

**SOCIO-ECONOMIC AND PRODUCTION RESOURCES INFLUENCE ON YAM PRODUCTION  
AMONG COOPERATIVE FARMERS IN ANAMBRA STATE, NIGERIA**

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**Abstract**

*This paper examined socio-economic and production resources influence on yam production among cooperative farmers in Anambra State, Nigeria. The paper was guided by two objectives and hypotheses. The theoretical orientation was marginal productivity theory. Descriptive survey design was adopted. Population of study was 3,200 registered yam cooperative farmers and sample size of 400 was generated using Taro Yamane formula. Multi-stage sampling technique was used in selecting respondents. Main data instrument was structured questionnaire. Data were analysed using frequency, percentage, mean and multiple regression through the aid of SPSS. The findings show that socio-economic characteristics (sex, age, size of household, farming experience, academic qualifications and years of cooperative membership) significantly influence yam production among cooperative farmers in Anambra state. It also revealed that yam production among cooperative members in the state was significantly influenced by production resources, such as price of yam sidelines, fertilizer, credit/funds, modern production tools, reliance on personal/family labour, extension service, pesticides/herbicides and means of transportation. This paper concluded that men still dominate yam farming in the area and the farmers are aging. It was recommended among others that the government should begin serious sensitization and farming empowerment programme on women and the youth as to encourage them to embrace and fully venture into yam cultivation. This would not only help to eliminate the traditional misconception that yam is crop for the men and curtail rising unemployment among the youth, but to boast food security.*

**Keywords:** agricultural cooperative, production resources, socio-economic, yam production.

**Introduction**

In Nigeria, yam cultivation is primarily carried out by smallholder farmers using rudimentary hand tools. As a result yam cultivation tends to be labour and capital intensive, especially on land preparation. Most yams in Nigeria are produced under a shifting cultivation system in which farmers cultivate a plot of land until it is no longer fertile and then move to another plot, leaving the previous land fallow. The production of yam is usually seasonal with the main harvest season occurring from August to December and a lean crop season occurring from May to July. Due to high prices, yam producers are often persuaded by traders and consumers to harvest their crop early in the season, hence, immature yams are more perishable. This partly explains why many producers experience high post-harvest losses (Nwosu & Okoli, 2010).

Yam is the perfect staple food appreciated in its state and cultural role. It is a major source of energy and diet for Nigerian people. Yam provides job opportunities and income to both the producers and marketers. Yam peels serve as feed for livestock and as a good component of farm yard manure. It is used as laboratory crop for scientific investigations. As food crop, the place of yam in the diet of Nigerians cannot be

overemphasized. It contribute more than 200 dietary calories daily, for more than 150 million people in West Africa as well as serving as an important source of income (Babaleye, 2003).

Although yams are grown throughout Africa, Nigeria is said to be the world's largest producer (NBS, 2013). FAO (2002) reported that Nigeria accounted for about 71% (26 000 000 tons) of world's total yam production from 2,760 ha. Yam production in Nigeria has tripled over the past 45 years from 6.7 million tons in 1961 to 39.3 million tons (FAO, 2006). This increase in output is attributed more to the large yam planted area with increased productivity (Nwosu & Okoli, 2010). Though areas of yam cultivation are on the increase, there has however been decline in the production rate in recent times in Nigeria. The decline in average yield per hectare has been more drastic as it dropped by 14.9% between 1986 and 1990 and 2.5% in the period between 1991 and 1999 (FAO, 2007). The decline trend may not be unconnected with inefficiency of resource allocation and utilization (CBN, 2012; Nwosu & Okoli, 2010).

In Anambra State, just like in most parts of Nigeria, yam cultivation still depends largely on intensive human labour, with traditional hoe-cutlass techniques. Many aspects of production like clearing, planting, weeding, staking and harvesting require considerable inputs of labour. However, as rural labour becomes more scarce and expensive, and the price of inputs increases, the cost of yam in the market increases making it a luxury food rather than a staple one (Hahn, Osiru, Akoroda & Atoo, 2013).

Some researchers have empirically investigated factors that determine the level of yam production in Nigeria and elsewhere in the world. Bamire and Amujoyegbe (2005) revealed that yam production without high labour leads to low yield per hectare when compared to crops such as cassava or sweet potato. They noted that relatively large amount of planting materials are required and its long growing season was observed to be major factors. By far the most critical of these factors is labour requirement, which exceeds that of other comparable crops. For these reasons and problems of storing harvested yam, the cost of production is high and yam is slowly losing ground to cassava. The resources that are usually needed by yam farmers range from land to seed yams, labour, chemicals and fertilizers, which are often barely affordable (Ike and Inoni, 2006). This situation has caused yam cultivation to suffer a severe setback leading to high cost of production. Agricultural cooperatives from their antecedents are identified as a suitable vehicle for mobilization of resources for rural and agricultural development. Multi-purpose cooperatives are one form of cooperatives that are providing different services to their members. Their general tasks have been provision of farm inputs, credit and other economic activities which help members in promoting agricultural production. There is the conventional believe that declining production could be arrested with active cooperative involvement. However, as evidence has shown that many cooperative societies in Nigeria have assisted farmers in their bid to improve efficiency and profitability of farm operations (Nwankwo, Ewuim & Asoya, 2013), others appear not to have. Just like in many other places, the productive output of such cooperative members is usually poor and their economic livelihood appears below average in Anambra State.

### **Problem Statement**

Despite many studies on the dynamics of yam production, analysis of socio-economic and production resources among yam farmers in Southeastern Nigeria have not received due attention. Olumese (2010) observed that yam production is no longer profitable because of increasing cost of resources. Conversely, Nigeria Bureau of Statistics (NBS, 2013) argued that yam production is profitable despite increasing cost. Despite these opposing views the economic condition of many yam farmers in Anambra State is not yet encouraging.

Moreover, as Nigeria is rated the world largest producer of yam, output growth has not been consistent. This unusual volatility makes planning difficult and has increased curiosity of many stakeholders about the sustainability of yam production. Zakriyiba and Tanko (2013) posited that the inconsistent growth in yam output can be attributed to low farm price engineered by increase in cost of inputs, absence of finance, storage facilities and illiteracy of yam farmers.

Many yam farmers joined cooperative societies in order to mitigate effects of these production constraints and it is yet to be ascertained on how membership has helped the members in meeting needed resources. Again, in this part of the world, yam farming is traditionally seen as men's affair and as a result women farmers are usually left out in production inputs or resources. Therefore gender plays a very significant role in determining who engages or gets what when it comes to yam cultivation. There are socio-cultural dimensions of yam production in Southeast Nigeria unlike in other parts of the country. Among the Igbos, yam is used as symbol of celebration, harvest, marriage, burial sacrifice, maleness and dignity. These circumstances might account for difference in economics of yam production in the nation.

Recent studies continue to show that there is a wide gap between the demand and supply of yam staple in the country as the prices continue to rise in the market beyond the reach of common man (Mba, 2008). This has been attributed to labour cost, farming experience, removal of subsidy, unavailability of land, illiteracy among cooperative farmers and poor marketing strategies. Labour cost is on the increase due to massive rural-urban migration. In addition, there seems to be dearth of literature on yam farming, especially as regard economic and resource analysis of its production. It is on this litany of issues that this paper examines socio-economic and production resources influence on yam production among cooperative farmers in Anambra State, Nigeria.

### **Objectives of the Study**

The broad objective of this paper is to examine socio-economic and production resources influence on yam production among cooperative farmers in Anambra State, Nigeria. Specifically, it tries to;

1. Ascertain the effects of farmers' socio-economic characteristics on yam production among cooperative farmers in Anambra state.
2. Determine the influence of production resources on yam production among cooperative farmers in Anambra state.

### **Research Hypotheses**

The following hypotheses guided this paper;

1. H<sub>0</sub>: Socio-economic characteristics do not significantly influence yam production among cooperative farmers in Anambra state.  
H<sub>1</sub>: Socio-economic characteristics have significantly influence yam production among cooperative farmers in Anambra state.
2. H<sub>0</sub>: Production resources do not significantly influence yam production among cooperative farmers in Anambra state.  
H<sub>1</sub>: Production resources have significantly influence yam production among cooperative farmers in Anambra state.

### **Literature Review**

#### **Concept of Yam Production**

Yam (*Dioscorea* spp.) is a vegetative propagated crop that is cultivated for its underground edible tubers, and a very important food and income source for millions of producers, processors and consumers in West Africa. About 48 million tons of yams are produced annually in this sub region on four million hectare of land. Nigeria is the largest producer, contributing two-third of yam production each year (NBS, 2013). Statistics has shown that yam is a valuable agricultural commodity in Nigeria that serves as food and source of income to about 32% of the population (FAO, 2014); it is also integral to the socio-cultural life in this sub region. It is among the oldest recorded food crops and ranked second after cassava in the study of carbohydrates in West Africa (Agwu & Alu, 2005). There are over 600 species of yam worldwide but six species can be considered as the edible ones in the tropics. These are white yam (*Dioscorea rotundata*) yellow yam (*D. cayenensis*), water yam (*D. alata*), trifoliate yam (*D. dumentorum*), arial yam (*D. bulbifera*) and Chinese yam (*D. esculenta*). Yam tubers are eaten boiled, roasted, fried and pounded and could be

chipped, dried and produced into yam flour. Yam is one of the major staple food in Nigeria and has potential for livestock feed and industrial starch production (Ayanwuyi, Akinboye & Oyetoro, 2011).

In Nigeria, yam is part of the religious heritage of several tribes and often plays a key role in different ceremonies and occasions (Sanusi & Salimonu, 2006). In many farm communities in Nigeria and other West Africa countries, the size of the yam enterprise that one has is a reflection of the person's social status. Due to the importance attached to yam, many communities celebrate the new yam festival annually (Izekor & Olumese, 2011). Traditionally, yam is a prestige crop that is viewed and received with high respect, prominently during special gatherings such as new yam festivals in rural communities of Nigeria, especially southeast. The ritual, ceremony and superstition often surrounding yam cultivation and utilization in West Africa is a strong indication of the antiquity of use of this crop. It is considered a "man's property" with traditional ceremonies accompanied its production (FAO, 2008).

Various seed yam production systems exist in Nigeria. The traditional system is to set aside 25% to 30% of the harvested tubers as seeds for the next planting season. This makes the crop not only expensive to produce but also inefficient. The multiplication rate in the field using the traditional system is also very low (1:5 to 1:10) compared, for instance, with some cereals (1:30). Low quality seed yam containing pests and pathogens also result in a poor yield of ware yam tubers (IITA, 2010). To address these constraints, innovative yam propagation technique using other methods like minisetts, vine cuttings were introduced. Miniset propagation method consists of using yam tubers of 20-25g pieces to produce planting material for ware tuber production. When compared to whole tubers, minisetts enable faster multiplication. The use of vine cuttings further improves the pace of multiplication and reduces the amount of planting material. In this method, cuttings, usually one to two nodes with leaves are taken from the lateral branches of immature healthy-looking vines before tuber enlargement and planted into soil. Once the cuttings formed roots and shoots, they are transplanted to nursery beds, where they are nurtured for about 4-5 months. During this time they will produce mini tubers, which are then used as planting material for the next season.

### **Concept of Agricultural Cooperatives**

Cooperatives represent an alternative to farmers as independent marketers of their products and purchasers of their inputs. Small farms are of critical importance in agriculture whilst larger farm units often represent a competitive threat to relatively small independent family owned farms (Altman, 2015). Co-operatives represent a means to maintain the independence of these farms. The International Cooperative Alliance (ICA, 2010) defines cooperative as an autonomous association of persons unified voluntarily to meet their common economic, social and cultural needs through a jointly-owned and democratically controlled enterprise. It is a business voluntarily owned and controlled by its member patrons and operates for them and by them on a non-profit basis (Nweze, 2001).

Rural farmers who are characterized by low income, low resource utilization, small farm holdings and scattered nature of farmland finds it difficult to pool their resources together in order to raise their farm income and substantially improve their living conditions. Therefore, cooperatives represent a strong and viable economic alternative for such class of farmers to better their lots. In other words, cooperative organization offers the best machinery for reaching the mass small scale famers.

In a study by Arua (2004), he viewed cooperatives as an important tool of improving the living conditions of yam farmers. While Nweze (2002) perceives cooperative societies as avenue for input distribution, Hermida (2008) found that cooperatives provide functional education to members in the areas of production, processing and marketing of agricultural produce. According to Borgens (2001), the participation of cooperatives in marketing of agricultural produce is low as a result of poor organizational structure, inadequate infrastructural facilities and administrative bottlenecks. These issues often tend to constrain farming enterprise of yam cooperative farmers and thereby affecting their socio-economic status.

### **Socio-Economic Influence on Yam Production**

There are socio-economic characteristics of farmers which are known to influence cultivation and resource use. These socio-economic variables include age, gender of farmers, household size, farm size, years of farming, level of education and marital status. Alabi *et al* (2005) observed that farmer's age has great influence on their production in Kaduna state with younger farmers producing more than the older ones because of their flexibility to new ideas and risk. Onyenweaku *et al* (2005) and Idiong *et al* (2006) observed that formal education has positive influence on the acquisition and utilization of information on improved technology by the farmers as well as their innovativeness adoption of innovations. These attest to the relevance of education in any human endeavor and its potency to positive reforms. More still, Rahman *et al* (2003) indicated that the length of time in farming business can be linked to age. Age, access to capital and experiences in farming may explain the tendency to adopt innovation and new technology.

### **Theoretical Orientation: Marginal Productivity Theory**

This work is anchored on marginal productivity theory. Marginal productivity theory contributes a significant role in factor pricing. It is a classical theory of factor pricing that was advocated by a German economist, T.H. Von Thunen in 1826. The theory was further developed and discussed by various economists, such as J.B. Clark, Walras, Barone, Ricardo, and Marshall. The assumption of this theory is that under perfect competition the price of services rendered by a factor of production is equal to its marginal productivity. Marginal product refers to the increase in amount of output by the addition of one unit of factor of production while keeping the other factors constant. The increase in the output with the addition of one unit of factors of production is known as marginal productivity.

Adesiyan *et. al* (2010) posits that under static conditions, every factor including entrepreneur would get a remuneration equal to marginal product. The theory contends that in equilibrium each productive agent will be rewarded in accordance with its marginal productivity. When a farmer increases one unit of a factor of production (while keeping the other factors constant), the marginal productivity increases to a certain level of production. After reaching a certain level, the marginal productivity starts declining. This is because when a farmer keeps on increasing the amount of a particular factor of production, the marginal cost also increases. After reaching a certain point, the marginal cost exceeds marginal revenue, thus the marginal productivity declines. On the other hand, if the marginal revenue is greater than marginal cost, the organization opts for employing an additional unit of factor of production.

The relevance of this theory to this paper is that it explains the relationship between inputs and output in yam production. It is useful in analyzing the effect of resources on yam production. It also helps to explain the marginal contribution of socio-economic factors to production.

### **Methodology**

Descriptive survey design was adopted in this paper. Anambra State where this research was carried out is made up of 21 Local Government Areas. It is located between latitudes 6° 45' N and 5° 44' N and longitudes 6° 36' E and 7° 20' E of the area with meridian. The temperature of the State during dry seasons, especially in January, ranges from 25.5 to 30.5°C while during raining season especially in July it ranges from 25 to 27.5°C. The rainfall between November and April ranges from 250 to 500 millimeters while between May and October it is over 2000 millimeters (Duze & Afolabi, 1985). The State is divided into four Agricultural zones namely, Aguata, Awka, Anambra, and Onitsha. Anambra State is bounded to the North by Kogi State, to the South by Imo and Abia States, to the East by Enugu State and to the West by Delta State. Yam and cassava mixed cropping dominate small scale farm holdings in the State. Population of study is 3,200 registered yam cooperative farmers and sample size of 400 was generated using Taro Yamane formula. Multi-stage sampling technique was used in selecting respondents. Main data instrument was structured questionnaire and was validated by two research experts. Out of 400 copies of questionnaire administered, 329 that were properly filled which represent 82% response rate were retrieved. Data were analysed using frequency, percentage, mean and multiple regression.

**Results and Discussion**

**Socio-Economic Characteristics of Respondents**

Table 1: Distribution of Respondents Socio-Economic Characteristics

S/n	Respondents' Socio-Economic Data	Frequency = 329	Percentage = 100	Mean = x
1	Sex			
	Male	273	82.9	
	Female	56	17.1	
2	Age			
	Below 25yrs	-	-	
	26 – 35	13	3.9	
	36 – 45	102	31.0	
	46 & Above	214	65.0	51
3	Marital Status			
	Married	281	85.4	
	Single	46	13.9	
	Separated	2	.6	
4	Size of Household			
	0 - 5	89	27.0	
	6-10	227	68.9	7
	11 & Above	13	3.9	
5	Farming Experience			
	1 – 4yrs	99	30.0	
	5 - 9 yrs	52	15.8	
	10yrs & Above	178	54.1	11
6	Farm Size			
	1 - 3 plots	169	51.3	
	4 - 7 hectares	76	23.1	4
	8 - 10 hectares	63	19.1	
	11 hectares & Above	21	6.3	
7	Academic Qualifications			
	No formal education	67	20.3	
	FSLC	10	3.0	
	SSCE	190	57.7	
	NCE	41	12.4	
	HND	17	5.1	
	BSC	4	1.2	
	MSc./PhD.	-	-	
8	Agricultural Specialization			
	Farming	246	74.7	
	Agric. processing	-	-	
	Agric. marketing	83	25.2	
9	Main Source of Income			
	Yam cultivation/sales	178	54.1	
	Livestock sales	47	14.2	
	Vegetable and fruit sales	14	4.2	
	Cassava sales	27	8.2	
	Maize/rice sales	59	17.9	
	Others	4	1.2	

10	Years of Cooperative Membership			
	Below 5 years	43	13.0	
	5-10	186	56.5	9
	11 – 15	74	22.4	
	16 – above	26	7.9	

Source: Survey, 2019.

Table 1 shows that majority of the respondents 273(82.9%) are males and 56(17.1%) were females. This large number of male involvement in yam production affirm the traditional belief in Igbo land that yam is crop of the men and as such is well revered, especially in the famous new yam festivals. The average mean age of the respondents is 51 years. This implies that the respondents are adults and at the peak of their productive active age. The result of the marital status of the respondents shows that majority 281(85.4%) were married, while the least of the respondents 2(.6) were separated with their spouses. This indicates that married respondents were more in yam production and this could be attributed to responsibilities or those depending on them. Again, the average household size of the respondents is 7 persons. This suggests that they have a large family size, hence, the possibility of more responsibilities to carter for. The majority 178(54.1%) of the respondents have had 10 years and above farming experience. This was followed by 99(30.0%) that had between 1 to 4 years farming experience. Having spent an average of 11 years in yam cultivation, this suggests that the respondents are committed and possibly experienced in this area. Moreso, the table revealed that the respondents have an average of 4 plots of land for their cultivation. Although more may still be needed for effective commercialization, these four plots indicate seriousness in farming. Academically, majority of the respondents 190(57.7%) have acquired SSCE, while the least of them 4(1.2%) had B.Sc degree. This implies that the respondents are less educated, as 67(20.3%) had no formal education and this could possibly affect the techniques utilized in the farming practices. However, as majority of the respondents 246(74.7%) specialized in farming, 83(25.2%) were into marking of the produce. Interestingly, none was into processing of the produce. This could be attributed to non-availability of technologies for that or lack of the technical know-how. Furthermore, the main source of income for majority 178(54.1%) of the respondents was yam cultivation/sales and the least of them 4(1.2%) had other sources of income. This suggest that many of the respondents which perhaps yam farming is not favourable with rely on other sources such as livestock, vegetable/fruit, cassava sales and maize/rice sales for income. Lastly, the table showed that majority of the respondents 186(56.5%) have had between 5 to 10 years of cooperative membership and the least of them 26(7.9%) have been in cooperative for more than 16 years. The average years spent in cooperatives by the respondents is 9 years. This suggests that a good number of the respondents are aware of the benefits of cooperative membership and determined to harness that.

### **Effects of Famers’ Socio-Economic Characteristics on Yam Production**

The effects of famers’ socio-economic characteristics on yam production among cooperative farmers in Anambra state were ascertained using regression analysis and the result is presented in table 2;

Table 2: Socio-economic factors influencing yam production

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	372.643	2816.015		3.528	.010
	Sex	17.190	3923.221	.041	21.612*	.000
	Age	210.415	5600.434	.072	3.432*	.000
	Marital Status	-35.632	0194.320	.054	-0.701	.153
	Size of Household	105.076	3772.193	.032	4.825*	.012
	Farming Experience	05.831	3245.784	.075	2.152*	.040
	Farm Size	-0.324	0091.021	.001	-0.897	.612
	Academic Qualifications	14.523	6910.042	.088	1.424*	.037
	Agricultural Specialization	-11.734	0241.093	.013	-2.805	.251
	Main Source of Income	-211.893	0011.007	.019	-0.173	.442
	Years of Coop. Membership	52.425	8242.212	.060	1.619*	.063
	N = 329					

\*Significant at 5% level

Source: Survey, 2019.

The effects of famers' socio-economic characteristics on yam production among cooperative farmers in Anambra state is shown in table 2. The result of the regression shows that out of the ten variables, seven (sex, age, household size, farming experience, academic qualification, agricultural specialization and years of cooperative membership) have significant positive coefficients.

The findings suggest that the variables positively affect yam production among the cooperative farmers. Based on the result, sex is positively influential to yam production. This validate the belief or perception in traditional Igbo society that yam is crop for the men and as such revered so much. The significance of yam in new yam festival and title taken for many men in Igbo society can only be imagined. Just as many men in the state and by extension region shy away from cassava cultivation and often perceive same as crop for the women, so does women perceive yam. Since the women are not considered to be given the referred Ezeji (king of yam) title, they usually shy away from venturing into this area of farming. As such, this influences involvement and further explains why men dominate this important area of agriculture in the study area. The coefficient for age (210.4) suggests that two years change in age of the cooperative farmers brings about 210 changes on yam production. Again, as it is usually said that experience is the best teacher, with the average age of 51 years of the farmers this suggest that the more experienced the farmer, the more likely he is to learn or correct himself from past mistakes. Again, household size which was observed to be significantly positive suggests that a unit change in size of household brings about 105 changes in production. The positive coefficient of farming experience tells the impact of a unit of experience acquired and as well validates the importance experience in farming. The academic qualification which has positive and significant influence on yam production indicates that additional educational acquisition results to a change in yam production. The finding validates that of Onyenweaku et al (2005) and Idiong et al (2006) who separately observed that formal education has positive influence on acquisition and utilization of information about improved technology or adoption of innovations. Furthermore, the coefficient of years of cooperative membership is positive and slightly significance, implying that yam production of older members is slightly above that of newer members. This is thereby justifying the importance and essence of joining agricultural cooperative society. However, marital status, farm size, agricultural specialization and main source of income were observed not to be significant. The negative coefficient of marital status may suggest that whether single or married once there is determination, effective yam production can be actualized.



**Test of Hypothesis One**

H<sub>0</sub>: Socio-economic characteristics do not significantly influence yam production among cooperative farmers in Anambra state.

H<sub>1</sub>: Socio-economic characteristics have significantly influence yam production among cooperative farmers in Anambra state.

Table 3: Model summary of hypothesis one on socio-economic characteristics

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1	.804 <sup>a</sup>	.726	.683	2169.321	.000

a. Predictors: (Constant), socio-economic characteristics  
b. Dependent Variable: yam production

\*Significant at 5% level

Source: Survey, 2019.

The regression model summary of table 3 shows that about 73% of yam production (dependent variable) is caused by the influence of socio-economic characteristics (independent variables) of the cooperative farmers. In addition, result of the adjusted R (.683), suggest that over 68% yam production among the cooperative farmers are influenced by their socio-economic characteristics, such as sex, age, size of household, farming experience, academic qualifications and years of cooperative membership as observed in table 2. Based on this, this paper rejected the null hypothesis and posits that socio-economic characteristics, such as sex, age, size of household, farming experience, academic qualifications and years of cooperative membership significantly influence yam production among cooperative farmers in Anambra state. This finding upholds that of Rahman et al (2003) that length of time (age or years in farming) and experiences in farming may explain the tendency to adopt innovation and new technology.

**Influence of Production Resources on Yam Production**

The influence of production resources on yam production among cooperative farmers in the state was determined using regression analysis and the result is presented in table 4;

Table 4: Production resources that influences yam production

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	529.672	378.290		4.033	.000
	Price of yam sidelines	16.030	294.113	.051	21.542*	.002
	Fertilizer	832.51	8017.422	.078	2.897*	.000
	Credit/funds	103.723	613.843	.090	3.163*	.000
	Modern production tools	492.159	1332.034	.066	1.119*	.050
	Reliance on personal/family labour	783.012	908.234	.084	0.521*	.031
	Extension service	234.943	672.010	.019	4.782*	.017
	Barn techniques for preservation	-3.983	6023.191	.011	-2.393	.401
	Large farm lands	-101.781	7823.561	.042	-0.562	.902
	Pesticides/herbicides to control pests	221.672	8032.012	.053	31.049*	.004
	Means of transportation	432.83	1231.094	.072	5.173*	.042
	Soil texture	-02.207	234.892	.014	-3.123	.323
	Big baskets to carry produce	-15.192	434.783	.020	-1.941	.615
N = 329						

\*Significant at 5% level

Source: Survey, 2019.

Table 4 shows the influence of production resources on yam production among cooperative farmers in Anambra state. The finding that price of yam sidelines has positive and significant influence (16.0) on yam production suggest that a unit change in price of yam sidelines bring about 16 changes in yam production. The positive coefficient of fertilizer indicates a significant influence on yam production, implying that a unit increase in fertilizer application could bring about 833 changes in yam production. In addition, credit/funds was observed to be coefficiently significant (103.7), suggesting that one unit increase in credit/fund causes about 104 changes in yam production. Moreso, the modern production tools was observed to be positively significant (.050). This indicates that lack of modern yam production technologies is influencing output. This could explain the essence of reliance on personal/family labour force (.031). In other words, when a yam farmer could not meet with modern technologies, he resorts to personal and by extension family labour, thus, leading to poor yield. Again, non-affordability of pesticides/herbicides to control pests was indicated to be significant (.004), thereby suggesting possible destruction of produce. Similarly, the means of transportation thro and fro farm is seen to be positively significant (.042). This attest to the poor state of many roads in the agrarian communities and high cost of transportation. However, barn techniques for preservation bore a negative sign, suggesting that this was not influential to yam produce. Similarly, the coefficient of large farm lands was negative, implying that this was not considered a serious influencing factor to yam production. In addition, soil texture and big baskets for carrying of produce were refuted as production resources that influence yam production. This may not be surprising because with the application of fertilizer and proper pesticides/herbicides control for pests, an infertile soil could still yield. With regards to big baskets, it is only when there is abundance of produce can a farmer talk about that, suggesting that this was not a vital production resource that could impede production.

**Test of Hypothesis Two**

H<sub>0</sub>: Production resources do not significantly influence yam production among cooperative farmers in Anambra state.

H<sub>1</sub>: Production resources have significantly influence yam production among cooperative farmers in Anambra state.

Table 5: Model summary of hypothesis two on production resources

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1	.772 <sup>a</sup>	.691	.746	5233.490	.000

a. Predictors: (Constant), production resources

b. Dependent Variable: yam production

\*Significant at 5% level

Source: Survey, 2019.

This regression model summary of table 5 reveals that about 69% of yam production is influenced by production resources. Moreso, result of the adjusted R<sup>2</sup> (.746) suggest that about 75% of yam production among the cooperative farmers are influenced by production resources such as price of yam sidelines, fertilizer, credit/funds, modern production tools, reliance on personal/family labour, extension service, pesticides/herbicides and means of transportation as shown in table 4. Therefore, the null hypothesis was rejected and this paper submits that yam production among cooperative members in Anambra state was significantly influenced by production resources, such as price of yam sidelines, fertilizer, credit/funds, modern production tools, reliance on personal/family labour, extension service, pesticides/herbicides and means of transportation.

### **Conclusion**

This paper submits that socio-economic factors such as sex, age, household size, academic qualification, years of cooperative membership etc influencing yam production in Anambra state. In other words, whether or not a yam farmer will experience bountiful harvest or increased income depends largely on the control of these factors. In addition to that, production resources such as price of yam sidelines, availability of fertilizer, provision of credit/funds, modern production tools, affordability of labour, extension services, improved means of transportation greatly influences production. The unavailability or insufficiency of some of these resources poses not just a threat to production but dwindles returns on investment. This paper concludes that men still dominate yam farming in the study area and the farmers are aging. In other words, young persons are not embracing this important area of farming.

### **Recommendations**

The following recommendations were made based on the findings;

1. Considering the fact that the elderly are the ones that dominate this important aspect of farming in the state, the government should begin serious sensitization and farming empowerment programme on women and the youth as to encourage them to embrace and fully venture into yam cultivation. This would not only help to eliminate the traditional misconception that yam is crop for the men and curtail rising unemployment among the youth, but to boost food security.
2. The importance of education on any vocation cannot be overemphasized. Therefore, cooperative societies into yam farming should strive to provide extension officers that would teach their members new techniques on yam cultivation and possibly manure production as to help minimize cost.
3. The government should subsidize fertilizer and other resources like pesticides to the level that every farmer can afford. This will not only enhance yield, but help to minimize unnecessary expenditure on procurement.

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