



PROFITABILITY OF SOYA BEANS PRODUCTION IN MUBI NORTH LOCAL GOVERNMENT AREA OF ADAMAWA STATE, NIGERIA

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ABSTRACT: *The study was conducted to examine the profitability of soya bean production in Mubi North Local Government Area of Adamawa State, Nigeria. The specific objectives of the study were to analyze the costs and returns to soya bean production and identify the major constraints to soya bean production in the study area. A multi stage random sampling techniques was used to select 80 respondents in the study area who were noted for soya beans production. Primary data were collected from the respondents with the aid of structured questionnaire and were analyzed using descriptive statistics and gross margin analysis. The results showed that Soya bean production was found to be profitable as a gross margin of N109894.5/ha was achieved. Major constraints encountered by the farmers were variability in the amount of rainfall which causes spoilage and retard growth, lack of extension services, inadequate farm credit, shortage of inputs, access to land for cultivation and activities of cattle rearers. It was therefore recommended that inputs such as seeds, fertilizers and agrochemicals which were the major inputs that increase the output of soya bean production in the study area should be made available on time, in right amounts and at affordable prices to the farmer's stakeholders in agriculture. Proper orientation and knowledge should be given to people willing to go into the cultivation of soya beans on the appropriate time of planting. Extension services should also be rendered effectively, farmers should be encouraged to join existing associations and participate fully in their activities.*

INTRODUCTION

Soya bean is the richest source of plant protein known to man (Odusanya, 2002). It is also an important source of income. It can contribute to the enhanced sustainability of intensified cropping system by improving soil fertility through nitrogen fixation, permitting a longer duration of ground cover in the cropping sequence and providing useful crop residues for animal feed. Adekunle, *et al*, (2003) opined that world production statistics acclaimed Nigeria the second largest producer of soybean after Zimbabwe and also surprisingly considered Nigeria a protein deficient country (Okuneye, 2002). The inclusion of soybean in



the carbohydrate rich staple food in Nigeria will increase their protein content (Ashaye, Adegbulugbe and Sanni, 2005 and Ajobo and Akinyemi, 2007).

Nigeria with an estimated population of 182,201,962 people (Worldmeter, 2015) is Africa's most populous country and agriculture is the centre of activity of her people. Although, the economy now relies heavily on the petroleum sector (which generates three quarters of government revenues and more than 90% of foreign exchange earnings), agriculture continues to play an important role in the economy (Ugwu, 2009). The sector currently contributes 26% to the Gross Domestic Product (GDP), with crop production accounting for an estimated 85% of this total, livestock contributing 10% with the remainder made up by forestry and fisheries (Ugwu, 2009). One of the major food problems in Nigeria is the gross deficiency in protein intake, both in quantity and quality (Dashiehl, 1998). Although, protein in human diet is derived from both plant and animal sources, the declining consumption of animal protein due to its high prices requires alternative sources. Soya bean provides a cheaper and high protein rich alternative substitute to animal protein. It is an important crop in the world and has been the dominant oilseed since the 1960s (Smith and Huyser, 1987). It is a multipurpose crop and its importance ranges from its use in milk production, oil processing, livestock feeds, medical, industrial and human consumption and more recently, as a source of bio-energy (Adedoyin, et al., 1998 and Myaka *et al.*, 2005). Consumption of soybean has been found to prevent various diseases such as cancer, diabetes and menopausal problems (Ajobo and Akinyemi, 2007). Hence the study of its profitability and challenges facing the farmer in the study area.



METHODOLOGY

The study was conducted in Mubi north local government area of Adamawa state. Mubi North local government of Adamawa state lies on the west bank of the Yedseram River, a stream that flows into Lake Chad and is situated on the western flanks of the Mandara Mountain. It shares common boundaries with Borno State to the North Hong Local Government Area to the West, Maiha Local Government to the South and Cameroun Republic to the East.

Temperature is normally warm to hot with minimum temperature of 120c and maximum temperature of 370c (Adebayo, 2004). The ethnic groups are mainly Fali, Gude, Marghi and Fulani. The inhabitants are predominantly farmers and traders. which 20 Data for this research was collected from primary sources, using structured questionnaires. The questions were being structured to elicit answers on the objectives of study.

Based on the study, the population targeted was soya bean farmers in the study area (Mubi north, LGA) of Adamawa State. Mubi north comprises of four (4) districts (Mubi-Town, Bahuli, Mayo-Bani and Muchalla) out of which it is divided into eleven (11) political wards namely; Mijilu, Lokuwa, Mayo-Bani, Kolere, Digil, Yelwa, Vimtim, Muchalla, Bahulli, Sabon-layi and betso. The multi-stage random sampling techniques was used in selecting the respondents, out of the population, four wards were chosen from the local Government area that were noted for soyabean production from farmers were selected from each ward.



Analytical Techniques

Gross margin analysis

The Gross Margin analysis was used to achieve objective (ii) and is expressed as:

$$GM = GI - TVC \text{ ----- (2)}$$

Where:

GM = Gross Margin (₦)

GI = Gross Income (₦)

TVC = Total Variable Cost (₦)

RESULTS AND DISCUSSION

SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

The socio-economic characteristics of the farmer have the potential to facilitate or influence the efficiency of their production. The relevant socio-economic characteristics considered in this study include; respondent's age, gender, marital status, literacy level, family size, farm size, years of experience in soya beans production, land acquisition method, main occupation, accessibility to credit facilities and contact with extension agents.

Age of Respondents

Table below revealed that majority of the respondents are average age, with majority 37.5 percent and 35 percent of the respondents being within the age bracket of 31– 40 and 41- 50 years in the production of soya beans in the study area. Only 10 percent of soya beans farmers were more than 50 years of age. The high percentage of farmers within 31– 40 and 41 – 50 years might be due to the fact that, within the age bracket, people are still in their



active ages and are capable of undergoing different difficult task and are more financially capable to involved in soyabeans production.

Table 1: Respondents Age Distribution

Age range (years)	Frequency	Percentage
21 – 30	14	17.5
31 – 40	28	35
41 – 50	30	37.5
51 Above	8	10
TOTAL	80	100

Source: field Survey, 2016

Gender

Table 3 revealed that majority (56.25 percent) of the respondent are female while 43.75 percent are male. The crowding of the female in the soya beans production activities may be due to the fact that soya beans is a crop that is more associated with women both at its raw stage and its value chain stages. It involves less fatigue and stress, and the low percentage of male participating in the soya beans farming may also be explained by socio-cultural factors affecting men, stress involved and the fatigue involved and not as a result of technical and



managerial inefficiency. Furthermore, female are more patient in the harvesting and processing process that are involved in the cultivation of soya beans.

Table 2: Distribution of Respondents based on their Gender

Gender	Frequency	Percentage
Male	35	43.75
Female	45	56.25
TOTAL	80	100

Source: field Survey, 2016

Marital Status

The distribution of the marital status of respondents as shown in Table 3 revealed that 65 percent of the soya beans farmers were married, while 17.5 are percent single, 12.5 percent of the farmers are widow(ers) and only percent are divorced summing up to 100 percent of the total soyabeans farmers. The majority of the respondents are married people. This finding is in consonance with Zalkuwi et al (2014) who found that about 55.67 percent of farmers in Numan Local Government Area of Adamawa State were married.

Table 3; Distribution of Respondents Marital Status

Marital Status	Frequency	Percentage
Single	14	17.5
Married	52	65



Divorced	4	5
Widow(er)	10	12.5
TOTAL	80	100

Source: field Survey, 2016

Literacy Level

Table 4 revealed that the respondent had only 42.5 percent secondary education and 42.5 percent tertiary education among the total number of the respondent in the study area, while the rest had either no formal education or primary education. This result is in agreement with the findings of Zalkuwi *et al* (2015), who found out that majority of the respondent have one form of formal education or another. This is an indication that majority of the farmers are literate and could be receptive to agricultural innovation. Njoku (1991) observed that years of formal education has a positive influence on adoption of innovation by farmers.

Table 4: Distribution of Respondent by Educational Qualification

Level of Education	Frequency	Percentage
No formal education	6	7.5
Primary education	6	7.5
Secondary education	34	42.5
Tertiary education	34	42.5
TOTAL	80	100

Source: field Survey, 2016



Family Size

Table 5 revealed that majority (66.25 percent) of the soya beans farmers had 6-10 family size and 20 percent of the farmers had family size of 1-5. This implies that large family size is an indication that some of them may depend on their family for labour. Large family size may increase efficiency because most farmers are financially constrained and thus, the availability of family labour will ease hiring of labour (Bayacay and Rola, 2001).

Table 5: Distribution of Respondents Family Size

Family size	Frequency	Percentage
1 – 5	16	20
6 – 10	53	66.25
11 – 15	11	13.75
16 – 20	0	0
21 above	0	0
TOTAL	80	100

Source: field Survey, 2016



Farming Experience

The distribution by years of farming experience in table 4.6 revealed that about 32.5 percent of the soya beans producers have a farming experience of 11 – 15 years, while 18.75 percent of the soya beans farmers have farming experience of 16-20 year. This result is in agreement with Zalkuwi *et al* (2014) who found out that about 64.95 percent had farming experience above 5 years. This result shows that majority of the respondents had much farming experience to improve their production techniques. Because this could positively influence their management capabilities on the crops, farmers with more years of farming experience may likely to adopt new innovation and are likely to be technically efficient in their farm practices.

Table 6: Distribution of Respondents by years of Experience in Soya beans Production

Years	Frequency	Percentage
≤ 5	9	11.25
6 – 10	20	25
11 – 15	26	32.5
16 – 20	15	18.75
21 above	10	12.5
TOTAL	80	100

Source: field Survey, 2016



Respondents Farm Size

Table 7 reveals that the soyabeans farmers in the study area had 60 percent farm size of 1ha while 35 percent of the soya beans farmers had 2 hectares. The result reveal that majority of the farmers are small-scale farmers. This may be attributed to high level of poverty where poor farmers can only afford small parcel of land for subsistence farming coupled with inadequate credit facilities necessary to expand their farm lands. According to FOS/FBS (1999) and Awoke and Okoji (2004), small scale farmers are farmers who cultivate between 0.1 – 4.99 hectare and produce on subsistence level.

Table 7: Percentage Distribution of Respondents by Farm Size

Farm Size (Ha)	Frequency	Percentage
1	48	60
2	28	35
3	4	5
4	0	0
5	0	0
TOTAL	80	100

Source: field Survey, 2016



Land Acquisition

Table 4.8 revealed that 52.5 percent of the soya beans farmers acquired their land through Gift and 30 percent of the farmers acquired their land through inheritance.

As observed by Adebayo and Onu (1999) that land ownership is one of the socio-economic characteristics of farmers which affect their productivity. This result is also in agreement with Zalkuwi *et al* (2014) who reported that 77 percent of cowpea farmland was inherited. The implication of majority using inherited land is that it would lead to fragmentation of farmland as a result of sharing among siblings hence reducing the size of farmland for agricultural practices.

Table 4.8: Distribution of Respondents according to Land Acquisition

Land Acquisition	Frequency	Percentage
Rent	6	7.5
Inheritance	24	30
Purchase	8	10
Gift	42	52.5
Others	0	0
TOTAL	80	100

Source: field Survey, 2016



Occupation

The Table 9 reveals that 53.75 percent of the respondent in the study were full-time farmers, while 46.25 percent of the respondent were involved in other activities like banking, military work, trading, civil service, carpentry etc. The findings of this research is also in agreement with Zalkuwi *et al* (2014), which reveals that 61 percent of cowpea producers of the respondents took farming as their full time main occupation while 39 percent of cowpea farmers engaged in other activities like trading, civil service, carpentry etc and practice farming as part-time basis. This implies that the majority of the respondents depend mainly on farming as their major source of income to cater for themselves and their families.

Table 9: Distribution of Respondents by Occupations

Occupation	Frequency	Percentage
Farming	43	53.75
Others	37	46.25
TOTAL	80	100

Source: field Survey, 2016

Access to Extension Services

Table10 revealed that 81.25 percent of the respondents were not visited by extension agents and only 18.75 percent of the respondents were visited; which implies that majority of the respondents had no contact with extension agents. Extension is one of the major tools through which new innovations are transferred to practicing farmers and it usually has significant effect on the economic efficiency level of farmers. The use of agricultural technologies is believed to be a strategy for making small scale farmers economically viable (Bzugu and



Gwary, 2005). This implies that if the farmers were efficiently visited as expected by the extension agent it could have had implication on the level of profitability and even adjustment to the problems and constraints militating against soya beans production.

Table 10: Distribution of Respondents Based on Access to Extension services

Access to Extension	Frequency	Percentage
Yes	15	18.75
No	65	81.2
TOTAL	80	100

Source: field Survey,

Credit Facilities

The table 11 reveals that majority of the respondents had access to credit facilities through relatives while 37.5 percent of the respondents had access to credit facilities through self-financing. They complained that both interest rate and transactional cost of agricultural loans were high especially from formal lenders. This is in accordance with a study by Von (1991) who earlier reported that money lenders generally charged exorbitant rates due to risks involved and in some cases they extract economic surplus provided by peasant labour, capital and possibly land. Also Obinaju, and Asa (2015), who through their findings reported that majority of the respondent (85.56 percent), had no access to credit. So their main source of capital is personal savings i.e self-financing. This might be the reason why the respondents cultivate in small hectares of land.



Table 11: Distribution of respondents Base on Access to Credit Facilities

Access to credit	Frequency	Percentage
Friends	5	6.25
Relatives	45	56.25
Money lenders	0	0
Commercial bank	0	0
Self	30	37.5
TOTAL	80	100

Source: field Survey, 2016

Profitability Analysis of Soya beans farmers in the study area.

Table 12 revealed that, the average total variable cost of production per hectare was ₦53,913.38 while the total fixed cost per hectare was ₦42,394.83. The total cost of producing soya beans in the study area per hectare was ₦96,308.21. This was largely attributed to the high cost hired labour in the variable cost of production and high cost of land renting in the fixed cost used in the production. The average outputs of the respondents were 13.02kg per hectare and the revenue generated were ₦163,807.88 per hectare for soya beans production. The table reveals that soya beans production had gross margin and net farm income of ₦109,894.5 and ₦67,499.67 per hectare respectively. From the analysis the study reveals that soya beans production in Mubi North Local Government Area is very profitable most especially if the cultivation is commercialized or produced in an extensive system (larger hectares) to enjoy economics of scale.



Table 1: Average Costs and Returns per Hectare of Soya beans Production

Yield Items	Value in (₦/ha)
• Variable cost	
Seed	1527.59
Insecticide	1061.22
Herbicide	2575.86
Fertilizer	11427.59
Transportation	795.69
Storage	1120.26
Family labour	20075
Hired labour	15330.17
Total variable cost (TVC)	53913.38
• Fixed Cost	
Rent on land	25767.24
Farm tools	16627.59
Total Fixed Cost (TFC)	42394.83
Total cost of production (A + B)	96308.21
• Returns	
Average output	13.02kg
Average price for Soya beans (₦/kg)	12581.25
Total revenue (N)	163807.88
Gross Margin (GM)	109894.5
Net farm Income (NFI)	67499.67

Source: field Survey, 2016



CONSTRAINTS AND PROBLEMS OF SOYABEANS FARMERS

The table 1 reveals that 32.5 percent of the respondent complained of variability in the amount of rainfall as a major problems which excess of it causes spoilage and retard growth while 21.25 percent of the respondent complained of lack of extension services as another problem militating against the cultivation of soya beans.

Cattle rearers activities were seen as their least problem with only 1.25 percent of the total respondents since soya beans was mainly cultivated near homes and family gardens in small hectares of land.

Table 15: Constraints encountered by respondents

S/No	Problems	Farmers	Percentage	Ranking
1	Inadequate farm credit	10	12.5	4
2	Shortage of inputs	8	10	5
3	Lack of extension visit	17	21.25	2
4	Shortage of labour	12	15	3
5	Variability in amount of rainfall	26	32.5	1
6	Pests and diseases	4	5	6
7	Cattle rearers activities	1	1.25	8
8	Access to land problem	2	2.5	7
TOTAL		80	100	

Source: field Survey, 2016



REFERENCES

1. Adebayo, A.A (2004) Mubi Regions. A Geographical synthesis.Pracklet publishers. Yola – Nigeria 32 – 38pp
2. Adebayo, E.F. and J.I. Onu (1999).Economics of Rice Production in Yola North and South Local Government areas of Adamawa State, Nigeria. Nigerian Journal of Tropical Agriculture, Federal University of Technology, Yola 115-120.
3. Adedoyin, S.F.,Torimiro, D.D.,Joda, A.O. and Ogunkoya, A.O. (1998): Adoption of Soybeans Planting, Processing and Utilisation Packages in Ago Iwoye, Proceeding of the 3rd Annual National Conference of the Agricultural Extension Society of Nigeria, 4-6 March.
4. Adekunle, O.A., Ogunlade, I. and Oladele, O.I. (2003): Adoption of Soybeans Production Technology in Kwara State, Nigeria. *Journal of Extension System*, 19 (2):32-3.
5. African Learning Journey, June 2015.
6. Ajobo, T. and Akinyemi, A. (2007): Soybean: Food that Prevents Cancer, Diabetes, Menopausal Problems. The Tribune Newspaper, June 6, 2007, page 2
7. Amaza, P.S, Onu, J.I and Okunmadewa, F.Y. (2006). Identification of factors that influence the Technical Efficiency of cotton farmers in Nigeria. Nigeria Agricultural Development studies 2(1): 133 – 145
8. Ashaye, O.A., Adegbulugbe, T.A. and Sanni, S. (2005): Assessment of Soybean Processing Technologies in Ilorin East and West Local Government Area of Kwara State. *World Journal of Agricultural Science 1 (1): 59-61*.
9. Bayacay, P.G. and Rola, A.C.,(2001) Farm Environment, Farm Knowledge and Technical Efficiency: An Investigation among Upland Corn Farmers in Bukidnon, Philippines.UnpublishedPh.D. Thesis, University of Philippines, Los Banos, Laguna, Philippines.
10. Bzugu, P.M. and Gwary, M.M.,(2005) Effective Communication by Extension Agents as Determinant of farmers Adoption of recommended Agricultural Technologies in Adamawa State, Nigeria, *Journal of Sustainable Development in Agriculture and Environment*, 1:55-59.
11. Dashiell K. (1998). An Effort to Promote the Production and Consumption of Soybean as a Means of Improving Nutrition in Nigeria
12. Federal Office of Statistics/ Federal Bureau of Statistics (1999).Poverty and Agricultural Sector in Nigeria, Poverty Incidence of Farmers by Region pp 22-23, Federal Office of Statistics/ Federal Bureau of Statistics.
13. Myaka, F. A., Kirenga, G., Malema, B. (Eds) (2005). Proceedings of the First National Soybean Stakeholders Workshop, 10–11 November 2005, Morogoro, Tanzania.
14. Okuneye, P.A. (2002): FAO Production Year Book Vol. 45, Rome.
15. Olayide , S.O., and Heady, E.O. (1982). Introduction to Agricultural Production Economics. University of Ibadan Press, Ibadan, Nigeria
16. Obinaju, L. C. and Asa, U. A. (2015).Economic analysis of vegetable (*telfairia occidentalis hook f.*) production among farming households in ibiono ibom local government area of akwa ibom state, nigeria. *European Journal of Agriculture and*



- Forestry Research Vol.3, No.4, pp.17-24, September 2015 Published by European Centre for Research Training and Development UK (www.eajournals.org)
17. Njoku, J.E.,(1991) Factors influencing the adoption of palm production technologies by small holder farmers in Imo State of Nigeria, In: Appropriate Agricultural Technologies for Resource Poor Farmers, Olukosi, J.O., Ogungbile, A.O. and Kalu, B.A. (eds), pp 207-218, 2014
 18. Smith, K. and Huyser, W. (1987).World Distribution and Significance of Soybean. In J.R. Wilcox (Ed.) Soybean: Improvement, Production and Uses. Third Ed. Agron.Monograph. 16. ASA, CSSA, and SSSA, Madison. Pp 1–22.
 19. Ugwu, D.S. (2009). Problems and Prospects of Commercial Small and Medium Scale Cocoa and Oil Palm Production in Cross River State, Nigeria.*Journal of Applied Sciences Research*, 5(7):827-832
 20. Zalkuwi, J.,Yusuf, C., and Ibrahim, A., (2014). Analysis of Cost and Return in Cowpea Production: A Case Study Guyuk Local Government Area of Adamawa State, Nigeria. The International Journal Of Humanities & Social Studies (ISSN 2321 - 9203) www.theijhss.com
 21. Zalkuwi, J., Ibrahim, A., and Kwakanapwa, E., (2014). Analysis of Cost and Return of Maize Production inNuman Local Government Area of Adamawa State, Nigeria, international journal of innovation research and development, ISSN 2278 – 0211 (Online,)Vol 3 Issue 4, April, 2014.
 22. Zalkuwi. J, Udhav P.S, Amita M and Asabe 2015. Cost and Return Analysis of Local Chicken Marketing in Mubi North Local Government Area of Adamawa State, Nigeria