Assessment of Processes and Challenges of Beekeeping in Edo State, Nigeria

*Okere C. I., Aneni T. I, Ogbebor C. O., Aghayedo C. O., Adeh, S. A., & Iyare, O. Nigerian Institute for Oil Palm Research,

Nigeria

Corresponding Author: chidinmaokere2@gmail.com

D.O.I: 10.56201/ijaes.v9.no1.2023.pg11.17

Abstract

The study was carried out to assess the process and challenges of beekeeping in Edo State, Nigeria. Four Local Government Areas were selected based on the presence of beekeepers in the areas. Data were obtained using a structured questionnaire. A total of 40 respondents were randomly and proportionately selected from the four (4) Local Governments and used for the study. Descriptive statistics were used as analytical tools. The result indicates that all the respondents (100%) were male and, most of them (65%) had 20 colonies and above. Also, most of the beekeepers were in their active and productive age (80%) group, less than 40 years. Shortage of forage, absconding of bees, agrochemicals, high cost of beekeeping equipment, pest, agrochemicals, and theft were some of the major problems militating against beekeeping in the study area. The prevalent pest identified by the beekeepers were wax moth, ants, termites, lizards, and spiders. It was recommended that there should be more training and awareness by extension agents to encourage people to participate in beekeeping in Edo State. Women should be encouraged to participate in beekeeping in Edo State. Government and non-governmental organizations in collaboration with the bee farmers' cooperative groups should provide improved beekeeping technologies at a subsidized rate to the farmers in order to encourage them. The issue of Wax moth pests reported by farmers should be looked into and control measures suggested. The use of pesticides and herbicides should be discouraged and non-chemical methods of insect and weed control should be encouraged

Keywords: Beekeeping Challenges, Process, Wax moth, Edo State

INTRODUCTION

Honeybees play a significant role in the economy since they serve as the main pollinators for a variety of agricultural and forestry products in addition to producing honey and bee wax. Because of pollination, crop productivity rises, and fruit and seed quality also improved (Moniruzzaman and Rahman, 2009). Beekeeping can support the rural workforce's food and livelihood needs while being environmentally sustainable. A combination of flavonoids and phenolic acids can be found in honey, a byproduct of bees. In addition to minerals (such as magnesium, potassium, calcium, sodium chlorine, sulphur, iron, and phosphate), vitamins (such as B1, B2, C, B6, B5, and B3), trace elements (such as copper, iodine, and zinc), and amino acids, honey is a great antibacterial agent. The varieties of flowers that bees pollinate determine the nutritional qualities or the precise composition of any batch of honey, as well

as the color and flavor of honey. Because Nigeria's environment is less contaminated than that of industrialized countries, it is a better place for the creation of bee colonies Also, tropical honey has a distinctively alluring aroma that is superior to that of honey from nontropical regions of the world (Akinwande et al. 2013). One activity that could give a means of living and lessen poverty among Nigerian rural residents is beekeeping for the production of honey (Babatunde et al., 2007). Because of the outstanding flora and the possibility of honey production, beekeeping is a very profitable endeavor. Akinwande et al. (2013) claim that honey production has always been in decline and has never been able to meet local demand. For many Nigerians, the necessity for a national income source other than crude oil has grown critical. As a result, the government supports initiatives that foster independence in an effort to reduce unemployment and pull the nation out of an economic slump. Beekeeping is a project that encourages independence. According to Ajao and Oladimeji, (2013), beekeeping offers an unexploited succor capable of salvaging people from abject hunger and poverty. Ayansola, (2012) observed that beekeeping will help to reduce the endemic poverty problem in Nigeria, especially in rural communities. Beekeeping has a wonderful potential to boost Nigeria's export base (Labe, 2017). In Edo state Nigeria, there is no report on the processes and challenges of beekeeping and this study is aimed at evaluating the beekeeping process in Edo state, Nigeria.

MATERIALS AND METHODS

This study was conducted in Edo State, Nigeria. The local Government Areas chosen for the study are Oredo, Ikpoba – Okha, Ovia South West, and Orhionmwon out of the 18 Local Government Areas in Edo State. They were purposely selected because of the presence of beekeepers in the Local Governments. A total of 40 beekeepers were randomly selected, 10 from each Local Government and interviewed using structured questionnaires. Data were collected and analyzed using SPSS.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents: The socio-economic characteristics of the respondents examined include: age, gender, number of colonies owned, and beekeeping experience. The findings are presented in Table 1

Socio-economic variables	Frequency	Percentage (%)
Age (Years)		
Less than 30	15	37.5
31-35	13	32.5
36-40	4	10
41 and above	8	20
Gender		
Male	40	100
Female	_	_
Number of Colony Owned		
Less than 20	14	35
20 - 40	16	40
50 and above	10	25

 Table 1:
 Socio-economic characteristics of the respondents

Experience		
1 - 5	15	37.5
10 and above	25	62.5

Source: Computed from Field Survey Data, 2021

Table 1 shows that the majority (80%) of beekeepers were less than 40 years, while 20% were above 40 of age in the study area. The finding shows that most of the beekeepers were in their active and productive age group. The result also indicates that all (100%) of the respondents were males. This might be due to male farmers' great responsibility in the household of having many mouths to feed as heads. Thus, they engage in beekeeping to supply their households with food and other basic needs (Tijani et al, 2011). Also, women might be scared away from beekeeping because of the fear of being stung by bees. In addition, Table 1 also shows that Most of the beekeepers in the study area are small-scale farmers. The finding also reveals that 62.5% of the respondents had between 10 years and more experience in beekeeping, while 37.5% had 1-5 years of experience in the study area. This implies that most of the farmers have reasonable beekeeping experience in the study area. The higher the number of years spent in farming by a farmer, the more he becomes aware of new production techniques (Iheanacho, 2000) thereby increasing the level of his productivity.

Beekeeping Process: The beekeeping process examined includes the location of bee colonies, types of agrochemicals used within the apiary, characteristics features of honeybees, and frequency of cleaning of hives. The findings are presented in Table 2

Table 2 shows that the majority (65%) of bees were located on farm plantations while 35% were located in the forest. The finding also shows that 45% of the respondents indicated that pest pesticides were used near their apiary while 55% indicated the use of herbicide near their apiary.

Beekeeping Process	Frequency	Percentage (%)
Location of Bee Colonies		
Forest	14	35
Farm Plantation	26	65
Do Agrochemicals affect your bees		
Yes	23	57.5
No	17	42.5
Types of Agrochemicals Used Within		
the Apiary		
Herbicide	22	55
Pesticide	18	45
Characteristics Features of Honeybee		
Aggressive	38	95
Docile	2	5
Frequency of Cleaning of Hives		
Once a Year	6	15
Twice a Year	34	85

Table 2: Beekeeping Process

Source: Computed from Field Survey Data, 2021

According to Fikadu, (2020), agrochemical poisoning is the primary challenge for the beekeeping sector which indicates that the use of different chemicals to agricultural crops highly affects the economy of beekeepers. The result also indicates that all (95%) of the bees are aggressive while 5% are docile. 85% of beekeepers cleaned their apiaries twice a year while 15% cleaned their apiaries once a year. Cleaning of apiary helps to prevent disease and can help beekeepers to notice the presence of pests.

Constraints of beekeeping: Table 3 shows the constraints of beekeeping. The respondents were asked to state all the possible problems they have in beekeeping and 95% claimed that the presence of pests was a problem, 75% claimed theft, 70% claimed to abscond of bees, and 50% indicated the use of agrochemicals within the location of their apiary as their challenge while 65% claimed high cost of beekeeping equipment and shortage of bee forage.

Constraints	Frequency	Percentage (%)
Absconding of Bees	28	70
High cost of Beekeeping Equipment	26	65
Shortage of Forage	26	65
Dect	20	05
Pest	38	93
Disease	_	_
Agrochemicals	20	50
Theft	30	75

Table 3: Constraints of Beekeeping in Edo State

Source: Computed from Field Survey Data, 2021. Multiple responses were allowed

The existence of honeybee pests affects the honeybees' life, which leads them to abscond (Abebe, 2007). Absconding (the total movement of the honeybee colony by leaving the hive) can happen due to different reasons. Lack of feed, honey bee pests, and drought are the main problems that may cause absconding (Abebe 2007). Shortage of bee forage can cause the honeybee colony to abscond to areas where resources are available for their survival (Yirga *et al*, 2012).

The pest that affects beekeeping in Edo State: Table 4 shows the ranking order of pest that affects beekeeping in the selected local government areas in Edo State. The wax moth has 55%, Termite 17.5%, Ant 12.5%, and Lizard 15%

Pest	Rank Order	Frequency	Percentage (%)
Wax moth	1	22	55
Ant	2	5	12.5
Termites	3	7	17.5
Lizard	4	6	15
Spider	5	-	-

Table 4: Pest that affect Beekeeping in Edo State

Source: Computed from Field Survey Data, 2021

The greater wax moth *Galleria mellonella* is considered a notorious pest of honey bee colonies which is well distributed throughout the world. The wax moth larvae don't cause direct damage to Honeybees at any living stage, but they are very destructive to the combs. They eat the wax of the comb, pollen, propolis, dead bees, and pupal cases of bees. As a result of serious infestation, it causes weak bee colonies to abscond, while in strong colonies bee population will quickly reduce, and complete destruction of colonies can occur (Kwadha

et al, 2017). Also, according to Yirga *et al*, 2012, Ants and termites can cause a significant effect on honey yield since they highly hinder or limits the activity of bees or causes absconding.

RECCOMENDATION / CONCLUSION

The analysis of the socio-economic characteristics of honey producers showed that the majority of the respondents were between 30-40 years. This showed that young people are majorly involved in beekeeping. All the respondents in the study area were men. Women should be encouraged to participate in beekeeping. In addition, 55% of the respondents identified Wax moth as the most prevalent pest of their bee colonies. These pests should be studied to understand their life cycle and mode of attack. All the respondents reported the use of agrochemicals within their apiary. Honey bees play an important ecological and economic role in the pollination service of crops. But the recent global decline in pollinators, including honeybees can be caused by the use of agrochemicals.

Based on the field survey results, the following recommendations are made:

- There should be more training and awareness by extension agents to encourage people to participate in beekeeping in Edo State
- Women should be encouraged to participate in beekeeping in Edo State
- Government and non-governmental organizations in collaboration with the bee farmers' cooperative groups should provide improved beekeeping technologies at a subsidized rate to the farmers in order to encourage them
- The issue of Wax moth pests reported by farmers should be looked into and control measures suggested
- The use of pesticides and herbicides should be discouraged and non-chemical methods of insect and weed control should be encouraged
- Bush burning should be discouraged in order to preserve bee forage
- Local vigilantes should be involved to guide hives against theft and vandalization

REFERENCES

Moniruzzaman, M., & Rahman, M. S. (2009). Prospects of beekeeping in Bangladesh. Journal of the Bangladesh Agricultural University, 7(452-2016-35479).

Taylor, I., & Smith, K. (2007). United Nations Conference on Trade and Development (UNCTAD). Routledge.

- Babatunde, R. O., Omotesho, O. A., & Sholotan, O. S. (2007). Socio-economic characteristics and food security status of farming households in Kwara State, North-Central Nigeria. *Pakistan Journal of Nutrition*, 6(1), 49-58.
- Akinwande, K. L., Badejo, M. A., & Ogbogu, S. S. (2013). Challenges associated with the honey bee (Apis mellifera adansonii) colonies establishment in southwestern Nigeria. African Journal of Food, Agriculture, Nutrition and Development, 13(2).

Ajao, A. M., & Oladimeji, Y. U. (2013). Assessment of the contribution of apicultural

practices to household income and poverty alleviation in Kwara State, Nigeria. *International journal of science and nature*, *4*(4), 687-698.

- Ayansola, A. A. (2012). An appraisal of apicultural practices in southwestern Nigeria. *Journal of Agricultural Sciences*, 3(2), 79-84.
- Labe, T. E. (2017). Prospects and challenges of apiculture business in Nigeria-A Review. *Journal of Research in Forestry, Wildlife and Environment*, 9(2), 83-91.
- Tijani, B. A., Ala, A. L., Maikasuwa, M. A., & Ganawa, N. (2011). Economic analysis of beekeeping in Chibok local government area of Borno State, Nigeria. *Nigerian Journal of Basic and Applied Sciences*, 19(2).
- Iheanacho, A. C. (2000). Economics of Millet production under different cropping systems in Borno State of Nigeria. Unpublished Ph. D. Thesis, University of Maiduguri, Nigeria.
- Fikadu, Z. (2020). Pesticides use, practice and its effect on honeybee in Ethiopia: a review. *International Journal of Tropical Insect Science*, 40, 473-481.
- Abebe, W. (2007). Determinants of adoption of improved box hive in Atsbi Wemberta District of Eastern Zone, Tigray Region (Doctoral dissertation, Haramaya University).
- Yirga, G., Koru, B., Kidane, D., & Mebrahatu, A. (2012). Assessment of beekeeping practices in Asgede Tsimbla district, Northern Ethiopia: Absconding, bee forage and bee pests. *African Journal of Agricultural Research*, 7(1), 1-5.
- Kwadha, C. A., Ong'amo, G. O., Ndegwa, P. N., Raina, S. K., & Fombong, A. T. (2017). The biology and control of the greater wax moth, Galleria mellonella. *Insects*, 8(2), 61.