# AFRICA INDIGENOUS PROCESSING AS A POVERTY ALLEVIATION STRATEGY AMONG RURAL WOMEN: A CASE OF LOCUST BEANS PROCESSING IN SOUTH-WESTERN NIGERIA

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## ABSTRACT

Locust bean is one of the several Non-Timber products which are widely traded in Nigeria irrespective of geographical zones. Poverty make a lot of people depend on natural forest for survival. This locust bean processing is mostly done by women in order to generate more income to meet some of those basic needs that cannot be met by the people due to their low level of income. The study was designed to assess the economic potentials of locust bean processing as a means of alleviating poverty among the processors. Purposive sampling procedure was used to select 160 respondents for the study. Chi-Square was used to test relationship between productivity and other variables. The result showed that 55.0% were between the ages of 30 and 50 years old. All the respondents have one other income generating activity or the other. About 58.0% of the respondents make between N400. 00 ($2.66) and N450.00 ($3.00) profit from processing 5kg of locust beans. Constraints encountered by the processors are scarcity of locust beans, transportation, scarcity of labour and weather variation. Result of Chi-Square analysis showed that educational qualification has a significant relationship ($X^2 = 8.403$, $p > 0.05$) with periodicity

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## INTRODUCTION

The economic importance of Non-Timber Forest Products (NTFP) to rural communities cannot be over emphasized. This includes meeting rural communities needs for food, fiber and forage, as well as essential sources of national and foreign income. For example, Pimentel et al (1997) estimated that over 300 million people in the world derive part or all of their livelihoods and food from forest. Numerous estimates also exist locally, nationally and even world wide of the number of people in different areas who are more or less dependent on NTFPs (Ndoye et al, 1998). The value of these forest products to rural dwelling people underline the importance of efforts to conserve and manage these resources which have been neglected

Locust bean is one of the several Non-Timber Forest Products which are widely traded and found in most market irrespective of geographical or ecological zones of Nigeria. It has a high demand to satisfy peculiar ethnic / consumer taste and processing of the products. Locust bean trees fruit from February to July. Collection of fruits is usually done by men who will later sell to women processors. Fruits collectors climb the trees and detached matured fruits while the processing and marketing of locust bean is the responsibility of rural women. Hence collection, processing and marketing of locust bean are done by rural households. Ndoye et al (1998) reported that local market plays an important role for forest related households who sell NTFPs

In Nigeria, fermented food condiment called “iru” in Yoruba, “dawadawa” in Hausa, ‘Nune” in Igbo languages is the major product produced from locust bean tree. The processing of this product have been traditional and cumbersome until recent when the production of “dadawa” cube started by Cadbury Nigeria Plc. Adewumi, (1988) reported that the general processing chart of legumes could be adopted for the production of locust bean. Odunfa (1982) and Gernah et al (2001) identified the flow chart for the local preparation of locust bean which has remained in the hands of rural households over the years. The rural households usually process these seeds for home consumption and sale to others who cannot process it on a small scale basis by using rudimentary utensils (Odunfa and Adewuyi 1985).

The local processing is tedious, slow, labour – intensive and it subjects the bean to excessive water treatment leading to colour degradation and uncontrolled activities of micro – organisms (Adewumi 1997a). Recently, applications of scientific principles and mechanization have

introduced a new dimension to the processing of locust bean. A number of equipment for the processing has been developed. The equivalent items include: thrasher, dehuller, steamer and separator for locust bean processing (Adewumi, 1997b). Although most of these equipments has been perfected tested and okay but could only be used for commercial purposes not among rural households. It is suggested that good extension education and micro credit assistance should be rendered to the processors. Transportation of the products is an important factor to be considered in the process of marketing. Transportation affects the net production cost and in some cases the quality of the product particularly over a long distance. Apart from the fermented product, the dry seeds (unprocessed) are also traded by women regardless of geographical or ecological zone or origin. The dry seeds are stored during the on-season and brought to the market during the off-season period. Till now, little or no attention has been given to economic analysis of locust bean production and processing in Nigeria.

Fermentation material has a great role to play in fermentation process of the processed bean. Locally there are various types of fermentation materials such as cimelina arborea leaves – gmelina, banana (Musa Sapeinta) leaves, jute bag, polythene bag, cloths and calabash. Temperature also has role to play in the incubation of locust bean bacteria which is used for fermentation of the bean. In some civilized countries, they introduce selected pure culture of bacillus subtilis called inoculation, banana (Musa sapienta) leaves, jute bag, polythene bag, clothes and calabash. Other countries ferment using traditional method and rely on chance inoculation. The bacteria are strongly proteolytic in nature and thus quickly hydrolyze the protein in the beans giving amino-acid which are further metabolized giving rise to changes in Ph value from 6.8- 8.5 and the development of strong ammonia odour ( Sarkar et al, 1994). Campbell (1980) also reported increase in protein content ( on moisture free basis) from 30.0% to 38.5% and fat from 15% to 31%, while carbohydrate decreased from 49% to 23.6% during fermentation, various incubation materials have been employed locally by many workers for the production of "Iru" or related products from African locust beans. Antai and banana leaves with a clean calabash as holding container, usually take too long time of fermentation leading to poor aroma due to over accumulation of ammonia in the system.

After the dehulled seed had been properly cleaned and with less moisture, then it can be stored in clean cloths inserted in a calabash then tied with twine to avoid any escape of air

leaving for two days, it can then be open after that two days, proper fermented locust beans give grey-white colour. Fermentation increases the texture, the beans become softer to touch and therefore more edible and acceptable because there is a breakdown of the complex compound of the beans during fermentation to yield simpler more digestible components. Gmelina leaves, cloths and calabash show high rate of fermentation. This entire process takes 3days. The product will be Moulded into various smaller sizes depending on the price rate.

Ogwumike and Ozughalu (2001) defined poverty as the inability of individuals, households, or community to obtain and consume basic needs such as food, water, housing, clothing, health care, education and transportation. Poverty can be defined in two terms. UNDP (1997) defined relative poverty as inability on the part of certain sections of a society to earn adequate income to satisfy their basic needs as well as others. On the other hand, material poverty is defined as lack of ownership and control of physical assets such as land and animal husbandry (UNDP 1997).

Okunmadewa (1999) observed that economic growth alone is not sufficient for poverty reduction, growth must be accomplished with equity and promoted by participation. Participation of the poor themselves in the activities that would "push" and "pull" them out of poverty is the key to global poverty reduction (Ogundipe (1999). Research has proved that female headed households are more vulnerable to poverty than male headed households. CBN and World Bank (1999) reported that women household heads are impoverished because of the discrimination they encountered in getting jobs and credit facilities for self employment which hinder their entrepreneurial abilities. This has been the reasons why women are more involved in income generating activities that do not involve large capital investment and which are less attractive to men.

Although, locust bean is very common in Nigeria, and especially in the entire savanna region of West Africa, a reliable evaluation of its importance to the socio-economic development of the processors in each region is yet to be assessed, let alone any consideration of its potential value to the national economy. This study attempts to create awareness to the general public about the socio-economic benefits derivable from the product. It will also establish the need for policy makers to attach greater priority to the effective management of this product in the study area.

It is widely believed that locust bean has some multiple value which need to be assessed under this study, it's medicinal value also need to be weighed and compared with other sources of medicinal drug, the farmer limitation which served as an hindrance for domesticating locust bean tree as a plantation and management by propagation. Pulp flour is another product which could be gotten from locust bean recast processing called pasting. Evaluation of locust beans Dehuller and separation for "Dawadawa" "Iru" production, finally each stage in production and processing will also be stated and examined.

This study was designed to assess the income generating potentials of locust bean processing and thereby serve as a poverty alleviation strategy in the region. In doing this the socio-economic characteristics of the processors, their productivity and constraints were assessed.

**METHODOLOGY**

The research work was conducted in Ekiti State of Southwestern region of Nigeria. Ekiti State is one of the six States constituting the South-Western region of Nigeria. Although some parts of the region are fairly urbanized, the greater majority of the population still constitutes rural areas. .The State is bounded in the North-west by Kwara State in the North-west by Kogi State and in the South by Ondo State. The State is located on latitude $7^0$25 and at $8^0$5 N and between longitude $4^0$45 and $5^0$46 E.

Ekiti State has a generally undulating land surface with a characteristic land scope that consists of old plains broken by steep sided out crops, dome rocks that may occur singularly or in groups or ridges. Temperature in the State ranges between 21-$28^0$c with high relative humidity. Tropical forest exits in the south while Guinea savannah occupies the northern peripheries.

Purposive sampling procedure was used to select those that are involved in locust bean processing from four Local Government Areas in the savannah zone of the State. From each LGA, 4 villages were randomly selected making a total of 16 villages. From each village 10 respondents who involve in processing of locust beans were purposively selected, making a total of 160 respondents for the study. Primary data were collected through the use of pre-tested and well structured interviewed schedule. Information was also obtained through personal

observation, market survey and discussions that were good enough to justify the objectives of the study.

Descriptive statistics such as percentages and frequency distribution were used to analyze qualitative data from the study, it was also used to analyze accessibility and availability of locust bean processing among rural dwellers. Chi-Sqaure was employed to test for relationship between productivity and other variables.

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of the Respondents

Mean age of the respondents was 43.64 with standard deviation of 6.321. Table 1 below showed that 28.7% of the respondents have their ages fall between 31 and 40 years. Only 9.4% are above 61 years of age. This implies that the respondents are younger in age. This may be due to the stress that locust beans processing entails that make it difficult for older women to be involved. It was revealed that only women process locust beans in the area. Religion of the respondents showed that 55.0% and 45.0% of the respondents practice Christianity and Islamic religion respectively. This implies that processing of locust bean is not in conflict with the two popular religions in the country. Educational status of the respondents showed that none of the respondents has post secondary educational status while 18.8% have no formal educational qualification. Only 45.6% of the respondents have secondary educational qualification. The implication of this low educational status is that many of the respondents will not be able to receive information through print media and in English language which is the formal language of the country. Other income generating activities reveal that 13.8% are artisans, 52.5% are farmers while 18.8% are traders. Only 15.0% are civil servants. This may be due to the fact that many of the respondents have low education which can qualify them for civil service. Profit from processing 5kg of locust bean was also measured. The result shows that 40.0% and 18.8% of the respondents make N400.00 ($2.66) and N450.00 ($3.00) profit from processing 5kg of locust beans respectively. This implies that the processors can make good profit from their locust bean processing activities if modern technologies that can increase the quality of their product which attracts more profit are made available to them. This will go a long way to reduce poverty among rural women who are the processors. It is therefore important that policy makers should have

consideration for the processors of Non-Timber Forest Products who are predominantly women and policy that can help them boost their processing activities should be made.

**Table 1: Frequency Distribution of Socio-economics Characteristics of Respondents**

| Socio-economic Variables | Frequency | Percentages |
|---|---|---|
| Age | | |
| 31-40 | 46 | 28.7 |
| 41- 50 | 42 | 26.3 |
| 51- 60 | 57 | 35.6 |
| 61 and above | 15 | 9.4 |
| Sex | | |
| Female | 160 | 100.0 |
| Male | --- | --- |
| Religion | | |
| Christianity | 88 | 55.0 |
| Islam | 72 | 45.0 |
| Educational qualification | | |
| No education | 30 | 18.7 |
| Primary education | 57 | 35.6 |
| Secondary education | 73 | 45.6 |
| Post secondary education | --- | --- |
| Household size | | |
| 6 | 73 | 45.6 |
| 7 | 42 | 26.2 |
| 8 | 15 | 9.4 |
| 10 | 30 | 18.8 |
| Other income generating activities | 22 | 13.8 |
| Artisans | 84 | 52.5 |
| Farming | 30 | 18.8 |
| Trading | 24 | 15.0 |
| Civil service | | |
| Profit (N) | 15 | 9.4 |
| 180.00 | 51 | 31.9 |
| 300.00 | 64 | 40.0 |
| 400.00 | 30 | 18.8 |
| 450.00 | | |

**Source: Field survey, 2011**

**Processing Method of the Respondents**

The study revealed that the respondents use only traditional method for their processing activities. There is no record of modern method disseminated to the processors in the study area. There is no information on available modern method of locust bean processing in the study area. This is the major reason why respondents only make use of the traditional method available to them which they claimed have inherited from their ancestors. This finding brought to limelight the urgency of developing modern processing technology for locust beans in the country. It has been observed to be a laborious activity which post-harvest technology experts should take up as challenge in their professional field.

**Constraints of Locust Bean Processing as Identified by the Processors**

Table 2 below showed that 33.0% of the respondents identified seasonality of locust beans seeds as their own constraint in their processing enterprise. Labour scarcity was identified by 28.2%, transportation was identified by 23.0% while 15.0% identified weather variation. Scarcity of labour can be due to the fact that all the respondents are still using traditional method which is time consuming and labour intensive. Transportation problem can be due to the fact that the pods are gathered from the natural forest which might not have access road. This may require the processors to transport the pods or seeds to their processing location by foot which may be very difficult for them. Weather variation is bound to affect the processors negatively because they are using traditional method which on the other hand depends on available weather which might not always suitable for the processing activities. These identified constraints can be overcome by developing modern processing technology for the processors.

**Table 2: Frequency Distribution of Constraints among Locust Bean Processors**

| Constraints | Frequency | Percentages |
|---|---|---|
| Seasonality of beans | 54 | 33.0 |
| Scarcity of labour | 45 | 28.2 |
| Transportation | 37 | 23.0 |
| Weather variation | 24 | 15.0 |

**Source: field survey, 2011**

**Relationship between Socio-economic Characteristics and Productivity of the Respondents**

From Table 3 below showed relationship between socio-economic characteristics and productivity of the respondents. Of all socio-economic characteristics considered, only educational qualification has significant relationship with productivity ($X^{=}$ 8.340, P = 0.0402) which is significant at 5% level of significant. This implies that if the educational status of the respondents can be improved upon, the productivity of the respondents would be increased. This can be due to the fact that the respondents would have access to more information channels like printing and in official language about production and marketing which can lead to increase in their productivity. This finding suggests that there should be provision of both formal and informal education systems in the rural communities in the state so that rural women can have access to these education systems which will boost their productivity and help to alleviate their poverty.

**Table 3: Relationship between Socio-Economic Characteristics and Productivity**

| Socio-economic Variables | Chi-square value | Df | P-value |
|---|---|---|---|
| Age | 37.670 | 3 | 0.3013 |
| Household size | 3.910 | 4 | 0.1026 |
| Educational qualification | 8.340 | 3 | 0.0402 |
| Religion | 3.420 | 1 | 0.117 |
| Other income generating activities | 2.480 | 3 | 0.116 |

Source: Field survey, 2011

**CONCLUSION**

It can be concluded at this junction that locust beans is generally accepted by all the ethnic groups in the country. It has some advantages over other leguminous plants which include medicinal advantage. Only women are involved in processing activities in the study area. The processors only use traditional method which is the only method available to them and which

have inherited from their ancestors for their activities. This processing method is observed to be laborious and time consuming. Processors have very low educational qualifications and this has reduced their access to production and marketing information that can lead to increase in their productivities. There is no record of availability and distribution of locust bean post-harvest technologies in the country during this study which form the basis for most of the constraints identified by the respondents.

## RECOMMENDATION

From the study, it is therefore recommended that processing technology should be developed and disseminated to the processors in the country. Government should include locust bean into the policy that can lead to increase the production of locust bean seeds and processing of the seeds. Governments at all levels should be involved in the production and the processing of locust bean as it can increase the nation's foreign exchange earnings. Both formal and informal education systems should provided in rural communities to increase rural women's access to education as this can increase their productivity thereby alleviate their poverty.

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