

Profitability analysis and determinants of groundnut

[Environment](#), [Plants](#)



INTRODUCTION

Groundnut (*Arachis hypogea*) is the 13th most important food crop of the world (FAO, 2011). It is the world 4th most important source of vegetable protein. Groundnut seeds contain high quality edible oil (50%) easily digestible protein (25%) and carbohydrate (20%) groundnut is grown in nearly 100 countries with China, India, Nigeria, USA, and Indonesia and Sudan's major producers (National Peanut Council, 2006). Before the world war Nigeria's groundnut export figured prominently in world trade, accounting for 29% of Africa's export and 12% of the world export in the 1950s world export. In the early 70s, Nigeria accounted for 41% of the total groundnut production in West Africa (Adesinmi 2003). The role of Agriculture in providing food and cash crop security, thereby reducing poverty cannot be over emphasized. It is in this light that Nigeria's agricultural policy focused on developing a progressive, dynamic and viable agricultural economy that would ensure food security, income growth and hence poverty reduction as well as promoting sustainable agriculture and a thriving agric business sector (NAERLS, 2011). It is estimated that over 90% of the farm holders in Nigeria are small scale; similarly most of these farmers produce are subsistence basis and thus, face cash insecurity problems. It is in the light of this that many people believe that the production of cash crops such as groundnut is way out at such cash insecurity. Groundnut is cultivated in both tropical and sub-tropical countries. FAO (2011) estimated that Nigeria's cultivated area under groundnut cultivation is about 1. 0-2. 5million hectares annually and yield in the range of 500-3000kg/ha. It was reported that seed yield in

northern Nigeria's is about 3000kg/ha developing countries account for 92% and 96% of global output and production area respectively (FAO 2011).

PROBLEM STATEMENT

Groundnut believed to be the most popular and widely cultivated legume in Nigeria because of its adaptation to varied climatic conditions. Groundnut production in northern Nigeria is very pronounced and about 92% of the national production comes from northern Nigeria (Girei et al. 2013). However, NAERLS (2011) laments that groundnut yield in Nigeria has generally been poor due to a combination of factors including unreliable rain, little technology available to small-scale farmers, poor seed varieties and increased non-supportive small farm policies which have negatively impacted on groundnut production while some of these factors are outside the control of the farmers, other are within their control. Despite numerous crop improvement practices and vast resources of land and labour as reported by national peanut council (national peanut council, 2006). There seem to be inadequate supply of groundnut to meet the demand of the teeming population. Groundnut is mainly under taken by small holder farmers at subsistence level of production, using traditional methods and employing low yielding variety with low yields per hectare (Girei et al. 2013). This decline in groundnut production has also been attributed to the discovery of petroleum in Nigeria, groundnut rosette epidemic, drought and lack of organized inputs and inadequate structures marketing. It is important to find out the extent to which the latter influence the efficiency levels of the farmers so that specific policies may be designed to step up the production of groundnut in the study area.

OBJECTIVES OF THE STUDY

The broad objective of the study is to analyze the profitability and determinants of groundnut production in Dambatta local government area of Kano State, while the specific objectives are to:

1. Estimate the profitability of groundnut production;
2. Determine the input and output relationship of groundnut production;
and
3. Identify the constraints of groundnut production in the study area.

HYPOTHESIS

Ho: There is no input and output relationship in groundnut production.

JUSTIFICATION

Groundnut used to be a very important foreign exchange earner for Nigeria prior to the oil boom of the 1970s. It was the groundnut sub-sector that established the basis for the industrial development of the country and improved rural economies. More than 2 million hectares are planted to groundnuts annually producing variable pod yields ranging from 800-3500 kg/ha (FAO, 2011). However, groundnut production in Nigeria drastically declined due to several factors. The persistent declines in groundnut production over several decades has generated great concern of the Nigerian government which has resulted in the evaluation of various means of revitalizing the production through research for improved yields, yet there still seems to be inadequate supply of groundnut to meet the demand of the teeming population (NAERLS, 2005). Groundnut is mainly under taken by

small holder farmers at subsistence level of production, using traditional methods and employing low yielding variety with low yields per hectare (Taru et al. 2010). There is therefore a serious need to reverse this negative trend, with a view to improving groundnut production. Some analysts argue that realizing the above objectives of increasing food supply and incomes, hinges on the improvement of farmer's efficiency, while also depending on improving the existing resource base and available technology (Awoke, 2003). It against this backdrop that we seek, in this study to find out the determinants of groundnut production by farmers in the study area and also the mitigating factors that affect their productivity.

METHODOLOGY

Dambatta is situated in northern part of Kano State it is enclosed between latitude 12°25'N and longitude 08°30'55'E with a land mass of 2732km². Dambatta local government area is located in Dambatta town just about 40km north east of Kano metropolis. It has a population of 207, 968 and expansion rate of 6. 2 -percent per-annum (NPC, 2006). It has a land mass area of 305. 51km². Humidity at times rise up to 100^o percent with a daily maximum and minimum temperature of 33. 1°C and 15. 85°C respectively. Rainfall varies considerably from year to year ranging between 635mm - 889mm and it reaches its peak from storms followed by tomatoes mainly during the month of May and at the end of the rainy season in September or early October (NAERLS, 2011). Most of the populations are small scale farmers producing food crops like groundnut, millet, sorghum, cowpea and moreover, villages that are located close to the nearby oasis irrigational

project engage in production of rice, pepper, onions, tomatoes and wheat. In addition, they are livestock, goats, sheep and poultry.

SAMPLING TECHNIQUE

Multi-stage sampling technique was employed in the drawing of samples for the study. The first stage involved the systematic random selection of four districts in the study area out of ten (10), which included Dambatta yamma, Dambatta Gabas, Ajumawa and Gwarabjawa and the final stage involved the random selection of 20 groundnut famers in each of the selected districts giving a sample size of 80 respondents from the sample frame provided by Agricultural Development Project (ADP) and Groundnut co-operative farmers association in the study area.

METHOD OF DATA COLLECTION

A well-structured questionnaire designed in line with the objectives of the study was used for the collection of data. The data collected for this study were obtained from primary sources. The primary data will be collected for this research through scheduled interviews and observations, using a well-structured questionnaire. A total of 80 questionnaires were administered to the respondents, which were all retrieved and found to be valid enough for further analysis, giving a response rate of 100%.

METHOD OF DATA ANALYSIS

Analytical techniques such as, farm budgeting tools (gross margin, net farm income and profitability ratios) were used to analyze objective i. Multiple

regression analysis was used to determine the effects of the variable inputs on the output of groundnut; this was used in analyzing objective ii.

Descriptive statistics (frequency distribution and percentages) were used to analyze objective iii. Thus, combinations of statistical, budgetary and parametric techniques were used in the analysis of data collected.

DISCUSSION

PROFITABILITY (COSTS AND RETURN) ANALYSIS

The cost and return analysis in Table 1 reveals that the total cost of producing groundnut per hectare was estimated at N 60, 600, while the estimated total revenue was N120, 000, Gross margin and net farm income were N71, 400/ha and N59, 400/ha respectively. From the analysis, the estimate of total variable cost was N 48, 600/ha and the total fixed cost was estimated as N12, 000/ha. The major costs incurred in groundnut production were fertilizer (30%), labor (27%), agro-chemicals (14%), land rent (12. 4%) and depreciation cost of farm assets (7. 3%). Also the benefit cost ratio was estimated to be 1. 98 which indicates that groundnut production is profitable in the study area; hence the profitability index was estimated to be greater than one (1. 98, therefore $P. I > 1$). Thus the farmer earned N1. 98 on every naira spent on groundnut production. The fixed and operating ratios were 0. 28 and 0. 33 respectively, implying that groundnut production in the study area was relatively profitable. Hence, groundnut production in the study area is a very viable farm enterprise that has the capacity to improve the living standards of the rural farmers.

REGRESSION (DOUBLE LOG FUNCTION) ANALYSIS

The production function analysis presented in Table 2 (the double log function as the lead equation) was used to determine the input and output relationship in groundnut production. The result of the regression model fitted to analyze the determinants of productivity reveals that the coefficient of multiple determinations (R^2) was 0.739 implying that 74% of the variation in the output of groundnut was accounted for by the explanatory variable inputs in the model. The remaining 26% not explained may be due to omitted variables and the stochastic error term. The regression coefficients of Farm size (X_1) and Credit (X_6) were positive and statistically significant at ($p < 0.01$), Labour (X_2) and Agrochemical (X_5) were also positive and statistically significant at ($p < 0.1$), while Fertilizer (X_4) was also positive and statistically significant at ($p < 0.05$), this implies an increase in these positive endogenous variables, holding other factors constant will lead to an increase in gross output. From the result, X_1 , X_2 , X_4 , X_5 and X_6 had positive coefficients, this implies that any 1% increase in these inputs would increase groundnut output by 0.34%, 0.32%, 0.56%, 0.21%, 0.33% respectively. This conforms to the findings of Girei et al., (2013), Alabi et al., (2013) and Awoke, (2003). Only seed (X_3) was negative and but statistically significant at ($p < 0.1$). This negative coefficient of seed suggests an inverse relationship with gross (groundnut) output. The F-ratio ($F = 7.911$) is significant at ($P < 0.01$), implying that the regression model significantly predicts the outcome variable. The variables significantly explained the

variations in the gross (groundnut) output. Therefore the regression model is good fit for the data, suggesting a linear relationship among the variables.

CONSTRAINTS OF GROUNDNUT PRODUCTION

The result of Table 3 revealed that a number of problems were identified confronting groundnut production in Dambatta local government area. From the result of this study the following production constraints were identified among groundnut farmers in the study area as presented in Table 3. The constraints include: inadequate capital (86. 25%), high cost of production inputs (82. 5%), lack of access to agricultural credit (77. 5%), poor access to improved production technology (61. 25%), fragmented farmlands (55%), post-harvest losses due to poor storage facilities (46. 25%), pest and diseases (42. 5%) and lack of extension contact(36. 25%). All the constraints identified by the farmers significantly affected groundnut productivity in the study area.

CONCLUSION

This study examined the economics of groundnut production in Dambatta Local Government Area in Kano State. The results indicate that majority of the respondents were males. Also most of the farmers were literate and land acquisition for groundnut production in the study area is mainly through inheritance. Despite the various problems faced by groundnut farmers in the study area, groundnut production is profitable with an average total revenue of N120, 000/ha, giving a gross margin and net farm income of N71, 400/ha and N59, 400/ha respectively. Variation in groundnut output is explained by

the variation in farm size, seed, fertilizer, agrochemicals and access to credit. Data analysis showed that at the regression coefficients of the variable inputs in the model were positive and statistically significant at ($p < 0.05$ and $p < 0.01$) level of significance. Farmers were however faced with some constraints, among the problems identified, lack of credit facility ranked first, followed by poor road network and the least problem recorded was inadequate extension contact. All the constraints identified were economically important in groundnut production. It is therefore recommended that effort should be channeled towards ameliorating these constraints. All stakeholders are encouraged to play their part in ensuring the survival and sustainability of groundnut production in Kano State. It is however believed, that with time and policy changes, these small-scale farmers will improve on their performance and grow to become major producers of groundnut in Kano state and in Nigeria in general.

RECOMMENDATIONS

Groundnut production in Dambatta local government area is a profitable venture as shown in this study. However, like other agro business, it faces a lot of constraint's that need to be tackled to improve the situation. Improving groundnut production therefore requires that attention be paid to the following:

Groundnut farmers are enjoined to form producer cooperatives to enable them pool resources together to enhance their productivity.

Governmental agencies should ensure that credit facilities are extended to farmers in groundnut producing areas. This will help in reducing the incidence of insufficient capital being currently faced by farmers.

There is also need to assign more extension agents to attend to the farmers as this particular crop has not been given much attention by any governmental agency. Training should be constantly organized so as to keep farmers abreast of improved technologies in production.

Improved land tenure practices should be adopted to reduce incidence of agricultural land fragmentation so as to enable them cultivate more land area for the crop. When farmers have access to reasonable hectarage of land, this will enable mechanization. To this end land use act should be appropriately amended.

Government as well as other stake holders should ensure production inputs are subsidized for the farmers.

Government as well as other stake holders should ensure adequate supply of improved production technologies to farmers.

Farmers should also adopt appropriate measures in allocating their scarce resources such as land, capital, etc., and good management practices to bring about the much desired increase in food production and food security.