



Exploring the Expansion and Productivity of Rural Organic Beekeeping Farming through Madhu Gram Yojana: Insights from Kumaun division of Uttarakhand

Subiya Naaz

Research scholar, Department of Commerce

DSB Campus, Kumaun University, Nainital

Dr. Arati Pant

Associate Professor, Department of Commerce

DSB Campus, Kumaun University, Nainital

Abstract:

This study looks at the growth and productivity of rural organic beekeeping in the Kumaun region of Uttarakhand, with particular attention on the difficulties, opportunities for growth, and effects of the Madhu Palan Yojana on beekeepers. Due to the growing demand for honey on both the domestic and international markets, honey bee farming is becoming more and more popular these days. Because of its rich biodiversity and long-standing agricultural traditions, the Indian state of Uttarakhand's Kumaun region offers a distinctive setting for research on organic beekeeping. Apis mellifera and Indica cerena are the two species of bees used in this investigation. The results show that maximum production of Apis Mellifera is found in Nainital district of the Kumaun division of Uttarakhand's, whereas the highest production of Indica cerena is found in the Pithoragarh district. Additionally, rural communities are becoming more interested in organic beekeeping due to a number of factors, including economic opportunity, environmental concerns, and the preservation of cultural legacy. However, obstacles including restricted resource availability, gaps in technical understanding, and market limitations prevent organic beekeeping from reaching its full potential. The report ends with suggestions for market connections, capacity-building programs, and legislative changes to facilitate the organic beekeeping industry's sustainable growth in the Kumaun Region of Uttarakhand.

Keywords: Organic Beekeeping, Madhu Gram Yojana, Kumaun division

1. INTRODUCTION

Uttarakhand, which is famous for its rich biodiversity and traditional farming methods, is tucked away in the tranquil landscapes and scenic beauty, an Indian state. The emergence of organic beekeeping in the rural parts of Uttarakhand has been a quiet revolution in recent years. Uttarakhand state divided into two divisions that is Kumaun and Garhwal division. The significance of Kumaun division organic beekeeping, There is great potential for organic beekeeping in the rural areas of Kumaun division. The main source of income for many rural households in the area has historically been agriculture. Conventional agricultural methods have been challenged, meanwhile, by unpredictable weather patterns, declining soil fertility, and shifting market values. One feasible substitute that offers a steady revenue stream and protects the local ecology is organic beekeeping. Bees are kept by beekeepers for a variety of purposes, including pollinating crops, gathering honey and beeswax, and raising bees to sell to other growers. This farming practice has a long history and is ecologically benign. Since beekeeping may be done for their beloved products like honey, beeswax, propolis, bee venom, etc., as well as for their pollination services, honeybees are remarkable gifts to humanity. These goods are widely used in many Indian small- and large-scale enterprises. Gaining knowledge about honey bee science can help you comprehend the most intriguing and hardworking insect in nature. In Kumaun region, two types of bee species are found, that is *Apis mellifera* and *indica cerena*.

□ Benefits of Organic Beekeeping Farming:

- **Economic Empowerment:** For rural households, organic beekeeping offers an additional source of income, especially in the off-season for other crops. Beekeepers may raise their standard of living and strengthen their economic resilience by marketing organic honey and associated goods.
- **Environmental Sustainability:** Organic beekeeping supports environmental sustainability and biodiversity protection, in contrast to traditional farming methods that mainly rely on chemical inputs. In order to sustain the growth of fruits, vegetables, and blooming plants in the area, bees are essential for pollination.
- **Preservation of Cultural Heritage:** In many of the Nainital District's rural villages, beekeeping has a long-standing cultural importance. Farmers that adopt organic beekeeping methods not only respect their cultural legacy but also help to preserve traditional knowledge and methods.

□ MADHU GRAM YOJANA

The goal of the Uttarakhand government's Maun Palan Yojana is to encourage the state's jobless youth to pursue self-employment. The establishment of honey producing facilities around the state is required under this plan. The Uttarakhand State Horticulture Mission is in charge of overseeing this program. Youths who generate honey through beekeeping would receive an 80% subsidy from the state government under Maun Palan Uttarakhand. The government of Uttarakhand will construct panchayat-level honey villages in a number of districts as part of the Maun Palan Yojana. Since the primary purpose of this project is to produce honey in rural regions. For this reason, the Madhu Gram Yojana and Madhu Vikas Yojana are other names for this program. The Uttarakhand government's Maun Palan Scheme is a very ambitious programme. In

thirteen districts of Uttarakhand, gram panchayats have been chosen to create Madhu Grams under this plan. With the introduction of this program, the government hopes to lower the pace of migration to cities by creating jobs in rural regions. In addition, the production of honey must be made self-sufficient in the state. Currently, there are around 7,000 Maun Palan farmers in the state of Uttarakhand, who, in the state, produce 2200 metric tons of honey. The new program will now link a growing number of young jobless people to beekeeping and boost honey output. The state government would provide the Maun parents with up to an 80% subsidy in order to ensure the success of this initiative. In order for this plan to connect with an increasing number of individuals.

Benefits

The Uttarakhand beekeeping aid program provides a range of help to beekeepers with the goal of advancing and improving beekeeping endeavors within the area. Beekeepers receive financial help of Rs 350 per box; half of this sum is used to distribute Maun boxes in Maun colonies to support the beekeepers' activities. Beekeepers also receive 100% financial aid for beekeeping education, guaranteeing that they pick up the necessary know-how and abilities. Beekeepers can receive up to an 80% subsidy under Uttarakhand's Madhu Gram Yojana, which further encourages involvement in the beekeeping sector. A maximum of four Maun boxes can be awarded to each beneficiary, allowing them to expand their beekeeping activities. Additionally, descendants of Maun house occupants receive a stipend of Rs 800 per person, which promotes family participation in beekeeping endeavors. Training is an important component of the program; Uttarakhand beekeepers receive a thorough 7-day course. Under the silent program, financial aid pays for all training costs; each trainee receives Rs 350 for a week of instruction. In order to guarantee the trainers' remuneration, an additional Rs 700 is deposited straight into their bank accounts. With this initiative, the government is investing a total of Rs 1050 in the training of each learner, indicating its commitment to provide ample assistance to a flourishing beekeeping industry.

Eligibility

The Uttarakhand beekeeping assistance program's eligibility requirements are made to guarantee equitable access and focused help for those who fall into particular demographics and situations. To ensure that both younger people looking to get into the beekeeping sector and more experienced people who are still within a productive age range can apply, applicants must be between the ages of 18 and 55. To further ensure a wider distribution of rewards among families involved in beekeeping, the program limits eligibility to one individual per family, barring repeated applications from the same home. Moreover, individuals who have already received training in beekeeping from recognized institutions such as KVIC (Khadi and Village Industries Commission), NABARD (National Bank for Agriculture and Rural Development), KVK (Krishi Vigyan Kendra), or other approved training centers are eligible to apply. This criterion acknowledges the value of prior training and seeks to support those who have already invested in developing their skills in beekeeping. Additionally, the program targets individuals actively engaged in beekeeping, either on their own land or on registered lease land. This requirement ensures that the subsidy is directed towards those who are directly involved in beekeeping activities, whether they own the land or have secured it through

legal agreements. By focusing on individuals with existing involvement in beekeeping, the program aims to maximize the impact of the subsidy by supporting those already committed to the industry.

Overall, these eligibility criteria help to target the beekeeping assistance program towards individuals who are likely to benefit the most from the support provided, ensuring that resources are allocated efficiently and effectively to promote sustainable beekeeping practices in Uttarakhand.

REVIEW LITERATURE

Beekeeping has gained popularity as a method of subsistence in rural places, such as Uttarakhand, in recent years. Provide solutions to problems, such as sustainable methods, government assistance, or a variety of revenue sources. Rajinith and Sindhuja (2022). It has long been acknowledged that beekeeping is a lucrative and sustainable endeavor that promotes rural development and reduces poverty. Beekeeping, according to Sharma et al., has the potential to boost agricultural output by improving crop pollination and give farmers more revenue through honey and other value-added goods. Nevertheless, despite the possible advantages of beekeeping, farmers in rural Uttarakhand have a number of difficulties when operating in this sector. Lack of access to resources and facilities is one of the main issues rural Uttarakhand beekeepers confront. Establishing and maintaining bee colonies, buying tools and materials, and setting up processing facilities for the extraction of honey all demand an initial financial commitment from beekeepers. One of the biggest issues facing farmers in rural regions is the lack of access to facilities and finance. A significant obstacle that beekeepers in rural Uttarakhand must overcome is the issue of supplying products and services. Beekeepers frequently have difficulties in obtaining and affording essential inputs, such as equipment for beekeeping, bee colonies, and high-quality bee feed. The sustainability and performance of beekeeping operations depend on the availability of vital inputs. Beekeepers often face challenges due to the focus on a certain sector or company in rural regions.

2. OBJECTIVES FOR THE STUDY

- a. To study challenges faced by the beekeeping farmers in kumaun division of Uttarakhand.
- b. To analyse the Growth and performance of Madhu Gram Yojana for beekeeping farmers in kumaun division of Uttarakhand.

3. RESEARCH METHODOLOGY

The focus of this descriptive study is the beekeeping practices in the Kumaun region of Uttarakhand. Kumaun and Garhwal are the two divisions that make up Uttarakhand. The Kumaun division was chosen because it is renowned across Uttarakhand as a hub for beekeeping and the production of honey. *Apis mellifera* and *Indica cerena* are the two species of bees used in this investigation. The establishment of the Rajkiya Moan Palan Kendra in Jeolikote is evidence of the growing significance of beekeeping in the area. Secondary data serve as the study's cornerstone and highlight its reliance on earlier data. The study's secondary data was obtained from many public and unpublished sources, including as the National Bee-Board in Dehradun, the Krishi Vigyan Kendra in Nainital, the Khadi Village Industries Commission in

Haldwani, and the Rajkiya Moan Palan Kendra in Jeolikote. In essence, the research aims to provide a comprehensive picture of beekeeping practices in the Kumaun division of Uttarakhand by analyzing secondary data collected from reputable institutions and organizations involved in beekeeping activities in the area.

Period of the Study

The study's time frame is from 2021–2022 to 2022–2023.

Objective 1: Challenges Faced by Organic Beekeepers

Organic beekeeping has a lot of potential, but there are drawbacks as well. Obstacles to the growth of organic beekeeping in Nainital District include limited access to technical know-how, poor infrastructure, and market limitations. In addition, the frequency of illnesses and pests that impact bee colonies necessitates the use of efficient management techniques and the availability of relevant resources.

- **Climate Variability:** Nainital District experiences diverse climatic conditions, including cold winters and monsoon seasons, which can affect bee activity and honey production. Extreme weather events such as heavy rains or prolonged droughts can disrupt beekeeping activities and impact hive health.
- **Limited Access to Resources:** Beekeepers in rural areas of Nainital District may face challenges in accessing essential resources such as beekeeping equipment, bee colonies, high-quality forage, and technical knowledge. Limited access to financial resources for investment in beekeeping infrastructure and training programs also hinders the expansion of beekeeping farms.
- **Pests and Diseases:** Bee colonies in Nainital District are susceptible to pests and diseases such as Varroa mites, wax moths, and American foulbrood, which can weaken bee colonies and reduce honey yields. Limited availability of effective and organic pest management solutions exacerbates this challenge.
- **Land Use Changes:** Increasing urbanization, deforestation, and agricultural intensification in Nainital District can lead to habitat loss and fragmentation, impacting bee foraging habitats and biodiversity. Competition for land resources with other agricultural activities may restrict the expansion of beekeeping farms.
- **Market Access and Value Chain Constraints:** Limited market access and value chain constraints, including lack of proper storage facilities, transportation infrastructure, and market linkages, affect the profitability of beekeeping farming in Nainital District. Price fluctuations and lack of market information further add to the challenges faced by beekeepers.
- **Policy and Regulatory Framework:** Inadequate policy support and regulatory frameworks for beekeeping, including registration procedures, quality standards, and access to government schemes and subsidies, pose challenges for beekeepers in Nainital District. Simplifying regulatory procedures and providing support for organic certification can facilitate the growth of beekeeping farms.
- **Lack of Awareness and Training:** Limited awareness about the benefits of beekeeping and inadequate training programs on organic beekeeping practices, hive management, and marketing strategies hinder the adoption and expansion of beekeeping farming in Nainital District. Strengthening extension services and capacity-building initiatives can address this constraint. Addressing these constraints through targeted

interventions, including capacity building, access to resources, market development, and policy support, is essential for promoting sustainable beekeeping farming and enhancing the socio-economic well-being of beekeepers in Nainital District.

Objective 2: To analyse the Growth and performance of Madhu Gram Yojana for beekeeping farmers in kumaun division of Uttarakhand.

Table No.1 Products Produce during the year

MONTHS	HONEY	POLLEN	WAX	PROPOLISE
Jan	✓		✓	
Feb	✓	✓	✓	
March	✓	✓	✓	✓
April	✓	✓	✓	✓
May	✓	✓	✓	✓
June				
July				
August				
Sep				
Oct				
Nov	✓	✓	✓	✓
Dec	✓	✓	✓	✓
Total production during the year	7	6	7	5

(Source: Rajkiye Moan Palan Kendra, Jeolikote)

Table No. 1 It displays the pattern of production for propolise, wax, and honey pollen in Uttarakhand. It is evident that from January to May, honey is produced, followed by pollan from February to May, wax from January to May, and propolis from March to May. Thus, the information in the table shows that all of the products are produced for about half of the year, with propolise producing the least and honey and wax the most.

Table No. 2 District-wise Honey Production from 2021-22 to 2022-23 (Apis Mellifera and Indica Cerena)

S. N	District	Indica Cerena			Apis Mellifera		
		PY (ql)	CY (ql)	TOTAL	PY(ql)	CY(ql)	TOTAL
1	Almora	244.02	122.22	366.24	-	-	-
2	Bagesh war	137.13	91.42	228.55	-	-	-
3	Pithoragarh	1153.53	768.6	1940.13	-	-	-
4	Champawat	416.29	277.2	693.49	299.6	112.35	411.95
5	Chamoli	485.66	323.4	809.06	-	-	-
6	Rudraprayag	951.7	634.2	1585.9	-	-	-
7	Uttarakashi	606.55	303.1	909.65	-	-	-
8	Dehradun	407.4	203.7	611.1	4771.2	1789.2	6560.4
9	Nainital	907.2	453.6	1360.8	10264.8	14951.2	25216
10	Pauri	557.2	278.8	836	554.4	207.9	762.3
11	Tehri	508.2	254.2	762.4	1120	420	1540
12	USN	-	-	-	1100.4	412.65	1513.05
13	Haridwar	-	-	-	12941.6	10053.1	22994.7

(Source: Rajkiye Moan Palan Kendra, Jeolikote)

According to table no.2, It displays the output of honey (Apis mellifera and Indica cerena) as per district for the current year (2022–2023) and the year prior (2021–2022).. It shows that the maximum production of Apis Mellifera is found in Nainital district of the Kumaun division of Uttarakhand's, whereas the highest production of Indica cerena is found in the Pithoragarh district. It is due to the abundance of flowers, the high height, and the ideal environment. Indica cerena prefers warm climates with temperatures between 21 and 29 °C, lots of sunshine, and well-drained soil. Apis Mellifera prefers temperatures between 10 and 30 °C and needs access to water sources for hydration.

Table no. 3 and table no.4 show the Growth and performance of Madhu gram yojana of Nainital (Apis Mellifera) and Pithoragah (Indica cerena) districts from 2021-22 to 2022-

23.

Table No.3 Growth and performance of Madhu Gram Yojana in Nainital District (Apis Mellifera)

Sr.	Item	2021-22		2022-23	
		Target	Supplied	Target	Supplied
1	Bees colony	690	300	710	315
2	Honey production (Govt.)	37ql*	32.5ql	55ql	38.5ql
3	Honeyproduction (Ind.)	900ql	12758.5ql	1200ql	15474.9ql
4	Wax sale	27kg*	105kg	55kg	175kg
6	Bee house construction	212 units	190 units	280 units	210 units

(Source: Rajkiye Moan Palan Kendra, Jeolikote)

Here, ql denotes quantal and kg denotes kilogram.

Table No. 3 of the Madhu Gram Yojana in the Nainital district shows the production of honey (Apis Mellifera). This table, which covers practically every facet of Apis mellifera honey production, demonstrates that, with the exception of individual honey output and wax sales, both years' production was below goals. Improving the rural beekeeping market in the Nainital district is mostly dependent on individual honey output and wax sales.

Table No.4 Growth and performance of Madhu gram yojana in Pithoragarh District (Indica cerena)

S.N	Items	2021-22		2022-23	
		Target	Supplied	Target	Supplied
1	Bees colony	370	157	520	115
2	Honey production (Govt.)	22ql*	11ql	15ql	8.5ql
3	Honeyproduction(Ind.)	90ql	123ql	113ql	121.9ql
4	Wax sale	15kg*	12kg	11kg	15kg
6	Bee house construction	180 units	135 units	275 units	152 units

(Source: Rajkiye Moan Palan Kendra, Jeolikote)

Here, ql denotes quantal and kg denotes kilogram.

Table 4 shows the product of honey (Indica cerena) produced by the Madhu Gram Yojana in the Pithoragarh district. Everything related to the production of indica cerena honey is included in this table, which indicates that, with the exception of individual honey production, both years' output was below target. Wax sales grew from 2021–2022 to 2022–2023, which is highly remarkable. Improving the rural beekeeping market in the Pithoragarh district is mostly dependent on individual honey output and wax sales.

4. FINDINGS

In the last several years, rural residents of Uttarakhand's Kumaun division have grown more and more interested in beekeeping as a source of income. Honey cultivation became popular with progressive farmers. As per Table No. 2, the district of Nainital in Kumaun division has emerged as the foremost producer of honey (*Apis Mellifera*) among all the districts in Uttarakhand. However, Pithoragarh district emerged as the top producer of Indian cerena, or honey. The perfect setting, the height, and the profusion of flowers are to blame. Warm weather, lots of sunlight, and well-drained soil are ideal for *Indica cerena*. Temperatures between 21 and 29 °C are ideal. The ideal temperature range for *Apis Mellifera* is between 10 and 30 °C, and it requires access to water sources to stay hydrated.

Despite of these facts yet proper structured market was not available in the area. Improper marketing facilities emerged as crucial factor affecting sustainability of beekeeping business in the area. In spite of these realities, the area lacked a properly organized market. One major element hurting the area's beekeeping business's survival is improper marketing facilities.

□ Suggestions for improving the bee-farming market in Kumaun division of Uttarakhand-

Enhancing the bee-farming industry in Uttarakhand's Kumaun division calls for a thorough strategy that takes into account market accessibility, beekeeper support networks, and other beekeeping-related factors. Here are some recommendations:

- 1.Education and Training-** Both the quality and amount of honey produced may be increased by offering local beekeepers workshops and training programs on contemporary beekeeping methods, hive management, disease control, and honey processing.
- 2.Access to Technology-** Using contemporary beekeeping tools like automated extraction machinery, hive monitoring systems, and smartphone applications for beekeeping administration may boost output and efficiency.
- 3.Infrastructure Development-**You may lower post-harvest losses and raise the quality of your products by making investments in infrastructure including storage facilities, honey processing facilities, and supply hubs for beekeeping supplies.
- 4.Research and Development-** Long-term benefits to the bee-farming sector can come from funding research projects aimed at creating bee breeds that are suited to regional climates, enhancing the health of honeybees, and implementing sustainable beekeeping techniques.
- 5.Market links-** Beekeepers may build a consistent demand for honey produced locally by partnering with local companies, hotels, and tourism organizations, and by facilitating direct market links between customers and beekeepers.

- 6.Certification and Branding-** Helping beekeepers get their honey certified as organic and of a high grade can increase its value and competitiveness in the market. Furthermore, targeting specialized markets with branding campaigns that highlight the distinctive flavors and characteristics of Kumaun honey might draw in customers.
- 7.Financial Support-** Small-scale beekeepers may face less financial obstacles if they get subsidies, loans, or grants for beekeeping equipment, infrastructure development, and marketing initiatives.
- 8.Community Engagement-** Promoting community involvement in beekeeping groups or cooperatives can help to build mutual support, a pool of expertise, and collective bargaining power among beekeepers.
- 9.Environmental Conservation-** Bee populations can become more resilient and the bee- farming industry can remain viable over the long run by supporting sustainable beekeeping methods that support the preservation of biodiversity and the restoration of ecosystems.
- 10. Policy Support-** Promoting favorable local and state laws, such as those that encourage beekeeping, plan land uses to protect bee habitats, and forbid the use of dangerous pesticides, can foster an atmosphere that is favorable to the expansion of the bee-farming industry.

By putting these recommendations into practice, interested parties may collaborate to develop the Kumaun division of Uttarakhand's bee-farming industry, which will ultimately help the region's economy and beekeepers.

CONCLUSION:

Rural organic beekeeping holds immense promise as a sustainable livelihood option for the rural communities of Kumaun division of Uttarakhand. March and April were most important months from view of level of production and disposal of honey. By harnessing the potential of organic beekeeping, farmers can diversify their income sources, conserve the environment, and preserve their cultural heritage. However, concerted efforts are needed to address the challenges and create an enabling environment for the sustainable expansion of organic beekeeping in the region. With the right interventions and support mechanisms in place, rural organic beekeeping has the power to transform the socio-economic landscape of Nainital District while fostering environmental stewardship and community resilience.

6. REFERENCES

- A Study on Adoption of Recommended Beekeeping Practices in Kumaon Hills of Uttarakhand
- Adoption of Recommended Beekeeping Practices in Kumaon Hills of Uttarakhand
- Arya S, Kumar A, Kumar K, Kumar D. Major constraints faced by the beekeepers in production and marketing of honey in the Nainital district of Uttarakhand. J Pharm. Innov. 2021;10(8):276-279.
- Assessment of training programme on the knowledge level of beekeeping farmers under ICAR-farmer FIRST programme in mid hills of Uttarakhand
- Constraints Perceived by the Beekeepers of Jammu Province in Adoption of Scientific Beekeeping Practices. (2020). Indian Journal of Extension Education, 56(4), 49-53.
- <https://nainital.kvk4.in>
- <https://www.myscheme.gov.in/schemes/mpmsy/>
- Major constraints faced by the beekeepers in production and marketing of honey in the Nainital district of Uttarakhand
- Mishra I, Rana K. Socio economic profile characteristics of the beekeepers in Kumaon hills of Uttarakhand. The Pharma Innovation Journal 2023; 12(5): 3107-3110.
- Socio-economic analysis of traditional and modern beekeeping in Western Himalayan Region Uttarakhand, India
- Tiwari P, Singh D. Status of Beekeeping in District Chamoli and Rudraprayag of Garhwal Himalaya, Uttarakhand. HMNEH souvenir organized by the state beekeeping center Jeolikote; 2010.