

## **Constraints Perceived by the Beekeepers of Jammu Province in Adoption of Scientific Beekeeping Practices**

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### **ABSTRACT**

Beekeeping has established itself as an economic activity and a commercial enterprise in the state of Jammu and Kashmir due to its great potential for generating the employment, additional source of income, adding food and nutritional security and improvement in rural economy. Several deviations in the form of lack of knowledge and adoption of recommended production technology are considered the limiting factors in flourishing apiculture as an enterprise in the state. The present study was conducted in four districts of Jammu province viz., Jammu, Kathua, Rajouri and Ramban in which a total of 210 beekeepers were selected to collect data regarding different constraints viz., economic, technological, infrastructural, administrative, post-harvest and socio-cultural constraints faced by the beekeepers in adoption of improved beekeeping practices. The data were collected through face-to-face interview technique. The results revealed that the major economic constraints include high cost of beekeeping equipment and low selling price of honey. The major technological constraints include lack of knowledge about honeybee enemies and new technologies while as the major administrative and infrastructural constraints included lack of state government support, non-availability of honey processing units and skilled labour. The public disputes arising due to bee sting, interference of neighbours and compulsion family members to give up the apiculture enterprise as profession were observed the major socio-economic constraints. There is an urgent need to make efforts by the state government so that the beekeepers could get rid of these constraints.

**Keywords:** Beekeepers, Beekeeping, Constraints, Knowledge

### **INTRODUCTION**

Honey bees (Hymenoptera: Apidae) are the best known and most useful insects not only for the honey production and other valued bee products (wax, royal jelly, propolis, pollen, venom etc.) but also for their more important ecological role as the most dependable and efficient pollinators of flowering plants and trees which leads to enhanced crop productivity (quantitatively as

well as qualitatively) besides contributing to maintenance of plant diversity. India occupies sixth position among the top ten honey producing countries in the world (Anonymous, 2020). Beekeeping is an excellent source of employment for the rural unemployed youth and currently approximately 2,50,000 farmers in India are employed through beekeeping (Kejriwal, 2012). Beekeeping in the UT of Jammu and Kashmir particularly in Jammu province is mainly forest based

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and represents one of the most important beekeeping regions in India. In spite of the immense potential of the apiculture as a venture with vast scope of development, the availability of technical expertise at all levels and supportive government policies, etc the progress in the form of honey production, colony multiplication, processing and quality parameters are not matching. Several constraints in the form of lack of knowledge of recommended practices (Kumar *et al.*, 2020), irregular production (Büchler *et al.*, 2014; Champetier *et al.*, 2014), attack of seasonal pests (Painkra, 2018) lack of regulated market facilities, etc. are reported to be the limiting factors in flourishing apiculture as an enterprise. It is a high time that such an important venture needs to be looked into from various dimensions as the beekeepers of Jammu region encounter a lot of problems. Therefore, this study was carried out to find out the major constraints faced by the beekeepers in adoption of scientific beekeeping practices.

### METHODOLOGY

The study was conducted in Jammu province of Jammu and Kashmir state during 2017. Four districts were purposively selected for the study as the maximum number of beekeepers fall in these four districts in the Jammu province which include Jammu, Kathua, Rajouri and Ramban. They were selected on the basis of census of beekeepers carried out by Department of Agriculture during 2011. A list of registered beekeepers of the selected districts was obtained and accordingly the number of beekeepers was selected randomly in each district, based on the proportionate random sampling method. A total sample of 210 beekeepers was selected in all the four districts which included 126 from Ramban, 22 from Rajaouri, 43 from Kathua and 19 from Jammu. The constraints were operationally defined as the difficulties experienced by the beekeepers in adoption of scientific beekeeping practices which include economic, technological, infrastructural and administrative, post-harvest and socio-cultural constraints. The respondent beekeepers were requested to express their constraints in the process of adoption of improved production and management practices of apiculture. The constraints perceived by the beekeepers in open-ended questions

were incorporated in the interview schedule and the problems were ranked on the basis of percentage response under each aspect.

### RESULT AND DISCUSSION

The different constraints expressed by the beekeepers of Jammu region are presented and discussed as under.

#### Economic Constraints

The results revealed that majority of respondent beekeepers in Kathua district reported high cost of beekeeping equipments (95.34%) as the major constraint followed by low selling price of honey and shortage of financial resources for purchasing raw material with frequency of 83.72%. The high cost of beekeeping equipment and low selling price of honey were expressed as major economic constraints in district Jammu also with frequency of 94.73% each but it was followed by higher expenditure on transportation during migration (78.94%). Similarly the beekeepers in Rajouri district pointed out high cost of equipments and higher expenditure on transportation during migration as major constraints with similar frequency record of (90.90%). The other problems highlighted by the respondent beekeepers were shortage of financial resources for purchasing raw material (81.81%) and low selling price of honey (81.81%). However, in Ramban district, majority of the respondent beekeepers expressed low selling price of honey as the major constraint (95.23%) followed by high cost of beekeeping equipment (91.26%). Overall the major economic constraints perceived by the beekeepers of the Jammu region were high cost of beekeeping equipment (92.38%) followed by low selling price of honey (91.42%) and higher expenditure on transportation during migration (78.57%) (Table 1).

#### Technological Constraints

The technological constraints expressed by the respondent beekeepers of Kathua district revealed lack of knowledge about honeybee enemies (95.34%) as the major technical constraint followed by lack of knowledge about pesticide poisoning of bees used on

**Table 1: Constraints faced by the beekeepers of Jammu province (n=210)**

Constraint	District-wise percentage of beekeepers				
	Kathua (n=43)	Jammu (n=19)	Rajouri (n=22)	Ramban (n=126)	Overall percentage of four districts (n=210)
<b>Economic constraints</b>					
Lack of Subsidy	23.25	15.78	45.45	42.85	36.66
Lack of knowledge about facilities of loan for purchasing raw material	34.88	26.31	54.54	49.20	44.76
High cost of equipment	95.34	94.73	90.90	91.26	92.38
Low selling price of honey	83.72	94.73	81.81	95.23	91.42
Higher expenditure on transportation while migrating	69.76	78.94	90.90	79.36	78.57
High labour costs	69.76	52.63	68.18	71.42	69.04
Shortage of financial resources for purchasing raw material	83.72	68.42	81.81	65.87	71.42
<b>Technological constraints</b>					
Lack of knowledge about new technologies	69.76	68.42	68.18	79.36	75.23
Lack of knowledge about identification of diseases	65.11	52.63	63.63	59.52	60.47
Lack of knowledge about migrating of bee colonies	23.25	42.10	90.90	41.26	42.85
Lack of knowledge about management of food for colonies in the off season	6.97	0.00	22.72	19.84	15.71
Lack of knowledge about honeybee Enemies	95.34	84.21	86.36	95.23	93.33
Lack of knowledge about doses of pesticides	34.88	36.84	77.27	63.49	56.66
Lack of knowledge about poisoning of bees from the flora on which pesticides are used	74.41	42.10	50.00	57.93	59.04
Lack of knowledge about technical guidance of bee flora	11.62	10.52	59.09	50	39.52
<b>Post-harvest constraints</b>					
Lack of skilled labour	48.83	36.84	54.54	57.93	53.80
Storage of honey	30.23	15.78	22.72	19.84	21.09
Lack of honey processing unit	69.76	52.63	63.63	71.42	68.57
Unseasonal weather disturbances	46.51	31.57	31.81	53.96	48.09
Problem in sale of honey	34.88	26.36	45.45	40.47	38.57
Non-availability of storage and packing material	37.20	21.05	68.18	47.61	45.23
Problem of transport facility	18.60	15.78	68.18	71.42	55.23
<b>Socio cultural constraints</b>					
Public disputes arise due to bee sting	74.41	78.94	81.81	87.30	83.33
Non-Cooperation of family members	16.27	15.78	22.72	11.90	14.28
Family members force to quit the apiculture enterprise	11.62	15.78	22.72	11.11	12.85
Interference of neighbours	60.46	63.15	54.54	58.73	59.04
Lack of support of bee keepers to the upcoming beekeeper (who are new to this enterprises)	34.88	21.05	27.27	10.31	18.09

crops (74.41%) and about new technologies (69.76%). In Jammu district also, 84.21 per cent beekeepers reported lack of knowledge about honey bee enemies as the major problem, followed by awareness about new technologies (69.76%). However, the respondent beekeepers of Rajouri district revealed lack of knowledge about migration of bee colonies (90.90%) as the major constraint followed by lack of knowledge about honey bee enemies (86.36%). Similarly in Ramban district, 95.23 and 79.36 per cent respondent beekeepers perceived lack of knowledge about honey bee enemies and new technologies as the major constraints, respectively. The pooled data of the four districts revealed lack of knowledge about honeybee enemies (93.33%) as the most important constraint perceived by the respondent beekeepers of Jammu province followed by lack of knowledge about new technologies (75.23%), identification of diseases (60.47%), pesticide poisoning (59.04%), migration of bee colonies (42.85%), technical guidance about bee flora (39.52%) and feed management for colonies in the offseason (15.71%).

#### **Infrastructural and Administrative Constraints**

The data revealed that respondent beekeepers of Kathua district reported lack of state government support (93.02%) followed by inefficient government policies on beekeeping (88.37%) as the major constraints. The other important administrative constraints reported by the beekeepers include interference of forest department for keeping beehives in forest land (81.39%), and police department at the check posts during migration of beehives to other states (69.76%). Similar trend in respect of administrative constraints was observed in Jammu district in which 84.21 per cent respondent beekeepers perceived lack of state government support and its unproductive policies on beekeeping (84.21%) as the major constraints followed by hindrance of the forest department in providing space for the apiaries (78.94%) and problems created by police department at check posts during migration of beehives to other states (63.15%). In Rajouri district also majority (81.81%) of the respondent beekeepers reported the lack of state government support and its ineffective policies and hindrance of the police department at check posts during migration as

the major constraints followed by problems created by the forest department in keeping boxes in forest land (77.27%). However, the respondent beekeepers of Ramban district reported major constraint as interference by the police department at check posts during migration of beehives to other states (87.30%). The other constraints observed in the district were lack of state government support and its ineffective policies (79.36%) on beekeeping as perceived by the respondent beekeepers. Overall the major infrastructural and administrative constraints faced by the respondent beekeepers of Jammu province were lack of state government support and its flimsy policies on beekeeping followed by interference created by forest department in keeping boxes in forest land and intrusion of police department at the check posts during migration of colonies to other states.

#### **Post-harvest Constraints**

The major post-harvest constraints pointed out were lack of honey processing unit and skilled labour, as reported by 69.76 per cent and 48.83 per cent beekeepers, respectively, followed by unseasonal weather disturbances perceived by (46.51%) beekeepers. In Jammu district, lack of honey processing unit as a major constraint was reported by 56.63 per cent beekeepers. The other constraints reported by the beekeepers were lack of skilled labour, 36.84 per cent and unseasonal weather disturbances 31.57 per cent. The respondents of Rajouri district, highlighted that non-availability of storage and packing material (68.18%) and problem of transport facility (68.18%) as the major constraints. Lack of honey processing unit (63.63%) and lack of skilled labour (54.54%) were also the important constraints faced by the beekeepers. In Ramban district, lack of honey processing unit and problem of transport facility (71.42%) were the main important constraints faced by the apiculturists followed by lack of skilled labour (57.93%).

The major post-harvest problems reported by the beekeepers of the four districts were lack of honey processing unit, problem of transport facility, lack of skilled labour, unseasonal weather disturbances, non-availability of storage and packing material 45.23, problem in sale of honey and storage of honey.

### Socio-cultural Constraints

The various socio-cultural constraints faced by the beekeepers include public disputes arising due to bee sting, non-cooperation of family members, family members compulsion to quit the apiculture enterprise, interference of neighbours and lack of support of progressive beekeepers to the upcoming beekeepers. The data revealed that public disputes arising due to bee sting was observed the major social constraint in all the districts. In Kathua district, public disputes arising due to bee sting (74.41%) was observed the major constraint faced by the respondent beekeepers, followed by interference of neighbours (60.46%). Similarly the major constraints reported in Jammu district were the public disputes arising due to bee sting (78.94%) followed by interference of neighbours (63.15%). In Rajouri district also the major problems highlighted by the beekeepers were public disputes arising due to bee sting (81.81%) and interference of neighbours (54.54%). In Ramban district also public disputes arising due to bee sting (87.30%) and interference of neighbours (58.04%) were major constraints faced by the respondents. Overall public disputes arising due to bee sting was reported the major social constraint followed by interference of neighbours. The other constraints reported by the apiculturists were lack of support of progressive beekeepers to the upcoming beekeeper and non-cooperation of family members and their compulsion to quit the apiculture enterprise.

### CONCLUSION

The study has clearly pointed out the major economic, technological, infrastructural and administrative, post-harvest and socio-cultural constraints faced by the beekeepers of Jammu province. The major economic constraint include high cost of equipment followed by low selling price of honey and higher expenditure on transportation during migration while the technological constraints include lack of awareness about management of honey bee enemies and diseases and new technologies. The major administrative and infrastructural constraints include lack of government support and its inefficient policies and non-availability of modern honey processing

unit and skilled labour, while as the public disputes arising due to bee sting, interference of neighbours and family members force to quite the apiculture enterprise were pointed out among the major socio-cultural constraints. Hence, it is suggested that the government of Jammu and Kashmir particularly the agriculture department, agricultural universities and other concerned non-governmental organisations should take necessary steps to reduce the constraints faced by the beekeepers at different levels and also facilitate them, so as to boost the apiculture industry in the Jammu province.

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