Bee Keeping Enterprise Among Rural Men and Women in Moga District

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ABSTRACT
A survey was conducted to evaluate the adoption trend of bee keeping as a subsidiary enterprise among the rural men and women in the district. The period taken in consideration was from year 2005 to 2014. All the beekeepers practiced bee keeping with *Apis mellifera* and before starting the enterprise the beekeepers took a formal training from Krishi Vigyan Kendra (KVK). Availability of flora, government policies and quick transfer of technology were important factors affecting the adoption in the area. The productivity of the boxes varied significantly depending upon the practice followed i.e., stationary or migratory. The average number of boxes owned by an individual outnumbered the number of subsidised boxes. A cluster of beekeepers was existing in the Baghapurana block and another upcoming cluster was located in Moga 1. The farmers were satisfied and wanted to start the enterprise due to quick returns, low investment and less time requirement. Rural women are showing an increased interest in getting the training and adopting the enterprise for enhancing the household income.

Key Words: Bee keeping, Moga, Productivity, Survey, Bee keepers Cluster.

INTRODUCTION
Bee keeping is an important subsidiary enterprise which has an integral role in agriculture providing economic, nutritional and ecological balance to the rural India. In the past honey production was mainly dependent on four indigenous species viz. *Apis cerena, Apis dorsata, Apis florea* and *Trigona sp*. The attack of Thai Sac Brood Virus disease (TSBVD) in 1992 first identified in Karnataka lead to the eradication of *Apis cerena*, opening the other options. It was then that Punjab Agricultural University (PAU) scientist introduced an improved imported crossbreed honey bee *Apis mellifera* in Punjab. Slowly these species replaced all other due to better honey production and immunity against TSBVD.

The present study was done with an objective to study the trend of beekeeping in the district, to evaluate the trend of women participation in the enterprise, to identify the bee keepers cluster and analyse the productivity of the honey bee hive.

MATERIALS AND METHODS
The study was conducted for a period from April 2005-March 2014 in the district Moga. The district has 323 villages, divided into five blocks namely Moga1 (M1), Moga2 (M2), Nihal Singh Wala (NSW), Baghapurana (BG) and Kot Ise Khan (KIK) The beekeepers data were obtained from both the primary and secondary sources. The primary information was collected through household survey, which verified the information collected from group meetings and discussions. The secondary information was collected from other departments like Department of Horticulture, Department of Agriculture, bee breeders and various other organisations. A survey questionnaire was prepared reviewing relevant references and personal communications with apiculturists.

Data analysis and Productivity evaluation: The collected data were managed and analysed using computer software, MS Excel.

Productivity (kg/box) = \( \frac{\text{Total Honey Produced (kg)}}{\text{Total Number of boxes from which honey produced}} \times 100 \)

RESULTS AND DISCUSSION
The data collected from the survey showed high population of bee keepers in Baghapurana
and Moga 1 followed by Kot Ise Khan, Nihal Singh Wala and Moga 2. Minimum colonies (175) were reported in Moga 2 as it falls under urban and peri-urban region. It was reported that area under cultivation in Moga 1 is minimum (28,588 ha.) in comparison to other four blocks. Baghapurana tops the list with 4,91,345 ha. of cultivated area, followed by Kot Ise Khan (48,230.5 ha.), Nihal Singh Wala (33,822 ha.) and Moga 1 (32,898 ha.). Baghapurana reported highest number of beekeepers (56) followed by Moga 1 (25), Kot Ise Khan (15) and Nihal Singh Wala (13). It was found that number of beekeepers and number of boxes had a direct correlation (Table 1). As the number of beekeepers increased the number of boxes also increased. The average number of boxes owned per individual were 61 for Baghapurana, 56 for Nihal Singh Wala, 41 for Kot Ise Khan, 68 for Moga 1 and 58 for Moga 2.

The block wise population and location of beekeepers in different villages is shown in Fig 1-4. Maximum number of beekeepers was reported in Malke (18), Samalsar (12) and Daudhar Garbi (11). The first two villages fall in Baghapurana and latter in Moga 1 block.

Beekeepers with the highest number of boxes/individual (61) were reported in Baghapurana forming a cluster. The number of beekeepers in Moga 1 are increasing rapidly and is predicted to be another upcoming cluster of beekeepers. Clusters grow faster in the presence of strong related neighbouring clusters and the increase in number of beekeepers would increase the bee colonies finally increasing the honey production, processing and packaging. The establishment of any industry depends upon the availability of raw material. With the increase in honey production in the area, it has scope for establishment of honey processing and packaging plant. A strong cluster of beekeepers exists in Baghapurana, encouraging the farmers to enhance the growth opportunities with adoption of the beekeeping enterprise, other industries and clusters. The increase in beekeepers’ population could be mainly due to three factors namely flora, quick transfer of technology and government policies.

Flora

Flora is the key for the honey production and its products (royal jelly, propolis etc.). Its availability around the year is very important. There is a wide variation in the availability of desirable flora in five blocks due to different soil types. Soil type varies from sandy in Kot Ise Khan to medium and heavy soils in Baghapurana and Nihal Singh Wala. An area having a cropping pattern that includes oilseeds (mustard, sunflower), pear, cotton, arhar, eucalyptus, barseem in rotation results in higher honey production. Horticulture crops cover an area of 414 ha. in Moga with a production of 16,112 MT. Considering the fruit and vegetable production in these blocks it is highest in Kot Ise Khan (44,273 MT and 2,874 MT) followed by Baghapurana (3,290 MT and 1,079 MT) and Nihal Singh Wala (3,267 MT and 713 MT). Flora is an important factor which influences the productivity of the box.

Farmers normally would follow (i) Migratory or (ii) Stationary bee keeping practice. In case of stationary beekeeping the boxes are kept in the fields at a fixed location restricting their movement, while in the other case the boxes are mobile and are moved from one location to another depending upon the availability of flora and conducive weather conditions.

During the lean season when the flora is not available in abundance the bee farmers migrate the boxes to the adjoining areas of Himachal Pradesh, Jammu Kashmir and Rajasthan. The number of boxes owned by an individual affects the type of practice. It is observed that the farmers

<table>
<thead>
<tr>
<th>Block</th>
<th>Number of Bee Keepers</th>
<th>Total Number of Boxes</th>
<th>Number of Boxes/Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagha Purana</td>
<td>56</td>
<td>3,400</td>
<td>61</td>
</tr>
<tr>
<td>Nihal Singh Wala</td>
<td>13</td>
<td>730</td>
<td>56</td>
</tr>
<tr>
<td>Kot Ise Khan</td>
<td>15</td>
<td>619</td>
<td>41</td>
</tr>
<tr>
<td>Moga 1</td>
<td>25</td>
<td>1,710</td>
<td>68</td>
</tr>
<tr>
<td>Moga 2</td>
<td>3</td>
<td>175</td>
<td>58</td>
</tr>
</tbody>
</table>

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having higher number of boxes per individual practice migratory bee keeping for sustainability and economic benefit in comparison to farmers with small number of boxes (Table 1). Fig (1) shows Baghapurana reported maximum number of boxes (5,700) and the percentage of beekeepers practicing migration is also higher, similar trend was recorded for Moga 1. In Moga 2 there are no farmers practicing the stationary bee keeping.

Comparing the productivity of the boxes in migration, highest productivity (22.05 kg/box) was reported for Moga 1 followed by Kot Ise Khan (19.72 kg/box), Nihal Singh Wala (18.8 kg/box), Baghapurana (17.3 kg/box) and Moga2 (14.72 kg/box) (Fig 2) while the productivity for beekeepers practicing stationary beekeeping was 5.81 for Moga 1, 13.3 for Kot Ise Khan, 10.0 for Nihal Singh Wala and 12.5 kg/box for Baghapurana. The average productivity of stationary boxes to migratory boxes varied significantly from 8.33-18.43 kg/box. The results were in agreement with those reported by Bhusall and Thappa (2005). Stationary boxes reported a significant difference in productivity varying from 5.8 kg/box to 12.5 kg/box. It could be due to various reasons like bee keeping practice (single box/supers), pest infestation, lack of training and book keeping.

There is a high potential of increasing the honey yield in stationary boxes.

(ii) Quick transfer of technology

The geographical location confirms Moga1 proximity to Ludhiana and Baghapurana’s to Faridkot. This allows them to have access to neighbouring KVK’s. These institutes provide formal technical knowhow to start the enterprise. It was found that 90 per cent of bee keepers had acquired formal training in bee keeping from Govt recognised institution. The trend could be due to the present subsidy policy of government. For an individual to avail subsidy a bee keeping training is mandatory. The survey revealed majority of bee keepers took the training from their native district (Moga) and very few took it from the neighbouring districts Ludhiana, Bathinda and Faridkot (Fig 3).

The data show that the number of women participants have increased from 1 (in 2009) to 26 (in 2014) which sums to an increase from 5 per cent (2009) to 17 per cent (2014) of women. This change in trend could be due to various factors like education, previous involvement of the family in bee keeping and subsidy. It was seen that 67 per cent of the participants fell in the age
group of 20-40 years, 3 per cent fell in the age group of under 20 and the remaining 30 per cent fell in the age group of 40-60 years. The 90 per cent of women were educated at least till the grade 10th and had shown an interest in engaging themselves in earning extra income through subsidiary occupation.

Analysing the adoption trend in the Moga district during the last. Fig 4 shows the adoption was at a steady rate (under 5 from the year 1995-2005). The trend picked up from 2007 onwards which could be due to establishment of a bee keeping unit at the KVK farm and the availability of an expert to guide the individuals for quick adoption, bringing awareness among the rural youth and farmers in regards to the economic and environmental benefits. The economic benefit from honey has increased by 100 per cent during the last one decade. In the year 2005 the whole sale rate of honey was Rs 65/kg in comparison to Rs 130/kg in 2014. In the year 2013-14, training programs sponsored by the National Horticulture Mission (NHM) were hosted at KVK and other government departments to train more people in bee keeping and boost the self-employment avenues. Bee keeping trainings (vocational and short duration) were organised, more people were trained; their exposure and horizons widened and quick adoption took place.

(iii) Government Policies

Government has introduced various schemes under NHM (pollination support through bee-keeping) to encourage the landless/marginal/small scale farmers to adopt it as subsidiary enterprise. A number subsidies are been given away under various schemes which includes subsidy on (i) bee colonies, (ii) bee hives, (iii) equipments and (iv) production of bee colonies by bee breeders. To avail the above subsidies (i, ii, iii) it is required that the applicant must have completed a formal training in basic bee keeping course (from SAU, KVK or Department of Agriculture) and its certificate should be furnished along with the completed form available from Department of Horticulture. To claim subsidy bee colonies and the hives should be purchased from the registered bee breeders. The Government has given license to thirty registered bee breeders in the state, who are certified to commercially sell the bee keeping equipment and related material. From the list of thirty breeders, thirteen are located in Moga and adjoining districts (Bathinda, Faridkot and Ludhiana). Amongst them three are located in Moga; two in Baghapurana and one in Mogal block. Presence of bee-breeders confirms easy availability of the bee keeping equipment (smoker, extraction unit, knives) bee keeping boxes, comb, protection gear, and is an important factor for cluster formation. To avail the subsidy the purchase bills should be attached along with the completed forms. Individual entitlement for subsidy is 50 boxes, considering the entire district an average of 57 boxes per individual was calculated, which out numbers the subsidised boxes (50 boxes/ individual). This implies that even if the farmer is getting subsidy on 50 boxes they are increasing the number of boxes (>50). The economic benefit (income enhancement) with low investment could be the major driving force for adoption.

CONCLUSION

Beekeeping is one of the most respected and satisfied subsidiary profession which can generate significant secondary income to beekeepers. The location of Moga district is appropriate for the bee keeping and number of bee keepers has increased which could be due to cumulative effect of low investment, government policies, less labour intensive and expert guidance in close vicinity. An upcoming trend of women participation in adoption of bee keeping as an enterprise has come up and the women belonging to reserved category needs to be encouraged for enterprise adoption. It is significant that an individual owns an average of 57 boxes in the district which out numbers the subsidised boxes (50). This trend shows wide popularisation and acceptance of the enterprise among the farmers. The average productivity of the stationary box is significantly low which can be improved by incorporating diversification in cropping pattern and timely management of hives during the lean period. High population (clusters) of bee keepers were found close to the location of bee breeders. The breeders play an important role in adoption of the enterprise so the government should try to introduce policy
allowing at least one bee breeder in each block. Kot Ise Khan block has a favourable conditions for bee keeping, recording the highest average productivity. Special training program or camps should be organised to encourage farmers in the area for its adoption. Government has taken an initiative to widen the earning horizons of small and marginal farmer which are bearing fruits as the adoption is increasing.

REFERENCES

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