing activities on food crop production from farm youth's perspective. Thus, an important goal of this study was to investigate in detail and give clearer picture of the effect of Fulani herdsmen grazing activities on food crop production of farm youth. Hence, the study specifically described the characteristics of farm youth in Nigeria; determined the level of occurrence of Fulani herdsmen grazing activities, determined the perception of farm youth towards Fulani herdsmen grazing activities in Nigeria; examined the effects of Fulani herdsmen grazing activities on food crop production among farm youth in the study area, and identify the coping strategies used by farm youth to mitigate the effect of herdsmen grazing activities on their food crop production in the study area. The study also determined the relationships between the effect of Fulani herdsmen grazing activities on farm youth food crop production and their socio-economic characteristics, and their perception.

2. Methods

2.1. The Area of Study

The study area is Nigeria within northern hemisphere of Africa. The Nigerian geographic coordinates is located at latitude 9.081999 and longitude 8.675277. It is a federal constitutional republic comprising 36 states and its Federal Capital Territory is Abuja. Nigeria is in West Africa and shares land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north a reflected in Figure 1.

Figure 1 Map Showing the Studied Area

2.2. Sample Selection

The target population for this included all the farm youth in Nigeria. A multistage sampling technique was employed. At first stage, Oyo state was purposively selected because it stands as one of the food baskets of the nation. At the second stage, 3 Local Government Areas (LGAs) were purposively selected due to predominance of Fulani grazing activities, that is, Ibarapa North, Ibarapa East, and Ibarapa Central. At the third stage, 10 farming communities were proportionately selected from the LGAs; 4, 3, and 3 from Ibarapa North, East, and Central, respectively. At the last stage, 12 farm youths were randomly selected from each of the selected villages making 120 respondents.

2.3. Data Analysis

The structured interview schedule for collecting information was written in English but interpreted to local language (Yoruba) for the illiterate farm youths. Data collected was subjected to both descriptive and inferential statistics. Descriptive statistics include mean and standard deviation, percentage, and frequency distribution, while Chi-square and Pearson Product Moment Correlation (PPMC) analyses were used to test the stated hypotheses.

2.4. Measurement of Variable

The effect of the Fulani herdsmen's grazing activities on the food crop production was measured by asking the respondents to respond to statements in the interviewed schedule. Six questions were asked which include, loss of lives due to conflict, crop damaged by cattle, loss of income, environmental degradation, water contamination, low participation in food crop production and the respondents were asked to specify if there is any, which were recorded as High effect (3), Moderate effect (2), Low effect (1), No effect (0), with maximum obtainable score as 18 and minimum obtainable score as 0. They were later categorized into high, moderate, and low using equal interval approach.

3. Results and Discussion

3.1. Characteristics of the Farm Youth

Result in Table 1 reveals that the respondents' mean age was 29.03±5.190 years. The implication of this result is that the farm youth are young, productive, and energetic, which could have an encouraging outcome on the deployment of appropriate coping strategies by the respondents (farm youth) to guard their villages against the illegal intrusion of Fulani herdsmen. This is in line with the findings of [9] which established that farming can be efficiently carried out by young people who are energetic, especially as majority of the rural farmers are getting old and needs the young people to take over from them. Table 1 also reveals that many (69.2%) of the respondents were male. The implication is that most of them were males, which therefore suggests that farming activities are men dominated as a result of its tediousness. This corroborates the findings of [10],

who discovered that agricultural operations require physical strength inherent of males. In addition, the Table shows that almost half (48.3%) of the respondents had secondary education. This implies that more than half of the respondents have one form of education or the other. Furthermore, this confers on farm youth the ability to call for dialogue whenever there is any clash between them and the Fulani herders. This agrees with [11] who asserted that the majority of the rural workforce (particularly the farm youth) can read and write, because of their large attainment of either primary or secondary school education. The mean years of farming experience was 17.11±7.22 years. The result reveals that the majority of the respondents possessed more than 10 years of experience in farming, perhaps, due to being born into farming environment where they grew and socialized into farming at a very young age. More so, in the course of farming, they would have been faced with difficult challenges which, by reason of their experience, they have been able to handle overtime, including conflicts and misunderstandings [12]. Result in the Table also shows that vast majority (86.7%) are involved in farming as their main occupation from which they earn low income with annual mean income of ₦69, 850±7,750.14 (conversion rate of1$= ₦456). The contributory factor to the low income might be due to the grazing activities of the herdsmen on their farmland. Although there was no adequate record keeping justifying this assertion! However, this corroborated the findings of [13] who reported that majority of rural farmers are low-income earners.

Table 1 Respondents by Their Characteristics

Variables	Frequency	Percent (%)	Mean	Std.
Age (year)			29.03	1.90
≤30	52	43.3		
>30	68	56.7		
Sex				
Male	83	69.2		
Female	37	30.8		
Educational levels				
No formal education	27	22.5		
Primary	38	31.7		
Secondary	43	35.8		
Tertiary	12	10.0		
****Primary occupation***				
Farming	113	94.2		
Petty trading	12	10.0		
Artisanship	16	13.3		
Farming experience (years)			11.11	7.22
<10	16	13.3		
10-20	77	64.2		
>20	27	22.5		
Monthly income (₦)			69,850	7,750.14
<100,000	88	73.3		
100,000-240,999	27	22.5		
≥250,000	5	4.2		

Source: Field survey, 2021
Conversion rate of1$= ₦456
*Multiple response

3.2. Occurrences of Fulani Herdsmen Grazing Activities

The results in Table 2 show that "taking the cattle to the river for water" (mean = 4.97) in the host community was ranked highest among the herders' activities in which 96.7% of the respondents indicated daily occurrence. Also, "passing through the farmland" (mean = 4.53) was ranked second as herders' activities by the respondents with almost 93% indicated both weekly and daily occurrence. Furthermore, "feeding the cattle" (mean = 4.40) was ranked third with 90% of the respondents indicating both daily and weekly occurrence of the herders' activities. Robbery (mean = 4.08), kidnapping (mean = 2.67) and illegal occupying of farmland (mean = 0.98) occupied the fourth, fifth and sixth position, respectively. From this result, it could be inferred that taking the cattle to the river for water being the highest is the major occurrence of the Fulani herders grazing activities, followed by passing through the farmland, then followed by feeding the cattle. The herdsmen pollute the river by taking the cattle to the river which serves as the water source for the community on which they depend on for their daily supply of water. The cattle drop their dungs into the river after feeding which makes the water not healthy for farmers or inhabitants downstream. Also, herdsmen taking their cattle though the farmland causes great damages as the cattle feed on crops planted by the farmers or even crush the crop or trample upon it while passing. This leads to gross destruction of the crops thereby leading to shortage of food crop production and consequently, food insecurity. Also, the herdsmen feed the cattle anywhere green grasses are found without any regards to whether the location of the green grasses is someone's farm or not. This grazing activity leads to destruction of crops and farmlands, destruction of farmsteads and properties and consequently threat to life. The result corroborated the findings of [14], which linked the occurrence of Fulani herdsmen's grazing on farms to the country's food and national insecurity. He reported that serious conflict erupts between Fulani herdsmen and farmers leading to the loss of lives, valuable properties and destruction of the vast expanse of arable agricultural farmlands. Grazing on farmlands, which is the most likely activity of Fulani herdsmen has a negative impact on the livelihoods of the farmers in the study area, as farm productivity might drastically drop, which could in turn subject rural farmers to abject poverty.

Table 2. Respondents by Degree of Occurrences of Fulani Herdsmen Grazing Activities

Activities	N F (%)	O F (%)	M F (%)	F F (%)	W F (%)	D F (%)	Mean	Rank
Taking cattle to river for water	0(0.0)	0(0.0)	0(0.0)	0(0.0)	4(3.3)	116(96.7)	4.97	1st
Passing though the farmland	0(0.0)	5(4.2)	1(0.8)	3(2.5)	28(23.3)	83(69.2)	4.53	2nd
Feeding the cattle	0(0.0)	6(5.0)	0(0.0)	6(5.0)	36(30.0)	72(60.0)	4.40	3rd
Robbery	0(0.0)	12(10.0)	6(5)	9(7.5)	27(22.5)	66(55.0)	4.08	4th
Kidnapping	0(0.0)	57(47.5)	4(3.3)	16(13.3)	8(6.7)	35(29.2)	2.67	5th
Illegal occupying of farm shed	81(67.5)	16(13.3)	0(0.0)	6(5.0)	1(0.8)	16(13.3)	0.98	6th

Source: Field survey, 2021
F= frequency, %= percentages
Scoring keys: N=Not at all (0), O= Occasionally (1), M= Monthly (2), FN= Fortnightly (3), W= Weekly (4), D= Daily (5), Mean = Composite mean score of items

3.3. Level of Occurrence of Fulani Herdsmen Grazing Activities

The result in Figure 2 below shows the level of occurrence of Fulani herdsmen grazing activities in the study area. The result shows that very few (0.8%) experienced a low level of occurrence of Fulani herdsmen grazing activities. Also, less than half (46%) of the respondents experienced a moderate level of occurrence while more than half (60.8%) of the respondents experienced a high level of occurrence of Fulani herdsmen grazing activities. This implies that bulk of the farm youth experienced a high level of occurrences of Fulani herdsmen grazing activities in the study area. This suggest that farm youth are exposed to insecurity as these repeated occurrences of grazing activities push them to various kind of attack from these Fulani herdsmen.

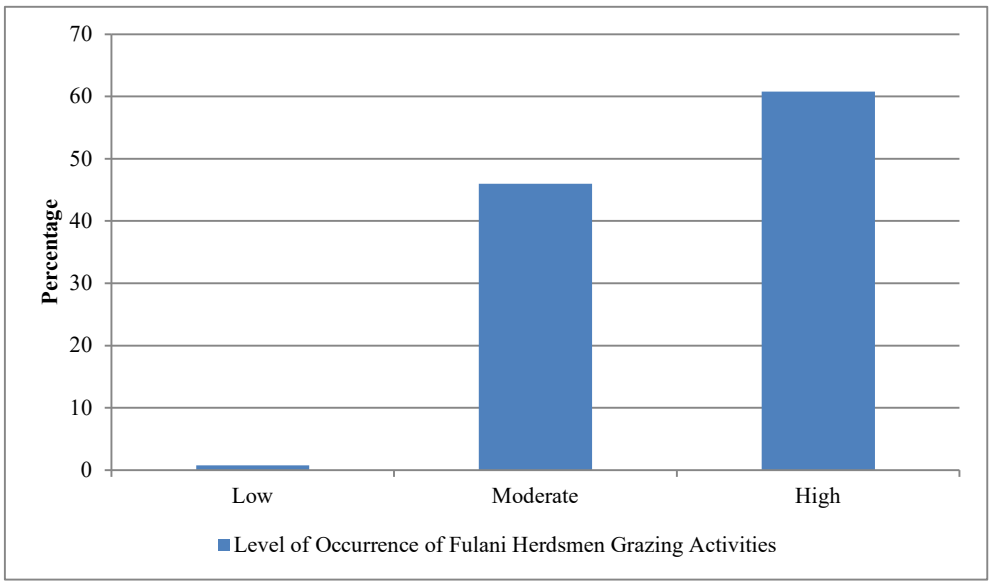

Figure 2 Level of Occurrence of Fulani Herdsmen Grazing Activities

3.4. Effect of Fulani Herdsmen Grazing Activities on Food Crop Production

The result in Table 3 revealed that 'Crop damaged by cattle' was ranked first with a mean score of 2.98, which is followed by 'loss of income' with a mean score of 2.95. 'Theft of farm produce' was ranked third with a mean score of 2.89, followed by 'low participation of farm youth in food crop production with the mean score of 2.88. Also, 'water contamination by cattle' with the mean score of 2.83 which was followed by 'environmental degradation' with the mean score of 2.80. Lastly, 'loss of lives' was also considered as an effect of Fulani herdsmen grazing activities with the mean score of 2.25. The grand mean was 2.98 and the standard deviation value 0.20. The implication of this result revealed that crops damaged by cattle being the highest on the Table 3 were major effect of herdsmen activities in the study area. The farm youth experiences damage and destruction of crops as the cattle are grazed on the farmland as they either eat the crops or trample on juvenile crops. Also, because of the huge loss in crop production, farm youth have less farm produce to sell which was the major reason for shortage in their annual income. Another outcome of the effect of herdsmen activities was that many farm youths are abandoning the farm to migrate to the urban centres in search for a more lucrative jobs due to the insecurity that Fulani

herdsmen grazing activities have cause thereby resulting in low participation in farming activities, yet, the few that manage to farm their cultivated farmlands have their crop yields destroyed by cattle. Others such as contamination of water, environmental degradation and loss of lives are also the effect of grazing activities by the herdsmen. The result of this study corroborates the findings of [10], [15], who opined that the result of grazing activities by the herdsmen is a sweeping food shortage, abject poverty and high rate of unemployment in the country. food crop production of the particular area is reduced, which eventually results into food scarcity.

Table 3 Respondents by the Effects of Fulani Herdsmen Grazing Activities on Food Crop Production

S/N	Effect of Fulani herdsmen grazing activities on food crop production	NH	LE	ME	HE	Mean	Rank
1	Crops damaged by cattle	1(0.8)	0(0.0)	0(0.0)	119(99.2)	2.98	1st
2	Loss of income	1(0.8)	1(0.8)	1(0.8)	117(97.5)	2.95	2nd
3	Theft of farm produce	1(0.8)	4(3.3)	3(2.5)	112(93.3)	2.89	3rd
4	Low participation of farm youth in food crop production	1(0.8)	0(0.0)	10(8.3)	109(90.8)	2.88	4th
5	Water contamination by cattle	1(0.8)	6(5.0)	5(4.2)	108(90.0)	2.83	5th
6	Environmental degradation	1(0.8)	0(0.0)	21(17.5)	98(81.7)	2.80	6th
7	Loss of lives	2(1.7)	38(31.7)	8(6.7)	72(60.0)	2.25	7th

Source: Field Survey, 2021.
Grand mean 2.98±0.20
NH = Never Happened, LE = Low Effect, ME = Moderate Effect, HE = High Effect

3.5. Categories of Effects of Fulani Herdsmen Grazing Activities on Food Crop Production

Result in Table 5 show the respondents' level of effects of Fulani herdsmen grazing activities in the study area. According to the result, very few (15.8%) of the respondents indicated low effect of Fulani herdsmen grazing activities. Also, few (29.6%) of the respondents indicated moderate effect and more than half (54.6%) indicated high effect of Fulani herdsmen grazing activities in the study area. From this result, it is evident that majority of the farm youth are experiencing serious damages on their farm as a result of Fulani herdsmen grazing activities.

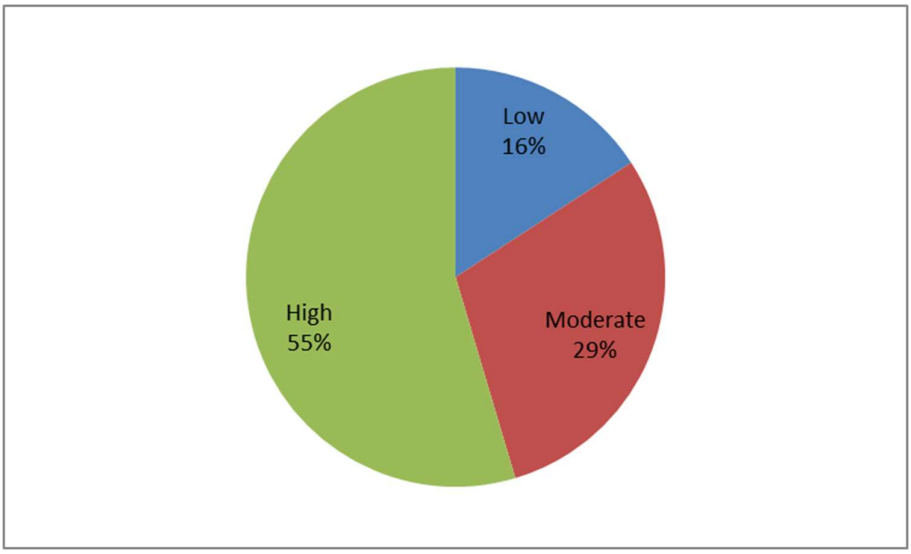

Figure 3 Distribution of the Respondents by the Level of Effects of Fulani Herdsmen Grazing Activities
Source: Field Survey, 2021

3.6. Coping Strategies Adopted by Farm Youth to Curtail Fulani Herdsmen Grazing Activities

Results in Table 4 show the rank mean order of coping strategies adopted by the farm youth to curtail the Fulani herdsmen grazing activities. The results show that 'verbal warning' (mean = 2.96) ranked highest among the coping strategies followed by 'local security' (mean = 1.94), 'fencing' (mean = 1.48), 'reallocation to new plots' (mean = 1.14), 'engaging in physical combat with herders' (mean = 1.14), 'arrest and prosecution' (mean = 0.83), and 'poisoning of the cattle' (mean = 0.03). The grand mean score was 1.88 with the standard deviation of 0.46. From this result, it could be inferred that verbal warning which has the highest mean value was deployed the most and this was to sternly warn the Fulani herdsmen to desist from taking their cattle to graze on their farm. Also, the use of local security was used to scare away these enemies. Fencing, reallocation of new plots, engaging in physical combats with herders, arrest and prosecution and poisoning of cattle were rated low as they are not been used always. This could be as a result of high cost of establishment of fencing and access to fencing materials for fencing. Also, farm youth are hardly reallocated another piece of land due to land tenure system highly practiced in the study area. Engaging in physical combat was also used by the respondents in the study area. This approach can be said to be inappropriate as it would not solve the problem. Conclusively, different approaches were used to curtail the damaging effect of the Fulani herdsmen grazing activities.

Table 4 Distribution of the Respondents by the Coping Strategies Adopted by Farm Youth to Curtail Fulani Herdsmen Grazing Activities

S/N	Coping strategies	Very often F (%)	Often used F (%)	Rarely used F (%)	Not used F (%)	Ranked Mean
1	Verbal warning	117(97.5)	2(1.7)	0(0.0)	1(0.8)	2.96
2	Local security	31(25.8)	53(44.2)	34(28.3)	2(1.7)	1.94
3	Fencing	11(9.2)	38(31.7)	68(56.7)	3(2.5)	1.48
4	Reallocation of new plots	25(20.8)	21(17.5)	20(16.7)	54(45.0)	1.14
5	Engaging in physical combat with herders	18(15.0)	15(12.5)	53(44.2)	34(28.3)	1.14
6	Arrest and prosecution	4(3.3)	13(10.8)	62(51.7)	41(34.2)	0.83
7	Poisoning of the cattle	0(0.0)	0(0.0)	4(3.3)	116(96.7)	0.18

Source: Field Survey, 2021
Grand mean = 1.88±0.46
F = frequency, % = percentages

3.7. Relationship between other Variables and Effect of Fulani Herdsmen's Grazing Activities on Food Crop Production

Result in Table 5 shows that at 0.01 and 0.05 levels of significant there was significant association between effect of Fulani herdsmen's grazing activities on food crop production and primary occupation (χ^2 = 22.868) and levels of education (χ^2 =19.700), respectively. This implies that primary occupation and years of education had significant association with effect of Fulani herdsmen's grazing activities on food crop production, also, the null hypothesis is accepted for sex but rejected for primary occupation and level of education. Consequently, the contingency coefficient revealed a strong association with primary occupation (C = 0.312) and levels of education (C = 0.279) based on [15], which described C value of 0.28 as moderate relationship, and greater values as higher association. The result also reveals that at 0.01 level of significance, respondents' farming experience (r = 0.411), and respondents' coping strategies (r = 0.446) had significant relationship with effect of Fulani herdsmen's grazing activities on food crop production; the null hypothesis was rejected for respondents' coping strategies. The coefficient of determination reflects the percentage contribution to the effect of Fulani herdsmen's grazing activities on food crop production. The contribution of respondents' farming experience was 16.9% (r^2 = 0.1689), and contribution of respondents' coping strategies was 19.9% (r^2 = 0.1989).

Table 5 Relationship Between Other Variables and Effect of Fulani herdsmen's Grazing Activities on Food Crop Production

Variables	χ2 Value	DF	P-Value	C	r	r^2
Sex	0.907	2	0.136	0.000		
Level of education	10.865	6	0.386*	0.279		
Primary occupation	34.322	6	0.623**	0.312		
Farming experience					0.411**	0.1689
Coping strategies					0.446**	0.1989

Source: Field Survey, 2021
Number of respondents = 120
**Significant at $P \leq 0.01$; *Significant at $P \leq 0.05$
χ^2 = Chi-square
C = Contingency coefficient,
r - Correlation coefficient, r2 - Coefficient of determination

4. Conclusion and Recommendations

Following results from analysis carried out on the data collected, the following can be inferred: majority of farm youth in the study area were male, literate with farming as primary occupation; the level of occurrence of Fulani herdsmen grazing activities was high; it was also evident that effect of Fulani herdsmen grazing activities on the food crop production very high. The null hypotheses were accepted for sex, but rejected for level of education, farming experience, and coping strategies. It was recommended that herdsmen and the agrarian youth should work together in establishing paddocks in order to restrict the movements of herds within the area.

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