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SOCIO-ECONOMIC FACTORS INFLUENCING THE PROCESSING OF AFRICAN OIL BEAN SEED AMONG RURAL WOMEN IN IDEATO SOUTH LOCAL GOVERNMENT AREA OF IMO STATE NIGERIA

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A B S T R A C T

This study investigated socio-economic factors influencing the processing of African oil bean seed among rural women in Ideato Local Government Area of Imo State Nigeria. The specific objectives of the study were to ascertain the level of participation of rural women in African oil bean seed processing in the study area. The multi-stage sampling procedure was used in the selection of the sample size. In the first stage, two communities were randomly selected from the local government area followed by a selection of 20 households who are into oil bean processing bringing the total to 140 respondents. Primary data was collected using a well-structured questionnaire and interview schedule and later analysed with frequencies, percentages, mean, ranking and logistic regression. The findings showed that the mean age of the respondents was 42 years, while about 43% and 29.3% of the respondents had a non-formal education and primary school education, respectively. A good proportion of the respondents (46.4%) were married, with a household size of 1-5 members and 6-10 members respectively. About 37.9% of the respondents had a monthly income below 40 thousand naira and (64.3%) belonged to a cooperative society/farm association respectively. Regression results indicated that level of education, household size and marital status were strong determinants in the processing of African oil bean seed by the rural women in the study area. It was recommended that the rural women should be empowered through loans to encourage them to be more proactive in the processing of African oil bean seed. Therefore, the paper recommends that processing techniques should be modernized for efficient production and improved shelf-life.

INTRODUCTION

The Rural women in Nigeria are involved and responsible for (80%) of all food items produced in Nigeria. In addition, they form an active and reserved labour force in agricultural development (Rahman, 2004). African Oil bean seed (*Pentaclethra macrophylla*) is one of the economic plants found in Ideato South Local Government Area of Imo State. It is a tropical tree crop that belongs to the leguminoseae family and the minosoideae sub family (Okoli *et al.,* 2006). Different Nigerian tribes have different names for the African oil bean;for example, it is known as Ukpaka or Ugba in Igbo, the Yoruba's call it Apara while the Efik tribe calls it Ukana. (Ikhuoria *et al.,* 2006).

African Oil bean tree is a perennial crop which grows approximately 6 metres in girth and 21 meters height within 3 to 5 years. The tree is low branched with low wide buttresses and an open crown that allows light to penetrate under its canopy. The bark has a reddish-brown to gray coloured with irregular patches that usually flakes off. The leaves are characterized by a big angular stalk that measures about 20-45 centimeters long. The leaves are glabrous in appearance and are equally covered with rusty hairs with 10-12 pairs of stout pinnae. The tree trunk oozes out reddish orange coloured fluid when cut and are equally buttressed and crooked (Iwueke *et al.,* 2006).The most widely used part of the tree is the seed in which women play a significant role and contribute towards the social and economic life of the rural populace. African oil bean tree could be planted by both men and women, though planting is done by men mainly either on the boundaries, inside the farmland or the compound, this depends on the individual choice. Unlike most other crops, it must not necessarily be planted on a farmland.

Women's contributions to the social and economic development is more when compared to that of men by virtue of their of their dual roles in the production and reproductive sphere of the family life (Makama, 2013). Their participation in the formal and informal structures and processes, where decisions regarding the use of societal resources generated by both men and women remains insignificant. Women are involved farm operations like planting, thinning, weeding, fertilizer application, harvesting, storing, marketing and processing (Mgada, 2000). The seeds of the African oil bean tree is harnessed by women, the seed is usually enclosed in a flat pods that tends to burst once matured there by distributing the seeds all over the area in which the tree covers. The pods measures about 35 to 45 centimeters long by 5 to 10 centimeters broad. The pods are black in colour, quite hard land woody in appearance while the glossy seeds are normally 5 to 8 in each pods and brownish in colour (Asoegwu and Ohanyere, 2006).

Commercially, the African Oil Bean Seeds are an excellent source of oil; thus, can be used commercially for producing soaps, candles and cooking oil. The edible seeds are enclosed in a brownish shell, which can be used for decoration and for making beads, traditional dancing costumes, dresses, rosaries, hand bangles, bags and necklaces. The wood serves as firewood and can also be used for generating charcoals.

African oil bean seed is an excellent source of energy, protein, amino acids, phosphorus, magnesium, iron, vitamins, manganese and copper. It is also an excellent source of phyto-nutrients such as tannins, alkaloids, flavnoids, glycosides and saponins. Notwithstanding the high nutritional content of African oil bean seeds, studies reveal that the fermentation process which they undergo before consumption usually eradicates most of these minerals and vitamins such as phosphorus and also toxins. African oil bean seed are used by rural women occasionally for ceremonies like child dedication, traditional wedding, burial etc. Because of its nutritional value, it is supposed to be used for dietary supplement (Achinewhu, 1982).

Furthermore, the preparation of the African oil bean seeds is mainly carried out by rural women and then boiled in water between 14 to 18 hours after which the cooked seeds are sliced into thin strips soaked in water and washed severally before being wrapped in green leaves for three to four days for fermentation to take place. Once fermentation has taken place, the ugba are being prepared by the rural women in assorted mouth watering dishes (Akanbi and Enujiugha *et; al;* 2005), such as Ugba and Okporoko, Nkwobi, Abacha, Soups, Sausages and Vegetable yam.

Economically, the seeds, leaves, stems, barks, trunks and roots of the African oil bean trees are very useful for medicinal, edible and commercial purposes. The wood and leaves can serve as mulch that can be spread around or over another growing plant to enrich or insulate the soil. The wood can serve as a stake for supporting other growing plants, such as yam, running beans, African yam beans and the trunk can serve as timber that can be used or structural work which is being carried out by the men since it is a laborious work. African oil bean is a leguminous plant which can fix nitrogen to the soil through the leaves. Ashes from Ukpaka pods can serve as local cooking salt while the seeds can be ground into powdered flour for making bread for commercial purposes (Aiwonegbe *et al.*, 2006).

African oil bean is an agricultural product that can improve the socio-economic welfare of women in a community or society, and there is also a need to expand its processing for commercial purposes. Consequently, successive governmental administrations in Nigeria have initiated policies aimed at involving women in agriculture as a lucrative vocation. Women in agriculture in Nigeria can about 1988, and it is a programme implemented to enhance women's participation in agriculture, incorporating women on African oil bean production will empower them for agricultural sensitivity towards commercial purposes. Without this, any withdrawal of women in African oil bean processing will endanger food security; thus, women need to be encouraged and their interest in agriculture aroused (FAO 2007; Pervez et al. 2018).

A lot of research work has been done on the production of African oil bean seeds and related aspects such as storage, preservation, processing (Non-wood News, 2009). Also efforts have been made to significantly study the traditional processing (Babalola, 2012). However, it is of paramount importance and worthwhile to carry out a study that would eventually identify the

factors influencing the processing of African oil bean seed with a view of suggesting improvement measures with the following specific objectives:

i. identify the socio-economic characteristics of women in the study area.
ii. identify the challenges faced by the women in the processing of African oil bean seed in the study area.

Hypothesis

Ho: There is no significant relationship between the socio-economic characteristics of the respondents and the factors influencing the processing of African oil bean seed in the study area.

Methodology

Study Area

The study was conducted in Ideato South Local Government area of Imo State. The area is located within the South-East agro-ecological zone of Nigeria. It lies between 6º30` and 6°40`North of the equator and Longitude 8°35` and 6°26`East of the Greenwich Meridian. It shares boundaries with Anambra State to the North, Delta, and River States. To the South and Abia State to the East and the capital is Owerri. The major occupation of the people is agriculture, aided by good soil in the study area. Crops produced are maize, Cassava, yam, vegetables, beans etc. while cash crops include oil palm, citrus, rubber etc. mixed cropping system is the usual agricultural practice of the area with the traditional tools.

Ideato South Local Government of Imo State consist of six clans namely; Ogboko, Obohia, Mgbei, Umuchima, Ugbeli, Omuma communities with three autonomous populations in each clan. Its identification of concerned respondents was made through oil bean producers and sellers association in the area.

The population of the study comprised of all the rural women who were African oil bean seed processors in Ideato South Local government area.

Sample Procedure

A multistage sampling techniques were employed for the study. In the first stage involved purposive selection of all the blocks (2) in Ideato L.G.A. Second stage involved simple random sampling of four (4) circles from the list of all the circles that make up each of the blocks. The third stage involved selecting two (2) sub-circles from the list of sub-circles that make up each of the selected circles. The fourth stage involved a simple random selection of ten (10) processors from the list of the African oil bean seed processors in each of the selected sub-circles. In all the sample size were 140 processors.

However, a simple random sampling procedure was used for the study based on identified number of concerned respondents obtained during the reconnaissance survey. A total of 140 respondents. Data was collected using a structured questionnaire; interview schedule later analysed with simple descriptive statistics and regression model.

Hypothesis Testing

The hypothesis there is no significant relationship between socio-economic characteristics of the respondents and factors influencing the processing of African oil bean seed and the socio-economic characteristics of the respondents was tested using multiple regression. The Ordinary Least Square (OLS) was used. The implicit form of the model is specified as: $Y = \log (p/1-p) = f(X_1,X_2,X_3,X_4,X_5,X_6,X_7,X_8,e_i)$

Where Y= Index of processing

X_1 = Age (Years)

X_2 = Level of Education (Years of formal schooling)

X_3 = Marital Status (single = 0, married = 1)

X_4 = Household size (Number of persons living in the same household)

X_5 = Occupation (Farming = 1, others = 0)

X_6 = Monthly Income (measured in Naira)

X_7=Cooperative (Member = 1, Others = 0)

e_i = error term

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The socio-economic characteristics of the respondents are represented in Table 1 below;

Table 1: Distribution of respondents by their socio-economic characteristics

Socio-economic characteristics	Categories	Frequency	Percentages	Mean
Age	20-30	29	20.7	
	31-40	36	25.7	
	41-50	34	24.3	21.6
	51-60	32	22.9	
	61 and above	9	6.4	
Level of Education	Non-formal	60	42.9	
	Primary school	41	29.3	
	Secondary school	15	10.7	
	Vocational school	21	15	
	Tertiary education	3	2.1	
Marital Status	Single	21	15	
	Married	65	46.4	
	Widowed	39	27.9	
	Separated/divorced	15	10.7	
Household size	1-6	39	27.9	
	6-10	61	43.6	
	11-15	34	24.2	19.4
	16 and above	6	4.3	
Religion	Christianity	129	92.1	
	Traditional	11	7.9	
Occupation	Farming	60	42.9	
	Trading	33	23.6	
	Public Servant	9	6.4	
	Artisan	38	27.1	
Monthly Income (₦' 000)	Below 40	53	37.9	
	40-80	61	43.6	
	100-120	20	14.2	
	140-160	6	4.3	
	160 and above	-	-	
Cooperative Society/Farm	Member	90	64.3	
Association Membership	Non-member	50	35.7	

Source: Field Survey, 2018

Age

Data in table 1 showed that about 20.7% and 25.7% of the respondents were within the age brackets of 20-30 years and 31-40 years respectively, while about 24.3% and 22.9% of the respondents were within the age brackets of 41-50 years and 61-60 years respectively. The remaining 6.4% of the respondents were within the age brackets of 61 and above. From this result, there is a relatively high proportion of middle age (41-60 years) to old age (above 60 years). This trend suggested that the occupation is main the occupation of the aged people in the area although the youths were not left out. Abiodun (2008)stated that the active age of processors is a positive factor to sustainable food production and poverty alleviation amongst the rural women. Also, Nwaru (2004), said that the risk decrease with age. Young people in the area should, therefore, be encouraged to get involved in the processing of African oil bean seed through empowerment.

Level of Education

The table also revealed the educational level of the respondents. About 42.9% and 29.3% of the respondents had a non-formal education and primary school education respectively, while about 10.75% and 15% of the respondents had a secondary school education and vocational school education respectively. The remaining 2.1% of the respondents had tertiary education. This implied that they would be more receptive to new and improved technologies of African bean seed processing as compared to those without any form of education. Njoku (2009); Pervez (2019), in confirmation of this finding, stated that knowledge would influence the processor's positive inclination towards the adoption of new technologies on the course of their processing when exposed to one. Also, Okoro *et al.*, (2006) wrote that educated processors are expected to be more receptive to new, improved technologies in processing than their counterparts with little or no education.

Marital Status

Table 1 above also showed that about 15% and 46.4% of the respondents were single and married respectively, while about 27.9% and 10.7% of the respondents were widowed and separated/divorced. This result indicated that a large proportion of the respondents were married. This may be as result of the fact the respondents are matured age wise to have their own families.

Household Size

According to United Nations (2006), household size is the number of individuals that live together under one roof, eating from the same pot and recognizing one person as the head of the household. From the result of this study, about 27.9% and 43.6% of the respondents had a household size of 1-5 members and 6-10 members respectively. Also about 24.2% and 4.3% of the respondents had a household size of 11-15 members and 16 and above members respectively. This result implied that the families had a relatively large household size providing the labour force for their processing of African oil bean seed. Therefore a large household is expected to increase their processing rate and quantity of African oil bean seed produced within a specified period.

Occupation

In Table 1, about 42.9% and 23.6% of the respondents practice farming and trading as their occupation, respectively, while about 6.4% and 27.1% of the respondents were public servants and artisans, respectively. This result implied that the respondents, apart from processing African oil bean seed had other occupations they engage on. This may be as a result that a high proportion of the respondents were married and have families, hence needed more income to cater for their families.

Monthly Income

About 37.9% and 43.6% of the respondents had a monthly income below 40 thousand naira and 40-80 thousand naira respectively, while about 14.2% and 4.3% of the respondents had a monthly income of 140-160 thousand naira and above 160 thousand naira respectively. This result implied that the respondents earn some income, probably because they had families and have to cater for them.

Cooperative Society/Farm Association Membership

Majority of the respondents (64.3%) belonged to a cooperative society/farm association. Perhaps that was why they were more inclined towards the processing of African oil bean seed. It is expected they (the processors) can access loans, grants, incentives in processing etc. through these cooperative societies and farm associations which will help them to boost their processing of African oil bean seed.

Table 2: Challenges associated with processing of African oil bean seed

Challenges	Frequency	Percentage
Availability of raw materials	125	24.7
De-hulling of seeds	92	18.2
Market availability	106	20.9
Storage facilities	63	12.5
Cost of purchasing	120	23.7
Firewood for cooking		

Multiple Responses recorded

Source: Field Survey, 2018

Table 2 revealed that 25% of the respondents stated that non-availability of raw materials were one of the most challenges they face. The respondents stated that, the African oil bean seed is not always available, that they had to travel outside the community contributing to the high price of the product. Also about 18% of the respondents complained that de-hulling of the seeds is a stressful activity because of the nature of the seed. Also, 21% of the respondents complained about cost of purchasing firewood for cooking because firewood according to them is expensive and the cooking of the bean consumes a lot of wood. Further, the table revealed that 23% of the respondents complained about market availability while 13% of the respondents complain about storage facilities, which is affecting them in marketing, especially those marketing their products outside the area.

Hypothesis Testing

H_O: There is no significant relationship between the socio-economic characteristics of the respondents and factors influencing the processing of African oil bean seed of respondents in the study area.

Multiple regression analysis on there is no significant relationship between the socio-economic characteristics of the respondents and factors influencing the processing of African oil bean seed of respondents in the study area

VARIABLES	LINEAR	SEMILOG	EXPONENTIAL	DOUBLE LOG
Constant	-5.337	0.211	-13.445	-0.562
Age	-1.684	-0.161	-2.367	-0.224
	(-1.558)	(-1.298)	(-1.565)	(-1.310)
Level of Education	4.181	0.607	6.455	0.925
	(2.570)***	(3.250)***	(2.797)***	(3.593)***
Sex	1.113	0.100	1.677	0.925
	(1.206)	(0.948)	(1.292)	(1.458)
Marital status	0.094	0.011	0.801	0.105
	(0.356)	(6.941)	(1.505)	(1.748)*
Household size	0.851	0.093	3.784	0.437
	(2.927)***	(2.794)***	(3.588)***	(3.715)***
Religion	0.091	0.010	0.801	0.105
	(0.362)	(6.940)	(1.502)	(1.733)
Occupation	-1.682	-0.159	-2.365	-0.222
	(-1.556)	(-1.296)	(-1.563)	(-1.308)
Monthly income	1.112	0.099	1.676	0.157
	(1.205)	(0.947)	(1.291)	(1.076)
Cooperative/Farm association membership				
Adjusted R^2	0.389	0.412	0.417	0.590
Ratio	7.412	8.136	8.221	0.985

Source: Field survey, 2018

***, * is significant at 1% and 10% respectively, + represents the lead equation.

The relationship between the socio-economic factors influencing the processing of African oil bean seed and the socio-economic characteristics of the respondents were determined by using the Ordinary Least Square (OLS) Regression Model. The model was analyzed in four forms of the linear, semi-log, exponential and double log. The double log was chosen as the lead equation. The co-efficient of multiple determinants R^2 was 0.59, which implies that 59% of the observed variation on the benefits from garden cultivation was explained by the variables included in the model. The F-ratio was 9.85. Three Variables, level of education, household size and marital status were positive and a had significant relationship with the socio-economic factors influencing the processing of African oil bean.

The co-efficient determinant of the level of education was positively related to the benefits from garden egg cultivation with a t- the value of 3.59, which was significant at 1% level. This suggested that the respondents with a higher level of education had a significant influence on the processing of African oil bean seed. In consonance with this finding, Opara (2010) stated that the farmers level of education would influence their processing of African oil bean seed, hence the benefits they derive from it. This implied that the education is vital in the processing of African oil bean seed as the processors with a higher level of education will readily adopt the latest techniques in the processing of African oil bean seed.

The co-efficient determination of household size was positively signed and significantly related to the processing of African oil bean processing with a t-value of 3.71 and significant at 1% of probability. This implied that household size influenced the handling of African oil bean seed. This is in agreement with the prior expectation.

Marital status was also significant to the processing of African oil bean seed processing with a t-value of 1.75 and significant at 10% level of probability. This suggested that the respondents who were married are more inclined towards the processing of African oil bean seed processing, hence its benefits. This may be to the fact that they needed to diversify their income potentials in other to be able to take care for their households. So their processing of African oil bean seed will create a financial security for them and their households.

Conclusion and recommendation

The study showed that majority of the respondents relies on the processing and sale of African oil bean seed for a living. Despite its importance as an item for food and income generation, the source most of the time is outside the area. The processors are mainly females unfortunately the trade is not growing because it lacks modern technology which affects all aspects. Therefore, the paper recommends that the processing technique should be modernized to improve shelf life.

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