FARMERS' PERCEPTIONS OF ECONOMIC VIABILITY OF IMPROVED YAM PRODUCTION PRACTICES IN EBONYI STATE, NIGERIA.

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ABSTRACT
*The study examined farmers' perception of the economic viability of improved yam production practices in Ebonyi State, Nigeria. A multi-stage random sampling procedure was employed in selecting 120 farmers producing yam in the study area. Data were collected through the use of a structured interview schedule and analyzed using both descriptive (mean score rating) and inferential (simple linear regression) statistics. The results of the study showed that the usage of improved practices such as storage in barns ($\bar{x}$ = 4.6); harvesting within 7-12months after planting ($\bar{x}$ = 4.5); staking ($\bar{x}$ = 4.4); use of NPK chemical fertilizer 12:12:17 ($\bar{x}$ = 4.2); and yam-cassava relay intercropping ($\bar{x}$ = 4.1) was high . Results also revealed from the grand mean score (3.5) that the improved yam production practices have high and positive effects on the production of yam in the study area. Specifically, improved practices such as yam staking ($\bar{x}$ =4.4), use of NPK fertilizer ($\bar{x}$ = 4.3), weeding (2-3times) after planting; and yam-cassava relay intercropping ($\bar{x}$ = 3.9) were perceived by the farmers to have highly positive effects on yam production in the study area. The result further showed that the yields gotten through the practices are substantial and add to food sufficiency ($\bar{x}$ = 4.0), increase in income from yam ($\bar{x}$ = 3.9), wise use of resources ($\bar{x}$ = 3.8), savings ($\bar{x}$ = 3.7), improved yam production practices are affordable ($\bar{x}$ = 3.2). Furthermore, results of simple regression analysis showed that farmers' perception of economic viability (12.885***) of the improved yam production practices has a significant favourable influence on the sustainability of their uses rural farmers in the study areaat 1% level of significance. The study concludes that the use of improved yam production practices among rural farmers was economically viable. It thus recommended that extension agents should mount promotional campaign on the use of the improved yam production practices among farmers to e enhance yam productivity and farmers' income.*

Keywords: Economic viability, improved practices and yam production

INTRODUCTION

Yam is one of the nation's most valuable tuber crops whose demand is generally very high in Nigeria (Nweke, 2014).Vincent, (2017), revealed that in some societies in Nigeria, festivals are staged to mark the beginning of yam harvest while some use yam in fertility and marriage ceremonies. Nigeria alone produces 36 million tonnes on 3 million hectares of land annually accounting for 68% of global production being the world's largest producer. Improved yam production practices are the technologically advanced system of farming yam in the world. Scientific research findings and mechanized farm implements are majorly used for farming activities (Rivera-Ferre*et al*., 2015). The research findings are generated by universities, research centres and private industries. In developing countries, the priority is to adopt technology that helps to achieve food security and economic development and sustainability (Jordan and Constance, 2008).

. In Ebonyi State Nigeria, improved yam production practices have been transferred to farmers by the agricultural extension agents, but the farmers' perception of the economic viability of the practices has not been established. A study was thus conducted to assess the farmers' perception of the economic viability of the improved yam production practices in Ebonyi State. This paper, therefore, seeks to x-ray the farmers' perception of the economic viability of the improved yam production practices in Ebonyi State with the following specific objectives:

i. examine the extent of use of selected improved yam production practices by farmers;
ii. ascertain the perceived effect of improved practices on yam production; and
iii. ascertain the perceived economic viability of improved yam production practices by farmers in the study area.
iv. determine the relationship between farmers' use of improved yam production practices and their perceptions of the economic viability of the practices in the study area.

METHODOLOGY

The study was conducted in the Ebonyi State of Nigeria. Ebonyi State is one of the 36 States in Nigeria, is located in the South-Eastern geographical zone of Nigeria with Abakaliki as her State Capital. The State lies approximately on latitude $70^0 30^0_E$ and longitudes$50^0 40^0_{N.}$ The State (Ebonyi) with a landmass of approximately 5,932 square kilometres and has projected population estimate of 4 million people based on the average growth rate of 3.28% of NPC web 2018 spread within the 13 local government areas. The States that share boundary with Ebonyi includes: Benue State to the North, Abia to the South, Cross River State to the East and Enugu to the West (National Population Commission; NPC, 2006).

A multi-stage random sampling procedure was used to select two agricultural zones for the study These are Ebonyi North and Ebonyi Central. A Simple random sampling technique was used to select three extension blocks from the two agricultural zones.. Ohaukwu, Izzi and Abakaliki were randomly selected from Ebonyi North agricultural zone while Ikwo, Ezza North and Ezza South were randomly selected from Ebonyi Central agricultural zone. Two cells were randomly selected from each of the six blocks selected, giving a total of twelve cells were selected. . Ten respondents were selected from each of the twelve cells using a random sampling technique, giving a total of 120 respondents.

The extent at which the perceived economic viability of improved yam production practices influences their use among the farmers was implicitly ascertained using the simple regression model implicitly expressed as :

$Y=f(X_1, X_2, X_3, X_4, X_5, X_6)$

Where Y = dependent variable (mean score of the extent of use)

x = independent variable (economic viability mean score)

b = intercept or slope

o = co-efficient

e = error term

RESULT AND DISCUSSIONS

The extent of Use of Improved Yam Production Practices among Farmers in the Study Area

The result in Table 1shows the distribution of respondents according to the extent of use of improved yam production practices among farmers in Ebonyi State, Nigeria. Improved practices such as storage in barns ($\bar{x}$ = 4.6); harvesting within 7-12months after planting ($\bar{x}$ = 4.5); staking ($\bar{x}$ = 4.4); use of NPK (12:12:17) fertilizer ($\bar{x}$ = 4.2); yam-cassava relay intercropping ($\bar{x}$ = 4.1); weeding 2-3 times ($\bar{x}$ = 4.0); yam-vegetables intercropping ($\bar{x}$ = 4.0); yam-melon intercropping ($\bar{x}$ = 3.5); yam-cowpea-maize intercropping ($\bar{x}$ =3.5); band placement of fertilizer ($\bar{x}$ = 3.5);yam-maize intercropping ($\bar{x}$ = 3.4); yam-maize-melon intercropping ($\bar{x}$ = 3.4) were extensively utilized by the farmers in the study area

The overall extent of use was affirmed by the grand mean (3.3) to be high. The implication remains that the improved yam production practices diffused to the rural farmers were used in varying levels as indicated by the mean scores. The findings agree with the view of Akinbile *et al*. (2014), that awareness of innovations gives a high probability of their extent of use, thereby improving users' standard of living. In the same vein, the success of agricultural development in developing countries like Nigeria largely depends on nature, the extent of use of technologies and mobilization of people for awareness (Adekoya and Tologbonse, 2005).

Table 1.*Distribution of responses according to the Extent of Use of Improved Yam Production Practices among farmers in the study area

Variables	Never	Hardly ever	Sometimes	Regularly	Always	**Mean**	Remarks
Mechanized land preparation	53	24	24	14	5	**2.1**	Low
Treatment of seed/setts	68	5	16	18	13	**2.3**	low
Lime application on acid soil	49	33	25	10	3	**2.0**	low
Weeding 2-3 times	2	4	19	59	36	**4.0**	high
Use of NPK fertilizer	2	6	6	60	46	**4.2**	high
Minister sole cropping	38	35	21	17	8	**2.3**	low
1mx1m plant spacing	38	26	28	24	4	**2.4**	low
Yam-maize intercrop	7	9	41	55	8	**3.4**	high
Yam-melon intercrop	10	7	26	64	13	**3.4**	high
Yam/maize/melon intercrop	13	10	35	44	18	**3.4**	high
Yam-cassava relay intercrop	1	6	19	45	49	**4.1**	high
Yam/cowpea/maize intercrop	9	10	37	46	18	**3.5**	high
Yam-Vegetables intercropping	2	7	13	60	38	**4.0**	high
Band placement fertilizer	14	12	22	47	25	**3.5**	high
Staking	2	2	9	38	69	**4.4**	high
Harvesting in 7-12 months after planting	-	-	10	43	67	**4.5**	high
Storage of yams in barns	-	-	6	33	81	**4.6**	high
Grand mean						**3.3**	high

Source: Field survey, 2018

Perceived Effects of Improved Yam Production Practices in the Study Area

Table 2 shows the distribution of responses according to the perceived effect of the improved practices of yam production among farmers in the study area. Results indicate that the farmers perceived several improved practices as having positive effects on yam production. These included storage in barns ($\bar{x}$ = 4.5), harvesting within 7-12 months after planting and staking ($\bar{x}$ = 4.4), use of NPK (12:12:17) fertilizer ($\bar{x}$ = 4.3), manual weeding (2-3times) after planting; and yam-cassava relay intercropping ($\bar{x}$ = 3.9), yam-vegetables intercropping ($\bar{x}$ = 3.8), intensive tillage and band placement of fertilizer ($\bar{x}$ = 3.6), yam-maize intercropping, yam-melon intercropping and yam-maize-melron intercropping ($\bar{x}$ = 3.5), yam-cowpea-maize intercropping ($\bar{x}$ = 3.4), intensive ridge making and planting ($\bar{x}$ = 3.3), ware yam sole cropping ($\bar{x}$ = 3.2); and mechanized land preparation ($\bar{x}$ = 3.0). Meanwhile, the rest of the practices like treatment of setts/seeds with agrochemicals (2.7), lime application (2.9), 1mx1m plant spacing (2.8), and mindset sole cropping (2.8) were found below the benchmark of $\bar{x}$ = 3.00.

Based on the grand mean of 3.5, most of the improved production practices were perceived to have positive effects on improved yam production among rural farmers in Ebonyi State.

The findings corroborate the reports that improved yam production practice such as the yam minisett technology is instrumental in the production of both ware and seed yams and have been validated and proven to be suitable for broader adoption in Nigeria (Akanji *et al.*, 2003; NRCRI, 2005; Agbarevo, 2014; Nnadozie *et al.*, 2015).

Table 2.* Distribution of responses according to Perceived Effect of Improved Practices on yam production

Variables	Very little	Little	Moderate	Much	Very Much	Mean	Remarks
Mechanized land preparation	17	31	32	17	23	**3.0**	positive
Treatment of seed/setts	24	40	28	8	20	**2.7**	negative
Lime application on acid soil	22	21	39	27	11	**2.9**	negative
Weeding 2-3 times	4	6	18	57	35	**3.9**	positive
Use of NPK fertilizer	4	2	10	43	61	**4.3**	positive
Minisett sole cropping	16	40	30	25	9	**2.8**	negative
1mx1m plant spacing	12	46	26	21	15	**2.8**	negative
Yam-maize intercrop	6	10	43	46	15	**3.5**	positive
Yam-melon intercrop	13	7	35	41	24	**3.5**	positive
Yam/maize/melon intercrop	9	8	42	39	22	**3.5**	positive
Yam-cassava relay intercrop	2	5	27	54	32	**3.9**	positive
Yam/cowpea/maize intercrop	13	11	41	31	24	**3.4**	positive
Yam-Vegetables intercropping	4	8	31	39	38	**3.8**	positive
Band placement fertilizer	13	6	23	52	26	**3.6**	positive
Staking	4	1	9	36	70	**4.4**	positive
Harvesting in 7-12 months after planting	1	1	10	32	76	**4.5**	positive
Storage of yams in barns	1	5	4	29	81	**4.5**	positive
Grand mean						**3.3**	positive

Source: Field survey, 2018

Economic Viability of Improved Yam Production Practices

Table 3 shows the perceived economic viability of improved yam production practices among rural farmers in Ebonyi State. The results revealed that the economic viability of improved yam production practices was perceived high and positive based on the grand mean of 3.6, which was higher than the benchmark score (3.00).

The result further revealed that the perceived positive and high economic viability of the improved practices was accounted for by the following attributes viz: substantial yield ($\bar{x}$ = 4.0), contribution to household's food security ($\bar{x}$ = 4.0), increase in income ($\bar{x}$ = 3.9), wise use of resources ($\bar{x}$ = 3.8), savings ($\bar{x}$ = 3.7), affordable ($\bar{x}$ = 3.2), and less labour intensive ($\bar{x}$ = 3.0). It implies that the improved yam production practices disseminated and used among the rural farmers in Ebonyi State were perceived economically viable.

Table 3. Distribution of responses on farmers' Perceived Economic Viability of Improved Yam Production Practices in the study area

Variables	Very little	Little	Moderate	Much	Very Much	Mean	Remarks
Practices are Affordable	12	25	27	39	17	**3.2**	positive
Resources are readily available	22	24	39	30	5	**2.8**	negative
Yields gotten are substantial	0	5	20	62	33	**4.0**	positive
Contributes to food security	2	6	8	76	28	**4.0**	positive
Contributes to increased income	1	16	8	69	26	**3.9**	positive
Encourages savings	6	36	25	31	22	**3.7**	positive
Less labour intensive	1	5	5	52	57	**3.0**	positive
Encourages wise use of resources	1	9	47	44	19	**3.8**	positive
Mean						**3.6**	positive

Source: Field survey, 2018. *=multiple responses recorded

The results of the regression analysis revealed the value of the coefficient of simple determination (R^2) to be 0.685, implying that 68.5% variations in the level of use of improved yam production practices were influenced by farmers' perception of the economic viability of the practices. The result showed that regression coefficient (1.132) with t-value (12.885) was significant and positively related to the use of improved yam production practices among the respondents in the study area at 1% level of significance. This implies that an increase in positive perception of the economic viability of improved yam production practices shall result in corresponding increasein the use of the practices in the study area and vice versa. This suggested that sustainable use of improved yam production practices is dependent on its economic viability. This finding agrees with the view of Firbank, (2012) and Nwaiwu *et al*. (2013) that the economic value of any given production practices is essential to the sustainability of such practices.

Given that the F-statistic of 166.030 was significantly higher than the F-tabulated of (6.76) at 5% level of significance, we reject the null hypothesis and accept the alternative hypothesis. We conclude that the perceived economic viability of improved yam production practices significantly influenced its extent of use in yam production in the study area.

T**able 4. Simple regression analysis of the relationship between perceived economic viability of improved yam production practices and the extent of their uses in yam production in the area**

Variables	Regression Coefficient	Standard Error	t-value
Constant	- 0.687	0.315	- 2.181**
Economic viability	1.132	0.088	12.885***
R-squared	0.685		
R	0.828		
Adjusted R^2	0.681		
F-statistic	166.030***		

Source: Field Survey, 2018. Note: ** and *** represent 5% and 1% level of significance respectively. Values in parenthesis are T-ratio,

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, the extent of use of improved yam production practices among rural farmers was affirmed to be very high, the perceived effect was highly positive and improved yam production practices were also found economically viable. It was also revealed that perceived economic viability of improved yam production practices positively and significantly influenced their sustainable use among the yam farmers in the study area. Based on the findings of the study, it is thus recommended that research institutes should make further improvement on the production practices to enhance the yield and income of rural farmers. Also, Agricultural Development Programmes should encourage farmers to join related cooperative societies as this would make them have more access to some innovative practices at relatively cheap rates.

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