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Economic Analysis of Melon (Agusi) Production in Gassol Local Government Area of Taraba State, Nigeria

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ABSTRACT

The study analysed the economics of melon (Agusi) production in Gassol Local Government Area of Taraba State, Nigeria. Structured questionnaires were used to collect data from 96 melon (agusi) farmers selected through purposive and random sampling techniques. The data were analysed using descriptive statistics and Gross Margin Analysis. The results of the socio-economic characteristics revealed that majority (66%) of the farmers were males of below 51 years of age (89%) they were married (73%) with large family size (75%) and most (71%) had formal education with many years of farming experience (70%) but were mainly small-holder farmers (78%). The result of the gross margin analysis indicated that, melon farmers incurred an average total cost of ₦41,980 per hectare. It also revealed the gross income, gross margin, net farm income and return on Naira invested of ₦60,000, ₦23,500, ₦18,020 and 0.432 respectively. The major constraints of melon (agusi) production identified were: inadequate fund, lack of improved seed, high cost of farm inputs, pest and disease, price fluctuation and insecurity. It is recommended that, farmers should form cooperative in order to get financial assistance from Government as well as access credit from banks. Also Government should intervene in subsidizing the price of farm inputs as well as fixing a minimum guaranteed price for the production in the area.

Keywords: Economic, Analysis, Melon, Production.

Introduction

Melon 'Agusi' (*Citrullus Lanatus Thunb. Mansf*) is one among the most important oil crop. It is the major source of fats and oil from plants. Melon 'Agusi' is a native of Africa, which has probably been introduced to Asia, Iran and Ukraine (Schippers, 2000). According to Yusuf *et al.*, (2008), the cultivation of melon 'Agusi' is across the country but with higher intensity in Kogi and Benue States (211, 600 ha). There was large increase in land area put to melon production in 2004 and 2005 (NAERLS – PCU, 2005). A valuable vegetable oil is extracted

from the seed while the grounded seed is used to prepare various delicacies including cake and soup (Lagoke et al., 1983). Our total dependence on the exotic plants as a source of livelihood is continuing to pose serious challenge to food insecurity in the African continent. This is because the exotic plants though give high output under favourable conditions, but they are cost intensive and most of the time inadaptable to our environment. While most of these indigenous crops like melon 'Agusi' can give a relative high average yield under these adverse conditions (Schippers, 2000). Melon 'Agusi' is probably the oldest African vegetable oil crop indigenous to most West African countries where is either the staple or a major part of their diet and soup (food) for various delicacies (Atodele, *et al.*, 2007).

Most of melon 'Agusi' consumers neither grow nor process the product, which of course made the commodity relatively costly and there by increasing the economic status of the farmers and marketers. The potentials for the production of this crop in Nigeria and West Africa at large is high as it is superior to other vegetable oil crops in performance under moisture stress and low soil nutrients. Despite these numerous advantages associated with melon 'Agusi', it is observed that, the production of this commodity has been declining, hence the demand for melon 'Agusi' to meet up with the nutritional requirement has outstripped supply probably due to population increase coupled with low production rate (FAO, 2003). Also, there are little or no empirical studies on the commodity in the study area. With these aforementioned reasons, this study aims at describing the socio-economic characteristics of melon farmers, estimating the costs and returns of melon production and identifying the major constraints to melon production in Gassol Local Government Area of Taraba State, Nigeria.

Methodology

The Study Area

The study was conducted in Gassol Local Government Area of Taraba State, Nigeria. Gassol Local Government is located in the Taraba Central Senatorial Zone with it's 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^{0}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: melon, yam, rice, cowpea, groundnut, maize, cattle, sheep, goats and poultry.

Source of Data

Data for this study were collected from both primary and secondary sources. Primary data were collected with the use of structured questionnaire, while secondary data were collected from journals, textbooks, seminar proceedings and internet.

Sampling Technique

Purposive and simple random sampling techniques were employed to select the respondents. Six (6) wards out of the twelve (12) wards in the Local Government Area were selected based on their prominence in melon 'Agusi' production viz: Gassol, Mutum-Biyu, Sabongida, Gunduma, Namnai and Wuro Jam. In each of the six (6) wards, twenty (20) melon 'Agusi' farmers were selected using simple random technique to make up to one hundred and twenty (120) respondents, whom questionnaires were distributed, and out of which ninety-six (96) questionnaires were retrieved for data analysis.

Analytical Techniques

Data collected were analysed using both descriptive statistics and Gross Margin analysis. The descriptive statistic such as frequency distribution and percentage were used to describe the socio-economic characteristics of the farmers as well as analysed the constraints to melon production. While the gross margin analysis was used to estimate the costs and returns of melon 'Agusi' production in the study area.

Gross Margin Analysis

Gross margin analysis is the difference between the gross farm income and the total variable costs (Olukosi and Erhabor, 1998). It is used to assess the effect of changes that do not alter the fixed cost of production, especially the cost of land and other durable factors. It is also used to determine the potential profitability and effect on farmer's farm income. It has the advantage of being simple as well as useful in the analysis of the profitability of small farms that have small fixed costs (Samm, 2009).

Model Specification

The empirical model is specified below:

$Gm = GI - TVC$ 1

Where:

Gm = Gross margin (N)

GI = Gross farm income (N)

TVC = Total variable cost (N)

The net farm income (NFI) was computed as follows:

$NFI = Gm - TFC$ 2

Where:

NFI = Net farm income (N)

Gm = Gross margin (N)

TFC = Total fixed cost (N)

NB: Thus Gross farm income or total value of output from melon production (N/ha) is the product of average output per hectare and the market price. The price used was the market price of the year 2014. Total Variable Costs (TVC) or the costs that are specific in producing melon 'Agusi' output (N/ha). TVC varies according to output and are incurred on variable inputs. These include cost of inputs like: seeds, agro-chemical, labour, harvesting, processing and transportation.

Results and Discussion

Socio-Economic Characteristics of Melon 'Agusi' Farmers

The analysis in Table 1 shows that majority (89.0%) of the respondents were below 51 years of age. This implies that they were young adult who are in their productive years and could be actively involved in farm operations. This result is in agreement with the findings of Stephen *et al.*, (2006). Also, 66.0% of the farmers were males while females constituted only 34.0%. The proportion of women engaged in melon production is low and it may be explained by socio-cultural as well as religious factors and not as result of technical and managerial inefficiency. For instance, women are considered in most African cultures as house keepers who should remain at home cooking and catering for children. Table 1 further revealed that, most (73.0%) of the respondents was married and majority (75.0%) had a large family size of more than five (5) persons per household. This could positively influence melon production in the area as there would be adequate farm labour supply from the family.

Similarly, majority (71.0%) of the farmers had formal education ranging from primary to tertiary level. Farmers education is believed to positively influenced the use of improve technology in agricultural production and hence farmers productivity (Awolola, 1995). Table 1 also indicated that majority (70.0%) of the farmers had more than six (6) years of farming experience. The experience in farming by these farmers could positively influence their management capabilities of the crop. This result confirmed to the findings of Yusuf *et al.,* (2008). Also, most (78.0%) of the farmers had a farm size of less than five hectares of land. This implies that, most of the melon 'Agusi' farmers in the study area were smallholder farmers who cultivated few hectares of land due to inadequate funds to expand their farms.

Costs and Returns of Melon 'Agusi' Production

Table 2 shows the average costs and returns per hectare of melon 'Agusi' production. The result indicated that melon farmers incurred a total variable costs (TVC) of ₦36,500 representing 87% of the total cost of production (₦41,980). The result further shows the Gross Income, Gross Margin, Net farm Income and Return on Naira invested of ₦60,000, ₦23,500, ₦18,000 and ₦0.43K respectively. This implies that melon 'Agusi' production is a profitable venture in the study area. This result agreed with the findings of Yusuf *et al.*, (2008).

Constraints to Melon 'Agusi' Production

Table 3 shows the major constraints to melon 'Agusi' production in the study area. The result indicated inadequate funds (90.63%) as the major constraints, which hinders farmers in expanding the melon farms which could be the reason why majority (78.-%) are smallholder farmers in the study area. This agrees with the result of Yusuf *et al.*, (2008). Also, lack of improved seeds (81.25%) and high cost of farm inputs (83.33%) as major constraints to melon production have affected negatively yield of the crop. Similarly, price fluctuation (87.50%) and insecurity (84.38%) has severely constrained the production of melon in the area. These problems might not be unconnected with the ethno-religious crisis in the study area which made some melon farmers to migrate to other places for the safety of their lives and properties. This situation made some farmers to abandon their farms as well as marketers to stop transaction in the area.

Conclusion and Recommendations

The findings in this study shows that, males predominated in melon production, and most melon farmers are young adult who are married with large family size, they are educated with many years of farming experience but are mainly

smallholder farmers. Melon 'Agusi' production in the study area is a profitable venture despite the constraints to its production such as inadequate fund, high cost of farm inputs, lack of improved seeds, price fluctuation and insecurity. Farmers are encouraged to form cooperative society in order to get financial assistance from Government, NGO's and Banks. Also, Government should subsidize the price of farm inputs, as well as provide a minimum guaranteed price for the product. In the same vein, adequate security measures should be taken to safeguard the lives and properties of farmers/marketers in the study area.

Table 1: Socio-Economic Characteristics of Melon Farmers (n = 96)

Variables	Frequency	Percentage (%)
Age (years)		
20-30	22	23.0
31-40	27	28.0
41-50	36	38.0
51 and above	11	11.0
Gender		
Male	63	66.0
Female	33	34.0
Marital Status		
Married	70	73.0
Single	15	16.0
Divourced/widowed	11	11.0
Household size (no. of persons)		
1-5	24	25.0
6-10	46	48.0
11 and above	26	27.0
Educational Level		
No formal education	28	29.0
Primary education	27	28.0
Secondary education	31	32.0
Tertiary education	10	11.0
Years of farming experience		
1-5	29	30.0
6 and above	67	70.0
Farm size		
<1-5	75	78.0
6 and above	21	22.0

Source: Field Survey, 2014

Table 2: Estimated average costs and returns per hectare of melon production

Productions Variables	Value N/ha
A. Variable Costs	
Seeds	3000
Herbicides	2,000
Pesticides	2,000
Fertilizer	6,000
Labour	20,000
transportation	1,000
Other expenses	2,500
Total Variable Costs	**36,500**
B. Fixed Costs	
Depreciation on assets	2,480
Rents on land	3,000
Total fixed costs (TFC)	**5,480**
Total Cost of Production (TC) = A + B	41,980
C. Returns	
Gross income (GI)	60,000
Gross margin (Gm)	23,500
Net farm income (NFI)	18,020
Return on Naira invested	0.43K

Source: Field Survey, 2014

Table 3: Constraints to Melon 'Agusi' Production

Constrains	Frequency	Percentage (%)
Inadequate funds	87	90.63
High cost of farm inputs	80	83.33
Price fluctuation	84	87.50
Lack of improve seeds	74	81.25
Insecurity	81	84.38

Source: Field Survey, 2014

- **Multiple response**

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