



Beekeeping: Opportunities and Challenges in the Growing Industry

*Sandip Saravadiya¹, Dharmishtha Rathod², Umang Patel³ and Raj Patel¹

¹M.Sc. Scholar, Department of Agricultural Economics, Navsari Agricultural University, Navsari, Gujarat-396450

²M.Sc. Scholar, Agricultural Meteorological Cell, Department of Agricultural Engineering, Navsari Agricultural University, Navsari, Gujarat-396450

³Assistant Professor, Department of Agricultural Economics, College of Agriculture, SDAU, Tharad, Gujarat-385506

Corresponding Author's email: sandip.n.saravadiya@gmail.com

Beekeeping also known as apiculture has emerged as an important agri-based enterprise contributing to agricultural productivity, rural livelihoods, nutritional security and environmental sustainability. Honeybees play a critical role in pollination, supporting crop yields and biodiversity while providing valuable products such as honey, beeswax, royal jelly, pollen, propolis and bee venom. In recent years, the beekeeping sector has gained momentum in India due to increasing domestic demand, export potential and strong government support under initiatives like the Sweet Revolution and National Beekeeping and Honey Mission. The study concludes that beekeeping is a low-investment, high-potential enterprise that can significantly enhance farmers' income and promote sustainable agriculture when supported by scientific management, market linkages and policy interventions.

Keywords: Beekeeping, Honey, Pollination, Rural Livelihood, Sweet Revolution.

Introduction

Beekeeping is the scientific management of honeybee colonies to obtain economic and ecological benefits. Traditionally practiced as a subsidiary activity, beekeeping has now evolved into a commercially viable agribusiness enterprise. (Abrol, 2010). The primary objectives of beekeeping include maximizing honey production and providing pollination services to agricultural and horticultural crops. In addition to honey, beekeepers also obtain valuable by-products such as beeswax, pollen, propolis, royal jelly and bee venom, which have applications in food, pharmaceutical, cosmetic and medicinal industries (Cartland, 1970; Mcinerney, 1990; Molan, 1999). In India, beekeeping plays a dual role by enhancing farm income and improving crop productivity through pollination with rising awareness about the nutritional and medicinal value of honey and increasing export demand, apiculture has gained renewed attention from policymakers, researchers and farmers alike.

Role of Honeybees in Agriculture

Honeybees are among the most efficient pollinators in nature. It is estimated that one out of every three bites of food consumed by humans depends on pollination, largely by bees. According to the United Nations Environment Programme (UNEP), out of the 100 crop species that provide 90 per cent of the world's food, 71 are pollinated by bees (FAO, 2022; Wakgari & Yigezu, 2021). Crops such as fruits, vegetables, oilseeds, nuts, and fodder crops show significant yield improvement due to bee pollination. In India, especially in North and Western regions, honeybees play a crucial role in pollinating crops like apple, almond, cherry, litchi, mustard, sunflower and various vegetables. Studies have reported yield

increases ranging from 15 per cent to 200 per cent in several crops due to effective bee pollination. Thus, beekeeping not only generates direct income through hive products but also indirectly boosts farm productivity and food security.

Status of Beekeeping: Global and Indian Scenario

Global Scenario

Globally, *Apis mellifera* is the most widely managed honeybee species. The world honey production is estimated at around 2.15 million metric tonnes with China contributing nearly 28.03 per cent of total global production, followed by Turkey contributes 6.95 per cent and Ethiopia contributes 5.11 per cent. (Tridge 2025). In terms of per capita honey consumption per day, Central African Republic tops the list with 9.62 grams consumed per day. In Asia, Japan is the biggest consumer of honey with per capita consumption of up to 1.9 grams per day. Over the last decade, there has been a steady increase in the number of beehives, particularly in Asia and Africa, reflecting growing awareness of pollination services and honey demand. (Live beekeeping 2024).

Indian Scenario

India has witnessed rapid growth in the apiculture sector. According to National Bee Board (NBB) around 22.83 lakh bee colonies are registered in the country. Annual honey production stands at approximately 1.4 lakh metric tonnes and about 50 per cent of this production was exported (NBB, 2024). During FY 2023–24, India exported around 1.07 lakh metric tonnes of natural honey worth USD 177.52 million, showing a remarkable increase from FY 2020–21. India exported 78.22 per cent share of its total honey export to the USA followed by UAE about 9.11 per cent and Saudi Arabia about 2.59 per cent (World Integrated Trade Solution, 2024).

Opportunities in Beekeeping

- Income generation and employment creation
- Pollination services for crop productivity
- Export potential and value-added products
- Sustainable agriculture and environmental conservation
- Scope for agri-tourism and training

Challenges in Beekeeping

- Deforestation and declining floral resources
- Climate change and adverse weather conditions
- Pests, diseases, and indiscriminate pesticide use
- Adulteration and quality control issues
- Weak marketing, branding, and infrastructure

Financial Viability of Beekeeping

Financial analysis of 100 honeybee colonies indicates that beekeeping is a profitable enterprise with favourable cost–benefit ratios and positive net returns (Gautam *et al.*, 2022). Initial investment is relatively low, while annual returns from honey and by-products provide attractive net income. Studies show positive net returns within a short period, making beekeeping suitable for small and marginal farmers.

Government Initiatives for Promoting Beekeeping

The Government of India has launched several initiatives to promote apiculture, including

- **National Bee Board (NBB)** for overall development of beekeeping
- **Sweet Revolution** to double farmers' income
- **National Beekeeping and Honey Mission (NBHM)**
- **Honey Mission** by KVIC
- **Madhu Kranti Portal** for traceability and quality control
- **Honey Corners** by NAFED for marketing support

These initiatives aim to strengthen production, processing, marketing and export of honey and bee products (NBB, 2024).

Conclusion

Beekeeping offers immense potential as a sustainable and profitable agribusiness enterprise for enhancing farmers' income and ensuring environmental sustainability. It enhances farmers' income, improves crop yields through pollination and supports environmental conservation. Despite challenges related to climate, pests and marketing, appropriate training, scientific management and strong policy support can unlock the full potential of apiculture. With rising demand for natural products and increasing government focus, beekeeping can play a significant role in rural development and sustainable agriculture in India.

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