

ASSESSMENT OF PROFITABILITY OF WATER MELON (*CITRILLUS LANATUS*) IN SELECTED MARKETS IN PARTS OF KADUNA NORTHERN GUINEA SAVANNAH OF NIGERIA



Sodimu, A.I. ^{*1}✉, Usman, M.B. ¹, Oladele, N.O. ², Lapkat, L.G. ¹, Awobona, T.A. ¹, Suleiman, R. ¹



¹ Federal College of Forestry Mechanization, Forestry Research Institute of Nigeria, P.M.B. 2273, Afaka, Kaduna Nigeria

² Trial Afforestation Project, Forestry Research Institute of Nigeria, P.M.B.2312, Afaka, Kaduna Nigeria

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ABSTRACT

The study examines the assessment of profitability of watermelon (*Citrillus lanatus*) in selected markets in parts of Kaduna Northern Guinea Savanna of Nigeria. One hundred questionnaires were randomly administered (100) and 51 were recovered from the respondents. Descriptive statistics gross margin analysis and Z- test were used to analyze the data collected. The results revealed that 74.51% of the respondents are male and 25.29% are female. Majority of the respondents are aged between 35 – 45 years (43.14%) and 12.55% are married. 35.29% of the respondent had secondary education and 39.21% had primary education. The gross margin analysis shows a significant level of profitability at ($P>0.05$) with estimated net income of #10,851.20 per annum. The Z- test further shows that the calculated value was statistically significant at ($P>0.05$) probability level. However, recommendation for improvement and marketing of the species were highlighted.

1. INTRODUCTION

Fruits are concentrated source of natural components. These natural components are plant derived materials performing a key role in maintaining human health, especially in disease prevention, growth and development. In the recent era, phyto-nutrients, particularly from fruits and vegetables, are becoming popular due to consumer awareness regarding their health enhancing potential [1] Water melon (*Citrullus lanatus* Thumb. *Matsum and nakai*) belongs to the family of *Cucurbataceae*. It is an important horticultural crop mostly known for its sweet and juicy fruit, grown in warm climates all over the world [2],[3]. In Africa, watermelon accounts for 5.4% of the harvested

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area devoted to vegetable production and this contributed to the world watermelon production with 4.6% of 99,194,223 tonnes [4].

Watermelon seeds are good sources of vitamins; they are equivalent to multivitamin B complex supplement we consume [5]. Some of the vitamin B present in watermelon seed includes niacin, foliate, thiamine, riboflavin, vitamin B6 and pantothenic acid. Hundred grams (100gm) of watermelon seed provide 19% daily value of Niacin which is essential in maintaining the nervous system, digestive system and skin health [5]. In Asian and Middle eastern countries, watermelon seeds are collected, dried and roasted for eating; watermelon seeds are also used in making soups and other beneficial products like watermelon seed oil, watermelon seed tea and watermelon seed extracts [6]. When we think of health benefits of watermelon, we tend to ignore the health benefits of watermelon seeds. Thus, we might need to rethink spitting or discarding watermelon seeds. Relatively, little is known about the importance of watermelon seeds in Africa. A survey carried out in Benin indicates that watermelon seed may be more important as food source than previously anticipated [7]. From a nutritional point of view, the red and sweet watermelon seed is an important source of carotenoids including lycopine and B-carotene, a pre-cursor of Vitamin A [8],[9]. Water melon seeds and flesh are rich in citrulline which can be metabolized to arginine. The amino acid is a substrate for the synthesis of nitric oxide and it plays a role in cardiovascular and immune functions [10].

[11] defined marketing as the performance of all business activities that evolved into the forward flow of goods and services like water melon from the point of production to the hands of ultimate consumers. Marketing of water melon supplement in that it makes what is produced available to consumers and use the time, place and form required. [12] stated that within the market system, prices, allocation of resources, income distribution and capital formation are determined. Therefore, Marketing will have significant effects on the total production of a given commodity, on consumer price, on adoption of improve technology, in production and marketing methods and infact, upon the growth and development of the entire economy.

Based on this, it will be of interest to study the Profitability of water melon marketing in different parts of Kaduna Northern Guinea Savanna to broaden the understanding of the diversity within the plant, develop local conservation strategies and to identify the potential of the fruits and seeds to enhance food security, medicine, nutrition and income generation for the public.

2. METHODOLOGY

2.1. STUDY AREA

The study was conducted in selected markets in parts of Kaduna Northern Guinea Savannah of Nigeria. The markets sampled were selected in four (4) local governments, which are; Kaduna North, Kaduna South, Igabi and Chikun local government areas. Kaduna State is located North Western part of Nigeria along latitude $9^{\circ}31'$ and $11^{\circ}32'N$ and longitude $6^{\circ}51'$ and $8^{\circ}48'E$ [13],[14]. It lies within the Guinea Savanna eco- region with mean annual rainfall of about 1239.5m. The temperature in the area is generally high especially during the dry season. It ranges between $25.5^{\circ}C$ to $30^{\circ}C$ [14].

2.2. DATA COLLECTION

A pre-survey of the parts of Kaduna Northern Guinea Savannah was conducted to identify major markets in each local government where water melon marketers are. One major market was chosen from each local government area. These markets are: Igabi (Mando Market); Kaduna North (Kawo Market); Kaduna South (Station Market) and Chikun (Buruku Market). Twenty-five (25) questionnaires were randomly administered in each of the market to make a total sum of one hundred questionnaires (100) in all. Fifty-one (51) were however retrieved.

2.3. DATA ANALYSIS

The following tools of analysis were used to analyze the data collected.

- Descriptive Statistic
- Gross Margin Analysis

- 1) **Descriptive Statistic:** Descriptive statistic such as frequency, percentages were used to analyze some socio-economic characteristic known to influenced water melon marketers in Kaduna Northern Guinea Savannah of Nigeria.
- 2) **Gross Margin Analysis:** the gross margin analysis involves evaluating the efficiency of an individual enterprise so that the comparison can be made between enterprises of different farm plans [11].

$$GM = TR - TVC$$

Where:

GM= Gross Margin (#)

TR= Total Revenue (#)

TVC=Total Variable Cost (#)

However, Z- test was used to test the hypothesis formulated and is given as below;

$$Z = \frac{x_1 - x_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$$

$$\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}$$

Where:

X_1 = mean value of return from water melon Production

X_2 = Mean value of cost from water melon marketing

S_1 = Variance of return

S_2 = Variance of cost from water melon production

N_1 = Sampling size associated with returns

N_2 = Sampling size associated with cost from water melon production

A positive gross margin would indicate the water melon marketing in the study area is profitable [11]

Study Hypothesis:

H_0 : Water melon (*Citrillus lanatus*) production in Kaduna Northern Guinea Savanna is not profitable.

3. RESULTS AND DISCUSSION

Socio-economic characteristics of the sampled water melon marketers: Some socio-economic characteristics are known to influence water melon marketers in parts of Kaduna Northern Guinea Savannah of Nigeria. The variables analyzed in this study include: Age, Marital Status, Gender and Level of Education.

Table 1: Socio-economic Characteristics of the Respondents

Variable	Respondents	Percentages %
Age in Years		
25 - 35	19	37.25
35 - 45	22	43.14
45 - 55	10	19.61
Marital Status		
Married	37	72.55
Single	14	27.45
Gender		
Male	38	74.51
Female	13	25.49
Education Level		
Tertiary	20	32.21
Secondary	18	35.29
Primary	13	25.49
Total	51	100

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Table 1 revealed that 43.14% of the sampled consumers were between the age brackets of 35 – 45 years. This implies that they were at middle and economic age which could have positive effects on their standard of living. The age distribution of the respondents determines their productivity or managerial ability in any business enterprise. This is especially true in traditional society of Nigeria. This result agrees with the findings of [15], which shows that age influence the profitability in several ways. 72.55% of the sampled marketers were married, 74.51% were male and 25.49% were females. 32.21% of the sampled respondents had secondary education as 35.29% had tertiary education; the remaining 25.49% had primary education. This implies that all the sampled respondents were literate; they know how to read and write. [14] observed that formal education has a positive influence on marketing and profitability of goods.

Table 2: Average Gross Margin Analysis of Sampled Marketers

Variables	Average Mean Cost
Transportation	3,350,230
Commission Cost	1,300,250
Total Variable Cost	4,650, 480
Gross Income (#)	15,601,600
Net Income	10,851.20

Table 2 revealed that gross margin is positive and profitable with estimated value of #10,851.20. The calculated value was statistically significant at ($P>0.05$) level of probability. Thus, the null hypothesis (H_0) was rejected and alternative hypothesis (H_1) that water melon production in Kaduna Northern Guinea Savanna was profitable in the study area was accepted.

4. CONCLUSION AND RECOMMENDATION

The study has revealed that water melon marketing is profitable with an average net income of #10,851.20. Based on these findings, the following recommendations are made:

- 1) There is need for effective government supported institutions such as entrepreneurial development units, co-operative bodies and other relevant institution under the State Ministry of Environment to motivate the water melon traders through adequate price support activities, loan and subsidies input.
- 2) Government should provide good road network for the production areas
- 3) The extension system in the area should be strengthened to enable farmers adopt not only improved water melon varieties but other water melon production technologies such as sowing, spacing, weed control, fertilizer application, pest and disease control and lastly,
- 4) The extension workers should organize workshop, seminars for the traders as appropriate

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None.

CONFLICT OF INTEREST

None.

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