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Full Length Research Paper

Economics of Honey Production in Oyo State, Nigeria

Ezekiel, A.A*, Olagunju, F.I and Olapade-Ogunwole, F.

Department of Agricultural Economics, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria.

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This research was specifically designed to determine the economic effect of honey production in Ogbomoso Agricultural zone. Well structure questionnaires were employed to collect useful and relevant data from the respondents. A total of 120 respondents were randomly selected. The data collected were analyzed using regression analysis, frequency count and percentages. The result shows that the majority of the honey producers were male with 92.1% and age group between 31-40years with 36.8%, 1-10years experience with (52.5%). They operated with 1-80 numbers of hives with 83.2% and about 90% had one form of education or the other.The management system revealed that equipment and material used as inputs include, bee dress, smokers, honey extractor, uncapping knife, wax extractor, hand gloves etc. some of the problems faced by honey producers in the study area include lack of capital, bush burning, insufficient equipment, unavailability of land, bees aggressiveness and lack of technical known how. It was recommended that extension agents should take conscious effort to encourage apiarists; government should subsidize the input for the farmer and proper orientation on the benefits of honey production.

Keywords: Economic, Honey, Production, Agriculture.

INTRODUCTION

Beekeeping is an applied science of rearing honey bees for man's economic benefits, is also the mother source of honey production. The common African honeybee (Apis Mellifera Adansonni), live throughout the year in colonies consisting of a queen or mother bee, which is a fertile egg-laying female 10,000 to 200,000 worker bees called drones that may be present in the colony only during the reproductive season. Honey bees naturally build .their nests in a hole of a tree, inside a cave and under the roof of buildings, but traditionally, people also keep bee colonies, beekeeping has been in practice in many part of the world (Alberg, 2004). The main reason for keeping bees by farmers is to extract the honey they produce. The honey has been used for dressing the wounds, as anti-diarrhea drug, in alcoholic drink, tobacco curing, bakery and confectionery and in manufacturing of cosmetics. In addition, other honey products like bee wax, propolis, bee venom, and royal jelly are foreign exchange earning commodities for some countries while the crop pollination role of the bees is of tremendous important. Honey, the natural food of the honey bee, is describes as man's sweetest food (FAO, 2001). Honey is a sweet, thick, supersaturated sugar solution manufactured by bees to feed their larvae and for subsistence in dry season. Bee honey is composed of fructose, glucose, and water, in varying proportions; it also contains several enzymes and oils

(Philip, 2003) described honey as a natural invert sugar, in fact a sugar invertase (B-Fructosidase) trapped in the pouch of bees and thus transforms the excess of sucrose in the necter and its P.H (4.0) is a little higher than that of industrial invert sugar. The process of honey cultivation and harvesting has increased in Nigeria and there is the need to rise to the challenges of the ever expanding honey demands by designing machines that will help the local fanners in solving this problem. The recent increase in the demand of honey is as a result of its great economic importance which ranged from numerous uses as food to medical relevance. To meet this demand, requires finding a way of extracting honey from the honey comb and should be different and more efficient from the obsolete and traditional methods in existence by the local beekeepers. To remove the honey from the combs efficiently, there is need for an extractor. A mechanical device for the removal of honey from the honey combs without destroying the combs (Halley et al., 1988).

*Correspondent Author E-mail: ayinlani@yahoo.com,

According to (Carl, 1998) the study and keeping of bees which is referred to as "Apiaculture" often begins as a hobby which can later be expanded into a small business. This practice is well suited for small farm operations and in the recent times, many Nigerian farmers have started venturing in to this profitable business, thus making the honey production sector grow wide.

Within the foregoing context, the following questions are fundamental to this study:

(1) What are the socio-economic characteristics of the farmers that influence their honey production in the study area?

(2) What are the factors that affect honey production among farmers in the study area?

(3) Is the attitude of farmers toward honey bee production favorable?

The broad objective of the study is to examine the factors that affect honey production in the study area, and the socio-economic characteristics of the honey bee farmers in the study area.

Statement of Hypotheses.

H_0: There is no significant relationship between net return of honey production and the examined socio-economic characteristics of the respondents.

Ho: $\beta 1 = \beta 2 = \beta 3 = \_\_\_\_\_ = \beta n = 0$

Ha: Socio-economic characteristics of the respondents affect honey production in the study area.

H_A: $\beta 1 \neq \beta 2 \neq \beta 3 \neq \_\_\_\_\_ \neq \beta n \neq 0$

RESEARCH METHODOLOGY

Theoretical framework

Productivities of honey bees are very low and an average of 5-6kg of honey could be cropped per hive per year, while from improved system an average of 15-20kg is possible (FAO, 2001). Honey and beeswax are collected after the rainy season starts in October and extends until December. In South and Eastern parts, there is minor harvesting period from May-June. The major honey and beeswax producing regions in Ethiopia are oromia (about 46%), S.N.N.P.R. (31%) and Tigray (5%). However, the country is suffering from the ecological deterioration of its natural resources and this means the basis for any honey production is threatened. (FAO, 2001).

The study was carried out in Ogbomoso Agricultural Zone of Oyo State. The state is situated in the western part of Nigeria. The state lies entirely in the tropics; it is among the forest Zone states, though it has a derived Savannah in its northern part. The area has an annual rainfall of 1,173mm which occurs between April and October. The climatic conditions expressly favour the bees' activities due to the presence of vegetation which does not only produce flower from which nectars and pollens are collected but shade against Sunlight for the bee-colony (CEBRAD, 1999). The study area comprises of five local governments which are: Oriire (LGA) situated at Ikoyi-ile Surulere (LGA) -Iresadu, Ogbomoso South (LGA) Arowomole-Ogbomoso North (LGA)-Kinnira Ogbomoso and Ogo-Oluwa (LGA)-Ajaawa. There are quite a number of small-scale farmers in these local government areas that engage in honey production. Well structured questionnaires and interview schedule were used to collect data from the respondents. Farmers (Beekeepers) were contacted at home and on their farm to solicit for their support and cooperation, also enumerators were visited frequency in order to get the information required from them.

Data collected were summarized by the use of standard tools (descriptive statistics) such as frequencies tables, means and percentages. The cost and returns analysis were also carried out to determine the profitability of the business (honey production). Inferential statistics which entail regression analysis were also used in the study

RESULTS AND DISCUSSION

Gender Distribution of the Respondents

The gender distribution of the respondents. It was discovered that 92.1% of the respondents were female while 7.9% of the respondents were female. From the table 1, it was discovered that majority of honey bee keepers in Ogbomoso Agricultural zone were male.

Age distribution of the respondents, it shows that 3% of the respondent were between age range of 30yr, and below, 36.8% of the respondents were between age range of 30yrs-40yrs, 30.8% of the farmers were between age range of 41yrs-50yrs, 25.9% of the respondent were between age range of 51yrs - 60yrs while 4% of the apiarist were age range above 60yrs. It shows that majority of people that engaged in honey bee keeping in Ogbomoso Agricultural zone were age range between 31yrs-40yrs.

Education level of the respondents. It was discovered that 9.9% of the respondents had no formal education, 16.8% had primary education, 33.7% had secondary education and 39.6 had tertiary education. This indicates that majority (90%) of the respondents had one form of educational background or the other; also education is essential in modern bee keeping practices and in adoption of new technology.

The study revealed that 7.9% of the respondents were single, 77.2% of them were married, 3.0% were widows, 5.0% were widowers while 6.9% were separated (divorced). This implies that most of the apiarists were married.

52.5% of the respondents had 1-10yrs of experience, 31.7% of the farmers had 11-20yreas of experience, and 13.9% had 21-30years of experience while few (2.0%) had 31-50years of experience.

Majority of the respondents (39.6%) between had 21-40hives 24.8% had between 40-80hives, 18.8% had between 1-20hives, 15.8% had between 81-200hives while only 1.0% had 201 above hives. This revealed that most of the bee keepers in Ogbomoso Agricultural zone are medium scale producers. The numbers of hives set determine the output of the honey produced on proper management of the hives.

52.5% of the respondents (apiarist) were making use of squeezing method to extract harvest honey from the comb, 37.6% were using centrifugal extractor and only while 9.9% of the respondents were using honey dipping method. The shows that majority of the honey bee farmer in Ogbomoso Agricultural using squeezing method to extract honey from the comb.

13.9% of the respondents harvest once in a year, 74.3% harvest 2times in a year and 11.9% harvest 3times in a year. It implies that majority of honey bee farmers in Ogbomoso Agricultural zone of Oyo State harvest their honey 2times in a year.

54.5% were engaged in farming as their primary occupation, while 3.0 were engaged in fishing, 5.9% were hunters, 26.7% were engaged in poultry business, 8.9% were rearing pig, while

Table 1: Socio-economic characteristics of the respondents.

Gender	Frequency	Percentage
Male	93	92.1
Female	8	7.9
Age		
30 and below	3	2
31-40	37	36.8
41-50	31	30.8
51-60	26	25.9
Above 60	4	4
Level of education		
No formal education	10	9.9
Primary education	17	16.8
Secondary education	34	33.7
Tertiary education	40	39.6
Marital status		
Single	8	7.9
Married	78	77.2
Widow	3	3.0
Widower	5	5.0
Divorced	7	6.9
Experience in year		
1-10years	53	52.5
11-20	32	31.7
21-30	14	13.9
31-50	2	2.0
Number of hive		
1-20hives	19	18.8
21-40	40	39.6
41-80	25	24.8
81-200	16	15.8
201 and above	1	1.0
Extraction method		
Squeezing	53	52.5
Centrifugal extractor	38	37.6
Honey dipping	10	9.9
Time Per Year		
1 Time	14	13.9
2 Times	75	74.3
3 Times	12	11.9
Primary Occupation		
Farming	55	54.5
Fishing	3	3.0
Hunting	6	5.9
Poultry	27	26.7
Piggery	9	8.9
Cattle rearer	1	1.0

Source: Field survey, 2011.

only 1.0% were cattle rearer, it was discovered that majority of bee keepers in Ogbomoso Agricultural zone were farmers (primary occupation). It implies those farmers are usually engaged in honey bee production.

In order to determine the economic effect of honey bee production in Ogbomoso Agricultural zone of Oyo State, the measured variables were subjected to regression analysis because of the heterogeneous nature of the variables. The dependent variable was the total income while the independent variables were Sex, Age, Level of education, Marital status, Religion, Primary occupation, Secondary occupation, Number of hives, Number of harvest time per year, Extraction method,

Table 2. Regression Analysis

Variables	Frequency	Percentage
Constant	0.318	0.707
Sex	0.026	0.920
Age	0.002	0.797
Education level	0.069	0.362
Marital status	0.062	0.411
Religion	-0.133	0.149
Primary occupation	0.012	0.982
Secondary occupation	-0.080	0.183
No of hives	0.393	0.000*
No of harvest time per year	0.029	0.839
Extraction method	-0.043	0.697
Quantity per harvest	0.341	0.001**
Period to set hives	-0.311	0.321

Dependent variable: Total income
$R^2 = 0.54$ F - Ratio = 8.622 significant at 1%

Quantity per harvest and period of year they set hives. The functional form used was linear regression form. The choice of this model was based on its statistical significance of the coefficient of parameter estimate and the magnitude of the $\overline{R}$ - square $(\overline{R}^2)$ which gives the best fit.

Test of Hypothesis

In order to determine the economic effect of honey bee production in Oyo State, the measured variables were subjected to regression analysis because of the heterogeneous nature of the variables. The dependent variable was the total income while the independent variables were Sex, Age, Level of education, Marital status, Religion, Primary occupation, Secondary occupation, Number of hives, Number of harvest time per year, Extraction method, Quantity per harvest and period of year they set hives. The functional form used was linear regression form. The choice of this model was based on its statistical significance of the coefficient of parameter estimate and the magnitude of the $\overline{R}$ - square $(\overline{R}^2)$ which gives the best fit. The regression result is interpreted on the basis of the explanatory power of the R-square and the F-ratio. The R-square is 0.54 which shows that 54% of the variable in the total income of bee keeper in Oyo State, is been accounted for by Sex, Age, Level of education, Marital status, Religion, Primary occupation, Secondary occupation, Number of hives, Number of harvest per year, Extraction method, Quantity per harvest and period to set the hives while the remaining 46% is accounted for by unknown variables that are not specified in the model.

The F-ratio is 8.622 and it is significant at 1%. This shows that the regression line is well fitted. The null hypothesis is rejected. Therefore, there is significant relationship between the net return of honey production and selected socio-economic characteristics.

It is also discovered that number of hives and the quantity per harvest significantly affect the income of the farmers at 1% level. Sex, Age, Level of Education, Marital status, Primary occupation, Number of harvest per year, have a positive effect on the total income of the farmers in Oyo State.

SUMMARY CONCLUSION AND RECOMMENDATION

The major objective of this study is to know the economic analysis of honey production, the demographic characteristics of the respondents are their age, sex, educational level, marital status, religion and their experience, quantity of honey per harvest and their experience. It revealed that majority of the honey producers are male with 92.1%. The study also revealed that most of the producers were in their active years. Majority of the respondents were within the age range between 31-40years with 36.8% with the least between 60 and above with 4.0%. About 90% of the respondents had one form of education or the other while only 10% had to formal education. 77.2% of the respondents were married, and 57.4% were Christians while 27.7 were Muslims, that the majority of them had 1-10 years of experience with 52.5%.

The management system revealed that 83.2% of the honey farmers in the study areas used between 21-80 number of hives indicating a willingness of many farmers to go in to honey production as a way of diversification and other source of income. It further revealed that most of the farmer (64.4%) harvest above 21litres per harvest it also revealed cost of equipment varies it also shows that most of the farmer 78.2% make between 10,000-100,000 as their total income per annual, this implies that honey production is profitable if necessary conditions for setting it up were duly provided.

Some problems discovered facing the farmers were

unavailability of land, insufficiency production equipment, problems of pest and disease, theft, insufficiency of money bush burning and lack of credit facilities for the honey farmer.

Based on the findings of this study, government should assist in subsidizing farm equipment and loan should be provided to assist apiarist in taking care of cost such as cost of labour and hive purchase and Proper orientation should be given to the farmer on the benefits of honey production as a side project and way of diversification by government and non-government organization,

Conclusively, it is noted that honey production from management of beekeeping and other hive productions is a profitable enterprise. Particularity, modern beekeeping brings about more yields in honey and hence more profit that the traditional beekeeping enterprise. Also farm variables such as cost of labour equipment and number of hives affected honey production.

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