



ISSN Print: 2664-8792
ISSN Online: 2664-8806
Impact Factor: RJIF 8.54
IJRM 2025; 7(2): 829-832
www.managementpaper.net
Received: 11-07-2025
Accepted: 16-08-2025

Sumuna Lama
Department of Commerce,
Gurudas College, Kolkata,
West Bengal, India

Beekeeping and honey production in India: A path to sustainability and income: A brief overview

Sumuna Lama

DOI: <https://www.doi.org/10.33545/26648792.2025.v7.i2i.535>

Abstract

The article examines beekeeping in India as a sustainable and economically feasible option, based on secondary data and literature reviews. Beekeeping has gained significance recently as it helps diversify income, especially among small and marginal farmers. It is regarded as an eco-friendly activity because it supports biodiversity through natural pollination. The article provides an overview of honey production in India and also discusses various government programs that have played an important role in promoting beekeeping. Despite its potential, beekeeping faces challenges such as pesticide exposure, climate change effects, and low awareness among people.

Keywords: Beekeeping, India, sustainable agriculture, economic feasibility

Introduction

As the world faces interrelated environmental, economic, and social challenges, the need for sustainable development becomes more vital than ever. Extreme weather changes such as longlasting droughts, intense heatwaves, unpredictable rainfall, floods, and frequent storms have caused significant disruptions across the entire ecosystem, leading to a decline in agricultural productivity and global food security. In this context, highlighting the role of Beekeeping as a sustainable and ecologically sound activity becomes more crucial. It generates little to no pollution, making it a sustainable option with low environmental impact.

Importance of Beekeeping: Beekeeping is also known as apiculture or bee farming. It is the practice of cultivating bees for the commercial production of various bee products. In addition to honey, beekeeping produces several other valuable products. These include beeswax, used in cosmetics and candles; pollen, propolis, royal jelly, and bee venom, all of which are valued for their medicinal and health benefits. These products are in high demand both locally and globally, making beekeeping a vital and profitable activity. Beekeeping is essential for supporting the environment, economy, and society in many ways. It provides income to farmers, creates self-employment opportunities for rural youths and women, and promotes economic growth. Beekeeping encourages agripreneurship, particularly among smallholders, contributing to livelihood security and economic transformation (Mohanty *et al.*, 2023) ^[1]. Like other insects, bees are part of a food chain that plays a significant role in the ecosystem.

They help in the pollination process, which is necessary for sustainable farming and ecological stability. Honeybees are the important pollinators of various fruits, vegetables, oilseeds, pulses and fiber crops (Abrol., 2023) ^[2]. Beekeeping aids the growth of plant species, thereby preserving ecosystems and wildlife habitats (Kaya *et al.*, 2023) ^[3]. Beekeeping is also an emerging aspect of ecotourism, offering visitors the opportunity to learn about sustainable bee farming practices and understand their ecological importance. It holds deep cultural significance in many parts of the world. Integrating these traditions into tourism experiences helps preserve indigenous knowledge from disappearing. It's a simple yet powerful approach to connect people, food, and nature.

Beekeeping Requirements: Beekeeping is an appealing, profitable, and fascinating rural agrihorticultural venture that requires neither advanced technology, significant capital

Corresponding Author:
Sumuna Lama
Department of Commerce,
Gurudas College, Kolkata,
West Bengal, India

investment, nor extensive infrastructure (Narang *et al.*, 2022) ^[4]. As stated above, beekeeping requires less initial investment compared to other agricultural businesses. It is a good option for small and marginal farmers because it doesn't require much land, and can be easily integrated with existing farming practices. Bee equipment is generally affordable compared to the high costs involved in other types of livestock farming. Basic beekeeping equipment typically includes beehives, bee colonies, protective clothing, a smoker, and essential tools such as a hive tool and a bee brush. However, it is a specialized and challenging practice that requires proper skills and training. For a career in beekeeping, it is essential to understand the basics, including bee species, their biology, management and rearing methods, bee enemies and diseases, bee forage, their role in pollination, and the causes and solutions for pollinator decline (Kishan *et al.*, 2017) ^[5]. As stated, successful beekeeping depends on several factors, including weather conditions, appropriate location, proper beekeeping equipment, pest and disease control, understanding bee behavior, hive health, and correct harvesting techniques.

Indian Overview

India's rural economy largely depends on agriculture for income generation and livelihood support. For generations, beekeeping has been an integral part of rural life in India, providing an additional source of income for many, while honey remains a valued component of Indian cuisine and cultural traditions. India's diverse climate and landscape provide suitable habitats for several bee species, each thriving in specific regions, including *Apis dorsata*, *Apis*

cerana indica, *Apis mellifera*, *Apis florea*, and *Trigona species*. Among these, *Apis cerana indica*, the Indian honeybee, is one of the most common species found and reared in the country. However, *Apis mellifera*, an introduced species, is widely cultivated in several parts of India due to its high honey production capacity. *Apis dorsata*, the Giant honeybee, is wild in nature. Due to their migratory nature, aggressiveness, and difficult handling, this species is rarely domesticated in India (Udayakumar *et al.*, 2022) ^[6]. *Apis florea*, the dwarf bee, is suitable for pollinating wild plants and crops.

Trigona species, the stingless bees, are valued for their medicinal honey and pollination services. Stingless bees are vital pollinators of crops like mango, strawberry, coconut, lablab, gooseberry, and cucurbits (Udayakumar *et al.*, 2022) ^[6]. Each species contributes to pollination, supporting local agriculture and sustaining biodiversity. The northeastern region of India showcases diverse bee species and floral resources, enhancing beekeeping potential (Haldhar *et al.*, 2021) ^[8].

Beekeeping in India has experienced renewed growth and support through various government schemes and initiatives. As of recent records, approximately 14,909 individual beekeepers and 19.55 lakhs honey bee colonies are registered with the National Bee Board. Several states have demonstrated exceptional performance in honey production. Honey production depends on colony strength, the availability of suitable forage crops, and prevailing weather conditions. The table below presents the top five honey-producing states based on data from 2023-24.

Table 1: Top 5 Honey Producing States in India as per 2023-24 data

State	Production Quantity In: (000) tonnes	Percent Share
Uttar Pradesh	25.03	17.11
West Bengal	23.69	16.2
Punjab	20.6	14.08
Bihar	18.03	12.33
Rajasthan	13.39	9.15
Source: Department of Animal Husbandry (APEDA)		

Uttar Pradesh ranks as the leading honey-producing state in India, contributing over 17.11% of the nation's total output, with West Bengal, Punjab, Bihar, and Rajasthan following closely behind. In 2024, India exported 94,778.5 metric tons of natural honey, valued at USD 179.77 million (Source: WITS). Mustard Honey, Eucalyptus Honey, Lychee Honey, Sunflower Honey, Pongamea Honey, Multi-flora Himalayan Honey, Acacia Honey, Wild Flora Honey, Multi and Mono-floral honey are some of the main varieties of honey exported from India (Source: APEDA). India's top honey export destinations in 2024 were the United States, importing 74,138 metric tons of natural honey worth USD 139.20 million, followed by the UAE, Saudi Arabia, Portugal, Qatar, Libya, Bangladesh, and Canada (Source: WITS). India's honey exports have shown consistent growth, with the United States emerging as a significant destination market.

Government Initiatives to boost beekeeping in India: To promote and strengthen beekeeping in India, the government launched the 'Sweet Revolution' in 2016, intending to double farmers' income by 2024. In line with this objective, 'The National Beekeeping & Honey Mission' was launched

in 2020 under the Aatmnirbhar Bharat Initiative, implemented through the National Bee Board (NBB), Agriculture, and Farmers' Welfare. The scheme has three Mini Missions (MM-I, II & III), each focusing on different areas: awareness, capacity building and training, and women empowerment through beekeeping; establishing essential infrastructure like Integrated Beekeeping Development Centres, Honey Testing & Disease Diagnostic Labs, Beekeeping Equipment Manufacturing Units, Bee Breeders and more; MM-I includes digitization and online registration for beekeepers, MM-II focuses on honey processing, adding value to honey products, and marketing support; and MM-III supports research and development in beekeeping. To support these efforts, the Madhukranti portal was created as a digital platform to connect beekeepers, entrepreneurs, and the government for the efficient marketing of produced honey (Source: MoAFW). It helps track the source of Honey and other beehive products. Additionally, the 'Honey Mission Program' was initiated by KVIC under the Ministry of MSME during 2017-18 to encourage beekeeping and provide self-employment opportunities for rural youth. Also, the Honey FPOs program of NAFED was launched by MoAFW on 26th

November 2020 to strengthen the beekeeping industry and help farmers overcome challenges. This program also seeks to promote beekeeping as a means of providing sustainable livelihoods for unemployed women and tribal communities.

Issues to be addressed: Although beekeeping is becoming popular in India, many challenges still hinder its growth as a sustainable approach to agriculture and the environment. One major concern is that exposure of bees to pesticides and chemicals weakens and destroys their colonies. A study conducted in Odisha, based on input from farmers, suggested that among five different types of bees, which included species such as *Apis cerana*, *Apis dorsata*, *Apis florea*, *Amegilla spp* and *Xylocopa spp*, four species experienced a decline up to 70-90 percent, except *Apis dorsata*. In addition, habitat loss caused by urbanization, deforestation, and climate change negatively impacts bee health and behavior. Another recent study conducted in Bangalore revealed a decrease in the abundance of bees of up to 20 percent (Steinhübel *et al.*, 2022) ^[16]. Furthermore, in many parts of India, farmers and the general public lack awareness and knowledge of the vital role that bees play in the pollination process. Limited access to technical knowledge, training, and financial support further discourages many farmers and rural youth from adopting beekeeping. Many individuals are unable to start a beekeeping business due to a lack of skilled labor and access to high-quality equipment (Singh *et al.*, 2021) ^[8]. Further, small-scale beekeepers also struggle with market access, product promotion, and obtaining fair prices for honey and other bee-related products. Addressing these challenges is essential for unlocking the full potential of beekeeping in India, especially given that a significant portion of agricultural production relies on insect pollination.

Conclusion

The role of honeybees is vital for agricultural productivity and ecosystem preservation. The conservation of pollinators supports most of the Sustainable Development Goals, thereby fostering a more balanced and sustainable world (Kaya *et al.*, 2023) ^[3]. Therefore, it is crucial to implement effective initiatives to protect and sustain the bee population. Although the Government has introduced various programs and schemes to strengthen beekeeping, additional efforts are needed to enhance its potential. The following measures are recommended:

- Awareness programs should be conducted to educate the public about the significance of pollination, the role of honeybees, the importance of beekeeping for sustainable agriculture, and environmental conservation.
- Skill development and training programs must be organized on a regular basis for farmers and beekeepers to enhance their knowledge and technical skills in modern beekeeping practices.
- Increased support from government agencies and NGOs is necessary to encourage active participation in beekeeping among farmers, rural youths, and women.
- A robust support system, including easy access to loans, subsidies, and reliable markets, is essential for empowering beekeepers.
- Adoption of an integrated pest management system, an eco-friendly practice, helps protect crop health and the

bee population, ensuring long-term agricultural productivity.

- The application of advanced technologies and tools to monitor and protect the health of bee colonies and to promote efficient beekeeping. IoT and AI are increasingly being used in beekeeping worldwide, with India gradually adopting these technologies for real-time hive monitoring through sensors that track temperature, humidity, weight, and bee activity (Manoj *et al.*, 2023) ^[18].
- Integration of beekeeping into eco-tourism offers educational, ecological, economic, and cultural benefits for people seeking a unique connection to the natural world.

By following these steps, India can further maximize the benefits of beekeeping, not only as a means of livelihood support but also as a backbone of sustainable farming and biodiversity conservation.

References

1. Mohanty AK, Bordoloi RM, T A, Singha AK, Kumar B, Athare T, *et al.* Promotion of beekeeping as a potential option for agriprenureship: Insights in context of Mann Ki Baat (Inner thoughts). The Indian Journal of Agricultural Sciences. 2023;93(5). <https://doi.org/10.56093/ijas.v93i5.135462>
2. Abrol DP. Beekeeping for sustainable economic development of India: Challenges and opportunities. J Indian Inst Sci. 2023;103:997-1017. <https://doi.org/10.1007/s41745-023-00374-9>
3. Kaya MY, Gültekin YS, Gültekin P. Evaluation of honey bees within the scope of sustainable development goals and ecosystem services. Düzce Üniversitesi Bilim Ve Teknoloji Dergisi. 2023;11(5):2397-2408. <https://doi.org/10.29130/dubited.1383016>
4. Narang A, Kumar D, Gupta G. Political, economical, social, technological and SWOT analysis of beekeeping as a successful enterprise in India: An overview. Journal of Applied and Natural Science. 2022;14(1):194-202. <https://doi.org/10.31018/jans.v14i1.3312>
5. Kishan Tej M, Aruna R, Mishra G, Srinivasan MR. Beekeeping in India. In: Omkar, editor. Industrial Entomology. Singapore: Springer; 2017. https://doi.org/10.1007/978-981-10-3304-9_3
6. Udayakumar A, Subaharan K, Timalapur SM. Diversity of bee pollinators - global and Indian perspective. Indian Journal of Plant Genetic Resources. 2022;35(3):397-400. <https://doi.org/10.5958/0976-1926.2022.00108.5>
7. Baswant Honey Bee Park. Baswant Honey Bee Park details. <https://baswant.com/baswant~Honey~bee~park~details#:~:text=Out%20of%20a%20total%20%2C000,Apis%20mellifera%20and%20Tetragonula%20iridipenis>
8. Haldhar S, Nidhi C, Singh K, Devi A. Honeybees diversity, pollination, entrepreneurship and beekeeping scenario in NEH region of India. Journal of Agriculture and Ecology. 2021;12(12):27-43. <https://saaer.org.in/journals/index.php/jae/article/view/400>

9. Das JK. Honey bee (Hymenoptera: Apidae) and its products used as nutritive food. International Journal of Creative Research Thoughts. 2020.
<https://www.ijcrt.org>
10. National Bee Board. Madhukranti portal.
https://madhukranti.in/NBB/frm_appl_report_all.aspx?id=1
11. Agricultural and Processed Food Products Export Development Authority. AgriExchange production index.
<https://agriexchange.apeda.gov.in/Production/Indiacat/Index>
12. World Integrated Trade Solution. India honey export data.
<https://wits.worldbank.org/trade/comtrade/en/country/IND/year/2024/tradeflow/Exports/partner/ALL/product/040900>
13. Agricultural and Processed Food Products Export Development Authority. Natural honey export portal.
<https://apeda.gov.in/NaturalHoney>
14. Press Information Bureau. Press release on national beekeeping initiatives.
<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1737656>
15. Smith BM, Chakrabarti P, Chatterjee A, Chatterjee S, Dey UK, Dicks LV, *et al.* Collating and validating indigenous and local knowledge to apply multiple knowledge systems to an environmental challenge: A case study of pollinators in India. Biological Conservation. 2017;211:20-28.
<https://doi.org/10.1016/j.biocon.2017.04.032>
16. Steinhübel L, Wenzel A, Hulamani P, Von Cramon-Taubadel S, Mason NM. Effects of local farm management on wild bees through temporal and spatial spillovers: Evidence from Southern India. Landscape Ecology. 2022;37(10):2635-2649.
<https://doi.org/10.1007/s10980-022-01507-8>
17. Singh B, Singh S, Kumar N, Kumar D. Adoption of beekeeping as an enterprise in Haryana. Journal of Entomology and Zoology Studies. 2021;9(3):348-351.
18. Manoj MS, Sharma P, SM R, Paschapur AU. Current scenario of beekeeping and honey production in India. HEXAPODA. 2023;30(1&2):43-55.
<https://doi.org/10.55446/hexa.2023.591>