

**RAW MATERIALS DEVELOPMENT FOR THE  
SURVIVAL OF NIGERIAN FOOD AND ALLIED  
INDUSTRIES IN THE 21ST CENTURY**



**FOOD SCIENCE AND TECHNOLOGY**

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**ECONOMIC EVALUATION OF FIRO'S DESIGNED AND FABRICATED AFRICAN LOCUST BEANS DEHULLER/SEPARATOR FOR THE PRODUCTION OF DAWADDAWA**

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**INTRODUCTION**

Dawaddawa, is the fermented soup and stews condiment produced from African locust beans seed; known as 'iru' in Yoruba land and "ogiri-igala" in Igbo land, is the most important food condiment in the savannah region in west and central Africa<sup>1</sup>. It is produced each year in Nigeria in the savannah regions, Oyo, Osun and Kwara states of Nigeria<sup>2</sup>. The average daily per capital intake of protein from dawaddawa in western Nigeria is 3.1% of the total protein intake<sup>3</sup>. About \$200 million (two hundred million dollars) is spent on the importation of food flavours in 1981 in Nigeria with a projection of 15% Annual future increase Essien<sup>4</sup>. It is essential to modernise the production process, so as to upgrade the production level thereby removing the drudgery of local processing as well as presenting hygienic product. This study therefore presents the design and fabrication of African locust bean dehuller and the economic evaluation of the equipment.

**MATERIALS AND METHODS**

A survey of dawaddawa producing areas was carried out to investigate the state of the art of dawaddawa production from African Locust beans. Based on the local processing techniques and problems in the field, African locust bean dehuller/separator was designed and fabricated at FIRO. The equipment was evaluated economically to determine the cost implication of processing dawaddawa from African Locust beans exploring indices of financial evaluation. The assumptions on which the economic evaluation was based are Dehuller/separator with capacity of 400kg of wet dehulled dawaddawa per day of 8 hrs shift, 250 working days per annum, input output ratio 1.33:1 of African locust beans to dawaddawa and selling price of N19.00 per kg. of dawaddawa.

**RESULTS AND DISCUSSIONS**

The survey established that the same production technique was used with very slight variation through out the States. The general procedure include the following; cooking of the seeds for 22 hours with addition of water, softening safety agent; dehulling and separation of hull which takes about 4 days; fermentation in calabash or baskets insulated with local materials for 4-6 days. The most tedious processing step was found to be dehulling/separating of hull.

*Equipment Evaluation*

The development of the Dehuller/Separator has reduced the time of dehully/separating from 4 days to about 4 hrs. The results of the economic evaluatin of dawaddawa production from African Locust beans using the Dehuler/Separator are summarised in tables 1 and 2. The estimated total initial investment cost for the project was N860,000.00 which include estimated fixed capital of N415,000.00, estimated working capital of N375,000.00 and project implementation cost of N70,000.00 (table 1). The total production cost was N 1,426,000.00 while the production cost per kg was N10.72. The total sales revenue was N2,527,000.00 and the Net Profit was N771,000.00 (table 2).



From the above financial indices, the profitability ratios are as follows: The Pay Back Period (PBP) was 9 months, the Rate of Return on Investment (RRI) was 90% and the Rate of Return on Equity (RRE) was 202%. These are impressive profitability ratios indicating a worth-while investment.

Table 1: Total Initial Investment Cost

| No. | Items                       | Cost (N)    |
|-----|-----------------------------|-------------|
| 1.  | Estimated Fixed Capital     | 415,000.00  |
| 2.  | Estimated Working Capital   | 375,000.00  |
| 3.  | Project Implementation Cost | 70,000.00   |
|     | Total                       | N860,000.00 |

Table 2: Net Income Statement (N)

| No. | Items   | Cost (N)     |
|-----|---|--------------|
| 1.  | Sales Revenue price at N19.00 per kilo or N19,000 per tonne | 2,520,000.00 |
|     | Total production cost                                       | 1,426,000.00 |
| 2.  | Gross Profit  | 1,101,000.00 |
| 3.  | Tax @ 30%   | 330,000.00   |
| 4.  | Net Profit  | 771,000.00   |

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