

Full length Research paper

# Analysis of profitability of Neem Seed marketing in Yobe State, Nigeria

\*Muhammad YK, Ilu KJ, Jibo AU, Gidado AH, Salami KD and Lawal AA

Department of Forestry and Wildlife Management, Federal University Dutse, Jigawa State, Nigeria.

Accepted 18<sup>th</sup> April, 2022.

This work analyzed the profitability of Neem seed marketing in Yobe State, Nigeria. Purposive sampling technique was used in selecting Afunori, Nangere and Damaturu Neem plantations established in 1999. The study involved 25 marketing respondents selected based on Yero Yemeni's model. Primary data were collected using structured questionnaires and the variables on which data were collected included socioeconomic characteristics, marketing costs and revenues and same were analyzed using descriptive statistics, multiple regressions, gross margin and profitability analyses. Socioeconomic results revealed that the marketing scenario was dominated by none-literate, male, married youth farmers whose mean age and marketing experiences were 36.88 and 8.74 years respectively. Respective unit increase in marketing experience and educational levels significantly raised profits by only ₦8.76 and ₦2.14, whereas same unit increase in purchase and operating costs recorded significant profit reduction by ₦4,792.92 and ₦8,508.36 respectively. Of the total of 673.13 tons of neem seeds marketed between 2009 and 2013, only ₦1,136.25 GM/ton/marketer was realized. Similarly, net profit per ton per marketer stood at only ₦949.12 within the same period. The study concluded that neem seed marketing wasn't profitable in the study area. Creation of markets and Neem associations was the major policy recommendation made.

**Key words:** Analysis, Profitability, Neem Seeds

## INTRODUCTION

The experiences of the global economic meltdown of 2009 and economic recession of 2015 necessitated the need for economic diversification in Nigeria. For this reason, the Federal Government directed all states to look inwards for alternative sources of revenues for all forms of development in their respective domains. Accordingly, Yobe State endowed with favorable agro-ecology for neem resources, considered large scale investment in afforestation and reforestation projects to combat desertification and to generate revenue (Muhammad, 2016). Based on tree selection criteria (Wilkinson and Elevitch, 2012) and critical analyses of the strengths, weaknesses, opportunities and possible threats (SWOT), the Yobe State Afforestation Project (YBSAP) (2015), recommended *Azadirachta indica* (Neem) for its exceptionally high leveled adaptation, greater microclimatic

potentials and wide range of valuable products and services. However, this work concentrates on the economic aspect of the program. Therefore, it is restricted to assessing the profitability of neem seed marketing being the major product of the species marketed in the State. Specifically, it assessed the socioeconomic characteristics of the sampled neem seed marketers, the impact of socioeconomic factors on profitability as well as profitability analyses for Neem seed marketing in the State.

Until recently, not much was known about the economic potentials of neem in Nigeria. Therefore, neem product marketing was restricted to the local situation. Though, it has excellent physical and economic potentials, exploitation in many countries target at physical benefits only. Neem originates from Southeastern Asia. The tree spread globally along the tropical belt in the twentieth century and was introduced to Nigeria in 1928, probably from Ghana. The principal motive then was to combat desertification which was why it was widely utilized in programs and projects of environmental management (Muhammad, 2016). Economically, neem has greater

\*Corresponding author's Email: [myayokarage30@gmail.com](mailto:myayokarage30@gmail.com)

comparative advantage than most local species. Every part of the tree has industrial application (Muhammad, 2016). It is in recognition of this that the Federal Government has recently attempted to exploit its economic potentials. Reports like the following make this point clearer:

*Nigeria: Neem - Northern Economic Tree (Ibrahim, 2016) Economic Diversification: Katsina is Boosting Neem Production (Ibrahim, 2015)*

Evidently, the economic potentials of neem are gradually being uncovered. To this end, the Federal Government constituted a Presidential Task Force in 2004 to develop strategies for utilization and transformation of neem seeds to wealth in some pilot plants to be established in Katsina and Kebbi and later Borno, Yobe and Jigawa States (Muhammad, 2016).

Neem is the United Nations' "**tree of the 21<sup>st</sup> century**" and is believed to have solutions to all global problems (World Neem Conference, 2012). It is thus evident from the foregoing that marketing of neem seeds and other neem products could make giant strides in revenue generation strategies of the state (YBSSEDS, 2017). Could neem seed marketing be significantly profitable to justify its inclusion in the economic diversification program of the State? This calls for empirical assessment of profitability of its marketing in the State.

### **Socioeconomic Factors Affecting Profitability of Neem Seed Marketing in Nigeria: A Review**

Many factors combine to determine the profitability of marketing forest product in Nigeria. However, the major ones that dominate literature were grouped into two: social and economic also known as socioeconomic factors (Umar, *et al.*, 2016). The socioeconomic factors influencing Neem seed marketing in Nigeria are briefly examined below: -

**(i) Age** has an inverse relationship with profitability of neem seed marketing in Nigeria (Mbah, 2011 and Umar *et al.*, 2011). This implies that there is diminishing return to profit with increase in ages of marketers.

**(ii) Education** is crucial to the success of any agribusiness activity (UNDP, 2015). The relationship between education and profitability of marketing forest products is not only positive but also direct (Umar *et al.*, 2016).

**(iii) Gender and marital status** have very little or no effect on profitability of marketing the product (Umar *et al.*, 2011 and Umar *et al.*, 2016). Although studies have shown that male gender and married marketers tend to dominate marketing scenarios of most forest products, there is no empirical evidence reflecting the significance of their influences on economic profitability.

**(iv) Marketing experience** influences the marketing process positively or negatively depending on the accumulated marketing experience of the individual. The

higher the experience, the better the performance of marketing activities (Muhammad, 2016). Experienced marketing clients produce the required grades and standards that command attractive prices. Marketing experience improves the effectiveness of marketing events (Woods, 2008).

**(v) Cost of purchase** influences the forces of demand and supply of neem seed produce in Nigeria. An increase in purchase cost leads to greater supply of the commodities with consequent fall in prices (Adegeye and Dittoh, 2015).

**(vi) Operating cost** has inverse relationships with profitability of the product. Marketing costs in this category include transportation, storage, grading, handling, tax and bagging expenditure. The inverse relationship is often occasioned by incurring high operating cost to the point of Diminishing Marginal Return (Ndanitsa, 2010).

**(vii) Labor expenses** also have inverse relationships with profit (Muhammad, 2016). Thus, an increase in labor expenditure reduces profit levels whereas a decrease increases the profit margin of the product.

#### **(viii) Total fixed cost (TFC)**

Cost items in this category included scales, measures, head pans and other related items use in the marketing of both products. Although TFC has an inverse relationship with profits, studies have shown that their effects are negligible (Umar, *et al.*, 2016). Most often, these items are not regularly used or under-utilized; creating unnecessary expenditure that reduces profit.

## **MATERIALS AND METHODS**

### **The study area**

Yobe State is located between latitudes 10°27' and 13°23' North and longitudes 9°40' and 12°30' East of the Green Which Meridian (Figure 1). It occupies the North Eastern part of the country and is bounded on the North by the Niger republic, on the East by Borno State, Bauchi and Jigawa States on the Southwest and Northwest respectively (Encyclopedia Britannica, 2006). It covers a total land area of 45,502 square kilometers. Considerable climatic variations abound between the Northern and Southern parts of the State. In the north, annual rainfall ranges from 300mm to 500mm whereas in the southern part, the range per annum falls between 500mm and 1000mm (YBSG, 2014).

Temperatures are particularly very high throughout the year ranging from 39° C to 42° C (YBSG, 2014). Two vegetation types occur in the state: Sahel in the north and Sudan Savannah in the south. Both vegetation types are under severe continuous threats of desert encroachment (Iloeje, 2012). Farming and marketing are the major occupations in the State.

**Sample and Sampling Procedure**

The State was divided into three plantation areas: comprising Afunori Plantation Area (APA), Nangere Plantation Area (NPA) and Damaturu Plantation Area (DPA) based on the existing zoning arrangement of the Yobe State Afforestation Project (YBSAP). APA covered a total land area of 16,059.52 square kilometers, whereas NPA and DPA had 10,706.35 and 18, 736.12 square kilometers respectively (YBSSEDS, 2017). Multi stage sampling technique was used. The first stage was purposive sampling of neem plantations established in 1999 in each plantation area. The second stage relates to

the sampling of neem marketing respondents. A total of 25 marketing respondents in the order of 4, 8 and 13 were selected at NPA, APA and DPA respectively based on Yero Yemeni’s model (1967). The outline of the model as used by Buba (2015) is given below –

$$n = \frac{N}{(1+N(e)^2)} \dots \dots \dots (i)$$

Where;  
 n = Sample size of neem seed marketers  
 N = Population size of neem seed marketers  
 e = Sampling error (0.05)

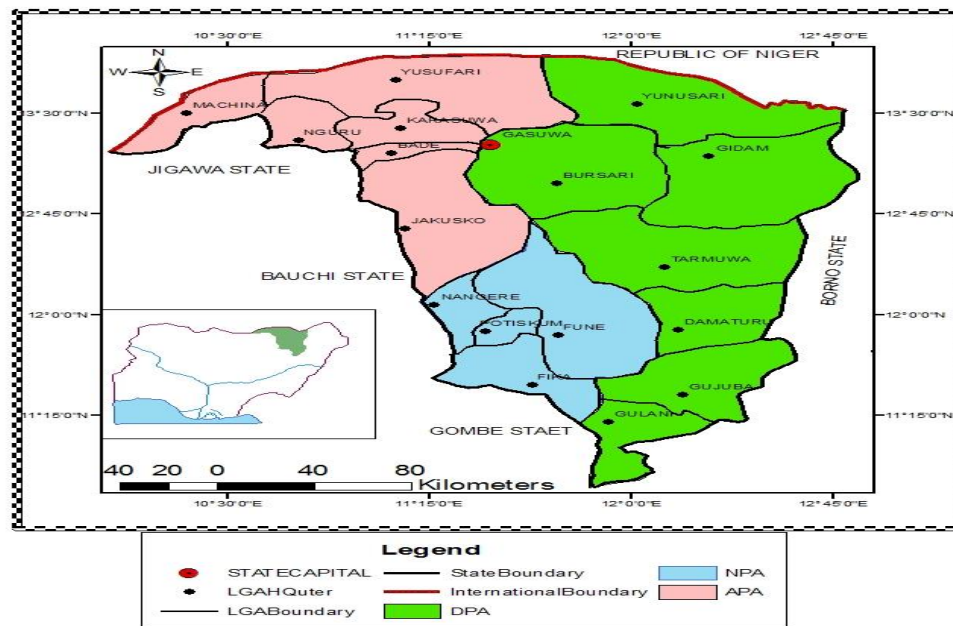


Figure 1: Map Yobe State Showing the Study Area  
 Produce @ GIS Laboratory, Geography Department MAUTECH Yola 2016

**Method of Data Collection**

Primary data were collected using structured questionnaires. A total of 30 questionnaires were produced for data collection out of which 25 copies were correctly filled, returned and used in data analysis.

**Tools for Data Analysis**

A combination of both descriptive and economic/financial tools was used in analyzing the data. Descriptive statistics such as means, percentages and frequency count were

used in analyzing the socioeconomic variables of respondents. In contrast, Gross Margin (GM) and profitability analyses constituted the main economic and financial tools applied in assessing the profitability of neem seed marketing in the study area.

**Model Specifications**

**(i) Multiple Regression Model**

Multiple regression analysis was used to analyze the effects of socioeconomic factors on the profitability of neem seed marketing. The data generated on this aspect was

subjected to several algebraic forms of the multiple regressions such as the linear, the Cob-Douglas, Semi-log and Exponential functions. The regression model is explicitly expressed as:

$$Y = f (X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7 + X_8 + U) \dots\dots\dots (ii)$$

Where:

Y = Total Net Profit/tonne realized from Neem seed marketing (₦)

- X<sub>1</sub> = Purchase cost (₦)
- X<sub>2</sub> = Operating cost (₦)
- X<sub>3</sub> = Labor cost (₦)
- X<sub>4</sub> = Marketing experience (years)
- X<sub>5</sub> = Educational level (years spent in school)
- X<sub>6</sub> = Cost of fixed inputs (calculated by straight line depreciation method) (₦)
- X<sub>7</sub> = Major occupation (dummy: farmers = 1 others = 0)
- X<sub>8</sub> = Gender (dummy: 1 = Male, 0 = Female)
- U = Error term.

Four (4) functional models (linear, semi-log, double log and exponential) were tried. Using the economic theory, statistical criteria and coefficient of multiple determinations (R<sup>2</sup>), the regression result with the best line of fit was selected for interpretation of the study as adopted by Maiangwa (2007) and Mesike, Agbonkpolor, Umar and Giroh (2007). The functional models are as follows:

Linear:  $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + U \dots\dots\dots (iii)$

Semi-log:  $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + U \dots\dots\dots (iv)$

Cob-Douglas:  $\log Y = b_0 + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + b_5\log X_5 + b_6\log X_6 + b_7\log X_7 + b_8\log X_8 + U \dots\dots\dots (v)$

Where:

X<sub>1</sub>.....X<sub>8</sub> independent variables, defined in equation) (ii) above

- b = constant
- b<sub>1</sub> – b<sub>8</sub> = Regression coefficients
- Y = Dependent variable
- U = Error term

**(ii) Gross Margin/profitability analysis:** this is simply the difference between Total Revenue (TR) generated from neem seed marketing and the Total Variable Cost (TVC) incurred. This work adopts Muhammad (2016) method GM computation as follows:

$$(a) \quad GM = TR - TVC \dots\dots\dots (vi)$$

Where;

GM = gross margin of neem seed marketing (₦/tonne/marketer)

TR = Total Revenue generated from neem seed marketing (₦)

TVC = total variable cost incurred in neem seed marketing (₦)

$$NP = TR - TC \dots\dots\dots (vii)$$

Where;

NP = net profit realized from the sales of neem seed marketing (₦/ton)

TR = total revenue generated from the sales of neem seed produce (₦)

$$(b) \quad TC = TFC + TVC \dots\dots\dots (viii)$$

Where,

TFC = Total Fixed Cost of scales, head pans and measures/modus used in neem seeds marketing (₦)

**RESULTS**

**Socioeconomic characteristics of Neem Seed Marketers**

**Age distribution of respondents**

Results reveal that the class 31 – 41 years was the modal age class for the respondents. It constituted 64% of the total respondents engaged in neem seed marketing (Table 1). It was also the class with the most active individuals. The age class 42 – 52 years followed with 16%. Generally, the mean age of the respondents was 36.88 years (Table 1).

**Gender of respondents**

The male gender dominated the marketing scenario of neem seed in the study area. It formed 72% of the sampled neem seed marketers. The balance of 28% represented female participation in neem seed marketing (Table 1).

**Marital status of respondents**

Married individuals constituted 76% of respondents involved in neem seed marketing. Singles, widows and divorcees collectively formed the balance of 24% (Table 1).

**Educational qualification of respondents**

The educational background of neem seed marketers was poor as respondents with No-Formal- Education (NFE) formed up to 56% of the sample. Individuals with primary and secondary education collectively constituted 44% (Table 1)

**Occupational distribution of respondents**

Farming was the major occupation of neem seed marketers

**Table 1:** Socioeconomic Characteristics of Gum Arabic and Neem Seed Marketers

S/n	Variable of Comparison	Neem Seed Marketers	Mean	S.D
1	Gender			
	Male	18 (72.00)		
	Female	07 (28.00)		
	Total	25 (100.00)		
2	Age Class			
	20 – 30	04 (16.00)		
	31 – 41	16 (64.00)		
	42 – 52	04 (16.00)		
	53 – 63	01 (04.00)		
	Total	25(100.00)	36.88	7.57
3	Marital Status			
	Married	19 (76.00)		
	Single	03 (12.00)		
	Widow	02 (08.00)		
	Divorcee	01 (04.00)		
	Total	25 (100.00)		
4	Educational Qualification			
	No Formal Education (NFE)	14 (56.00)		
	Primary	04 (16.00)		
	Secondary	07 (28.00)		
	Total	25 (100.00)		
5	Main Occupation			
	Farming	19 (76.00)		
	Trading	02 (08.00)		
	Civil Servant	04 (16.00)		
	Total	25 (100.00)		
6	Marketing experience			
	05 – 08	14 (56.00)		
	09 – 12	08 (32.00)		
	13 – 16	03 (12.00)		
	<b>Total</b>	<b>25 (100.00)</b>	<b>08.74</b>	<b>02.79</b>

Source: Field Survey, 2014.

Figures in parenthesis are in percentages

(76%) whereas petty trading and public service together formed 24%.

### Marketing experience

The mean marketing experience among neem seed marketers was 8.74 years. Thus, neem seed marketing was the newest business in the study area (Table 1).

### Regression Analysis of Socioeconomic Factors influencing the Profitability of Neem Seed Marketing in Yobe State.

Table 2 indicates that the linear regression models gave the best fit in terms of the magnitude of  $R^2$ , appropriate signs of regression coefficients and levels of significance of the variables included in the equation and was therefore

chosen as lead equation. Thus, the result of the linear model was chosen for interpretation. The  $R^2$  value for neem seed was 0.8370. This signifies that 83.7% of the variations in neem seed profits were jointly explained by the independent variables included in the model. Thus, the balances of 16.3% represented non-inclusion of some explanatory variables and/or estimation errors. The purchase cost coefficients ( $X_1$ ) was negative as expected. This indicates an inverse relationship between profit and purchase cost of the product. At 5% probability level, a naira increase in purchase cost of neem seed significantly reduces profit by N4, 792.92. In line with a priori expectation, increase in purchasing costs reduced profits generated from the marketing of the product.

The operating cost ( $X_2$ ) coefficients was also negative and significant at 5%. As expected, an increase in operating costs reduces profit levels. Reduction in profit per a naira

increase in operating costs of neem seed was N8, 508.36. This result infers that cost items that formed the overall operating expenditure of neem seed marketers were used to the point of Diminishing Marginal Return (DMR) to profit. This agrees with the findings of Umar, et al. (2016) on costs and returns of gum Arabic and some selected tree crops in Adamawa and Yobe states, Nigeria, The results for labor costs (X3) also had negative coefficient but not significant at any of the accepted probability levels. As expected, Labor cost had an inverse relationship with profit generated from the marketing of forest products. Thus, a naira increase in the cost of labor gave rise to decrease in profit margins by N3, 636.55. Although profit declines with increase in labor cost, more participants earned margins in the marketing system (Giroh, Moses and Umar, 2007).

Marketing experience (X4) had positive coefficient of 8.755987. This value is significant at 1%. Statistically, it signifies that a unit increase in marketing experience led to

increase in profits of neem seeds by N8.76. This confirms Wood's (2008) assertion that experience is a useful factor in determining the effectiveness of marketing events among marketers.

Coefficient for educational level (X5) was positive and significant at 1%. This implies direct relationship between educational level of the respondents and their profits making capacities. Thus, a unit increase in educational level led to an increase in profit margins of neem seeds by N2.14. This agrees with (Umar, *et al.*, 2016) that education is a crucial factor to the success of any business entity.

The major occupations (X7) of respondents had positive coefficient but not significant. The results signify that a unit increase in the occupation of neem seed marketers increased profits by N9, 808.02. Though the profit magnitude was not significant, it was sizeable to deduce that additional occupation could have provided additional funding for neem seed business than relying mainly on farming with limited access to market information and credit facilities.

**Table 2:** Multiple Regression Results for Socioeconomic Factors Affecting of Neem Seed Profits

Variable	Linear#			Semi-log			Double Log			Exponential		
Variable	Coefficient	t – Value	P – Value	Coefficient	t – Value	P – Value	Coefficient	t – Value	P – Value	Coefficient	t - Value	P – Value
Purchase cost (X1)	-4792.921	-2.47	0.025**	-225969.3	-2.59	0.020**	-.8045854	-3.00	0.008***	-.0179197	-2.60	0.019**
Operating Cost (X2)	-8508.365	-2.01	0.062**	-81390.64	-1.95	0.069*	-.2842406	-2.21	0.042**	-.0315568	-2.09	0.053*
Labor cost (X3)	-3636.549	-1.74	0.102	-1830.856	-0.63	0.539	-.0046751	-0.52	0.610	-.0109425	-1.47	0.162
Mark. Exp. (X4)	8.755987	2.99	0.009***	207733.7	4.16	0.001***	.7774323	5.05	0.000***	.0000355	3.40	0.004***
Educational Level (X5)	2.142971	5.07	0.000***	93698.62	3.16	0.006***	.26084	2.86	0.011**	.0000178	3.96	0.001***
Cost of fixed inputs (X6)	-.0475115	-0.10	0.920	-27883.67	-1.35	0.196	-.1041679	-1.64	0.121	-5.35e-07	-0.32	0.750
Occupation (X7)	9808.016	0.58	0.567	57234.13	1.55	0.141	.1868488	1.64	0.120	.0262725	0.44	0.666
Gender (X8)	.1797016	0.95	0.356	30369.43	1.79	0.092*	.0892691	1.71	0.106	4.50e-07	0.67	0.513
Constant	241429	2.55	0.021***	-1740385	-2.85	0.012***	5.910101	3.14	0.006**	12.46908	36.99	0.000***
R <sup>2</sup>	0.8370			0.7483			0.7827			0.8120		
F – Value	10.27			5.95			7.20			8.64		

Source: Data Analysis from Field Survey, 2014.

\*\*\* = Significant at 1% level \*\* = Significant at 5% level \* = Significant at 10% level # = Lead equation.

**GM and profitability analysis of neem seed marketing**

The result in Table 3 depicts the profitability analysis for neem seed marketing in the three-plantation areas using Gross Margin (GM) model. Results indicate that 673.13 tons of the product were marketed between 2009 and 2013

generating N54,97,698.59. Total GM realized by neem seed marketers was N19,121, 050.95. Thus, GM per ton stood at N28,406.18. GM value per ton per marketer was N1,136.25. Total net profit generated was N15,972, 036.57. Thus, NP/ton was N23,728.01 while NP/ton/marketer stood at N949.12 (Table 3).

**Table 3:** GM and Profitability Analysis for Neem Seed Marketing at APA, NPA and DPA

Variables (Items/Activities)	Value (N)/tone
	Neem Seeds
(A) Depreciated Fixed Cost	
i. Scales	2, 666.82
ii. Head pans	1, 157.31
iii. Measures/Modus	310.62
Total Fixed Cost	4, 134.75
(B) Variable Cost	
i. Labor	4, 874.27
ii. Operating Cost	6, 432.99
iii. Purchasing Cost	41, 694.27
Total Variable Cost	53, 001.53
(C) Total Cost	57, 136.28
(D) Total Revenue (TR)	81, 407.30
(E) Gross Margin (D – B)	28, 406.18
GM/tone/Marketer	1, 136.25
(F) Net Profit (D – C)	23, 728.01
NP/tone/Marketer	949.12
(G) Total Number of respondents	25
(H) Total Quantity Marketed	673.13 tones

Source: Computed from data collected from the field, 2014

**DISCUSSION**

**Socioeconomic Characteristics of Respondents**

**Age distribution of respondents**

Results have shown that the sampled marketing respondents were mainly youths whose mean age was 36.88 years. As youth, they had high tendencies for risk bearing and adoption of change programs with large scale profit potentials as widely reported in the early work of Giroh, Umar and Yakubu (2010).

**Gender**

The male gender dominated the marketing scenario of neem seed produce. It constituted 72% of the total respondents engaged in neem seed marketing. The balance of 28% represented female participation. Clearly, this contravenes the principle of gender equality severally reiterated in goal 5 of the Sustainable Development Goals (SDGs) (UNDP, 2015).

**Marital Status**

The married sub variable constituted 74% of the total marketing respondents. Singles, widows, divorcees and separated individuals formed the balance of 26%. In other words, neem seed marketing engaged persons with many and varied marital statuses. However, the extent was greater among married respondents compared to other sub-variables in the same category. Again, this contradicts Goal 8 of the SDGs which stipulates sustained and inclusive economic growth among all individuals including women and youth (UNDP, 2015). The high participation of married respondents was explained by the need for additional incomes for livelihood improvement (UNDP, 2008).

**Educational background**

The majority of the sampled marketers (56%) had access to None Formal Education (NFE). The balance of 44% constituted the lump sum share for the basic primary and secondary education among the sampled marketers. This could possibly be the reason for insignificant profits. This confirms Eboh's (2016) assertion that education was crucial for higher performance in any business activity. It



could also be the reason why quality education tops 17 goals of the SDGs (UNDP, 2015).

### Major occupation of the respondents

Majority of neem seed marketers were peasant farmers whose operations were adversely affected by poverty and illiteracy (UNDP, 2015). However, to a certain extent, neem seed marketing opened up additional sources of income to farmers and civil servants (UNDP, 2015).

### Marketing experience

The low profitability of neem seed business was partly attributed to low marketing experience of the respondents. Without experience, positive changes that could culminate into higher productivity would be difficult to come by as observed in the early work of Woods (2008).

### Gross Margin (GM) and profitability of neem seed marketing

The low net profit/ton/marketer of ₦ 949.12 realized from 673.13 tons of neem seed marketed within 5 years was a clear proof of the insignificant profit that could be generated from the business. Yet, it has greater comparative advantage over other local species (Neem Foundation, 2012). If every part of the tree has an industrial application, if it is truly the UN's tree of the 21<sup>st</sup> century (World Neem Conference, 2012) and if it has solution to all global problems (Neem Foundation, 2012), the question to be asked is this: why was the marketing of its seeds not economically profitable in Yobe State?

From the findings of this work and available literature, it is evident that neem has not been recognized as an economic tree in Yobe State. In spite of YBSAP (2015), recommendations, its utilization was exclusively restricted to physical functions including afforestation and reforestation projects, sand dune fixation and stabilization programs, greening urban and rural settlements as well as flood, erosion and desertification control programs. The economic aspect of it remained unexploited. The low profitability of neem seed marketing could be attributed to a number of reasons. One; more than 90% of the produce was purchased indirectly from the local markets where stocks were not sorted, graded and properly packaged to meet both local and international market standards. Such products attracted insignificant prices as earlier established by Adegeye and Dittoh (2015) as well as Umar *et al.* (2016). Two; neem and neem products lacked established market and association that could regulate value addition, quality control and pricing policies compatible with season and production cost as well as demand and commodity grade.

In other words, neem could make giant strides in profitability and thus revenue generation if enabling

environment for its production and marketing were created.

### Socioeconomic Factors influencing the Profitability of Neem Seed Marketing

The regression analysis of the effects of socioeconomic factors on the profitability of neem seed marketing has shown that all cost elements incurred in the marketing of the product had significant negative impact on the profitability of neem seeds.

For instance, if a naira increase in purchase and operating costs could reduce profits by ₦4, 7292.92 and ₦8, 508.36 per ton respectively, then how would one expect significant profits for a product marketed in an area devoid of markets and its relevant agencies? Though, there have been numerical increases in the impact of the social factors (marketing experience, educational level and occupations) on the profitability of the product, those increases were not statistically adequate for significant profit making. This confirms the findings of Umar *et al.* (2011) on costs and return of gum Arabic and some selected tree crops in Adamawa and Yobe states, Nigeria.

### CONCLUSION AND RECOMMENDATIONS

The profitability of neem seed marketing in Yobe State has been critically assessed from social and economic perspectives. All cost variables had considerable negative impact that reduced profits significantly. Social variables on the other hand have shown numerical increases in the profit portfolio but not significant enough to influence concrete decisions.

The economic and statistical tools employed in assessing the profitability of marketing the product almost had a convergent outcome that neem seed marketing in Yobe State was not significantly profitable. For Neem seed marketing to make giant economic strides, this work recommends awareness creation about its economic potentials as well as development of supportive production and marketing mechanisms in the State.

### REFERENCES

- Adegeye AJ, Dittoh JS (2015). Essentials of Agricultural Economics. Impact Publishers(Nig.).Ltd, Ibadan, Nigeria.
- Buba AA (2015) Tools for Educational Measurement and Probability. Boga Press, Ibadan, Nigeria. pp. 45-49.
- Encyclopaedia Britannica (2016). Yobe State. Retrieved January 07, 2017, from: <http://www.britannica.com/es/articles-9077978/yobe>.
- Eboh E (2016). Economic Competitiveness across Nigerian states: The Challenges of Infrastructure and Utilities. BECANS Working Paper 2. African Institute for Applied Economics. pp 30.

- Giroh DY, Umar HY, Yakubu W (2010). Structure, Conduct and Performance of Farm gate Marketing of Natural Rubber in Edo and Delta states, Nigeria. *International Journal for Sustainable Development* 1(2): 22 – 27.
- Giroh DY, Moses J, Umar HY (2007). Analysis of Farmers' Awareness on Gum Arabic Production in Selected Local Government of Jigawa State, Nigeria. *The Niger. J. Rural Extension and Devel.* 2(1): 21 – 24.
- Ibrahim L (2015). Nigeria: How Katsina is Boosting Neem Production? Retrieved June 25, 2015 from: <http://allafrica.com/stories/200902030136.html>.
- Ibrahim L (2016). Nigeria: Neem - Northern Economic Tree. Retrieved July 5, 2015, from: <http://allafrica.com/stories/201004070608.html>.
- Iloje M (2012). Regional Geography for West Africa; Impact Publishers, NIG.Ltd., Ibadan, Nigeria. Conference of Agricultural Society of Nigeria, Badeggi, Niger State
- Maiangwa MG(2007). Factors Associated with the Adoption of Animal Manure in the North–West zone of Nigeria. *Niger. J. Trop. Agric.* 9:91-110.
- Mbah SO ( 2011). Effects of Socio – Economic Characteristics on Farmers' Outputs in Ishiagu, Ivo Local Government Area of Ebonyi State, Nigeria. *The 45th Proceedings of Agricultural Society of Nigeria Annual Conference held between 24th and 28th October, 2011 Usmanu Danfodiya University, Sokoto, Nigeria.* Pp. 29 – 32.
- Mesike CS, Agbonkpolor BN, Umar HY, Giroh DY (2007). Economic Analysis of Rubber Export Supply in Nigeria..*Journal of Agricultural Research and Policies* 2(2): 66 – 69
- Muhammad YK (2016). Comparative Analysis of *Azadirachta indica* (Neem) and *Acacia senegal* (Gum Arabic) for Desertification Control and Revenue Generation in Yobe State, Nigeria. An unpublished PhD thesis submitted to the Department of Forestry and Wildlife Management, Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria
- Ndanitsa MA, Omotesho OA, Adewumi MO, Umar IS, Olaleye RS, Mohammed US, Sadiq MS, Usman RK, Abubakar SB (2010). *Cost – Return Analysis of Vegetable Production (Tomato Enterprise) in Mokwa Local*
- Neem Foundation (2012). All About Neem. Accessed online April 13, 2014, at <http://www.productosdeneem.com/informacion2.htm>
- UNDP (2008). Millennium Development Goals. Retrieved May 15, 2009, from: <http://www.undp/mdg/goal1.html>.
- UNDP (2015). Sustainable Development Goals. Retrieved January 27/01/2021 @ <https://www.un.org/development/desa/disabilities/envison2030.html> at 1:00 pm
- Umar HY, Otitolaiye JO, Grace AA (2016) Factors Influencing Profitability among Gum Arabic Marketers in Jalingo, Taraba State, Nigeria. *Global Advanced Research Journal of Social Science.*3, 001 – 007, Available online @ <http://garj.org/garjss/index.htm>.
- Umar HY, Audu SI, Waizah Y (2011). Economic Analysis of Gum Arabic Production in Jigawa State, Nigeria. *New York Science Journal.*4 (4), 45 – 49. Available at <http://www.sciencepub.net/newyork>.
- Wilkinson K, Elevitch C (2012). Multipurpose Trees. Retrieved December 31, 2012, from: *ejournal of Agroforestry @ www.Overstory Online* No. 16
- Woods HE (2008). Event Marketing: Measuring Experience. Seventh International Trends Congress. January 17th – 19th Venice, Italy
- World Neem Conference (2012). Neem for Sustainable Development and Environmental Conservation. Retrieved May 2, 2013, from: <http://www.neemfoundation.org/neem-foundation/world-neem-conference-2012/74-neem-for-sustainable-development-and-environmental-conservation.html>.
- Yobe State Afforestation Project (2015). *Outlook Study of Desirable Tree Species for Sand Dune Fixation and Stabilization in the Sahel.* GPP publication No.17. Government Printing Press Damaturu, Yobe State, Nigeria.
- Yemeni Y (1967). *Statistics: An Introductory Analysis.* (Rev.ed.) Harper and Row.
- Yobe State Government (2014). Brief Description of Climate. Retrieved December, 11, 2006, from: <http://www.yobestategov.com/climate.htm>
- Yobe State Social and Economic Development Submit (YBSSDES) (2017). *The Yobe Environment: Problems and Proposed Intervention.* Spectrum Books Limited Ibadan, Nigeria