BEEKEEPING & BEE DISEASE SCENARIO IN THE NILGIRIS

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Beekeeping in the Nilgiris has been an old tradition. Most of the activity has revolved around the indigenous species, *Apis cerana* indica. This was hived in Newton boxes, and was a common sight in any garden and estate. According to the Nilgiris Gazetteer, (Francis,W.;1908) the British tried to introduce the *Apis mellifera* in the early 1900s but were not very successful, with the colonies reducing in number and strength over a period of three years.

However, the tribal communities have continued keeping and harvesting bees in their own traditional ways. The Kurumbas and Irulas, who live in the lower elevations still harvest the *Apis cerana* from walls and tree trunk cavities. During the honey flow season, the tribals locate bee colonies and remove the honey and brood combs for their consumption. This extraction is sometimes rough and destroys the colonies and their habitat. However, these people are primarily *Apis dorsata* hunters and thereby have another larger source of honey. Therefore, a need to start beekeeping with these people is necessary so that they learn to rear bees for a regular supply of honey. Efforts through government programmes for this activity with the tribals have not met with success.

The Todas in the higher elevations have an unique system of honey collection from tree trunks where each family has traditional rights over a tree. This system is appropriate and ecologically safe, because they do not destroy the brood portion, which is critical for the growth of future generations. They also seldom use smoke or other irritants - they blow gently inside the hollow tree cavity. This method of beekeeping ensures protection of habitat and old shola trees.

The 1960s saw a boom in the beekeeping activity as the Khadi and Village Industries Board promoted it in a big way. Till the late 1970s, there was a sustained interest during which each beekeeper kept a number of hives. Since then, there has been a marked decline not only in the number of beekeepers but also in the availability of colonies in the wild.

This has been due to a number of reasons:

deforestation and landuse changes which have reduced the numbers and diversity of plant species for foraging and decreased bee habitat area

use of pesticides have destroyed natural colonies

Recently, the reasons have also included

loss of a large number of colonies due to the Thai Sac Brood Virus (TSBV), a disease which attacks colonies at the larval stage, and

a greater interest in cash crops

Case Study

Murthy lives in Bandishola near Coonoor. He is a small farmer who earns his living from distilling Eucalyptus oil. He has 72 hives, but due to lack of time beekeeping has not been profitable. He pays Rs. 100 per colonisation (capture of bees for the bee box) and Rs. 100 for general upkeep and maintenance. All the hives are of the Newton type. There are 60 good colonies out of which 40 have yielded honey. Honey sells at the average price of Rs. 100 per kg.

His main problems are :
1. Lack of assistance from KVIB extension service
2. Lack of knowledge of bee diseases

According to him, honey yields were more before the tea gardens came in. Earlier, there were natural patches of Shola and Eucalyptus tracts which yielded more nectar and pollen.

Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994.

THAI SAC BROOD VIRUS - the disease story

Amongst the above, a major factor which is affecting the growth of beekeeping has been the spread of the Thai Sac Brood Virus. Its most important ramification is that the disease not only affects domestic beekeeping but also wipes out colonies in the wild.

This virus, which is believed to have originated from Thailand, struck north-east India in the 1970s and northern India in the early 1980s. It struck

Tamil Nadu in 1991. Intensive migratory beekeeping in Kanya Kumari district has contributed largely to the spread of this disease to other areas of the state. However, confirmed detection of the disease in the Nilgiris was done only in 1995 by both Nilgiri Beekeepers Association (NBKA) and Keystone. Compared to other areas in Tamil Nadu, the disease spread in this area has been slow. Due to lack of knowledge and communication, identification of the disease has been very poor in many areas of the district.

KEYSTONE'S EXPERIENCE

Given the background information about the disease, Keystone has specifically had experience in facing and handling the disease situation not only in various parts of the country but also in Bangladesh where it struck during 1985-86. It struck the Palni Hills during early 1992 and wiped out a number of colonies. Information gathered during an extensive survey of Honeyhunters and Beekeepers in Tamil Nadu in 1994 revealed that Nilgiris was one of the few remaining areas in the state which had not yet been struck by the disease *(Refer Map 6, Tamil Nadu - Disease Scenario. Source - Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994.)*

Some of the indicators of the prevalence of the disease can be:

the colony has a restless and aggressive look when the top cover is removed
the infected colony has a strong urine like odour
presence of only older bees in the colony
frequent abscondings leaving behind honey, pollen and the brood
the diseased larvae lie on the cell wall with pointed tips towards the cap
at a particular stage, when the larvae are taken out and observed, one can see the larvae floating in a sac filled with some liquid.
the capped brood will be scratched
two tiny black spots can be seen on the affected larvae
the larvae perish and form a mucous like substance. With a matchstick this substance can be pulled out to 3-5 mm lengths
affected larvae can be seen on the bottom board and outside
pale yellow lines of mucous can be seen on the bottom board where the bees have dragged the dead larvae
in an advanced stage, the larvae dry up and can be removed as scales and is very brittle

Given the above disease situation, there are some precautionary steps that can be taken:

* mark out the active period elapsed of the disease, i.e. the age of the virus in the areas where the disease has struck.

* a complete quarantine to be enforced on the movement of new colonies from place to place.

* generate awareness among beekeepers of the symptoms of the disease and the isolation of the affected colonies

* use the colonies which have survived the disease attack for future multiplication

Some beekeepers have been treating with herbal plants, neem, turmeric, etc. in the hope of finding a remedy. Requeening was also tried but it was effective only for a short period. Research at Chettali Research Station, Karnataka has shown some success when affected colonies have been fed with a dose of Ribavirin, an anti-viral chemical. Reports from Himachal Pradesh say that the TSBV has a cycle of approximately five years. However, as yet, no confirmed treatment is available to address this disease.

Many of the beekeepers are watching, waiting and hoping that given nature's process of evolution, the disease might slowly die out. The encouraging fact is beekeepers from Kanyakumari report that a large number of colonies are now recovering and they have been able to extract honey from them. However, there is a need to actively resist the spread of the disease by various colony management practices.

The bee disease which has arrived in Nilgiris, has had an impact on the bee keeping industry. Since 1995, Keystone has been monitoring the spread and impact of the disease in these hills. Compared to other areas in Tamil Nadu, in Nilgiris the impact has not been so severe and the spread has been quite slow. Recently, the Horticulture Department has brought in *Apis mellifera*, as a bee which could produce larger quantities of honey and is also resistent to the TSBV but however, it is susceptible to other bee diseases.

***Apis mellifera* and Related Issues**

Since 1880, considerable interest has been taken to import *Apis mellifera* into India. For almost 100 years, all attempts have failed, despite consignments of bees from England, Italy, Lebanon, USA, Australia and USSR.

During the 1970s, a fairly large number of colonies were successfully established in the Himalayan region. Since the 1980s, a thriving beekeeping industry, based on *Apis mellifera*, has developed in the region. Bee colonies are now being supplied to other areas of India, to promote beekeeping with the exotic Western bees.

Even though much attention in India is focused on the short term economic gains from *Apis mellifera* beekeeping, a number of other perspectives should be seriously considered before widespread introduction is attempted:

Ecological Perspective:

* In case *Apis mellifera*, despite an unfavourable environment, proves itself superior to *Apis cerana*, the endemic bee may become extinct and a valuable gene reserve needed in the future will be lost. Transfer of diseases, unknown and harmful to the endemic bee could escalate the loss of genetic reserves.

* The pollination pattern of *Apis mellifera* is different from that of *Apis cerana*. A massive introduction of *Apis mellifera* could cause a decline in floral diversity. Surveillance tools to determine whether this actually happens has yet to be developed.

Socio-economical Perspective:

* Beekeeping with *Apis mellifera* is resource intensive. A high level of technical knowledge and capital investment is needed to utilize the potentials. In the context of rural development, this is highly undesirable, because it leaves out options to involve the poor and less educated.

* With the introduction of *Apis mellifera* into new areas, serious diseases, unknown and harmful to the endemic bees, can be imported and cause heavy economic losses among already established local beekeepers, dependent on *Apis cerana*.

* Health considerations: Beekeeping with *Apis mellifera* in India is heavily dependent on use of pesticides in the beehives to control the Varroa mite. Residues of most pesticides are accumulated in honey and beeswax, and could cause a health risk, in a long term perspective.