

An Appraisal of Apicultural Practices in Southwestern Nigeria

Abel Adebayo Ayansola

*Honeybee Research Unit, Natural History Museum, Obafemi Awolowo University,
Ile-Ife, Nigeria*

E-mail: aaayansola@yahoo.com

KEYWORDS Honey. Beekeeping. Gender. Socio-economic Characteristics

ABSTRACT Apiculture remains one of the most productive resources that has not been earnestly tapped in Nigeria due to nonchalant attitude towards beekeeping and lack of apicultural knowledge. This study, therefore investigated the beekeeping knowledge of beekeepers in the six states of south-western Nigeria. The study population consisted of 60 beekeepers in each state giving an overall total of 360 respondents. Structured interview was used to obtain information from the respondents. Findings revealed that majority of the beekeepers were males, in their forties and married with good level of education. This study however, revealed that gender, age, level of education, religion and marital status of beekeepers did not affect adoption of beekeeping as a business. Majority of the beekeepers have good knowledge of beekeeping. The study revealed that beekeeping is a viable business as the majority of respondents found it very profitable.

INTRODUCTION

There is mass unemployment currently in Nigeria. Government, on realizing this situation started encouraging projects that induce self-reliance so as to reduce the hardship of unemployment and other social vices associated with it. Amidst the self-reliant projects realized so far is beekeeping which is an aspect of agriculture, scientifically called apiculture.

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. Regretably however, beekeeping as a commercial venture is still largely unexplored in Nigeria, and the country meets domestic demand for honey mostly by importation from producer countries (Ja' Afar-furo 2007; Ayansola 2009).

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 every part of Nigeria (resulting in large crop acreages), the future of apicultural enterprise is very bright as the demand for honey and pollinators is bound to increase. As the investment cost of beekeeping is low compared with other kinds of farming coupled with its high return on investment, apiculture is an industry that can help develop rural areas of Nigeria through increased farm income (Bradbear 1991; Oduntan 1999). It could

also serve to provide self-reliant employment for the majority of jobless individuals. Regretably however, commercialization of beekeeping in Nigeria has not been appreciably exploited (Ja' Afar-furo 2007).

The apparent low rate of investment is largely due to dearth of research work on apicultural management and as well as poor beekeeping awareness of the people (Bradbear 1991; Oduntan 1999; Ja' Afar-furo 2007). Saville and Upadhaya (2000) suggest that there is need for apicultural management research projects if beekeeping is to have relevance to the poor farmers. There is therefore the need for interactions with beekeepers in order to assess their level of beekeeping knowledge with a view to determining their challenges and opportunities available to overcome them. This explains the rationale behind the present study.

MATERIAL AND METHODS

This study was carried out in south-western Nigeria which comprised Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. The target group for the study consisted of the members of Beekeepers' Association of Nigeria (BAN) in all the six states. Total membership in each state ranges from 61-68. Structured questionnaires were administered to sixty members of BAN in each state. The dependent variables were measured by asking the respondents to score statement of opinion given to them using Likert four points scale of strongly agree (4), agree (3), disagree (2) and strongly disagree (1).

The field survey was carried out between June 2010 and July 2011. The 360 questionnaires were coded and analyzed using SPSS version 16.0 (SPSS, 2007). Descriptive statistics such as, frequency distributions, percentages and means were used to present the results.

RESULTS

Responses of Beekeepers in South-western Nigeria to Personal Characteristics

Table 1 showed that 93.3% of the respondents were males, while the remaining 6.7% were females. It was also revealed that none of the respondents was under the age of twenty-one years while 3.3% were between 21 and 30 years. Majority of the beekeepers (37.8%) were between 41 and 50 years while 28.6% were between 51 and 60 years. Majority of the respondents (58.1%) were Christians, 39.4% were Muslims, 1.4% were traditional worshippers and the remaining 1.1% did not disclose their religious affiliation. The majority of the respondents (79.4%) were married, 6.9% were single, 5% were divorcees, while the remaining 8.6% claimed to be widowed.

Table 1: Distribution of respondents according to their personal characteristics among beekeepers in south-western Nigeria

Bio-data	Respondents	
	N	%
<i>Gender</i>		
Male	336	93.30
Female	24	6.70
Total	360	100.0
<i>Age</i>		
21 - 30	12	3.30
31 - 40	90	25.80
41 - 50	136	37.80
51 - 60	103	28.60
61 - 70	16	4.40
Total	360	100.0
<i>Religion</i>		
Christianity	209	58.10
Islam	142	39.40
Traditional	5	1.40
No response	4	1.10
Total	360	100.0
<i>Marital Status</i>		
Married	286	79.40
Single	25	6.90
Divorced	18	5.00
Widowed	31	8.60
Total	360	100.00

Responses of Beekeepers to Socio-economic Characteristics in South-western Nigeria

The socio-economic characteristics assessed in this study include years of formal education, nature of honey production, membership of social organization, and the number of people assisting the farmers during harvest of honey

Table 2 showed that majority of the respondents (48.6%) had between 11 and 15 years of formal education. 27.5% had between 16 and 20 years of formal education; 15.8% had between 6 and 10 years; 6.1% had between 1 and 6 years while the remaining 1.9% had between 21 and 25 years. The results revealed that 92.5% of the respondents took beekeeping as part time business, while the other 7.2% took it as full time business.

Table 2: Distribution of respondents by their Socio-economic characteristics in southwestern Nigeria

Social characteristics	Respondents	
	N	%
<i>Year of Formal Education</i>		
1 - 6	22	6.10
6 - 10	57	15.80
11 - 15	175	48.60
16 - 20	99	27.50
21 - 25	7	1.90
Total	360	100.0
<i>Nature of Beekeeping</i>		
Part-time	333	92.50
Full time	26	7.20
Total	359	99.70
Missing	1	0.30
Total	360	100.0
<i>Major Occupation</i>		
Farming	77	21.40
Trading	52	14.40
Civil servant	159	44.40
Food vendor	6	1.70
Artisans	43	11.90
Total	337	93.60
Missing	23	6.40
Total	360	100.00
<i>Social Organisation of Respondents</i>		
Beekeepers Association	358	99.40
Non membership	2	0.60
Total	360	100.00
<i>Number of People Assisting During Honey Harvest</i>		
1 - 3	299	83.10
4 - 6	51	14.20
7 - 9	10	2.80
Total	360	100.00

Findings revealed that 21.4% of those that claimed to take beekeeping as part-time business signified farming to be their major occu-

pation, 14.4% of them were mainly traders, 44.2% were civil servants while 11.9% were artisans. The result showed that 99.4% of the respondents were members of Beekeepers Association while the remaining 0.6% did not belong to the association.

The results indicated that 83.1% of the respondents claimed to have between 1 and 3 people assisting on their apiary during harvest (Table 2). Another 14.2% had between 4 and 6 people assisting them, while 2.8% claimed to have between 7 and 9 people assisting them.

Knowledge Attributes of Beekeepers

Table 3 revealed that 9.4% of the respondents had between one and two years of experience. Majority of the respondents (70.8%) claimed to have experience of 5 years and above. The remaining respondents (19.7%) had between 2 and 4 years of experience. The Results showed that 65.3% of the respondents claimed to have gained knowledge they were using through training by their friends and acquaintances. Some respondents obtained knowledge through the attendance of seminars/workshops. Those who obtained their knowledge through textbook were just 1.1% while 0.8% claimed to have inherited the knowledge through their parents.

Findings revealed that 12.2% of the respondents indicated that honey is ripe and ready for harvest when the comb is properly sealed. Another 6.9% emphasized that honey is ripe for harvest when the honey comb is no longer watery, while 9.4% of the respondents agreed that the honey can be known to be ripe by perceiving the flavour, and 12.2% said it is through colour observation. The remaining 60.7% emphasized that perfect knowledge of all the conditions above are needed to determine whether honey is matured for harvesting (Table 3).

Results showed that 64.2% of the respondents carried out harvesting of honey two to three times in a year. Another 32.2% claimed to harvest three to four times per annum, and the remaining 3.6% did their harvesting four to five times per year.

Time of the year when harvesting of honey can be carried out was identified in this study. Results revealed that 53.3% of the respondents harvest their honey between January and February, while 19.2% harvest between March and April, and 0.3% harvest between May and June

Table 3: Distribution of respondents according to their experience and knowledge of beekeeping

Knowledge attributes	Respondents	
	N	%
<i>Years of Experience</i>		
1 - 2	34	9.40
2 - 4	71	19.70
5 and above	255	70.80
Total	360	100.00
<i>Sources of Knowledge</i>		
Training	235	65.30
Inheritance	3	0.80
Seminar/Workshop	117	32.50
Textbook	4	1.10
Total	359	99.70
Missing	1	0.30
Total	360	100.00
<i>Knowledge of Ripe Honey</i>		
When the comb are properly sealed	44	12.20
When it is no longer watery	25	6.90
By perceiving the flavour	34	9.40
By observing the colour	44	12.20
All of the above options	213	60.70
Total	360	100.00
<i>Number of Times Honey is Harvested in a Year</i>		
2 - 3 times	231	64.20
3 - 4 times	116	32.20
4 - 5 times	13	3.60
Total	360	100.00
<i>Period of Harvest</i>		
January/February	192	53.30
March/April	69	19.20
May/June	1	0.30
July/August	2	0.60
September/October	17	4.70
November/December	79	21.90
Total	360	100.00
<i>Method Used for Honey Extraction</i>		
Use of hand	113	31.40
Use of honey press	247	68.60
Total	360	100.00
<i>Other Products Got From Beehive</i>		
Beeswax	351	97.50
Bee Pollen	2	0.60
Propolis	3	0.80
Royal jelly	4	1.10
Total	359	99.70
Missing	1	0.10
Total	360	100.00
<i>Distinguishing Features of Pure Honey</i>		
Pure honey is sweeter when tasted	46	12.80
Pure honey has fine flavour than an adulterated honey	188	52.20
Adulterated honey is thicker than pure honey	75	20.80
The colour differs when carefully watched	51	14.20
Total	360	100.00

(Table 3). Some respondents (0.6%) do harvest in July/August, while some (4.7%) favour September and October, and the remaining 21.9%

preferred November and April. May to October may be regarded as off-season for honey as the study revealed that only 5.6% of the respondents harvest honey within this period.

Table 3 revealed that the currently available methods available for extracting honey are through the use of hand and honey press. Majority of the respondents (68.6%) claimed to use honey press while the remaining 31.4% were using hands only. This study also identified other products that can be got from beekeeping apart from honey. Table 3 showed that 97.5% of the respondents indicated beeswax as other product. Another 0.6% claimed they got bee pollen and 0.8% claimed they got bee propolis, while the remaining 1.1% got royal jelly.

Table 3 showed that 75.8% of the respondents indicated the use of top bar hives, 21.1% indicated the use of frame hives, and the remaining respondents (3.1%) were using traditional hives.

Table 3 revealed that two methods could be used to prevent bee stings: the use of beekeepers' dress and the use of smoke. Majority of the respondents (89.2%) claimed the use of both the beekeepers dress and smoke to prevent bee sting. About 6.1% claimed the use of beekeepers dress alone and the other 4.4% claimed that the use of smoke on bee is enough to prevent them from bee sting.

As a way of distinguishing pure honey from fake honey, 12.8% of the respondents claimed that pure honey is sweeter when tasted, 52.2% said that pure honey has fine flavour than sugar syrup, 20.8% indicated that adulterated honey is thicker than pure honey. Other respondents (14.2%) signified that the colour differ when carefully watched (Table 3).

Table 4 showed that 84.4% of the respondents indicated that honey production is a profitable venture while 8.1% was of the opinion that the business could help one break even instead of recording loss. The remaining 5.3% opined that if there is any loss, it is going to be short run and minimal.

Intensity of Using the Identified Management Practices in Beekeeping

Findings revealed that 60.6% of the respondents did site selection, while the remaining 37.2% did so when there is need to expand the scope of business. Majority of the respondents

Table 4: Distribution of respondents by their perception of viability of beekeeping business

Viability attributes	Respondents	
	N	%
It is highly profitable	311	84.40
At least one will break even	29	8.10
Loss can only be incurred on a short run and it will be minimal	19	5.30
Total	359	99.70
Missing	1	0.30
Total	360	100.00

(58.9%) did house their bees once per season. About 22.5% of the respondents indicated twice per season, while 12.5% claimed to house their bees thrice a year. It was also revealed that 8.3% of the respondents carried out routine inspection on their apiary weekly. Another 27.8% did routine inspection fortnightly, while the remaining 63.9% did inspect their hives once in a month (Table 5). Majority of the respondents (82.5%) attracted bees into hives by baiting while 17.2% used capturing of wild bees during swarming.

The study revealed that 7.5% of the respondents considered accessibility when selecting sites. Another 1.4% considered proximity, 1.1% considered safety, while 4.7% considered availability of melliferous plants. It is worthy of note that 85% of the respondents considered all the listed factors before selecting site for beekeeping.

From the result obtained, it was observed that 74.2% of the respondents carried out harvesting, processing and packaging of honey two to three times per year. The other 25.8% did so four to five times in a year. Findings also showed that 12.2% of the respondents carried out record keeping weekly. Another 26.7% did record keeping fortnightly, while 60.8% carried out record keeping monthly (Table 5).

DISCUSSION

The age of respondents ranged between 21 and 70 years. This implied that people of different ages both young and old could take to beekeeping based on their willingness and interest. However the majority of beekeepers fell between the age range of 41 and 50 years. The above findings agreed with that of Nwachukwu and Jibowo (2000) who noted that most farmers were below the age of 50 years. Of the re-

Table 5: Distribution of respondents on how they carry out routine inspection, housing of bees, site selection and factors considered in site selection for beekeeping

<i>Management attributes</i>	<i>Respondents</i>	
	<i>N</i>	<i>%</i>
<i>Site Selection</i>		
When a problem exists	218	60.60
Need for expansion	134	37.20
Total	352	97.80
Missing	8	2.20
Total	360	100.00
<i>Housing of Bees</i>		
Once	212	58.90
Twice	81	22.50
Thrice	45	12.50
Total	338	93.90
Missing	22	6.10
Total	360	100.00
<i>Routine Inspection</i>		
Weekly	30	8.30
Fortnightly	100	27.80
Monthly	230	63.90
Total	360	100.00
<i>Factors Considered In Site Selection</i>		
Accessibility	27	7.50
Proximity	5	1.40
Safety	4	1.10
Abundance of melliferous plants	17	4.70
All of the above	306	85.00
Total	359	99.70
Missing	1	0.30
Total	360	100.00
<i>Harvesting, Processing and Packaging</i>		
2 – 3 times a year	267	74.20
4 – 5 times a year	93	25.80
Total	360	100.00
<i>Record Keeping</i>		
Weekly	44	12.20
Fortnightly	96	26.70
Monthly	219	60.80
Total	359	99.70
Missing	1	0.30
Total	360	100.00
<i>Baiting Techniques</i>		
Baiting hive to attract colony	297	82.50
Capturing wild bees	62	17.20
Total	359	99.70
Missing	1	0.30
Total	360	100.00

spondents surveyed, 93.3% were males, whereas the females were in the minority (6.7%). A few numbers of females may be due to poor awareness of women about beekeeping, making them to erroneously believe that it is men's occupation.

The educational attainment of people plays a pivot role in their ability to acquire innovations faster. It could be observed that all of the beekeepers have had at least formal education ranging from primary to tertiary education

(Table 2) These educational levels imply that it would be a flexible society towards change (Nnema and Adaeze 2006).

Majority of the respondents (92.5%) took beekeeping as a part-time business while the other 7.2% took it as full-time business. This shows that the full economic potential of beekeeping is yet to be realised by the people. It also indicates that beekeeping could be combined with other forms of business. Findings revealed that 83.1% of respondents claimed to have between 1 and 3 people assisting on their apiary during harvest. This shows that harvesting of honey cannot be handled by the farmer alone. It further shows that beekeeping generates employment.

It has been established in this study that beekeeping is a high income generating enterprise even with the local technology being used by the beekeepers. Therefore to alleviate the effects of poverty and to improve the living standard of the rural farmers in southwestern Nigeria, beekeeping should be encouraged among the people.

Gamze et al. (2004) reported that honey production plays a very important role as a source of increasing rural income in sustainable development in Turkey. In a comparative analysis of beekeeping and crop production in Adamawa state of Nigeria, farm budgeting analysis and descriptive statistics revealed that beekeeping was a far more profitable and cost effective form of farming among the respondents (Ja' Afar-furo et al. 2006). Apiculture has been appraised in some parts of Nigeria and other parts of the world with remarkable success in terms of profitability (Dukku 2001; Saha 2003; Farinde et al. 2005). Therefore, the introduction of modern apicultural techniques becomes imperative.

CONCLUSION

The following conclusions were drawn based on the major findings of the study.

Majority of the beekeepers producing honey in the areas of study were males, in their forties and married with good level of education. Participation of women was very low. This study however, revealed that gender, age, level of education, religion and marital status of beekeepers did not affect adoption of beekeeping as a business. Majority of the beekeepers have good knowledge of beekeeping. The study revealed

that beekeeping is a viable business as the majority of respondents found it very profitable. Many beekeepers were still using top-bar hives in their operations.

RECOMMENDATIONS

The following recommendations were given based on the findings of this study:

Women should be encouraged, reached and trained on beekeeping since their present participation in the areas of study was very low. Unemployed youths, graduates and retirees should be encouraged and trained on modern beekeeping practices so as to make them self employed. Apiculture should be incorporated into the school curriculum for agricultural, forestry and zoological students in higher institutions of learning, in order to prepare them for self-employment after graduation.

ACKNOWLEDGEMENTS

I wish to thank all members of Beekeepers Association of Nigeria in the six states of south-western Nigeria for their cooperation during this project.

REFERENCES

- Ayansola A 2009. *Honeybees: Bio-ecology, Honey Production Methods and Utilization*. Ile-Ife: Obafemi Awolowo University Press, P. 70.
- Bradbeer N 1991. Banjul Bee Declaration. In: *Proceedings of the First West African Bee Research Seminar* (Ed.) Gambia: Bakau, pp. 80-82.
- Dukku UH 2001. The Role of Beekeeping in Poverty Alleviation and Environmental Protection. *Paper Presented at the Monthly Technology Review Meeting (MTRM). Held at MTRM Hall, Bauchi State Agricultural Development Programme (BSADP) Headquarters*. February 28, P.4.
- Farinde AJ, Soyibo KO, Oyedokun MD 2005. Exploration of beekeeping as a coping strategy in a deregulated economy. *J Agric Exten*, 8: 76 – 80.
- Gamze S, Engindeniz S, Tolon B, Cukur F 2004. The economic analysis of beekeeping enterprise in sustainable development: A case study of Turkey. *Apiacta*, 38: 342 – 351.
- Ja' Afar-furo MR 2007. Appraising the perception of farming communities towards adoption of apiculture as a viable source of income in Adamawa state, Nigeria. *Apiacta*, 42: 1– 15.
- Ja' Afar-furo MR, Suleiman A, Hong YE 2006. A comparative analysis of beekeeping and crop production in Adamawa state, Nigeria. *Apiacta*, 41: 44-53.
- Nnena EA, Adaeze NB 2006. Agricultural extension communication services in Ikwo Local Government of Ebonyi State, Nigeria: Problems and prospects. *J Res in Agric*, 3: 1-5.
- Nwachukwu I, Jibowo AA 2000. Evaluation of the utilization of a rice processing technology among women farmers in the central zone of Nigeria. *J Agric Exten*, 4: 63 – 64.
- Oduntan C 1999. *The Practice of Beekeeping*. Abeokuta: Bee Craft Publishers, P. 110.
- Saha JC 2003. Beekeeping for Rural Development: Its Potentiality and Beekeeping Against Poverty-Bangladesh Perspective. *The 38th Apimondia Congress, Ljubljana, Slovenia*, 24-29 August, P. 9.
- Saville NM, Upadhaya SN 2000. Indigenous knowledge of beekeeping in Jumla, Western Nepal. In: M Matsuka, F E Thompson, R Nataya (Eds.): *Asian Bees and Beekeeping: Progress of Research and Development*. New Delhi: Oxford and IBH, pp. 248-251.
- SPSS 2007. *Statistical Package for Social Sciences, base 16.0 Applications Guide*. Chicago, USA: SPSS, Inc.