

# Chapter 3

## Beehives and Beekeeping

### What is a beehive?

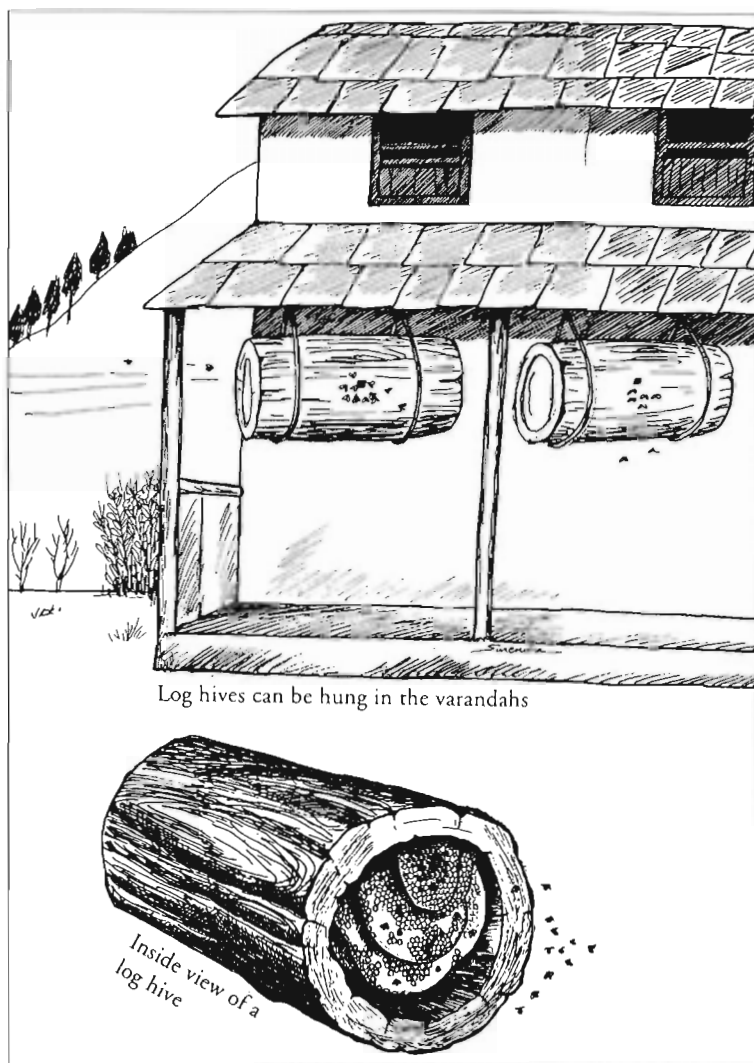
A beehive is a container provided in which honeybees build their nests. It is an artificial nesting site. The beekeeper can then manage the bees to his/her advantage, i.e., for the production of honey and other bee products as well as for crop pollination. In the Hindu Kush-Himalayan region, farmers keep *Apis cerana* in both traditional fixed-comb hives, such as log hives, wall hives and pitcher hives, or in movable-frame wooden hives. Commercial beekeepers keep both *Apis cerana* and *Apis mellifera* in movable-frame wooden hives.

#### ***Traditional fixed-comb hives***

A log hive is a simple hollowed-out tree trunk without any frames or bars. The open ends of the log are sealed with a piece of tin, a wooden plank, or a mixture of mud and cow-dung. The entrance is made in the middle of the wooden cylinder. Farmers either hang their log hives in the verandas of their houses or on branches, or place them on a piece of raised ground (Figure 3.1).

A wall hive is a rectangular or square recess in a wall. A small hole is provided at the base, middle, or top as an entrance. The side walls are plastered with mud and cow-dung, and the roof and the bottom are wooden planks. The back of the recess is closed on the inside of the house with a wooden plank that is temporarily fixed to the wall with mud and cow-dung (Figure 3.2).

A pitcher hive is a cavity formed by a clay pitcher. A clay lid serves as a covering for the opening. In temperate moun-



*Figure 3.1: Bees can also be kept in fixed-comb log hives.*

tain areas the pitcher is inserted horizontally into a wall of a house, and in warm tropical and subtropical areas it is hung from a tree.

Traditional fixed-comb hives have the following disadvantages for beekeepers, farmers, and honey consumers.

- Honey is harvested by squeezing. This honey may become contaminated with brood extracts, parts of bee

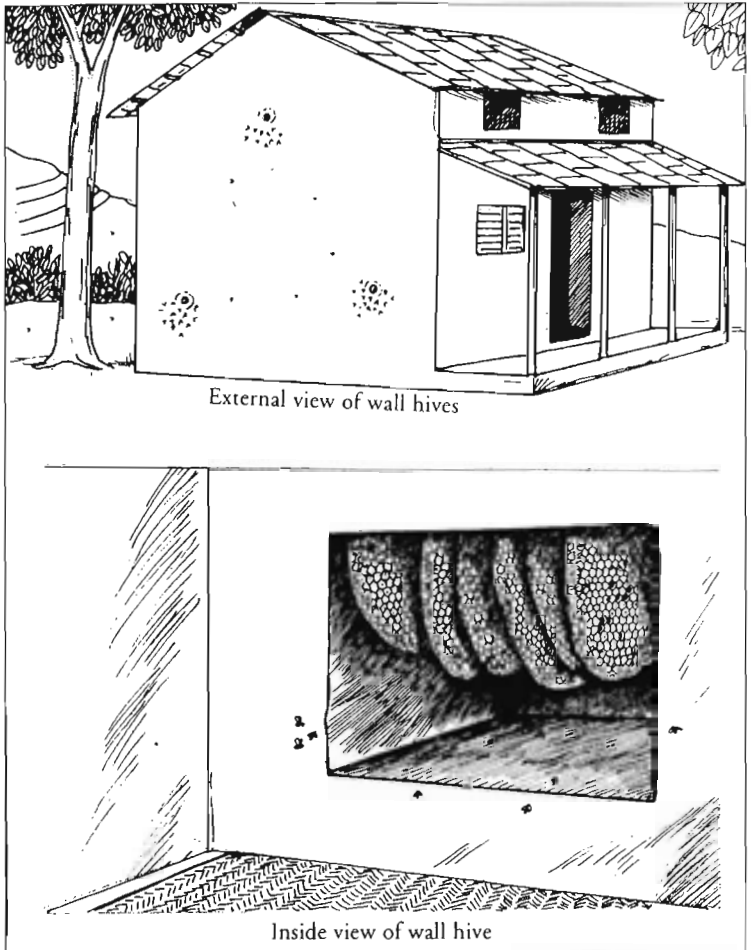


Figure 3.2: Farmers can keep bees in traditional fixed-comb wall hives.

bodies, hive debris, and dirt. Such honey does not fetch a good price.

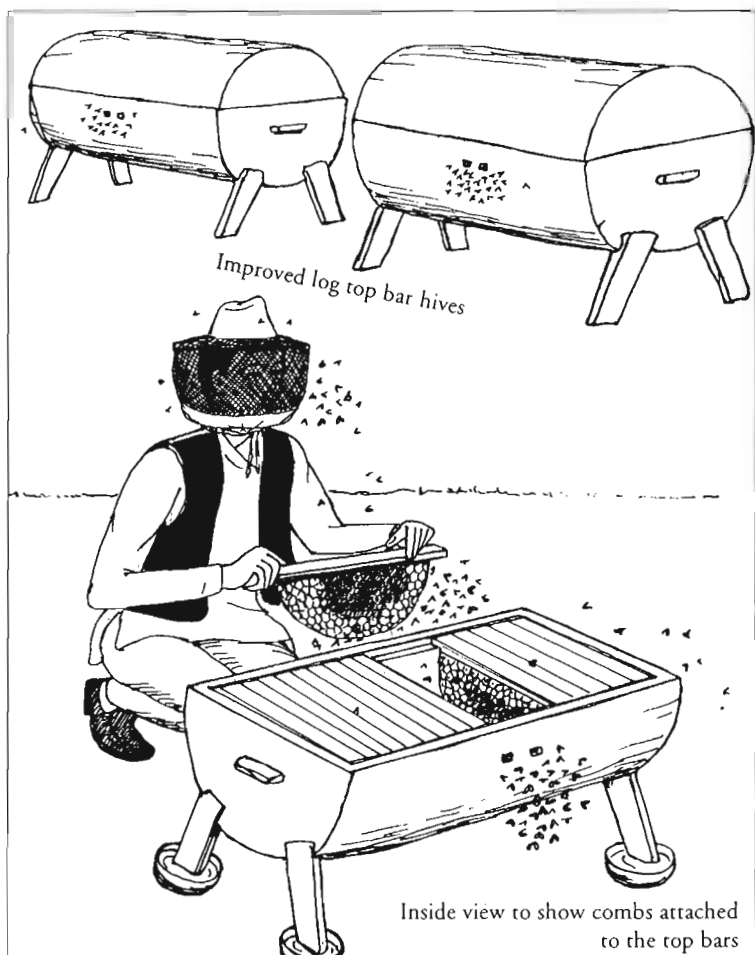
- Honey yield can be relatively low. However beeswax yield is higher than from frame hives.
- A large proportion of brood and adult bees are killed during honey harvesting. This leads to a reduction of the colony strength.
- Old combs are destroyed while squeezing honey. This means that bees waste a lot of energy making new combs.
- The inspection of colonies for disease, re-queening, supplementary feeding during dearth periods, and

cleaning is not possible. This often leads to the absconding of bees.

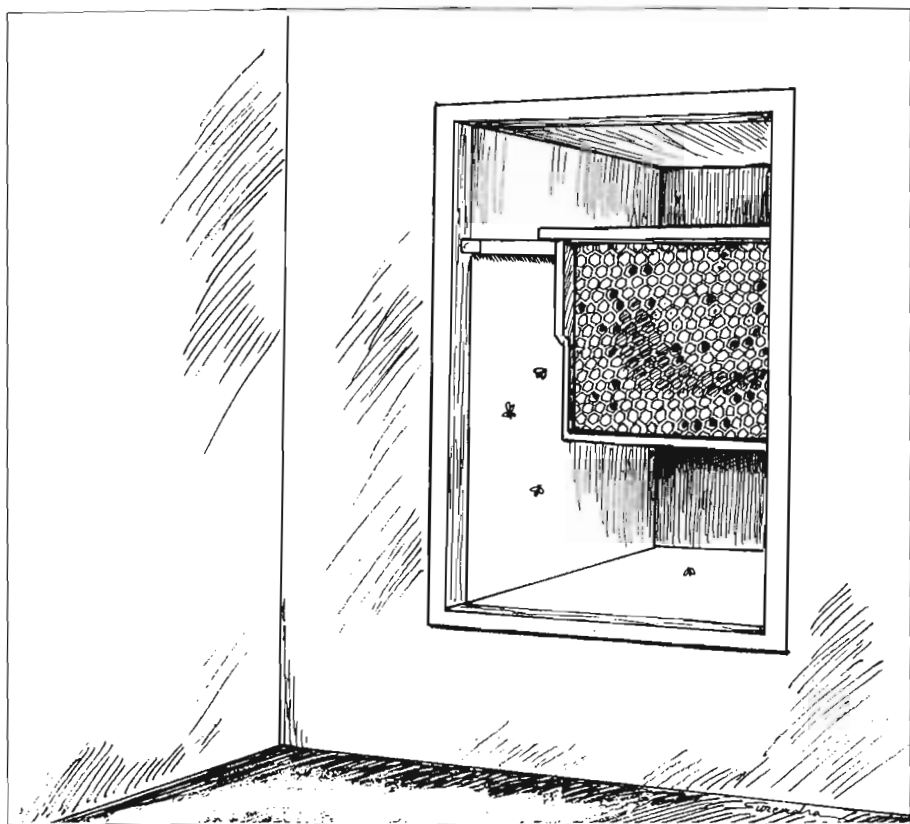
- Bees kept in traditional hives cannot be transported to crops to aid pollination.

### *Improved beehives*

To tackle the disadvantages associated with traditional hives, efforts have been made to improve them, particularly log hives and wall hives. Log hives have been improved by putting in top bars (Figure 3.3); and wall hives have been



*Figure 3.3: Improvement of log hive by putting top bars makes colony inspection easy and yields better quality honey than traditional fixed comb log hives.*



*Figure 3.4: Improvement of wall hive by putting movable frames makes colony inspection easy and yields better quality honey.*

improved by putting in movable frames (Figure 3.4). These improvements mean that inspection of the bees is possible and that honey can be harvested without disturbing bees or brood because it is stored in the outer frames. This honey is of better quality than that from traditional hives.

Another type of hive consists of a box that has a series of bars across the top to which bees attach their combs. It can be made from locally available materials such as straw, bamboo, or wood, although wood is the best material. Top-bar hives are useful for inspection of colonies, but are difficult to transport without breaking the comb. Therefore, they are not suitable for migratory beekeeping and cannot be moved to fields for crop pollination.

***Movable-frame wooden hives***

A movable-frame hive consists of a hive body—also called the brood chamber—that provides space for bees and brood. In this chamber the queen lays eggs, the brood is reared, and honey is stored for consumption by the colony. The hive body is placed on a bottom board where the hive entrance is located. For surplus honey production, a shallow super is placed above the brood chamber. An inner cover is placed over the super. A hive cover (often covered with an aluminium sheet to protect the wood) is placed on top of the hive to protect it from rain and wind (Figure 3.5). The hive is placed on a stand made of either wood or iron to keep its bottom dry. Bowls of water are placed under each leg to prevent ants entering the hive.

The use of movable-frame wooden hives is the most advanced form of beekeeping. This method allows for any manipulation of the colony such as brood-nest adjustment, inspection for diseases and pests, verification of food store

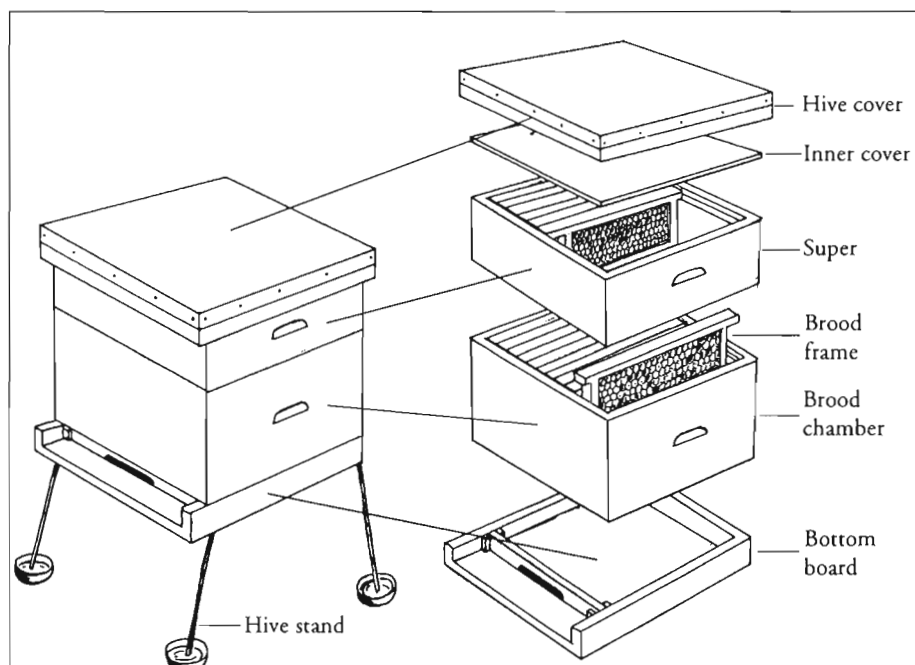


Figure 3.5 A movable frame wooden hive allows any manipulation of the bee colony.

levels, supplementary feeding during dearth periods, queen rearing, and addition of supers during honey-flow season. The movable-frame hive has several advantages over traditional hives.

- Honey yield is two to three times greater than from traditional hives, but the input costs are also higher.
- The quality of honey is superior because it is harvested with a honey extractor. Such honey can fetch a better price.
- Combs remain intact and can be recycled to the hive.
- Bees and brood remain undisturbed during honey extraction because honey is stored separately in the super.
- Colony inspection is easy. However, scientists believe that it is only the introduction of the movable frame hives that has spread diseases so widely
- These hives are suitable for migratory beekeeping because they can be moved to allow bees to exploit flora in different places.
- Honeybees in movable-frame hives can be transported to fields and managed for crop pollination (Figure 3.6).

Movable frame hives are usually made from wood but they can also be constructed using locally available materials such as rice or wheat straw, thatch grass, cement, sand, clay, glauconite, used newspaper, dry agave leaves, and rice husks. However, with the exception of straw, these materials are not suitable for transporting and so cannot be moved to fields for crop pollination.

### **What is beekeeping?**

Beekeeping refers to the rearing of honeybees for honey and beeswax production. A person who rears honeybees is

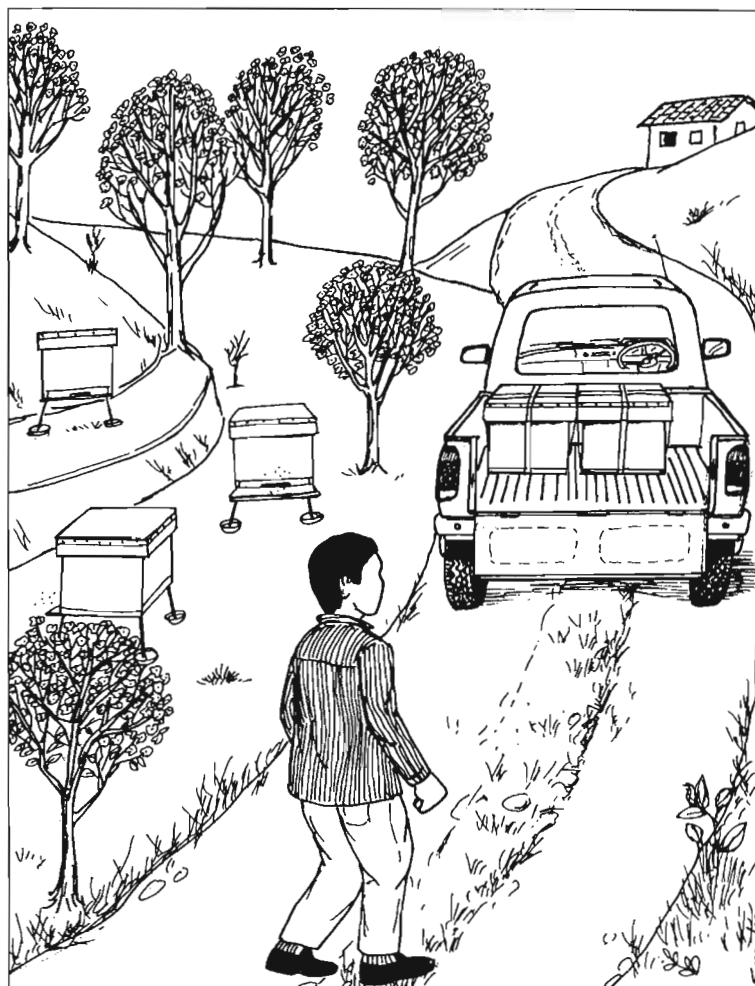


Figure 3.6: Bee colonies in the movable frame hives can be transported to the field for pollination of crops.

called a beekeeper or an apiarist. The beekeeper can keep and manage a few or many colonies of honeybees in many different types of beehive. The place where the bee colonies are kept is called an apiary. The Himalayan honeybee, *Apis cerana*, and European honeybee, *Apis mellifera*, are the only species of honeybee that are managed for honey production. Beekeeping is practised not only for honey and beeswax production but also for the pollination of various cash crops, especially apples. In Himachal Pradesh, a north-western Indian state, apple farmers hire honeybee colonies





*Figure 3.7: In Himachal Pradesh beekeeping is being promoted for apple pollination.*

from beekeepers for pollination purposes. Movable-frame wooden hives are the most suitable for transporting to a crop for pollination.