Direct Research Journal of Agriculture and Food Science
Vol. 10(12) Pp. 279-284, December 2022
ISSN 2354-4147
DOI: https://doi.org/10.26765/DRJAFS44634267
Article Number DRJAFS44634267

https://directresearchpublisher.org/drjafs/

Full Length Research Paper

Farmers' Perception on the Impact of Grazing Livestock on Some Tuber Crops Production in Abuja, Nigeria

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Received 7 November 2022; Accepted 5 December 2022; Published 15 December 2022

ABSTRACT: In Abuja, a study was conducted to assess farmers' perceptions of the impact of grazing livestock on some tuber crops (yam, cassava, and potato). In the study area, 300 tuber crop farmers were sampled using a multi-stage sampling technique. A structured questionnaire was used to collect data. The results were analyzed using descriptive statistics and analysis of variance (ANOVA). According to the socioeconomic analysis, the majority of the farmers were male and married. The majorities of them had a household size of 6-10 people and were between the ages of 41 and 50, indicating that they were economically active. In addition, the majority of them had 11-20 years of farming experience and a secondary school education. The majority of them were smallholder farmers with no more than 3 hectares of farmland. Cassava was the most affected tuber crop in the study area by grazing livestock, while cattle were the most destructive livestock to tuber crops in the study area. The study found that the impact of grazing on tuber crop production varied significantly ($p < .05$) depending on tuber type (yam, cassava, and potato), livestock type (cattle, goat, and sheep), and location of the state's small-scale farmers. Furthermore, the interaction of tuber type, livestock type, and location had a significant impact on the level of grazing on tuber crops in the study area. The highest estimated average cost of cassava damage was N24, 519.19. The average cost of potato damage was N6, 328.36, the lowest in the study area. It was suggested that livestock farmers be given grazing reserves in order to reduce the constant clashes between crop farmers and herders caused by livestock destruction of crops.

Keywords: Tuber, livestock, production, grazing, perception

INTRODUCTION

Agriculture is a significant source of income and a source of livelihood for many households. According to Abdullahi (2017), this tradition has made agricultural pursuits and farming the most popular and fulfilling vocation and occupation of human choice, while also remaining the world's most economically rewarding investment platform. When it comes to national development, agriculture is the engine that drives economic processes. Agriculture was the mainstay of Nigeria's economy prior to the oil boom of the 1970s, according to historical evidence (Ayodele et al., 2013). Farmers are the primary actors in the agricultural value chain, and they are dispersed throughout the country's habitable regions (Idowu et al., 2012). Plants that produce starchy roots, tubers, rhizomes, corms, and stems are known as tuber crops. They are primarily used in human food, animal feed, and the production of starch, alcohol, and fermented beverages. Potato, sweet potato, and cassava are the world's most important root and tuber crops (Liu et al., 2014). Tuber crops, such as yam, cassava, and sweet potato, are among Africa's most important food crops for direct human consumption. The total value of yam,

cassava, and sweet potato production in Nigeria exceeds that of all other African staples (Sanginga and Mbabu, 2015).

Tuber crops have numerous advantages for long-term food production. They are versatile staples that can help millions of people achieve food and nutrition security while producing more food per unit area of land.

According to experts, pastoralism is causing many problems for society as a result of increasing desertification, development encroachment, and diminishing range lands (grazing resource). As can be seen, the country is currently dealing with food insecurity, environmental degradation, stifled economic growth, and distorted national integration.

These issues stem from clashes between herders and farmers as pasturing animals intrude on farmlands and watering points in search of free pasture, and farmers encroach on cattle routes in search of more cultivable land (Odoh and Chilaka, 2012). Precious human and animal lives are lost, crop yields are harmed, and not only are food security jeopardized, but manpower to support economic growth is reduced. Given that the struggle for available land resources causes conflict between crop farmers and pastoralists, it is necessary to investigate how tuber crop farmers perceive the impact of grazing livestock on crop production.

Objectives of the study

The broad objective of this study is to assess farmers' perception on the impact of grazing livestock on some tuber crops (yam, cassava and potato) while the specific objectives are to:

i. describe the socio-economic characteristics of tuber crop farmers in the study area.

ii. determine the tuber crops that are mostly affected by grazing livestock in the study area.

iii. determine the most destructive livestock to tuber crops in the study area.

iv. estimate the costs of damage by grazing livestock on tuber crops in the study area.

METHODOLOGY

The study location was Abuja in the north central zone, Nigeria. It is located between latitudes 8^0 25` and $9^0$ 25` North of the Equator and longitudes 6^0 45`and $7^0$ 45` East of Greenwich. Abuja is bordered on all sides by four Niger, Nasarawa, Kogi and Kaduna (Ajah *et al.,* 2015). Abuja is situated within the savannah region with moderate climatic conditions. The indigenous inhabitants of Abuja are the Gbagyi (Gwari), the major language, Bassa, Gwandara, Gade, Ganagana and Koro. The major stable crops grown in the area include cassava, yam, sweet potato, sorghum, maize, millet, onions, tomatoes, pepper, rice, groundnut, cowpea, etc.

Population of the study

The population of the study is small-scale tuber crop farmers in the study area.

Sampling technique

Multi-stage sampling technique was used to sample respondents for the study. The first stage involved the purposive selection of three (3) agricultural zones from the territory. These zones will be selected because of the high number of production in those zones. The second stage involved the selection of four (4) agricultural blocks from each of the three zones, resulting in six (12) blocks. In the third stage, five cells were selected from each of the twelve (12) blocks which will give a total of sixty (60) cells. The final stage involved the selection of five farmers from each of the 60 selected cells which resulted in a total of three hundred (300) respondents used for the study.

Method of data collection

Primary data were used for the study and they were collected through the use of well-structured questionnaire, administered to the respondents.

Data analysis

The objectives of the study were actualized using descriptive statistics such as frequency percentage and mean separations.

RESULT AND DISCUSSION

Socio economic characteristics of tuber crop farmers in the study area

The findings for the socio-economic traits of farmers who grow tuber crops in the research area are shown in (Table 1). The findings showed that men made up the majority of farmers (61.2%), with women making up the remaining 38.8%. This concurs with Kimaro et al. (2015), who claimed that due to the high energy requirements of the business, men are more frequently employed in agriculture than women. The majority of farmers (81.6%) were married, while 12.3% were single and 6.1% were either widowed or divorced. According to the household distribution of farmers in (Table 1), the majority (49.9%) of respondents had a household size of 6-10 people, 27.2% had a household size of 1-5 people, and only

Table 1: Socio economic characteristics of tuber crop farmers in the study area.

Socio Economic Variables	Frequency	Percent (%)
Gender		
Male	735	61.2
Female	465	38.8
Marital status		
Single	148	12.3
Married	980	81.6
Divorced	33	2.8
Widowed	39	3.3
Household size		
1-5	327	27.2
6-10	599	49.9
11-15	221	18.4
16-20	38	3.2
21 and above	15	1.3
Age (years)		
20 and less	21	1.8
21-30	193	16.0
31-40	349	29.1
41-50	451	37.6
51-60	138	11.5
61 and above	48	4.0
Farming experience (years)		
1-10	203	17.0
11-20	549	45.7
21-30	241	20.0
31-40	183	15.3
41 and above	24	2.0
Educational qualification		
No formal education	233	19.4
Primary education	258	21.5
Secondary education	445	37.1
Tertiary education	264	28.0
Farm size (ha)		
1-3	475	39.5
4-6	399	33.4
7-9	150	12.5
10 or more	176	14.6

Source: Field Data Analysis, 2021

11.15% had a household size of 11-15 people. According to Okoye et al. (2009), farmers with larger households have higher outputs per hectare than those with smaller households. The majority (45.7%) of respondents had been involved in agriculture for 11 to 20 years, 20.0% had farming experience ranging from 21 to 30 years, and 17.0% had farming experience ranging from 1 to 10 years. Table 1 also revealed that 37.6% of respondents were between the ages of 41 and 50, 29.1% were between the ages of 31 and 40, and 16.0% were between the ages of 21 and 30.

The level of education of tuber crop farmers revealed that the majority (65.1%) had a secondary school education, 28.0% had a tertiary school education, and 21.5% had a primary school education. Only 19.4% of those polled did not have any formal education. The majority of farmers (39.5%) had a farm size of 1-3 hectares, 33.4% had a farm size of 4-6 hectares, and 27.1% had 7 hectares of farmland.

Tuber crops mostly affected by grazing livestock in the study area

Figure 1 depicts farmers' perceptions of the tuber crops most impacted by grazing livestock in the study area. Cassava was found to be the most affected tuber crop by grazing livestock in the study area. The mean response was 2.12, the highest of the three tuber crops studied in this study. Furthermore, yam and potato had mean scores of 1.77 and 1.67, respectively. This means that

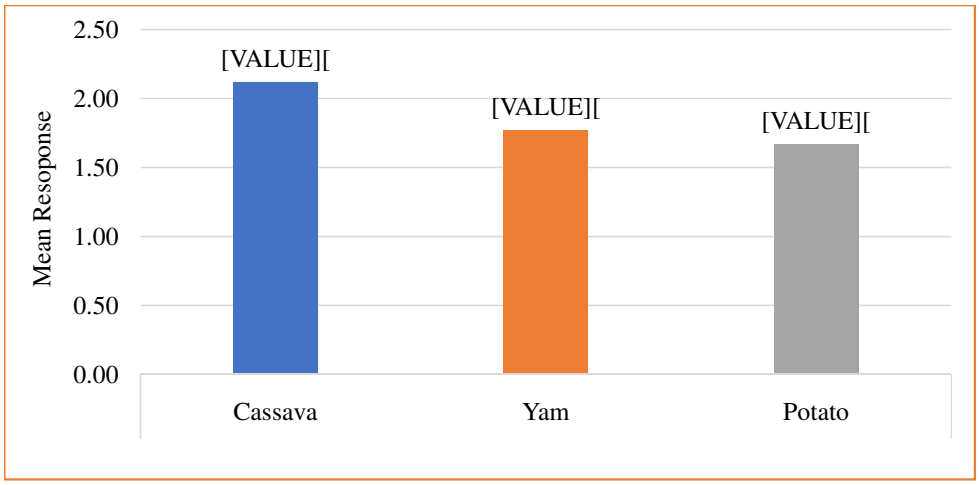

Figure 1: Farmers rating showing the most affected tuber crop (pooled data) Note: Means (bars) with the same alphabet did not significantly differ from each other
Computed from field data, 2021

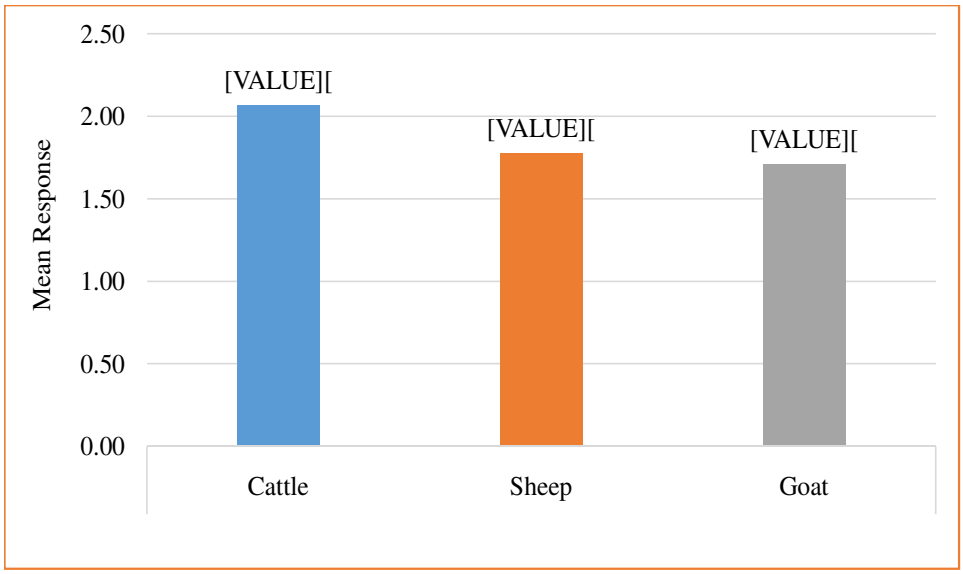

Figure 2: Farmers rating showing most disastrous livestock on tuber production (pooled data) Note: Means (bars) with the same alphabet did not significantly differ from each other
Source: computed from field data

both crops were significantly less damaged by grazing livestock because their mean scores were less than 2.12. This means that tuber crop farmers who cultivate more cassava are more likely to suffer losses than those who cultivate other tuber crop species. The potato crop was the least affected. This is consistent with the findings of Ajah (2017), who found that grazing livestock had the greatest impact on cassava farmers.

Livestock that farmers perceive as most destructive to tuber crops

Figure 2 depicts the results for the livestock that farmers perceived to be the most damaging to tuber crops in the study area. Cattle were the most destructive livestock to tuber crops in the study area, with a mean response of 2.07. This score is significantly (p 0.5) higher than that of sheep (1.78) and goats (1.71). Furthermore, the results revealed that sheep (1.78) were the second most destructive grazing livestock to tuber crops in the study area, while goats (1.71) were the least destructive livestock to tuber crops.

This suggests that goats are the least destructive animals. According to Ajah (2012), cattle have a much greater impact on crop production than other livestock such as goats and sheep.

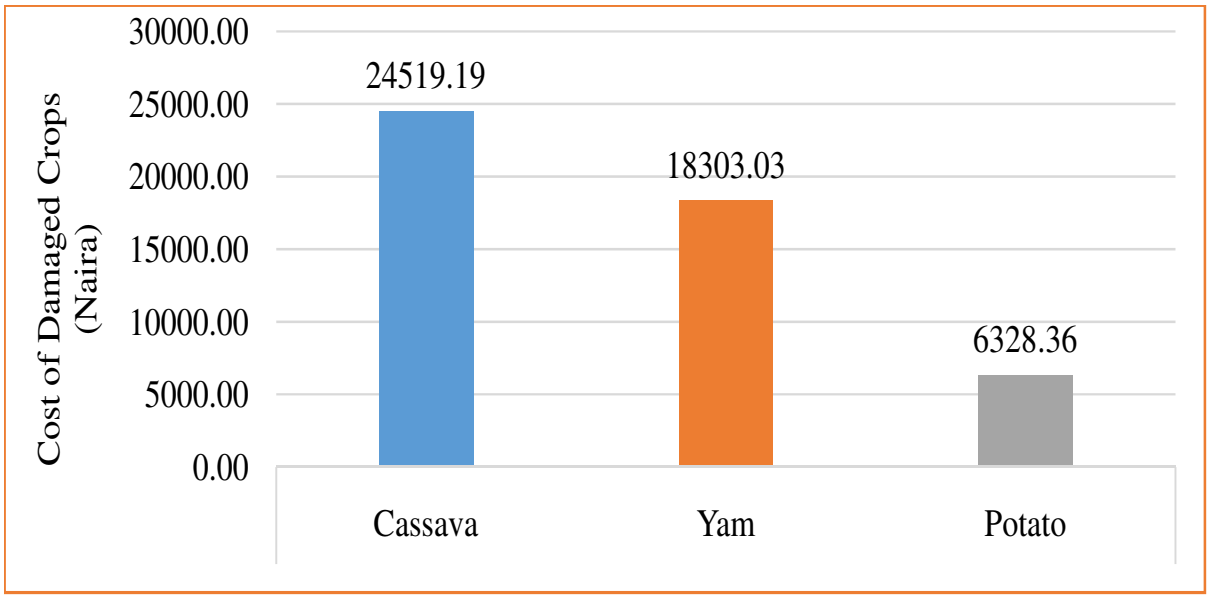

Figure 3: Cost estimates of tuber crops destroyed by grazing livestock in Abuja
Source: Computed from field data, 2021.

Cost estimates of tuber crops destroyed by grazing livestock in Abuja

Figure 3 depicts the estimated cost of damage caused by grazing livestock on tuber crops in Abuja. Cassava was the most expensive, with an average cost of N24, 519.19. The estimated cost of yam damage was N18, 303.03, while the cost of potato damage was N6,328.36. This means that cassava farmers suffered the greatest economic loss as a result of grazing activities in Abuja, while potato producers suffered the least.

Conclusion

Crop cultivation and livestock production in Nigeria under semi-intensive or extensive systems are not mutually exclusive because both require the use of scarce land resources. Crop farmers and herders must compete for available land, which frequently leads to clashes that have resulted in the deaths of many people and the destruction of property. Both animal husbandry and crop production are critical to maintaining food security and economic growth, so neither can be stopped. The effect of grazing cattle on the production of tuber crops must therefore be investigated. Cattle, sheep, and goats were included in the study's consideration of livestock, and yam, cassava, and potato were included as tuber crops. According to the study's findings, cattle are the most destructive animal in the study area, whereas cassava is more vulnerable to harm from livestock. Compared to other tuber crop producers in the research area, cassava growers experienced much higher financial losses from grazing operations.

Recommendations

Based on the findings, the following recommendations are made.

i. Grazing reserves should be provided for livestock farmers so that the incessant clashes between crop farmers and herders resulting from destruction of crops by livestock can be reduced. A peaceful co-existence between these different groups will ensure that both crop farmers and herders can carry out their production activities without fear. Also, this will ensure that damages caused by grazing animals is stopped or reduced.
ii. Extension workers should ensure that livestock farmers should be sensitized and encouraged to adopt intensive system of animal production.

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