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DETERMINANTS AND PROFITABILITY OF HONEY PRODUCTION IN IKWUANO LOCAL GOVERNMENT AREA, ABIA STATE, NIGERIA

Chibuzo Ikechukwu OKPOKIRI, Ifeanyi Ndubuto NWACHUKWU, Chigozirim Ndubuisi ONWUSIRIBE

Michael Okpara University of Agriculture Umudike, Department of Agribusiness and Management, Abia State, Nigeria, Phone: +2348030817321 Email: blazes.okpokiri@gmail.com

Corresponding author: blazes.okpokiri@gmail.com

Abstract

The study analyzed the determinants and profitability of honey production in Ikwuano Local Government Area of Abia state, Nigeria. Beyond the broad objective, the study specifically sought to analyze the socio economic characteristics of honey producers in the study area, examine the returns associated with honey production, estimate the production, analyze the determinant of honey production in the area and identify the constraints of honey producers in the area. A total of 60 respondents were randomly selected and interviewed in Ikwuano Local Government Area from which data and information were elicited. Multiple regression, descriptive statistics, Cobb Douglas production function and profitability analysis were used to analyze the data collected. The result shows that bee farmers in the study area combine honey production with others jobs, raise their capital themselves and mainly use family members as source of labour. Inadequate capital was highlighted as the major constraint to honey production in the study area. The coefficients of age, sex, income and household size were positively related to the quantity of honey produced and the gross margin of N47,183.33 shows that honey production is very lucrative in the study area and should be encouraged among farmers in Ikwuano Local Government Area.

Key words**:** *honey production, profitability, socio- economics*

INTRODUCTION

The discovery of crude oil in Nigeria in the late 1950's adversely affected the agricultural sector of the Nigerian economy. The once booming agriculture in Nigeria especially in the 1940s and early 1950s became a shadow of itself. The groundnut pyramids in the North disappeared, cocoa products in the Western region declined drastically while palm products from the Eastern region were localized [5]. Due to the recent decline in crude price, there is an urgent need for diversification of the economy in order to avert the looming crisis. In the bid to diversify the Nigerian economy, the Nigerian government has shifted emphasis to non-oil sectors of the economy which agriculture is chief.

Apiculture (Honey production) which is an aspect of agriculture presents an untapped natural resources that will help revive the dwindling economy of Nigeria, alleviate poverty and improve the standard of living in the country. Apiculture can be defined as the science and art of bee keeping while bee keeping includes the collection and taking care of bees, pollination of field crops by bees, the study of bee product and the breeding of bee for honey production either in small or large scale is known as bee keeping. Beekeeping for honey production is a profitable agricultural enterprise nowadays in all parts of the world including Nigeria. It is an important foreign exchange earner for those that export honey and beeswax. Following the production trends, China is the number one honey exporter in the world, selling $246,550,000 (12.0% of total natural honey exports in the world) closely followed by Argentina with $212,637,000 (10.3%) and New Zealand at third $139,316,000 (6.8%) [2], this show how valuable this enterprise is especially in the countries where it has been embraced a long time and has been a source of revenue and export in these countries. The experience of apiculturist in developed economy shows that commercial apiculture is a money spinner. However, beekeeping as a commercial venture is still largely unexplored

in Nigeria in large scale production, and the country meets domestic demand for honey mostly by importation from producer countries and locally by bee hunters [2].There is a growing consumption of honey and other bee products because of its high values in maintaining good health and in treatment of various diseases. With the current growth in domestic consumption of honey in Nigeria coupled with mechanized agriculture in most part of Nigeria, resulting in large crop acreage, the future of apicultural enterprise is very bright as the demand for honey and pollinators is bound to increase. It could provide food, nutritional, and livelihood security to the rural work force on an ecologically sustainable basis. Apiculture can be practiced as a hobby, a part time or full-time occupation. At times depending on how it is practiced, it could be seen as an art, a science, a technology or a vocation and can be practiced by those who are not conventional farmers. Bees, the main player in Bee-farming are four winged flower feeding insects that live in all the crannies of the world. They are social insects and live in groups. Honey bees are important and beneficial economic insects, as they produce honey and pollinate crops. Honey is a natural food produced by bees from nectar or secretion of flowers. Honey has a content of 80-85 % carbohydrates, 15-17 % water, 0.3 % proteins, 0.2 % ashes, and minor quantities of amino-acids and vitamins as well as other components in low levels of concentration. These properties including using honey for various medications made it an essential and high economic commodity [1]. Bee farming is relatively cheap to manage, as the major production is undertaken by the bees, while man does the harvesting. It is the only agricultural practice that does not need large expanse of land, water, feed and fertilizer to thrive. Beekeeping offers opportunities for empowering and developing the rural populace by making them self-reliant and depend less on the government. They can be economically empowered through the various benefits derivable from beekeeping like; the quality of land required is less important because hives are placed either on the trees or on the ground. Beekeeping is an agricultural and forest based decentralized industry and does not displace persons from their villages. It is a sustainable form of agriculture that can provide rural people with a source of much needed income and nutrition therefore they have economic reasons to retain the natural habitat or modify it to boost honey product because it has potentials to increase yield such as other agricultural products [3]. Honey, bee wax and other by-products are highly demanded by households, hospitals, commercial outlays, pharmaceuticals and cosmetic industries as a good supplement, medicinal or complement in the production of other products. Honey can be used for the treatment of wounds, burns, cataracts, skin ulcer and scabies. Bee wax is used in the production of cosmetics, candles, polishes, etc. Pollen from the flowers are sold to perfume industries, also used dietary or nutritional supplement in foods due to its high medicinal and nutritional properties. In Ikwuano, only few individuals are involved in honey production. This study aims to get relevant information on honey production in the study area through the following objectives: analyze the socio economic characteristics of honey producers in the study area. Examine the returns associated with honey production. Estimate the production, analyze the determinants of honey production in the area and identify the constraints of honey producers in the area.

MATERIALS AND METHODS

The study area was Ikwuano Local Government Area which is located South East part of Umuahia Urban Zone. It is transverse by the Umuahia to Ikot Ekpene federal road. It extends from the fourth mile stone Umudike to the twentieth mile stone which is the Abia State boundary with Akwa Ibom State.

The total land mass is estimated at about 40,059 miles.

Farming is the major occupation in the area and they produce mostly cassava, melon, cocoyam, vegetable and other annual crops. It has an average temperature of 260C with maximum and minimum temperature of 320E and 220C respectively.

It also has an altitude of 122m above sea level, which tends to make it good for agriculture and apiculture as well.

Due to the limited number of people involved in honey production in Ikwano sixty (60) respondent were randomly selected and interviewed.

The data were collected from primary source. The primary data was collected using a well structured questionnaire.

Data analysis

The Objectives were analyzed using descriptive statistics, gross margin analysis or income statement analysis, production function and ordinary least square (OLS).

The model for production determinants was as follows:

(Log Y=b0+ b1logx + b2logx2 + b3logx3+b4logx4 + b5logx5 + U)

where:

Log y= quantity of honey produced per producer in Kg

Logx = labor in man days

Logx2= capital available for production

Logx3= rent in naira

Logx4= number of bee hives

Logx5= distance to production unit

U= error term

Secondly, the model for the analysis of the socio economic factors affecting honey production was stated as follows:

Y= f (r1, r2, r3, r4, r5, r6, r7, r8, e)

Where:

Y= quantity of honey in kg

R1= age of the bee keeper in years

R2= sex (male 1, female 0)

R3= education of the bee keeper in years

R4= income of the bee keeper in naira

R5= experience of the bee keeper in naira

R6= membership to cooperative society (yes 1, No 0)

R7= household size in numbers

R8= credit access (Access 1, No access 0)

E= error term

RESULTS AND DISCUSSIONS

From Table 1 one can see that 25% of the respondents are students, 32% are civil servants, 25% teachers and 18% are farmers. And 83% of the respondents undertake honey production on a par time basis this shows that honey production can be combined with other jobs this collaborates with the results of Babatunde [3].

Table 1. Socio economic characteristics of respondents

Variables	frequency	Percentage
Occupation		
Student	15	25%
Civil servant	19	32%
Teacher	15	25%
Farmer	11	18%
Total	60	100
Nature of job		
Par time	50	83%
Full time	10	17%
Total	60	100
Labour source		
Family	31	52%
Hired	21	35%
Friends	8	13%
Total	60	100
Use of honey		
Income	42	70%
Food	10	17%
Medicine	3	5%
Industrial	5	8%
Total	60	100
Harvesting period		
Jan- march	16	27%
April- June	25	42%
July- sept	5	8%
Oct- dec	14	23%
Total	60	100
Source of capital		
Personal savings	41	68%
Friends	7	12%
Cooperative	7	12%
Loans	3	8%
Total	60	100

Source: Field survey

Also, from Table 1, one can see that 52% of the respondents use their family members as source of labour, 35% hire labourers and 8% use the help of their friends as source of labour. This shows that honey production is not labour intensive. Much money is not spent on labour as friends and family members can be used. This is supported by the findings of Babatunde [3]. A greater proportion of the respondents (68%) used their personal savings as a source of capital, 12% borrowed from friends, another 12% got their finance through

cooperative society and only 8% used loans as a source of capital this shows that not much money is required to start a honey production business as honey bees can easily produce their own food. From the table, 70% of the respondents produce honey for income, 17% as food, 5% for medicine, and 8% use honey industrially. This proves that honey production is a lucrative and can be a source of livelihood. 42% of the respondents harvest their honey between January- March period, 27% harvest between April- June, 8% harvest around July- September and the remaining 8% do theirs by October- December.

Table 2. Cost and return of honey production in Ikwuano local government area.

Items	Value	Cost as percentage of Total cost
Gross revenue from honey	5,400,000	-
Mean value	90,000	-
Gross revenue from bee wax	60,000	-
Mean value	1,000	-
Total revenue	5,460,000	-
Total gross mean revenue	91,000	
VARIABLE COST		
Attendant	61,000	2.3
Harvesting/ processing	600,000	22.8
Transportation	60,000	2.28
Bottles	300,000	11.41
Labeling	30,000	1.14
Attractants	300,000	11.41
Total variable cost	1,351,000	51.34
Total mean variable cost	22,516.67	
FIXED COST		
Depreciation in capital input, interest on loans, rent, taxes, and insurance	1,278,000	
Total fixed cost	1,278,000	48.6
Mean fixed cost	21,300	
Total cost (TVC+TFC)	2,629,000	
Profitability indicators		
Net income (TR-TC)	2,831,000	
Gross margin	47,183.33	
Gross return per naira invested	1.08	

Source: field survey

This shows that can be all year round and has its peak during the dry season as plants produce flower and nectar is abundant. This is in line with the findings of Babatunde [3].

The total revenue of honey production in Ikwuano local government area according to the data collected was N5,460,000. Total variable cost summed up to be N1,351,000 which had the percentage (51.34). Harvesting cost was the highest variable cost possessing the total percentage of 22.8 which was followed by cost of bottles and attractants having the same percentage of 11.41, bee attendant was with a percentage of 2.3 and transportation having 2.28 while labelling cost had a percentage of 1.14.

The total fixed cost was N1, 278,000 having a total percentage of 48.6. Three profit indicators were estimated. The net income amounted to N2,831,000. The gross margin amounted to N47,183.33, and gross margin per naira was 1.08. The result from this data shows that honey production is profitable in the study area.

Table 3. Socio-economic factors of honey production in Ikwuano local government.

Explanatory variables	Linear function
Constant	12.984 (1.972)**
Age (R1)	0.559 (5.061)***
Sex (R2)	0.009 (0.114)
Educational status (R3)	-0.090 (-0.034)
Income (R4)	0.179 (2.728)***
Experience in years (R5)	0.000 (-1.952)**
Membership to cooperative(R6)	0.068 (0.575)
Household size (R7)	8.001 (2.737)***
Credit access (R8)	-1.400 (-4.000)***
R2	0.784
F-ratio	(16.087)***

Source: field survey

Note: *** implies significant at 1% level; ** implies at 5% level and * implies significant at 10% level.

From the table above, the significant factors of honey production in the study area include

Age, Income, experience in years, Household size and credit access.

Age of the honey producers was significant at 5% probability level; age was positively related to the quantity of honey produced. This is against the apriori expectation of negative relationship but the result can be accepted because honey production in the study area is practiced more by aged men and women who take the business as retirement or par time business in the study area.

Income of honey producers signed positive with the quantity of honey produced at 1% probability level. This implies in honey produce will increase the income of the framer.

Experience of the framer related positively with honey produced at 5%risk level. This shows that farmers ride the experience curve in decision making which increase the output of the framer.

Household size was significant at 1% and positively related to output. This implies that as household size increases, output increases. This is against the result of Mbah [4]. This is because families in the study area mainly use household members as a means of cheap labour and if the family is large, it has cheap labour and more hands to work in the farm and most bee framers in the study use family members more as workers in the farm.

Credit access was significant at 1% and signed negative to output. This shows that due to high interest rates, it increases the cost of production which goes a long way to reduce the farmers output.

The linear function was selected of the four functional forms having the best fit with R^2 value of 0.784, F-ratio of 16.784 with relatively more significant variables.

From Table 4, one can see that labour was signed negatively and is significantly related to the amount of honey produced at 5% probability level. This implies that as the number of labourers increase without a corresponding in the number of bee hives, the output is bound to decrease.

Also the amounted if capital invested in the honey venture related positively with production. The factor is significant at5% probability. This implied that as the capital invested in the business increases, the output of the honey production increases also.

Rent was negatively related with production. This factor was significant at 10% probability level. This shows that the framers do not pay rent for the place the bee hives are kept; the hives are kept in their farms or places where they are not charged.

Table 4. Analysis of determinants of honey production in Ikwuano local government area.

EXPLANATORY VARIABLES	COBB DOUGLAS
Constant	92.821
	(1.782)*
Labour	-1.276
	(-1.974)**
Capital	0.501
	(0.207)*
Rent	-0.938
	(-2.471)**
Number of bee hives	-4.042
	(-0.796)
Distance to production unit	-1.943
	(-3.266)***
R^2	0.363
F-ratio	(6.040)***

Source: Field survey

The distance to production unit was negatively related to the output of honey at a significant level of 5% level of probability. This means that as much as the framers output, he will still travel the same distant to the production unit.

Table 5. Distribution of constraints in the study area

Constraints	frequency	Percentage
Inadequate capital	15	24
Inadequate tools	5	8
Inadequate loan	10	17
High interest rate	9	15
Theft	1	2
Inadequate skilled manpower	10	17
Swarming	4	7
Much rain	4	7
Pest and diseases	2	3
Total	60	100

Source: field survey

From the table above, 24% of the respondents have the problem of inadequate capital to finance honey production enterprise. 8% complained of inadequate tools. 17% have no access to loan facilities while15% obtained

loan at a very high interest rate. Only 2% of the respondent complained of theft which shows that theft is not a problem in honey production. 17% experienced the problem of shortage of skilled manpower, 7% experienced swarming and heavy and frequent rainfall respectively and 3% of the respondent complained of pest and disease attack.

CONCLUSIONS

The study has shown that honey production is not only profitable but equally viable in the study area; it is evident in the gross margin obtained from the study.

It is also evident from the study that promotions of agriculture development has the potential in alleviating poverty in the country and the economy of Nigeria from being a mono-economy.

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