Role Of Cassava In Minimizing Household Food Insecurity In Owerri North L.G.A Of Imo State

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Abstract: This study was aimed at analyzing' the role of cassava in minimizing household food insecurity in Owerri North L.G.A. of Imo State, based on the survey of 70 randomly selected households. The specific objectives were to determine the quantity of cassava consumed per household; factors influencing the quantity consumed and estimate the percentage contribution of cassava towards meeting daily calorific requirement as well as identification of the constraints that influence cassava consumption in the area. Multiple regression analysis was run in a bid to estimate the factors that affect the quantity of cassava consumed. The results of the analysis showed that price of cassava, price of close substitutes and household sizes were the major determinants and hence significant measures of cassava quantity consumed in the area. Food security here was measured in terms of energy value in the quantity consumed and entitlement (availability and price when compared with close substitutes) it was observed that cassava made 36% contribution towards meeting daily energy requirement per adult and hence does not provide enough food security when compared with the standard for an adult, but in terms of entitlement, it was a food secure crop as it was the cheapest and most readily available when compared with other close substitutes. The major constraint faced by the respondents was the cost of the product. Though most of the household produce it, it is often taken outside the council area to market so as to meet other family needs. It was therefore recommend that to mitigate food security in the council area, other products of cassava should be enhanced to increase household consumption of the products and again the provision of more processing centers in the villages will reduce the cost of the product.

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1. Introduction

The UNFAO, (2005) defined food security as a condition in which all people at all time have both physical and economic access to the basic food they need. There are two essentially and joint determinants of food security, availability and access to food. Availability does not guarantee access to food but access to food is contingent on there being food available at market as the poor usually lack adequate means to secure access to food. Scarcity of food has very devastating effect on human beings, but cassava as a food security crop has played roles in many household to reduce this devastating effect. Cassava derives its importance from the fact that it is starchy, a cheap source of carbohydrate, more so, its tuber roots are a valuable source of cheap calories especially in developing countries where calories deficiency and malnutrition are wild spread. Over 2/3 of the total production of cassava is consumed in various forms by human. Cassava provides about 45% of all calories consumed in Africa (Nwajiuba

1995) and about 70% of the daily calories intake of over 50 million Nigerians. Cassava has advantage over other crops when compared; it generates income for the largest numbering households (FAO, 2002). It provides the farmer with an income earning opportunity enabling him to purchase commodities, which can contribute to the household food security. Most households grow cassava as their main stable food, because tree crop production requires peak labour input mainly at planting and harvesting season while cassava production does not require such seasonal labour. Cassava roots are boiled and eaten without further processing. It has many alternative uses, the roots of sweet cassava varieties are eaten raw, roasted in an open fire, or boiled in water. Boiled roots maybe pounded alone or in combination with other starchy staples.

In the light of the above problems on food security and the potentials of cassava as a food security crop, this study wants to find out the quantity of cassava that is consumed by the households in the study area, is it at variance with the standard calorific requirements, and what contribution does cassava make towards reducing the security gap. What about in terms of entitlement, are the prices at par with other close substitutes? Several studies exist on food security (Odii 1994; Nwajiuba, 1995; Emenyonu, et al 2006), but information is scanty on the role played by cassava as a major stable food in minimizing food insecurity and non specifically in the study area. This study is justified based on the hypothesis that there is no significant difference between the quantity of cassava consumed and standard calorific requirement in the area. Again this will intensify further policy action on cassava production and consumption.

2. Materials And Methods

This study was carried out in Owerri North Local Government Area. This one of the L.G.A. in Imo State, with the largest population. It has 12 communities and they include Emekuku, Emii, Naze, Obibiezena, Agbala, Ulakwo, Uratta, Orji, Amakohia, Akwakuma, Egbu, Awaka and Obube. It has a population of 144, 161, with land area of 165.83km^2 and population density of 869.3/km (NPC 2004). The main occupation in these communities is not only farming, but Civil Service, and the major crops produced include cassava, maize, melon, and vegetables, while livestock production is occasional with local breeds. 7 communities were selected purposefully from the 12, this were those with high production and consumption of cassava products. Out of the 7 communities 10 households were selected randomly giving sample size of 70. This is to ensure that every household was equally likely to be selected and hence eliminate bias. A questionnaire was administered on a face to face basis to the respondents. Information obtained from the households interalia, quantities of cassava consumed, household size and other socioeconomic characteristics. Basic statistical tools were used to analyze the socioeconomic characteristics such as mean, frequencies and percentages. While the OLS multiple regression technique was used in an effort to estimate the factors that influence cassava consumption. Again, in estimating the energy contribution of cassava, the percentage contribution was estimated following Olomu (1995). Moreso, food security measure in terms of entitlement was done by comparing the availability and unit price of cassava with other close substitutes following Devereux and Naeraa (1993). In doing this, the following models were used.

Model 1.

$Q = f(X_1x_2,X_3,X_4,X_5)$

Where
- Q = Qty cassava consumed in kg
- X_1 = Monthly price of cassava in (₦)
- X_2 = Price of other close substitutes (₦)
- X_3 = Household size in Number
- X_4 = Colour of product (yellow/White)

Yellow = 1, White otherwise (0)

- X_5 = Income level of household head (₦)

Model 11

$$PC = \frac{EC}{SR} \times \frac{100}{1}$$

- PC = Percentage contribution
- EC = Energy value in Qty consumed daily
- SR = Standard Calorific Requirement

3. Results And Discussion

The tables below represent some vital socioeconomic characteristics of the respondents.

Table 1: Frequency and Percentage Distribution Of Respondents By Households Size.

Household Size	Frequency	Percentage
1 – 5	24	35.29
6 – 10	35	50
11 – 15	11	15.71
Total	**70**	**100**

Mean household size = 7

Source: Computed from Survey Data, (2005)

From Table 1, 50% of the respondents have household size ranging from 6 -10 persons. About 16% have the highest household size of 11 - 15 persons. The mean household size is 7 persons. The reason that may be attributed to large household size is nearness of the study area to the city.

Table 2: **Frequency and Percentage Distribution of Respondents by Occupation.**

Occupation	Frequency	Percentage
Farming	26	37.14
Trading	5	7.14
Civil Servant	24	34.29
Others	15	21.43
Total	**70**	**100.00**

Source: Computed from survey data, 2005

From Table 2, 37% percent of the respondents are engaged in farming, 7% trading and about 34 percent civil servants. The high preponderance of civil servants is closely related with the level of education that is observed in the study area.

Table 3: Frequency and Percentage Distribution of Respondents by Level of Education.

Educational Attainment	Frequency	Percentage
Primary	16	22.86
Secondary	23	32.86
Tertiary	14	20
Vocational	17	24.28
Total	**70**	**100**

Source: Filed Survey Data 2005

From Table 3 about 33% of the respondents had secondary education while 20% had tertiary education. About 24% had vocational training. These suggest that if there is any food security measure that is taken in the area, they will abide by such policy statement for better living.

Table 4: Frequency and Percentage Distribution of Respondents by Monthly Income.

Amount in	Frequency	Percentage
1000 – 5000	21	30

6000 – 10000	16	22.86
> 10000	33	47.14
Total	**70**	**100**

Source: Field Survey Data 2005

Table four showed that most of the respondents (52.86%) are low income earners. About 47% earn N10000 and above as their monthly income. This is an indication of the amount of money that will be spent on food in general and garri to be specific.

Table 5: Percentage Distribution of Respondents by Frequency of Cassava Consumption.

Frequency of Consumption	Number of Respondents	Percentage
Eaten Once	44	62.86
Eaten Twice	19	27.14
Eaten Trice	7	10
Total	**70**	**100**

Source: Field Survey Data 2005

From Table 5 virtually everybody in the area eats cassava products. 62.8% eat once, 27.14 twice and about 10% trice daily. The reason that maybe adduced to this consumption rate is the effect of urbanization and proximity to state capital where diet variation is more common.

Table 6: Frequency and Percentage Distribution of Respondents by Constraints in Cassava Consumption.

Constraints	Number of Respondents	Percentage
High Cost	20	28.5
Scarcity	18	25.71
Difficulty in Processing	20	20.57
Inferior to Other Staples	12	17.14
Total	**70**	**100**

Source: Field Survey Data 2005

Table 6 shows that the major constraint faced by the respondents is high cost of the product as most of them are low income earners. 25.7% also indicated that scarcity relative to price is another major problem. The least constraints faced by them is the case of inferiority to other staple foods with the frequency of 17.14%.

3.2 Food Security Measures

Measure in terms of energy value

Total consumed per household = 2.50kg

Mean quantity per person per day = 0.36kg

Standard calorific requirement per person per day = 1700kcal/kg

$$PC = \frac{EC}{SR} \times \frac{100}{1}$$

$$\frac{612}{1700} \times \frac{100}{1} = 36\%$$

From the above result, the percentage contribution of cassava towards meeting the daily standard energy requirement is 36%, this implies that cassava has not provided the much needed security in terms of energy value. This agrees with the results on Table 6 where it was discovered that the highest frequency of consumption was "once".

3.3 Measure In Terms Of Entitlement

Entitlement here means amount of money spent on cassava monthly per household and the price of cassava when compared to other close staples which are also carbohydrates.

Table 7: Food Security Measure in Terms of Entitlements

Parameter	Cassava	Yam	Rice
Quantity Consumed/Month	475 Cups	88 Tubers	362 Cups
Mean Household Size	7	7	7
Total Price Monthly	9500	13200	10,860
Unit Price	20 Cups	150 Tuber	30 Cups
Mean Price	**135.71**	**188.57**	**155.14**

Source: Field Survey Data 2005

From Table 7 above, cassava is deemed a food security crop in terms of entitlement with a mean price of N135.71 spent on it daily as against rice and yam with prices of N155.14 and 188.57 respectively, which implies that it is cheaper to buy cassava (garri) than either yam or rice.

Table 8: Regression Results of the Determinants of the Quantity of Cassava Consumed

Functional forms	Semi-log	Exponential	Linear	Double log
Intercept	354.9254	2.70088	15.8135	6.6864
R-square	0.561	0.695	0.763	0.731
F-value	16.36	29.13	41.00	34.75
(X_1)	-16.5761 (-2.30)*	-0.0000 (-0.38)	-0.0037 (-3.56)*	-0.0726 (-0.73)
(X_2)	-16.5761 (-2.3)*	-0.001 (-5.33)*	-0.0083 (-8.52)*	-0.0726 (-0.73)
(X_3)	80.939 (6.937)*	-0.3167 (9.70)*	21.0126 (-8.53)*	1.3552 (8.50)*
(X_4)	12.8491 (-1.14)	0.1424 (1.26)	-0.1136 (-0.02)	-0.0262 (-0.17)
(X_5)	-11.379 (-1.94)	-0.0002 (-1.41)	-0.0006 (-0.94)	-0.1861 (-2.31)*

Source: field Survey Data 2005

Figures in Parenthesis are t-ratios

* = Significant @ 5%

X_1, X_2, … X_5, stands as previously defined

From Table 8, the linear model provided the lead equation based on economic, econometric and apriori expectations. Therefore, all other discussions were based on it. Among the explanatory variables, only price of cassava (x_1), the price of close substitutes (x_2) and household size (x_2) were highly significant at 5% probability level. The coefficients of x_1 and x_2 were inversely related to the quantity of cassava. This implies that as the prices of x_1 and x_2 decrease, the quantity consumed of cassava increases. This agrees with basic economic principles that price has an inverse relationship with quantity demanded. The coefficient of household size (x_3) is positive and significant at 5%. This implies that as household size increases the quantity of cassava (garri) consumed increases. This agrees with apriori expectations and the results of (Emenyonu et al, 2006). However, the coefficient of x_4 (colour) and income (x_5) are insignificant and inversely related to the quantity of cassava communed. This implies that they are not major determinants of quantity of cassava consumed in the area.

4. Policy Recommendation And Conclusion

Given the problems faced by the respondents in the study area, cassava processing technologies should be improved so as to reduce the cost in the market. Government and NGOs and other agencies should collaborate in the establishment of more cassava processing centres in the villages to reduce costs. Other cassava products should be enhanced to increase households interest in the products. Since some of the explanatory variables were found to be significant and important determinants of the quantity cassava consumed, emphasis should be given to those factors which were found to be significant while those which were insignificant de-emphasized. Again, a comparison of the amount of money spent on cassava and price of garri with other close staples showed garri to be the cheapest and most available and hence a food secure crop in that area. However, in terms of energy (calorific contributions), it was low when compared with the standard requirement. This was adduced to the low rate of consumption in the area. This agrees with results of Okigbo (1986), and Nweke et al (1986).

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