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Determinants of Productivity in Groundnut Production in Mubi-North, Adamawa State, Nigeria

[1]Haddabi, A. S., [2]Usman, J. and [3]Gabdo, B. H.

Department of Agricultural Economics and Extension, Faculty of Agriculture, Adamawa State University, Mubi. Adamawa State, Nigeria
*Email: jalaluddeen4u@gmail.com

ABSTRACT

This study analyzed the determinants of productivity in groundnut production in Mubi-North, Adamawa State, Nigeria. A survey method of primary data collection was used via questionnaires and personal interviews. The data was collected from groundnut farmers in the study area. The study used multiple regression model and Cost Concept [Commission on Agricultural Cost and Price (CACP)] for data analysis. The result of the regression analysis reveals that 97.0% variation in the productivity of groundnut was explained by the various explanatory variables included in the model while 3.0% variation was due to other determinants. Four variables Fertilizer, family labour, farm size and pesticides were positive and statistically significant at 1% and 5% respectively. This implies that one unit increase in these variables will increase the productivity of groundnut in Mubi-North Local Government Area. The result of the cost concept shows that the average crop yield for groundnut production was found to be 367.20 Kg/ha for main product (Groundnut Pods) while 99.00 Kg/ha for by-product. The gross income and margin were N625, 500.94/ha and N501, 240.94/ha respectively while the cost of production at cost C_3 was 498.60 (N/kg). Hired labour was the highest cost incurred with N30,000.00 per hectare; while depreciation on farm tools and machinery was the least cost with N2,000.89 representing 16.39% and 1.09% respectively of the total cost. Hence groundnut production was found to be a profitable proposition with very low productivity in the study area. The study therefore, recommend that farmers should be educated and train on how to make efficient use of agricultural resources (input) to enhance their productivity and profit.

Key Words: Cost Concept, Groundnut, Mubi-North, Nigeria, Productivity

INTRODUCTION

Background of the Study

In any economy, productivity and growth in productivity are very important determinants of how per capita income grows. Productivity is reinforced by efficiency. One of the major economic problems in Nigeria is the provision of enough food to its citizens; even when more than seventy percent are in agricultural production. This could be as a result of population growth, poverty, and low productivity as result of traditional methods of agricultural production. This method of production, is widely adapted in the local environment and usually provides food for the family only. By far, the most difficult problem is how to provide a good livelihood for the rural people through increased productivity (Kuye *et al.*, 2004). United Nations Development Program (UNDP), (1999) revealed that the development of agriculture in Nigeria is not meeting the demand of its teeming-population, despite the country's endowment with abundant and diversified range of natural, human and capital resources and oil revenue. The transformation of agriculture from low productive traditional inputs to high productive modern inputs is a major problem facing agricultural development in Sub-Saharan African countries including Nigeria, (Ibrahim *et al.,* 2006). Groundnut (*Arachis hypogaea* L.) is the 6th most important oil seed crop in the world. It contains 48-50% oil, 26-28% protein and 11-27 % carbohydrate, minerals and vitamin (Mukhtar, 2009). It is cultivated in the semi-arid and subtropical regions of about 114 countries of the world on nearly 31.2million hectares, with a total output of 60.5 million metric tons (mmt) at an average productivity of 1.4 metric tons per hauling (International Crop Research Institute for the Semi-Arid Tropics, 2014). Malaysia, Israel, China, Nicaragua, Nigeria, USA and Saudi Arabia are some of the leading groundnut producing countries in the world. Asia, with 25.6mmt (58.28%) and Africa, with 13.9mmt (31.62%) grasps maximum global groundnut output. Developing countries in Asia, Africa and South America account for 99.85% of the total quantity of groundnut produced in the world in 2014.

Groundnut is an important crop in many developing countries where it serves as a source of protein, vitamins and cooking oil. Groundnut is the 13th most significant food crop of the world. The haulms being a good source of feed supplement for livestock, also increases farmers income particularly during the dry season when fresh green grasses are in short supply and the silage is in high demand. The meager output of groundnut in African countries may be attributed to production challenges such as variability in rainfall, drought, poor soil fertility, biotic and abiotic constraints, input supply constraints, traditional smallholder farming with little or no mechanization, prevalence of pests and diseases and partial extension services. Groundnut is a major source of edible oil as well as employment generation for smallholder farmers in Northern Nigeria where 48% of the total output in West Africa was

produced in 2015. It occupies about 34% of the total land area under cultivation. Since 1996; production has been increasing at an estimated rate of 2.3 mmt to about 3.4 mmt in 2015, as a result of both area expansion (5.52%) and increase in productivity(Ndjeunga *et al.,* 2005). Nigeria is still among the top three groundnut producing countries in the world. It ranks third next to China 183.08 lakh tonnes and India 102.44 lakh tonnes. It contributed nearly 9 percent of world groundnut production in 2021 (ANGRAU, 2022). The average productivity across the states was 709.44 kg/ha.

In the Northern part of Nigeria, apart from being consumed whole, groundnuts are processed into or included as an ingredient in a wide range of other products which includes groundnut paste which is fried to obtain groundnut cake (*kuli kuli)*, salted groundnut (*gyada mai gishiri)*, a gruel or porridge made with millet and groundnut (*ko-aaaaunun gyada)*, groundnut candy *(kunun gyada)* and groundnut soup (*miyar gyada).*The shells are used for fuel by some local oil factories or they are sometimes spread on the field as a soil amendment. They could also be used as bulk in livestock rations or in making chipboard for use in joinery (Mukhtar, 2009).

Problem Statement

Groundnut is either cultivated sole or as mixed crop with maize, sorghum, millet or cassava etc. Fifty five percent of groundnut is produced as mixed crop in Nigeria, (Anonymous, 2004). In Nigeria, the leading producing states include Niger, Kano, Jigawa, Zamfara, Kebbi, Sokoto, Katsina, Kaduna, Adamawa, Yobe, Borno, Taraba, Plateau, Nasarawa, Bauchi, and Gombe States (NAERL, 2011). The Nigeria's annual production of groundnut yield (in-shells) and areas under cultivation in 1990, 1995 and 1998 were 0.992, 1.6 and 2.6 million tones and 0.7, 1.8 and 2.3 million hectares respectively. The yields per hectare in developing countries including Nigeria are very low ranging from 0.3 to 0.9 tons per hectare compared to very high yields of 2.8 tons per hectare in the United States of America (FAOSTAT, 2013). Groundnut pod yields from farmer`s field are low, averaging about 800 kg ha-1, less than one-third the potential yield of 3000 kg/ha. This large gap between actual and potential yields is due to several factors, including non-availability of seeds of improved varieties for a particular ecology, poor soil fertility, inappropriate crop management practices, pests and diseases (Ahmed *et al.,* 2010).

Groundnut production, marketing and trade served as major sources of employment, income and foreign exchange before and shortly after Nigeria became independent. The groundnut sector provided the basis for the agro-industrial development and contributed significantly to the commercialization, monetization and integration of the natural rural sector. Despite the enormous importance of this cash crop, availability of ample land and human resources in Nigeria, the yields per hectare are declining in the study area. Demand for groundnut is increasing as a result of rapid population growth in Mubi-north local government while the activities of Boko haram and kidnappers posed serious problem to famer's access to production resources. These lead to decline in productivity of groundnut in the study area. Therefore, there is need to reverse the foregoing scenario through improvement in productivity and efficiency of resource use among groundnut farmers. It is on this back drop that this research title "Determinants of Productivity in Groundnut Production in Mubi-North, Adamawa State, Nigeria" was undertaken to determined and improved on the factors reducing productivity of groundnut in the study area.

Research Questions

The study is designed to address the following research questions based on the research problem described above:

1) What are the determinant of productivity in groundnut production in the study area?

2) Is groundnut production profitable in the study area?

Objective of the Study

The broad objective of the study is to analyze the productivity of Groundnut production in the study area. The specific objectives include, to:

- analyse the factors determining productivity in groundnut production;

- determine the cost and return of groundnut production in the study area.

EMPIRICAL REVIEW

Origin and Distribution of Groundnut

The cultivated groundnut (Arachis hypogaea L.) is an ancient crop of the New World, which originated in South America (southern Bolivia/north west Argentina region) where it was cultivated as early as 1000 B.C. Dissemination of the crop to Africa, Asia, Europe and the Pacific Islands occurred presumably in the sixteenth and seventeenth centuries with the discovery voyages of the Spanish, Portuguese, British and Dutch (Krapovickas, 1994). Today, it is grown in areas between 40 degrees South and 40 degrees North of the equator, where average rainfall is 500 to 1200 mm and mean daily temperatures are higher than 20°C. The groundnut crop is cultivated in 108 countries on about 22.2 million hectares, of which 13.69 million ha are in Asia (India 8 million ha; China 3.84 million ha), 7.39 million ha in Sub-Saharan Africa, and 0.7 million ha in Central and South America. Average pod yields on a global scale increased slightly from 1.08 Mt ha-1 in the 1980's to 1.15 Mt ha-1 in the 1990's, and the global production is 29 million tons of pods. India, China, and the United States are the leading producers and grow about 70% of the world's groundnuts (FAO, 2011).

Productivity and Production Trend of Groundnut

Groundnut is currently grown on 23 million ha worldwide. During the past two decades, groundnut area has expanded in Africa and Asia, increased marginally in developed countries, and declined sharply in Latin America and the Caribbean. Overall, global groundnut area increased by 1.3 percent per annum between 1979 and 1996. In Africa, area declined from the mid-1970s to the mid-1980s, but this trend was reversed by an expansion in Sudan, Egypt, Nigeria, and several countries in Western Africa. In Asia the expansion was led by China, where groundnut area increased by almost 60 percent between 1979 and 1996. In contrast, groundnut area fell drastically in Latin America. In Argentina and Brazil, the main producers, area declined by over 50 percent during the 1980s, as farmers shifted from groundnut to soybean due to higher relative profitability from soybean cultivation—lower production costs, generally lower pest and disease pressure, and more stable markets. In Argentina, groundnut area declined from 289 000 ha to 166 000 ha during the 1980s. Groundnut area increased slightly in the developed countries. This was due to increases in the USA, which in turn resulted from price support and quota policies that assured domestic producers of high prices and protected the domestic groundnut industry. Groundnut area increased during the 1970s and early 1980s but declined around the mid-1980s due to reductions in quota allocations and crop rotation. Groundnut yields increased worldwide by 1.9 percent per annum between 1979 and 1996. Productivity improved in all regions and especially in Asia and Latin America and the Caribbean—yields in China and Argentina grew by over 3 percent per annum. Yield improvement in Africa was much lower, but even the 1.1 percent annual growth rate during 1979-96 represented a major improvement over the negative levels of the 1970s. Within this overall picture of increased productivity, trends in semi-subsistence and high-input systems are sharply different. In the semi-subsistence systems found in much of Africa and Asia, farmers generally grow low-yielding, late-maturing varieties. The crop is cultivated on marginal land with no irrigation and minimal inputs, and average yields have remained essentially unchanged (0.8-1.0 t ha-1) for several decades. In contrast, yields of up to 4 t ha-1 have been obtained in high-input systems in parts of Senegal, Sudan, Zimbabwe, and Egypt where the crop is produced by commercial enterprises under irrigation. Yields in India vary widely depending on the production system. Rain fed groundnut, which occupies about 80 percent of groundnut area, yields roughly 0.9 t ha-1, while the irrigated crop yields about 1.6 tons ha-1. Yields in high-input production systems are high due to widespread adoption of improved varieties and management practices such as organic and inorganic fertilizer, crop rotation; plastic film mulch, pest and disease control (Freeman, 1999).

The recent production figures shows that China is the largest producer of groundnut in 2022/2023 cropping season with a total production of 18.3 million MT, with 4% increase from previously five-years average production accompanies with a seriously high domestic demand. This make China by far the largest importer of groundnut in the world to a tone of $ 1,028,039,000 worth of groundnut in 2021. India is the second largest producer with 6.3 million MT. Nigeria produces 4.5 million MT in 2022/23 recording an increase of 6.4% from previous production making it third and first in the world and Africa respectively. The warm, humid climate and well-drained soil of northern Nigeria are particularly well suited to groundnut production. The yield of groundnut per hectare in Nigeria is about 1.3 mt which is lower than 1.5 – 2 mt in other part of Africa (Pnut King, 2023).

Cost and Returns of Groundnut Production

According to Wikipedia (2018), cost is a metric that is totaling up as a result of a process or as a differential for the result of a decision. There are costs of variable inputs or factors of production such as labour, fertilizer, tools etc. while fixed costs refer to the costs of physical assets, such as tractors, buildings, rent, interest on capital and breeding stock (Olukosi, 2007). Eyo (2004), observed that in the Nigerian agricultural sector, the small operators face pure competition both at production and marketing stages. Because of this structure, output is sold at industry-determined price and profits are maximized at the level of output where marginal cost equals marginal revenue. However, the size of profit depends on how large the per unit output price is compared to the unit cost of production. If the per unit output prices is large, the operators earn pure profit in the short-run. Invariably, if the outcome of the pattern of structure and conduct that is the performance as interpreted by the profit or marketing margins among other things.

According to Taru *et al.* (2008) from the costs and return analysis of groundnut production in Michika local government area of Adamawa, it is found that, the total cost of production by farm size per hectare in the area was N133, 812.68; the gross margin per hectare was N221,348.68, while the average net return per hectare was N40, 097.63. The findings also shows that farmers in the area earned an average net revenue ranging between N17, 217.00 and N445, 011.35 depending on farm size which indicated that groundnut production is a profitable venture in the study area.

Bathon *et.al,* (2015). Found that the analysis of cost and returns revealed a total variable cost of N 18,931.68/ha in groundnut/sorghum enterprise, while that of sole groundnut enterprise was N 20,244.40/ha. On the returns from production, the total revenue from groundnut/sorghum production was N66,273.950/ha while that of sole groundnut enterprise was N77,319.40/ha. The profit from groundnut/sorghum production was N47,324.27/ha, while that of sole groundnut production was N57,075.00/ha indicating the later to be more profitable than the former. Sole groundnut production had higher profitability index, higher rate of return on investment and higher rate of return on variable cost than groundnut/sorghum production

Similarly, Jubril *et al.* (2012) also reported that Groundnut processors in Kwara State earned gross income of N4, 643.28 which indicated that Groundnut production is a profitable venture. Ibrahim *et al.* (2010) in their study on Evaluation of Groundnut Processing by Women in rural area of North Central Nigeria reported a net farm income of N10,586.60 per production cycle of four days which indicated that groundnut processing is profitable. Profitability of any business can be deduced from the relationship between the cost incurred in running the farm business and the returns accruing to it. The result of the farm budgeting analysis revealed that the variable cost constituted 49.84% of the total cost of production of groundnut enterprise. Fixed capital accounted for 50.16%. The result showed that a typical farmer realized a gross margin of N206, 555.60. The net farm income was N145, 624.30 per annum. The result showed that groundnut producers realized profits; however, profit can be enhanced if they improve on the management practices. This can be attributed to low cost of production under traditional system. Lawal, and Auwal, (2018) reported that groundnut production is profitable in Michika Local Government Area of Adamawa State with an average gross margin of N97,477.80, total revenue of N167,160, and net farm income of N94,540.64 per hectare.

METHODOLOGY

The Study Area

This research was carried out in Mubi-north Local Government Area (LGA) of Adamawa state, It lies on latitude 10º 32 N to 10º 11 N and longitude 13°12 E to 13° 35'E, with a total land size of 926,553 Km^2. It has a total population of 151,515 with 78,059 male and 73,456 as female (NPC, 2006). Mubi-north is one of the leading (LGA) areas in groundnut production and marketing in the state.

Figure 1: Map of Adamawa State, showing the study area, (Mubi North LGA).

Sampling Procedure

Purposive and simple random sampling techniques were used for the study. Six wards were purposively selected from eleven wards of the local government area; they include; Mayo-Bani, Kolere, Digil, Muchalla, Bahulli and Sabon-layi. Thereafter, one hundred and thirty five respondents was randomly selected, five percent of the total number of groundnut farmers in each of the wards, as presented in table 1 below.

Table 1: Sampling Frame and Sample Size

State	Local Government	Wards	Population of Groundnut Farmers	Sample of the Population (5%)
Adamawa	Mubi-North	Mayo-Bani	300	15
		Kolere	220	11
		Digil	280	14
		Muchallah	300	15
		Bahulli	900	45
		Sabon-layi	700	35
Total		06	2,420	135

Method of Data Collection and Period

Primary data was used for this study. It was collected through the use of well-structured questionnaires and personal interview. The data is for 2022/2023 (from March to August 2024) cropping season in the study area.

Method of Data Analysis.

The primary data collected was subjected to analysis via multiple regression and cost concept developed by the Commission on Agricultural Cost and Price (CACP).

Multiple Regression

Regression model is a casual relationship between two or more independent variables and a dependent variable (Gowda, 2002). This study, adopted linear regression model. The Linear Production Function (LPF) assumes a linear relationship between the inputs and outputs. It takes the following;

$$Y = A_0 + A_1X_1 + A_2X_2 + A_3X_3 + \ldots + A_8X_8 + U \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(1)$$

Where: Y = Total output of groundnut (Kg);

X_1 = Seeds (kg);

X_2 = Fertilizer (kg);

X_3 = Family labour (man days);

X_4 = Hired labour (man days);

X_5 = Pesticide (litres);

X_6 = Farm size (Hectares);

X_7 = Education (years)

X_8 = Extension contacts (1 or 0)

A_1-A_8 = Regression coefficients of the inputs;

A_0 = Constant

U = Error term.

Commission on Agricultural Cost and Price (CACP)

The cost concept developed by the Commission on Agricultural Cost and Price (CACP) was adopted for the estimation of cost and returns in groundnut production in the study area. The different costs included as:

Cost A_1 = All actual expenses in cash and kind incurred in production by owner.

These include: cost of seed, cost incurred on manures and fertilizers, plant protection chemicals, land revenue, wages of hired human labour, hired labour charges of implements and machinery, charges for bullock labour, depreciation on fixed assets, excluding family labour.

Cost A_2 = Cost A_1 + rent paid for leased-in land.

Cost A_2+ FL = Cost A_2 + imputed value of family labour. Cost B_1 = Cost A_1 + interest on value of owned fixed capital assets (excluding land).

Cost B_2 = Cost B_1 + rental value of owned land (net of land revenue) and rent paid for leased-in land.

Cost C_1 = Cost B_1 + imputed value of family labour.

Cost C_2 = Cost B_2 + imputed value of family labour.

Cost C_3 = Cost C_2 + 10 per cent of cost C_2 on account of managerial functions performed by the farmers. (Narayanamoorthy, 2013)

RESULTS AND DISCUSSION

The result of the regression analysis presented in Table 2 reveals the factors determining productivity in groundnut production in Mubi-north local government area. The F-ratio was significant at 1% probability level indicating that there is a significant linear relationship between the independent variables included in the model and the productivity of groundnut. The R- squared of 0.97 shows that 97.0% variation in the productivity of groundnut are explained by the various explanatory variables included in the model while 3.0% variation is due to other determinants. Ayodele, (2019) also reported very high relationship (80.20%) between the output of groundnut and variable inputs in his study on Profitability Analysis of Groundnut Production in Chikun Local Government Area, of Kaduna State, Nigeria.

The Table further revealed that four variables (Fertilizer, family labour, farm size and pesticides were positive and statistically significant at 1% and 5% respectively. Therefore, one unit increase in fertilizer will increase the productivity of groundnut by 714,010%. The finding concur Faki *et, al*. (2019) who pointed out that, supply of organic manure, crop rotation, crop residues management and supply of household waste had significant and positive effects on groundnut yield level. In their study on Determinant of groundnut (Arachis hypogaea L.) yield improvement in the farmers cropping systems in Benin. Similarly, family labour, farm size and pesticides with a positive coefficient of 5,584.842, 3,132.908 and 6.280 respectively will increase the productivity of groundnut by 558,484.2%, 313,290.8% and 628.0% respectively. While the other four variables (seed, hired labour, education and extension contacts) were statistically not significant. This result is in line with the findings of Onuwa, *et al.* (2020) who reported Farm size, labour, Agrochemical and Fertilizer as positive determinants of groundnut (Arachis hypogea) production in Dambatta local government area of Kano state, Nigeria.

Table 2: Determinant of Productivity in Groundnut Production

Variable Estimate	Coefficient	Standard Error	t-value	P> [t]	95% Confidence Interval	
Seed (X_1)	23.30542	86.82597	0.27	0.789	196.5185	149.9077
Fertilizer (X_2)	7140.018	1886.138	3.79	0.000	3377.276	10902.76
Family Labour (X_3)	5584.842	1085.892	5.14	0.000	3418.548	7751.136
Hired Labour (X_4)	-5508.87	5108.34	-1.08	0.285	-15699.73	4681.988
Pesticide (X_5)	3132.908	1510.441	2.07	0.642	119.6605	6146.155
Farm Size (X_6)	6.279825	7856762	7.99	0.000	4.718942	7.840708
Education (X_7)	-2674.763	2608.704	-1.03	0.309	-7878.985	2529.458
Extension Contacts (X_8)	3089.63	2054.941	1.50	0.137	-1009.864	7189.124
Constant	363.5375	5884.013	0.06	0.951	-11374.75	12101.82

Number of Observation	135
F(9, 69)	227.84
Prob>F	0.0000
R-Squared	0.9674
Adj R-Squared	0.9632
Root MSE	4172.6

Source: Field survey data (2024)

Cost of Cultivation of Groundnut (N/ha)

The right use of inputs is necessary to maximize the level of output in any agricultural production. A study of the costs of all inputs used in groundnut production will determined the extent of benefit derived from the farm returns. Table 3 reveals that groundnut production is a profitable proposition in the study area. The component-wise various cost incurred in the production of groundnut is given in the Table. A perusal of the table reveals that the cost incurred for hired labour was the highest amounting to N 30,000.00 per hectare; while depreciation on farm tools and machinery was the least cost with N2,000.89 representing 16.39% and 1.09% respectively of the total cost. The result is inline with the findings by Taru *et al.* (2010) who reported labour as the highest cost in groundnut production in Michika Local Government Area of Adamawa State, Nigeria. Farmers were found to lease in land for cultivation of groundnut, paying rent of N25,000.03 per hectare. This courses significant difference between cost A_1 and cost A_2 with N106,260.89 and N131,260.92 respectively per hectare. The total variable costs was found to be 67.87% of the total cost while only 23.04 % when to fixed cost. The costs of cultivation was found to be N183,085.16/ha.

Table 3: Cost of Cultivation of Groundnut

Particulars	Value	Percentage of Total Cost
Variable Cost		
Family Labour	20,000.00	10.92
Hired Labour	30,000.00	16.39
Farm Yard Manure	5,500.00	3.00
Seed	25,000.00	13.65
Fertilizer	20,000.00	10.92
Plant Protection Chemicals	15,500.75	8.47
Interest on working Capital	8,259.25	4.51
Sub Total	**124,260.00**	**67.87**
Fixed Cost		-
Depreciation on farm tools and machinery	2000.89	1.09
Rent Paid For Leased land	25,000.03	13.65
Rent Value of own Land	10,000.00	5.46
Interest on fixed Capital Excluding Land	5,180.13	2.83
Sub Total	**42,181.05**	**23.04**
10% of Cost C_2 as Managerial cost	16,644.11	9.09
Total Cost	**183,085.16**	**100.00**
Cost of Cultivation		
Cost A_1	106,260.89	58.04
Cost A_2	131,260.92	71.69

Cost A_2 + FL	151,260.92	82.62
Cost B_1	111,441.02	60.87
Cost B_2	146441.05	79.99
Cost C_1	131,441.02	71.79
Cost C_2	166,441.05	90.91
Cost C_3	**183,085.16**	**100.00**

Source: Field survey data (2024)

Cost and Return in Groundnut Production

The average crop yield for groundnut production was found to be 367.20 Kg/ha for main product (Pods) while 99.00 Kg/ha for by-product as presented in Table 4. The gross income was N625, 500.94/ha and the gross margin was N501, 240.94/ha while the cost of production at cost C_3 was 498.60 (N/kg). The findings concur the report by Ayodele, (2019) who reported groundnut production as a profitable business with net and gross farm income of N81, 518.33/ha and N173, 952.45/ha respectively; in Chikun Local Government Area of Kaduna State, Nigeria. The net income (N/Kg) over cost A_1 was found to be N519,240.05, is the highest cost followed by cost B_1 N514,059.92 while cost C_3 N442,415.78 is the least cost. The input-output ratio analysis was worked out on the basis of cost A_1 to C_3. Cost A_1 has the highest ratio of 1: 5.89 followed by cost B_1 (1: 5.61) while the C_3 has the least ratio 1: 3.42.

Table 4: Cost and Return in Groundnut Production

Particulars	Value
Crop Yield	
Main Product (Pod, kg/ha)	367.20
By Product (kg/ha)	99.00
Market Price	
Main Product (N/kg)	1,568.63
By Product (N/kg)	500.00
Gross Income	625,500.94
Gross Margin	501,240.94
Net Income (N /ha) Over	
Cost A_1	519,240.05
Cost A_2	494,240.02
Cost A_2 + FL	474,240.02
Cost B_1	514,059.92
Cost B_2	479,059.89
Cost C_1	494,059.92
Cost C_2	459,059.89
Cost C_3	442,415.78
Input-output Ratio Over	
Cost A_1	1: 5.89
Cost A_2	1: 4.77
Cost A_2 + FL	1: 4.14

Cost B_1	1: 5.61	
Cost B_2	1: 4.27	
Cost C_1	1: 4.76	
Source: Field survey data Cost C_2	1: 3.76	(2024)
CONCLUSION **Cost C_3**	1: 3.42	**AND**
Cost of Production		
Cost of production at cost C_3 (N /kg)	498.60	
Gross Return/Cost C_3 (N)	3.42	

RECOMMENDATIONS

The productivity of groundnut was found to be very low 367.20 Kg/ha for main product (Groundnut Pods) while 99.00 Kg/ha for by-product. Four variables fertilizer, family labour, farm size and pesticides were positive and statistically significant at 1% and 5% respectively, which implies that one unit increase in these variables will increase the productivity of groundnut in Mubi-North Local Government Area. The gross income and margin were N625, 500.94/ha and N501, 240.94/ha respectively while the cost of production at cost C_3 was 498.60 (N/kg). Hired labour was the highest cost incurred with N30,000.00 per hectare; while depreciation on farm tools and machinery was the least cost with N2,000.89 representing 16.39% and 1.09% respectively of the total cost. Hence groundnut production was found to be a profitable proposition in the study area. The study therefore, recommend that farmers should be educated and train on how to make efficient use of agricultural resources (input) to enhance their productivity and profit.

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