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RESOURCE USE EFFICIENCY IN HONEY PRODUCTION IN ABIA STATE, NIGERIA

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ABSTRACT

The study accessed the resource use efficiency of Bee farmers in Abia state. Multi-stage sampling technique was used in selecting 120 bee farmers from two Agricultural zones-Ohaofia and Umuahia. Questionnaire and interview methods were used to gather information from the farmers and data were analyzed using descriptive and inferential statistics. The result of the analysis showed that the mean age of the respondents was 41 years with the majority (53.7%) of the farmers married, having a mean household size of 5 persons and a mean educational level of 16 years. The mean income was N77562.50 with an average experience of 5 years. The coefficient of the number of beehives and baiting material were both significant at a 1% level and were positively related to the output of honey. The study revealed that honey production in the study area was a sustainable and profitable venture. It is revealed in the study that for every one naira spent in the process of production and marketing, not less than two naira was realized as profit. The study recommended that Bee farmers in the study area should be given proper training on the rudiments of beekeeping.to ensure a proper understanding of the use of modern equipment and adopt technology capable of increasing not only the profitability of the enterprise but also making efficient use of the resources available for honey production since the resources were overused.

Keywords: Resource, Efficiency, and Honey Production

INTRODUCTION

Small-scale farmers are increasingly turning to beekeeping as a means of generating income, as it offers a more diverse and less risky alternative to traditional crop and animal production (Uchechukwu et al, 2020)). Apiculture, or beekeeping, involves the management of honeybee colonies in artificial hives for economic gain and can yield valuable materials such as honey, beeswax, propolis, bee pollen, bee venom, and royal jelly (*(Behonegn A. 2021*).

Beekeeping is a sustainable form of agriculture that can provide rural communities with a source of income and nutrition and does not require large areas of land or daily care *(Mata et al., 2023*). Additionally, beekeeping is a decentralized industry that does not displace individuals from their villages, making it an attractive option for those seeking economic stability. Honey, one of the primary products of beekeeping, has a variety of medicinal uses, including the treatment of wounds, burns, cataracts, skin ulcers, and scabies *(Uchechukwu N.U., 2020*).

However, while the demand for honey in Nigeria is rising, organized beekeeping as an enterprise remains low.

To address this issue, it is crucial to improve the productivity, profitability, and resource efficiency of honeybee practices, particularly for small-scale bee farmers in developing countries like Nigeria, this can be achieved through the adoption of more sophisticated and intensive forms of practices, as well as the provision of technologies and incentives to encourage their adoption (Berhel et al 2019). The local production of honey is limited to a few honey hunters and traditional bee farmers who use outdated harvesting and processing techniques, resulting in poor-quality honey. Although some studies have addressed various aspects of honey production in Nigeria, (ShresthaA.2017, Okezie et al., 2021, Ebe et al., 2021) there is still dearth information on the resource use efficiency of honey production in Abia State. Therefore, this study was piloted to examine the level of resource use efficiency among honey producers in Abia State.

METHODOLOGY

The investigation was conducted in Abia State, and the sampling procedure used in the study involved multiple stages. In the second stage, two Local Government Areas were randomly chosen from each of the two selected agricultural zones: Umuahia North and Ikwuano from the Umuahia Agricultural zone, and Isikwuato and Ohafia from the Ohafia Agricultural zone, resulting in a total of four Local Government Areas. Moving on to the third stage, two communities were purposefully chosen from each of the four Local Government Areas based on the presence of bee farmers, resulting in eight communities. In the fourth stage, three villages were randomly selected from each of the autonomous communities identified in stage three, totaling twenty-four villages. Finally, five bee farmers were randomly chosen from each village, resulting in a total of 120 respondents for the study.

Data for this study were collected from primary sources. The primary data were collected by the use of a well-structured questionnaire, interview schedule and direct observations of the bee farmers.

The analysis was done using descriptive and inferential statistics, such as means, frequency distribution, and percentages.

RESULT AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The result on the age of the farmers showed that 57.5% of the bee farmers were within the age range of 31-40, 22.5% were within the age range of 41-50 and 20.0% were within the age range of 51- 60 years with the mean age of 40 years. This implied that the respondents were in their youthful age. This further implied that the majority of the farmers are in their economic active years.

The result showed the mean household size was 5 persons. This implied that the bee farmers in the study area had moderate household sizes. Farmers with moderate or large household sizes spend less on labor. The result also showed that 57.5% of the respondents had secondary education while 42.5% of them had tertiary education. The mean educational level was 16 years.

The result showed that the mean years of farming experience was 5 years. Given that the mean age of the farmers is 40 years as has been reported, the farming experience situation shows that many of these farmers have gained some level of experience in honey production, which is expected to affect their productivity positively.

For income, the result on the income showed that the mean income was N77,562.50. This implied that honey producers in the study area were moderate-income earners and still needed to improve on their income. This result was supported by Mbam (2019) who observed that income level is a vital element in embracing technology.

Table 1: Distribution of Respondents according to their socioeconomic characteristics

Variables	Frequency	Percentage	Mean
Age			
31-40	69	57.5	40years
41-50	27	22.5	
51-60	24	20.0	
Total	120	100.0	
Sex			
Female	57	47.5	
Male	63	52.5	
Total	120	100.0	
Marital status			
Single	-	-	
Married	120	100.0	
Divorced	-	-	
Widowed	-	-	
Total	120	100.0	
Household size			
2-4	73	60.8	5 persons
5-7	47	39.2	
Total	120	100.0	
Level of education			
No education	-	-	16years
Primary education	-	-	
Secondary education	69	57.5	
Tertiary education	51	42.5	
Total	120	100.0	
Farming experience			
1-4	37	22.5	5 years
5-8	83	69.2	
Total	120	100.0	
Income			
31000-50,000	41	34.2	77562.50
51000-70,000	19	15.8	
71000-90,000	-	-	
>91,000	60	50.0	
Total	120	100.0	

Source; field survey, 2022

Distribution of Respondents according to their Scale of Honey Production (number of bee hives).

Table 2 revealed that farm size is one of the parameters for determining the scale of operation of producers. The number of hives set determines the output of the honey produced on proper management of the hives. The findings on a scale of honey production indicated that many (47.5%) of the respondents had between 6-10 hives, which was small-scale for honey business. About 26.7% had between 1-5 hives and 25.8% had 11-15 hives. This revealed that most of the beekeepers in Abia state were small-scale producers. Smallholder farmers dominate agriculture in Nigeria, and the implication of this is that they lack the capacity to generate adequate income and this might as well affect their capacity to access formal credit for their agricultural products.

Table 2: Distribution of Respondents according to their Scale of Honey Production

Scale of production (number of bee hives)	Frequency	Percentage
1-5hives	32	26.7
6-10hives	57	47.5
11-15hives	31	25.8
Total	**120**	**100.0**

Source; field survey, 2022

Estimated values of coefficients of production function of honey production

The result showed that the coefficient of multiple determinations (R^2) was 0.935. About 93.5% of variations in gross return have been explained by the independent variables. Similarly, the adjusted R square value is 0.931 indicating that on account of the degree of freedom (df), 93.1% of the variation in the dependent variable is explained by the independent variables. The overall significance of the anticipated regression F value was 269.53 indicating that factor variance was 269.53 times more than error variance and it was significant at a 1% level entailing that all the explanatory variables included in the model were vital for clarifying the variation in the gross income per hive among the beekeepers.

The coefficient of the number of bee hives was significant at a 1 % level and was positively related to the output of honey. This implied that an increase in the number of bee hives would increase the output of honey. The cost of hired labor and the cost of family labor were both significant at a 5 % level and were positively related to the output of honey. This implied that an increase in both family and hired labor would increase the output of honey in the study area. Furthermore, the cost of baiting material was significant at a 1 % level and was positively related to the output of honey. This implied that an increase in the baiting material would directly increase the production output of honey. This result agreed with that of Dahkal et al (2017)

Table 3: Estimated values of coefficients of production function of honey production

Variables	Parameters	Coefficient
Constant	$ß_0$	.507
		(.260)
Numbers of bee hives	$ß_1$	.735
		(12.710)***
Cost of hired labor	$ß_2$	.085
		(2.525) **
Cost of family labor	$ß_3$	.142
		(2.496) **
Cost of bating materials	$ß_4$	.169
		(4.369) ***
f-statistics		269.53***
R^2		.935
Adjusted R		.931
Return to scale		1.13

Source; field survey, 2022

Note; the values in parenthesis are the t-ratios

Estimate the Level of Allocative Efficiency of Honey Production

The proportion of MVP to MFC of the number of beehives was positive and less than one indicating the overuse of this resource. Here, the cost of hired labor used in honey production has a positive and less than one which indicated that the resource was overused, this result was supported by Shrestha (2017) as well as (Dhakal *et al.,* 2017) but Ahmad et al. (2015) reported it as negative and insignificant. The cost of family labour was positive and was less than one, indicating that the resource was overused. Dhakal *et al.* (2017) as well as Shrestha (2017) supported the findings. The cost of bating material was less than one indicating overutilization of the resource in honey production.

Table 4. Estimated resource-use efficiency of honey production

Resources	MPP	MVP	MFC	Allocative efficiency (r)	Efficiency
Numbers of bee hives	0.735	11.025	15.0	0.735	Over utilized
Cost of hired labor	0.085	127.50	1500	0.085	Over utilized
Cost of family labor	0.142	99.40	700	0.142	Over utilized
Cost of bating materials	0.169	169.0	1000	0.169	Over utilized

Source; field survey, 2022

CONCLUSION AND RECOMMENDATION

The study revealed that honey production in the study area was a viable and profitable venture. The honey business was, however, found to be lucrative as it is revealed in the study that for every one naira spent in the process of production and marketing, not less than two naira was realized as profit. This is a very good opportunity for the honey investors to explore. This study recommended that Bee farmers in the study area should be given proper training on the rudiments of beekeeping. This will ensure a proper understanding of the use of modern equipment and adopt technology capable of increasing not only the profitability of the enterprise but also making efficient use of the resources available for honey production since the resources were overused.

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