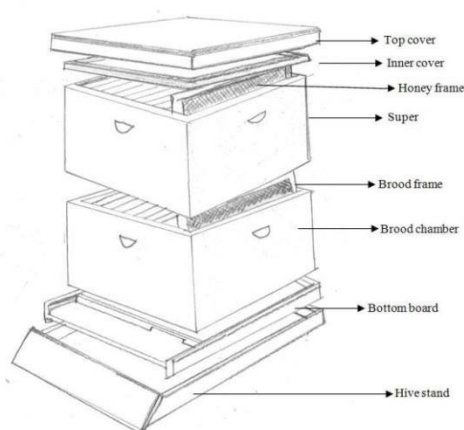


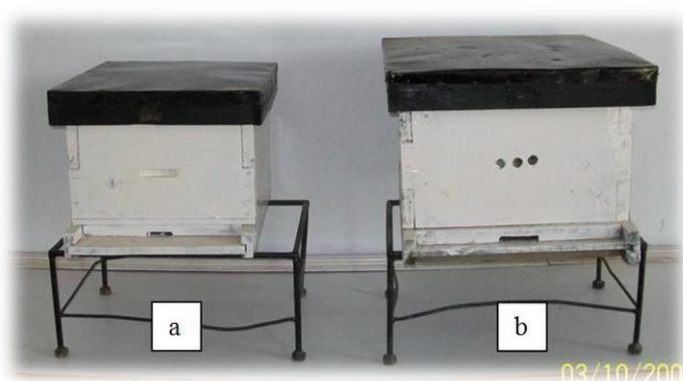
BEE KEEPING EQUIPMENTS

BEE HIVE

L.L. Langstroth discovered the principle of bee space in 1851 in the U.S.A. This space permits free passage for worker bees and is too small to build a comb by bees or too large for depositing bee glue i.e. propolis. We can say that bee space is optimum distance between two surfaces in a bee hive essential for normal movement and functioning of bees. This principle was a big discovery for modern beekeeping. The modern hive has been designed on the bases of principle of bee space in which frames can be easily moved. The bee space measures 9.52 mm for *A. mellifera* and this was modified for *A. cerana* to be between 7 and 9 mm.



Parts of a movable frame hive



a) BIS type hive for *Apis cerana*. b) BIS type hive for *Apis mellifera*

Stand: To support bottom board.

Bottom board: It is floor of the hive having an entrance for bees. On this board brood chamber rests.

Brood chamber: Chamber used for rearing of brood. Frames are placed in this chamber on which bees raise combs. The dimensions and number of frames vary with the type of hive. A wooden dummy board is used to limit the size of brood chamber and is placed at the end of brood frames.

Frame: Each frame consists of a top bar, two side and a bottom bar. Inner aspect of the top bar has a groove for fixing comb foundation sheet. Side bar has 4 holes for wiring the frame. The frame holds a comb.

Dimensions of hive: In general for *A. mellifera* use Langstroth hive (named after L.L. Langstroth) and for *A. cerana*, BIS (Bureau of Indian Standard) hive A and B type. In 1995, BIS introduced C-type hive based on Langstroth hive, for *A. mellifera*. Well seasoned wood of “Kail, “Toon”, teak or rubber can be used for making good quality bee hives. Wood having strong smell is not used. Dimensions of different types of bee hives being used in India are given below:

Super: Dimensions may be same as that of brood chamber or half of it (depending on type of bee hive). This is the chamber where bees store surplus honey.

Inner cover: A board which acts as a partition between brood/super chamber and the roof

Top cover: A type of lid acting as roof placed over inner cover.

Other Beekeeping Equipments

Ant well: The four legs of hive stand are placed in the ant wells filled with water. This prevents ants and other crawling insects entering the hive. Ant wells are simple tin or Aluminium bowls (15 cm in diameter).

Nucleus Box: It is a small bee box having about 4 frames and used to house a nucleus colony - a small man-made colony of bees. As the nucleus colony grows, it is transferred to a normal bee box.

Dummy Board: It is a wooden board of the size of a frame and used to reduce the size of the bee nest in a hive. Dummy board is used to reduce the free space in the hive that helps the bees in containing heat within the nest.

Feeders: It is simple Aluminium bowls are used to provide sugar syrup as feed to the bees during periods of nectar scarcity.

Queen Cage: It is used for transport of queen with a few attendant worker bees in packages.

Queen introduction cage: The *queen introduction cage* is made of simple woven wire mesh, (3 mm size). The mesh is bent round in the form of a square section tube of about 9 cm length and 2.0 x 1.3 cm cross section. One end of the tube is plugged with a wooden block, and the other end is open.

Wire embedder: This is used for embedding wire in the comb foundation to give strength to the combs.

Hive tool: It is a flat piece of steel of varying design and size used to separate the brood and super chambers, to loosen the frames for taking them out, or to scrape hive corners, frames and other hive parts.

Smoker: It is appliance to produce and apply smoke to the bees while handling them.

There are different designs of smokers and different methods of smoking.

Bee veil: This is an essential wear of the beekeeper for protecting face from bee stings during the handling of bees. In principle a bee veil should have a cloth hood with an arrangement to hold a hat, and a screen in front of the face to allow free vision of the bees and colony.

Gloves: These are used soft leather gloves with canvas gauntlets to the elbow are the best for use to protect hands and arms, while inspecting and handling colonies.

Swarm net: It is used to hold a swarm of bees and transport it to the apiary. It consists of a mosquito net bag about 50 cm long and 40 to 45 cm wide, with one side open. The open side has a rope to close the bag after capturing the swarm.

Bee brush: It is a soft hairbrush to remove bees from honeycombs taken out for extraction of honey.

Uncapping knife: It is used to cut off capping of honeycomb before putting it in the honey extractor. Two types of uncapping knife, cold- and steam-uncapping knife are in use.

Comb cutter: With comb cutter, old and worn out combs are cut and removed.

Scraper: It is a flat piece of steel with one end broad and sharpened and the other end with a wooden handle. It does the same work as hive tool, but more efficiently.