

BEEKEEPING: PRACTICES, OPPORTUNITIES AND CHALLENGES IN DEUPUR, PARBAT, NEPAL

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ABSTRACT

Beekeeping practice and challenges faced by beekeepers were studied in Deupur, Modi Rural Municipality, Parbat District, Gandaki Province, Nepal. A total of 10 farmers, who had beehives were selected for questionnaire survey during the study period. Of these, five households practiced modern way of beekeeping, two households practiced both modern and traditional way, and three household practiced traditional way of beekeeping. Eighty percent (80%) of respondents supported good forest coverage was the potential opportunities for bee keepers but 20% did not believe; 60% of respondents believed that the existence of a variety of vegetation determined the quality of honey but 40% did not and 20% of respondents were in a reasonable state for availability of resources like hives and storage vessels but 80% did not. The main challenges faced by the beekeepers were expensive modern hives, lack of modern equipments, market instability and pests of bees, such as, ants, moth, mite, wasp, marten and wall lizard. Market stabilization seems to play a provocative role to encourage the people in bee keeping, so, government should pay attention towards it.

Key words: Apiculture, traditional, modern, hives, *Apis*.

INTRODUCTION

A honey bee is any member of the genus *Apis*, primarily distinguished by the production and storage of honey and the construction of perennial, colonial nests from the wax. Currently, only seven species of honey bees are recognized in Nepal. Beekeeping in Nepal has been practiced from an ancient time. Nepal is the only country in the world, where honey is produced from the range of 70m to the 4,200 meters above the sea level (Thapa, 2001 and Underwood, 1990). In Nepal, modern beekeeping was initiated 15 years ago with the introduction of movable frame hives to rear *Apis cerana* (Fabricius). Beekeeping with improved and imported crossbred honeybee *Apis mellifera* (Linnaeus) culture started since 1993-1995 (Pokhrel, 2009).

Nepal has four species of indigenous honeybees *Apis laboriosa* (Smith), the Himalayan cliff bee; *Apis dorsata* (Fabricius), the giant honey bee of the sub tropics; *Apis florea* (Fabricius), dwarf honey bee and *Apis cerana* (Fabricius), the Asian hive bee, including one exotic species-the European honey bee, *Apis mellifera* (Linnaeus). The indigenous honey bees (especially the wild) are endangered because of the import of the exotic species (*Apis mellifera*) with imported diseases and unsustainable management.

Nepal is known for its traditional technology of beekeeping. The honey collectors risk their lives to pick wild honey up from the rock walls with their simple equipment. According to Akinwande *et al.* (2013) the traditional beekeeping is still found in many parts of the world using hollow log beehives and modern

beekeeping was emerged about 200 years ago.

The main problems in bee keeping are loss of flowering plants (bee flora and natural vegetation), diseases, enemies, pesticides and lack of legislation for the conservation of bees. The disease Thaisac brood, mite, wax moth, pesticide damage, deforestation and lack of technical knowledge were important problems for apiculture in the study area. The objectives of the present study were to study the beekeeping practices and difficulties faced by the farmers.

MATERIALS AND METHODS

Study area

Present study was carried in Deupur Modi Rural Municipality- 2, in Parbat district, Nepal. It is about 15 km far from Kushma, the district headquarter. Parbat district is 245 km far from Kathmandu. It extends from 28° 00' 19" to 28° 23' 59" N latitude and 83° 33' 40" E to 83° 49' 30" E longitude covering an area of 536 km².



Figure 1. Location map of study area (Modi Rural Municipality ward division).

Sampling

Sampling was done by selecting small number of beekeepers among the total population of Deupur Village. Among eight wards, ward number two was selected for the study and of 107 houses, 26 houses practiced beekeeping either in a traditional or in a modern way. Among 26 houses, 10 were selected randomly as samples. Primary data was received directly from the respondent based on the research needs during summer 2017 and structural questions were used for questionnaire. Interview was done with the local people to find out the challenges faced by beekeepers.

RESULTS

Out of 10 beekeepers in the study area, eight were male and two were female ranging in age from 30 to 70.

Most of the beekeepers (60%) had less than five years of experience, people (20%) had more than ten years' experience and the people (20%) had less than one to three years experience.

Both traditional and modern way of beekeeping had been practiced in the study area. Traditional way of beekeeping was practiced from the ancient time and people started the modern way of beekeeping from 1996. Traditional way of beekeeping was practiced either in long hive or in wall hive. Out of the total 10 household, it was found that five household practiced modern way of beekeeping and two practiced both modern and traditional way and three practiced traditional way of beekeeping.

Table 1. Modern and traditional hives.

Type of hives	Number	Percentage %
Modern hives	112	91.05
Traditional hives	11	8.94
Total	123	100

Out of 123 hives, 112 were modern hives and 11 were traditional hives. Majority of respondents (60%) had practiced beekeeping only for subsistence, 20% as additional source of income and 40% as primary economic activity. This implies that large number of the people have taken it as main occupation.

Table 2. Reason for bee keeping

Reason	Number	Percentage
As primary economic activity	4	40
As an additional source of income	2	20
Only for subsistence	6	60
Total	10	100

Opportunities for beekeeping

Most of the places in Deupur had good forest coverage and most of the people were engaged in agriculture which directly or indirectly benefits for bee keeping (Table 3). Mostly the farmers were engaged in horticulture, agronomy and floriculture.

Table 3. Opportunities for beekeeping.

Potential Opportunity	Number			Percentage %		
	Yes	No	Total	Yes	No	Total
Good forest coverage	8	2	10	80	20	100
Variety of vegetation	6	4	10	60	40	100
Modern hives easily available	2	8	10	20	80	100

Potential opportunities for beekeepers included good forest coverage (80% of respondents), existence of a variety of different species of vegetation which determines the quality of honey (60% of respondents). On the other hand, other opportunities are not in a reasonable state which included availability of resources like hives and storage vessels (20% of respondents).

Challenges faced by beekeepers

According to Tika Ram Jaisi (one of the farmer

in Deupur) the main problems faced by him during beekeeping was the insider enemies like ants, moth, mite etc and outsider enemies were Yellow throated marten, wasps, birds, mouse, wall lizards etc. Sometimes, farmers also faced the problems of weather like heavy rainfall and storm.

Damage done by insider enemies

Many enemies entered inside the bee hives which affected the production of honey as follows:

Ants: the ants entered the beehives when it smell honey. Bees can't chase away the ants at last bees left the house and fly away.

Wax moths: there were two types of wasp moths big and small but only small, moths were found in hilly region. Wasp moths attacked the beehive when they were in weak stage and ate old larva and didn't make more damage like big moth.

Challenges faced by farmers to start beekeeping

It was not easy to start any business without particular knowledge about sufficient amount of money.

Table 4. Challenges faced by farmers to start beekeeping.

Challenges	Number			Percentage %		
	Yes	No	Total	Yes	No	Total
Costly modern equipment	8	2	10	80	20	100
Expensive modern hive	7	3	10	70	30	100
Lack of knowledge about bees	6	4	10	60	40	100

Cost of modern equipment (80% of the beekeepers), expensive modern hives (70% of the beekeepers) were challenges faced by beekeepers in the study area and lack of knowledge about bees was supported by 60% of beekeepers.

DISCUSSION

In Nepal, beekeeping practices are either in traditional or in modern way. Traditional beekeeping has been practiced from ancient time in log hives or wall hives. The modern beekeeping has also been practiced for commercial production of honey in some parts. But, both of the beekeepers are facing similar types of challenges, such as diseases, avian and insect predation (Devkota, 2006).

Data on improved hive throughout the nation were deficient. Most of the people (91.5%) from Deupur, used improved hives. Similar research done by Pokhrel (2009) in Terai region of Nepal, showed the quite low number of improved hives (41.1%) than that of the Deupur. He documented the average colonies in the hills were 4.4 and in Terai 50.0 per household. Labor engaged to manage these colonies were 1.6 in hills and 2.9 in Terai. Beekeeping in Chitwan was mainly for income generation from honey selling as mentioned by Bee Keeping Section (2002). But, 40% of farmer claimed that beekeeping was primary economic activity in Deupur, Parbat.

Beekeepers adopted *A. mellifera* in Terai in improved hives, while *A. cerana* in improved (41.1%), traditional log (31.2%) and wall hives (27.6%) in hills (Pokhrel, 2009).

Despite of having many constraints in Deupur, still there were good potential opportunities for beekeeping. The existence of variety of different species of vegetation, good forest cover and most of people were engaged in agriculture practice determine the quality of honey. In such cases, beekeeping can play a major role in poverty reduction and food security enhancement in Terai as well as hilly region of Nepal. However, it needs special apicultural package of practices for the promotion of beekeeping in hills.

CONCLUSION

The potential opportunities for bee keepers in Deupur include: good forest coverage, existence of a variety of different species of vegetation which determines the quality of honey. On the other hand, opportunities in a reasonable state include :availability of resources like hives and storage vessels and market access is guaranteed by the social and physical infrastructures. There are serious challenges faced by beekeepers which include: lack of modern equipment, expensiveness of the modern beehives, lack of knowledge about bees, and market instability.

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