



**PROFITABILITY OF CUCUMBER (*Cucumis sativa L.*) PRODUCTION IN TAI LOCAL GOVERNMENT AREA OF RIVERS STATE, NIGERIA**

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**ABSTRACT**

This study examined the economics of cucumber production in Tai Local government Area of Rivers State, Nigeria. It made use of data obtained through the administration of copies of well structured questionnaire to obtain 70 respondents selected by purposive and random sampling methods. Descriptive statistics involving frequencies, tables and percentages were used to analyze the data including the profit function. Majority (67.4%) of the respondents were educated with a mean age of 35years and average household size of 6 persons. 64.4% were married, the mean plot size and farming experiences of the farmers were 2.3 plots and 3.2 years respectively. The gross margin of production was ₦716,100.00, while the net farm income and profitability index were ₦-168,657.52 and -0.047 respectively showing that cucumber production in the study area was unprofitable. Production was most seriously constrained by the lack of storage, scarcity of planting seed, high cost of labour, and lack of capital. Policy to boost production and maximize profit must be channeled towards measures that would combat the identified problems such as the provision of soft loans to the farmers, encourage extension visits and organize seminars and training for the farmers.

**Key words:** Cucumber production, profitability, constraints, Tai

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**INTRODUCTION**

Cucumber is a widely cultivated plant in the gourd family called cucurbitaceae (Swain, Ware and Macallin, 2005). It is a monoecious, annual climber or creeper (Adetula and Denton, 2003) that has been cultivated for over 3,000 years and is still widely cultivated today. The crop is the fourth most important vegetable after tomato, cabbage and onion in Asia (Tatlioglu, 1997), the second most important vegetable crop after tomato in Western Europe (Phu, 1997). In tropical Africa, its place has not been ranked because of its limited use. It is grown mainly in Jos, Plateau State especially and in some other states of the federation. It is a soft succulent plant with high water content and has large leaves that form canopy over the fruit. The vines grow on stakes or on trellise. The fruit is roughly cylindrical, elongated with tapered ends and may be as long in diameter. They are used in unripe mature state, usually eaten raw in salads or pickled and are also stewed in tropical regions (Grubben, 1977).



Cucumber grown for eating are called slicers and those intended for pickling are called picklers. Pickler refers to cucumbers that are primarily used for processing. Although, it is less nutritious than most fruits, it is still a very good source of vitamins A, C, K, B6, potassium and also provides dietary fibres, pantothenic acid, magnesium, phosphous, copper and manganese (Vimala *et al.*, 1999). It contains ascorbic acid and caffeic acid both of which help to smoothen the skin irritation and reduces swelling in skin. Its juice is often recommended as a source of silicon to improve the complexion and health of the skin (Duke, 1997). According to Okonmah (2011), cucumber is one of the most important market vegetables in the tropics. However, the production of the fruit in Nigeria is very low due to some constraints such as choice of appropriate type of staking (in order to promote higher yield of pods), environmental factors and diseases, etc. They are produced mainly in the northern states of Nigeria (Adetula and Denton, 2003). It is necessary to increase the production in order to supplement the high intake of carbohydrate in Nigeria, especially the southern parts of Nigeria where there is sparse and over dependence of its supply for salad, vegetables and fruits from the north (being major suppliers), resulting to relative higher price because of transportation cost and spoilage of the fruit (Okonmah, 2011). The fruit constitute the dietary system of the populace in the cities as valuable ingredient in vegetable salads and fruit. This study is therefore aimed at studying cucumber production and profitability, estimating cost and returns of cucumber production and constraints to production.

#### **Problem Statement**

Cucumbers are used widely in a wide variety of salads. Due to the continued realization of the importance of fruits in our diets and the over whelming importance of cucumber health benefits along with skin care, there is an increase demand for the product in Nigeria. The shortage in supply could be linked to the production which is also linked to farmers down the line of production. Small scale farmers are still responsible for the production of agricultural crops at subsistent level with crude tools, small plot of land and engaged in multiple coppicing practices.

In Nigeria, adequate research has not been conducted to find out the definite types of staking to support the best yield of cucumber in large farms and near the cities (Okonmah, 2011). The fruit is usually under foliage, shading one another. They could still require high staking for good exposure to sunlight and sufficient photosynthetic activities (Okonmah, 2011). Farmers are likely not aware of the potentials of this crop, its market value due to lack of market information from extension agents in order to key into its production and increase their income level and status (Okonmah, 2011 and Opara *et al.*, 2013). Furthermore, little researches have been carried out to ascertain the possibility of its wide cultivation here in the South-South. The study objectives are to: describe the socio-economic characteristic of farmers that grow cucumber, estimate the profitability of cucumber production and identify factors affecting cucumber production in the study area.

#### **Materials and Method**

The study was conducted in Tai Local Government Area of Rivers State, Nigeria. Primary data used for this study were obtained from sixty small holders multiple crop farmers engaged in cucumber crop cultivation with structured questionnaire. In the first stage, fifteen villages were purposely selected from the Local Government Area because farmers in these areas were engaged in cultivating cucumber. At the second stage, four farmers were randomly selected from each village to give a total of 60 farmers. The budgetary technique (Ugwumba and Uzuegbunam, 2010; Ugwumba *et al.*, 2012) used in determining enterprise profitability is specified as:



$$NFI = \sum_{i=1}^m P_{xij} X_{ij} + \sum_{j=1}^r F_{ij}$$

Where:

NFI/Profit = Net Farm Income/ Profit

$\Sigma$  = Sum

$P_{yj} Y_j$  = Unit Price x quantity of jth respondent's output = Total Revenue (TR) for jth respondent

$P_{xij} X_{ij}$  = Prices x quantities of jth respondent's variable inputs = Total Variable Cost (TVC) for jth respondent

$F_{ij}$  = Depreciation values of equipment, interest on loan, etc. for jth respondent = Total Fixed Cost (TFC) for jth respondent.

TC = Total Cost (TVC + TFC)

ROI = Return on investment = TR / TC When ROI > 1, there is profit, otherwise there is loss

NROI = Net return on Investment = NFI / TC

## RESULTS AND DISCUSSION

Table 1: Distribution of the respondents according to socioeconomic characteristics

VARIABLE	FREQUENCY	PERCENTAGE	MEAN
<b>Gender</b>			
Male	34	48.7	
Female	36	51.4	
<b>Total</b>	<b>70</b>	<b>100</b>	
<b>Age</b>			
25-32	16	22.9	
33-40	28	40	
41-48	22	31.4	35
49-56	4	5.7	
<b>Total</b>	<b>70</b>	<b>100</b>	
<b>Plot size</b>			
1 - 2	42	59.9	
3 - 4	28	40.1	
<b>Total</b>	<b>70</b>	<b>100</b>	
<b>Household size</b>			
1 - 3	2	2.9	
4 - 6	43	61.4	
7 - 9	25	35.7	
<b>Total</b>	<b>70</b>	<b>100</b>	6
<b>Education Level</b>			
No Education	-	-	
Primary	7	10	
Secondary	47	67.4	
Tertiary education	16	22.8	
<b>Total</b>	<b>70</b>	<b>100</b>	
<b>Years of experiences</b>			
1 – 3	42	60	
4 - 6	28	40	
<b>Total</b>	<b>70</b>	<b>100</b>	
14-17	4	6.06	



18-21	2	3.03	6.6
	66	100	

*Source: Field survey 2014*

**Socio-economic characteristics of households:** The results of the study revealed that 51.4% of the growers were females as against 48.7% of males. This implies that more females are into cucumber production than their males' counterparts who are probably engaged with other activities. It also confirms that women are more active in agriculture than the males (Azeez and Madukwe, 2010). 40% of the farmers are within the age range of 33-40 years with a mean average age of 35 for all respondents. This is the economic active age and implies that more cucumber can be produced if the strength of the farmers is harnessed. This is corroborated by the findings of Rahman *et al.*, (2002) in which they showed that farmers' age may influence adoption in several ways. Ebewore (2012) also made similar observation among cocoa farmers in Edo and Ondo States of Nigeria. The order of educational level ranges from the least to highest as primary education (10%), secondary education (22.8%) and tertiary education (67.4%) respectively. This observation will be good for the cucumber production as higher percentage of them is enlightened they can understand the steps involved in cucumber production. By implication, a reasonable number of farmers in the area should be able to understand the use of improved technologies and apply it to achieve increased production. This had been demonstrated in several studies that low level of education makes introduction of improved technologies by extension agents difficult (Idrisa *et al.*, 2007; Babatunde *et al.*, 2007).

The study revealed a large proportion of household size 4-6 (61.4%) and 7-9 (35.7%), with a mean average of 6 persons per house-hold. This would imply more hands in the farm and cheap labour that can be utilized for cultivation of large area and greater output. long years of experience would have implied better performance, but, a greater percentage (60%) reported that they have 1-3years of experience in cucumber production with a mean average of 3.2 years. This shows that the farmers don't have sufficient experience. The study shows that 42.8% of cucumber producers make use of personal funds to cultivate their crops while 34.3%, 8.6%, and 8.6% get theirs from friends, relative, cooperatives, micro finance banks. This shows that the banks are probably still unwilling to lend to farmers in agriculture because of its inherent risks or the farmers are unwilling to borrow due to lack of collateral or high interest rates demanded by the banks. The study further reveals that the proportion of land available for cultivation of cucumber are 59.9% of the farmers make use of about 1-2 plots for the purpose with an average mean of 2.3 plots which is inadequate to go in for commercial production of the crop. The farmers resort to mixed cropping pattern and not sole farming.

#### **Profitability of cucumber production**

Table 2: Gross margin and net return analysis of cucumber production

ITEMS OF COST	QUANTITY	UNIT COST(₦)	TOTAL COST(₦)
<b>A. Variable cost items:</b>			
Seed planted			161,800
Family labour	202	1000	202,000
Hired labour			280,700
Agro-chemical			219,000
Fertilizer			58,500
Capital borrowed			1,990,000
Interest on loan			622,200
Total			<b>3,534,200</b>

#### **B. Fixed cost items:**



Land for production	73	12,000	876,000
Depreciation on equipment			7,957.52
Total			<b>883,957.52</b>
<b>Total cost (A+B)</b>			<b>418,957.52</b>
<b>C. Revenue from sales</b>			<b>4,250,300.00</b>
Gross margin = TR- TVC			716,100.00
Net income = TR-TC (4,250,300-4,418,957.52)			- 168,657.52
Profitability index = NI/TVC (-168,657.52/3,534,200)			-0.047

Source: field survey, 2014.

The rule of thumb is that; an investment project or proposal is considered to be profitable if it features a profitability index above 1 and should be accepted. A profitability index of less than 1 indicates that the project or investment will not make us any profits and should be rejected. On the contrary, a profitability index equal to 1 indicates a break-even on the investments without making any profits. The profitability index of (-0.047) in the study area indicates that cucumber production is unprofitable. Also the negative result (₦ -168,657.52) from the net income indicates a loss. By implication farmers may be making up from other engagements as in part time farming or from their mixed cropping pattern.

#### **Constraints to cucumber production**

Distribution of the respondents according to problems militating against cucumber production in the area is shown in Table 4.14. The result indicated that lack of storage for harvested crop constituted a major constraint of 82.9%. This was followed by the problem of getting seed for planting with a score of 81.4% in the production area. This was followed by high cost of labour (75.7%), lack of or scarcity of land for planting (75.7%), lack of capital (70%), and disease challenges (4.3%). The high percentages indicate the very serious nature of the constraints.

**Table 3: Constraints to cucumber production**

Variable	Very serious		Serious		Mod. Serious		Not serious	
	Freq	%	freq	%	freq	%	freq	%
Storage problems	58	82.9	09	12.9	3	4.3		
Problem getting seeds	57	81.4	09	12.9	4	5.7		
Labour cost	53	75.7	11	15.7	6	8.6		
Land scarcity	53	75.7	11	15.7	6	8.6		
Lack of capital	49	70.0	12	17.1	9	12.9		
Disease	3	4.3	14	20.0	52	74.3	1	1.4

Source: Field survey 2014.

#### **Conclusion and recommendation**

Based on the findings of this study the following conclusions are made. The study concluded that cucumber production in Tai Local government Area is not profitable. However, if resources were adequately utilized and the constraining factors better addressed, more output may be obtained. The study recommended as follows: Cucumber production in the area has not reached the maximum level. There is room for increased production. Therefore, more input resources should be added to increase output of the crop. The farmers should be given aid especially by providing them with production credit which will enable them to increase their resource use. This is because their present level of resource use may be due to scarcity of production



credit given the fact that their equity in business is low. Therefore, extension agents should make efforts geared towards educating the farmers on the need for and method to help the farmers improve on their production. Seminars and trainings are also proposed for small scale farmers on resource use. This will improve their production.

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