

ECONOMIC ANALYSIS OF WATERMELON PRODUCTION IN WARJI LOCAL GOVERNMENT AREA OF BAUCHI STATE

ALI, M. A.¹, IBRAHIM ABUBAKAR², AHMED MOHAMMED BAKOSHI³
& IBRAHIM ALIYU ISAH⁴

mohammedaliburra@gmail.com¹, dalilibrahim426@gmail.com²,
ahmedmohammedbakoshi@gmail.com³ & iibrahimaliyu@gmail.com⁴

Agricultural Education Department, School of Vocational and Technical Education,
Aminu Saleh College of Education, Azare.

Abstract

This paper is entitled “Economic Analysis of Watermelon Production in Warji Local Government Area of Bauchi State. The main objective of the study is to analyze socio economic characteristic of sample respondents, analyze of cost of production per hectare, return and profitability of watermelon production. Out of the two districts of Warji Local Government Area, a total of four (4) villages and 85 respondents were randomly selected out of the population. Average size of land holding of respondents was 2.65 hectares and majority of the respondents were in working age group of 20 to 49 years (58.23%). Most of the respondents are secondary graduate (44.29%). Data collected were analyzed using descriptive statistics and gross margin. Budgetary analysis shows a high profitability of watermelon, with gross margin of ₦2.18 realized for every ₦1 invest on watermelon per hectare. The result of the analysis also indicated that total cost was N3,254,250 and the total revenue was N7,109,600. This gave a gross margin of N3,855,350 of watermelon produced.

Keywords: Economics, Cost, Return, Gross margin, Profit, Watermelon

Introduction

Agriculture, be it crop production, animal production, agricultural marketing, agricultural mechanization, agricultural processing among others, is the bedrock of Nigerian economy which employs about 70-80% of the Nigerian population. Therefore, watermelon is an important export crops for foreign exchange, which improves economic development in Nigeria. Economic strength of the country is a tool that can be used to eradicate poverty (FMARD, 2021). Poverty eradication is among the Millennium Development Goals (MDGs) and also a component of the vision 2020 of late Umaru Musa Yar'adua's administration. Agriculture in general is the main stream of the Nigeria's economy and a tool for food security and poverty eradication. FOA(2021).

Nigerian Agriculture is a source of livelihood and food security to its teeming population of over 200 million. There are two types of melon that are of economic importance in Nigeria, Watermelon and Egusi watermelon, also called “wild watermelon”. Both are grown throughout Nigeria and the Congo for its seeds, which are

high in protein and carbohydrates. In Nigeria, it often grows wild, but it is also farmed as an increasingly important cash crop. The white, bitter flesh of the egusi is not edible, but he seeds are staple of local diet. Egusi is easy to grow in Nigeria's warm, arid climate (Walleany, 2016).

According to Ajewole (2016), watermelon is a warm season crop that is cultivated worldwide because of its numerous nutritional benefits. It thrives very well in most well drained soil whether clay or sandy but preferably sandy loams. Although China is reported to be the current world largest producer of the commodity according to Dauda (2015), watermelons are generally believed to have originated from Africa.

In Nigeria, as well as other parts of the world, watermelon is highly relished as fresh fruit owing to its thirst-quenching attribute in addition to many other identified nutritional values and advantages. It is therefore not surprising that the consumption of the commodity in the recent times has witnessed remarkable development as it cuts across all socio-economic classes. Presently, the largest production of the crop in Nigeria still

comes from the northern part. It is surprising that melon production has not been given much regards in research and agricultural polices of Nigeria

Objectives of the Study

1. Describe the socio-economic characteristics of watermelon farmers in the study area.
2. Estimate the costs and returns from water melon production in the study area
3. Determine the technical efficiency of watermelon production in the study area.

Methodology

Study Area

The study was conducted in Warji Local Government Area of Bauchi State. The head quarter of the local government is located in Katanga town. The Local Government is located between longitude 11° 11'N and latitude 9° 45'E. It has an area of 493 km² (BSADP, 2021) and a population of 176,883 as at the 2006 National Population Census.

The vegetation of Warji local government is mostly sudan savannah. The main language spoken in the area is Warjanci with the mixture of Hausa and Fulani. The main crops growing in the area are: Rice, Sorghum, Maize, Watermelon, Groundnut and Sesame. Major villages including Dagu, Baima, Ran ga, Gabanga, Tiyyin, Tudunwada and Galadima (BSADP, 2021).

Design of the study

This study adopted descriptive survey research design. A descriptive survey design is one in which a group of people or items are studied by collecting and analyzing data from a few people or items considered to be representatives of the entire group.

In survey research, views and facts are collected through questionnaire, interview, an observation which are used to analyze data and answer research questions. Mwangi, M. and Kariuki, S. (2015).

Sample and Sampling Technique

A multistage sampling technique were adopted for the selection of watermelon farmers in the study area.

In the first stage, Dagu and Ranga wards of Warji Local Government Areas were purposively selected because of prominence of watermelon farmers in the areas.

In the second stage, two communities were randomly selected from each ward of the Local Government Area using the list of communities available in the LGA/ADP.

The third stage was involved the random selection of farmers from Dagu and Ranga, making a total of 85 watermelon farmers using the list of watermelon farmers available with the village extension agent (VEA).

Method of Data Collection

Well - structured questionnaire, interview and observation were used in data collection.

Method of Data Analysis

In this study the data obtained from the farmers was analyzed using descriptive statistics and Productivity Analysis: The following index was estimated.

Total productivity = Total value of product (₦)/total value of input (₦)

Labour productivity = Total value of product (₦)/total value of labour (₦)

Capital productivity = Total value of product (₦)/total value of capital.

Results and Discussion

Socio-Economic Characteristics of Respondents

The socioeconomic characteristics of water melon farmers include sex, age, marital status, the level of education, source of capital, major occupation, five most important crops cultivated, years of experience and choice of these characteristics for comparison was based on literature De Lannoy (2015).

Table 1: Distribution of Respondents by Socio-economic Characteristics (N = 85)

Characteristics		
Sex	Frequency	Percentage (%)
Male	75	88.2
Female	25	11.8
Age (Years)	Frequency	Percentage (%)
21-30	25	29.4
31-40	28	32.9
41-50	20	23.5
50 and above	12	14.2
Marital status	Frequency	Percentage (%)
Single	15	17.6
Married	70	82.4
Educational Level	Frequency	Percentage (%)
No formal education	19	22.4
Primary school education	29	34.1
Secondary school education	24	28.2
Tertiary education	13	15.3
Source of Capital	Frequency	Percentage (%)
Cooperative	15	17.7
Commercial Bank	20	23.5
Personal savings	25	29.4
Friends	25	29.4
Major Occupation	Frequency	Percentage (%)
Farming	75	88.2
Teaching	10	11.8
Years of Experience	Frequency	Percentage (%)
5-10	34	40
11-15	27	31.8
16-20	14	16.4
Greater than 21	10	11.8

Source: Field Survey 2022

Sex (Gender) of Respondent

Table 1 indicates the proportion of gender of the farmers in the study area in which 75 (88.2%) are male while 25 (11.8%) are female.

Age (Years) of Respondent

The table shows that majority (32.9%) of watermelon farmers were 31-40 years respectively. These age groups are economically active in watermelon production in the study area.

Marital status of the Respondent

On the of marital status of the farmers, Table 1 indicates that majority 70 (82.4%) are married while 17.6% (15) are single.

Educational Level of Respondents

Level of formal education attainment by the respondents from the table indicated that 29 (34.1%) and 24 (28.2%) of them completed and attained primary and secondary education respectively while 13 (15.3%) of them had a tertiary education.

Source of Capital

Table 1 also indicated that 17.7% and 23.5% of the watermelon farmers got loans from cooperative societies and commercial banks respectively while 29.4% of the watermelon farmers make use of their savings and money from friends.

Major Occupation

From Table 1 Majority of the farmers` (88.2%) major occupation is farming while 10 (11.8%) are teachers.

Years of Experience

Table 1 shows that 40.0% of the farmers had been involved in watermelon production for about 5 to 10 years, while 11.8% had above 21 years of farming experience.

Table 2: Farm Size

Farm Size (ha)	Frequency	Percentage
1-2	31	36.4
2.5-3	23	27.1
3.5-4	12	14.1
4.5-5	10	11.8
Mode of Acquisition	Frequency	Percentage
Inheritance	40	47.1
Lease	15	17.6
Borrowed	10	11.8
Gift	5	5.9
Purchased	15	17.6

Source: Field Survey 2022

Table 2 revealed that 36.4% of the watermelon farmers cultivated between 4.5 hac and 11.8% of the watermelon farmers cultivated between 1-2 hac. In addition,

Table 2 shows that 47.1 owned farm through inheritance while 5.9% is being owned through gift.

Table 3: Cost and Return Analysis of the study

Plot No	Items	Quantity	Type	Local	Cost (₦)
	Seed		Hybrid		
1	1bag	1(kg)	✓		800
2	4bags	4(kg)	✓		3200
3	8bags	8(kg)	✓		6400
4	12bags	12(kg)	✓		9600
5	20bags	20(kg)	✓		16000 and above
	Fertilizer	Quantity	Organic	Inorganic	Cost (₦)
1	1bag	25(kg)	✓		5500
2	2bags	50(kg)	✓		10000
3	5bags	125(kg)	✓		25000
4	6bags	150(kg)	✓		30000
5	12bags	300(kg)	✓		60000 and above
	Agrochemical	Quantity			Cost (₦)
1	Herbicides	4litres			4000
2	Pesticides	6litres			6000
3	Insecticides	2litres			2000
4	Seed dresser	5sachets			1000
	Weeding	Days			Cost (₦)
	1 st	7days			8000
1 ha	2 nd	5days			6000
	3 rd	3days			
	Harvesting	Days			Cost (₦)
	1 st	7days			10000
1 ha	2 nd	5ays			5000
	3 rd	3days			3000
			Total		=N18000

Source: Field Survey 2022

Table 3 shows that Seeds cost about N800.00 per kilogram. The fertilizer cost about N5500 to N17,000. And Herbicides are chemicals used to control weeds Their cost ranges to N1000/litre to N1,100/litre.

Weeding (weed control)

Table 3 shows that a cost of N8000 naira for the first weeding per hectare which can take up to 7days to finish, a cost of N6000 which

can take up to 5days to finish for the second weeding and a cost of N2000 which can take up to 3 days to finish for the third weeding while Harvesting cost of N10000 naira for the first harvesting per hectare can take up to 7days to finish, a cost of N5000 which can take up to 5 days to finish the second harvesting and a cost of N3000 which can take up to 3 days to finish for the third harvesting.

Table 4 Output of Water Melon (Kg)

Plot No	Quantity harvested (Kg)	Total Qty sold(kg)	Price/Unit	Total Revenue (TR)	Total Cost (TC)	Profit (TR-TC)
1	37	35	1800	132599	63000	69599
2	81	75	1800	389513	135000	254513
3	93	89	1800	517785	160200	357585
4	101	90	1800	789432	162000	627432
5 and above	12	98	1800	1438950	176400	1262550
				Total =3268279	Total =639900	Total =2628379

Source: Field Survey 2022

From Table 4 above, the total revenue from one hectare in the study was found to be N3268279.00, N639900.00 for total cost of watermelon farmers and N2628379.00 naira for profit respectively.

Table 5 Profitability index

Index	Production
Gross Ratio (GR)	0.33
RPCI	0.67
Operating Ratio	0.32
Benefit Cost Ratio (BCR)	3.05

Source: Field Survey 2022

Table 5 revealed that the gross ratio was 0.33 for watermelon farmers. Also, operating

ratio indicated that 0.32 of the gross income (GI). The Return per capital invested (RPCI) was 0.67, while, BCR was 3.05. Three profitability index estimates show that watermelon production is profitable.

Conclusion

This study evaluated the economic benefit of watermelon production in Warji local government area. The result showed that watermelon production is profitable based on the net return, profitability index, operating expense ratio and rate of return on investment result. Although the watermelon is profitable, profit will increase if constraints mitigating against watermelon farming are properly addressed

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