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Analyse the Status of Apiculture in Vaishali District of North Bihar, India

Jyotish Kumar Singh[1], Dr. Nalini Bhardwaj[2]

[1]Research Scholar, P. G. Department of Zoology, J. P. University, Chapra, Saran, Bihar – 841301, India

[2]Assistant Professor, P. G. Department of Zoology, Z. A. Islamia College, Siwan

Abstract: ***This chapter can explain the importance of technologies in maintaining the authenticity of apiculture in the Vaishali district of Bihar. Honey is consist of effective nutritional and economical value, which is also included in this chapter. However, it is noticed that improvement needed in the honey production of India. Few states are contributed to maintaining the development of honey production in India proper honey production directly has an impact on the economic development of India.***

Keywords: Economic development, India, honey production, economical value, and nutritional value

1. Introduction

This study can explain status of apiculture in Vaishali district of North Bihar, Bihar. Agricultural Products Export Development Authority (APEDA) and Central Bee Research and Training Institute are the Beekeeping institutions where apiculture is performed. APIS India limited, Allied Natural Product, Dabur India Limited and BRIJ Honey Private limited are honey exporters in India. These are responsible for exporting the honey to other countries. The Indian government has initiated various schemes for supporting apiculture in India. Prime Minister Employment Generation Program and Western Ghats Development Programmed are the present schemes of the government.

2. Literature Review

2.1 Nutritional value of honey in India

Honey is conducted with the involvement of effective nutritional value. Cut, burns and wounds are also maintained properly with the help of honey, due to these actors it is easy to state that honey s useful for people. On the other hand, effective medicinal properties are also noticed in honey, which is useful for people. According to Pashte et al. (2020), it is noticed that honey is conducted with the involvement of Vitamin B6, Vitamin C and Amino Acid that can increase the efficiency of honey. Few effective raw honey benefits are present, which is an effective nutritional value of honey (Thakur et al.2021). High - performing antiseptic properties are also present in honey. On the other hand, antibacterial and antifungal characteristics are present in Honey. Antioxidant properties are responsible for the phytonutrients of honey. The skin of people is also maintained properly with the involvement of honey. With the help of few resources, it is noticed that the main nutrients of honey are carbohydrates, fructose, riboflavin niacin, and amino acid. Duration of diarrhoea is also maintained properly with the help of honey (Leaka et al.2019).

The severity of diarrhoea is also decreased by honey, which is treated as an effective facility of honey. High - quality nutraceutical value is present in natural honey, which is treated as an effective benefit of natural honey. Increased potassium and water intake are promoted properly with the help of honey. On the other hand, it is noticed that honey can play a crucial role in maintaining weight. According to Ghosh et al. (2020), the cholesterol level of the human body is also reduced with the help of honey. Added sugar in the diet is reduced properly with the help of honey. This factor directly has an impact on maintaining high blood pressure and diabetes - related issues. On the other hand, honey can play a crucial role in maintaining cough related issues properly, market facility of honey is maintained properly with the involvement of these nutritional values of honey in India.

2.2 Status of Apiculture in India

From 2015 to 2020 there has been strong growth seen in the Indian apiculture market. Apiculture is the study of beekeeping for the production of natural honey (Singh et al.2018). Over the last few decades, honey consumption in India has increased due to various factors that have positively changed the practices of Apiculture in India. However, the per capita consumption of honey is very low. Various reasons are present that are responsible for the low productivity of honey in India. People in India are less aware or they have no idea regarding the positivity of honey and its impact on health. In India, honey is mainly used for medicine in low amounts. AS per (Mishra et al.2020), the consumption of honey as food in India is quite low.

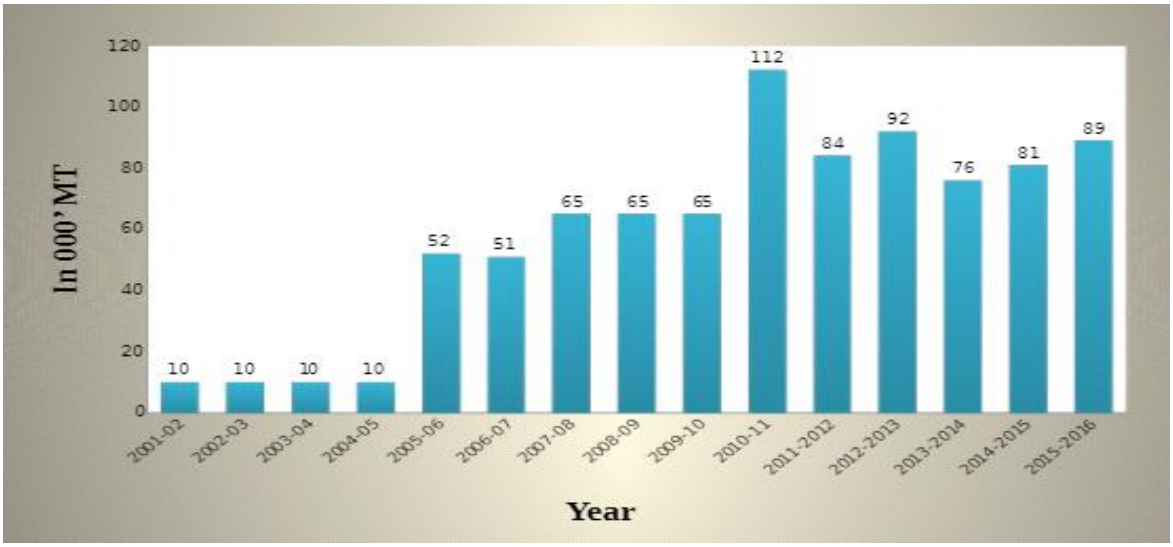

Figure 1: Honey Production in India
(Source: Singh et al.2018, p.456)

Beeswax is the product obtained from the bees that are mainly used for the manufacturing of pharmaceuticals and cosmetics shops. It has been expected that in the upcoming, the consumption of honey will be increased due to the increasing inclination of the people regarding health and good foods. During the pandemic period, people are shifting to Ayurveda, and honey is used as a prominent material while taking the medicine.

Due to the contribution of honey in Ayurveda, India comes at the 9th rank in the leading manufacturing of honey. Various farmers across India are involved in apiculture due to having great profit in the products manufactured from the honey bee (Tej et al.2017). The process of manufacturing honey from the bee is long and it takes several days. This results in the expensiveness of honey products. In India, the honey production units are about 2.64 lakh and no of bee colonies in India is about 30 lakh. At present India exports about 94500 MT whereas it imports about 400 MT honey from the other countries. The total consumption of honey per capita in India is 70 gm. In India, more than 3 lakh people get employment due to apiculture.

2.3 Status of apiculture in Vaishali district

Bihar can play a crucial role in beekeeping, as well as the Vaishali district of Bihar is treated as an effective centre of apiculture proper growth of honey production is noticed in this district. With the help of few resources, it is noticed that a total number of 9, 580 registered beekeepers are present in India. Along with this, the National Bee Board state that 1, 412, 659 bee colonies are present in India. Among this number, 859 registered beekeepers are present in Bihar of India. In India, this state ranks 11 in honey production this factor directly has an impact on the development of beekeeping in India. The economic growth of this system is also maintained properly with the help of this aspect (Jamwal and Mattu 2021). On the other hand, it is important to maintain the involvement of beekeepers and innovative technologies.

Proper growth and improvisation are important for his state to increase the efficiency of apiculture. Various challenges are faced by beekeepers in this state to maintain this factor it is important to maintain the implementation of innovative technologies properly. The favourable temperature of this district can play a crucial role in maintaining the development of beekeeping. The National Bee Board (NBB) is working hard to advance the beekeeping industry in the country. It raises public awareness and has done a lot of effort to help beekeepers improve their ability. The NBB's major goals are to create nucleus stock, expand capacity, and train bee producers and keepers in order to achieve comprehensive development of scientific beekeeping in India by popularising state - of - the - art technology for processing and quality control of bee products. With the help of few resources, it is noticed that the government of India provide loan to almost 60 farmers of Vaishali in 2014 - 215 to maintain beekeeping (Kalia 2019).

The Indian government can provide them 40000 rupees for apiculture. Along with this, high performing pollination diversity is noticed in this district of Bihar. On the other hand, it is important to collect proper and effective information about traditional beekeeping and modern beekeeping. The traditional bee farming process is maintained by people for a long time. This process is conducted with the help of old - fashioned clay houses in wooded logs. However, now a days modern technology is also used increasingly in maintaining bee farming in this district of Bihar. This modern technology can play a crucial role in the improvisation of bee farming in this district of Bihar. Along with is it is noticed that the top bar hive method s used increasingly in maintaining modern bee farming (Mattu 2017).

3. Materials and Method

Profitable honey farming is also noticed in India, which directly has an impact on the economic benefit of honey in India. Commercial beekeeping is treated as a recent profitable business of India, which directly has an impact on the development of the Indian economy. Now a days government of India is trying to provide beekeeping cost. The current price of honey in the Indian market is 120

rupees. Table 1 can provide information about the economics of commercial beekeeping in India. This table can provide income - related aspects of honey in India, which directly has an impact on the economy of India.

Table 1: Market Price of Honey in India

Serial Number	Particulars	Income
1.	Yield per Box * No. of Hives * Price	40 x 40 x 100 = 1, 60, 000 rupees
2.	No. of New Box * Price	25 x 700= 17, 500 rupees
Total		1, 77, 500 rupees

According to the National Bee Board, which is part of the agriculture ministry, India's honey output in 2017 - 2018 was 1.05 lakh metric tonnes (MTs), up from 35, 000 MTs in 2005 - 06. In 2005 - 06, India had 8 lakh bee colonies, but now it has 35 lakh bee colonies. The number of accounting firms and societies has also increased, with 9091 persons registered in the apiary industry as of January 2019. Along with this, an integrated beekeeping development centre is also created properly with the help of the Indian government. This factor directly has an impact on the development of honey production in this country. Manivanan et al. (2018) stated that, fertilization of honey bee is also maintained properly with the help of this centre. This factor directly has an impact on the development of honey production in India.

4. Result and Discussion

4.1 The scientific process of apiculture

Improvement of beekeeping is maintained properly with the help of proper and effective scientific method. Improvisation of apiculture s maintained properly with the help of the scientific method. To maintain the improvisation of this process few effective scientific processes are conducted. The authenticity of beekeeping processes. Proper training is treated as an effective aspect that can play a crucial role in maintaining the authenticity of beekeeping process (Tej et al.2017). To maintain scientific beekeeping it is important to collect proper and effective information about bees. It is important to collect roper and effective information about Indian bee, little bee, and stingless bee. This factor directly has an impact on maintaining pollen and nectar source. The scientific process of apiculture can provide all essential information about worker bee's communication. Along with this, bee space is treated as an effective aspect. This factor is maintained properly with the involvement of proper and effective scientific method. The exact location of nectar is maintained properly with the involvement of worker bee's communication. This factor directly has an impact on the development of nectar.

Growth of the apiculture process is improvised with the involvement of this process. On the other hand, it is important to collect proper and effective information about proper equipment for beekeeping. Along with this, it is noticed that hive, smoker, swarm catcher, and honey extractor processes are used increasingly in maintaining the growth of apiculture in India. The act of raising honeybees is known as apiculture. Bees are commercially grown in apiaries in this technique. An apiary is a space that can accommodate a significant number of beehives. The bees are cared for and maintained here to generate wax and honey. Few effective elements are present in apiculture which is maintained by the scientific method. The authenticity of beekeeping processes is justified properly by the scientific method. These essential elements are a typical moveable hive, safety dress and another important aspect.

4.2 Importance of training and knowledge for beekeepers

Beekeeping is one of the major occupation practised by the people in the Vaishali district. From the prehistoric days, honey has been produced by the Vaishali district that is exported to other countries. Beekeeping is the major source of income of the people of Vaishali that generate employment and income. The proper training and knowledge about beekeeping will help the beekeepers to understand the method of producing bees effectively. Producing honey from the bee is not an easy task, it involves various risky processes that take a long process to produce honey (Ricketts and Shackleton 2020). The tradition of Beekeeping in Vaishali is old. A practice which is done with the Apis cerana. The adoption of honeybee Apis helps the beekeeper to produce honey that reached 4335 tonnes. Training regarding Beekeeping helps the farmer to learn the new technology regarding beekeeping as well as through the way they can obtain a high yield of productivity (Prodanović et al.2019).

The per colony per year of productivity of honey is low in the Vaishali district as compared to the other state. The difference between the productivity of the Vaishali district with the other state is the technology adoption of these states. It is important to create awareness among the farmers regarding the use of technologies that enhance the effectiveness of honey production from beekeeping (Amulen et al.2017). The proper use of the latest technology helps the farmers to enhance their productivity and maximize their profitability.

Table 2: Use of proper technology in maintaining honey production in India

Knowledge level	Pre - training		Post - training		Mean
	F %	Mean score	F %	Mean score	
Low (0 - 28)	128 64.80		0 0.00		
Low - Medium (29 - 56)	51 25.52	29.63	35 18.34	68.36	37.72
High - medium (57 - 85)	14 7.63		132 66.84		
High (86 - 113)	1 1.11		26 13.75		

5. Conclusion

Based on this chapter, it is concluded that effective beneficial is present in honey. These benefits are useful for human health. Cardiovascular disease, wound care, reproductive system, eye disorder. On the other hand, it is noticed that cough - related issues are also maintained properly with the help of honey. Knowledge is an important factor that impacts bee production. Knowledge regarding the use of scientific technology has a great impact and it was

found missing in the Vaishali district, which is concluded in this study

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