



Constraints and Suggestions in Adoption of Recommended Beekeeping Practices in Kumaon Hills of Uttarakhand

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ABSTRACT

Beekeeping refers to the human-driven maintenance and management of honey bee colonies, typically in hives, and is considered an environmentally sustainable and socially and economically viable endeavor. Understanding the challenges hindering the adoption of recommended beekeeping practices can enhance the collaboration between research, extension systems, and practitioners. This study focused on the Bhimtal block in Nainital district, Uttarakhand, known for its significant honey production. The top four honey-producing villages were chosen to pinpoint constraints and gather suggestions regarding the adoption of recommended beekeeping practices in the Kumaon hills of Uttarakhand. The primary obstacles identified in the study include a lack of essential skills to embrace recommended practices and a skepticism about the practical utility of modern-day recommendations. The study aimed to uncover these constraints and propose recommendations to promote the adoption of recommended beekeeping practices in the Kumaon hills of Uttarakhand.

Key Words: Beekeeping, Constraints, Suggestions, Kumaon Hills

INTRODUCTION

Honeybees hold a crucial significance for rural hill communities and the ecosystem. Products derived from honeybees, particularly honey and beeswax, serve as vital sources of income, nutrition, and medicinal benefits. Simultaneously, these bees play a pivotal role as pollinators in both agricultural and natural settings. In the traditional practices of impoverished and landless farmers residing in remote mountain areas of the Kumaon hills, there has been a historical practice of discovering and safeguarding bee colonies in the forest. These farmers harvest modest quantities of honey from these colonies. According to local traditions, farmers can assert 'ownership' over these colonies while allowing them to remain in their original nesting locations, effectively acting as stewards of biodiversity. Those with more resources and space have traditionally maintained indigenous hive bees in simple, homemade log or wall hives located near

their homes.

The National Bee Board recommends various packages of practices to enhance honey production. In a developing country like India, where the nation's prosperity is closely tied to agriculture, significant changes have occurred in the traditional agrarian system in recent years. Various programs have been implemented to introduce modern inputs and new technologies recommended by the national bee board. However, the progress has not reached the desired level of satisfaction, and its extent varies across regions. The adoption of recommended beekeeping technologies by beekeepers is influenced by multiple factors and the challenges they encounter. Constraints, in this context, refer to the difficulties faced by beekeepers in actually adopting the recommended technologies, creating a technological gap. Identifying and addressing these constraints in the transfer of technology will ultimately assist the research and extension system

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in strengthening efforts and closing the gap between technology transfer and adoption.

In Uttarakhand, beekeeping is an integral component of smallholder farming systems and serves as a significant source of additional cash income in subsistence agriculture. The credit for popularizing beehives and modern beekeeping in Kumaon and other parts of Northern India goes to Mr. R.N. Mutoo, who established the Bee Centre at Jeolikote, Nainital. The central government has taken positive initiatives, launching the National Mission for the overall development of beekeeping in the North Eastern and Hilly States of the country (HMNEHS). Consequently, there is ample potential for beekeeping as a lucrative enterprise in Uttarakhand. In India, there are approximately 2.5 lakh beekeeping units, with only about 8,700 units in Uttarakhand (3.48 per cent), producing 2,500 MT of honey in 2016-17. Notable honey-producing districts in Uttarakhand include Nainital, Haridwar, Pauri, and Pithoragarh. This study aims to uncover the major constraints faced by beekeepers in adopting various beekeeping practices in the Kumaon Hills of Uttarakhand. The successful implementation of beekeeping practices in the Kumaon hills is contingent upon overcoming these constraints, which impact the widespread adoption and sustainability of beekeeping in the region.

MATERIALS AND METHODS

The research was carried out in the Nainital district of the Kumaon Hills in Uttarakhand. The Bhimtal block was purposefully chosen for the study due to its having the highest number of beekeepers, as reported by the State Beekeeping Research Centre, Jeolikote. Four villages were purposively selected for the study because they were identified as the leading contributors to honey production in the district. Respondents were chosen based on a census method from the list of beekeepers provided by the State Beekeeping Research Centre, Jeolikote. A comprehensive list of registered beekeepers from the selected districts was acquired, and the number of beekeepers was determined using the census

method for each village. The study involved a total sample of 76 beekeepers from the four villages, comprising 40 respondents from Jeoli village, 17 from Chopra, 14 from Bhaluti, and 5 from Gaga village. Through household surveys, data was collected using a semi-structured schedule through face-to-face interviews with the 76 beekeepers selected for the study. The inquiry generated results that contributed to a conclusive outcome.

RESULTS AND DISCUSSION

Constraints in Adoption of Recommended Beekeeping Practices

The adoption of various recommended beekeeping practices faced several challenges, resulting in limited honey production. The production level was directly correlated with the strength and activity of the bee colonies. Table 1 presents the primary constraints hindering the exploitation of untapped potential in beekeeping activity and the adoption of recommended practices. According to the data, 100 percent of the respondents identified the lack of necessary skills to adopt recommended practices and a lack of trust in the usefulness of modern recommended practices as the major constraints faced by beekeepers. Another significant constraint, cited by 89.47 percent of beekeepers, was the high cost of inputs. Approximately 84.21 percent mentioned a lack of knowledge about recommended practices, followed by non-availability of exotic varieties (82.89%) and a lack of government support for prices (82.89%) as major constraints. Almost 78.94 percent of respondents believed that recommended beekeeping practices were not deemed appropriate by the locals. For 71.10 percent of respondents, the new recommended practices were considered tedious. About 67.11 percent of respondents expressed a preference for traditional bee rearing methods over modern recommended methods. None of the respondents reported the absence of organized extension activities for teaching recommended hive management practices.

Constraints and Suggestions in Adoption of Recommended Beekeeping Practices

Table 1: Constraints faced by Beekeepers in adoption of recommended beekeeping practices

S. No	Constraints	Percentage	
1	High cost of input	68	89.47
2	Lack of government support for prices	63	82.89
3	Lack of knowledge about recommended practices	64	84.21
4	Non availability of exotic varieties	63	82.89
5	Recommended practices are not considered appropriate by the locals	60	78.94
6	Traditional bee rearing methods are better than the modern recommended methods	51	67.11
7	Lack of necessary skills to adopt recommended practices	76	100.00
8	Lack of trust that the modern recommended practices are useful	76	100.00
9	New recommended practices are tedious	54	71.10
10	No extension activities organized for teaching the recommended hive management practices	0	00.00

Other studies have highlighted constraints, emphasizing the necessity to place greater emphasis on bee management during periods of floral scarcity. Asrani et al. (2017), in their investigation into the potential of beekeeping in Haryana, identified technical constraints as the primary challenges faced by respondents. Phadke (2008) identified obstacles in the advancement of beekeeping on agricultural plains in India, listing excessive pesticide use, the absence of forage during certain months, and the intense summer heat as significant constraints. Bhusal and Thapa (2005) revealed that majority of bee keeping lacked working capital and could not produce quality honey.

Suggestions for adoption of Recommended Beekeeping Practices

In recent times, beekeeping has gained popularity as an income-generating activity among rural residents in the hilly regions of Uttarakhand (Singh and Singh, 2019). Many progressive farmers have adopted various commercial practices related to honey production, leading to Nainital district emerging as the top honey producer among all districts in Uttarakhand. Based on the aforementioned constraints, beekeepers have put forth several suggestions. Approximately 94.73 percent of beekeepers proposed the need for timely

and adequate credit availability to effectively utilize funds for honey production activities. Timely Availability of credit is regarded by majority of the farmers (94.73%). Around 92.10 percent of beekeepers emphasized the importance of easy and accessible availability of inputs. Beekeepers (89.47%) also highlighted the necessity for regular training to enhance skills related to honey production. Another significant suggestion from beekeepers (86.84%) in the Kumaon Hills was the assurance of accessible market facilities and information. The provision of superior-quality bees for honey production was advocated by 78.94 percent of beekeepers. About 76.31 percent of respondents recommended regular guidance from the Krishi Vigyan Kendra (KVK) and the State Beekeeping Research Centre. While a majority of beekeepers expressed satisfaction with the facilities for bee colony migration, 59.21 percent believed that there should be improved facilities for the migration of bee colonies.

Beekeepers also provided additional suggestions aimed at enhancing honey production and boosting the adoption of recommended beekeeping practices. Among these recommendations is the integration of agroforestry practices to amplify pollination opportunities for bees. Farmers also emphasized on

Table 2: Suggestions in Adoption of Recommended Beekeeping Practices

No.	Suggestions	Frequency	Percentage	Rank
1.	Availability of credit in time.	72	94.73	1st
2.	Availability of assured market facilities and information.	66	86.84	4th
3.	Easy and accessible input availability.	70	92.10	2nd
4.	Availability of processing plant of honey for quality control.	56	73.68	7th
5.	Regular Training for skill enhancements in concern to honey production.	68	89.47	3rd
6.	Provision of Superior quality of bee for honey production.	60	78.94	5th
7.	Regular guidance from the KVK and the state beekeeping research centre.	58	76.31	6th
8.	Better facilities in relation to migration of the Bee colonies.	45	59.21	8th

the need for regularly organizing training sessions to acquaint them with the latest advancements in beekeeping and beehive technologies.

CONCLUSION

In summary facilitating the adoption of beekeeping practices can contribute to sustainable livelihoods and environmental conservation in the region. Beekeeping proves to be a lucrative venture, generating substantial income for beekeepers with minimal initial investment, often derived from personal savings. Although an increasing number of individuals are embracing beekeeping as a business in the Kumaon Hills, it is crucial to address the constraints revealed in this study. This can be achieved through government intervention and support from relevant organizations, providing essential information through training programs, offering credit facilities for business setup, and instituting support systems for marketing. The limited number of buyers in the market and the absence of competition for honey purchases among buyers in the region pose challenges for beekeepers, who often have limited control over pricing for their produce. In the Kumaon hills,

beekeepers predominantly sell their honey directly to processors, with the months of March and April being crucial for both production levels and honey disposal due to favorable weather conditions.

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Received on 16/7/2023

Accepted on 11/9/2023