Income Enhancement and Employment Generation Through Apiculture Enterprise for Rural Youth in Punjab

Gurdeep Singh[1], Devinder Tiwari[2] and S.P. Yadav[3]

1. Asstt. Prof. (Ext. Edu.), KVK Mansa, PAU Ludhiana, 2. Asstt. Prof. (Ext. Edu.), KVK Samrala, PAU Ludhiana,
3. District Extension Specialist (Entomology) KVK Yamnanagar, CCSHAU, Hisar.
Corresponding author e-mail: gurdeepsingh@pau.edu.

Paper Received on October11, 2015, Accepted on December 04, 2015 and Published Online on December 15, 2015

ABSTRACT

The study was conducted during the year 2013-14 in Mansa and Ludhiana district of Punjab State. Objective of the study was to conduct comparative socio-economic analysis of the migratory and stationary apiary units. The average size of migratory apiary units was found to be 65 hives and in case of stationary apiary units on an average there were 12 hives. A total of 60 respondents were selected for the purpose of the study. The analysis of the personal characteristics of the respondents revealed that migratory apiary units were adopted by unemployed rural youth from all the sections of the rural society. While, stationary apiary units were mainly practised as subsidiary occupation by small and marginal category farmers. The average honey production from migratory apiary units was 46 kg hive^{-1} it was only 17 kg hive^{-1} for stationary apiary units. The cost-benefit analysis of both migratory and apiary units were found to be 2.77 and 1.91 and relative income was Rs. 2.61 kg^{-1} and Rs. 1.63 kg^{-1}, respectively.

***Key words**: Impact assessment; Apiculture Enterprise; Migratory apiary units;*

India is agriculture based economy with majority of population living in rural areas and has farming as major occupation. Farmers are facing many challenges in the current scenario. Land holding are getting fragmented and emerging small holding are is becoming unviable. Further, increasing input cost and low yields are resulting in poor income to the farmers. Other aspect which demands immediate attention is the unemployment among rural youth. Low formal educational qualifications and lack of employment opportunities in industry or service sectors is resulting in large scale unemployment in rural areas. Therefore, need is to promote small scale enterprises among farmers for enhancing their incomes and generating employment among rural youth. Most of the enterprises viz; dairy, poultry, mushroom farming and apiculture if adopted on scientific lines can not only provide additional incomes to the farming families but can generate substantial employment opportunities. Beekeeping is becoming a very fascinating occupation day by day. It can be practiced by all sections of the society it may be by men, women, grown up children and even by physically handicapped and old persons (*Monga and Manocha, 2011*). The economic returns from this venture are quite high then the investment required. Beekeeping does not bring any pressure on agriculture land and it produces honey, beeswax, pollen, propolis from the flowers which otherwise dry up in nature and go waste. If the favourable conditions prevail the level of beekeeping can be increased to semi-commercial or commercial level.

Punjab is going to become the largest honey producing state having 33000 beekeepers. The average honey yield in Punjab is 35 kg per bee colony per year, with a maximum 80,000 bees. The average national yield is 15.32 kg per colony per year and the average international yield 28. Thus, every section of the rural area can substantially supplement their income by adopting apiculture enterprise which has not been yet exploited to the desired extent. In the Punjab state the apiculture is being adopted by the farmers in two ways one at small scale i.e. Stationary units having 10-20 hives per person and another at the commercial level i.e. migratory units having 50-100 hives per person. In order to increase the adoption rate of this enterprise and to

compare stationary v/s migratory units an economic evaluation was made in the present study.

METHODOLOGY

The study was conducted in two districts of the Punjab State i.e. Mansa and Ludhiana during the year 2013-14. An inventory of bee keepers who received trainings from KVKs on Apiculture was prepared and a random selection of 60 respondents was made under two categories i.e. Migratory units (having 50-100 hives) and Stationary units (10-20 hives). The sample size was further equally distributed over the two categories as well as the selected districts. An interview schedule was developed for collection of data regarding socio-economic status of bee keepers. The data were collected and economic analysis was done for comparison. The cost and benefit sides were separately computed and the cost side divided the benefit side to compute the B-C ratio. The cost items were grouped into two categories, i.e., i) non-recurring costs and ii) recurring costs. Total non-recurring cost includes cost on hives, bee hives, honey extractor, bee keeping kit and other miscellaneous items. The total recurring included, migration charges, labour cost, empty hive cost, other miscellaneous costs including depreciation as well as interest on non-recurring cost. Benefits from apiary units were due to sale of honey, was and additional hives. The benefit-cost ratio was computed by using the following formula:

$$\text{B: C ratio} = \frac{\text{Total returns}}{\text{Total recurring cost}}$$

RESULTS AND DISCUSSION

The background information of the respondents was collected to determine the extent of their role and contribution in starting and continuing the enterprise of beekeeping. The socio-personal profile of the sample groups is shown in Table 1.

Socio-personal profile of beekeepers: The data given in Table 1 showed the socio-personal profile of the respondents with respect to age, occupation, level of education, caste, land holdings etc. The findings highlighted that under migratory apiary units as well as under stationary apiary units majority of the respondents were falling in age group of 31-40 years (56.7 and 60.00%, respectively). As far as occupational status is concerned, majority (60.00%) were unemployed rural youth in case of migratory apiary units while in case of stationary apiary unit's majority (76.7 %) were having agriculture as primary occupation. It is evident that majority (40.00 and 53.3 %) of the respondents were having education qualification upto matriculation in both the categories. *Mujuni et al (2012*) revealed that beekeepers participated in study had attained formal education, with the highest percentage (42.5) having attained secondary education. More than half (56.67%) of the respondents holding migratory apiary units were from general category while about one third (36.67%) were belonging to schedule caste category. In case of respondents holding stationary apiary unit's majority (76.67%) were from general category. Finding further revealed that respondents having migratory apiary units were mainly small farmers (56.67%) followed by marginal category farmer (20.00%) and landless labourers (13.33). While proportion respondents of having stationary apiary units in small farmer, marginal farmers and landless category were 60.00 per cent, 16.67 per cent and 13.33 per cent, respectively.

Table 1. Socio-personal characteristic of the respondents (n_1= 30) (n_2=30)

Personal Characteristics		Migratory Apiary Units(n_1)		Stationary Apiary Units (n_2)	
Parameters	Variables	No.	%	No.	%
Age	20 - 30	06	20.0	04	13.3
	31-40	17	56.7	18	60.0
	41-60	06	20.0	07	23.3
	>60	01	3.3	01	3.3
Occupational status	Agriculture	11	36.7	23	76.7
	Other oc	01	3.3	02	6.7
	Unemployed	18	60.0	05	16.7
Level of education	No education	01	3.3	01	3.3
	Middle	07	23.3	06	20.0
	Matriculation	12	40.0	16	53.3
	Sr. Secondary	09	30.0	07	23.3
	Graduation	01	3.3	00	0.0
Caste	SC	11	36.67	06	20.0
	BC	02	6.67	01	3.33
	General	17	56.67	23	76.67
Land holding (in ha)	Landless	04	13.33	04	13.33
	Marginal (<1.0)	06	20.00	05	16.67
	Small (1.0-2.0)	17	56.67	18	60.00
	Medium (2.0-10.0)	03	10.00	03	10.00
	Large (>10.0ha)	00	0.00	00	0.00
Marital Status	Married	16	53.3	18	60.0
	Unmarried	14	46.7	12	40.0

Table 2. Economic analysis of migratory apiary units (65 hives) during Year 2014-15 (n_1=30)

Non-recurring costs	Cost (Rs.)
Cost of 65 hives @ Rs.1100 hive^{-1}	71500
Bee hives @ 8 frame bees @ Rs 250 hive^{-1}	130000
Honey Extractor @ Rs. 6500	6500
Bee keeping kit (Bee veil, hive tool, hand gloves) @ 190 kit^{-1}	190
Drip tray (Rs. 850 tray^{-1}), wax sheets (Rs. 24 sheet^{-1}), nylon net (Rs. 57 m^{-2}) and other miscellaneous items	5400
A. Total Non-recurring cost	213590
Recurring Cost	
Interest on Non-recurring cost @12.75%	27232
Depreciation cost @ 10 %	21359
Migration Charges/year (Rs)	18500
Labour charges @ Rs. 6000/month^{-1}	72000
Empty hives (12) @ Rs.1100 hive^{-1}	13200
Miscellaneous (Feed, sulphur dust, formic acid etc.)	7250
B. Total Recurring cost	159541
Economic returns	
Production of honey 2990 kg (@46 kg hive^{-1}) sold at Rs. 139.5 kg^{-1})	417105
Sale of bee wax(@ 1.2 kg hive-1) 78 kg sold at Rs. 150 kg^{-1}	11700
Sale of 52 honey bee frames @ 250 frame^{-1}	13000
C. Total Returns	441805
Net Return (C-B)	282264
BC Ratio (C/B)	2.77

Table 3: Economic analysis of stationary apiary units during Year 2014-15 (n_2=30)

Non-recurring costs	Cost (Rs.)
Cost of hives 12 @ Rs.1100 hive^{-1}	13200
Bee hives @ 8 frame bees @ Rs 250 hive^{-1}	24000
Honey Extractor @ Rs. 2500	2500
Bee keeping kit (Bee veil, hive tool, hand gloves) @190 hive^{-1}	190
Drip trays, brush, nylon net and other items	4200
A. Total Non-recurring cost	44090
Recurring Cost	
Interest on Non-recurring cost @12.75%	5621
Depreciation cost @ 10 %	4409
Migration Charges/year (Rs)	-
Labour charges @ Rs. 6000/month^{-1}	-
Empty hives (3) @ Rs.1100 hive^{-1}	3300
Miscellaneous (wax sheets, feed, sulphur dust, formic acid etc.)	4500
B. Total Recurring cost	17830
Economic returns	
Production of honey 204 kg (@17 kg hive^{-1}) sold at Rs.142.20 kg^{-1}	29000
Bee wax bee wax 7.5kg (@ 1.0 kg hive^{-1}) sold at Rs. 150 kg^{-1}	1125
Sale of 16 honey bee frames @ 250 frame-1	4000
C. Total Returns	34125
Net Return (C-B)	16295
BC Ratio (C/B)	1.91

Impact Assessment of Apiculture Enterprise: Economic analysis of migratory apiary units: The economic analysis of 30 selected migratory bee keeping units was presented in Table 2. The data revealed that on an average there were 65 bee-keeping colonies per respondent for which total average recurring cost was found to be Rs. 2, 13,590. Average Total recurring cost which includes cost for interest on non-recurring cost, depreciation, annual migration charges, annual labour charges and other miscellaneous charges was found to be 1, 59,541. The findings further show that on an average 46 kg of honey was produced from a single hive and total average honey production from single migratory unit was found to be 2,990 kg. From the sale of this honey @Rs. 139.5/kg the single respondent has earned average Rs. 4, 17,105. In addition to honey there was average ten per cent increase in honey bees population (52 hives) worth Rs. 13000 and an on an average 1.2 per cent increase in wax production (78 kg) from which additional income from sale of wax i.e. Rs. 11700. A net average return from a migratory apiary unit was found to be 282264. The benefit cost analysis of migratory units was also worked out.

The findings show that the benefits were more than recurring cost involved as the benefit cost ratio found to be 2.77. *Qaiser et al (2013)* has reported cost benefit ratio of 1.44 in with 170 colonies in Pakistan.

Economic analysis of Stationary apiary units: The findings given in Table 3 shows the economic analysis of 30 selected stationary apiary units in which on average single respondents was holding 12 hives average total non- recurring cost was found to be Rs 44090 and average total recurring cost was found to be Rs. 17830. On an average a total of 204 kg honey was produced (@17 kg hive^{-1}. The benefit cost ration for stationary apiary units was found to be 1.91 which shows substantial additional income from apiary as subsidiary occupation.

Comparative Economics of migratory and stationary units in terms of per unit cost: A further analysis was made to calculate relative income per unit of honey production in both types of apiary units. The cost of honey production was Rs. 53.35 kg^{-1} in migratory apiary units and Rs. 87.40 kg^{-1} in case of stationary units with a difference of Rs. 34.05. The produce price in migratory and stationary units was Rs. 139.5 and Rs. 142.2 kg^{-1}, respectively.

Table 4. Relative Economics of honey production under migratory and stationary apiary units (n_1= 30) (n_2=30)

Parameters	Migratory Apiary Units (n_1)	Stationary Apiary Units (n_2)	Difference
Cost on honey production kg^{-1}	53.35	87.40	34.05
Producer Price kg^{-1}	139.5	142.2	2.7
Net income kg^{-1}	86.15	54.80	-31.35
Relative income kg^{-1}	2.61	1.63	-0.98

The difference in net income per unit cost was Rs. 31.25 kg^{-1}. Relative income from unit honey was 2.61 kg^{-1} in migratory apiary units and 1.63 kg^{-1} in stationary units with difference of 0.98 kg^{-1} which shows higher economics returns from migratory apiary units. *Saner G et al (2003)* reported relative income of € 1.17 from e”100 colonies.

CONCLUSION

The impact assessment of Apiculture enterprise revealed that migratory apiary units were established by the unemployed rural youth while stationary units mainly small and marginal farmers. The benefit-cost analysis of beekeeping was done to establish the returns from this enterprise. This indicated that beekeepers were substantial returns, which was a good source of income especially for the rural people. Migratory units had edge over stationary units as far economics is concerned. The efforts should be made to promote apiary on large scale in Punjab by KVKs, State Deptt. of Hort & other agencies involved in honey bee rearing jointly. Creating awareness regarding apiary, developing marketing facilities, trainings, making arrangement for availability of flora by road side plantation and easy credit facilities for rural people can have a positive impact on income enhancement and employment generation in rural areas.

REFERENCES

Monga, K and Manocha, A (2011). Adoption and constraints of beekeeping in district Panchkula (Haryana). *Livestock Res. for Rural Dev.. Volume **23**, Article #103. Retrieved October 6, 2013, from ttp://www.lrrd.org/lrrd23/5/mong23103.htm.*

Mujuni, A, Natukunda, K and Kugonza, D. R. (2012). Factors affecting the adoption of beekeeping and associated technologies in Bushenyi district, Western Uganda. *Livestock Res. for Rural Dev. Volume **24**. Retrieved October 6, 2013, from http://www.lrrd.org/lrrd24/8/muju24133.htm*

Singh K, Peshin, R and Saini, S. K. (2010). Evaluation of agricultural vocational training programmes conducted by Krishi Vigyan Kendras in Indian Punjab. *J. Agri. and Rural Dev. in Tropics and Subtropics.* **111** : 65-77.

Saner G., Engindeniz Tolon Cukur S.and B.F. (2003). The economic analysis of beekeeping enterprise in sustainable development: A case study of Turkey : *Apiacta* **4**. Available: http://www.apimondiafoundation.org/cgi-in/index.cgi?sid=&zone=download&action =download_file&file_id=303&categ_ id=118.

Tabinda Qaiser, Ayesha Tahir, Sajida Taj and Murad Ali (2013). Benefit-cost analysis of apiculture enterprise: A case study in district Chakwal, Pakistan. *Pakistan J. Agric. Res.***26** (4). A295-298. Available http://www.pjar.org.pk/Issues/Vol26_2013N0 _ 4/J26_4_295.pdf (July 2 2015).

• • • • •