

Profitability of Dry Season Tomato (*Lycopersicon esculentum* Mill.) Production in Fufore Local Government Area of Adamawa State Nigeria.

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-----ABSTRACT-----

The study analyzed the profitability of dry season tomato production in fufore local government area of Adamawa state, Nigeria. A multistage sampling technique was used to select eighty (80) tomato farmers in the study area. Primary data were collected with the aid of structured questionnaires for 2011/2012 cropping season. Descriptive statistics, gross margin and net income analysis were the analytical tools employed. The results showed that majority (88,75%) of the respondents were male, married (82%) who were in their active ages of their life. The level of education of the respondents was very low as most of them (50%) had only first living certificate, with little farming experience. The result of the profitability analysis revealed average gross margin and net income per hectare of ₦125,500 and ₦105,012.91 respectively. This indicated that dry season tomato production is a profitable venture in the study area. The analysis further identified inadequate farm credit, poor storage and processing facilities and inadequate extension services as the main problems faced by farmers. The study therefore, recommends that farmers should be encouraged to form cooperative societies so as to enable them obtain loans from commercial banks and agricultural and rural cooperative bank, at regulated interest rates. Government should provide efficient extension services in the study area by organizing workshops, training and make provision to facilitate their work and provide adequate storage facilities.

KEYWORDS: Data, Fufore; Irrigation; Production; Storage; Tomato.

Exchange rate: 157.60NGN to 1USD

Date of Submission: 17, September 2013



Date of Acceptance: 10, November 2013

I. INTRODUCTION

1.1 Study Background

Irrigated Agriculture has a significant role in expanding the level of food production leading to the attainment of food self-sufficiency and the overall agricultural development in Nigeria. Vegetable production forms a substantial percentage of the major food crop cultivation in Nigeria. Tomato is perhaps the most important popular vegetable crop grown all over the country. Both the wet and dry season cropping system contributes immensely to the national requirement; though bulk production is from the dry season cropping.

Tomato (*Lycopersicon esculentum* Mill.) is one of the most cultivated vegetable in most regions of the world, ranking second in importance to potatoes in many countries (Ojo et.al., 2009). In Nigeria, an annual total area of one million hectares is reportedly used for its cultivation and it makes up about 18 percent of the average daily consumption of vegetables in Nigerian homes (Chidi 2012). Nigeria is also ranked second largest producer of tomato in Africa and thirtieth largest in the world, producing 1.701 million tonnes of tomato annually at an average of 25-30 tonnes per hectare (FAO 2010). Dry season tomato production in Adamawa state is done mainly in swampy (Fadama) areas along river bank.

Most nutritionists are of the opinion that fresh fruits and vegetables are very important sources of vitamins and minerals that are essential for healthy human diet (Chidi 2012). According to report from ADADP (2010a), dry season tomato production is on the

increase, it occupied large hectares of all vegetables grown between 99-2010 a total of 12.83(000ha) were cultivated to tomato in Adamawa state and the total produce was 78.4(000mt) with an average production of 6.11 tones/ha for the same period. While a total of 1.49(000ha) of land was put under tomato production in the state in 2010 alone with a total production of 7.5(000mt); gives an estimated average yield of 5.03tons /ha within the period. The result also indicates increasing average production in tomato farming in the state as the average annual yield stood at 5,050 kg/ha for the year under review.

It is observed that other vegetables have restricted demand as they are consumed exclusively only by the urban affluent/elite class, the demand for the tomato is universal, for it is consumed by both affluent/elite and poor classes. Tomato is regarded as the vegetable of the largely poor masses (Adepetu 2005). The highly perishable nature of tomato makes it difficult to cultivate by many farmers at commercial level in Nigeria; despite its numerous demand and importance in the nutrition of the people. This is because the producers of the crop are mostly small-scale farmers who still operate within the frame work of traditional agriculture. It is in view of the prospect which this crop holds for the agro-allied industries and domestic home consumption in Nigeria, that there is a clear need for the conduct of studies on profitability analysis of dry season tomato production in Fufore Local Government Area of Adamawa state.

1.2 Study objectives

The broad objective of the study was to analyze the profitability of tomato production in Fufore LGA of Adamawa State. Specifically the study would

- [1] Examine the socio-economic characteristics of tomato farmers in the study area.
- [2] Determine the profitability of tomato enterprise in the study area.
- [3] Identify the constraints to tomato production in the study area.

II. MATERIALS AND METHODS

2.1 Study Area

The study was conducted in Fufore Local Government Area (LGA) of Adamawa state. Fufore is one of the largest of the 21(LGAs) in the state. The area lies between latitude 10⁰N and longitude 12⁰.30E (Adebayo 1999). It has land area of 5078.14(sq. km) with a population of 209,460 that comprised 105,626males and 103,834 females(NPC 2006). The study area lies in the humid climatic zone of Nigeria with mean annual rainfall ranging from 700mm – 1000mm. The rainy season lasts for four to five months (Adebayo 1999). The predominant ethnic groups found in the area includes: Verre, Bwatiye and Fulani. The local government is situated in the northern guinea savannah; with large swampy (Fadama) areas which supports tomato production during dry season. Other crops grown in the area includes groundnut, rice, maize and sorghum (Sajo *et. al.*, 1999). The major economic activity of the inhabitant is agriculture (farming, fishing and live-stock production).

2.2 Sampling Techniques and Data Collection

The study employed the use of well structured questionnaires designed in line with the objective of the study. Multi-stage sampling procedure was employed. In the first stage fufore local government area was selected based on aprior knowledge that it is a tomato producing area. In the second stage five villages namely:(Ribadu, Dasin house, parriya, wurobokki, and farang) were purposively selected from eleven wards of the LGA because of their proximity to swampy (fadama) areas which support tomato production. Third stage involve the random selection of eighty (80) tomato farmers in proportionate to the farmers population sizes of the sampled villages.

2.3 Methods of Data Analysis

Frequency tables and percentages were used to analyze the socio-economic characteristic of the respondents,(age, gender, education, marriage, occupation, farm size and farming experience) as well as problems faced by the respondents, while profitability of tomato farmers was determined by Gross Margin and Net Income analysis. Afolami (2002) defined gross margin analysis as the difference between the gross farm income (GFI) and the total variable production cost (TVC); while Net Farm Income (NFI) was defined as the difference between gross margin and total fixed production cost. It is express as follows:

$$GM = TR - TVC \quad \dots (3.1)$$

Where;

- GM = Gross Margin (₦/Ha)
- TR = Total Revenue (₦/Ha)
- TVC = Total Variable Costs (₦/Ha)

And

$$NFI = GM - TFC \quad \dots(3.2)$$

Where;

- NFI = Net Farm Income (₦/Ha)
- TFC = Total Fixed Cost (₦/Ha)

The variable costs mention include, seed, family labour, hired labour, tractor hiring, transportation, fuel, empty basket, fertilizer, and agrochemicals. While Fixed cost includes: depreciation of fixed asset and rent on land.

III. RESULTS AND DISCUSSIONS

3.1 Socio-economic characteristics of the respondents.

Table 1 presented the socio-economics distribution of the respondents. The table Showed that majority (88.75%) of the farmers involved in tomato production were males while only 11.25% were females. This indicated that women were also in the business but to a smaller extend. The dominance of tomato production by men in the study area may be as a result of high labour requirement in tomato production. This is in line with the studies by Usman and Bakari (2013) and Zalkuwi *et. al.*(2012), who reported that males dominated tomato production in Adamawa State. The age distribution of the respondents revealed that majority (88%) of the respondents were within the age range of 31 years and above which implied that the production was dominated by adults who were in their active ages. This also agrees with the findings of Usman and Bakari (2013) who found that tomato production was dominated by adults. The table further revealed that most of the respondents (82%) were married who produce tomato most likely to cater for their family needs. The table also reveled that 50% of the farmers had primary education. This implies that farmers may be responsive to the challenges of new technology in the study area. This result is consistent with the findings by Babalola *et. al.* (2010). About 45% of the respondents had less than five years of experience in tomato production. This may affect their efficiency, because the more experienced a farmer is the more efficient he may on the farm and vice versa. The table further indicated that majority (84%) of respondents were small scaled and command farm holdings 0.1-2.0 hectares. This implied that mechanized farm production among the respondents could not be feasible.

Table 1. Socio-economic characteristics of respondents

Variables	Frequency	Percentage (%)
Gender		
Male	71	88.75
Female	9	11.25
Total	80	100.00
Age(years)		
21-30	10	12.50
31-40	30	37.50
≥41	40	50.00
Total	80	100.00
Marital Status		
Married	66	82.50
Single	10	12.50
Divorced	4	5.00
Total	80	100.00
Educational Background		
Primary	40	50.00
Secondary	9	11.25
Tertiary	5	6.25
No. Formal	26	32.50
Total	80	100.00
Farm Size(ha)		
≤ 1.0	17	21.25
1.1-2.0	51	63.75
≥3.0	12	15.00
Total	80	100.00
Farming Experience		
≤5	36	45.00
6-10	24	30.00
11-20	12	15.00
≥21	8	10.00
Total	80	100.00

Source: Field Survey, 2012

3.2 Average Cost and Return per Hectare.

Table 2 showed the profitability analysis of tomato production among the respondents. The average gross revenue per hectare generated by tomato farmers in the study area was ₦321,350.33 while the total average cost of production incurred during the production was ₦216,337.42. The average gross margin and net farm income per hectare therefore were ₦125,500.88 and ₦105,012.91 respectively. Hired and family labour, empty basket, loading and transportation, as well as fertilizer accounted for 72.06% of the total variable costs. The farm gross ratio was 0.67; the ratio showed that the total farm cost was about 7% of the gross revenue which is in line with Olukosi and Erhabor (2008) which states that a gross ratio of less than one is desirable for any farm business. Therefore, based on the information in table 2, it is obvious that dry season tomato production was a profitable venture in the study area.

Table 2: Average Cost and Returns per hectare

Vriables	Value(₦)	(%)
Variables Cost		
Fertilizer	21,969.24	10.16
Agrochemical	20,019.62	9.25
Seed	5,713.29	2.64
Family Labour	34,756.86	16.07
Hired Labour	48,418.56	22.38
Loading & Transportation	22,250.03	10.28
Fuel	14,220.93	6.57
Empty basket	28,500.92	13.17
Total Variable Cost (TVC)	195,849.45	90.53
Fixed Cost		
Rent on land	5,254.43	2.43
Depreciation of fixed Assets	15,233.54	7.04
Total Fixed cost (TFC)	20,487.97	9.47
Total cost of production (TVC+TFC)	216,337.42	100
Returns		
Gross Revenue (GR)	321,350.33	
Gross Margin (GR-TVC)	125,500.88	
Net Farm Income (GM-TFC)	105,012.91	
Farm Gross Ratio (GM/GR)	0.67	

Source: Field Survey, 2012.

Table 3: Constraints Associated with Tomato production

Constraints	Frequency	(%)	Rank
Inadequate farm credit	60	20.00	1
Poor storage and processing Facilities	58	19.33	2
Inadequate extension services	50	16.67	3
Attack by Pests and disease	42	14.00	4
Shortage /high cost of inputs	40	13.33	5
High cost of fuel	30	10.00	6
Land Shortage	20	06.67	7
Total	300*	100.00	

Source: Field survey, 2012.

* Multiple responses

The result in Table 3 showed the constraints faced by the respondents. The table revealed that, the major problem faced by dry season tomato producers is inadequate credit facilities which accounted for 20%. This is in line with the study by Usman and Bakari, (2013), who reported inadequate capital hinders tomato farmers from expanding their

business. This was followed by poor storage and processing facilities (19.33%). This problem causes the price of tomatoes to fluctuate with season. Farmers are forced to sell their produce at harvest at a very low price. Inadequate extension services among producers were also a major challenge to most producers (16.67%). Because of this problem dissemination of new production technologies among the respondents was bound to be limited. Similarly, 14% of the respondents pointed out high incident of pest and disease as a constraining factor. Another problem mentioned by the farmers was shortage/high cost of inputs which necessitated farmers to use organic manure. This is in line with the report of Afolami (2002) noted high input cost among tomato farmers in Ogun State. In addition, about 10% of the respondents mentioned high cost of fuel and 6.67% shortage of land as other problems facing tomato farmers in the study area. These problems singly or put together can limit farm output and profit. This can go a long way in explaining the prevalent poverty cycle among the respondents.

IV. CONCLUSION AND RECOMMENDATIONS

The results indicated that majority of the tomato farmers in the study area were males, married, who were in their active ages and had first school leaving certificate as their highest qualification. The study also showed that most of the respondents were small-scale farmers with little experience in tomato production. However, the respondent make good farm profit with average gross margin and net farm income per hectare of ₦125,500.88 and ₦105,012.91 respectively. While inadequacy of farm credit was identified as the most significant problem among the respondents, land shortage was the least significant constraint. The study therefore, recommended that farmers should be encouraged to form cooperative societies so as to enable them obtain loans from commercial banks and agricultural and rural cooperative bank, at regulated interest rates. Government should ensure efficient extension services in the study area by organizing workshops, training and make provision to facilitate their work and also provide adequate storage facilities.

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