

## Economic Analysis of Cotton Production in Selected Local Government Areas of Taraba State, Nigeria

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**ABSTRACT** The study was carried out on the economic analysis of cotton production in Selected Local Government Areas of Taraba State, Nigeria. Data were collected through primary source using structured questionnaires from 96 respondents using multi-stage, purposive random sampling techniques. Data were analyzed using descriptive statistics and budgetary technique analysis. The result of the socio-economic characteristics revealed that 84.5% were young aged people below 41 years with a mean age of 32 years and were predominantly males (88.5%). About 77.08% of the respondents attained different level of education, 91% had farm size ranging from 0.5 – 5 ha with a mean farm size of 2.5 ha. Also 72% had above 6-10 years farming with a mean farming experience of 9 years. Budgetary technique analysis showed a total cost of production of ₦ 37, 629/ha with a total revenue (TR), gross margin (GM), net farm income (NFI) and returns on investment (R.O.I) per hectare of ₦ 58,081.10, ₦ 23, 236.12, ₦ 21,172.2 and ₦ 0.56 respectively. The study also identified low price of seed cotton, pest and diseases infestation, inadequate funds, highest cost of inputs and inadequate extension agents as constraints of production. The researchers wish to recommend that farmers should form cooperative societies to have access to loans; they should also be trained by Government and Non-Governmental organization on the effective method of pesticide application in the study area. The result of the study showed that the business of cotton production is a profitable venture.

### INTRODUCTION

Cotton (*Gossypium Spp*) remains by far the most important natural fibre, it represents 38% of the fibre market. Cotton is crucially important for income and employment provided its production and processing is adequate. In Nigeria, prior to the oil boom, cotton was one of the main source of foreign exchange and second largest employer of labour after the public sector (Gbadegesin and Uyovnisere 1994).

In 1993 cotton output was roughly equivalent to the requirement of the textile industry (Andrae and Beckman 1987). However, later cotton production in Nigeria could only account for 38% of the requirement of the textile industry while the remaining 62% was imported (Chukwendu 1993).

According to Mshelia (1991), cotton production in the country has taken a downward trend as the gap between demand and supply is becoming wider and wider every year because the supply does not equate demand. If such situation persists, it means that the demand for raw material cannot be met by our local industries. The current cotton production in Nigeria as reported by United States Agency for international Development (USAID) (2012) is 120,000 tons in the year 2012. USAID further reported that

China, India, United States and Pakistan accounting 70% of the world total.

According to Raw Material and Research Development Council (RMRDC) (2004), consumption of cotton lint by textile industry in Nigeria is about 100, 000 metric tons plus or minus 15%. Textile mills are therefore forced to import 15, 000 metric tons of cotton in order to cover the shortfall in local supply and for certain specific requirements for finer yarns such as 30-40 inches, which is not grown locally. It is therefore clear that the local supply is not enough to meet the demand of the product. The report further stressed that against a total demand of about 80, 000 MT of lint per annum (240,000 MT of seed cotton) by textile mills, the total production of lint has been less, thus resulting in a gap between demand and supply. It is expected that this gap will widen further as the steps taken by government to revive the textile industry may lead to increase in capacity utilization, thus resulting in higher demand for cotton.

The cotton production areas in Nigeria are divided into three ecological zones, namely: the Northern cotton zone which comprises of Kano, Kaduna, Sokoto, Kebbi and Jigawa States. These States contribute 60-65% of the cotton produced in Nigeria. Also the Eastern cotton zone which

comprises of Adamawa, Bauchi, Borno, Gombe, Yobe and Taraba States. This zone contributes 30-35% of the total cotton production in Nigeria. The third ecological area known as the Southern cotton zone is made up of Kwara, Niger, Kogi, Oyo, Osun, Ondo and Edo States; it contributes 5% of the total cotton production in Nigeria (Anon 1995). Study by Adeneji (2011) revealed that cotton production in Northern cotton zone is on the increase compared to other zones.

The broad objective of the study is to determine the economic analysis of cotton production in the study area.

The specific objectives are to:

- i. describe the socio-economic characteristics of cotton farmers;
- ii. determined the profitability level of cotton production and
- iii. identify the constraints associated with cotton production in the study area.

## METHODOLOGY

### Study Area

The study was conducted in Taraba State, specifically three (3) local government areas namely; Lau, Gassol and Bali commonly known for cotton production (Afcott Outgrowers Scheme 1998). Taraba State lies between latitudes 6° 30' North and 9° 36' North and longitudes 9° 10' East and 11° 50' East of the Greenwich Meridian. It shares boundaries with six (6) States; Adamawa (North East), Bauchi and Gombe States (North), Plateau and Nassara States (North-West) and Benue and Republic of Cameroon (South-West).

The State has a tropical climate marked by dry (November-March) and rainy (April-October) seasons. It has an average annual rainfall range of 800 mm to 1950 mm and with temperatures ranging from 15°C to 38°C. the State lies within the tropical Savannah region of Nigeria and characterized with forest and grasses (Agboola 1979).

### Method of Data Collection

The data for the research was collected mainly from primary source. This was obtained through a structured questionnaire which was distributed to 100 cotton farmers in the study area. The data covered 2009/2010 cropping season.

### Sampling Technique

The study employed multi-stage, purposive as well as simple random sampling techniques in the selection of the respondents. 5% of the population of cotton farmers (using Afcott Outgrowers Scheme) from Nine villages namely, Gassol, mutum Biyu, Tella, Kunini, Lau, Abare, Maihula, Jatun Bali and Gazabu were chosen. A total of 100 farmers were chosen in ratio proportional to the size of the population but only 96 respondent forms the sample size after retrieving the questionnaire from the study area.

### Method of Data Analysis

Data collected were analyzed using both descriptive statistics and budgetary technique (gross margin analysis). The descriptive statistics such as means, frequency, distribution tables and percentages were used for the analysis of objective 1 and 3 respectively while the gross margin was used for the analysis of objective 2.

### Model Specification

Gross margin is the difference between the value of production (that is, gross income) and the total variable cost. Gross margin analysis is used to study the performance of an enterprise. It is a very useful tool in a situation where fixed capital is a negligible portion of the farming enterprises as in the case of subsistence agriculture (Olukosi and Erhabor 1998).

The empirical model is specified below

$$GM = GI - TVC$$

Where

GM = Gross Margin

GFI = Gross Farm Income

TVC = Total Variable Cost

The net farm income (NFI) was computed using the formula below:

$$NFI = GM - TFC$$

Where:

NFI = Net Farm Income

GM = Gross Margin

TFC = Total Fixed Cost

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of the Farmers

The age range of farmers in the study area as indicated in Table 1 was from 20 years to above

41 years with the majority (44%) of the farmers being between 31-40 years with a mean age of 32 years. The predominance of younger people in cotton production could be because of the labour intensive nature of its production, which requires young and energetic farmers. The reason could be that young farmers are more agile, aggressive, energetic and capable of making good production decision and have the potential for productivity, hence are likely to be more efficient in cotton production than the older farmers. This finding agrees with the finding of Onu and Edon (2009) who reported a significant relationship between farmers' age and efficiency. They further stated that younger farmers have the tendency to operate more efficiently on the farm than the older ones because the younger farmers are more agile and energetic to work on farm.

The result of the study also revealed in Table 1 that majority (89%) of the respondents were males while about 11% of them were females indicating that there are more males in cotton production than their female counterparts. The dominance of male in cotton production activities could be attributed to the fact that, it involves intensive capital and hard labor. The study also pointed out that about 68% of the respondents had a family size of more than eleven (11) people. The large family size implies availability of family labour for cotton production. This finding is in conformity with the finding of Ibrahim (2002) who reported that family size is relevant to cotton production because it constitutes the highest supply of labour in cotton production. It is believed that where family labour supply is high, then cost of total production will be reduced.

The results in Table 1 clearly revealed that majority (77%) of the respondents are educated. This implies that most cotton farmers in the study area are literate and will find it easy to understand and adopt new technological innovations and method of production and hence are likely to be efficient in their production. Further analysis in Table 1 revealed that about 72% of the farmers had 6-11 years and above farming experience. This shows that, greater number of the farmers had farming experience to improve their cotton output. This also implies that majority of farmers have been in the business for long and are therefore conversant with the problems of cotton production in the area.

The result of the analysis in Table 1 had it that majority (91%) of the farmers had farm size ranging from 0.5-5ha with a mean farm size of 2.5 ha. This implies that majority of the farmers in the study area were poor farmers who do not have access to capital to expand their farm size, this result is in consonance with the findings by Ibrahim (2008) who reported a mean farm size of 3 ha.

**Table 1: Socio-economic characteristics of respondents (N= 96)**

| <i>Variable</i>                   | <i>Frequency</i> | <i>Percentage</i> |
|-----------------------------------|------------------|-------------------|
| <i>Age (years)</i>                |                  |                   |
| 20 and below                      | 18               | 18.8              |
| 21-30                             | 21               | 21.9              |
| 31- 40                            | 42               | 43.8              |
| 41 and above                      | 15               | 15.5              |
| <i>Gender</i>                     |                  |                   |
| Male                              | 85               | 88.5              |
| Female                            | 11               | 11.5              |
| <i>Family Size</i>                |                  |                   |
| 1-5                               | 14               | 14.6              |
| 6-10                              | 17               | 17.7              |
| 11 and above                      | 65               | 67.7              |
| <i>Educational Level</i>          |                  |                   |
| Non –formal education             | 22               | 22.9              |
| Primary education                 | 20               | 20.8              |
| Secondary education               | 29               | 30.2              |
| Tertiary education                | 25               | 26.1              |
| <i>Farming Experience (years)</i> |                  |                   |
| 1-5                               | 26               | 27.1              |
| 6-10                              | 30               | 31.3              |
| 11 and above                      | 40               | 41.6              |
| <i>Farm Size</i>                  |                  |                   |
| 0.5-5.0                           | 87               | 90.6              |
| 6-10                              | 9                | 9.4               |

Source: Survey Data 2010

### **Average Costs and Return in Cotton Production**

Table 2 shows the average costs and returns of cotton farmers in the study area. The average revenue from cotton output was found to be ₦ 58, 801.12 per hectare. The total cost incurred in cotton production was ₦ 37, 629 per hectare. Labour cost has the highest percentage (21%) of the total cost of production. The total variable cost constituted 95% while fixed cost constituted just 5% of the total cost. The enterprise had an average net farm income of ₦ 21, 172.12.

The result of the study further revealed that returns on Naira invested by farmers in the study area was ₦ 0.56, meaning that a farmer gain 56 Kobo in every one naira invested in cotton production. The result of the study clearly indicated

that cotton production is a profitable venture and so farmers in the study area should be advised to venture into because it is profitable enterprise. This finding is in conformity with the result of Ibrahim (2008) who conducted a research on the economics of sole cotton production in Lau Local Government Area of Taraba State and came out with a similar result (that is, returns on investment of ₦ 0.76)

**Table 2: Average cost and returns per hectare of cotton production in the study area**

| Item                        | Quantity/Ha               | Unit price | Total          |
|-----------------------------|---------------------------|------------|----------------|
|                             | Used by b ₦<br>respondent | a * b      | cost           |
| Revenue/Output (kg)         | 1,050                     | 56.0       | 58,801.12      |
| Total revenue               |                           |            | 58,801.12      |
| <b>Variable Cost</b>        |                           |            |                |
| Bush clearing and ploughing | 45 mandays                | 800        | 7,900          |
| Fertilizer                  | 1 bag of 50 kg            | 70.00      | 3,500          |
| Pesticide                   | 2 litres                  | 1000       | 2,000          |
| Harvesting                  | 1.050.20 kg/ha            | 4.524/kg   | 4,750          |
| Transportation              | 20 bags of 50 kg          | 425/bag    | 850            |
| Bagging                     | 20 bags                   | 33.25/bag  | 665            |
| <b>Total Variable Cost</b>  |                           |            | <b>35,565</b>  |
| <b>Fixed Variable Cost</b>  |                           |            |                |
| Hoe                         |                           | 400        | 1,600 (256)    |
| Axes                        |                           | 900        | 900 (144)      |
| Cutlass                     |                           | 400        | 400 (64)       |
| Sprayer                     |                           | 10,000     | 10,000 (1,600) |
| <b>Total Depreciation</b>   |                           |            |                |
| Total variable cost (TVC)   |                           | 35,565     |                |
| Total fixed cost (TFC)      |                           |            | 2,064          |
| Total cost (TVC + TFC)      |                           |            | 37,629         |
| Gross margin (GM)           |                           |            | 23,235.12      |
| Net farm income (NFI)       |                           |            | 21,172.12      |
| Return on investment (ROI)  |                           |            | 0.56           |

Source: Field Date 2010

### Constraints to Cotton Production

The distribution to farmers according to constraints to cotton production is shown in Table 3. It revealed that the most common constraints to cotton production in the study area are: low price of seed cotton (72.9%) which agreed with the report of Fortucci (2002) which stated that West and Central Africa is vulnerable to cotton world price. Pest and disease infestation (68.8%) is another major constraint which conformed with the findings of International Cotton Association Committee (ICAC) (2001) which indi-

cated that pest and disease infestation is the most critical factor in cotton production which could in most cases result in the total failure of the cotton farming business.

**Table 3: Distribution of respondents by constraints with cotton production**

| Constraints                  | Frequency | Percentage |
|------------------------------|-----------|------------|
| Low price of seed cotton     | 70        | 72.9       |
| Pest and disease infestation | 66        | 68.8       |
| Inadequate funds             | 65        | 67.7       |
| High cost of inputs          | 60        | 62.5       |
| Inadequate extension agents  | 50        | 52.1       |

Source: Survey Data 2010

Inadequate funds (67.7%) which hinders farmers in expanding the cotton farming business, which could be the reason why majority of the cotton farmers (91%) are small scale farmers in the study area. High cost of farm inputs (19.29%) as a major constraints may not be unconnected with the low or underutilization of inputs especially fertilizer and pesticides which directly affects yields negatively as compared to yield of 1500 kg – 2000 kg/ha by intensified inputs by Afcott cotton outgrowers scheme in Adamawa State, Nigeria (Mshelia 1991).

An inadequate extension agent (52.1%) was another constraint to cotton farming business, which could be the reason why majority (91%) of the cotton farmers in the study area is small scale farmers. High cost of farm inputs (62.5%) as a major constraints may not be unconnected with the low or underutilization of inputs especially fertilizer and pesticides which directly affects yield negatively as compared to yield of 1500 kg – 2000 kg/ha by intensified inputs by Afcott cotton out growers scheme in Adamawa State, Nigeria (Mshelia 1991).

These agents are responsible in teaching improved farming practices to farmers, as well as help farmers source for quality and affordable farm inputs like: fertilizer, improve seeds and chemicals.

### CONCLUSION

Based on the results of the findings, the following conclusions were made: farmers in the study area have diverse socio-economic characteristics with majority (91%) still small-scale farmers. It was also ascertained that cotton farm-

ing is a profitable venture in the study area considering the results of gross margin analysis and the return on the Naira invested. The major constraints to cotton production in the study area were; low price of seed cotton, high pest and disease infestation among others.

### RECOMMENDATIONS

Based on the results of the study, the following recommendations were made:

- i. Farmers should be well trained by Government and private firms on the application of pesticides to enable them effectively control pest and disease infestation on cotton farms. Also quality and well tested pesticides should be made available to farmers to curtail the problem of using fake and adulterated chemicals.
- ii. Farmers are encouraged to form or join cooperative societies in order to have access to credit/loan facilities from Government and other financial institutions.
- iii. The distribution of inputs like fertilizer should be done at the right time.
- iv. Efforts should be made by the State, Federal government as well as donor institutions to make cotton price attractive to the producers.

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