Journal of Agriculture and Applied Biotechnology 2023, 2(1): 23-30
ISSN: 2971-7051
GLINTPLUS
Original Article

An Analysis of the knowledge and attitudes toward African breadfruit among rural households in Osun State, Nigeria

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ABSTRACT

The study assessed the knowledge and attitudes of rural dwellers regarding the importance of African breadfruit in Osun State, Nigeria. It describes the respondents' socioeconomic characteristics, their knowledge of the importance of African breadfruit, and attitudes toward the production and consumption of African breadfruit in the study area. A multi-stage sampling procedure was used to select 288 respondents. Data were elicited through a structured questionnaire. Data collected were described with frequency, percentages and mean. They were also analysed using Pearson's Product Moment Correlation (PPMC). Findings revealed that the mean age of the respondents was 47.8 ± 1.32 years and the majority were male (62.2%) with a mean years of formal schooling as 9.7 ± 4.67. Respondents had moderate knowledge (64%) of the importance of African breadfruit, with an indifferent attitude towards its production and consumption. There was a significant association between religion ($\chi 2$= 21.966; P=0.000), level of education ($\chi 2$= 46.136; P=0.000), cosmopoliteness ($\chi 2$= 16.877; P=0.000) and knowledge of the importance of African breadfruit at p ≤0.01. There was a significant relationship between the level of education (r = 0.202), years of formal schooling (r = -0.165), cosmopoliteness (r = 0.172), and knowledge of the importance of African breadfruit at p ≤ 0.01. Additionally, there exists a significant relationship between rural households' attitudes toward the production and consumption of African breadfruit and the knowledge of its importance (r = 0.219, p ≤0.01). It was therefore established from the findings of this study that respondents had moderate knowledge of African breadfruit with an indifferent attitude towards its production and consumption.

HIGHLIGHTS

- Respondents have moderate knowledge of the importance of African breadfruit.
- Positive attitude towards African breadfruit exists.

Article History:
Received: 20th December, 2022
Accepted: 10th June, 2023
Available online: 6th July, 2023
Keywords:
African breadfruit; rural dwellers; food security; consumption.

1. Introduction

The African breadfruit (AFB) (*Treculia africana* Decne) is a large evergreen tree found in tropical and sub-tropical humid forests. It is widely distributed in West and Central Africa and plays a significant role in many aspects of daily life. It belongs to the family Moraceae and can grow to a height of 30 m while the stem can be up to 6 m wide. The stem bark is grey, in colour, and produces white latex. The leaves are large and dark green on the surface and lighter underneath. The tree may be monoecious or dioecious. The male flowers are club-shaped while the female inflorescence forms globose heads on a receptacle (Food and Agricultural Organisation, 2020). *Treculia africana* Decne commonly known as African breadfruit; wild jack fruit, or African boxwood is a neglected and underexploited tropical tree crop native to many tropical countries like Ghana, Sierra Leone, Nigeria, and the West Indies. The tree remains ever-green in both rainy and dry seasons producing fruits that have immense potential as a nutritional source for man and other domestic animals. Africana Decne spp is a forest tree up to 27 m high and it has been established that a fruit may contain about 1,500 seeds. They are aromatic and have a flavour much like groundnuts (Folake and Victor, 2020).

The mature seed consists of an outer covering or seed coat and an inner edible endosperm (Adumanya *et al.,* 2015). The seeds are a popular traditional food item, commonly roasted, cooked, mashed, and consumed either directly as a snack food or as flour for use in soup thickening, cakes, and bread for food formulations. African breadfruit is rich in Vitamin C which helps in the production of collagen, a protein that provides elasticity to the skin (Ojimelukwe and Ugwuona, 2021). A 100 g serving of African breadfruit meal is composed of 10 % fat, primarily unsaturated fat (the good fat), 12 – 15 % protein, 25 % carbohydrates with 2 % fibre, and with only about 240 kcal in this serving amount (Nnorom *et al.,* 2015).

According to Etemike and Efanodor (2015), Nigeria's rural economy system comprises five major components, which include; human resources, agricultural activities, non-agricultural activities, primary production, and natural resources. More than 80 percent of the rural labour force is engaged in subsistence farming at the smallholder level (Etemike and Efanodor, 2015). According to Etemike and Efanodor (2015), crop and livestock production are usually fused as rural agricultural activities and

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https://doi.org/10.52493/j.jaab.2023.3.58

there are variations in agricultural production, the Northern region of Nigeria majorly produces more cotton, rice, beans, groundnut, horticulture, and livestock while the Southern region majorly produces more of palm product, cassava, rubber, cocoa, and fishing product. Most food crop is produced for consumption, while cash crops are exported.

Knowledge is a concept – like gravity. You cannot see it, but can only observe its effects. Because knowledge is an invisible, intangible asset and cannot be directly observed, many people and organizations do not explicitly recognize the importance of knowledge, in contrast to their more visible financial and capital assets. There is no way to know if any definition of knowledge is correct or incorrect. This is because it would either involve the circularity of referring to the definition of knowledge or referring to some non-definitional way of knowing what knowledge is, but there is no one whereby we may say we know the definition is correct or not (Popovic, 2015). Assessing knowledge before the testing performance of a complex task has the advantage of detecting and identifying knowledge deficiencies before they are revealed by errors in performance or other near-accident incidents. To be useful to a person, the knowledge must not only be acquired but also retained or remembered. It is not enough for instructors and trainers to be concerned only with the acquisition of knowledge by trainees. They must also be concerned with the retention of knowledge so that learners will know what is available to them at later times. If the knowledge is acquired but does not influence behaviour and cannot be retrieved from memory, e.g. is forgotten before its intended later use, then the earlier learning has failed to attain its instructional purposes.

African breadfruit is a food security that helps meet the nutrient needs of people and also provides income to rural poor households that produce, process, and/or preserve this crop. Uluocha *et al*. (2016) investigated the income generation, processing, and sales of African breadfruit in Imo State, Nigeria. Their findings were that AFB was an underutilized food security crop and the major challenges to its economic development were; seasonal scarcity; labour input during processing and transportation. No previous studies have been conducted to assess the knowledge, attitude, and cultivation practices of African breadfruit's importance among rural households. The foregoing arouses the quest to assess the knowledge, attitude, and cultivation practices of African breadfruit's importance among rural households in Osun State, Nigeria. The specific objectives of the study describe the socio-economic characteristics of the respondents, describe rural households' knowledge level of the importance of African breadfruit, and determine the attitudinal level of rural households towards the production and consumption of African breadfruit in the study area.

The following hypotheses were tested:

Hypothesis (H_o1): there is no significant relationship between the socioeconomic characteristics of rural households and the knowledge of the importance of African breadfruit.

Hypothesis (H_o2): there is no significant relationship between rural households' attitudes towards the production and consumption of African breadfruit and the knowledge of the importance of African breadfruit.

1.1. Theoretical Framework

This research was founded on rational choice theory. Rational choice theory is an umbrella name for several models that explain social phenomena as the results of rational individual action. The efforts of one man, James S. Coleman, have greatly contributed to rational choice theory becoming one of the leading theories in modern sociology (Heckathorn, 2005). The rational choice theory's fundamental ideas are taken from neoclassical economics (as well as utilitarianism and game theory; Lindenberg, 2001; Simpson, 2007). The actors are fundamental to rational choice theory. Actors are perceived to be purposeful or to have intent. That is, actors have ends or aims in mind for their acts. "Rational behaviour" is defined as behaviour that is appropriate for achieving specified goals given the constraints imposed by the situation.

Individual preferences, beliefs, and limits are central to all rational choice explanations. Preferences are the positive or negative assessments that people have about the likely results of their activities. Preferences can stem from a variety of sources, including culturally transmitted appetites for food or other goods, as well as personal routines and commitments. Beliefs are perceived cause-effect relationships, such as the likelihood that an individual's activities will result in distinct probable outcomes. A village leader, for example, may assume that assaulting neighbouring village A has a larger chance of success than raiding neighbouring village B. Constraints define the boundaries of the collection of possible activities (for example, the amount of credit available imposes a budget constraint on individuals considering purchasing a home).

2. Methodology

The respondents for this study were drawn from rural households in the three Osun State Agricultural Development Programme (OSSADEP) zones namely Ife/Ijesa, Iwo, and Osogbo, and it has 30 local government areas (LGAs, Figure 1). Osun State was created in 1991 from the eastern third of Oyo State. It is bounded by the states of Kwara on the northeast, Ekiti and Ondo on the east, Ogun on the south, and Oyo on the west and northwest. The Yoruba Hills run through the northern part of Osun state. The state has a covering of tropical rainforest, and Osun is the most important river. Osun state is inhabited mainly by the Yoruba people. Osun state occupation is mainly agriculture. Major crops include maize, yam, and cash crop.

This study adopted cross-sectional, descriptive survey by recruiting experienced data collectors to elicit information from the participants. The dependent variables are knowledge about the importance of African breadfruit and attitude towards the production and consumption of African breadfruit while the independent variables are age, average monthly income, family size, sex, and years of formal education among others

A multi-stage sampling procedure was used to select respondents for the study. In the first stage, 25 percent of the total Local Government Areas (LGAs) in the three zones were purposively selected based on the predominance of breadfruit in those areas; that is three out of ten LGAs in Ife-Ijesha zone (Atakumosa East, Ife East and Ife South), two out of seven LGAs in Iwo zone (Irewole and Isokan), and three out of thirteen LGAs in Osogbo zone (Ila, Olorunda and Odo Otin) making a total of eight LGAs. In the second stage, the purposive sampling technique was used to select three communities from each of the selected LGAs where African Breadfruit is predominant making a total of twenty-four communities in all. In the third stage, a purposive sampling technique was used to select four rural households with youth within the age bracket of 18-40 years; father and mother from each of the twenty-four communities making a total of 288 rural household members that formed the respondents for the study.

Data were collected using a structured interview guide. The data were manually collected. Data were analysed using SPSS. Chi-square was used to test the relationship between nominal variables and the dependent variable. Variables having p-value < 0.05 in the multivariable analysis were considered satistically significant. A descriptive statistical tool such as mean, standard

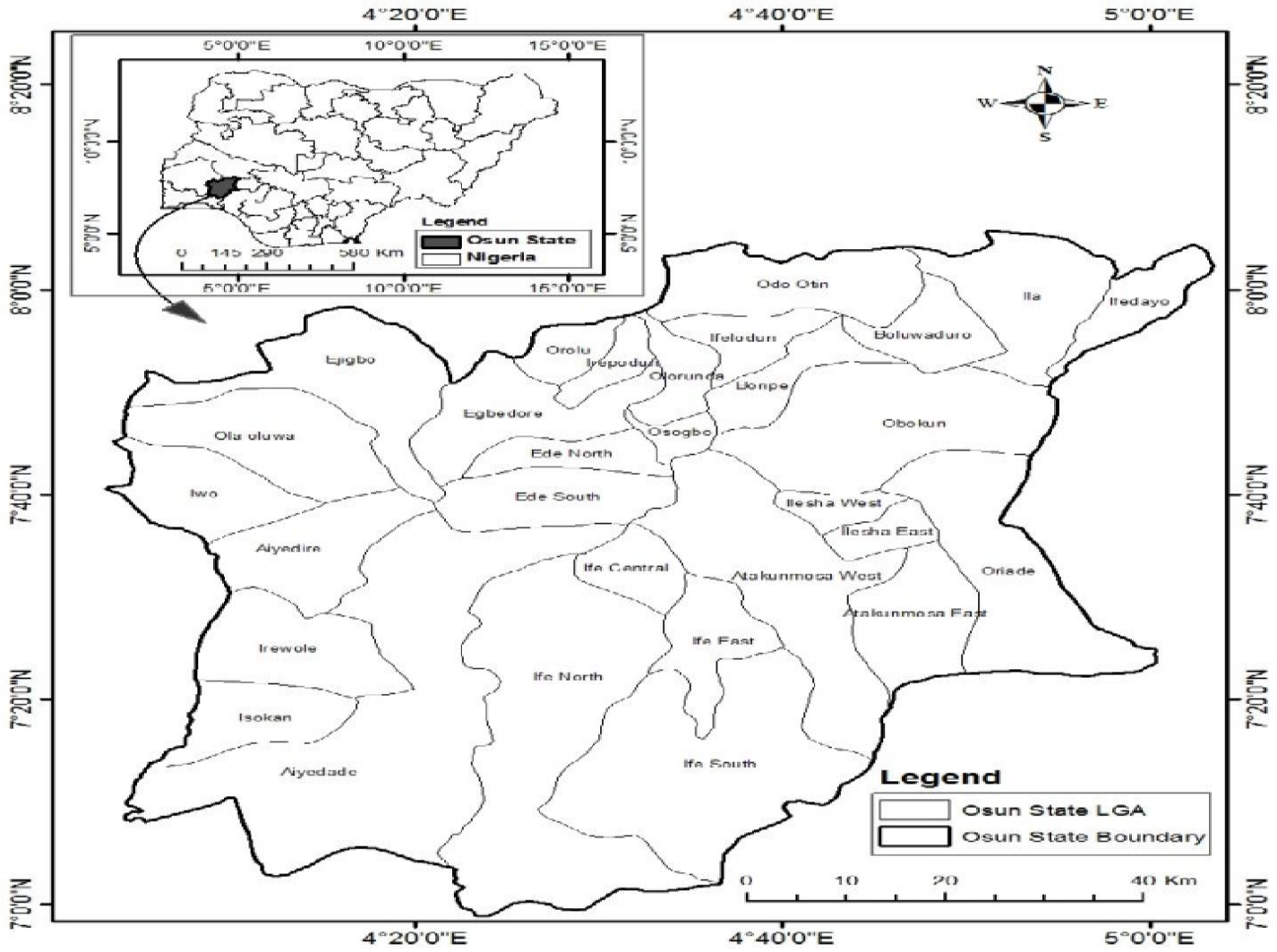

Figure 1. Osun State showing the 30 Local Government Areas

deviation, frequency count, and percentages were used to describe the data.

3. Results and Discussion

The results in Table 1 show that the mean age of the respondents was approximately 48 years. This indicates that the respondents are at their active age and can actively take risks and source new knowledge to improve their return on investment and subsequently, their standard of living. This result corroborates the findings of Ogunleye *et al*. (2017), Oke *et al.* (2019), Abdulaleem *et al.* (2017), and Oladejo (2016) which state that Osun State rural dwellers were middle-aged, meaning they are neither young nor old and at their active age. About 62.2% of the respondents were male while 37.8% were female. This is in agreement with the findings of Gidaroku (2015), Ayinde *et al.*(2016), Oladejo (2016), and Oke *et al*. (2019) which indicated that in most rural farming communities, men are more inclined to farm activities while women only occupy the positions of farmers' wives. Wole-Alo *et al*. (2016) also observed the same and suggest that it could be a result of the continual old methods of farm practices which include rigorous farm operation; hence, the involvement of males rather than females. Abdulaleem *et al.* (2017) reported a similar result, they explained that the trend could be a result of the right to the land which has usually favoured the male gender.

The mean family size is 6 with a standard deviation of 2.95. This finding opposes the result of Oke *et al*. (2019) who reported 8 and Abdulaleem *et al*. (2017) also reported 7 members in a household. However, the findings further upheld the study of Oladejo (2016) and Ogunleye *et al*. (2017) who estimated that the average household size in the rural area of Nigeria is 6. The findings reveal that rural households were no longer as large as they used to be traditionally when large household sizes were needed for farm labour. This observation might be because the majority of parents in rural areas now send their children to schools instead of using them as a cheap source of labour. On the other hand, this result connotes that the head of the household must cater to the need of members of the household. Hence, they are involved in various livelihood activities such as farming and other non-farm activities to meet their financial needs.

The mean years of formal schooling were 10.7±4.67. This implies that the majority of the respondents were literate and could source the importance of African Breadfruit from friends, neighbours, the internet, and extension agents, which in turn influenced their perceived knowledge of the importance of African Breadfruit and their attitude to its production and consumption. These findings conform with Oladejo (2016), Ogunleye *et al*. (2017), and Oke *et al*. (2019) and that the majority of the farmers in Osun state and generally in South Western Nigeria are literate and they have achieved at least a minimum of five years of

Table 1. Distribution of respondents by their personal and socio-economic characteristics

Variables	Frequency	Percentage	Mean and SD
Age(years)			
20-30	43	14.9	
31-40	49	17.0	
41-50	65	22.6	47.8±1.32
51-60	69	24.0	
Above 61	62	21.5	
Sex			
Male	179	62.2	
Female	109	37.8	
Family size			
1-5	147	51.0	
6-10	120	41.7	6.35±2.95
11-15	17	5.9	
Above 15	4	1.4	
Average monthly income			
<20000	39	13.5	
20000-60000	220	76.4	41759±19461
61000-100000	28	9.7	
Above 100000	1	0.3	
Years of formal schooling			
<5	55	19.1	
5-10	97	33.7	10.7±4.67
11-20	134	46.5	
Above 20	2	0.7	

Table 2. Distribution of respondents by their knowledge of the importance of African breadfruit

Knowledge statements	NK (freq%)	LK (freq%)	MK (freq%)	Mean Score of Knowledge	Rank
The tree can serve as shade and cooling effect	28 (9.7)	86 (29.9)	174 (60.4)	1.50	1st
Fallen leaves improve soil condition	61 (21.2)	46 (16.0)	181 (62.8)	1.41	2nd
The tree prevents soil erosion	47 (16.3)	100 (34.7)	141 (49.0)	1.32	3rd
The tree is an important source of oxygen	43 (14.9)	112 (38.9)	133 (46.2)	1.31	4th
Its wood can be used for furniture making	47 (16.3)	113 (39.2)	128 (44.4)	1.28	5th
It has the potential to contribute to food security	62 (21.5)	136 (47.2)	90 (31.2)	1.09	6th
African breadfruit production can generate income	87 (30.2)	93 (32.3)	103 (37.5)	1.07	7th
Its production can generate employment opportunities	78 (27.1)	124 (43.1)	86 (29.9)	1.02	8th
Its wood can be used for paper production	68 (23.6)	146 (50.7)	74 (25.7)	1.02	8th
It has a laxative effect	105 (36.5)	73 (25.3)	110 (38.2)	1.01	10th

NK=No Knowledge; LK=Little Knowledge; MK=Much Knowledge; Grand Mean= 0.87

schooling. This result also aligns with Wole-Alo *et al.* (2016). The level of literacy in the study area somewhat suggests that adoption and innovation rates should be high. Furthermore, it means that the literacy rate could have a significant influence on the perception and attitude of the residents.

The mean average monthly income was ₦41,759 with a standard deviation of 19,461. The results indicate a relatively low income compared to the average family household. This must have been the reason for over 50% of food insecurity experienced by an average household in the study area as reported by Fawole *et al*. (2016). The low income could also be a result of the type of economic activities the respondents are engaged in.

3.1. Knowledge of the Importance of African Breadfruit

The results in Table 2 show the rank order (top ten) of perceived knowledge in descending order, the results reveal that the tree can serve as shade and cooling effect (mean =1.50) ranked highest of all the knowledge, followed by fallen leaves improves soil condition (mean =1.41), the tree prevents soil erosion (mean =1.32), the tree is an important source of oxygen (mean =1.31), its wood is used for furniture making (mean =1.28), it has the potential to contribute to food security (mean =1.09), its production can generate income (mean= 1.07). However, with the grand mean score (0.87) for perceived knowledge. It can be deduced that 41.4 percent of the respondents had little knowledge

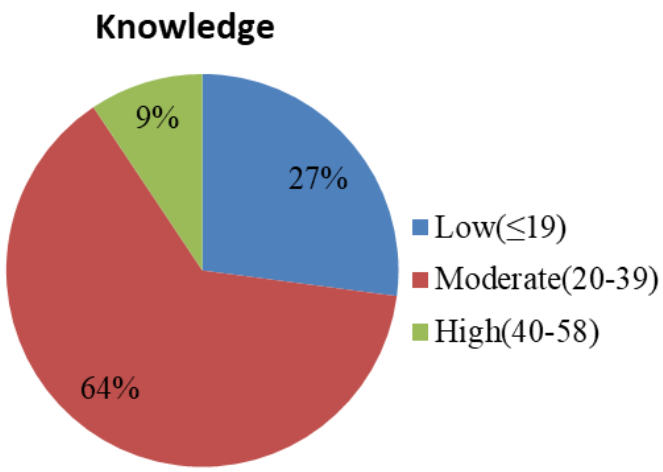

Figure 2. Pie chart showing the level of perceived knowledge of the importance of African breadfruit. Source: Field Survey, 2019

of the importance of African breadfruit. It is interesting and apparent from this table that the respondents recognise both the direct and indirect benefits of African breadfruit. Furthermore, the findings align with the study of Appiah *et al*. (2016), that in addition to being a source of fat for energy and mineral, such as beta-carotene, vitamin C, and folic acid, the protein content in the crop can help to boost protein intake in the human diet; hence, improving food security. The study of Ojimelukwe & Ugwuona (2021) on the traditional and medicinal use of African Breadfruit amplifies that the crop is significantly rich in both dietetic and medical properties. Umezuruike (2019) opined that its seeds are essential raw materials for livestock feeds, especially for the poultry and pig industries. Umezuruike also added that there are profitable opportunities in the cultivation of the crop. This is a result of the demand both locally and internationally for the seed which serves as a source of nutritional oil. Meanwhile, Ohajianya & Osuafor (2017) also reported that the household recognition of the importance of African Breadfruit has increased its demand. This implies that rural dwellers can tap from its increased demand to improve their livelihood through their engagement in the activities along the AFB value chain.

3.2. Knowledge Level of the Importance of African Breadfruit

Evidence in Figure 2 reveals the overall knowledge level of the importance of African breadfruit in the study area. This result is categorized into low, moderate, and high knowledge levels using equal intervals. Scores between 0-19 were regarded as low level; 20-39 were regarded as a moderate level while scores above 40 were regarded as a high knowledge level. The result shows that 27 percent of the respondents' low knowledge level, 64 percent of the respondents had a moderate knowledge level and 9 percent of the respondents had a high knowledge level. The findings indicate that the rural households had moderate knowledge of the importance of African breadfruit. This implies that they are aware of the basic benefit or purpose that can be derived from the cultivation and utilisation of the crop. Also, it connotes that they are limited in knowledge of how to fully harness the crop's potential. This limited knowledge could be a result of the dearth of awareness, campaigns, and training on the importance and potential of the crop. This aligns with the study of Osuafor *et al*. (2018). They advocated that there is an urgent need to promote awareness of African Breadfruit as it has great potential to attain rural food security. Similarly, Ohajianya & Osuafor (2017) noted

Table 3. Distribution of respondents by their attitudes towards the production and consumption of African Breadfruit

Attitudinal Statements	SA (freq%)	A (freq%)	D (freq%)	SD (freq%)	MS	Rank
Planting of African breadfruit is important for its medicinal purpose	196(68.1)	75(26.0)	14(14.9)	3(1.0)	2.61	1st
Consumption of African breadfruit doesn't have any medicinal purpose	4(1.4)	18(6.2)	129(44.8)	137(47.6)	2.38	2nd
Planting of African breadfruit can generate income	166(57.6)	65(22.6)	38(13.2)	19(6.6)	2.31	3rd
Consumption of African breadfruit is cheap	151(52.4)	87(30.2)	38(13.2)	12(4.2)	2.30	4th
Planting of African breadfruit take longer years to mature	138(47.9)	95(33.0)	45(15.6)	10(3.5)	2.25	5th
Planting of African breadfruit is important for its environmental purpose	124(43.1)	117(40.6)	33(11.5)	14(4.8)	2.21	6th
My community doesn't like eating African breadfruit	16(5.6)	45(15.6)	113(39.2)	114(39.4)	2.12	7th
Planting of African breadfruit cannot generate income	25(8.7)	46(16.0)	96(33.3)	121(42.0)	2.08	8th
Planting of African breadfruit is important because my community love eating it	114(39.6)	98(34.0)	52(18.1)	24(8.3)	2.04	9th
Planting of African breadfruit is not important because nobody will buy it	47(16.3)	44(15.3)	64(22.2)	133(46.2)	1.98	10th
Friends/relations motivate one another to cultivate African breadfruit	116(40.3)	80(27.8)	44(15.3)	48(16.7)	1.91	11th
Planting of African breadfruit is used as a catch crop	67(23.3)	136(47.2)	62(21.5)	23(8.0)	1.85	12th
Planting of African breadfruit is not important for its low shelf life	38(13.2)	60(20.8)	124(43.1)	66(22.9)	1.75	13th
Friends/relations do not motivate one another to cultivate African breadfruit	57(19.8)	78(27.1)	67(23.3)	86(29.9)	1.63	14th
Consumption of African breadfruit require some certain soup	68(23.6)	61(21.2)	124(43.1)	35(12.1)	1.56	15th
Planting of African breadfruit doesn't suppress the growth of other crops	71(24.7)	68(23.6)	79(27.4)	70(24.3)	1.51	16th
Cultivation of African breadfruit is not important because it take too much space	62(21.5)	96(33.3)	71(24.7)	59(20.5)	1.44	17th
Consumption of African breadfruit does not require certain soup	92(31.9)	80(27.8)	41(14.2)	75(26.0)	1.34	18th
There is a cultural taboo restricting its cultivation	43(14.9)	50(17.4)	107(37.2)	88(30.6)	1.16	19th
Consumption of African breadfruit is associated with slavery	48(16.7)	33(11.5)	109(37.8)	98(34.0)	1.10	20th
Consumption of African breadfruit is not associated with slavery	121(42.0)	98(34.0)	29(10.1)	40(13.9)	0.95	21st
There is no cultural taboo restricting its cultivation	151(52.4)	48(16.7)	55(19.1)	34(11.8)	0.90	22nd

MS= mean score, Grand Mean= 1.79

that insufficient knowledge about the importance of the crop has lowered its production rate. They, also opined that awareness will significantly expand production among farmers.

3.3. Attitude towards the production and consumption of African breadfruit

The results in Table 3 show the attitude of respondents towards the production and consumption of African Breadfruit. It is interesting to note that planting of African breadfruit is important for its medicinal purpose (mean =2.61) ranked the highest of the attitude towards the production and consumption of African breadfruit, followed by consumption of African breadfruit does not have any medicinal purpose (mean =2.38), planting of African breadfruit can generate income (mean =2.31), consumption of African breadfruit is cheap (mean =2.30), planting of African breadfruit take longer years to mature (mean =2.25), planting of African breadfruit is important for its environmental purpose (mean =2.21). A closer inspection of the table shows that respondents' attitude to the production and consumption of the crop is influenced strongly by the nutritional, health, and economic benefits deduced from it. Also, the acceptance of the crop by the community member is another factor that has influenced the cultivation of the crop in the study. This means that, if there is more sensitisation of the crop's benefits, it will increase its demand as well as cultivation. The study by Nzeh & Onuigbo, (2020), also showed that the high demand for African breadfruits has resulted in a hike in the price of the crop. Their findings study also suggest that an increase in the demand for the crop is both due to household consumption and that various enterprises can emerge along its value change in some rural areas of Nigeria. Moreover, Uluocha *et al*. (2016), reported that the seeds of the crops are in high demand and it is not far-fetched from the income and dietary benefits attributed to it.

3.4. Attitudinal level towards the production and consumption of African breadfruit

Results in Figure 3 reveal the overall attitude of the respondents towards the production and consumption of African breadfruit in the study area. The attitudinal level was determined by summing all the responses of the respondents to the attitudinal questions asked. The overall attitudinal level was categorized into unfavourable, indifferent, and favourable attitudinal levels using equal intervals. Scores between 0-22 were regarded as unfavourable, 23-44 were regarded as indifferent, and scores above 45 were regarded as favourable. The results show that only 1.4 percent of the respondent had an unfavourable attitude towards the production and consumption of African breadfruit, 72.9 percent had an indifferent attitude while 25.7 percent had a favourable attitude towards the production and consumption of African breadfruit in the study area. The findings indicate that the rural household had an indifferent attitude towards producing and consuming African breadfruit. The potential benefits of the production and cultivation of the crop must have played a pivotal role in the attitude of respondents to the crop as reported by (Nzeh & Onuigbo, 2020; Uluocha *et al*., 2016).

3.5. Hypothesis one: Association between selected socio-economic characteristics of the rural households and their knowledge of the importance of African breadfruit.

Results of the chi-square analysis in Table 4 reveal that there was a significant association between knowledge of the importance of African breadfruit and religion (χ^2= 21.966; P=0.000), level of education (χ^2= 46.136; P=0.000), cosmopoliteness (χ^2= 16.877; P=0.000), farthest distance travelled (χ^2= 22.943; P=0.003) and association membership (χ^2=15.839; P=0.000) in the study area. It can be deduced from this that since the majority (62.2%) of the respondents were Christians, religion will influence their knowledge of the importance of African breadfruit because Christianity does not restrict the production and consumption of African breadfruit. Also, the more the level of education, the more their knowledge of the

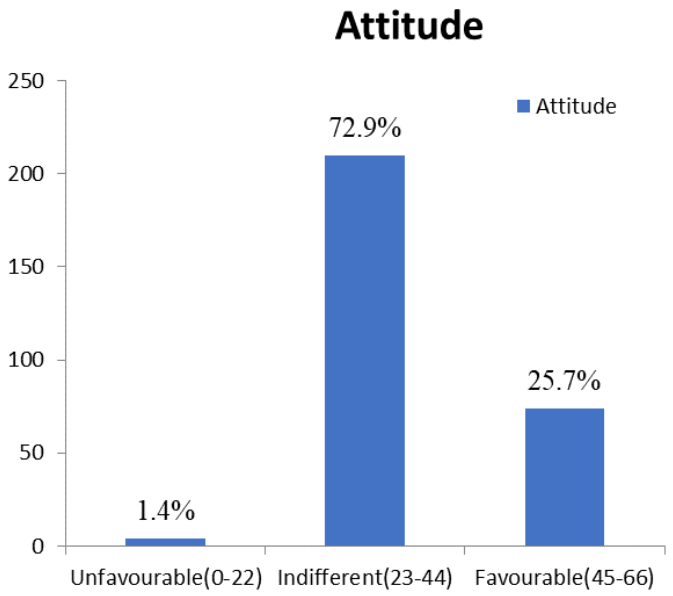

Figure 3. Bar chart showing the attitudinal level towards the production and consumption of African breadfruit. Source: Field Survey, 2019

Table 4. Chi-square analysis showing the association between some selected socio-economic characteristics and the perceived knowledge of the importance of African breadfruit

Socio-economic characteristics	χ^2	D.f	C	p-value
Sex	5.390	2	0.136	0.068
Religion	21.966	4	0.266	0.000**
Marital Status	10.606	8	0.188	0.225
Ethnic Group	10.825	4	0.190	0.029*
Residency in other community	7.194	2	0.156	0.027*
Family type	2.142	2	0.086	0.343
Level of education	46.136	10	0.372	0.000**
Cosmopoliteness	16.877	2	0.235	0.000**
Farthest distance traveled	22.943	8	0.290	0.003**
Association membership	15.839	2	0.228	0.000**

** Significant at P≤0.01; * Significant at P≤0.05; C- Contingency coefficient; χ^2- chi square; Df- Degree of freedom; Number of respondents = 288

Table 5. Correlation analysis of the respondent's knowledge of the importance of African Breadfruit and their socio-economic status.

Variable	r-value	p-value	Decision
Age	0.025	0.678	NS
Family size	-0.24	0.683	NS
Years of formal schooling	-0.165*	0.05	S
Average monthly income	0.097	0.101	NS

*Significant at P≤0.05; NS= Not Significant; S=Significant
Number of respondents= 288; r = correlation co-efficient
p = probability value.

importance of African breadfruit. Education will help the respondents source more information about African breadfruit. The result also implies that the higher their external orientation, the higher their knowledge of the importance of African breadfruit. External exposure enhances the use of new ideas gotten through external affluence. Also, the more the respondents belong to an association, the more their knowledge of the importance of African breadfruit. At $p \leq 0.05$, there was a significant association between ethnic groups (χ^2= 10.825; P=0.029), residency in other communities (χ^2= 7.194; P=0.027), and knowledge of the importance of African breadfruit.

3.6. Correlation analysis of the respondent's knowledge of the importance of African breadfruit and their social-economic status.

Results in Table 5 show that years of formal schooling (r= -0.165) had a significant, negative relationship with the knowledge of the importance of African breadfruit at *p-value* <0.05. This suggests that the greater the number of years spent in formal education, the less awareness of the value of breadfruit in the studied area. This could be because rural indigenes with an interest in education would have gone out of rural areas to pursue their academic careers. Surprisingly, the table also revealed that respondents' age, family size, and average monthly income have no bearing on their knowledge of the importance of African breadfruit. This shows that whether the respondent is young or old does not always imply an increase in crop knowledge. This could be due to a general lack of understanding of the crop's importance in the study area. Family size is also not significant. This means that, even with a larger household, knowledge does not increase. It also implies that because other members of the household do not have access to information about the importance of the crop, they are unlikely to communicate such information with other members of the household. As a result, increased knowledge of the importance of the African breadfruit among household members may lead to increased knowledge of the crop among other household members and, as well as the community. Furthermore, respondents' average monthly income had little bearing on their understanding of the significance of African breadfruit. This implies that income, whether high or low, does not affect knowledge. This is crucial since it indicates that respondents have not reaped considerable financial benefits from the crop's production/cultivation. As a result, their opportunities to learn more about the crop's potential are limited.

3.7. Hypothesis two: There is no significant relationship between rural households' attitudes and knowledge of the importance of African breadfruit.

The result in Table 6 reveals that the attitude of rural households to the production and consumption of African breadfruit (r=0.219, p≤0.01) had a positive significant relationship with the knowledge of the importance of African breadfruit. This

Table 6. Correlation analysis showing the relationship between rural households' attitude towards the production and consumption of African breadfruit and their knowledge of the importance of African breadfruit

Variable	r-value	p-value	Decision
Rural households attitude towards the production and consumption of African breadfruit	0.219**	0.000	S

**Significant at P≤0.01; S=Significant; Number of respondents= 288; r = correlation co-efficient; p = probability value.

implies that the more positively disposed to the production and consumption of African breadfruit the rural households were, the higher their knowledge of the importance. This was so because rural households were producing and consuming African breadfruit, so they were likely to search for more information about the importance, increasing their knowledge.

3.8. Limitation to bias sampling

1.0 The actual list of individuals that the sample is drawn may not match the population.
2.0 Participants are selected based on accessibility and availability.
3.0 Some members of the population are more likely to be included than others.
4.0 People with specific characteristics are more likely to agree to take part in the study than others.
5.0 Some members of a population are inadequately represented in the sample.

4. Conclusions

This study assessed the knowledge, attitude, and consumption practice of rural dwellers on the importance of African breadfruit in Osun State, Nigeria. From the results, it was clear that respondents share both the direct and indirect importance of the crop. They indicated that African Breadfruit has environmental, nutritional, and economic importance. It is striking to note that, despite the potential importance, the attitude of respondents towards the production and consumption of African breadfruit was indifferent. This suggests that there is insufficient awareness of the importance of the crop among respondents in the study area. Most importantly, at the time of conducting this research, the recent and relevant literature on the topic is sufficiently scarce. Therefore, further studies need to be conducted to advance the use and importance of African breadfruit, as previous studies have also indicated that there is a lack of awareness or information. Hence, through training and seminars, government, researchers, and extension should prioritise the promotion of sustainable production of African breadfruit as a means of a sustainable rural livelihood.

Acknowledgement

The authors appreciate the efforts and support of extension agents in Osun State.

Funding

No funding was received for the study.

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