STUDY ON TRADITIONAL METHOD OF KEEPING INDIAN HONEY BEES IN BURMA AND KEEPING WITH MODERN METHOD.

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ABSTRACT

The Indian honey bees (Apis corana) has been kept with traditional methods for hundred of years in Burma. Various kinds of hives is being observed and utilized by local beekeepers. Attempt to rear Indian honey bees with modern methods by means of mini Langstroth type, moveable frame hives has proved to be a success. Method of hiving honey bees and potential beekeeping for Indian honey bees are also presented and discussed.
INTRODUCTION

There are four species of honey bees on earth, three of these, the giant honey bee (Pyá-gyi) _Apis dorsata_, the Indian honey bee (Thit-khaung-pya) _Apis cerana_, and the dwarf honey bee (Yin-pya) _Apis florea_ are found throughout Asia, so called Asianic honey bee. The fourth honey bee _Apis mellifera_ (European honey bee) is a domesticated bee of Europe, Africa and the New World and only recently introduced into some parts of Asia. Among the four species, only _Apis mellifera_ and _Apis cerana_ can be reared in man-made hives. According to their biological evolution the other two species _Apis dorsata_ and _Apis florea_ live on a single comb and only build their hives in the open air and cannot be domesticated in hives.

The Indian honey bee is kept throughout Asia especially in India, China and Sri Lanka. In India particularly at Punjab Agricultural University, management has improved and production to make cerana for large scale beekeeping operation. There are five million honey bee colonies in China which produces (90) thousand tonnes of honey annually. Among the colonies (1) million are _Apis cerana_. The cerana colonies reared in Yunnan Guangxi and Guangdong provinces where the climate is subtropical. It is learnt that cerana colonies produces more honey than mellifera in the mountain areas in China. Sri Lanka is also using _Apis cerana_ effectively and commercially.

The Indian honey _Apis cerana_ is widely distributed throughout Burma and these bees have been kept with traditional methods for hundreds of years. Wooden boxes, hollow tree trunks, clay pots, bamboo stems are among the basic forms of hives utilized by our local beekeepers. Traditional beekeeping use fixed combs, so harvesting honey kills or severely weakens the colony and
the production is of relatively low quality due to the presence of debris in the honey. In contrast, modern beekeeping utilizes moveable frames so that the beekeeper may remove the crop (honey) with minimal damage to the colony and the honey and wax are processed to ensure a high quality product. In addition, modern method stresses the management of the colony through basic practices that increase productivity.

For abundance of this species *Apis corana*, and rich in pollen and nectar sources from a wide variety of cultivated and indigenous plants, Burma should also utilize the native Indian honey bees effectively.

**MATERIAL AND METHOD**

Burma started its beekeeping with *Apis corana* in traditional method for hundred of years. Material and methods employed vary. Traditional beekeepers kept bees only for the sake of honey. There are two basic methods of hiving the bees, utilized by our local beekeeper. First, is catching the natural swarms, *Apis corana* usually swarm seasonaly. Two peak periods of natural swarms in a year is being observed in Burma. First period appear between January and March and the second season is from August to October. During these periods local beekeeper place their primitive hives in the area where swarms of bees are likely to occur and hopefully wait till the bees occupy the empty hives, the inner sides of the hives are coated with bees wax to be a favourable site for attracting bees to abide in the hives. This method is commonly used by our local beekeeper and named as "calling bees method".
The next method is rehiving the wild colonies. Beekeepers go directly to the forest and search the wild colonies and the whole colony will be caught in a box hive and brought back to his own apiary during the daytime.

Type of traditional hive

There is no standard in shape or size of the hive that is used by our traditional beekeeper. The hive can be opened either from the front or side. Various kinds of hives which is used by our local beekeeper has been observed as below.

(a) **Hollow log hives** - Hollow logs are the most common material utilized as bee hives. All sorts of tree trunks with hollow vary from (8) inches to (24) inches has been observed which is used as a hive. The two side ends are closed with a wooden board and the entrance hole is provided in front of the logs. This typical hive is commonly found in Kachin, Karen and Kayah States.

(b) **Wooden box hives** - All sorts of discarded wooden cartons can be utilized as bee hives. There is no standard in shape or size of the box hive. The outer body of the hive is glued with cow faeces (which are used as manure) in aim to block all the unnecessary spaces to keep the hive tight. Box hives are mostly used as swarm catchers and it is commonly used all over the country.
(c) **Bamboo hives** - The hill tribes from Dawna Range, Karen State utilize bamboo stem as bee hives. A full joint of bamboo stem is cut and some small holes are made beside the stem to serve as a bee entrance. The bamboo hives are hung with a rope vertically on the ceiling outside the huts.

(d) **Clay pot hives** - Various clay pots which are used as water containers are one of the materials for bee hives. Hill tribes from Chin Hills bury the body of the pot hives into the ground in aim to protect the bees from cold.

(e) **Under ground cave hive** - A very strange method of keeping bees by the hill tribes was observed in the Chin Status. A board of wood is all the material required for a hive. First, a hole is dug in the earthen slope, then a board of wood is fixed in the hole to serve as a ceiling and the entrance is covered with some stones and a small outlet is kept for the bees to enter. In aim to attract the swarm bees a piece of honey comb is set inside the cave hive. These under ground cave hives are utilized as swarm catchers.

Absconding habitat is the main obstacle faced by the traditional bee-keeper. A local beekeeper from the Kachin State tied the queen bees between her thorax and abdomen by using thread. Some beekeepers chopped the queen bee's wings with a small scissors to protect her from escaping. Method of honey extraction utilized by local beekeepers is very crude, the colonies are heavily smoked which forces them to abandon the hive, and then the honey is robbed by the beekeeper. The wise beekeeper does not rob all the honey, they leave some in order to attract the absconding bees. The honey is then taken out by means of squeezing with the bare hands.
Keeping *Apis cerana* with modern method

Three *cerana* colonies were reared with modern hives in Rangoon (Mayangon Township area). The bees in general face no problem of food shortage in the area, as coconut palm, vegetables and various kinds of herbs, shrubs bloom in different periods of the year.

Modified mini Langstroth type (10) frame hives is being used. Each brood frame have (300) millimeters in length and (195) millimeters in depth, the distance of two adjacent frames center to center is (31) millimeters. The bee space is (8) millimeters, ventilation hole (25) diameter and Queen excluder is (4) millimeters. The size of the entrance depends on the strength of the colonies, (10) to (25) millimeters entrance is sufficient for small colonies.

It is most difficult in re-hiving a colony to force the bees to construct their combs on the frames. The following procedure will solve the problem easily.

First shake down the cluster of bees into the swarm box and feed the bees 300 millimeter sugar syrup (Ratio 1:1). The entrance will be only open up to (10) millimeter after 24 hours confinement. The sugar syrup feeding will force the bee to construct the combs immediately. After a week the cluster of bees are scooped out from the newly built combs into a prepared hive and the combs are cut and tied to the wooden frames by use of thread, after that the hive is placed in the previous position. Bees will quickly fasten the comb to the frame and chew and remove the thread within a day.
RESULTS AND DISCUSSION

Traditional beekeepers kept their bees stationary, where ever there is lack of natural food supply absconding problems increase to the beekeeper. Attempt to control the absconding tendency by tying the queen and crippling wings of queen bees is found to be unsuccessful. The thread can cause injury to the queen's wings and legs and the worker bees do not accept the wounded queen.

The bee colonies which are kept in traditional method are lost by factor which are grouped to five categories.

(a) Absconding habit
(b) Weather condition
(c) Natural food supply
(d) Natural enemies and disease
(e) Apiary or colony management

The experimented colonies which are kept in mini Langstroth type moveable frame- hives give very good results.

The colonies were established on 30th April 1982 and is still going strong till now. Natural swarm appear from the colonies twice. First swarm occurred on 4th January 1983 and the next was on the 11th January 1983. Both swarms have been caught and kept in the same type of hives. Among the two swarm colonies only one queen has been successfully mated. It has
been observed that the colonies consist of some surplus honey in November and December. According to the two years of observation ventilation hole in the hive body plays an important role to regulate the temperature and humidity. The cerana colonies do not favour the opening of their hives frequently. The effect was greater for the small colonies. Bees favour morning sun, absconding may occur to the colonies with exposed to direct sun throughout the day time. The foraging began when the sun rises in the morning; and ceased their activity just before dark. Differentiated from *Apis mellifera* is *Apis cerana* always turned the head from the hive entrance when it’s fanning and cerana used their wax for reducing bee space and filling cracks like propolis.

The parasitic mites *Varroa jacobsoni* is the only mite that is host to *Apis cerana*, heavily infestation of these mites cause the bees to abscond. Naturally, *Apis cerana* has a sudden resistance to the mites. The natural resistance is still undiscovered. Among the predators black ants, house lizards and frogs are troublesome to the bees. The ants enter into the hives and take honey, brood, pollen and dead bodies of bees. Bounds of cloth soaked with crude oil or heavy duty engine oil and tied around the legs of hive stands give a good repellant to stop ants from disturbing the bees. House lizards and small frogs also enter through the entrance and try to catch and feed on the in-coming bees. Catching and killing these frogs and lizards will save the colonies from absconding.
CONCLUSION

Beekeeping is an easily established family based industry, that quickly results in the production of crops of honey and bees wax. It can be a full-time occupation or a part-time pursuit, allowing the farmers to continue with their traditional activities. Beekeeping can be done by small land holders or even by landless peasants. Beekeeping technology is very simple, utilizing basic equipment can be manufactured by local home industries and the capital investment is relatively low. The greatest contribution of the honey bees are made through the pollination of many essential crops. Many fruits, vegetables, nuts, oilseed and animal-feed crops are dependent upon or benefit from honey bee pollination. Thus, beekeeping can raise the standard of living of the peasant farmers by means of surplus income both from Agriculture and honey.

Being an Agriculture country Burma should have a potential for developing beekeeping techniques with the local Indian honey bee. Modern beekeeping technology should be distributed in the country.

This paper is an aim to get results which would be applicable for the local beekeeper and help for the success of beekeeping with Indian honey bees in Burma. Once they get experience from this specie they can extend to keep the European honey bee which requires expensive bee stock and equipment and proper management.

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