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The current situation on the knowledge of beekeepers about general aspects of beekeeping in Vaishali district of North Bihar

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Abstract- Knowledge is the first stage in the innovation-decision process (Rogers, 1983, 1995, 2003). The research study provides valuable information about the knowledge level and adoption level of the respondent beekeepers with respect to the recommended beekeeping practices. The study will also help to evaluate how much knowledge about beekeeping is put into practice by the beekeepers. The beekeepers knowledge about general beekeeping aspects was high as more than 85 per cent beekeepers had knowledge about worker bee, Italian honey bees, collection of pollen by worker bees, drone bees are fatter than worker bees, Italian bees recommended for domestication, identification of queen bee, guarding of boxes by worker bees, importance of water for bees, sugar present in honey, season for increasing of boxes, swarming of bees during April, drone bee do not have sting and Indian honey bees. It is concluded that 99.52% beekeepers of all the blocks had knowledge about packing of boxes during winter and it was followed by 99.04% respondent apiculturists having knowledge about benefits of winter packing. Further, the minimum knowledge about placement of boxes during winter was possessed by 7.61% respondent beekeepers of all the blocks.

Key words: Knowledge, beekeepers, general aspects, beekeeping, North Bihar

INTRODUCTION

The apiculture is well practiced in Vaishali, Muzaffarpur, Samastipur, Champaran, Madhepura, Katihar and Begusarai.[1] The litchi honey of Vaishali has high domestic and foreign requirements. The Italian honey per honey bee yield is greater than that of other honey bee types.

The raw material for honey production, including litchi, muzzle, vine etc is produced in nature. Beekeeping does not need additional property. It doesn't overlap with agriculture. The value of the present work is taken as a vital source of jobs.[2] The importance of the work currently underway is based in two locations of Vaishali, the Katar mala (Katarmala) area, under the block Goraul and Rohna (Fatehpur Rohna) under the block Vaishali. The apiculture history in Bihar is very ancient and preserved in earthen pots with Apis cerana, however, apiculture in the 1980s plunged into a trafficking disorder due to TSBV disease (Thai sac brood virus). The All India Organized Research Project on the honey bee, DRPCAU, Bihar and the centre of Pusa introduced Apis mellifera bees in Bihar from 1987 to 1988 with 15 colonies. In the numerous agro-climate conditions prevailing in this state, the bees took a restful position.

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The Vaishali district in Bihar has rich flora and ecological requirements for apiculture. The prevailing weather conditions in the country render beekeeping more desirable with suitable temperature (25-35°C) throughout the year except May-June and December-January. The litchi honey has improved flavour, colour and taste than honey produced on different plants. The honey flow season in this area is three to four (Litchi Mustard, Combine Mung Honey, Till, Jamun, Drumstick). The Vaishali has more than four litchi variants which extend from 20-25 days to one month in respective flowering periods. There Apis mellifera is resistant from honeybee disease and predators like waxing moths, guides, mites and ants. The beekeepers also practice chemicals to control the colony damage by natural predators to other honeybee species in comparison to this species culture.

Knowledge is the first stage in the innovation-decision process.[3-6] The research study provides valuable information about the knowledge level and adoption level of the respondent beekeepers with respect to the recommended beekeeping practices. The study will also help to evaluate how much knowledge about beekeeping is put into practice by the beekeepers. The study estimates the economics of beekeeping enterprise and also finds out training needs and constraints faced by the beekeepers. The study identifies the area in less knowledge possessed by the beekeepers and also identifies the how much more training needs about beekeeping practices. This empirical study may provide feedback for Department of Agriculture, Agriculture Universities and other agencies for paying more attention in the development of beekeeping enterprise in the state of Bihar based on the study results.

MATERIALS & METHODS

A research schedules was constructed for data collection. The research instrument consisted of the following parts:

(i) Socio-personal attributes and communication

This part of the research schedule pertained to the profile of the beekeepers such as age, education, land holding, main occupation, social participation, family size, experience in beekeeping, training exposure, number of beehives, extension contact and sources of information.

(ii) Knowledge test

Knowledge test of Singh (2005)[7] was modified as per the requirements. The set of knowledge questions of beekeeping practices deleted and added were bused on the advice of the advisory committee members from the field of content area (Entomology). The knowledge tests comprised of 80 items which included general aspects, management of boxes, bee biology, production of honey, bee flora, bee enemies and bee breeding aspects, respectively.[8-14] The test contained open-ended questions and a few alternative response items. Equal weightage scheme was applied. Therefore each test question was of one mark.

RESULTS & DISCUSSION

Knowledge of Beekeepers about general aspects of Beekeeping

The data presented in Table 1 reveals that knowledge of beekeepers about general aspects of beekeeping. The beekeepers knowledge about general beekeeping aspects was high as more than 85 per cent beekeepers had knowledge about worker bee, Italian honey bees, collection of pollen by worker bees, drone bees are fatter than worker bees, Italian bees recommended for domestication, identification of queen bee, guarding of boxes by worker bees, importance of water for bees, sugar present in honey, season for increasing of boxes, swarming of bees during April, drone bee do not have sting and Indian honey bees.[15,16]

The respondent beekeepers knowledge about body parts of honey bees and different types of honey bees was low, as only about 20 and 15 percent of the beekeepers, respectively had knowledge about these aspects. The respondent apiculturists had moderate knowledge about collection of honey is only about 43 percent respondent beekeepers had knowledge about it.

The knowledge of the respondent apiculturists in various aspects of management of boxes has been presented in Table 1.

It is evident from the Table that 100% beekeepers of Mahnar block had knowledge about sugar syrup feeding of boxes, packing of boxes during winter, best season for bees and hive tool. Further analysis of data indicates that 9.30 percent beekeepers of Mahnar block had minimum knowledge about placement of boxes during winter, while all respondents of Goraul block were having high knowledge about sugar syrup feeding to boxes, time of giving feed to colonics, checking of boxes during summer, protection of boxes from robbing, packing of boxes during winter and benefits of winter packing, while none of the

Table 1. Knowledge of beekeepers about management of boxes (% beekeepers)

Aspects	Block wise % of beekeepers				Total % beekeepers (n=210)
	Mahua (n=43)	Goraul (n=22)	Sahdei (n=19)	Mahnar (n=126)	
Suitable time to start apiculture	90.69	95.45	100	82.53	87.14
Box to box distance	37.20	50	42.10	24.60	31.42
Row to row distance	62.79	40.90	42.10	26.19	36.36
Sugar feeding to boxes	100	100	100	96.82	98.09
Food supply in off-season	69.76	72.72	63.15	56.34	61.42
Time to giving feed to colonies	34.88	100	57.89	72.22	66.19
No. of boxes to start bee keeping	62.79	63.63	36.84	44.44	49.52
Location of boxes in winter	9.30	0.00	31.57	4.76	7.61
Checking of boxes in winter	93.02	95.45	84.21	88.88	90.00
Checking of boxes in summer	93.02	100	94.73	100	98.09
Methods to decrease no. of drones	65.11	90.90	31.57	49.20	55.23
Robbing in winter season	55.81	9.09	26.31	10.31	20.95
Protection of boxes from robbing	97.67	100	89.47	91.46	93.80
Packing of boxes in winter	100	100	94.73	100	99.52
Robbing problem	93.02	90.90	100	100	97.61
Swarming of bees	74.41	90.99	94.73	81.74	82.38
Best season for bees	100	86.36	94.73	84.12	88.57
Hive tool	100	95.45	84.21	96.03	95.71
Benefits of winter packing	97.67	100	94.73	100	99.04

beekeepers had knowledge about placement of boxes during winter Table 1).

In Sahdei block, all beekeepers had knowledge about optimum time to start beekeeping unit, sugar syrup feeding to boxes and robbing problem. Beekeepers possessed very low knowledge about robbing during rainy season (26.31%).

In Mahnar block, 100% of the respondent beekeepers had knowledge about checking of boxes during summer, packing of boxes during winter and robbing problem, whereas 4.76% beekeepers had minimum knowledge about placement of boxes during winter, respectively (Table 1).

It is concluded that 99.52% beekeepers of all the blocks had knowledge about packing of boxes during winter and it was followed by 99.04% respondent apiculturists having knowledge about benefits of winter packing. Further, the minimum knowledge about placement of boxes during winter was possessed by 7.61% respondent beekeepers of all the blocks.

The knowledge of respondent beekeepers about bee biology which includes different aspects like life cycle of honey bee, rearing of queen from eggs, rearing of drone from eggs and caring of worker bee from eggs.

Table 2- Knowledge of beekeepers about bee biology (% beekeepers)

Aspects	Block wise % of beekeepers				Total % beekeepers (n=210)
	Mahua (n=43)	Goraul (n=22)	Sahdei (n=19)	Mahnar (n=126)	
Life cycle of honeybee	13.95	22.72	42.10	2.38	10.47
Queen rearing by eggs	37.20	4.54	21.05	7.14	14.28
Drone rearing by eggs	13.95	0.00	0.00	0.00	2.85
Worker rearing by eggs	13.95	0.00	0.00	0.00	2.85

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