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FACTORS ASSOCIATED WITH LOCUST BEAN CONDIMENT CONSUMPTION IN KANO STATE, NIGERIA

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ABSTRACT

The study aimed at providing information on consumer preference and reasons for consumption of processed locust bean in kano State, Nigeria. Data were collected with the aid of questionnaire. Multi-stage sampling technique was used in selecting 70 respondents. Descriptive statistics was used to analyze data collected. Locust bean consumption was mainly (88.6%) carried out by men in which majority (35.7%) were 38-47 age group, mostly (94.3%) married with majority (44.3%) having informal Qur'anic form of education. Majority (65%) of the consumers source their locust bean condiment for consumption from the producers and the consumer preference majority (88.6%) prefer the cake than ball form (11.6%) while reason for locust bean consumption was mainly due to (57%) improve food taste. Consumers mean expenditure on processed locust bean was N30.00 and N172 for daily and weekly respectively. Major constraints identified by the consumers in the consumption of processed locust bean include inappropriate packaging (38.6%0, poor hygiene (27.1%), product adulteration (17.7% and pungent smell (16.7%). It was recommended that more sanitary measures have to be taken by the processors to improve hygienic condition of the processing environment and thus acceptability.

Keywords: Locust bean; Socio economics; Consumer preference and reason; Constraints.

INTRODUCTION

Agriculture occupies a pivotal place in the Nigerian economy as over seventy percent (70%) of her population obtain their livelihood from agricultural production (CBN, 1997). African locust bean *Parkia* spp belongs to the family *Mimosaceae*. This family is a close relation of *Papillonaceae* and they both belong to the *Leguminoceae* group (Mergarate 1979). In the West African region, the species *P. clappertoniana* is found in Nigeria, Benin, Togo and Ghana, where it is well adapted to climatic conditions in the dry savannah (Yayock *, et al.,* 1988).

The most important part of African locust bean tree (*Parkia biglobosa*) is seed, which is a grain legume.

The seed is processed into a form used for food seasoning. This is a strongly smelling ferment produce of locust bean known as *('daddawa' in 'Hausa, 'iru' in 'Yoruba' and 'nune' in 'Tiv')*, . This is one of the most important food condiments in Nigeria and many countries of West and Central Africa. *Dadawa (Iru)*

is rich in fat (39 to 40%) and protein (31 to 40%) (Achi, 2005) and contributes significantly to the energy intake, protein and vitamins, especially riboflavin, in many countries of West and Central Africa The condiment is rich in food value (16% CHO, 29% Fat, 37% Protein) and tends to take the place of 'maggi' in food seasoning in many localities in Nigeria (Yayock *et al.,* 1988). Apart from the flavouring attribute of the processed locust bean "daddawa", it also contributes significantly to the intake protein, carbohydrate, calcium, phosphate, iron content and essentials fatty acids, particularly vitamin B, riboflavin and vitamin A (Aju *et al*., 2008; Oduro *et al*., 2007; Popoola and Galaudu, 2000; Beaumont, 2002; Oladele *et al*., 1995; Musa,1991). It also serves as a source of protein supplements in the diet and the flavourant contribute some nutrients notable minerals and vitamins to nutritional requirements of a poor family especially in rural areas (Fagbemi, 2002; Oyerinde and Daramola, 2004; and Diawara *et al*., 2000).

The production, processing and consumption of this condiment makes locust bean seed an important commercial item in the entire northern Nigeria. It is estimated that 200,000 tonnes of locust seed are collected annually for 'daddawa' just in northern Nigeria (Madan*,* 2011).

The processing of locust bean fruits into condiment undergoes series of unit operations (Akande, *et al,* 2010) which consume a lot of time and are still done manually. Another challenge facing locust bean processors is the pungent odour, often compared to that of aged cheese. This cause most consumers to change to 'maggi' as a substitute (*Madan,* 2011).). Similarly, deforestation and absence of locust bean farms constitute to the scarcity of the locust bean seed which cause the commodity to be costly in most markets during a given period of the year. These posses challenges to the sustainability of local industries engaged in processing of locust beans into the condiment known locally as 'daddawa'. On the other hand, the industry provide employment to large number of people including the locust seed traders, the processors, the product marketers, etc thus the need to sustain and improve the industry.

The research tries to find the socio-economic characteristics of the consumers of locust beans and describe the consumer preferences and reasons for the consumption of the commodity, source of locust bean condiment for consumption, consumer expenditure on processed locust bean as well as the constraints and corresponding solutions. Due to the economic benefit of the locust bean tree, the researcher hopes to encourage its regeneration to cartel desert encroachment and reduce scarcity of locust bean seed. There are increasing concern over consuming organic food, as an organic food, this research encouraged the exportation of the commodity where they value organic food for more income to the industry. The result is hoped to add to the bank of knowledge in the area of study of locust bean

MATERIALS AND METHODS

Study Area

This study was carried out in Kano State, which is situated in the Sudan Savannah agro ecological zone of Nigeria located between latitude 13^0 N in the North and 11^0 N in the South and longitude 8^0E in the West and 10^0E in the East (KNSG, 2006). The 2006 population census estimates Kano State population at 9,383,683. The major tribes are

Hausa and Fulani ethnic groups but other ethnic groups inhabiting the state include almost all major and minor tribes in Nigeria. Other Nationals from different continents of the world are also found in Kano. Increase in populations is put at 7 percent per annum (KNSG, 2006). The people are predominantly peasant farmers cultivating foods and cash crops. They also embark on small, medium and large-scale livestock production such as rearing of goats, sheep and poultry as well marketing of their products. The climate of the study area is tropical dry climate with a mono modal rainfall distribution averaging 600mm per annum with most rains occurring between May and September. Air humidity is high during the wet season and very low during the dry season. Average temperature is 29^0 c with minimum temperature occurring from November top February and highest temperature occurring in March and April (KNARDA, 2008). Kano state is blessed with many economic trees which sustain the economic life of most of its people. They include: Locust bean, Baobab, Shear butter, Moringa etc (Kano SEED, 2007).

Sampling Techniques and Sample Size

Locust bean processing activity is prevalent in almost all the forty four Local Governments areas of Kano state. However, Four Local government areas (LGA) were purposively selected because of high intensity of Locust beans processing activities in the areas. The LGAs were Bagwai, Bebeji, Bichi and Gezawa Local governments. This followed an interview with some stake holders of the business. Furthermore, two villages were also purposively sampled from each of the LGAs based on the same reason above. However, Five (5) consumers were randomly selected from each of the villages sampled above. Five (5) Consumers were also randomly selected from Kwari Market, Kofar Wambai Market, Kurmi Market, Dakata Quarters, Rijiyar Lemo Quarters and Bayero University Kano new campus. This gave a total of Seventy (70) respondents from the Consumers group.

Data Collection and Analytical Tools

Data were collected using structured questionnaire by the researcher and with the aid of train enumerators. Descriptive statistics, which include frequency, percentage and mean, were used for this study.

It could be seen from Table 1 that, majority of the respondents (35.7%) have between 38 -47 years of age, followed by 28.6% with between 28-37 years of age. Also 17.1% of the respondents are within the range of 48-57 years of age, then 10% of the respondents are within 18-27 years of age and 8.5% of the respondents with 58-67 years of age. The Mean age was 41 years, Minimum of 18 years and Maximum of 65 years. This implied that locust bean condiment was consumed by youths, adults and old people in the area which may be due to the taste and nutritional value of the condiment.

Table 1 indicated that (32.9%) of the respondents have between 7-10 Household size followed by 24.3% of the respondents with 15-18 Household size. Twenty percent of the respondents have 3-6 Household size followed by 12.9% of the respondents with 19-22 Family size, the least being 10% of the respondents with 11-14 Family size. The Mean Family size was 11, Minimum of 3 and Maximum of 22. This implied that Locust bean condiment was consumed in both

RESULTS AND DISCUSSION

SOCIO-ECONOMIC CHARACTERISTICS OF LOCUST BEAN CONSUMERS

Table 1: Socio-Economic Characteristics of Locust Bean Consumers

Variables	Frequency	Percentage	
AGE			
18-27	07	10	
28-37	20	28.6	Mean=41, minimum=18
38-47	25	35.7	Maximum=65, SE=1.4
48-57	12	17.1	
58-67	6	8.5	
House hold size			
3-6	14	20	
7-10	23	32.9	Mean=11, minimum=3
11-14	7	10	Maximum=22, SE=0.8
15-18	17	24.3	
19-22	9	12.9	
Gender			
Male	62	88.6	
Female	8	11.4	
Marital status			
Single	3	4.3	
Married	66	94.3	
Widow	1	1.4	
Educational level			
Qur'anic education	31	44.3	
Primary education	11	15.7	
Secondary education	10	14.3	
Tertiary education	18	25.7	

According to the result, majority of the respondents (88.6%) were Males and 11.4% were Females. This implied that majority of the Consumers interviewed were Males. But this does not mean that females don't consume the condiment, females are the major food processors that use the condiment in the area. The fact remains that majority of females are in pudan and is the male that shop for them.

Marital status of the consumers was described in the Table 1 where majority of the respondents (94.3%) were married individuals and only 4.3% were single. This implied that majority of the consumers were married individuals attributable to the fact that it is mostly the married individuals that buys the food stuff for the family. This findings is similar to the result obtained by Egbewande (2010) that majority of consumers, 66%that buys fish in markets were married, matured and have both home and community re-

sponsibility.

From Table 1, majority of the respondents (44.3%) have Informal Qur'anic education followed by Tertiary education 25.7%, then Primary education 15.7% and Secondary education 14.3%. This implied that consumers of Locust bean in the study area can read and write in both Formal and Informal way and are aware of the nutritive value of locust bean which is rich in food value (16% CHO, 29% Fat, 37% Protein) (Yayock *et al,* 1988).

Consumption of Locust beans
Source of locust bean condiment for consumption:

Table 2: Distribution of consumers by point of purchasing the condiment

Variables	Frequency	Percentage
Wholesalers	4	5.7
Retailers	20	28.6
Producers	46	65.7

Sources: field survey Data, 2012 n=70

The sources through which the consumers obtain the condiment for consumption is presented in Table 2 which shows that majority of the respondents (65%) bought the condiment from Producers, followed by 28.6% that bought from Retailers. The least were 5.7% of the respondents, who bought from the wholesalers of the condiment. This implied that consumers bought the condiment in both small and large quantity for consumption.

Preferences describe the right or opportunity to choose an individual or object or course of action that is considered more desirable than another or a view that one person, object, or course of action is more desirable than another, or a choice based on such a view, (Encarta, 2008) .From Table 3, majority (88.6%) of the consumers prefer the cake form which is dry than the ball form which is wet 11.4% of daddawa. This is because the cake form is in dried form which it last longer than the ball form which is wet. For taste, Majority (70%) revealed that processed locust bean was very tasty when consumed, for aroma, 53% of the respondent interviewed preferred consuming processed locust bean because of its high aroma, for colour, 50% indicated that they prefer consuming the product due to its good colouration while for cost 50% consume the product because it was affordable. Also majority According to Steinkraus (1995), the traditional fermentation of foods serves several functions, which includes: enhancement of diet through development of flavour, aroma, and texture in food substrates, preservation and shelf-life extension through lactic acid, alcohol, acetic acid and alkaline fermentation, enhancement of food quality with protein, essential amino acids, essential fatty acids and vitamins, improving digestibility and nutrient availability, detoxification of anti-nutrient through food fermentation processes and a decrease in cooking time and fuel requirement.

Consumer preference and reason for locust bean consumption:

Table 3: Consumer preference on locust bean condiment

Variables	Category	Frequency	%
Consumer Preferences			
Type of daddawa preferred	Cake (dry)	62	88.6
	Ball (wet)	8	11.4
Taste	Less tasty	3	4.3
	Tasty	18	25.7
	Very tasty	49	70
Aroma	Less aroma	2	3
	Moderate aroma	24	34.3
	High aroma	37	53
Colour	Poor colouration	10	14.3
	Good colouration	42	60
	Very good colouration	18	26
Cost	Not affordable	5	7
	Affordable	35	50
	Very affordable	30	43
Reason for locust bean Consumption	Nutritional	6	9
	Improve taste	40	57
	Perceived health benefit	8	11
	Cultural promotion	16	23
Awareness of nutritive value of locus bean condiment	Aware	56	80
	Not aware	14	2 0

Source: Field survey 2012 n=70

Majority (57%) of the consumers consumed locust bean because it improves food taste, 23% consumed it due to cultural promotion, 11% consumed it due to perceived health benefit while the remaining 9% consumed it because of its nutritional value. This finding is in line with *Ogunshe et al.* (2008) that stated that of all the Nigerian traditional fermented foods, beverages and seasoning condiments like daddawa are so peculiar and indigenous to the people, and unparalleled by the industrial food seasoning agents.

The findings also revealed that majority (80%) of the consumers are aware of the nutritive value of locust bean condiment while 20% are not aware of the nutritive value of the locust bean condiment. This may be due

to the fact that most of the consumers are educated.

From Table 4, the mean cost for daily expenditure on the product was N30 with mean quantity of 6, for weekly it was N 172 and 32, for fortnightly it was N 250 and 50 while for monthly it was N 754 and 108 for both cost and mean quantity consumed respectively. This implied that locust bean condiment was affordable in the study area and this should make people to consume it more.

The result from Table 5 shows that 38.6% of the consumers identified inappropriate packaging as their major factor that discourages consumption of processed locust bean which was ranked 1st while 27.1% of the consumers identified poor hygiene as the second factor that discourages consumption of the product. Also 17.7% of the consumers identified product adulteration as the 3rd factor that discourages consumption of the product while the remaining 16.7% of the consumers identified pungent smell as their own problem. This is in agreement with Adenike *et al*. (2013) that recommended that educating the cottage-producers on such food safety measures, particularly on process hygiene is another safety strategy.

Consumer expenditure on processed locust bean:

Table 4: Expenditure on locust bean condiment consumption

Expenditure	Min		Max		Mean	
	Quantity	Cost (N)	Quantity	Cost (N)	Quantity	Cost (N)
Daily	1	5	30	150	6	30
Weekly	7	35	100	500	32	172
Fortnightly	15	80	150	600	50	250
Monthly	20	100	300	2500	108	754

Source: Field survey Data, 2012

Locust bean consumers' constraints:

Table 5: Major constraints to locust bean consumption

Constraints	Frequency	Percentage	Ranking
Pungent smell	16	16.7	4th
Product adulteration	17	17.7	3rd
Poor hygiene	26	27.1	2nd
Inappropriate packaging	37	38.6	1st

Source: Field survey, 2012 n>70 due to multiple responses

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this research it could be concluded that locust bean consumption was carried out by men who are middle aged group, mostly married with only informal Qur'anic form of education. The source of locust bean condiment for consumption was majorly from the producers and the consumer preference for daddawa was the cake form and reasons for locust bean consumption was mainly improve food taste. Consumers mean expenditure on processed locust bean was N30.00 and N172 for daily and weekly respectively. Major constraints identified by the consumers in the consumption of processed locust bean include inappropriate packaging, poor hygiene, product adulteration and pungent smell.

The recommendations for this study include the processors to be selling the Condiment in a closed container, the processors should improve the hygienic condition of the processing environment, improving the processing system should be adopted to solve the problem of product adulteration and pungent smell and Processors should be educated on modern marketing techniques to increase acceptability of the product to the consumers.

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