



## CONTRIBUTION OF LOCUST BEAN SEED PROCESSING TO THE HOUSEHOLD OF RURAL WOMEN IN OYO STATE, NIGERIA

Aderounmu, A.F; Oke, O.O; and \*Oyewo, I.O,

Federal College of Forestry, P.M.B. 5087 Jericho Hill, FRIN Ibadan.

\*Corresponding author: [ojerry2@gmail.com](mailto:ojerry2@gmail.com); [afaderounmu@gmail.com](mailto:afaderounmu@gmail.com); [woleok@yahoo.com](mailto:woleok@yahoo.com); 08035751159

### ABSTRACT

*This study was carried out to assess the contribution of locust bean seed processing to the household of rural women in Oyo State Nigeria. Means of livelihood, existing processing techniques, level of income, contribution of locust bean and constraints hindering locust bean processing by women in the study area were examined. Multi stage sampling technique was used to select 121 women processors as respondents. Questionnaires were administered to the sampled respondents of which 120 were retrieved. The data were subjected to descriptive (frequency, percentage, mean) and inferential statistics. The results revealed that 33.3% of processors were between the ages of 51 years and above. Majority (76.7%) of the respondents relied on locust bean processing as means of livelihood. All the respondents used traditional method of processing. The result revealed that there is no significant ( $p>0.05$ ) relationship between the selected socioeconomic characteristic variables and contributions of locust bean seed processing. The result also showed positive and significant ( $p<0.05$ ) relationship between livelihood income, perceived constraints and contributions of locust bean seed processing to the household of rural women. Difficult in locust bean processing (35.8%), scarcity of water/flowing river (18.3%) and inadequate capital (11.7%) were reported as most important constraints to locust bean processing in the study area. It was concluded that locust bean processing has the potential to improve the processors' household economy thus allowing agricultural development and sustainability provided the constraints are adequately addressed.*

**Keywords:** Locust bean, Processing, Rural Women, Oyo State, Livelihood

### INTRODUCTION

A major concern of developing countries in Africa and other regions has been to significantly reduce poverty among the masses. Poverty is still a common feature of rural communities that constitute the dominant population in developing countries. According to International Fund for Agricultural Development (IFAD, 2009), rural people constitute about 72 percent of the people living in extreme poverty (Less than 1.25 USD per day) in developing countries, down from about 80 percent ten years ago. About 51 percent of all the people in developing countries live in poverty (Less than USD 2.00/day), while 27 percent live in extreme poverty. At the macro, community, and household levels, the necessity to combat poverty and its effects in African countries has become

compelling over the past few decades (Clempton, 2012).

Exploitation of the usefulness of the African locust bean tree (*Parkia biglobosa*) has been an age-long income-generating venture among rural households in Nigeria and other African countries (Shao, 2002). Its relatively low input requirements have made the tree a veritable means of rural household poverty alleviation. Its seeds are used as a coffee substitute and in making local doughnuts, while its leaves serve as vegetable in combination with other foods. The bark of the African Locust Bean (ALB) tree is used medicinally and its young flowers are mixed with salads, the fruit pulp and seed residues are used in making animal feeds.

The most important part of the tree is found in its seeds and the processed seed is used as a condiment for soup. It is a source of natural nutritious condiment which features frequently in the traditional diet of the people (Akande *et al.*, 2010). Apart from the flavoring attribute of the processed locust bean “iru”, it also contributes significantly to the intake of protein, essential fatty acids, particularly Vitamin B, riboflavin and Vitamin A (Oguntola, 2007). Locust bean is native to West Africa and it is also called different local names in different localities; for instance, it is referred to as “kinda” in Sierra Leone, “Kapalugu” among the inhabitants of Northern Ghana, “Nere” in Burkina Faso, “igi igba” in Yoruba land, and “worku” in Ghana (Diawara *et al.*, 2000).

Also in the dry area, locust bean tree serve as potential sources of food, edible oil, fodder, lumber, fire wood and green manure. It was estimated that about 200,000 tonnes of Africa locust bean seeds are gathered each year in Nigeria alone, as well as large quantities are produced in the savannah region of South West, Nigeria (Diawara *et al.*, 2000). The seeds are most valued product of the tree. It generates reliable and dependable income for the farmers and women who are involved in its processing and marketing. It is estimated that the total national demand for various types of food condiments and seasonings in Nigeria is 5,475 Tonnes per annum (FIIRO, 2013).

Forest- based activities in developing countries Nigeria inclusive, which are mostly in NTFPs area, provide an equivalent of 17 million full- time jobs in the formal sector and another 30 million in the informal sector, as well as 13- 35% of all rural nonfarm employment (Duong 2008). Locust bean is an important forest product especially in the formal sector and another 30 million in the informal sector, as well as 13- 35% of all rural non- farm employment (Duong, 2008). Locust bean is an important forest product especially in dry land areas where it forms alternative sources of livelihoods. It also contributes to poverty alleviation through generation of income providing food and improved nutrition, medicine and foreign exchange earnings (Chikanai and Kagombe, 2002). There is therefore a growing awareness of the contributions of locust bean to household economy, food security, national

economy and conservation of biodiversity (Okafor *et al.*, 1994).

The main objective of this study is to assess the contributions of locust bean seed processing to the household economy of rural women in Oyo state, Nigeria.

The personal characteristics of the respondents identify their other means of livelihood, existing processing techniques; ways by which locust bean business contributes to the income and of course the constraints encountered by the respondents.

## MATERIALS AND METHODS

### Study area

The study area is Oluyole Local Government Area of Oyo state. Ibadan Is the capital of Oyo state, situated in the South- western part of Nigeria, 128 km inland northeast of Lagos and 53 0km southwest, of Abuja. It is the third largest metropolitan area by population in Nigeria after Lagos and Kano, with a population of 1, 338,659 according to 2006 census. It has boundaries with Ogun in the south, Kwara state in the North, Republic of Benin in the west and Osun state in the East. Ibadan is 228rn above sea level and has a rainfall of average distribution of about 1250 mm and 1800 mm. it is located on the latitude 7°45”N of the equator and longitude 3°45”E of the Greenwich meridian. Ibadan is blessed with two seasons; dry season which begins from November to April while rainy season from April to October. It also has a temperature that ranges between 27°c and 32°c with relative humidity of about 25% to 90% (Alabi and Ibiyemi, 2002). Oluyole is a home for small, medium and large scale industries.

### Sampling Procedure

Multi-stage sampling technique was used for the study.

1. First stage: Oyo State was purposively selected for the study due to the availability of locust bean processors in the area.
2. Second stage: Four Agricultural zones which are Oyo, Saki, Ibadan-Ibarapa, and Ogbomoso were selected
3. Third stage: Four (4) local government areas were purposively selected. These includes Ibarapa North, Iseyin, Surulere and Saki east

representing agricultural block of the Agricultural Development Programme (ADP)

4. Thirty five (35) locust bean processors were selected from each of the selected Local Government representing the ADPs. Therefore, a total of 140 were administered while only 120 were retrieved and useful for analysis for this study.

### Data analysis

Descriptive statistics such as frequency, percentage and 5 point Likert-type scale was used to analyse the objectives of the study

### RESULTS

Table 1 revealed that the respondents' ages ranged from 21 years with Majority (38.3%) were from 51 years and above while only 5.0% were between the ages of 21-30 years. Also 58.3% were married, 12.5% were divorced while 29.2% of the respondents were widow. The table further revealed that the majority (50.8%) of the processors and marketers were Christians, 46.7% were into Islamic religion while 2.5% of them were traditional worshippers. Most of the respondents (68.3%) have family size below 5 persons within the household while 31.7% have family size between 6-10 persons (Table 1). The result further shows that majority of *P. biglobosa* processors and marketers in the study

area had primary education (56.7%) as much as 34.2% had no formal education, 7.5% had secondary education while only 1.7% had tertiary education. Apart from the major livelihood activity, 28.3% and 9.2% of the respondents engaged in trading and arable farming respectively as supplementary livelihood activities (Table 2). In table 3, 2.5% of the respondents had income range of less than ₦1,000 daily, 51.7% had income range between ₦1000 - ₦2000, and 41.7% had income range between ₦2,000 - ₦3,000 while only 4.2% have above ₦3,000 per day. The result revealed in table 4 shows that majority (100.0%) of the respondents use the traditional processing method. Table 5 revealed that rural women highly benefited from marketing of processed locust-bean and cracking of locust bean pod as they ranked 1st and 2nd respectively. An investigation of the constraints encountered by the respondents yielded the data contained in table 6. Eight constraints identified during the field survey were presented on a 5 point Likert-type scale. The table showed that the respondents' greatest constraint was that, processing of locust bean is strenuous which was ranked first.

**Table 1: Socio-Economic Characteristics of Respondents**

| <b>Variable</b>           | <b>(N= 120)</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|---------------------------|-----------------|------------------|-----------------------|
| <b>Age</b>                |                 |                  |                       |
| 21-30                     |                 | 6                | 5.0                   |
| 31-40                     |                 | 26               | 21.7                  |
| 41-50                     |                 | 41               | 34.2                  |
| 51 Years And Above        |                 | 47               | 39.1                  |
| <b>Total</b>              |                 | <b>120</b>       | <b>100</b>            |
| <b>Marital status</b>     |                 |                  |                       |
| Married                   |                 | 70               | 58.3                  |
| Divorced                  |                 | 15               | 12.5                  |
| Widowed                   |                 | 35               | 29.2                  |
| <b>Total</b>              |                 | <b>120</b>       | <b>100</b>            |
| <b>Religion</b>           |                 |                  |                       |
| Christianity              |                 | 61               | 50.8                  |
| Islam                     |                 | 56               | 46.7                  |
| Traditional               |                 | 3                | 2.5                   |
| <b>Total</b>              |                 | <b>120</b>       | <b>100</b>            |
| <b>Household Size</b>     |                 |                  |                       |
| Below 5                   |                 | 82               | 68.3                  |
| 6-10                      |                 | 38               | 31.7                  |
| <b>Total</b>              |                 | <b>120</b>       | <b>100</b>            |
| <b>Educational Status</b> |                 |                  |                       |
| No Formal Education       |                 | 41               | 34.2                  |
| Primary Education         |                 | 64               | 56.7                  |
| Secondary Education       |                 | 9                | 7.5                   |
| Tertiary Education        |                 | 2                | 1.7                   |
| <b>Total</b>              |                 | <b>120</b>       | <b>100</b>            |

**Table 2: Other means of Livelihood Activities by sampled Respondents**

| <b>Livelihood Activities</b> | <b>No</b>  | <b>Yes</b> |
|------------------------------|------------|------------|
| Trading                      | 86(71.7)   | 34(28.3)   |
| Tailoring                    | 120(100.0) | –          |
| Arable Farming               | 109(90.8)  | 11(9.2)    |
| Yam Flour                    | 120(100.0) | –          |
| Fish processing              | 120(100.0) | –          |

**Table 3: Distribution of respondents according to Income**

| <b>Income</b> | <b>Frequency</b> | <b>Percentage</b> |
|---------------|------------------|-------------------|
| <1000         | 3                | 2.5               |
| 1000-2000     | 62               | 51.7              |
| 2000-3000     | 50               | 41.7              |
| >3000         | 5                | 4.1               |
| <b>Total</b>  | <b>120</b>       | <b>100.0</b>      |

**Table 4: Existing technique in Processing Locust bean**

| Technique   | (N= 120) | Frequency | Percentage |
|-------------|----------|-----------|------------|
| Traditional |          | 120       | 100.0      |
| Mechanical  |          | –         | –          |
| Both        |          | –         | –          |

**Table 5: Ways by which locust bean contribute to the income of the respondents**

| Contributions                      | SA   | A    | U   | D    | SD   | Rank            |
|------------------------------------|------|------|-----|------|------|-----------------|
| Cracking of locust bean pod        | 1.7  | 0.0  | 1.8 | 42.5 | 55.0 | 2 <sup>nd</sup> |
| Marketing of processed locust bean | 76.7 | 19.2 | 1.8 | 2.5  | 1.8  | 1 <sup>st</sup> |

Note: SA= Strongly agreed, A=Agreed, U= Undecided, D=Disagreed, SD= Strongly disagreed

Source: Field Survey, 2018

**Table 6: Perceived Constraints Encountered by the Respondents**

| Contributions  | SA   | A    | U   | D    | SD   | Rank            |
|--|------|------|-----|------|------|-----------------|
| Inadequate capital   | 11.7 | 9.2  | 0.8 | 33.3 | 45.0 | 3 <sup>rd</sup> |
| Processing of locust bean is strenuous                       | 35.8 | 24.2 | 0.8 | 35.0 | 4.2  | 1 <sup>st</sup> |
| Low demand of locust bean ( <i>Iru pete</i> or <i>woro</i> ) | 2.5  | 2.5  | 1.7 | 56.7 | 36.7 | 8 <sup>th</sup> |
| Inadequate market for the processed locust bean              | 9.2  | 5.0  | 1.7 | 32.5 | 51.7 | 4 <sup>th</sup> |
| Scarcity of water/ flowing River                             | 18.3 | 40.8 | 4.2 | 20.0 | 16.7 | 2 <sup>nd</sup> |
| Lack of modern processing facilities                         | 5.8  | 3.3  | 1.7 | 40.0 | 48.3 | 5 <sup>th</sup> |
| Lack of technical know-how                                   | 4.2  | 5.8  | 1.7 | 40.0 | 48.3 | 6 <sup>th</sup> |
| Competition from other seasoning                             | 2.5  | 3.3  | 2.5 | 27.5 | 64.2 | 7 <sup>th</sup> |

Note: SA= Strongly agreed, A=Agreed, U= Undecided, D=Disagreed, SD= Strongly disagreed

Source: Field Survey, 2018

## DISCUSSION

The result of this study therefore showed that majority (39.1%) of the processors was from 51 years old and above. This implies that *P. biglobosa* processors and marketers were middle aged. This is in agreement with the findings of Okunmadewa *et al.*, (2000) and Afolabi (2007) that most of these marketers were in their active and productive years who can easily adopt new innovations that could enhance *P. biglobosa* processing and marketing, most (58.3) of the respondents were married and depend on processing and marketing of *P. biglobosa* to attend to their needs and be responsible for the needs of their household. This is supported by Akinbile (2007) who stated that marriage confers responsibility. The majority (68.3) with small family sizes of less than 5 could be attributed to the practice of modern family size which is now extended to the rural areas, especially when people knew the implications and then adopt family planning method to control the size of their families. Oruboye (1995) reported that since

Nigeria is still largely agrarian and due to low level of technology prevailing in agriculture and communal land tenure practices, especially in the rural areas, emphasis has been strongly on large family size.

There is a reasonable level of literacy among the processors as majority (56.7) of them had primary education but higher education is important as this is likely to lead to quick access and adoption of new processing and marketing innovations and would immensely influence their income. Low level of educational attainment would limit respondents' access of information which might be of immense assistance to the processors especially in the adoption of new processing techniques and exploitation of market opportunities (Adams, 1982).

Information on other means of livelihood practiced by women in the study, it was observed that processing and marketing of *P. biglobosa* is the major livelihood activity of women in the area.

Little percentage (28.3% and 9.2%) of the women also combined other activities for a living. Since the processors were mostly involved in *P. biglobosa* production, this signifies high prospect for *P. biglobosa* production and the tendency to promote agricultural production and sustainability in Nigeria through efficient *P. biglobosa* processing and marketing. The findings support the observation by Olawoye (2002), that the concept of occupation involving one activity by which livelihood needs are met as used in the western world is not relevant to the experience of most mud dwellers in developing countries.

The daily income generated by the respondents indicated that majority (51.7%) had income range between ₦1000 - ₦2000. The implication of this is that respondents need to engage themselves in other income generating activities in order to increase their economic status. This in accordance with the findings of FAQ (2001) that rural dwellers are characterized with meager income. This is also supported by the report of Fagbemi, (2002) that large percentage 87% of the respondents had less than or equal to ₦135, 000 income per annum. All (100.0%) of the respondents use the traditional processing method which may be due to the fact that they have no knowledge about the modern method and this justifies the points said earlier on that the product is unsuitable for exportation as a result of lots of impurities and are rather consumed locally thereby fetching low income for the processors.

It was also shown that locust bean has contributed immensely to household income of the rural women because majority (76.7%) of them benefited from marketing of processed locust-bean. This is in line with Oyerinde and Daramola, (2004) who had earlier reported that production of locust bean is of the great potentials for increased income and expanding of opportunities among rural women. Those aspects that are of least contribution to rural women include selling of the seeds to other processors, harvesting of locust bean fruit and growing of locust bean tree. This could probably be attributed to the fact that they are not always

bringing more income compared to the other ones. This implies that *P. biglobosa* processing and marketing could serve as livelihood activity for the rural women in the study area and it is expected to have positive influence on the household income of the rural women in the area. This is in line with the study of Carr and Hart (2008) that Non-Timber Forest Products e.g. *P. biglobosa* is a sector that offers great promise for women, but to enhance the effectiveness of poverty reduction programmes, opportunities for the greater involvement of women are essential.

An investigation to the constraints encountered by the respondents showed that the respondents' greatest constraint was that, processing of locust bean is strenuous which was ranked first. This might not be unexpected because the majority of processors still make use of traditional method in processing their locust bean and this traditional processing procedures adopted by respondents were arduous, time-consuming, and generally devoid of any modern technology and still have small family size. Respondents generally identified scarcity of water/flowing river as the second most important problem they faced. This might be attributed to too much of agricultural practices on the little rivers available in the area. Inadequate operating capital and inadequate market for the processed locust bean were also among the problems faced by the processors. These problems could not only limit their scale of operation, but could also perpetuate household poverty among the processors. Despite widespread demand, historically, consumers are not willing to pay a 'good' price for the product, probably due to the fact that the processors still use traditional processing and packaging methods (Yusuf and Rahji, 2012). While modern processing facilities and lack of technical know-how are the least of the constraints according to the respondents, the other constraints were competition from other (industrially manufactured) seasonings and low demand which may be attributed to the age of civilization and increase in the production of modern condiments like maggi, curry, time etc. This result agreed with the findings of FIIRO, (2013).

## CONCLUSION

Based on the study on contribution of locust bean seed processing and marketing to the household economy of rural women in Oluyole Local Government Area of Oyo State, it was concluded that rural women were fully engaged in locust bean processing and marketing especially those aspects that have economic relevance and it had contributed to their household economy. The study revealed no significant relationship between some selected socioeconomic characteristic variables and contributions of locust bean seed processing and marketing; there is positive and significant relationship between livelihood income, perceived constraints and contribution of locust bean seed processing and marketing to the household economy of rural women.

## REFERENCES

- Adams, M. E., (1982): "Agricultural Extension in Developing Countries", Longman Group Ltd. Singapore, pp. 108. In Fabiyi, E. F. Danladi B. 11, Akande, K. E and Mahmood, Y. (2007): "Role of Women in Agricultural Development and Their Constraints; A Case Study of Biliri Local Area, Gombe State, Nigeria". *Pakistan Journal of Nutrition*, 6 (6): 676-680.
- Afolabi, J.A., (2007): Evaluation of Poultry Egg Marketing in South-Western Nigeria. *International Journal of Poultry Science*, 6: 362-366.
- Akande F.B, Adejumo, O.A., Adamade C,A and Bodunde, J., (2010). Processing of Locust bean Fruits: Challenges of Prospects. *African Journal of Agricultural Research* Vol. 5(17), Pp. 2268-2271
- Akinbile, L., (2007): Social Impact of Limestone Exploitation in Yewa North, Local Government of Ogun State. *Pakistan Journal of Social Sciences* 1:107-111.
- Alabi, R.T., and Ibiyemi, AG., (2002): Rainfall and Crop Production in Nigeria. Agronomy of Nigeria. University of Ibadan. Pp. 63- 66.
- Carr, M. and Harti, M. (2008): Mountain Forum: Digital Repository; Gender and Non-Timber Forest Products (NTFPs): Publication of

## Recommendations

It was therefore recommended that:

- i. Rural women locust bean processors can increase the quantity of locust-bean processed by the use of modern technique if available; also incorporate other means at which locust bean seed itself can boost their standard of living.
- ii. Since older people women still dominate locust bean seed processing, it is a signal that there is an opportunity for the involvement of younger people. It is therefore worthwhile for governments (local, state, and Federal) and non-governmental organizations to encourage greater youth participation in locust bean seed processing and marketing as a way of arresting youth unemployment, particularly in rural communities.

International Fund for Agricultural Development (IFAD): Promoting Food Security and Economic Empowerment, <http://www.ifad.org/gender/pub/tirnber.pdf>

- Chikamai, B.N and Kagombe, J., (2002): Review and Synthesis on The State of Knowledge of Boswelia Spp. and Commercialization Of Frankincense In The Dry Lands of Eastern Africa. KEFRI, Nairobi.
- Clempson, R. (2012). Combating Poverty in Sub-Saharan African. Retrieved from Sub-Saharan-African [Http://www.E-Ir.Info/2012/04/25/Combating-Poverty-In-Sub-Saharan-Africa/](http://www.E-Ir.Info/2012/04/25/Combating-Poverty-In-Sub-Saharan-Africa/)
- Diawara, B., Sawadogo, L., Jacobson, M., and Awug, W.K., (2000): HACCP System for Traditional Fermented Food (Sombala) Capacity Building for Research and Quality Assurance in Food Fermentation Technology for African Fermented Foods. *WAITRO Journal*, 26: Pp 11-62.
- Duong, N.H., (2008): The Role of Non-Timber Forest Products In Livelihood Strategies And Household Economics In A Remote Upland Village In The Upper River Basin, Nghe The Phuong. *Journal of Science and Development* 1:88-98

- Fagbemi, T. (2002): Investment opportunities in renewable resources Industry-forestry. 1<sup>st</sup> Edn. Belodan, Nigeria.
- Federal Institute of Industrial Research, Oshodi (FIIRO), (2013): Industrial Profile of Soy Dawadawa Production [Http://Www.Fiiro.Gov.Ng](http://www.fiiro.gov.ng) Accessed On 6<sup>th</sup> January, 2015.
- Food Agricultural Organization, FAO (2001): Experiencing of Implementing National Forest Programme in Nigeria (Electronic version) [www.fao.org/forestry/journal](http://www.fao.org/forestry/journal) Retrieved 26/6/2015
- Oguntola S., (2007): A Diet Rich In Locust Bean Benefits The Body. Nigerian Tribune
- Okafor, J.C., Omoradion, F.I and Amaja, C (1994): Non Timber Forest Products (Nigeria): Consultancy Paper Prepared By The Tropical Forest Actions Program (TFAP) Forest Management, Evaluation And Co-Ordination Units (FORMECU) And Federal Department Of Forestry (FDF) Abuja, Nigeria. Pp.8.
- Okunmadewa, I.Y., Adebayo, S.K., and Mafimisebi, O.E., (2000): Structure, Conduct and Performance of Sun-dried meat trade in Ibadan 'Metropolis. *Journal of Technology and Education in Nigeria*. 5( 2: 68-75
- Olawoye, J. E., (2002): Giving a voice to the rural population. An inaugural lecture presented at the Faculty of Education, University of Ibadan. 11th April.
- Oruboye, I. O., (1995): "The Demographic Situation in Nigeria and Prospects of for Fertility Transition" *Journal of International Development*". In Wusu, O. and Isiugo-Abanihe, U.C. (2006): "Interconnections among change family structure, childrearing and fertility behaviour among Ogun, Southwestern, Nigeria". *Demographic Research*, 14(8), 139-155.
- Oyerinde, O.V. and Daramola, A.G., (2004): Socioeconomic characteristic of African locust bean South-western Nigeria. *Pakistan Journal of Social Science* 2: 291 – 294.
- Shao, M., (2002): *Parkia biglobosa*: Changes in Resource Allocation In Kandiga, Ghana (Unpublished Master's Thesis). Michigan Technological University, Michian, Retrieved From [www.Forest.Mtu.Edu/Shao.Pdf](http://www.Forest.Mtu.Edu/Shao.Pdf)
- Yusuf O. I. S., and Rahji, M. A.Y., (2012): The processing and preference for locust bean products (*Parkia biglobosa*) in Lagos, Nigeria. *Journal of Biology, Agriculture and Healthcare*, 2(11), 105 – 112.