Research Article

PRODUCTION AND MARKETING CONSTRAINTS FACED BY BEEKEEPERS IN GUJARAT STATE

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Abstract: The study was intended to identify the constraints faced by beekeepers in the production and marketing of honey in Gujarat state. A total of 100 beekeepers were selected by employing the snowball sampling method from Gujarat state. Garratt's ranking technique was used to rank the constraints. The result revealed that the majority of beekeepers faced production constraints for migration of bee colonies with a 66.13 mean score. The low selling price of honey was faced by majority beekeepers listed under marketing constraint of honey with a mean score of 63.30 followed by to obtain the FSSAI/ISI standards certification in the study area whose producer's share in consumer rupee was found the least *i.e.,* 33.06 and 43.66 percent only among different marketing channels.

Keywords: *Beekeeper, Honey, Constraint analysis, Garratt's ranking*

Introduction

Beekeeping is the art and skill of maintaining the bees in modern movable frame hives for hobby or fascination, production of hive products, and pollination services. Apiculture is a synonym for beekeeping. It has been derived from the Latin word apiscultura, which means "Cultivation of bees through education". It is a high-profit enterprise and can be taken up both as a subsidiary industry as well as a whole-time profession. Beekeeping does not require ownership of land. It is not constrained for other agricultural activities, provides handsome income, and is helpful for pollination of agricultural/ horticultural crops which increases the quantity as well as the quality of yield. It plays a great role in agricultural diversification by producing various kinds of bee products and pollinating crops. Marketable beekeeping was underway during the last half of the 19th century. In 1851, L. L. Langstroth discovered the concept of bee space, 3/8-inch space is kept by the bees between two movable combs as their passageway for free movement all around the combs. The modern age 'Langstroth bee hive' with movable parallel frames/combs was developed. L. L. Langstroth is known as the father of modern beekeeping [1]. The first effort to keep bees' inflexible frames was made by Mr. John Douglas in 1882 in Calcutta followed by Sir Louis Dane around 1882 in Punjab, a pioneer to keep bees in a modern hive in Kulu valley during 1882-1884 and Simla in 1908 [2]. Recently, Honey Mission was launched as a part of the "Sweet Revolution" declared by Prime Minister Shri Narendra Modi in the year 2016. The government has allocated Rs. 500 crores towards beekeeping under Atma Nirbhar Abhiyan. The government of India is promoting beekeeping as a part of the aim to double the farmers' income by 2024 [3].

Material and Methods

To select the sample size of beekeepers, the snowball sampling method was adopted. A total of 100 beekeepers were selected under different four crops grown by them in Rabi season 2020. The details about the distribution of samples according to the crop taken by them are given in [Table-1]. The study was based on primary data. The data were collected with the help of a structured questionnaire by conducting a field survey. Garrett's ranking technique is used to analyze the problems perceived by beekeepers in the production and marketing of

honey in Gujarat state. To identify the constraints of beekeepers, a questionnaire was designed covering the important aspects of the production and marketing of honey. Garrett's ranking technique gave the modification of orders of constraints into arithmetic scores. The most important advantage of this method as compared to simple distribution is that here constraints are organized supported their position from the purpose of view of respondents. Garrett's formula for converting ranks into a percent is given by [4],

Percent Position = (100 (R$_{ij}$-0.5))/N$_j$

Where, R$_{ij}$ = Rank given for ith item by jth individual,

N$_j$ = Number of items ranked by jth individual

The comparative situation of every rank obtained from the above formula is renewed with scores by touching on the table prearranged by Garrett (transmutation of orders of merit into units of amount or scores) for each factor scores of all individuals have been added and then divided by the total number of respondents for the specific factor (constraint) attributes [5].

Table-1 *Crop wise samples taken for beekeepers*

Sr. No.	Crops	Beekeepers
1	Coriander	15
2	Fennel	05
3	Ajwain	05
4	Mango	75
Total		100

Result and Discussion

Production constraints involved problems faced by beekeepers during the production of honey. A lot of production constraints were being faced by beekeepers in the production of honey in Gujarat state. Total 21 production constraints were enlisted and divided into different 5 groups *i.e.* technical constraints, economic constraints, environmental constraints, physical constraints, and social constraints. Beekeepers from Gujarat state were surveyed for obtaining information and asked to rank based on its severity and were tabulated and furnished in [Table-2]. The result revealed that migration of bee colonies was the major technical constrain faced by the beekeeper with a 66.13 mean score followed by identification of insects/pests/diseases, management of food for

colonies in off-seasons, and fear of losing colonies due to diseases and enemies with mean score 60.63, 54.64 and 53.94, respectively. The least constraint faced by beekeepers was knowledge and application of artificial food with a minimum mean score of 33.27. The major economic constraint faced by beekeepers was lack of subsidy with a 66.91 mean score followed by lack of knowledge about facilities of loan for purchasing raw material and cumbersome loan procedures with 50.38 and 33.09 mean scores, respectively. Lack of flora and crops was the major environmental constraint faced by beekeepers. In social constraints, labour requirement was the most faced constraint for beekeepers followed by the interference of neighbours, negligence benefits of honey and other honey bee products, and lack of family support.

Table-2 *Constraints faced by beekeepers in the production of honey (n=100)*

SN	Constraints	Garrett's mean score	Rank
	Technical constraints		
1	Identification of insects/pest/diseases	60.63	II
2	Migration of bee colonies	66.13	I
3	Management of food for colonies in off-seasons	54.64	III
4	Fear of losing colonies due to diseases and enemies	53.94	IV
5	Poisoning of bees due to pesticides *etc.*	39.75	VI
6	Lack of technical knowledge	40.50	V
7	Knowledge and application of artificial food	33.27	VII
	Economic constraints		
1	Lack of subsidy	66.91	I
2	Lack of knowledge about facilities of loan for purchasing of raw material	50.38	II
3	Cumbersome loan procedures	33.09	III
	Environmental constraints		
1	Lack of flora and crops	59.36	I
2	Management of bee colonies in extreme weather	40.90	II
	Physical constraints		
1	Fear of bee stings	59.70	II
2	Headache during a routine investigation of bee colonies	50.05	III
3	Skin irritation and allergies	39.55	IV
4	Eyes irritation	27.95	V
5	Require more physical works	72.75	I
	Social constraints		
1	Interfere of neighbours	55.08	II
2	Lack of family support	36.49	IV
3	Negligence about benefits of honey and other honey bee products	40.23	III
4	Labours requirement	68.20	I

Source: Primary data from field survey

Marketing constraints are the problems faced by beekeepers in the marketing of honey. Beekeepers of Gujarat state facing several marketing constraints were enlisted in [Table-3]. The low selling price of honey was the constraint faced by the majority of beekeepers with 63.60 Garrett's mean score followed by the inability to compete with big companies and to obtain the FSSAI/ISI standards certification. Delay in payment was the least constraint faced by beekeepers with a minimum mean score of 33.90 next to the quality of honey regarding colour, palatability, *etc.*, and higher expenditure on transportation.

Table-3 *Constraints faced by beekeepers in the marketing of honey (n=100)*

SN	Constraints	Garrett's mean score	Rank
1	Low selling price of honey	63.60	I
2	Higher expenditure on transportation	37.91	VI
3	Delay in payment	33.90	VII
4	Inability to compete with big companies	59.15	II
5	To obtain the FSSAI/ISI standards certification	56.91	III
6	Availability of facility to get laboratory testing of honey	52.90	IV
7	Quality of honey regarding colour, palatability, *etc.*	44.89	V

Source: Primary data from field survey

The majority of the beekeepers faced the constraint of the low selling price of honey. The beekeepers who faced the constrain regarding low selling price were consist of Group 1 who preferred to sell the honey through Channel II to NGO due to the low quantity of honey yield. The majority of the beekeepers come from

Group 1. The producer's share in consumer rupee of beekeepers from Group 1 who preferred Channel II and Channel III was the lowest *i.e.*, 33.06 and 43.66 percent, respectively only which were 65.47 percent, and 94.48 percent among Channel I, and Channel IV, respectively.

Conclusion
It can be concluded the majority of production constraints faced by beekeepers were migration of colonies, lack of subsidy, lack of flora and crops, requiring more physical works, labour requirement, and low selling price of honey among marketing constraints.

Suggestions
To resolve the production constraints, beekeepers should attend more training programs and keep updated themselves to acquire more technical knowledge. To resolve the constraints of the low selling price, beekeepers should invest more in beehives to increase the production and primary processing like filtering of the honey to be made to increase the share in consumer's rupee. To obtain the FASSI/ISI standards certification and laboratory testing of the honey, beekeepers should approach the extension agencies, departments of SAUs that are working on beekeeping, FPOs, NGOs, *etc.* to find help regarding particular procedures.

Application of research: The study of problems regarding the production and marketing of honey will be useful to beekeepers for its better development.

Research Category: Agri-Business Management, Beekeeping

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Study area / Sample Collection: Gujarat state
Cultivar / Variety name: Honey and other bee products

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