

EFFECT OF INSECURITY ON CASSAVA PRODUCTION IN EDO STATE, NIGERIA

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ABSTRACT

In recent times, there has been an increase in insecurity around agrarian communities, which has impacted agricultural activities. This study examined the effect of insecurity on cassava production in Edo State. A sample size of 120 cassava farmers were selected using simple random sampling techniques, and an interview schedule was used to elicit data from them. Data were analyzed using frequency count, percentage, means, t-test, and Pearson Product Moment Correlation (PPMC). The finding revealed that the mean age of cassava farmers was 49 years, and 60 percent of them were married with an average household size of 8 persons. About 50% had primary education with a mean income of ₦147,675.00 per annum. The insecurity activities above 70 percent included armed robbery, kidnapping, land grabbing, and cult activities, while the main causes were unemployment (95%), lack of contentment (85%), quest for fast money (82%), and laziness (84%), among others. More than half (62%) perceived the insecurities affecting cassava production. There is a significant difference ($t=4.089$, $P < 0.05$) in the cassava production before and during the incidence of insecurities. There is also a significant relationship ($r=0.135$, $P < 0.05$) between the perceived effect and cassava production. The study concluded that the incidence of insecurities had a significant effect on cassava production; peoples' redundancy and poor orientation are common causes of insecurities. It is therefore recommended that farmers should engage in local vigilance; reorientation of the rural youth while government should empowered youth to be gainfully employed.

Keywords: Insecurity, Cassava, Yield, Perception, Coping strategies

INTRODUCTION

Agriculture plays an important role in the development of any nation (Downie, 2017). The transformation of agriculture fosters the mandate of the Sustainable Development Goals (SDGs) to achieve zero hunger and make the poorest countries economically prosperous. In Nigeria, prior to the discovery of oil, agriculture was the most significant economic sector in terms of export revenue, rural employment, and food and fiber sufficiency (Eleke et al., 2019; Adesuyi, 2021). Nigeria was a prominent exporter of agricultural products such as palm oil, cocoa, groundnuts, cotton, rubber, hides, and skins and still has enough to cater for her domestic food supply. Agriculture remains the largest sector in Nigeria, contributing an average of 24% to the nation's GDP over the past seven years (2013–2019) and the largest employer of labor in the country (Oyaniran, 2020). The dominance of agriculture in the Nigerian economy then could be seen from its contributions.

Nigeria is grappling with unprecedented insecurity, prompting the government to allocate significant resources to national security (Odalonu, 2022). Osabohien et al. (2019) asserted that the country's primary export and source of foreign exchange revenues, agricultural products, experienced a sharp drop. This situation is further worsened by the advent of a set of ferocious activities that are associated with Fulani herdsmen, Niger Delta militants, Boko Haram, and others. The climate in South-South Nigeria is challenging and makes it hard for people to cultivate there year-round (Okon et al., 2021). Numerous farmers have left their farms due to the increasing insecurity in agrarian communities (Chiaka et al., 2022). Fear of attacks, particularly from evil individuals, fights between farmers and herdsmen, disputes within the community, and other types of conflicts contribute to farm avoidance and abandonment. The producers can no longer match the demand from other regions of Nigeria with

the quantities that the farmers can produce. Rehabilitating injured and displaced individuals has taken up resources that could have been used to improve the agriculture industry (George and Adelaja, 2021).

It will not be an embellishment to note that the current wave of general insecurity was fueled by dearth, among others, and this situation makes the people susceptible and vulnerable (Ayoo, 2022). The vulnerabilities encountered by the rural people whose livelihood is farming cannot be ignored, and it affects cassava production, which is one of the main crops produced in the study area. Cassava is cultivated in almost all the states of Nigeria, and Edo State, which is the study area, had a production capacity of 630,000 metric tons in 2006 and a projected production capacity of about 1,000,000 metric tons by 2018. (Siloko et al. (2021); National Bureau of Statistics, 2023). The study specifically identified the insecurity activities, their causes, perceived effects, level of cassava production, and coping strategies. It is hypothesized that there is no significant difference between cassava productions before and during the incidence of insecurities and also that there is no relationship between the perceived effect of insecurities and cassava production.

MATERIALS AND METHODS

Study Area

The study was conducted in Edo State, which is located in the South-South Zone of Nigeria. Its capital town is Benin City. The state was created in 1991 out of the old Bendel state, and its geographical coordinates are latitudes 05° 44' to 07° 34' N and longitudes 05° 04' and 06° 45' E. It has a landmass of 19,794 square kilometers, and it is bordered by Kogi State to the north, Delta State to the east and south, and Ondo State. The population of Edo is estimated as 4.777 million people as of 2022 (National Bureau of Statistics 2023). Osayand et al. (2019), the state's landmass is mostly relatively flat in the

southern region, with an average elevation above sea level of roughly 500 meters. However, the Northern and Esan plateaus range in height from 183 meters at the Kukuru Hills to 672 meters at the Somorika Hills toward the northern axis. Cassava production is prominent in the study area, and the rate of insecurities reported in the agrarian communities of Edo State in the last five years is becoming alarming, which makes the study relevant in that location.

Sampling Procedure and Data Collection

The study population consists of crop farmers in the study. Multistage sampling was used to select the sample size for the study. From three senatorial districts in the study area, one Local Government Area (LGA) was selected using simple random sampling. From the selected three LGAs, two (2) wards were selected to make six wards using simple random sampling. Two communities were selected purposively based on the reported occurrence of insecurity activities from each LGA to make a total of 12 communities, while ten farmers were selected with simple random sampling to make a total of one hundred and twenty (120) farmers that were used for this study. The data were collected with the aid of interview schedules that were administered to the farmers.

Measurement of Variables

The measurements of the main variables are stated as follows: causes of insecurity were measured at the nominal level using Yes (1) and No (0). Perceived effects of insecurity on agricultural productivity were measured at intervals using a 5-point Likert rating scale as Strongly Agree (5), Agree (4), Undecided (3), Strongly Disagree (2), and Disagree (1), and coping strategies employed against insecurity were measured at intervals using a 3-point Likert scale as Always (3), Occasionally (2), and Never (1).

Data Analysis

Descriptive statistics such as frequency count and percentage were used to analyze data obtained and were presented in tables and charts. Pearson product-moment correlation and t-tests were used to determine the hypotheses.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Farmers

The results in Table 1 showed that more than half (59.20%) of the respondents were between the ages of 35 and 55 years old, with a mean age of 49 years. This implies that cassava farmers in this study area were nimble, active, and vibrant. Middle-aged individuals showed that they are experienced

farmers, and they are being affected by the insecurity issues, making them particularly vulnerable to the impact of insecurity. Result is buttressed by Osuji et al. (2023) and Omodara et al. (2023) reported that cassava farmers above forty years were agile, engaged, and dynamic, and they were able to adjust to the changes that can affect their cassava production either insecurities or environmental changes. Furthermore, most (68.30%) of the respondents were female; the implication is that women are often involved in various stages of cassava production, including planting, harvesting, processing, and marketing. The result is agreed upon by Madu et al. (2018) and Adeniyi et al. (2023) that women are frequently involved in planting, harvesting, processing, and marketing cassava, among other steps of the agricultural process.

More than half (51.70%) of the respondents were Christians. This implies that social and religious factors may play a role in shaping their experiences, perspectives, and coping mechanisms related to insecurity. Obaniyi et al. (2020) and Olarinde et al. (2020) affirmed that religious affiliations, social networks, and capital influence farmers to adopt strategies for production activities and also use collective support to adopt new coping strategies against insecurity in their livelihoods. Most (60.0%) of the respondents were married. This implies that cassava farmers were married and relied on cassava production to meet several household needs, such as food and cash for education and health services. The households with 5 to 10 persons were 78.33%, while the mean of the household size was 8 persons. This implies that there is a larger number of people to cater for, and any obstruction in cassava production will affect their capacity to meet the household's food and economic needs.

Furthermore, the results in Table 1 revealed that less than half (48.30%) of the farmers had primary education and most (63.30%) of them earned an average income of ₦147,675.00 per annum. This implies that many of the farmers have basic education which is enough to thrive in cassava production although higher education can influence better decision and action taking to create more profitable cassava enterprise. Guira et al. (2017) and Reincke et al. (2018) agreed that many households, especially in rural areas with limited access to alternative economic options, cassava serves as their primary source of both food and income. This result corroborate Ologbon et al. (2021) and Omoregie and Aziken (2022) that farmers are unaffected by low educational attainment because most cassava farmers are small-scale operators who acquire the skills and knowledge necessary for cassava farming via experience and training.

Table 1: Socio-Economic Characteristic of the Respondents (n=120)

Socio-economic characteristics	Frequency (f)	Percentage (%)	Mean ($\bar{x}$)
Age			
Less than 35 years	12	10.0	49 years
35 – 55 years	71	59.20	
Above 55 years	37	30.83	
Sex			
Male	38	31.70	
Female	82	68.30	
Marital Status			
Single	8	6.70	
Married	72	60.00	
Widowed	14	11.67	
Separated	6	5.00	
Divorced	20	16.67	
Religion			
Christianity	62	51.70	
Islam	33	27.50	
Traditional	25	20.8	
Level of Education			
No formal Education	20	16.70	
Primary Education	58	48.30	
Secondary Education	41	34.20	
Tertiary Education	1	0.80	
Household size (persons)			
Less than 5 persons	9	7.50	8 persons
5 -10 persons	94	78.33	
Above 10 persons	17	14.20	
Income in Naira per annum			
Less 100,000	21	17.50	₦147,675.00
100,000- 200,000	76	63.30	
Above 200,000	23	19.20	

Trends of incidence of insecurity in the study area

Entries in Figure 1 show various forms of insecurity reported in the study area. The prevalent trend of insecurity experienced by most of the farmers, above 80 percent, includes armed robbery, kidnapping, cult activities, and thuggery. These activities are carried out in the hideout, especially within the forest and bushes of farmland where these farmers have their livelihood. The armed robbers and cultists waylaid the farmers and sometimes kidnapped them to collect ransom from their family and loved ones. Olaniyan & Akinbobola (2022) and the CLEEN Foundation (2023) opined that there are consistent robbery and kidnapping trends in rural Nigeria, which are linked to youth unemployment, weak policing, and the proliferation of arms. The impact of these activities on agriculture, which is the main livelihood in the rural communities, cannot be ignored. The youth restiveness and political manipulation encourage cult group

activities, which are becoming increasingly violent, often operating in rural areas as extensions of urban gangs (Okeke 2020).

Above 70 percent of the farmers reported land grabbing as insecurity; this has a direct effect on their means of livelihoods and poses a significant threat to food security and rural development. FAO (2021) states that land conflicts, often involving influential elites or urban speculators, deprive farmers of productive assets and fuel inter-communal tensions. Assassination and rape incidence were 60% and 53%, respectively; this implies that many of the women were exposed to harassment, and the fear of attack reduces the involvement of women in farming activities. Amnesty International (2022) reported that harassment and rape of women, even on their farms, remain underreported because of reprisal or cultural stigma, thereby severely affecting women's participation in agriculture and rural leadership.

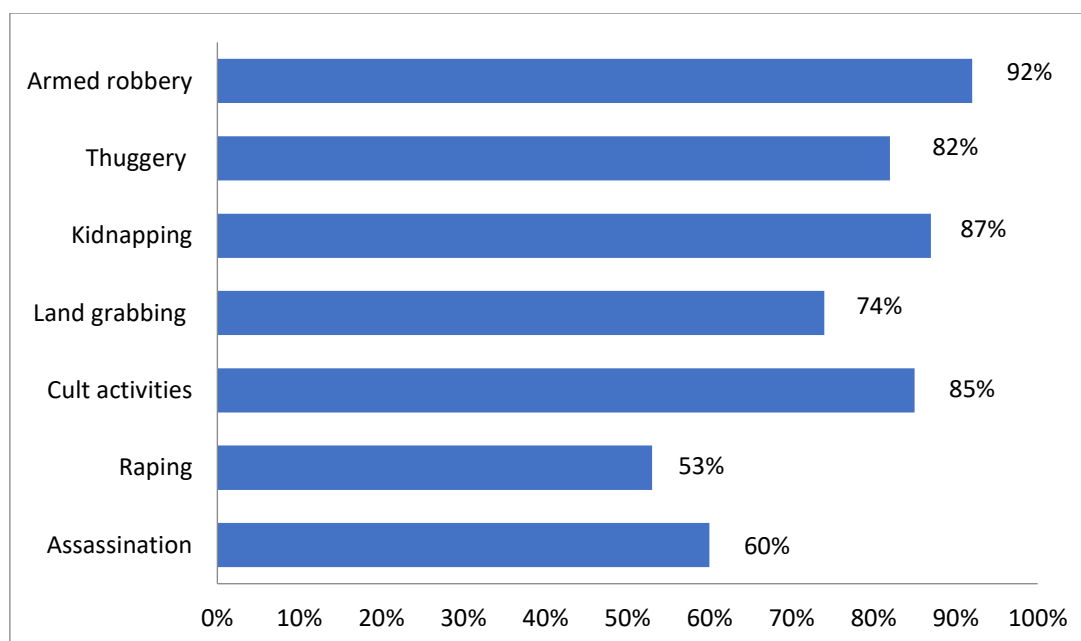


Figure 1: Incidence of Insecurity Recorded in the Study Area

Causes of Insecurity in the Study Area

Figure 2 reveals the results of the causes of insecurity in the study area. This indicates that unemployment is the most commonly cited cause of insecurity, with 95% of respondents identifying it as a significant factor. Other commonly cited causes above 80 percent include poverty, lack of contentment, quest for fast money, and laziness. This implies that there is a strong link between joblessness and increased security risks.

The behavioral factors like rivalry, idleness, and envy among a lack of contentment can lead to envy, rivalry, and conflicts within communities, and they can degenerate into insecurities in the study area. The finding on causes of insecurity in the study area was buttressed by Soremi (2020) and Madubuike and Dimnnajiego (2023), who stated that increased criminal activity, including theft and vandalism, is associated with unemployment and increased security hazards.

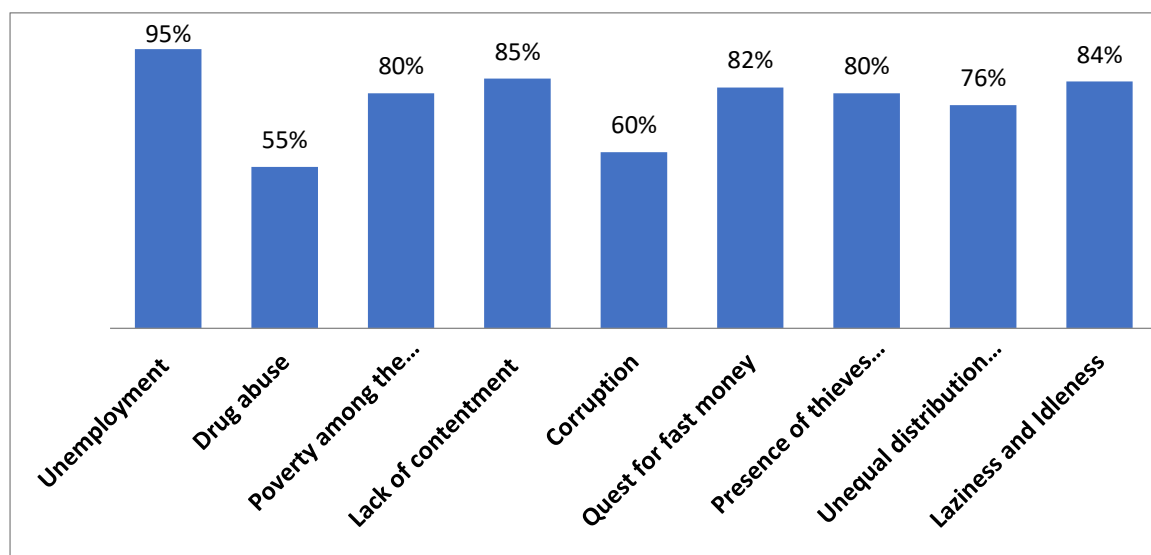


Figure 2: Causes of Insecurity in the Study Area

Yield of cassava production before and after the incidence of insecurity

The result in Table 2 revealed the yield of cassava production before and after the insecurity. Before the incidence, few (36.00%) of the respondents produced above 15 tons/ha of cassava, with a mean of 13.6 t/ha, and more than half (56.00%) of the respondents produced 5 tons–10 tons/ha of cassava, with a mean of 9.5 t/ha after the incidence. This implies that incidence had a significant effect on cassava production, as there were changes in the frequency and mean

production per hectare, which can in turn reduce income and profitability from lower yields and lead to an impact on farmers' financial stability and capacity to make investments in their farming operations. The decline in cassava production after the incidence of insecurities was corroborated by Wieliczko *et al.* (2020) and Grzelak (2022), who affirmed that farmer financial stability and ability to make investments in their farming operations are negatively impacted by the occurrence of insecurities, and most times it decreases their income and profit.

Table 2: Yield of cassava production

Variables	Before the incidence		After the incidence	
Cassava Production in t/ha	Freq	Mean ($\bar{x}$)	Freq	Mean ($\bar{x}$)
Less than 5tons/ha	18		33	
5tons – 10tons/ha	36	13.6 t/ha	56	9.5t/ha
10tons – 15tons/ha	30		13	
Above 15tons/ha	36		18	

Farmers' perception of the implication of insecurity on cassava production

The result in Table 3 revealed the perceived effect of the insecurity on the cassava production. The finding of the grand mean (3.99) indicates that the farmers agreed that insecurity hinders agricultural production and has great implications for farming activities. The farmers strongly agree that the cost of farm inputs increases due to disruption of transportation (mean=4.51), and insecurity activities encountered by the farmers make them sell assets and relocate to other safer areas (mean =4.20). The perceived effect of the insecurity on the cassava production findings was buttressed by Daghigh et al. (2019) and Younker and Radunovich (2021), who found that

farmers' well-being has suffered greatly as a result of the disruption to their way of life, which has also had an effect on their capacity to sustain their families and continue their livelihoods. The farmers also agreed that fleeing for safety affects processing and storing cassava during insecurity (mean = 4.15). The loss of farm produce and low income (mean =4.08) are associated with too many insecurity activities, and they also prevent market access to dispose of their farm produce (mean=4.07). This implies that the productivity and profitability of cassava production are adversely affected by the rising cost of inputs due to insecurity activities.

Table 3: Perceived Effect of the Insecurity on the Cassava Production in the Study Area

Perceived effect of the insecurity	SA%	A%	U%	D%	SD%	Mean ($\bar{x}$)
Cost of farm input increases due to disruption of transportation.	70.00	16.70	1.7	5.8	5.8	4.51
I sell my assets and relocate to other areas in period of severity	54.2	32.5	4.2	3.3	5.8	4.20
I engage in farming activities in places where there is no insecurity	53.3	30.0	6.7	6.7	3.3	4.20
I flee for safety and cannot process and store cassava during insecurity.	52.5	36.7	1.7	2.5	6.6	4.15
I lost farm produce and have less money at hand.	40.0	43.3	5.8	4.2	6.7	4.08
I can't sell my produce at the market because no one visits the market during severity.	43.3	45.9	5.0	3.3	2.5	4.07
I abandoned farmland in period of insecurity and flee for safety.	37.5	45.8	5.0	4.2	7.5	3.98
I can sell produce after harvesting because of food scarcity after insecurity	43.3	35.0	10.0	4.2	7.5	3.98
I gain more information and contact with Extension Agents	45.8	30.8	9.2	5.8	8.4	3.97
I spend less on farming inputs during the period	48.4	30.0	6.6	8.3	6.7	3.93
Planting of new crops will have to wait until insecurity stop	40.8	45.0	3.3	4.2	6.7	3.89
Farm produces price is usually low during this period	43.8	34.5	9.2	8.3	4.2	3.89
Hired labour increases due to loss of life to insecurity	41.7	33.3	9.2	11.6	4.2	3.85
High death rate always occurs and lead to less labour	44.2	37.5	5.8	8.3	4.2	3.76
Markets activities are usually high after insecurity	39.2	35.5	7.5	10.8	5.0	3.75
I can afford three square meal during period of insecurity	46.6	26.8	5.8	3.3	17.5	3.65

The entries in Figure 2 indicate that more than half of farmers (63%) have a favorable perception of insecurity in cassava production. This implies that farmers believed that the challenges posed by insecurity affect the level of agricultural activities. Despite the insecurities, the farmers continue their cassava cultivation, but the level of cassava production is

declining. Tajudeen et al. (2022), Olaosebikan et al. (2023), and Onah et al. (2023) confirmed that despite the security dangers facing the lives and livelihoods of the farm families, they are resilient and determined to continue production of cassava because they see farming as an essential source of revenue and a way to feed their families.

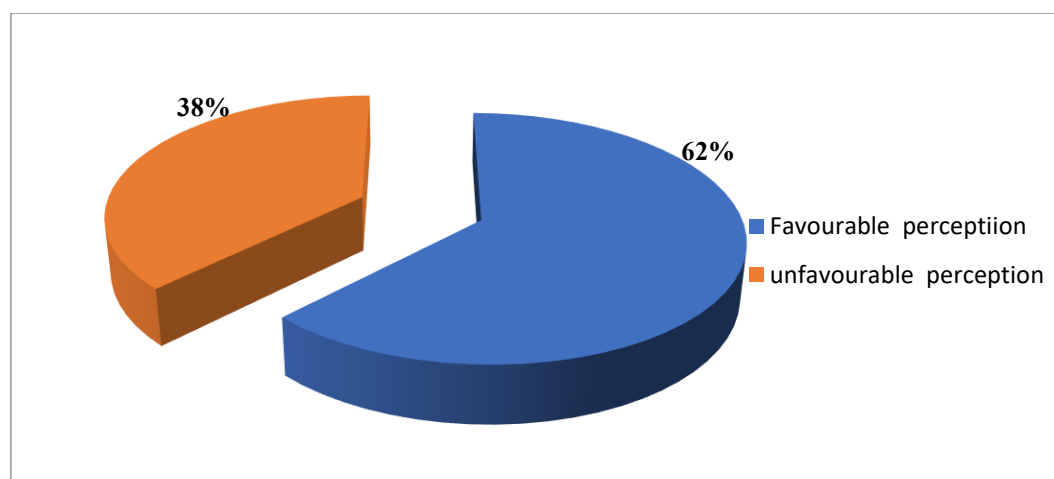


Figure 3: categorization of the perception of insecurity on cassava production

Coping strategies against insecurity in the study area

The result in Table 4 shows the coping strategies that were used as a means of dealing with insecurity in the communities and to encourage cassava production. The coping strategies include involving more household members, especially males, in farming activities—a strategy that was always used by 85.0% of the farmers. This aligns with the findings of Owombo *et al.* (2023), who observed increased reliance on household labor as a resilience mechanism among rural farmers. Training and retraining security personnel on new technology (57.5%), provision of adequate facilities, and creating more employment opportunities for jobless individuals (44.2%) were also highlighted as structural responses to reduce rural insecurity (Ehiwario *et al.*, 2024). The cassava farmers' association raising funds to assist security personnel in purchasing ammunition was a strategy

that was always used by 45.0% and occasionally by 27.5%, while contributing a certain amount monthly for security personnel salaries was always used by 50.8% and occasionally by 24.2%. Such community-based financing approaches are consistent with collective coping strategies identified by Obi-Egbedi and Owosho (2023), where farming communities pooled resources for security, infrastructure, and food systems support. Restricting access to the community for specific time periods (40.8%) and regulating the timing of farming activities by discouraging early departures or late returns (56.7% always; 13.3% occasionally) also reflect local-level preventive tactics against criminal attacks—practices similarly reported by Idiake-Ochei (2024) as an approach to mitigate insecurity in agrarian communities.

Table 4: Coping Strategies used by the Respondent Against Insecurity

Coping Strategies	Always %	Occasionally %	Never %
I involved more of household members especially the male in farming activities	85.0	3.3	11.7
Training and retraining of security personnel on new technology	57.5	17.5	25.0
Adequate facilities and more employment should be created for the jobless individual	44.2	30.0	25.8
The cassava farmers association raise funds to assist the security personnel in purchasing ammunition	45.0	27.5	27.5
All cassava farmers contribute certain amount monthly for security personnel as salary	50.8	24.2	25.0
Members of the community and strangers are not allowed to enter and leave the community for a specific period of time	40.8	25.0	34.2
Criminal caught should be sentenced to death immediately and this will instill fears in other individual	24.2	13.3	62.5
Farmers should work in group instead of working alone on farms	50.0	18.3	31.7
Staying late or going to farm early should not be allowed	56.7	13.3	30.0
The cassava farmers association should get involved with security personnel (vigilante) by providing help to them in tackling insecurity	54.2	17.5	28.3

Test of Hypotheses

A hypothesis was tested to determine if there was a significant difference in cassava production before and during the incidence of insecurities. The result showed a statistically significant difference in the mean cassava production across the two periods, $t(119) = 4.089$, $p < .001$, indicating that the insecurity situation had a significant impact on cassava production levels. This infers that cassava production significantly declined due to the insecurity situation in the

study area. The implication is that the decrease in cassava production will continue if the insecurities identified in the study area are not addressed, and it will thereby create food scarcity, increasing hunger and poverty in the agrarian communities. The farm families will not only abandon their farms in the future but could also be influenced to join the criminality when they become jobless and there is no means of conquering hunger in their families.

Table 5: Test of difference in cassava production before and during the insecurities incidence

Variable	d.f	T	p-value	Decision
Cassava production before and during the incidence of insecurities	119	4.089	0.000	S

P ≤ 0.01 Significant (S); P ≥ 0.01 Non-Significant (NS)

Table 6 indicates the perceived effect of insecurities and cassava production considered using Pearson Product Momentum Correlation (PPMC). There is a significant relationship ($p < 0.05$) between the perceived effect of insecurities and cassava production. It can be shown that there is a strong relationship between perceived effect of insecurities and cassava ($r = -0.135$). This implies that the incidence of insecurities reduces the production level of

cassava. The positive relationship between the incidence of securities and production indicates that as the insecurities increase, the perception of farmers about the impact on the cassava production also increases. The implication is that farmers will abandon the farms for fear of being attacked, production of cassava will reduce, and that will invariably increase hunger.

Table 6: Relationship between perceived effect of insecurities and cassava production

Variable	r-value	p-value	Decision
Perceived effect*production level after the incidence of insecurities	0.135	0.002	S

Source: Field Survey, 2023 P ≤ 0.05 Significant (S); P ≥ 0.05 Non-Significant (NS)

CONCLUSION

It is concluded that the incidence of insecurity had a significant negative impact on cassava production. There were observable changes in both the frequency and average production per hectare, indicating reduced productivity. The study concluded that farmers were forced to flee their farms during periods of insecurity, making it difficult to process or store harvested cassava, and it negatively affected them by increasing input costs and disruptions in transportation and supply chains. The study therefore recommended that the government strengthen security measures in agrarian communities by increasing security patrols, installing surveillance infrastructure, and deploying trained security personnel to high-risk communities. Local authorities should encourage communal vigilantism and creation of livelihood opportunities for individuals that are unemployed in their communities. The study encourages agricultural agencies to advocate for public awareness and reorientation of rural people on the importance of safeguarding agricultural resources and supporting local farmers.

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