



## Promotion of beekeeping as a potential option for agriprenureship: Insights in context of *Mann Ki Baat* (Inner thoughts)

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### ABSTRACT

Scientific beekeeping can be a potential and possible emerging entrepreneurial option for the smallholders' livelihood security. It stimulates economic transformation, helps in economic and nutritional security, enhance ecological resilience as emphasized by Hon'ble Prime Minister of India in his 91<sup>st</sup> episode of *Mann Ki Baat*, aired on 31 July 2022. The present study has examined the critical factors responsible for the success of beekeeping under various farming systems with a focus on individual/group beekeepers. Using a semi-structured interview schedule, the study was conducted with a sample size of 40 individual beekeepers and 40 group beekeepers (comprising of 2,221 members) selected purposively from 26 States/UTs covering 56 districts of the country. Middle aged beekeepers (47.50%) within the range of 35–50 years were observed to be more enthusiastic for beekeeping enterprise showing optimal gender discrimination with the male dominance of 92% and 77% in case of individual and group, respectively. Capacity built by KVKs with before and after *Mann Ki Baat* episodes facilitations, was perceived to be inspiring 32.50% individual and 25% group beekeepers to venture agri-business enterprise in beekeeping. In case of marketing of honey and honey-based products, middlemen intervention was more in case of individual (22%) as compared to group (6%), whereas the group (24%) has a better dominance in online marketing system than the individual (8%). Beekeeping proved to be a profitable enterprise as the group farmers earned a net income of ₹1,28,328 and the individual beekeepers with a net income of ₹92,947 per 50 bee hives with B:C ratio of 1.45 and 1.55, respectively. This has also been in tune of Hon'ble Prime Minister's emphasis on beekeeping as an alternative source of income for sustainable livelihood highlighted at the national conclave on natural farming on 16 December 2021. The study also revealed that 'pesticide residual problems', 'low level of knowledge on honey quality parameters' and 'lack of proper storage facility' were some of the major obstacles faced by the individual and group beekeeping enterprises. The paper also accentuates on the challenges faced by the beekeeping sector, and suggests strategies for its expansion as a viable business enterprise.

**Keywords:** Beekeepers, Business enterprise, Demonstrations, Gender, *Mann Ki Baat*

Hon'ble Prime Minister in his 91<sup>st</sup> episode of *Mann Ki Baat* (31 July 2022) narrated that the sweetness of honey is changing the lives of our farmers by increasing their income. He shared the success stories of three farmers who are practicing beekeeping in Yamunanagar (Haryana), Jammu

(Jammu and Kashmir) and Gorakhpur (Uttar Pradesh). The programme named *Maan Ki Baat* has been used frequently in this paper, which carry the meaning inner thoughts literally. He further said that farmers worked hard, and the sweetness of our honey started reaching across the world.

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He urged the youth population of the country to explore the opportunities and realize new possibilities in the field through the spirit of entrepreneurship and hard work. Further, Hon'ble Prime Minister, during his speech at National Conclave on Natural Farming on 16 December 2021, had also highlighted that 'along with agriculture, farmers are constantly being connected with many alternative sources of income like animal husbandry, beekeeping, fisheries, solar energy and bio-fuels for sustainable livelihood'.

Beekeeping is an enticing, lucrative, and intriguing rural agri-horticulture business. It does not require cutting-edge technology, a large financial investment, or vast infrastructure. It is effective as an allied activity in an integrated agricultural system for boosting the farming community's economy. Due to its low investment and simple techniques, beekeeping is an individual and group enterprise. Individual entrepreneur, besides honey production, helps other farmers in pollination. Kumar *et al.* (2017) reported that one of the young small farmers of Ropar district of Punjab is practicing seasonal migration of bee colonies during April and May months every year to Kullu and Manali (Himachal Pradesh) in apple orchard for pollination and earned ₹600 per honey bee colony. The group entrepreneur of beekeepers through SHGs, FPOs are creating value addition to the enterprise and trying to establish as the brand. They also linked their FPOs to the big marketing brands of honey for the larger benefit of their members.

The capacity building of the bee keepers covering honey production, efficient use of the flora, marketing, branding is necessary for the success of beekeeping enterprises. The Krishi Vigyan Kendras (Farm Science Centres) at the district level provides vocational training in beekeeping and skills rural youth in beekeeping under various projects for developing them as entrepreneurs in turn helping to realise the goal of sweet revolution. The past studies are mostly localised covering certain aspects of beekeeping. However, a national level holistic study covering individual as well as group enterprises in beekeeping covering the factors contributing to success and motivation in context of *Mann Ki Baat*, constraints faced and strategies for success of commercial beekeeping in India is lacking. Keeping this in view, the present study was conducted across India to analyse the beekeeping as viable business enterprise for sustainable livelihood security in context of *Mann Ki Baat* with the objectives to identify the crucial factors responsible for the success of beekeeping enterprises; measure the extent of success of beekeeping enterprises; find out the major constraints in beekeeping enterprises in the country and; suggest recommendations for strengthening the commercialisation of honey production.

## MATERIALS AND METHODS

The study was undertaken to identify the critical factors responsible for the success of beekeeping enterprises in India. To address the objectives of the study, both quantitative and qualitative approaches were followed. A sample of 40 individual beekeepers and 40 group beekeepers selected

purposively from 26 States and Union Territories comprising of 56 districts of the country. The data were collected by 10 Agricultural Technology Application Research Institutes (ATARI) Zones namely Ludhiana, Jodhpur, Kanpur, Patna, Kolkata, Guwahati, Barapani, Pune, Jabalpur and Bengaluru with the sample size of 4 individual and 4 group beekeepers selected from each ATARI through purposive sampling technique. It was ensured that the sample should be selected with the criteria like equal representation of different agro-climatic regions of India, cases must have sufficient evidence of success and selection of unique cases.

Keeping view on the objectives of study, a semi-structured interview schedule was prepared for data collection from 40 individual beekeepers and 40 group beekeepers through personal interview and focussed group discussion (2–4 office bearers or members of the group) by the officials of Krishi Vigyan Kendras of the district. The selected individuals and groups were engaged in beekeeping from the last five years following the appeal of Hon'ble Prime Minister in his *Mann Ki Baat*. Thus, a total of 160 beekeepers (40 individual and 120 office bearer/ members of the group) farmers were contacted for information on beekeeping enterprise. To assess the success of beekeeping, before and after the intervention data was recorded. Analytical tools such as profitability analysis (Gross cost, gross returns and net returns), descriptive statistics, tabular and graphical representation employed for the insightful results.

## RESULTS AND DISCUSSION

*Socio-demographic profile:* Results indicated that majority of the respondents (bee-keepers) belonged to middle age (47.50%) with the age from 35–50 years. This was followed by young (32.50%) with the age below 35 years and old (20%) of more than 50 years old in individually practicing bee keeping farmers. Usually, the middle-aged farmers were more enthusiastic after listening the *Mann Ki Baat* and have great amount of responsibility as well as they are efficient compared to old and young farmers. Further, the respondents between 35–50 years age group had more physical vigour and more responsibility towards family than the young farmers. Beekeeping enterprise was male dominated as evident from 92.50% of individual beekeeping respondents being the male, whereas only 7.50% were female beekeepers. For group enterprise, 76.79% respondents were male farmers and 23.21% respondents were found to be female in the study areas. It could be attributed to the fact that most of the participants of training programmes and enabling environment created during the *Mann Ki Baat*, and bee-keeping related management conducted by KVKs in the country were male farmers as the activities associated to the enterprise involve high level of risk and skills etc. Moreover, in India beekeeping is mostly practised as a full-time occupation and an engrossing hobby to produce handsome income and table honey.

*Farming system:* Honey bee production is being influenced by the prevailing agro-ecological system of the

region depending on the availability of flora and fauna, different species of honey bee and other biotic and abiotic factors. The results of the study shows that nearly one-third of the respondents (32.50%) reported adopting rice-based farming system in their farming situations as primary source of income and livelihood. This was followed by horticulture (27.50%), integrated farming system (22.50%) and agriculture (20%). Only 5% farmers in the study were reported as small holders/ landless farmers across the country.

**Experience in beekeeping:** In general, experience counts a lot for giving a proper shape and value to any business enterprise. In case of beekeeping enterprise, the present study depicts that nearly half of the respondents (47.50%) were found having 5–10 years' experience in beekeeping who were practicing the occupation on individual basis. While 27.50 and 25% of the total beekeeping individual farmers had experience in beekeeping of more than 10 years and less than 5 years respectively. While in case of group approach towards honey bee rearing/beekeeping enterprise, equal number of respondents (47.50%) also reported their experience between 5–10 years in beekeeping followed by experience of less than 5 years (40.00%) and only 12.50% respondents had experience of more than 10 years in beekeeping. Across the experienced group of beekeepers, they were found to be energised in way or other (self-motivation and strengthened extension services) after the *Mann Ki Baat* episodes in pursuing this enterprise.

**Species of honeybees:** Indian honeybee or eastern honeybee is a well-known bee species in India. Prior to the introduction of Italian bee, *Apis cerana* was the only domesticated bee species in India. These are comparatively non-aggressive and rarely shift locations. The study indicate that half (50%) of the individual respondents had reported that they were in practice of Indian species/Indian Bee (*Apis cerana*) as the most common species. While 42.5% individual beekeepers had adopted *Apis mellifera* and only 7.50% individual respondents had reported adopting *Apis mellifera* and *cerana* in their farming situations. In case of group approach, 37.50% beekeepers had adopted Indian species followed by *Apis mellifera* (22.5%). However, *Apis mellifera* and *cerana* adopted by 40% of group beekeepers. Further, the study also reveals that 37.5% individual beekeepers had reported that they received support or assistance for the establishment of beekeeping group, while 62.50% respondents confirmed that they had not received any kind of financial or technical support from any agency/organisation for establishment of bee groups and commercial honey bee production and management including marketing. On the contrary, over three-fourths (82.50%) of the beekeepers in group reported that they received support or assistance for the establishment of beekeeping group from different sources and remaining 17.5% only intimated not receiving support or assistance in this regard.

The study shows that only 30% individual beekeepers had involved in branding and labelling of honey bee products by the group, and the remaining 70% respondents had

reported that they were not involving in such activities. In case of group approach, the 65% respondents in group were found to be involved in branding and labelling of honey bee products, while 35% respondents reported in negative for involvement in activities related to branding and labelling of honey bee products. This indicates success of the beekeeping enterprise on commercial basis when it is taken up by farmers in group compared to individually by farmers in the country.

**Problems faced by individual and group beekeepers before taking up the beekeeping enterprise:** The results of the case studies delineate about various problems faced by both individual and group prior to the adoption of the beekeeping enterprises (Fig 1) was 'Low income from agriculture' for 60% individual beekeepers, whereas 'poor economic status of the family' was found to be prominent problem faced by group beekeepers (27.50%). Similarly, the problem of 'migration and unemployment' was faced by both the individuals (17.50%) and group (22.50%) with certain extent of threats to climate risks in agriculture before taking up the beekeeping practice being the next one. However, recently with *Mann Ki Baat*, environment of getting help from developmental agencies has ease the business as usual. For climate risks, the adoption of beekeeping may be taken up as a most suitable climate resilient enterprise for biodiversity conservation (USAID-PROSPER 2012–17 and Vercelli *et al.* 2021). Evidences suggest that beekeeping enterprises lead to higher income and employment opportunities, helping in doubling farm income (DFI), and may help in reduction of migration in search of employment. Similar results were reported by Beyene *et al.* (2014) for Wonchi district, South West Shewa zone of Ethiopia.

**Motivating factor for taking up the beekeeping enterprise:** The general hypothesis in the theory of change says that there is a strong linkage of successful incidences/ results with the attitudinal change of the stakeholders. From the present study, it is clearly evident that the awareness, training and demonstration provided by KVKs (compounding impact of before and after the *Mann Ki Baat*) were the major factors that inspired 32.50% individual beekeepers to start enterprise, whereas lucrative nature of beekeeping motivated 27.50% individual beekeepers (Fig 2). The success stories of neighbours and mass media

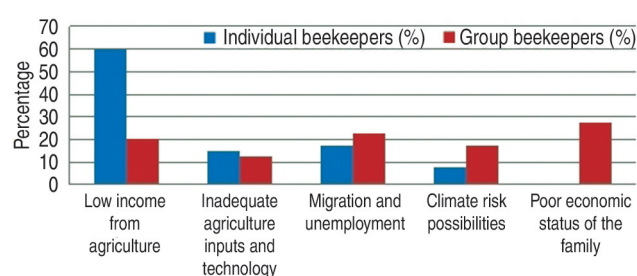


Fig 1 Problems faced by both individual and group beekeepers in livelihood maintenance before taking up the beekeeping enterprise.

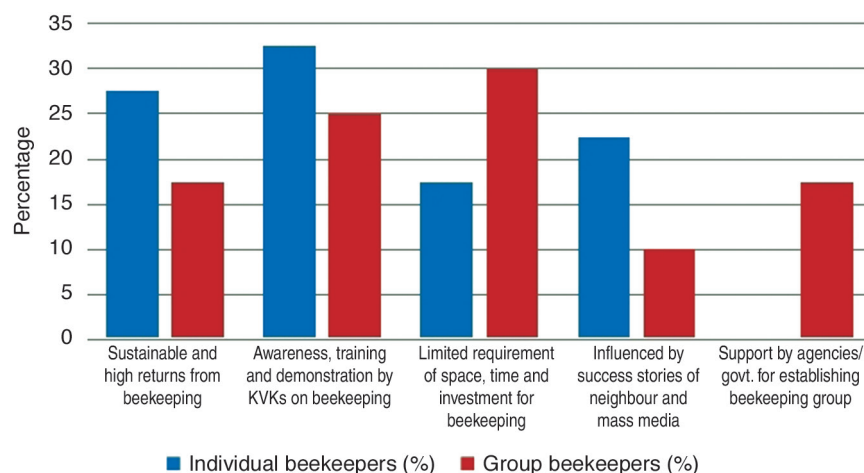


Fig 2 Factors of motivation strengthened after with Mann Ki Baat for taking up the beekeeping enterprise.

inspired 22.50% farmers to take up beekeeping enterprise. Although, beekeeping requires relatively little space and less investment, a few individual farmers (17.50%) are motivated by it after the *Mann Ki Baat* episodes. In contrast, the factors that have inspired group beekeepers are different from those that have inspired individual farmers. Further, 30% of the beekeeper group are motivated by the fact that beekeeping requires less space, time, and money. Awareness, training, and demonstration on beekeeping by KVKs have inspired (25%); Sustainable and High Returns from Beekeeping and support by Agencies/Government for establishing beekeeping Group have changed the attitude of the of the stakeholders @17.50% each and only 10% are influenced by success stories of neighbours& mass media.

**Expertise in beekeeping enterprise:** In contrast to exposure visits and demonstrations, vocational training programmes are the primary means by which individual beekeepers and beekeeping groups learn about beekeeping (Fig 3). The study reveals that 65% of individual beekeepers and 47.50% group beekeepers obtained their knowledge from the training programmes. On the other hand, 27.50% individual bee keepers and 32.50% beekeeping groups acquired their skills from exposure trips and 7.50% individuals and 20% groups acquired expertise through

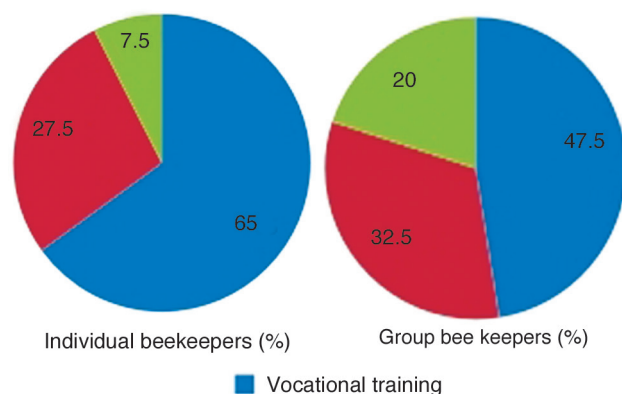


Fig 3 Expertise in beekeeping enterprise.

demonstrations (conducted before and during the *Mann Ki Baat*). The fact that vocational training offers more information on technical and practical expertise than exposure visits and demonstrations may account for why individual beekeepers and beekeeping groups showed a greater interest in it.

**Marketing of honey and honey bee-based products:** The marketing of honey bee and honey bee-based products of both groups and individuals are presented in Table 1. The results revealed that 42% of the individual’s products and 18% of the group products were sold in the local market, followed by middlemen for 22% of the total individual’s products and 6% of

group products. About 18% of the individual’s products and 32% of the group products were sold in the supermarket. Only 10% of the individual products and 20% of group products went through government outlets. Through the online market only 8% of the individual products and 24% of the group products were sold. The result shows that group approach helps in better marketing through super market and online market as compared to local market use by individual beekeepers. Additionally, about 15.0% farmers perceived that marketing ease has been strengthened in recent with the environment created by *Mann Ki Baat* episode.

**Sources of information on beekeeping:** The KVKs were found to be the major source of information for highest individual (67.50%) as well as group (47.50) for beekeeping. It shows the trust of farming community in the KVK as well as visibility and availability of expertise, demonstration units at the KVK’s farms. Friends, neighbours and mass media were used by least number of individuals (10%) and groups (0.10%) in beekeeping. NGO/State Department/University were source of information for 22.50% individuals and 42.50% groups (Fig 4). About 32.5% farmers across the space (individual and group) have perceived that although they were getting information on beekeeping, in recent past after the Mann Ki Baat the variety of information and required support from different institutions have been strengthened.

Table 1 Marketing of honey and honey bee-based products

Marketing of honey	Individual beekeepers	Group beekeepers
	Percentage	Percentage
Local market	42	18
Super market	18	32
Government outlet	10	20
Middlemen	22	6
Online market	8	24



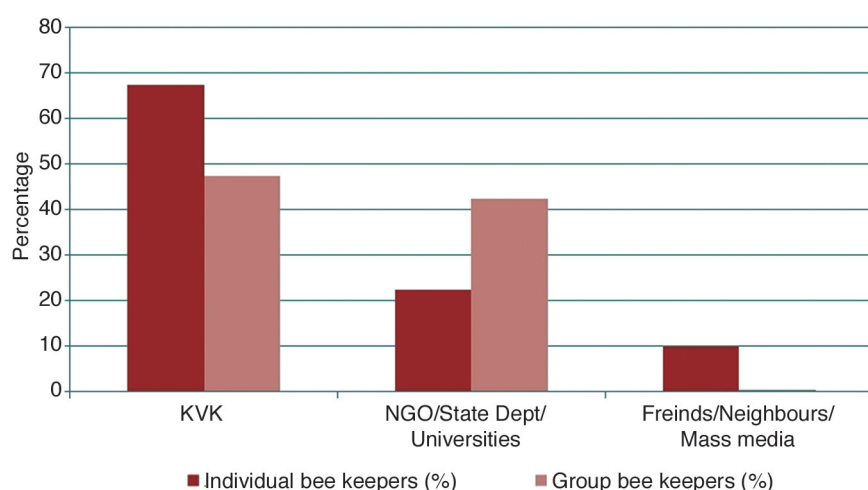


Fig 4 Sources of information on beekeeping.

**Sources of technology:** The governments departments, as well as several agencies, are putting their hard efforts to educate the farmers on beekeeping. It was observed that KVKs have a considerable impact on how technology is spread among individual and groups beekeepers, thus contributing 57.50 and 47.50%, respectively. The National Bee Board has also taken up disseminating technology with a contribution of 27.50 and 12.50% to individual and group beekeepers, respectively. Universities/NGO/State departments were the source of technology to 15 and 30% to individuals and groups, respectively. Progressive farmers have also gotten involved in providing technology to group beekeepers (Fig 5). However, the extension services and developmental activities around beekeeping have got enhanced with the environment created by *Mann Ki Baat* as perceived by about one third of studied farmers.

**Horizontal spread of technology:** Results of the study also revealed that a total of 19 individual beekeepers and 3 beekeeping groups were emerged due to horizontal diffusion of beekeeping technology. More number of individual beekeepers was benefited as compared to groups, which may be because the beekeeping is low capital-intensive enterprise with less technical complexity and helps in doubling the farm income within a short period. The

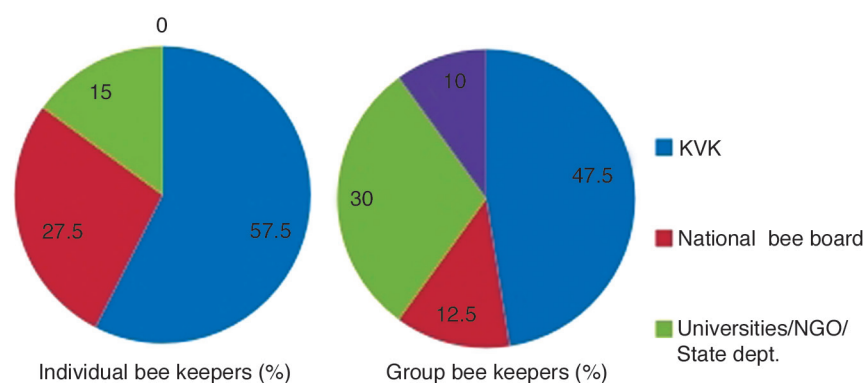


Fig 5 Sources of technology.

horizontal expansion of the beekeeping technology helps in boosting both the production potential and size of big and medium-sized beekeeping farms (Al-Nasser *et al.* 2020). Additionally, this might have also been influenced from the efforts being made by central and state governments through different policies, and awareness raised by *Mann Ki Baat* episode. Such context around technology spread on beekeeping was in conversation among the farmers.

**Economics of beekeeping enterprise:** Beekeeping involves initial fixed (non-recurring) expenditure, viz. purchase of double chamber langstroth hives, bee colonies, honey extractor and other tools which assumed be

have 10 years of utility. We observed that group beekeepers incurred additional cost for the registration of group/society. The annual maintenance (recurring) expenditure includes labour, sugar, comb foundation sheets, chemicals to control diseases and pests, branding, labelling, society running cost, etc. At the individual level, the establishment of 50 bee hives apiary involve on an average ₹1,78,100 fixed expenses. The main non-recurring cost made towards purchase of bee hives (56%) and bee colonies (36%). Farmers incurred ₹1,33,700 annually as a recurring cost. The total cost including depreciation cost, interest on fixed cost and interest on working capital worked out to be ₹1,69,005 for 50 bee colonies. Whereas, the group bee keepers incurred ₹1,51,800 and ₹2,33,500 as non-recurring and recurring cost respectively (Table 2 and 3). However, the group has relatively more operational cost and less fixed expenses as compared to the individual level for 50 bee hives apiaries. Therefore, the total cost also at group level (₹2,84,510) was higher than the individual level (₹1,69,005) (Fig 6).

The individual farmers earned the income by selling honey, bee wax and extra colonies but they were unable to process the honey or extract the other ingredients such as pollens, bee venom, royal jelly which would result in the higher income. Whereas, the group level farmers able to harness the full potential of earning income from

all possible sources. Therefore, the group farmers earned the net income of ₹1,28,328 (total income: ₹412838) whereas individual beekeepers gained net income ₹92,947.5 (total income: ₹261952.5) from the apiary (Table 4). Beekeeping results in a profitable income at both the level. However, practicing apiary at group level yielded higher net income than the singular level. Interestingly, the benefit obtained from each rupee of investment in the apiary was greater at individual level (B:C ratio is 1.55) compared to group

Table 2 Non-recurring cost of beekeeping for 50 bee hives

Non-recurring cost	Individual beekeeping			Group beekeeping		
	Qty (No./kg)	Price (₹)	Value (₹)	Qty (No./kg)	Price (₹)	Value (₹)
Bee hives	50	2000	100000	50	1900	95000
Bee colonies (four bee frames each)	50	350	70000	50	220	44000
Honey extractor	1	2500	2500	1	2200	2200
Smoker, bee veil, hive tool etc	1 set		600	1 set		600
Miscellaneous (Honey cans, mating nuclei etc)			5000			4500
Society registration cost						5500
Total			178100			151800

Table 3 Recurring cost of beekeeping for 50 Bee hives

Recurring cost	Individual bee keeping			Group bee keeping		
	Qty (No./kg)	Price (₹)	Value (₹)	Qty (No./kg)	Price (₹)	Value (₹)
Sugar for feeding	250	40	10000	250	39.5	9875
Comb foundation sheet	500	15	7500	500	13.75	6875
Labour (Skilled: ₹320/man day, Unskilled: ₹230/man day)	1	9600/month	115200	Skilled: 1, Unskilled: 1	Skilled: 9000/ month; Unskilled: 6900/ month	190800
Chemicals for pest control			1000			1300
Branding and labelling				1225	20 ₹/kg of honey	2450
Society maintenance cost					1850/ month	22200
Total				133700		233500

level (Table 5). The results opined that the farmers who working under group dynamics have the scale advantage over whom working at the individual level. Hence, they have the option to go for the processing of the honey and extracts.

*Constraints faced in beekeeping enterprises: Constraints*

faced in beekeeping enterprises-Individual vs. Group were analysed (Table 6) and it was observed that ‘*low technical guidance and training*’ was the major constraint faced by the individual beekeepers (42.50%) followed by a common

constraint like ‘*lack of information on pest and disease management in honeybees*’ has created a hurdle for both the individual (35%) and group (30%) to flourish their business enterprise. In addition, the factors like ‘*management of flora in off-season and dearth period*’ and ‘*lack of accessibility to beekeeping equipment*’ were the minor concerns for the group entrepreneurs. Similarly, in case of managerial constraints, ‘*migration of honey bees*’ was the major constraint for individual beekeepers (67.50%) and ‘*non-availability of skilled labour*’ for the group beekeepers (42.50%). In both the cases, ‘*unorganized markets*’ and ‘*low market price*’ are the major marketing constraints, but ‘*non-availability of proper branding & packaging facilities*’ was found to be

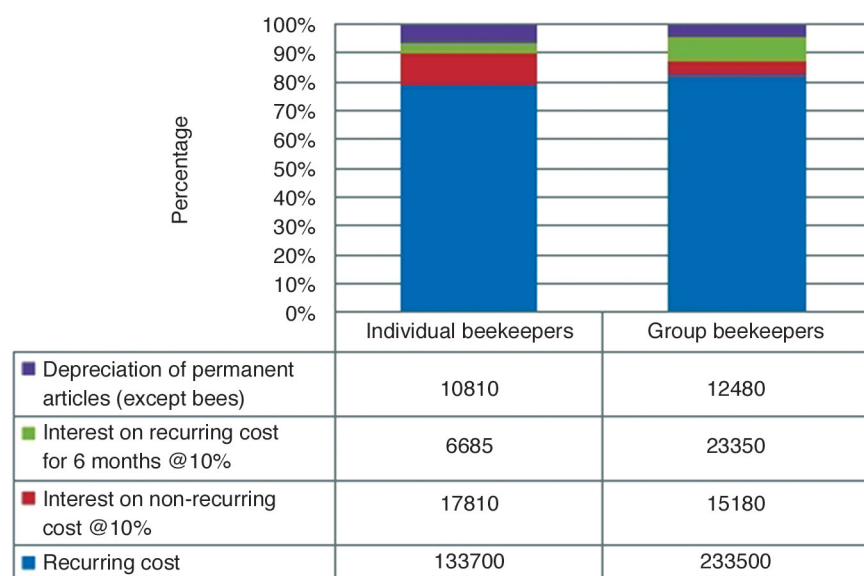


Fig 6 Total annual cost of beekeeping.

Table 4 Income from beekeeping

Particulars	Individual beekeeping				Group beekeeping			
	Average yield (kg)	Total quantity produced (kg)	Price (₹/kg)	Value (₹)	Average yield (kg)	Total quantity produced (kg)	Price (₹/ kg)	Value (₹)
Honey	26.45	1322.5	180	238050	24.5	1225	220	269500
Bee wax	3% of honey produced	39.675	300	11902.5	3% of honey produced	36.75	300	11025
Sale of extra colonies	25%	12 colonies	1000	12000	25%	12 colonies	1000	12000
Pollen (from 90% of colonies)	-	-	-	-	2.2	144.00	500	72000
Royal jelly (from 90% of colonies)	-	-	-	-	0.25	11.88	2500	29688
Propolis (from 100% of colonies)	-	-	-	-	0.05	2.50	450	1125
Bee venom (from 90% of colonies)	-	-	-	-	50 mg	2.5 g	7000	17500
Total income (₹)				261952.5				412838

Table 5 Economics of the beekeeping

Particular	Individual beekeeping	Group beekeeping
Gross cost (₹)	169005.00	284510
Gross returns (₹)	261952.50	412838
Net returns (₹)	92947.50	128328
B:C ratio	1.55	1.45

a limiting factor in expansion of marketing in case of group enterprises (27.50%). This result supports the observation found out by Sharma (2018) in his study conducted in Kamrup district in Assam. Processing is one of the most important parts in beekeeping enterprises. The prevalent constraints like '*lack of processing unit at approachable distances*' and '*non-availability of packaging material*' were found to affect the beekeeping business enterprise mostly. Similarly, the constraint like '*high cost of migration of colonies*' was found to be more prominent both in case of individual (80%) and group (85%) enterprises that acts as an impediment for large scale expansion of the beekeeping enterprise.

Quality of the honey determines a better price of the honey and establishes its market potential that attracts the entrepreneurs to take up the beekeeping as a viable business enterprise. In this context, the present study revealed that 'pesticide residual problems', 'low level of knowledge on honey quality parameters' and 'lack of proper storage facility' were some of the major obstacles faced by the individual and group beekeeping enterprises. The findings of the study accede to the research report given by Yemane *et al.* (2013).

*Suggestions by the beekeepers:* We recorded some

suggestions from beekeepers. The beekeepers suggested (37.50%, 12.50%) to have establishment of organized market'. Besides, 'timely technical support', 'establishment of honey bee processing units' and 'establishment of honey bee breeding stations' were some of the suggestions given by both type of respondents that may be looked into. Interestingly, a number of farmers and group of beekeepers opined to have furthermore episodes on *Mann Ki Baat* on honey. This suggestion was governed with their notion that *Mann Ki Baat* activates the development agencies also and in turn frequency and quality of extension services are improved significantly (Table 7).

*Conclusion and policy implications:* In a country like India rich in copious diversified natural resources, unlike agricultural and livestock-based commodities, beekeeping is considered as the most emerging and well proven agricultural enterprise with intrinsic health benefits that generate multiple market opportunities creating a wide employment base and income generation facilities. From this study it has been concluded that as a result of cumulative efforts made by transfer of technology agencies, state and central institutions and *Mann Ki Baat*, popularisation of beekeeping technology at individual and group scale of farmers was strengthened. It has helped in improving comfortable income from all the possible sources, which established the fact that beekeeping has a strong potential of fetching a profitable income at both the levels. In fact, the KVKs have significantly contributed for scaling-up the apiary technologies among individual and groups beekeepers thus strengthening the livelihoods. Currently, the beekeeping enterprise is male dominated, for which focus maybe given on strengthening the skill of women entrepreneurs in beekeeping. Results also indicated that beekeeping groups are good at marketing and branding their products as evident by optimum use of online and

Table 6 Constraints faced in beekeeping enterprises-Individual vs. Group

Constraints		Individual (n1=40)		Group (n2=40)	
		Freq.	%	Freq.	%
Technical constraint	Insecticide and pesticide application by neighbour farmer results in high pesticide residue	9	22.50	6	15.00
	Low technical guidance and training	17	42.50	8	20.00
	Lack of information on pest & disease management in honeybees	14	35.00	12	30.00
	Management of flora in off-season and dearth period			7	17.50
	Lack of accessibility to beekeeping equipment			7	17.50
Managerial constraint	Migration of honeybees	27	67.50	9	22.50
	High transportation cost migrating flora finding	13	32.50	14	35.00
	Non-availability of skilled labour			17	42.50
Marketing constraint	Unorganized markets	19	47.50	13	32.50
	Low market price	13	32.50	8	20.00
	Less scope for direct marketing	5	12.50	5	12.50
	Monopoly of middlemen	3	7.50	3	7.50
	Non-availability of proper branding & packaging facilities			11	27.50
Processing constraint	Lack of processing unit at approachable distances	23	57.50	13	32.50
	Non-availability of packaging material	13	32.50	22	55.00
	Lack of knowledge about honey processing	4	10.00	5	12.50
Financial constraint	No or low financial support by govt	8	20.00	6	15.00
	High cost of migration of colonies	32	80.00	34	85.00
Quality constraint	Pesticide residual problem	30	75.00	10	25.00
	Low level of knowledge on honey quality parameters	4	10.00	5	12.50
	No quality testing labs			3	7.50
	Crystallization of honey	5	12.50	9	22.50
	Difficult to maintain moisture percentage as per FSSAI standard			6	15.00
	Lack of proper honey storage facility			7	17.50

supermarkets to sale their produce, whereas individuals sale mostly to local markets. The marketing sector around beekeeping has been sensitized with *Mann Ki Baat* episode.

Though apiary farming in India is at a nascent stage, but the institutional, policy and technical supports has

created a conducive condition to maximize the potential of the beekeeping sector through establishment of resource conservation oriented sustainable business enterprises, and recent mass scale awareness created by *Mann Ki Baat* episode. However, little more policy interventions

Table 7 Suggestions by the beneficiaries for improvement of the beekeeping enterprises

Suggestion	Individual (n1=40)		Group (n2=40)	
	Freq. (No.)	Percentage (%)	Freq. (No.)	Percentage (%)
Establishment of organized markets for honey and honeybee by products*	15	37.50	5	12.50
Financial support for establishment of bee keeping enterprise*	6	15.00	3	7.50
Technical support through training, visits and demonstrations on scientific beekeeping*	13	32.50	10	25.00
Establishments of honey processing units at district level*	6	15.00	9	22.50
Establishment of honey bee breeding stations*			13	32.50

\*Concerned agencies may have also been sensitized with Mann Ki Baat, therefore their more active cooperation can further strengthen the beekeepers.



may further organise the marketing system on honeybee to maximize the profit of farmers. This can be pursued for example with encouraging more number of start-ups. Besides, in order to enhance the export opportunities in the sector, proper regulations can be implemented by the government to maintain the quality standards of honey and honey-based products through establishment of HACCP certified processing plants and storage facility. However, efforts may also be taken to further strengthen the linkages of honey producers with research and technical institutions for technological support for honey production and its associated dynamics.

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