

Resource Use Efficiency in Groundnut Production In Gassol Local Government Area Of Taraba State, Nigeria

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Abstract: The study examined the resource use efficiency in groundnut production in Gassol Local Government Area of Taraba State. The specific objectives were to describe the socio-economic characteristics of the respondents, analyze the resource-used efficiency of groundnut farmers, determine the profitability of groundnut production and identify the constraints to groundnut production in the study area. Sixty (60) structured questionnaires were randomly administered to selected respondents from six wards participating in groundnut production in the study area. Data collected were analyzed using descriptive and inferential statistics. The study revealed that majority of the respondents (79.31%) are male while (20.69%) are female and have one form of education or the other. The study further revealed that gross income, gross margin, net farm income and return on naira invested were ₦120,000, ₦66,000, ₦55,700 and ₦0.87k respectively. The constraints to groundnut production were identified as inadequate funds, lack of improved seeds, lack of storage facilities and high cost of farm inputs. Finally, it is recommended that groundnut farmers were advised to join or form cooperative societies to ensure easy access to loan facilities from government, government and research institutions should provide improved agricultural inputs and seeds that are drought and pest resistant and have short period of production etc.

Keywords: Resource, use, efficiency, Groundnut, Production, Gassol

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I. Introduction

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). Groundnut is grown on 26.4 million hectare worldwide, with a total production of 37.1 million metric tons and an average productivity of 1.4 metric tons /ha. Developing countries constitute 97% of the global area and 94% of the global production of this crop (FAO, 2011). In Nigeria, the crop is presently grown throughout the country with the exception of the riverine and swampy areas.

Groundnut has contributed immensely to the development of the Nigerian economy from 1956 to 1967. The common products from groundnut such as cake and oil accounted for about 70% of total Nigeria export earnings, making it the country's most valuable single export crop ahead of other cash crops like cotton, oil palm, cocoa and rubber (Harkness *et al.*, 1976). Presently, it provides significant sources of cash through the sales of seeds, cakes, oil and haulms (Olorunju *et al.*, 1999). Groundnut plays an important role in the diets of rural populations, particularly children, because of its high contents of protein and carbohydrate. It is also rich in calcium, potassium, phosphorus, magnesium and vitamin E. Groundnut meal, a by-product of oil extraction, is an important ingredient in livestock feed. Groundnut haulms are nutritious and widely used for feeding livestock. The groundnut oil is composed of mixed glycerides, and contain a high proportion of unsaturated fatty acids, in particular Oleic (50-56%) and Linoleic (18-30%) (Young, 1996).

Groundnuts are also important in the confectionary trade and the stable oil is preferred by the deep-frying industries since it has a smoke point of 229.4°C compared to 193.5°C of soybean oil. The oil is also used to make margarine and mayonnaise (Hul, 1996). Confectionary products such as snack nuts, sauce, flour, peanut butter and cookies are made from high quality nuts of the crop. In the Northern part of Nigeria, apart from being

consumed whole, edible groundnuts are processed into wide range of other products which includes groundnut paste which is fried to obtain groundnut cake salted groundnut a gruel or porridge made with millet and groundnut, groundnut candy and groundnut soup (Ahmed *et al.*, 2010). They further pointed that 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). These multiple uses of the groundnut make it a good cash crop for domestic markets as well as for foreign trade in several developing and developed countries. Studies revealed that, groundnut pod yields from farmers' field are low, averaging about 800 kg/ ha, 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). The low output realized by smallholder farmers is an indication that resources needed in the production of crops are not at optimal levels (Nweze, 2002, Panwal *et al.*, 2006; Adinya *et al.*, 2010).

Despite numerous efforts by the Nigerian government to revitalize the production of groundnut through research, crop improvement practices and vast resources of land, there seems to be inadequate supply of groundnuts to meet both the local and international market demand (Ani, *et al.*, 2013). Though few researchers had conducted research on groundnut, but most of the work was based on the protection aspect of groundnut production in the country. However, work on the groundnut farmer's resource use efficiency is still inadequate in the country.

Consequently, with the huge potential of this cash crop, there is need to investigate the resource use efficiency of its producers in the study area. This study therefore, become imperative to analyze the resource use efficiency of groundnut production in Gassol Local Government Area of Taraba State, Nigeria. The broad objective of the study is to analyze the resource use efficiency of groundnut production in Gassol Local Government Area of Taraba State, Nigeria. The specific objectives are:

- (i) describe the socio-economic characteristics of the respondents,
- (ii) analyze the resource use efficiency groundnut farmers in the study area,
- (iii) determine the profitability of groundnut production in the study area,
- (iv) identify the constraints to groundnut production in the study area.

II. Methodology

The Study Area

This study was conducted in Gassol Local Government Area of Taraba State, Nigeria. Gassol Local Government is located in the Taraba Central senatorial zone with its headquarter in Mutum-biyu. It is bounded by Karim-Lamido Local Government Area in the North Ardo-kola in the North-East, Bali in the South and Wukari Local Government Area in the West respectively. The local government has a total population of 244,749 people (NPC, 2006). The temperature of the area ranges from 25-35°C with annual rainfall of between 1000-2200mm. The major ethnic groups in the area are: Jenjo, Fulani, Jukun, Tiv, Hausa, Mumuye, Wurkum among others. Majority of the inhabitants in the area are farmers who produce crops and livestock such as: groundnut, yam, rice, cowpea, melon, maize, cattle, sheep, goats and poultry.

Method of Data Collection

Both primary and secondary data were collected for the study. Primary data were obtained through structured questionnaire. While secondary data was collected from journals, textbook, seminar conference proceedings past projects and internet sources.

Sampling Procedure and Sample Size

A purposive sampling techniques was employed to select respondents for this study. Six wards out of the twelve wards in the local government area were purposively selected based on their prominence role in groundnut production viz: Gassol, Mutum-Biyu, Sabon-gida, Gunduma, Namnai and Wuro-Jam. In each of the six wards, ten groundnut farmers were randomly selected to make up sixty respondents, which form the sample size for the analysis.

Method of Data Analysis

Data for this study was analyzed using descriptive statistics such as frequency, mean and percentages. This will be used to analyze objective I and IV. Gross Margin Analysis was used to analyze objective III, while Resource Used Efficiency Model was used to analyze objective II.

Gross Margin Analysis

Gross margin is the difference between the gross farm income and the total variable costs Olukosi and Erhabor, (1998) and Girei *et al.*, (2013). The empirical model is specified below:

$$GM = GI - TVC$$

Where

GM = Gross Margin (₦)

GI = Gross Income (₦)

TVC = Total Variable Cost (₦)

The Net Farm Income (NFI) will be computed as follows:

$$NFI = GM - TFC$$

Where:

NFI = Net Farm Income

TFC = Total Fixed Cost (₦)

Resource Used Efficiency

Obayelu *et al.*, (2013) defined the term “resource” as a human-centered perceived to have value by humans. We therefore talk about availability, affordability and changes in the use and distribution of resources like water, labour, and land remain fairly stable in their use and value, other such as agro-chemical and labour change a great deal. Resource use efficiency implies how efficiently the farmer can use his resources in the production process. It is very important because the resources are very limited. One way of increasing production by farmers is to efficiently use all available resources in the production process (Mesike *et al*, 2009).

The model will be estimated as follows:

$$r = \frac{MVP}{MFC}$$

The values of MVP and MFC will be estimated as follows:

$$MVP = MPP.P_Y$$

$$MPP = bi.y$$

$$MFC = P_{Xi}$$

Where:

r = Efficiency ratio

MVP = Marginal Value Product

MPP = Marginal Physical Production

MFC = Marginal Factor Cost

P_{Xi} = (Unit Price of Input X)

y = Arithmetic mean value of output

\bar{X} = Arithmetic mean value of input considered

P_y = Unit price of output

P_{Xi} = Unit Price of Input

bi = Estimated coefficients of independent variables

Based on the econometric theory, a firm maximizes profits with regard to resource use efficiency when use ratio of marginal reform to the opportunity cost is one. The values are interpreted as follows:

If r is less than 1 = resource was excessively used or over-utilized, hence decreasing quantity use for that resources increases profit.

If r is greater than 1 – resource is under use or being under-utilized, hence increasing it rate of use will increase profit level.

If $r = 1$ it shows the resource is efficiently used, that optimum utilization of resource hence the point of maximization.

III. Results And Discussion

Socio-economic Characteristics of the Farmers

The result in Table 1 reveals that, majority (79.3%) of the farmers fall within the active age of 18-47 years while about (20.70%) constituting 48 and above. The preponderance of the young farmers in farming profession depicts the fact that their productivity is expected to be high since they are active, energetic and can easily adopt agricultural innovation. It also indicates that older farmers are relatively less efficient in food crop production than their younger counterpart who tend to be more productive and also more progressive and hence more willing to adapt new practices leading to higher efficiencies in food crop production. These study also indicated that 79.31% of the farmers were males while 20.69% were females. This implies that men constitute the greater percentage of those who were engaged in groundnut farming in the study area. This finding in consonance with the findings of Iwunor (1999) who stated that there is existence of gender imbalance in the design and implementation of most research projects. Therefore, there is need to encourage women who are in the rural areas to be more involved in farm activities. The result in Table 1 further revealed that a large proportion (75.86%) of the respondents were married while (15.32%) were single, (this may be as a result of the

age of the farmers been studied as they are matured in age to have their own families). Also, the fact that marriage is highly desired, appreciated and honoured among people. This is in agreement with the findings of Ekong (2010) who opined that getting married is highly cherished value among rural people in Nigeria.

Similarly, table I indicated that 46.55% of the respondents are having between 5-9 members of household, 27.59% of the respondents have 1-4 household members while only (10.34%) of the respondents have 15 and above household members. This findings is in accordance with Muntaqha (2007) which revealed that (23.8%) of the respondents from IFAD – CBARDP Sokoto State have between 6-20 children the reason behind large family size could be due to polygamous nature of Hausa's and their dependency on family as a source of farm labour (Abubakar, *et al.*, 2009).

Moreover, about (84.48%) of the farmers had some form of formal education. This indicates that, the respondents are educated and are likely to be receptive to new and improved innovation that could lead to increase in output compared to those without formal education. (Okoye, *et al.*, 2004).

Most of the respondents (91.38%) had farm size of less than five hectares of farmland by implication groundnut farmers in the study area were predominantly smallholder farmers. This result agreed with the findings of Alam *et al.*, (2014) who found that rice farmers under rainfed production in Gassol Local Government Area of Taraba State were small-scale operator who need to increase their farmland to tap maximum benefits of economic scale.

Efficiency Ratio of the Resources Used

The result in Table 2: shows the estimated efficiency ratio of the resource used by the farmers. The result shows the efficiency coefficients (r) of seeds (r=4.03), agro-chemical (r=0.44) and labour (r=2.35). The results showed that, seeds and labour were underutilized, because the value of the efficiency coefficient (r) is greater than one while agro-chemicals were over utilized because the computed efficiency coefficients (r) is less than one. This result of the study shows that groundnut farmers in the study area were not efficient in the use of resources.

Costs and Returns of Groundnut Production

Table 3: shows the analysis on costs and returns of groundnut production using gross margin analysis. The result revealed that groundnut farmers realized an average output per hectare of 1500kgs and sold at an average market price of ₦80/kg. Similarly, the gross income, gross margin, net farm income and return on naira invested were ₦120,000, ₦66,000, ₦55,700 and ₦0.87k respectively. The finding revealed that for a naira incurred in the production of groundnut by the farmers 87 kobo is made as a gain. This is an indication that groundnut production in the study area is highly profitable. This result is in agreement with the study of Girei *et al.*, (2013) on economic analysis of groundnut which found that ground production is a profitable business that farmers need to reckon with.

Major Constraints affecting groundnut production in the study area

Table 4: The result shows that, the major constraints affecting groundnut production in the study area were inadequate funds, lack of improved seeds, lack of storage facilities and high cost of farm inputs.

IV. Conclusion

The study concludes that the business of groundnut production in Gassol Local Government is a profitable venture because in every one naira incurred in the production of ground nut yield a profit of 87 kobo. The major constraints militating against groundnut productivity in the study area were inadequate funds, lack of improved seeds, and lack of storage facilities and high cost of farm inputs.

V. Recommendations

Based on the result of the findings the researchers wish to recommend that:

- i. research institutions should provide improved agricultural inputs and seeds that are drought, short production period and pest resistant.
- ii. groundnut farmers should form cooperative societies to ensure easy access to loan facilities from government.
- iii. Non-Governmental Organization should strengthening their partnership and finance researchers that will lead to excellent and effective processing and storage of the product as well as organizing out growers to same as source of certified seeds for multiplication and dissemination to farmers.
- iv. government should provide loan facilities to farmers in the study area to boost their productivity.

Table1: Socio-economic Characteristics of Groundnut Farmers

Variable	Frequency	Percentage (%)
Age (years)		
18-27	6	10.34
28-37	22	37.93
38-47	18	31.3
48 and above	12	20.69
Gender		
Male	46	79.31
Female	12	20.69
Marital Status		
Married	44	75.86
Single	9	15.52
Widowed	3	5.17
Divorce	2	3.45
Family Size		
1-4 members	16	27.59
5-9 members	27	46.55
10-14 members	9	15.52
15 members and above	6	10.34
Educational Level		
Non-formal Education	9	15.52
Primary Education	4	6.90
Secondary Education	26	44.82
Tertiary Education	19	32.76
Farm Size		
Less than 1 hectare	16	27.59
1-2 hectares	28	48.27
3-4 hectares	9	15.52
5 and above	5	8.62
Total	58	100

Source: Field Survey, 2015.

Table 2. Estimated Efficiency Ratio

Inputs	MVP	MFC	r=MVP/MFC
Seed	262	65	4.03
Agro-chemicals (Herbicide)	56.4	128	0.44
Labour	849	362	2.35

Source: Field Survey, 2015.

Table 3. Estimated Average Costs and Return/hectare of Ground Production

Production Variables	Amount (₦)
(a) Variable Costs	
Seeds	7,000
Agro-chemicals (herbicides)	2,400
Labour	32,000
Transportation	7,500
Miscellaneous	5,000
TVC	53,900
(b) Fixed Costs	
Rent on land	8,000
Depreciation on fixed asset	2,400
TFC	10,400
Total Cost = TVC + TFC	64,300
(c) Returns	
Average yield (kg)	1,500
Price/kg	80
Gross income	120,000
Gross margin	66,100
Net farm income	55,700
Return on Naira invested	0.87k

Source: Field Survey, 2015.

Table 4. Constraints associated with groundnut production in Gassol Local Government Area.

Problems	Frequency	Percentage	Rank
Inadequate fund	46	23.47	1
High cost of farm inputs	27	13.78	4
High cost of labour	20	10.20	6

Lack of improved seed	32	16.33	2
Poor price of the product	18	9.18	7
Lack of storage facilities	29	14.80	3
Pest and diseases attack	24	12.24	5
Total	196	100	

Source: Field Survey, 2015.

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