



A study on the current utility and economic role of beekeeping in Chhattisgarh

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ABSTRACT

Beekeeping is a significant agriculture-based enterprise that not only produces honey, beeswax, and other by-products but also significantly increases the yield and quality of agricultural crops through pollination. In a predominantly agricultural country like India, beekeeping is currently viewed as an effective means of rural livelihood, self-employment, and sustainable development. Chhattisgarh state, with its diverse biodiversity, abundant forest resources, and agriculture-based rural structure, is considered a highly favorable region for beekeeping. This research paper presents an analysis of the current utility of beekeeping in Chhattisgarh and its role in the state's economy. The study clearly demonstrates that beekeeping has emerged as an alternative and sustainable source of income for farmers, tribal communities, and women's self-help groups in various districts of Chhattisgarh. Due to limited capital investment, low land requirements, and minimal risk, this business is proving particularly beneficial for small and marginal farmers. In addition to honey production, the pollination services provided by bees help increase the productivity of paddy, pulses, oilseeds, fruits, and vegetable crops, thereby directly and indirectly increasing agricultural income. The research also found that training programs, subsidy schemes, and technical support provided by the state government and various Krishi Vigyan Kendras are playing a crucial role in promoting beekeeping. For women

in particular, beekeeping has provided opportunities for employment generation at the household level, improving their economic independence and social status. Furthermore, this enterprise is opening up new self-employment opportunities for rural youth, which is also helping to reduce rural-urban migration. The study also indicates that the development of beekeeping in Chhattisgarh is environmentally beneficial, as it contributes to biodiversity conservation and maintaining ecological balance. However, some challenges still exist, such as a lack of marketing facilities, insufficient technical knowledge, and disease management issues, which require special attention from policymakers and relevant institutions.

Keywords: Beekeeping, Chhattisgarh economy, rural development, agricultural pollination, self-employment, women's empowerment, honey production, agriculture-based enterprises, sustainable livelihoods, rural employment.

INTRODUCTION

Chhattisgarh is a state rich in natural resources, often referred to as the "rice bowl" of India. Its vast forest areas, diverse agricultural crops, favorable climate, and biodiversity provide ideal conditions for beekeeping. At a time when there is a strong emphasis on increasing farmers' income and creating new self-employment opportunities, beekeeping can emerge as a significant alternative livelihood for Chhattisgarh. Chhattisgarh has an abundance of plant resources such as sal, teak, mahua, neem, karanj, palash, and acacia. In addition, crops like mustard, sunflower, sesame, pigeon pea, chickpeas, vegetables, and fruit trees such as mango, litchi, guava, and jackfruit provide excellent sources of pollen and nectar for bees. These crops and plants create immense potential for honey production. Districts like Bastar, Surguja, Kanker, Koriya, and Jashpur, in particular, have great potential for natural honey production. The biggest advantage of beekeeping is that it requires minimal land and capital investment. Farmers can adopt it as a supplementary business alongside their main crops. This not only yields products like honey, beeswax, pollen, royal jelly, and propolis, but also increases crop yield and quality through pollination by bees. Thus, beekeeping indirectly boosts agricultural production. Chhattisgarh has a large tribal and rural population, for whom beekeeping can become a powerful source of employment and income. Self-help groups, women's groups, and youth can be trained and involved in this sector. The state government, Krishi Vigyan Kendras (Agricultural Science Centers), the National Bee Board, and other institutions are providing training, technical assistance, and subsidies, making it even easier to adopt this business.

However, there are also some challenges in promoting beekeeping in Chhattisgarh, such as a lack of modern technology, insufficient knowledge of disease and pest management, limited marketing facilities, and a shortage of processing units. If these problems are addressed and attention is given to the branding and marketing of honey, this sector can develop rapidly. Chhattisgarh has immense potential for beekeeping. It not only helps in increasing the income of farmers and villagers but also plays a significant role in environmental conservation and agricultural development. With proper training, government support, and awareness campaigns, beekeeping can be transformed into a strong foundation for Chhattisgarh's rural economy.

Abrol (2010), in his study, presented beekeeping as a multi-purpose agricultural enterprise. The research analyzed the economic importance of honey production, beeswax, royal jelly, and pollination. He concluded that beekeeping can increase farmers' income, especially in horticultural crops, by 20–30%. ¹ Ghosh (1994)'s study compared the historical development of beekeeping in India, traditional methods, and modern techniques. The study indicates that adopting scientific beekeeping reduces production costs and increases profits. ² Singh et al. (2018), this research studied the interrelationship between beekeeping and crop pollination. According to the research, the presence of bees resulted in a 25–40% increase in the yield of mustard, sunflower, and pulse crops. ³ ICAR (2019), a study conducted by ICAR considered beekeeping an effective means of rural livelihood. The research found it to be a low-investment, profitable business for marginal farmers. ⁴ Sharma and Verma (2020), this study assessed the socio-economic impact of beekeeping activities undertaken by women's self-help groups. The findings showed an increase in women's income, decision-making power, and social respect. ⁵ FAO (2018)'s global study linked beekeeping to sustainable agriculture and biodiversity conservation. According to the study, the global economic value of pollination services is in billions of dollars. ⁶ Kumar et al. (2021), this research analyzed the cost-benefit structure of beekeeping. The study revealed that the net profit per box is higher compared to other agricultural activities. ⁷ NBHM Report (2022), the National Beekeeping and Honey Mission report evaluated the impact of government policies and training programs. According to the report, the income of trained beekeepers increased significantly. ⁸ Mishra (2019) studied the potential of beekeeping in tribal areas. The findings concluded that it is an effective alternative for forest-based livelihoods. ⁹ Hooper (2016)'s study provides a detailed discussion on bee management, disease control, and modern techniques. This research is considered a guide for practical beekeeping. ¹⁰

A review of all these studies clearly shows that beekeeping is a highly beneficial activity from an economic, social, and environmental perspective. It not only increases agricultural production but also plays a significant role in rural self-employment, women's empowerment, and sustainable development.

Beekeeping in Chhattisgarh: Efforts and its Role in the Economy from State Formation to the Present

Since the formation of Chhattisgarh as a state in 2000, the government has focused on strengthening the agriculture-based economy and the proper utilization of forest and rural resources. In this context, efforts have been made to develop beekeeping as a complementary agriculture and forest-based enterprise. Given the state's geographical structure, extensive forest area, and floral diversity, the potential for beekeeping as a powerful means of rural livelihood was recognized from the outset. In the initial years after state formation, beekeeping was mainly traditional and unorganized, especially in tribal areas, primarily involving the collection of natural honey. Gradually, the government initiated schemes to promote modern beekeeping techniques. Training programs, demonstration units, and awareness camps were organized in collaboration with the Agriculture Department, Horticulture Department, and Forest Department. With the assistance of the National Bee Board and Krishi Vigyan Kendras (Agricultural Science Centers), farmers were trained in scientific beekeeping methods. After 2010, beekeeping was promoted more systematically as a means of self-employment and income generation. Under the National Rural Livelihoods Mission (NRLM), National Horticulture Mission, and various state-level schemes, self-help groups, women, and youth were involved in beekeeping. Along with honey production, attention was also given to value addition of beeswax, pollen, and other bee products. Initiatives for honey processing and packaging were started in some districts, increasing local marketing opportunities. Currently, beekeeping is playing a supportive role in Chhattisgarh's economy. It is becoming a source of additional income in rural areas and is helping to reduce dependence on agriculture. Pollination by bees is increasing the productivity of paddy, oilseeds, pulses, fruits, and vegetables, which has had a positive impact on agricultural production and farmers' income. Furthermore, the recognition of forest-based honey as an organic and natural product has increased its demand in the market. However, the development of beekeeping in the state is still not commensurate with its potential. There is a continuing need for technical guidance, disease management,

quality control, and a robust marketing system. If sustained efforts are made in these areas, beekeeping will not only strengthen the rural economy but also help establish Chhattisgarh as a significant center for honey production.

Efforts by the State Government Promote Beekeeping in Chhattisgarh

In the state of Chhattisgarh, beekeeping is being recognized as an effective means of strengthening rural livelihoods, generating self-employment, and increasing agricultural production. With this objective, the state government, Krishi Vigyan Kendras (KVKs), and various non-governmental organizations are making continuous efforts to promote beekeeping through training, technical guidance, and institutional support. The state government is implementing several schemes through the Department of Agriculture and Horticulture to encourage beekeeping. Under these schemes, subsidies are provided to farmers, tribal communities, and women's self-help groups for beehives, bee colonies, equipment, and honey extraction machines. In addition, central schemes such as the "National Beekeeping and Honey Mission (NBHM)" are being effectively implemented at the state level to strengthen training, technical assistance, and marketing infrastructure. The state government is also organizing awareness camps and capacity building programs to establish beekeeping as an agriculture-based enterprise. The role of Krishi Vigyan Kendras has been crucial in the development of beekeeping. KVKs located in various districts of the state conduct short-term and long-term training programs on beekeeping, providing practical training on topics such as selection of bee species, colony management, disease and pest control, honey extraction, storage, and marketing. In addition, KVKs motivate farmers to adopt scientific methods of beekeeping through on-farm demonstrations and field visits. Non-governmental organizations (NGOs) and voluntary organizations are also playing a significant role in this sector. These organizations conduct training and entrepreneurship development programs specifically targeting women's self-help groups, tribal communities, and rural youth. Several non-governmental organizations (NGOs) are providing training as well as support in honey processing, branding, and marketing, ensuring that beekeepers receive fair prices for their produce. In addition, some organizations are promoting collective beekeeping through cooperative models, which reduces production costs and increases profits. These efforts have had a positive impact, leading to a continuous increase in interest in beekeeping among farmers and rural communities in Chhattisgarh. Through training and technical support, beekeeping is evolving from a traditional activity into an organized and profitable enterprise. In the future, if the state government, Krishi Vigyan

Kendras and NGOs further strengthen their coordination in training, research, and marketing facilities, beekeeping can become a strong foundation for sustainable rural development in Chhattisgarh.

State Government Policies and Local Training Programs

In Chhattisgarh state, beekeeping is being adopted as an effective livelihood option to reduce rural unemployment and promote agriculture-based self-employment. State government policies and locally conducted training programs are playing a significant role in this direction. Beekeeping is proving to be particularly suitable for farmers, rural youth, and women's self-help groups due to its low capital requirement, minimal land needs, and relatively low risk. The state government has undertaken various policy initiatives to promote beekeeping through the departments of agriculture, horticulture, and animal husbandry. Centrally sponsored schemes like the "National Beekeeping and Honey Mission" are being effectively implemented in the state, providing training, subsidies on equipment, distribution of bee colonies, and technical assistance. The objective of these policies is to develop beekeeping beyond a traditional activity into an organized, profitable, and sustainable form of self-employment. Additionally, the state government has integrated beekeeping with various livelihood missions and self-help group programs to encourage entrepreneurship development in rural areas. Local training programs are playing a fundamental role in generating self-employment through beekeeping. Training camps organized periodically by Krishi Vigyan Kendras (Agricultural Science Centers), the Department of Agriculture, and local institutions provide training on scientific beekeeping techniques, colony management, disease control, honey extraction, storage, and marketing. These training programs not only impart theoretical knowledge but also enhance the confidence of participants through practical demonstrations and field visits. Women's self-help groups in the state are being specifically linked to beekeeping. Adopting group-based beekeeping models after training is providing women with employment opportunities near their homes, thereby improving their economic independence and social status. Beekeeping is emerging as an attractive self-employment option for rural youth, potentially reducing migration from rural areas. The state government's supportive policies and local training programs are playing a crucial role in promoting self-employment through beekeeping. If these efforts are complemented by improved marketing facilities, value addition, branding, and continuous technical support, beekeeping can become a powerful engine for rural development and job creation in the state.

Beekeeping Sector in Chhattisgarh: Identification and Potential

Chhattisgarh is a state rich in natural resources, dense forests, and agricultural diversity. Its geographical features, tropical climate, and year-round availability of floral resources provide a favorable environment for beekeeping. The large forest cover, agricultural land, and horticultural crops in the state create areas where beekeeping can be systematically developed. Based on these characteristics, various regions of Chhattisgarh have been identified for their beekeeping potential. The Bastar division is an extremely important region for beekeeping in the state. Its dense forests, biodiversity, and natural vegetation such as Mahua, Sal, Karanj, Neem, Tendu, and Palash provide abundant pollen and nectar for bees. The tradition of natural honey collection already exists in districts like Jagdalpur, Kondagaon, Narayanpur, Dantewada, and Bijapur. By promoting scientific beekeeping in these areas, honey production can be organized and scaled up. The Surguja division is also a region with immense potential for beekeeping. Districts like Surguja, Jashpur, Korea, and Balrampur have extensive forest areas along with the availability of fruit trees and oilseed crops. Trees like Sal, Teak, Bamboo, Mango, Litchi, and Jackfruit are favorable for beekeeping here. In this tribal-dominated region, beekeeping can become an effective means of employment generation.

The central plains of Chhattisgarh, which include districts like Raipur, Durg, Rajnandgaon, Mahasamund, and Balodabazar, are primarily agricultural areas. Mustard, sunflower, sesame, gram, pigeon pea, vegetables, and horticultural crops are grown on a large scale here. Due to these crops, this region is particularly suitable for migratory beekeeping. By shifting beehives according to the crop cycle, honey production can be increased. The Mahanadi, Indravati, Hasdeo, and Shivnath river valleys are also favorable areas for beekeeping. These regions maintain humidity, lush greenery, and year-round flower availability, which promotes healthy bee development. Additionally, horticultural areas, such as those involved in fruit and vegetable production, prove beneficial for beekeeping. Thus, the forest areas, agricultural plains, and river valleys of Chhattisgarh can be identified as key regions for beekeeping. If area-specific planning, training, technical assistance, and marketing facilities are developed in these regions, beekeeping can play a significant role in strengthening the state's rural economy.

CONCLUSION

Based on this study, it can be clearly concluded that beekeeping in Chhattisgarh state is not only a supplementary agricultural activity but has also become an effective means of empowering the rural economy. The state's geographical conditions, rich flora, diverse

cropping systems, and favorable climate are highly suitable for the development of beekeeping. Due to minimal capital investment, limited land requirements, and low risk, this business is proving to be particularly beneficial for small and marginal farmers, tribal communities, and women's self-help groups. Beekeeping provides direct income through honey, beeswax, and other products, and also significantly increases agricultural production and quality through pollination services. This leads to increased crop productivity and a positive change in farmers' overall income. The study also found that beekeeping has created new self-employment opportunities in rural areas, helping to reduce unemployment and control rural-urban migration. Training programs, technical guidance, and subsidy schemes run by the state government, Krishi Vigyan Kendras (Agricultural Science Centers), and various non-governmental organizations have played a significant role in promoting beekeeping. For women in particular, this enterprise has become a means of economic self-reliance, increased decision-making power, and social empowerment. In addition, beekeeping contributes to environmental balance and biodiversity conservation, which is extremely important from the perspective of sustainable development. However, some obstacles still exist, such as limited availability of marketing facilities, lack of technical knowledge, disease management, and processing infrastructure. If these challenges are addressed through effective policies, better training, market linkages, and value addition, beekeeping can play an even stronger role in Chhattisgarh's economy. Therefore, it is concluded that beekeeping can become a crucial pillar of sustainable rural development in the state.

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