ALLOCATIVE EFFICIENCY OF TMS 30572 CASSAVA VARIETY PRODUCTION IN EBONYI STATE, NIGERIA

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ABSTRACT
The allocative efficiency of TMS 30572 cassava variety production in Ebonyi State, Nigeria, was studied. Purposive and multi-stage random sampling techniques were used to select a total of one hundred and twenty (120) respondents for a detailed study. A structured questionnaire and an oral interview were used to collect primary data. The objectives were analyzed using percentage responses, costs and return analysis, allocative efficiency and the Tobit regression model. Additionally, the results on socioeconomic characteristics showed that the majority of respondents had access to credit. Also, the cassava production is profitable with Net Farm Income (NFI) of ₦880,000, Benefit Cost Ratio (BCR); 1.87 and Gross Margin of N 892, 000. *Also, none of the farmers achieved allocative efficiency by equating the value of the marginal product (VMP) to their factor prices. The result of the allocative efficiency shows that the cassava farmers were unable to attain optimum resource allocation (r=1) as most of their resources such, as farm size and planting material were under- utilized (r <1), while labour , fertilizer and capital input were over -utilized (r>1). The determinants to allocative efficiency of TMS 30572 cassava production were age of the farmer, farming experience, household size and credit. In addition, constraints to the cassava production were access to cost of labour, high cost of fertilizer, poor access to credit and poor access to extension services. There is a need to enhance farmers' access to credit, fertilizer educational programmes and extension services.*

Keywords: Allocative Efficiency, TMS30572 , Variety, Production, Ebonyi State, Nigeria

INTRODUCTION
The essence of enhancing agricultural productivity is well documented. Productivity according to Food Agriculture Organization (FAO), 2020) ensures, amongst other things, effective utilization of resources, reduced cost of production, reduced price of goods and services, increased wages to workers, lower overhead costs, higher profits for businesses, higher per capita income and overall prosperity. In Nigeria and most countries in sub-Saharan Africa, low production and productivity characterised their agricultural sectors, thereby, limiting the ability of the agricultural sector to perform its traditional roles in economic growth and development (Ume, Edeh, and Udefi, 2022). Studies show that efficiency in resource use of the farmers, particularly those who dwell in allocative efficiency, could go a long way in improving their productivity(Mbanasor and Obiora, 2005; Nweke, 2017). Allocative efficiency, as reported by Esheya (2019), is the manipulation of available scarce resources and technical know-how to achieve the highest possible economic benefits within given resources, where the marginal value product is equated to its unit price.

An important food security and cash crop that is grown in the tropics and sub tropics of Africa, Central America and Caribbean is cassava(FAO, 2022). Apart from nutritional essence, the other importance is source of raw material for agro industry, source of poverty alleviation, source of foreign exchange and livestock feed (Anyanwu, 2015). Cassava has certain intrinsic characteristics which make it attractive, especially to the farmers, included multiplicity of end uses because of its rich in carbohydrates especially starch (be used in a wide array of industries, including food manufacturing, pharmaceuticals, textiles, plywood, paper and adhesives, and as feedstock for the production of ethanol biofuel), all-year-round source of cheap calories, tolerant to marginal soil and more resistant to drought, pests and diseases (National Root Crop Institute,, NRCRI), 2019), roots are storable in the ground for months after they mature and highest-producing starchy staple(50–82 metric tons per hectare) (Anyanwu, 2015). Other features of cassava are propagated from stem cuttings, planting material is low-cost and readily available and has formed a symbiotic association with soil fungi that help its roots absorb phosphorus and micronutrients (National Root Crop Research Institute (NRCRI), 2020).

Nigeria is the largest producer of cassava in the world with output of about 60 million tonnes from 6.5 million hectares at the rate of (yield) of 9.1 tonnes, compared to Ghana's 20 tonnes/ha and Indonesia' 24 tonnes\ha (Owoseni, 2021). The differential in yield per hectare could be related among others poor cassava varieties used by the farmers the country (NRCRI, 2020). In Nigeria, TMS 30572 is also known as IITA – TMS- IBA30572 is among improved varieties developed by International Institute for Tropical Agriculture (IITA), Ibadan, and released into Nigeria agricultural landscape through the national varietal release committee (Ume, et al; 2023).This variety has the common features of which endeared it to many cassava farmers in the area, including having high dry matter content(25%), moderately resistance to cassava Mosaic Disease(CMD), acceptable food quality, high stem multiplication ratio, early bulking, high starch and high yield (>25t/ha) (NRCRI, 2019, Ogbonna, 2020,).

The improved variety and other TMS were disseminated to the farmers through the Agriculture Development Programme (ADP), the Agricultural Department of Local Governments in the State and the extension arm of the research institute. The production and productivity of crop, TMS 30572 cassava variety inclusive partly depends on how resources of labour, fertilizer, pesticides, farm size and capita are allocated (Ume, et al; 2023). Studies revealed that majority of small holder farmers in Nigeria and many other countries un sub-Saharan Africa depend on the trial-and-error methods of resource allocation resulting into either resource under-allocation or over-allocation. In the long run, they suffer from huge losses (Gavighio, et al; 2021). It is imperative to state that for the improved variety production to flourish, it desires to attain among others high level of allocative efficiency which is indispensable for enhancing food security, create employment opportunities and improve the efficiency of utilization of labour.

As well, this study would further serve as a source of research information for scholars for further studies in related subjects and also provides helpful information for agricultural extension agents for effective dissemination of information to farmers. There is a dearth of information on the subject matter in the study area, to the best of the researcher's knowledge, hence the need to bridge the research gap becomes crucial.

Specifically, the objectives of the study are to:

(i) describe the socioeconomic characteristics of the respondents;
(ii) estimate costs and return in TMS 30572 cassava production.
(iii) estimate the allocative efficiency of TMS 30572 cassava production farmers;
(iv) access the determinants to allocative efficiency of TMS 30572 cassava production and
(v) Identify the constraints to TMS 30572 cassava production in the study area.

METHODOLOGY

The study was carried out in Ebonyi State of Nigeria. The State is located between latitude $5^0$41' and $6^0$50'N of Equator and Longitude $5^0$25' and $7^0$30E of Greenwich Meridian. Its rainfall ranges from 1500 mm-2500 mm per annum, temperature of 28-48^{0}C and average relative humidity of 75%. It is bounded in the North by Benue State, South by Abia State, in the East by Cross River State and in the West by Enugu State. Ebonyi State is made up of 13 local government areas and three Agricultural zones namely North, Central and South. The North agricultural zone consists of four local government areas: Abakaliki, Ebonyi, Izzi, and Ohaukwu. The Central Agricultural zone has four Local Government Areas: Ezza North, Ezza South, Ikwo and Ishielu, while the South agricultural zone has five local government areas: Afikpo North, Afikpo South, Ivo, Ohaozara and Onicha. Among the crops planted there are cassava, yam, sweet potato, rice, maize and tomato. Also, among the domestic animals reared are goat, sheep, local cow, poultry, rabbit, piggery and others. .The inhabitants also engaged on off-farm income activities such as saloon, petty trading, auto-mechanics, civil servants and brick layers.

In the first stage, two (2) Agricultural zones out of three (3) were purposively selected. The choice was made based on the intensity of the cassava production in the area. The designated zones were Ebonyi Central and South agricultural zones. In the second stage, three (3) Local Government Areas were selected randomly from each of the Agricultural Zones. These brought the total to six (6) Local Government Areas (LGAs). In the third stage, two (2) communities were randomly selected from each of the six LGAs, totalling twelve (12) communities. Finally, from the lists provided by extension agents in the community of farmers who cultivate the improved cassava. ten (10) rice farmers were randomly selected and this this brought to a total of one hundred and twenty (120) respondents.

The primary data was collected through the use of a structured questionnaire and an interview schedule. Descriptive statistics such as percentage response was used to analyze objectives i and v . Allocative efficiency was used to address the objectives iii and Tobit regression model and Net farm income were used to address the objectives iii and ii respectively.

Model Specification

Net Farm Income Analysis

The net farm income can be calculated by gross margin less fixed input. Gross margin, which is the difference between the total revenue (TR) and the total variable cost (TVC)

GM = TR – TVC…………………………………….………………… (1)

i.e. G.M = $\sum_{1-1}^{n} P_1 Q_1 - \sum_{j-i}^{m} r_i x_i$ ………………………………………….. (2)

The net farm income can be calculated by gross margin minus fixed input. The net farm income can be expressed as thus:

NFI = $\sum_{1-1}^{n} P_1 Q_1 - \left[\left(\sum_{j-i}^{m} r_i x_i\right) + k\right]$ ………………………………………. (3)

Where:

GM = Gross margin (N)

NFI = Net farm income (N)

P1 = Market (unit) price of output (N)

Q = Quantity of output (kg)

ri = Unit price of the variable input (kg)

xi = quantity of the variable input (kg)

K = Annual fixed cost (depreciation) (N)

i = 1 2 3 …….. n

j = 1 2 3 …….. m

3.5.2 Allocative Efficiency Model

The allocative efficiency indices b_i coefficient was estimated by means of ordinary least squared regressions method. The explicit production function was estimated by

$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + e$ ……………………… (4)

Where:

Y = value of cassava output (N), X_1 = farm size (ha), X_2 = labour (manday),

X_3 = planting material (kg), X_4 = fertilizer (kg), X_6 = Pesticides (Litres); X_5 = capital (N)

$x_1 - x_5$ = coefficient of the parameters to be estimated, while e_1 was the error term and b_0 was the coefficient.

Four functional forms of the multiple regressions were employed in order to select the one that has provided the best fit. The functional forms tried were:

Linear function

$Y = b_0 + b_1 x_1 b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + ei$ …………………………. (5)

Double log function:-

$\ln(y) = \ln b_0 + b_1\ln x_1 + b_2\ln x_2 + b_3\ln x_3 + b_4\ln x_4 + b_5\ln x_5 + ei$ …………… (6)

Semi log

$Y = \ln b_0 + b_1\ln x_1 + b_2\ln x_2 + b_3\ln x_3 + b_4\ln x_4 + b_5\ln x_5 + ei$ ………………… (7)

Exponential function

$\ln Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + ei$……………….………… (8)

The choice of the best functional form will be based on the magnitude of the R^2 value, the high number of significance, size and signs of the regression coefficients as they conform to *apriori expectation*. The estimated coefficients of the inputs in the lead equation formed the basis for the analysis of the farmers' allocative efficiency. Allocative efficiency was determined by equating the resource's marginal value product to its unit price.

$MVP = p_y f_i = p_{xi}$ ………………………………………………………… (9)

$f_i = dy/dx$ which is the marginal physical product of the resource. The models were specified as follows:

$r = MVP/MFC$ ……………………….……………………..……….. (10)

$MVP = mpp_{x1} py$ …………………..…………………………… (11)

(Double log as lead equation)

$Mppy_1 = {}^{dy}/_{dx} = {}^{b1y}/_{x}$ ……………………….………………………………… (12)

Semi log form the lead equation = $Mpp_1 = \frac{dy}{dx} = b_1 y$ ………………………...(13)

$Mppi = {}^{dy}/_{dx} = b_i$ ……………………………………………………………… (14)

(linear form is the lead equation)

$D_1 = (1 - {}^{1}/r_1)\ 100$ ………………………..…………………………… (15)

(Esheya, et al, 2019)

r = efficiency ratio notation, MVP = marginal value product, MFC = marginal factor cost (cost of unit price of a particular input), MPP = marginal physical product and are arithmetic means of the yield, Py = unit price of output, x_1 = various input 1 to n = absolute value of % change in MVP of 1^{th} resource, r_1 = ratio of MVP to MFC for i^{th} resource, 100 = factor (percentage)

D_1 = Absolute value of the % change in the MVP of the ith resource.

Px_i is the unit price of the i^{th} resource

$\overline{Y}$, and $\overline{X}$ = are the arithmetic means of the yield and inputs considered, respectively.

If r = 1, it implies that resources are efficiently used i.e. MVP = MFC = 1

r > 1 implies that resources are under-utilized

r < 1, means that resources are over-utilized.

Tobit Model Analysis

Tobit model was used to assess determinants of allocative efficiency in TMS419 cassava variety production The Tobit model was developed by Tobin (1957) is expressed as:

$Y^* = x\beta + e$ ……………………………………………………(16)

Where β is a vector of unknown coefficients, x is a vector of independent variables, e is an error term that is assumed to be independently distributed with mean zero and a variance of S^2. Y* is a latent variable. If the data for the dependent variable is above the limiting factor, zero is the case; Y is observable as a continuous variable. If Y is the limiting factor, it is held at zero. This rushing is presented mathematically in the following two equations.

$Y = Y^*$ if $Y^* > Y_0$,

$Y = 0$ if $Y^* < Y_0$…………………………………………………….....(17)

Where: Y_0 is the limiting factor. Two equations represent a censored distribution of the data. The Tobit model can be used to estimate the expected value of Y as a function of a set of explanatory variables (x), weighted by the probability that $Y_i \geq 0$ (Oladele, 2005).

Moddala (2003) shows that the expected intensity of adoption

$\sum(Y)$ is $\sum Y = x\beta\ f(z) + \alpha f(z)$ and $Z = x\beta/\sigma$…………………………….(18)

Where f(Z) is the cumulative normal distribution of Z, f(Z) is the value of the derivative of the standard curve at a given point (unit normal density). Z is the Z score for the area under the normal curve, and S is the standard error of the error term. The coefficients for variables in the model, β, do not represent the marginal effect directly. Still, the sign of the coefficient will provide the researcher with information about the direction of the impact.

The determinants of allocative efficiency in NR 8082 cassava variety production in the study area can be represented as: $y = f(x_1,x_2,x_3,x_4,x_5,x_6,x_7,x_8,x_9,x_{10} \ldots xn + e)$...….(19)

Where: y = technology adoption (1 for yes, 0, otherwise)

X_1 = Age (Years)

X_2 = Educational level (Number of years spent in school)

X_3 = Access to credit (access =1, no access = 0)

X_4 = Farming Experience (Years),

X_5 = Household size (Number of persons in the household)

RESULTS AND DISCUSSION

Farmers' socioeconomic Characteristics

The farmers's socioeconomic characteristics, such as age of the farmer, educational level, household size, farming experience and access to credit

Table 1: Distribution of respondents according to socioeconomic Characteristics

Socioeconomic Characteristics	Frequency	Percentage
Age		
24 – 40	48	40
Above 40	72	60
Educational Level		
No formal	20	16.7
Primary	50	41.7
Secondary	40	33.3
Tertiary	10	8.3
Household size		
1 – 6	40	33.3
7 and above	80	66.7
Farming experience		
1 -10	38	31.7
11- 40	82	68.3
Access to credit		
Access	80	66.7
No Access	40	33.3

Source; Field Survey; 2025

Table 1 shows that 60% of the respondents were aged 40 or older and dominated farming in the study area. Aged people are known to be conservative (Asumugha, et al; 2007, Ogbonna, 2020). Most respondents (83.3%) had formal education, while 16.7% had none. Educated people tend to be more receptive to innovations, risk -averse and prudent in management of resources than less educated ones (Anyanwu, 2015). Table 1 above shows that most of the sampled farmers (66.7%) had large household ranges from 7 years and above, while the least (, 1 - 6 years); 33.3%. The large household size, if of labour age could be used as hired labour to acquire income for the household head to boost family wellbeing (Esheya, 2019). The Table above shows that 68.3% of the respondents had farming experience of 11-40 years, while the least (31.7 %) had 1 -10 years. Experienced farmers can have exposure to varied farming techniques and receptiveness to new ideas, hence improving their resource use. In Table 1 above, 66.7% of the respondents had access to credit, while 33.3% had not. Credit aids farmers in having information that could boost their resource use efficiency, especially as relates to allocative efficiency. More so, 63.3 % of the respondents were members of organizations, while 36.7% were not. Cooperative enhances its members' resource use efficiency through manpower development (Nweke, 2017). This finding followed Shabu (2017), who opined that cooperation through the provision of inputs at reduced cost facilitates member production and productivity. However, Ume and Kaine (2021) reported that member farmers could be so engaged with cooperative matters to the detriment of their farming vocation.

Table 2: Costs and returns of TMS 30572 cassava variety production

Item	Unit	Quantity	Price/unit	Cost/value
Revenue				
Roots	Kg	5400	300	1,620,000
Sales of cassava stem cutting	Bundle (50 cuttings)	50	800	40000
Total Revenue				1,662,000
Total Physical input				
stem cutting	Bundle	80	800	64,000
Fertilizer	Kg	8	22000	170, 000
Miscellaneous				40,000
Total				274,000
Clearing	Md	15	5000	75,000
Mounding / ridging	Md	30	6000	180000
Cutting and planting of stem	Md	5	3500	16500
Fertilizer application	Md	7	3000	21000
Weeding	Md	25	4000	85000
Harvesting / Bagging	Md	20	4000	80000
Transportation				2,500
Total labour costs				460,000
Total variable costs				734,000
Gross margin (TR – TVC)				892,000
Depreciation of fixed assets excluding land				40,000
Total cost (TVC+TFC)				774,000
Farm income (TR-TC)				880,000
Benefit cost ratio				1.87

Field Survey, 2025

Costs and return of TMS 30572 production in the study area is presented in Table 2. The result showed that total variable cost was high and accounted for the major components of the cost items. The total variable cost was ₦734,000 and accounted for 83.4% of the total cost of production. Additionally, among the variable costs considered, the cost of ridging and mounding (N180,000) was the highest, accounting for about 20.5% of the total cost. The high cost of the labour item could be correlated to the fact that the operation or activity is very labour sapping and required energetic individuals, thus they (labourers) charge high wage to accomplish it (Ume, et al; 2022). The least labour-intensive operation was planting of the stem(N18000). Mbanasor and Obiora (2007) concurred with the above findings. They asserted that cutting and planting of cassava stems is usually performed by women and children. The Net farm income was N880,00. Ume et al. (2018) had a similar finding: BCR of 1:1.82.

Table 3: Estimated multiple regression of the production function for TMS 30572

Variable	Linear	Exponential	Double-Log^{+}	Semi-Log
Constant	−4.88629(-3254)***	−1.43468(3093)***	4.6587(6.006)***	4.1112(9.55)***
Farm size	2.0082(0542)	2.6230(2.4569)**	0.4110 (0.3045)	0.2360 (0.2134)
Improved cutting	0. 0581(1.1436)	4.7103 (3.1070) ***	0.2639 (3.4521)***	0.1362 (1.2315)*
Fertilizer	0. 0011(0.8002)**	1.6075(0.5823)	0.2097 (3.0017)**	0.0308(2.6373)
Labour	-0. 3620(0.1150)	0.0023 (04877)	0.7604 (2.0983)*	0.2257 (0.4308)
Capital	0.3250(0.1156)	0. 1520 (2.069)**	0.7663 (0.2319)	0.0919 (1.4451)*
R2	0.6189	0.6119	0.8760	0.5880
F Value	22.0095***	24.8921***	26.7780***	20.0928***

Source: Field Survey, 2025
*****, **, *** significant at 1.0%, 5.0% and 10.0% levels of probability respectively
The figure in parenthesis is the t-ratio

In Table 3, the Cobb-Douglas production function was chosen as the lead equation based on the statistics criterion, such as the highest coefficient of determination and the highest number of significant variables. The coefficient of multiple determination, R^2 was 0.867, connoting that the included independent variable accounted for 86.7% in the variation of dependent variable, while the remaining 14.3% were due to error term. The coefficient of fertilizer was positive and statistically significant at 5.0 % probability level. Fertilisers provide the nutrients needed to maximise crop yield, especially when applied appropriately (Ogbonna, 2020; IITA, 2021). Also the coefficient of improved cassava stem cutting was positive and statistically significant at a 1.0% risk level. The improved cassava stem cutting when planted in line with the production recommendations such as use of pesticides for stem cutting treatment, fertilizer and proper spacing will lead to high crop yield (Shabu 2017). Besides, the sign identity of the coefficients of labour was negative and significant at 5% risk levels. The sign of the variable could connote the high cost of labour. This could be a result of the economic depression the country is going through.

Table 4: Allocative Efficiency Indices of TME 419 cassava Farmers

Variable	Y	X	Bi	MPP	MVP	MFC	R	(D)%
Farm size	840	64.8	0.761	639.24	41422.8	20000	2.07	-1,860
Improved cutting	840	6.57	0.579	486.36	3195.4	1000	3.20	85.43
Fertilizer	840	12.6	0.776	651.84	8213.2	9000	0.913	1000
Labour	840	8.90	0.601	504.84	4,493.1	4500	0.998	-7.60
Capital	840	-17.80	0.433	363.72	-6,474.2	2000	-3.237	-28.83

Source: Field Survey, 2025

Table 4 shows that none of the variables considered had an efficiency ratio that is equal to 1 (one), connoting inefficient utilisation of resources. Besides, the ratio of marginal value production (MVP) and Marginal Factor Cost (MFC) for farm size and planting material were 2.07 and 3.02, which were greater than 1, signifying underutilization of the resource by the farmers in the study area. The scarcity and high cost of the two resources could account for the underutilization (Asumugha et al., 2007). The underutilization indicated that more than profit maximization levels of resources were used. Hence, for profit to be optimized in TMS 30572 cassava varieties production in the study area, farm size and planting materials should be reduced from their current level by -1860 and 85.4% respectively82.6% and 76.4%. The r_1 = ratio of MVP to MFC of fertiliser, labour and capital was 0.913, 0.998 and 3.24, respectively, hence overutilized. The employment of large numbers of family labour that is insignificant in terms of cost in a small portion of land could be related to overutilization of resources (Adebayo and Silbarger, 2020; Owoseni Okunlola, O., and Akinwalere, 2021). As well, indiscriminate use of farmyard manure from farmers' houses could be termed overutilization of the resource (Ogbonna, 2020; Owoseni et al, 2021). Therefore, for optimal profit to be achieved in those resources, there is a need to increase from their current levels by 1000%, -760% and 28.8%, respectively

Table 5. Elasticity of Production and Return to Scale

Variable	Elasticity of Production
Farm size	0.4110
Improved cassava cuttings	0.2659
Fertilizer	0.2097
Labour	0.7604
Capital	-0.7663
Return to Scale	2.4133

Source: Field Survey, 2025

The elasticity of production shows the change in output relative to a unit change in input (Ume *et al,* 2020). The elasticity of production of TMS 30752 cassava was estimated directly from Cobb-Douglas coefficients. Table 5 shows a production elasticity of less than 1 for each of the individual input resources. These indicated that all the factor inputs had an inelastic relationship with the cassava output, implying over-utilization of these inputs.

However, the return to scale, which is the sum of the elasticities of all inputs, used in (2.4133), is greater than 1, indicating that the production plan was elastic and that the farmers were in stage 3 of the production function. The value of the return to scale (2.4133) implied that when all factor inputs used for production were varied by 1%, the responsiveness of TMS 30572 cassava varieties output to such input variation would be 2.4133%. This finding is similar to that of Adebayo and Silbarger (2020), who found that farmers were at stage 3 of the production function.

Table 6. Determinants to allocative efficiency of TMS 30572 production

Variable	Coefficient	Standard Error	t- value
Age	0.329	0.124	2.65**
Educational Level	0.990	0.304	3.286***
Farming Experience	0.769	0.320	2.403**
Access to credit	0.233	0.211	1.104
Household size	0.387	0.551	0.512
Labour	1.323	0.452	2.927**
Constant	0.911	0.161	5.658***
Sigma	0.2314 (0.3223)		
R-squared	0.867		
F ratio	12.012***		
Pseudo R square	− 1.2503		
Log likelihood	235.5526		

***, **, *, 1, 5, and 10% significance level, respectively
Source: Field Survey, 2025

The coefficient of age of the farmer was positive and significant at 5.0% probability level. Aged farmers are efficient in resource management. This knowledge is usually acquired through years of experimenting and observations (Anyanwu, 2017). As well, the coefficient of educational level was positive to allocative efficiency (AE) and statistically significant at 1% probability level. The educated farmers are often efficient in resource use for productivity to be attained. Also, there is a positive relationship between years of farming experience and allocative efficiency (AE) of TMS 30572 cassava production at 5% probability level. Farming business involves annual routine activity, which leads to a combination of resources in a better and optimal manner, which could be used to explain the sign of the variable.

Additionally, the coefficient of credit access had a direct correlation with the allocative efficiency and was significant at 5% alpha level. Ume, *et al;* 2023) reported that farmers naturally put more efforts in efficiency of credit use, especially where such credit is borrowed to enhance their revenues and profits, for ease of repayment. In contrary, the finding of Nweke, (2017) reported ignorance of the loan facility among leading agencies, especially that located in urban areas to the sign of the variable.

Table 7: Distribution of respondents according to constraints to TMS 30572

Constraint	Frequency	Percentage
Cost of labour	80	66.7
High cost of fertilizer	82	68.3
Pests and diseases	30	25
Poor access to cassava cuttings	50	41.7
Poor quality and high cost of Pesticides	72	60
Land problem	50	41.7
Poor access to extension service	72	60
Access to credit	76	63

*Multiple Responses

Sources: Field Survey, 2024.

Table 7 indicates that high cost of labour (66.7%) constituted problem to the improved cassava production in the study area. The high cost of hired labour could be attributed to the urban drift of able-bodied individuals in search of greener pastures (Esheya, 2019). Additionally, 63% of the farmers sampled reported poor access to credit. Credit aids farmers in expanding their farming scope by hiring capable hands in farming (Ogbonna, 2018, Adebayo and Silbarger, 2020). Moreso, scarcity and high cost of fertilizer was reported by 68.3 % of the farmers. The withdrawal of fertilizer subsidy by Federal Government of Nigeria could be associated to high cost of fertilizer, especially at farm level(NRCRP, 2019). Additionally, 60% of respondents reported access to the extension service. Access to extension services could help farmers obtain improved farm inputs and access to agricultural innovation dissemination (NRCRI, 2020). In addition, 60% of the sampled farmers complained about the poor quality of pesticides in the markets. FAOSTAT (2019) and Ogbonna (2022) reported that these chemicals are often adulterated and substandard, hence frequently fail in efficiently performing their functions when applied.

CONCLUSION AND RECOMMENDATIONS

Based on the findings, the following conclusions were deduced: The cassava production is profitable, with Net Farm Income (NFI) of N880,000, Benefit-Cost Ratio (BCR) of 1.87, and Gross Margin of N892,000. Also, none of the farmers achieved allocative efficiency by equating the value of the marginal product (VMP) to their factor prices. The result shows that the TMS 30572 cassava farmers were unable to attain optimum resource allocation (r=1) as most of their resources, such as farm size and planting material, were under- utilized (r <1), while labour (0.601), fertilizer and capital input (0.433) were over -utilized (r>1). Additionally, the determinants of allocative efficiency of TMS 30572 cassava production were age, farming experience, household size and credit. The limiting factors to the cassava production were poor and high cost of pesticides, high cost of labour, high cost of fertilizer, and poor access to extension services.

Based on the findings, the following recommendations were proffered.
(I) The government should come to the aid of farmers through the provision of interest-free loans to boost their production and productivity

(ii) Cassava farmers in the study area were not efficient in their resource utilisation; they either underutilised or overutilized the resources. The over utilization resources (*labour fertilizer and capital input*) should be reduced, while the underutilized resources (farm size and planting material) be increased for farmers to attain absolute efficiency. Incentives and strategies aimed at encouraging farmers to use more labour and fertiliser are recommended to achieve greater resource-use efficiency.

(iii)Government in collaboration with research institute should develop improved cassava varieties and be made available to the farmers at affordable prices.

(iv)There is a need for the government to encourage financial institutions to provide credit facilities to the farmers at the required time, place and reasonable collateral.

(vi)Extension services should be made efficient in their duties through adequate training, be equipped with training tools and supported with mobility to ease transportation problems and ensure more exhaustive coverage.

(v)There is need for research to develop labour saving devices such as hand driven plough to curtail cost of production especially in peasant agriculture where farming activities are nearly zero mechanized.

(vi) There is need to bridge the ratio of farmer to extension agents through recruiting and training of young graduate to help in not only increasing farmers' productivity but empowering them to be productive members of the society.

(vii)Experienced farmers should be encouraged to remain in farming through the provision of productive inputs at subsidised prices.

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