

Profitability of Processor Use of Melon Sheller in Edu Local Government Area, Kwara State, Nigeria

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Abstract-This study assessed the profitability of use of melon sheller by melon processors in Edu Local Government Area, Kwara State in order to verify the advantage of the use of mechanized equipment for melon shelling. The data generated were basically primary and obtained through personal interview schedule with a well-structured questionnaire. A random sampling technique was used in selecting the sampling for the study. A total of 60 Agro-processors engaged in melon processing across the four villages purposively selected were used. Data were analysed using budgetary analysis and descriptive statistics. From the investigation, the result of the costs and returns analysis revealed that Gross Margin (GM) was ₦9,700.00. It shows that the use of this machine will make business more viable. It was therefore concluded that the use of melon sheller in processing melon is profitable in the study area and as well hastens and minimize the stress involve in shelling manually, as majority of the melon processors are women. Also credit facilities should be made available so as for them to get more returns. It was recommended that a melon sheller with a cleaning unit should be made available in the area for easy separation of the melon seeds from the husk after shelling.

Key words: Melon (*Citrullus Lanatus*), melon processing, profitability, shelling, Edu.

I. INTRODUCTION

Melón (*Citrullus Lanatus*) popularly referred to as “Egusi” in Yoruba language is one of the important oil seed crops widely grown and consumed in Nigeria and most other African countries. The melon seeds are small, flat and oval containing a white cotyledon in a thin walled shell with a thick ring around the edges [2]. Melon seed is one of the agricultural products mainly found in the southern part of Nigeria which is affected by the variability of the climate in the country[6].

Melon is inter-planted with other crops like cassava, maize, yam, pepper etc for maximum utilization of the land and also to increase the returns generated from such a production system. Melon is a crop which grows fast within a short time providing farmers with quick returns since they are ready for harvest 3 to 4 months after planting: unlike other crops that are harvested after several months or years [9].

They are grown in Nigeria not for their pulp which is bitter, but for their seeds which are particularly rich in protein and fat in addition to essential vitamins and minerals.. The melon

seed is used both as condiment and thickener in Nigerian local soup and the industrial scale production of the oil yet to be utilized despite the huge potential [13]. It is also a raw material in the production of margarine, salad, “robo cake”, baby food and livestock feeds. Its oil is used in the production of local pomade, soap and its shell is used as poultry litter [19]. In order to retain the high qualities of the protein and the oil, it is necessary to remove the shells from the seeds so that only the cotyledons are processed. Melon seeds have nutritive and caloric values which make them necessary in diets[12]. Melon seeds (egusi) contain 3.7% ash, 45.7% ether extract, 23% crude protein, 12% crude fibre and 10% total carbohydrate[17].

Immature fruits of some types of melon are often cooked as vegetables. Matured seeds are sometimes roasted and eaten. Recent statistics shows that 10,399,000 and 11,830,000 tonnes of vegetables (including melons) were produced in Nigeria in 2009 and 2010 respectively [5]. This specie (*Citrullus Lanatus*) “Bara” is common in Nigeria. Survey and evaluation trials conducted by [10] showed definite geographical distribution and differences in the performance of ‘Bara’ and a type called ‘Serewa’, the “Bara” has the widest distribution.

According to [21], melon is regarded as an important bridal gift in the Yoruba traditional marriage which symbolizes many happy children for the new couple. Also, the harvest period is likened to a festival time. Both men and women, young and old participate in the post harvesting activities in form of *Aaro* or *Owe* which is a form of rural socialization and integration. Other major socio-cultural uses of melon include income generation, household food, and as gift to relatives [1].

The vital crop has been recognized as an affordable source of vitamins and micronutrients especially in the rural areas. As described by [23] there is also a prospect for use of the melon seed in the improvement of infant nutrition in view of its high protein and fat content. Melon is in high demand in tropical markets, especially in the peri-urban and urban markets. It is also exported to Ethiopia and Sudan where the consumption is high and the extracted yellow oil is in high demand [20]. Almost all the big markets in Nigeria, Benin, Cameroon, Ghana, Togo, and other nearby nations sell the seed.

There has been report of profit making in melon production as in the case of [24] whose net farm income was ₦3,799.87 per ha. Also, [4] reported profit of ₦3,619.01 on a hectare of melon farm in Ibadan.[4] in his findings on the socioeconomic analysis of melon cultivation in Ifelodun Local Government Kwara State, observed the difference between the gross return and the total cost of production that gave a gross margin of ₦1,263.81 per ha.

Processing of melon include depodding, fermentation, coring, washing, drying, shelling and cleaning [7].

. Shelling involves removing the outermost part (husk) from the melon kernel. Here, the seed is separated from the spiny husk. This operation can be carried out in the field or at the storage environment [16]. Traditional method of shelling melon is slow, time consuming, tedious, inefficient and involves drudgery, thus limiting the availability of the product in the market. This has given concern to scientists and researchers in the recent past, particularly since women are the major processors of melon especially at shelling stage. Despite the large productivity and nutritional potentials of melon seeds, there has been a hindrance to industrialization of oil gotten from this crop because of the drudgery associated with shelling of the melon seed. In recent time there has been some development in the mechanization of melon (egusi) shelling machines, some of which are highly efficient in terms of yield and performance. The mechanical processing (shelling) melon is fast and can produce very large amount of melon seed (cotyledon) from the seed for the market[22]. The use of melon shelling machines to shell melon is a relieve to farmers and melon processors as compared to manual or traditional method which results in bruising and serious injury to the human fingers, coupled with low output rates [14]. The need to increase the processed melon by shelling with a mechanical melon sheller through reduction in the processing time, drudgery and ensure the wholesomeness of the product, thereby increasing the processors' output and reducing input so as to increase their income, the profitability of the use of melon sheller by the melon processors are closely examined, hence this research work.

The broad objective of this study is to examine the profitability of use of melon sheller by Agro processors associated with melon shelling in Edu Local Government Area, Kwara State.

The specific objectives are to:

1. Determine the costs and returns to melon processing (shelling) using NCAM melon sheller.
2. Describe the constraints faced by melon processors in melon shelling with the use of melon sheller.

II. MATERIALS AND METHOD

The study was carried out in Edu LGA of Kwara State, Nigeria. It was limited to the following communities namely; Tsaragi, Ankoru, Patiduru and Baata because they are majorly known for melon production and processing, as cited by [3] that Edu and Patigi local government areas of the Kwara State are popularly known for melon farming activities and are regarded as major melon processors in the state.

Edu is one of the Local Government Areas in Kwara State with an estimated total land area of about 2,542 km² and an estimated population of about 201,469 [13].

The climate is characterized by dry and wet season. The annual rainfall ranges between 1000 and 1500mm. Average temperatures between 30°C and 35°C and humidity range from 35 to 60%. The major source of livelihood and occupation of the people in these areas is farming. Farming is traditional in nature with emphasis on the cultivation of crops such as sorghum, cassava, yam, maize and melon [8]. They are also into groundnut, sorghum and maize production and processing.

A random selection of 15 processors was made from each of these purposively selected towns; a total of 60 Agro-processors from the local government were used for the study. The source of data used for this study was basically generated primarily. This involved the use of an interview schedule with a structured questionnaire designed to capture the vital profitability data needed. Data were collected based on the income, costs and returns and constraint faced by the processors. The response of these processors forms the primary data used. Budgetary analysis and descriptive statistics (frequency and percentages) were used to analyse data collected.

Farm Budgetary Analysis was used to analyse the costs and returns to melon processing. This is given as:

$$GM = GR - TVC$$

Where: GM = gross margin, GR = gross return, TVC = total variable cost.

III. RESULTS AND DISCUSSION

3.1 Cost and Returns Aspect

Farm budgeting techniques was used to analyse the cost and returns, see Table 1. The prevailing market price was used to calculate the cost of variable inputs used, total returns and net farm income so as to effectively calculate the costs and returns of the processors. The labour used consists of family and hired labour. The wage rate for separating husk from the shelled melon is ₦200 per bag which was used to calculate the total labour cost. Melon seed used were mainly obtained from the market. An average market price of ₦6,000 per bag (56kg) of unshelled melon was used in estimating the total cost of

unshelled melon ₦100 per bag was used to calculate the seed. The cost of shelling with machine of shelling cost. The cost of transportation of unshelled melon used was ₦100 per bag, and the soap used for washing the shelled melon for drying cost ₦50. The difference between the gross return from the sale of shelled melon and the total cost of production gave the gross margin which was calculated to be ₦ 9,700.00 for every 10 bags of unshelled melon. This implies that shelling of melon using melon sheller is profitable in the study area. This finding corroborates [21] that melon production is profitable and it contributed to rural farmer's household food security.

Table 1. Average Costs and Returns per 10 Bags of Unshelled Melon.

Items of costs/returns	Total
Shelled melon (kg)	175
Gross return (₦)	73,750
Less	
Variable cost (₦)	
Unshelled melon	60,000
Shelling cost	1,000
Labour	2,000
Transport	1,000
Soap	50
Total variable cost (₦)	64,050
Gross margin	9,700

Source: Field survey 2015

3.2 Problems Associated with Melon Processing (Shelling)

The major constraint of majority of the melon processors (Table 2) is separating the husk from the shelled melon after using the machine to shell. This might be that the melon shellers in this study area have no chaff separator that can immediately separate the seed from the husk. This implies that after using the machine to shell, they are still faced with the task of separation thereby requiring more labour which increases the cost of processing of melon.

They are also faced with the problem of lack of credit facilities and majority of them are not into co-operative society so as to obtain loan to boost their melon shelling business. This might be due to the fact that the respondents are small-scale farmers, they have low capital base and therefore cannot afford the high cost of inputs. According to the respondents, formal institution do not normally give credit to melon farmers may be because melon is considered not to be popularly grown and given adequate recognition. Both findings above are in line with the findings of [11] that Melon production potential in terms of yield and quality of the production has not been fully exploited. Consequently, there is still deficit supply of melon in the country. This could be adduced to the inaccessibility of the farmers to the appropriate modern technology, needed machineries and lack of credit facilities.

Table 2: Problems of Melon Processing (Shelling)

Factors	Frequency	Percentage
Use of cleaning machine		
Yes	0	0.00
No	60	100.00
Credit facility		
Yes	0	0.00
No	60	100.00

Source: Field survey 2015

IV. CONCLUSION AND RECOMENDATIONS

Melon processing especially shelling has been found to be very tedious and time consuming, but with the development of machines to shell the melon for easy consumption has brought hope to farmers and agro processors. The use of NCAM melon sheller in the study area is profitable and as well hasten and minimize the stress involve in shelling manually, as majority of the melon processors are women.

Based on the result from the findings, the following recommendations are suggested:

1. Melon sheller with a cleaning unit which is available in NCAM will be extended accordingly for easy separation after shelling the melon.
2. All existing credit facilities and schemes put in place to assist farmers should be strengthened so that farmers can have access to soft loan, and such loans should be interest free with no stringent condition so that farmers can expand their scale of production;

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