

Cite this article: Sangeeta, An adoption of beekeeping and associated challenges in Haryana, India, *RP Cur. Tr. Appl. Sci.* 2 (2023) 5–8.

## Original Research Article

# An adoption of beekeeping and associated challenges in Haryana, India

Sangeeta\*

Department of Zoology, MNS Government College, Bhiwani – 127021, Haryana, India

\*Corresponding author, E-mail: [sangeetasangwan.ss@gmail.com](mailto:sangeetasangwan.ss@gmail.com)

### ARTICLE HISTORY

Received: 25 October 2022

Revised: 8 January 2023

Accepted: 12 January 2023

Published online: 16  
January 2023

### KEYWORDS

Adoption; beekeeping;  
enterprise; constraints.

### ABSTRACT

To examine beekeeping adoption and associated challenges, the current study was carried out in the state of Haryana. Throughout the years 2018–22, data from 600 individuals was gathered. Beekeeping is a male-dominated industry that is dominated by young people with low levels of education, no or little land ownership, and low incomes, according to a study. The low rate of beekeeping adoption as a business venture may be attributable to a number of factors, such as the importance placed on other endeavours, a lack of resources, land, and funding, difficulties in marketing honey, and a lack of high-quality equipment, among others. Nevertheless, beekeeping was encouraged by various reasons, including low startup costs, low labour requirements, low technical requirements, and high returns. The primary actions required to be performed by the government and other organisations are an increase in awareness, the provision of financing facilities, and an improvement in the marketing structure of bee products.

## 1. Introduction

In the current environment of commercialised agriculture and economic liberalisation, beekeeping is extremely important. It has significant promise for generating revenue, reducing poverty, utilising forest resources sustainably, and diversifying the export market. Pollination of agricultural and forestry crops is the honeybees' most significant contribution to humanity (Commonwealth, 2002) [1]. According to Vaidya and Mehta [2], only bees carry out around 90% of the pollination in agricultural crops, which increases overall production of agricultural and fruit crops by about 33%. Beekeeping is a relatively low-investment endeavour that most people (women, young people, individuals with disabilities, and the elderly) may start, in contrast to other agricultural activities like cattle, poultry, and fish production. Since nectar and pollen are naturally produced, apiculture does not require any raw materials in the conventional sense. Additionally, it puts no strain on agricultural land and produces honey, beeswax, pollen, and propolis from flowers that would otherwise wither and be wasted in nature.

Additionally, beekeeping, which requires only a modest amount of time and resources, could be incorporated into the livelihood strategy of smallholder farming households to supplement income and disperse risk. Bee products can also be utilised domestically to manufacture food or traditional medical treatments [3]. In developing nations like India, beekeeping is becoming a very popular agricultural practise for those living in rural areas, largely because it is a low-cost and high-return business. However, the adoption of beekeeping as an enterprise and factors affecting thereof must be evaluated in order to effectively popularise this activity among youth and farming communities. This evaluation may be useful in designing the extension strategy and policy making for the

uplift of farming communities and unemployed youth in the nation.

## 2. Materials and Method

The current study was carried out between 2018 and 2022. A total of 600 participants were contacted over the survey of four years. As a result, thorough questionnaires were created and used to gather all the pertinent data needed to carry out this investigation. In general, the instrument was made to gather data on the following topics: gender, educational attainment, annual income, and variables influencing the adoption of beekeeping, among others. MS Excel programme was used to analyse the data.

## 3. Results

### Descriptive statistics of the respondents

The majority of respondents were male, making up roughly 94% of both adopters and non-adopters according to socioeconomic profile data, indicating that males predominate over females in the beekeeping industry (Table 1). The majority of respondents in both adoptive and non-adopter groups, or 69.7 and 75.5%, respectively, were found to be in the young age group (18-35 years), followed by the medium age group (35-50 years), which had 27.7 and 21.8 percent adopters and non-adopters, respectively. This implied that young and middle-aged persons were more engaged in beekeeping activities. Kareem et al.'s [4] finding that 87.5% of beekeepers were under the age of 50 is consistent with this conclusion.

In terms of educational attainment, more respondents (70.8%) who adopted beekeeping had completed their senior secondary education, which was higher than the similar non-



adopter group (71.1%). These findings matched those of the research by Lal et al. [5] and Verma et al. [6]. It demonstrated that those with less education are more likely to adopt beekeeping than those with greater education. It might be because those with greater education may have more opportunities to work in the public or commercial sectors than those with less education.

Agriculturists made up more than 60% of beekeeping adopters, followed by members of the working class (30.3%), who made up, respectively, 57.8% and 21.8% of the non-adopters in that category. This demonstrated how beekeeping is becoming popular among both the labour class and farmers as a side business. Only 0.8% of housewives, or a very small number, have taken up beekeeping. It can be because of social

limits that society has placed on women and their ability to conduct domestic business. The data also showed that the majority (46%) of respondents who adopted beekeeping had marginal land holdings (less than 1.0 ha), followed by landless respondents (37%) and respondents with minor land holdings (1.0 to 2.0 ha). It suggested that marginal to small farmers and landless people are turning to beekeeping as a primary or secondary profession. The majority of respondents (59.7%) who chose beekeeping had low annual incomes (under Rs. 1.0 lakh/year), followed by medium-high annual incomes (between Rs. 1.0 and 2.5 lakhs/year, or 35%). It was mentioned that beekeeping could be a better source of extra income for those with low to moderate yearly incomes.

**Table 1:** Descriptive statistics of the respondents

Description	Variables	Adopter (n = 119)		Non adopter (n = 481)	
		f	%	f	%
Sex	Male	112	94.1	453	94.2
	Female	7	5.9	28	5.8
Age (yrs)	18-35 (Young)	83	69.7	363	75.5
	35-50 (Middle)	33	27.7	105	21.8
	> 50 (Old)	3	2.5	13	2.7
Qualification	Up to primary	3	2.5	18	3.7
	Middle	8	6.7	28	5.8
	Matric	34	28.6	112	23.3
	Senior Secondary	50	42.0	184	38.3
	Diploma	2	1.7	23	4.8
	Graduate	19	16.0	91	18.9
	Post Graduate	3	2.5	25	5.2
Occupation	Agriculture	75	63.0	278	57.8
	Labor	36	30.3	105	21.8
	Business	2	1.7	19	4.0
	Service	0	0.0	12	2.5
	Housewife	1	0.8	12	2.5
	Student	0	0.0	39	8.1
	Retiree	5	4.2	16	3.3
Land holding	Landless	37	31.1	130	27.0
	Marginal farmer (< 1 h.a.)	46	38.7	184	38.3
	Small farmer ((1-2 h.a.)	23	19.3	92	19.1
	Large farmer (> 2 h.a.)	13	10.9	75	15.6
Annual income	Low	71	59.7	266	55.3
	Medium	42	35.3	140	29.1
	High	6	5.0	75	15.6

### Adoption of beekeeping

According to the statistics, beekeeping was adopted at a low rate (18.7%) in the first year and then climbed to 23.3% in the second year of the study, which was 2015–16 (Table 1). Again, there was volatility in the adoption rate throughout the course of the following two years of the study, with the adoption of beekeeping reaching 17.3 and 20.0 percent in the third and fourth years, respectively. The overall enterprise adoption of beekeeping was 19.8% during the course of the study, which was rather low and may have been impacted by the different challenges people faced when beginning a new business. Additionally, Singh et al. [7] revealed that only 18 to 27% of the trainees had adopted beekeeping. It might be improved by providing more skill training and informing

people of the activity's dual benefits, namely an increase in crop productivity and income from bee products.

**Table 2:** Adoption of beekeeping among trained persons (n = 150)

Year	Adoption		Non-adoption	
	f	%	f	%
1 <sup>st</sup> year	28	18.7	122	81.3
2 <sup>nd</sup> year	35	23.3	115	76.7
3 <sup>rd</sup> year	26	17.3	124	82.7
4 <sup>th</sup> year	30	20.0	120	80.0
Mean	29.8	19.8	120.3	80.2

**Factors adversely affecting adoption of beekeeping**

The numerous replies of the respondents were obtained and are shown in Table 3 in order to determine the elements that negatively impact the adoption of beekeeping as a business.

**Social factors**

Since alternative activities were favoured by 47.6% of the respondents, this social issue scored first among those that negatively impacted the adoption of beekeeping as a business. These results are consistent with those of Heckle et al. [8], who found that beekeeping was not a desirable career choice for Kenya's young educated population. They favour non-manual, more stable paying work. It suggested that greater emphasis may be placed on making beekeeping a desirable profession by delivering trainings and educating people about the numerous advantages of this activity. About 22% of the respondents were unable to adopt beekeeping because of a lack of family support, 7.3% were uninterested in the activity, and 5.6% were prevented from doing so due to socio-cultural constraints. This percentage of respondents may include women, as in states like Haryana, women are typically not permitted to leave the house and are expected to focus exclusively on household duties.

**Physical factors**

The majority of respondents (47%) indicated that they were unable to start a beekeeping business, placing a lack of land and resources as the top physical barrier. It demonstrated that, despite the fact that agricultural land is not necessary for this industry, those without property and those with low finances have difficulties starting a beekeeping business. It can be as a result of the farmers' ban on keeping bee hives in their fields. A little over 14% of respondents said they were afraid of bees, and 10.2% said they were allergic to bee stings as a result, making beekeeping impossible for them. These results are consistent with those of Singh and Singh [9], who reported that approximately 40% of the trainees were terrified of bees and that roughly 46% believed land was important for beekeeping. One in ten people (11.4%) who responded said beekeeping required a lot of labour.

**Economic factors**

Lack of startup capital (62%) was the top economic barrier preventing respondents from adopting beekeeping, followed by a lack of credit options (60.9%) in second place. A research by Monga and Manocha [10] on the adoption and restrictions of beekeeping in Haryana also identified a lack of financial availability as a significant barrier to entry. Similar to this, Singh et al. [7] observed that the main obstacle to beekeeping being a viable business in Nagaland was financial constraints. It showed that financial institutions do not care much about these actions. However, it might be taken into account by policymakers as they formulate plans for the improvement of farmers and young people without jobs. According to 59.7% of the respondents, marketing of honey and other bee products was another significant economic aspect that had a negative impact on beekeeping as a business. In the absence of a proper marketing infrastructure, the present beekeepers are expected to sell their product at very low price. The government should prioritise marketing its goods and agricultural crop patterns.

**Table 3:** Factors adversely affecting adoption of beekeeping (Multiple response) (n = 481)

Factors	Particular	f	%	Rank
Social factors	Priority to other activities	229	47.6	I
	Lack of family support	105	21.8	II
	Non interested in beekeeping	35	7.3	III
	Socio-culture restrictions	27	5.6	IV
Physical factors	Lack of land and resources	224	46.6	I
	Fear from bees	67	13.9	II
	Labor intensive activity	55	11.4	III
	Allergy from bee sting	49	10.2	IV
Economical factors	Financial problem	298	62.0	I
	Lack of loan facilities	293	60.9	II
	Marketing problem	287	59.7	III
	Less income than expenditure	15	3.1	IV
Technical factors	Limited access to quality equipment	203	42.2	I
	Lack of skilled labor	148	30.8	II
	More technical than other activities	121	25.2	III
	Lack of complete knowledge	113	23.5	IV

**Technical factors**

Due to a lack of suitable equipment, more than 40% of respondents were unable to begin beekeeping. A little over 31% of respondents cited a shortage of skilled labour as a deterrent to beekeeping as a business. In addition, Ejigu et al. [11] noted that one of the technical barriers to the adoption of beekeeping in Ethiopia's Amhara Distt was a shortage of competent labour. One-fourth of the respondents thought beekeeping was more technical than other activities, and 23.5% said they couldn't undertake it because they didn't know everything there was to know about it. Insufficient skills and expertise in bee farming negatively impacted the adoption of beekeeping in Aasam, India, according to Sharma and Das [12]. Similar to this, a research by Asrani et al. [13] on the prospects of beekeeping in Haryana and related demands, limitations, and facilitators similarly highlighted technical difficulties as being the main issues the respondents faced. More focus needs to be placed on training organisation and farmers' group organisation in order to increase the technical knowledge of the applicants.

**Factors positively influencing the adoption of beekeeping**

Beekeeping has many limitations, no question, but there are also a number of things that set it apart from other similar pursuits and encourage people to take it up. Multiple responses from the respondents were obtained in order to determine these characteristics (Table 4). The majority of respondents (96.6%) rated beekeeping as a low-cost activity, making it the primary factor that positively influenced the adoption of the practise. In comparison to other agriculturally related occupations, beekeeping is thought to need less labour and is less technical by 88.2 percent of respondents, who made up more than 90%

of the sample. According to 81.5% of those surveyed, beekeeping has a higher return on investment than other agriculturally related businesses. It can be as a result of the minimal initial investment and relatively low ongoing costs associated with beekeeping. Beekeeping was chosen as a self-employment by almost 49% of the respondents, showing that it is a reliable source of income.

**Table 4:** Factors positively influencing adoption of beekeeping (Multiple response) ( $n = 119$ )

Factors	<i>f</i>	%	Rank
Low initial investment	115	96.6	I
Less labor intensive	110	92.4	II
Less technical activity	105	88.2	III
Higher return than expenditure	97	81.5	IV
Self-employment	58	48.7	V
Increase in production of crops	47	39.5	VI
Additional source of income	37	31.1	VII
No requirement of land	7	5.9	VIII
Taken over of family occupation	6	5	IX
Amateurishly	5	4.2	X

Honey bees are effective pollinators and increase crop yield, hence 39.5% of respondents started beekeeping to boost crop production. Beekeeping was chosen as a second source of income by 31% of respondents, demonstrating its significance for raising household income. Since beekeeping doesn't require agricultural land, about 6% of respondents expressed interest in it. It suggested that beekeeping might be a reliable source of income for those without access to land. 5.0% of the respondents took over the business since it may have been run by some family for some time. 4.2% of persons had a novice start to their beekeeping.

#### 4. Discussion

From this discovery, it has been inferred that beekeeping might be a means of money generation for rural residents, and especially for young people without jobs. Farmers' family incomes, particularly those of marginal and small farmers, may increase as a result. Beekeeping is a viable option for self-employment because it involves a minimal initial investment, offers a good return on investment, and requires less skill and labour than other agricultural occupations. Therefore, this activity may prove to be a useful alternative for generating revenue, especially for those who lack land and have modest incomes. Actions that enhance awareness and understanding, especially in places with a low heritage of beekeeping, should be continued and stepped up in order to boost the adoption of beekeeping. Beekeeping may be a profitable business that

greatly raises and diversifies the income of many rural households despite its many difficulties. Two key obstacles to beekeeping that the majority of people typically encounter are a lack of funding for business startup and honey marketing. In order to do this, rural banks in particular should step up and offer beekeepers financial facilities, and the government should offer subsidies and set the support price of honey based on the patterns of agricultural products.

#### References

- [1] Commonwealth Secretariat, Uganda: Strategy for development of the apiculture sector, Final report, EIDD, EMDD, London (2002) 60.
- [2] D.N. Vaidya, P.K. Mehta, Honeybees as valuable pollinators, *Farmer and Parliament* **28** (1993) 10-12.
- [3] J. Lowore, N. Bradbear, R. Ndyabarema, B. Okello, Market access for beekeepers, *Bees for Development* (2010).
- [4] O.W. Kareem, K.D. Kokate, P.B. Kharde, Constraints to adoption of beekeeping management practices among beekeepers in Osun State, Nigeria, *Ind. Res. J. Ext. Edu.* **17** (2017) 113-116.
- [5] R. Lal, S.D. Sharma, J.K. Sharma, V. Sharma, D. Singh, Impact of bee-keeping training on socioeconomic status of farmers and rural youth in Kullu and Mandi districts of Himachal Pradesh, *J. Human Ecol.* **39** (2012) 208-08.
- [6] T.C. Verma, K.C. Meena, S. Aswal, D.K. Singh, Socio-personal and economic analysis of apiculture enterprise in Hadauti region of Rajasthan, *Economic Affairs* **63** (2018) 261-268.
- [7] A.K. Singh, R.P. Singh, N. Singh, Constraints in adoption of beekeeping as an enterprise in Nagaland, *Ind. J. Ext. Edu.* **52** (2016) 61-64.
- [8] R. Heckle, P. Smith, J.I. Macdiarmid, E. Campbell, P. Abbott, Beekeeping adoption: A case study of three smallholder farming communities in Baringo County, Kenya, *J. Agri. Rural Develop. Trop. Subtrop.* **119** (2018) 1-11.
- [9] B. Singh, S. Singh, Perception towards adoption and constraints in beekeeping, *J. Pharma. Phytochem.* **8** (2019) 459-461.
- [10] K. Monga, A. Manocha, Adoption and constraints of beekeeping in District Panchkula (Haryana), India, *Livestock Research for Rural Development* (2011) 23, Article #103. Retrieved June 15, 2011, from <http://www.lrrd.org/lrrd23/5/mong23103.htm>
- [11] K. Ejigu, T. Gebey, T.R. Preston, Constraints and prospects for apiculture research and development in Amhara region, Ethiopia, *Livestock Res. Rural Develop.* (2009) 21.
- [12] S. Sharma, D. Das, Factors affecting adoption of beekeeping and associated technologies in Kamrup (rural) district, Assam state, India, *Biodiv. Int. J.* **2** (2018) 253-258.
- [13] S. Asrani, S. Kaushik, S.K. Sharma, H.D. Kaushik, Prospects of beekeeping in Haryana: Perceived needs, constraints and enablers, *J. Dairy. Foods Home Sci.* **26** (2007) 7-8.

**Publisher's Note:** Research Plateau Publishers stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.