

SECTION 4 – TOP-BAR HIVES

The top-bar hive is a relatively cheap and simple hive that allows beekeepers in the tropics to manage their bees in a more efficient way than with the traditional fixed-comb hives. As the name suggests, bees build their comb from the top bar not from the ceiling of the hive as in traditional fixed-comb hives or within wooden rectangles as in a frame hive.

Top-bar hives offer the following advantages:

1. The only exact dimensions required in construction are those of the top bar itself. Other measurements are not too critical, so that hives can be made with simple tools from relatively cheap local materials.
2. The size of the hive can vary to suit local conditions.
3. Every comb is accessible without removing the others. This one-bar-at-a-time technique causes less disturbance to the colony and greatly reduces the number of bees flying around when the hive is open.
4. The brood can be inspected easily, which gives the beekeeper real control over the management of the hive.
5. The beekeeper can judge the exact time when combs are ready for honey-harvesting without disturbing the brood. The honey is also of higher quality as the combs can be selected to be free of pollen and brood.
6. The top-bar hive makes it possible to gather good quality beeswax for which there is always a ready market.
7. No lifting is required other than the combs. The top-bar hive can be managed by those who cannot lift heavy weights.
8. All top bars are at the same level, which can be chosen to suit the individual. This and point seven above mean that this form of beekeeping can be carried out by the physically disabled and not just those who are fit and strong.
9. If there are predators, hives can be suspended by wires above the ground at a height convenient for operation.
10. The better management techniques promoted by these hives help protect, preserve and increase the bee population. This then benefits the economy through increased pollination as well as honey and wax production.

How to make top-bar hives

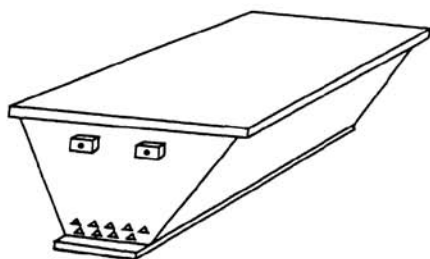
A hive can be made of any wood providing it is:

- Not warped or twisted.
- Resistant to the rotting effects of sun and rain.
- Very few woods are termite proof and so all hives have to be protected from termite attack.

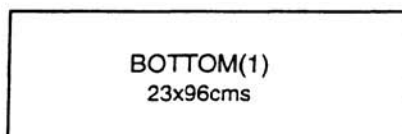
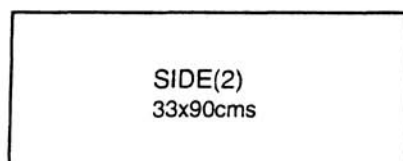
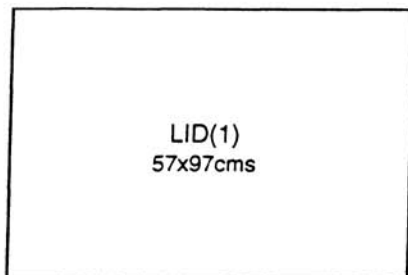
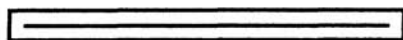
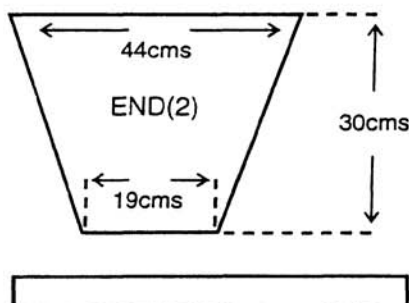
The hive itself consists of just six parts the dimensions of which are not very critical and so construction does not require highly skilled labour.

In the wild, bees develop their comb downwards in a gentle curve. Therefore, the sides of the hive need to be at an angle which approximates this curve. This limits the inclination of the bees to attach the comb to the side walls.

The top bars themselves do require critical measurements and uniformity. Here there are advantages to be gained from machine-cutting which can ensure constancy and



The hive is made from wood approximately 19mm (3/4 inch) thick. The front will require about 10 small holes.



Top bar viewed from above 32mm x 480 mm (1¼ in x 19 inches). The length is just a guide but it must be 32 mm (1¼ inches) wide.

Top bar viewed from below with groove cut in lower surface.



a.



b.

Alternative cross-sections: (a) groove as above into which beeswax is placed to encourage comb formation (b) 'V' shaped cross-section to encourage comb formation.

FIG. 42. Making a top-bar hive. The dimensions are only given as a rough guide and can vary according to local needs. All surfaces need to be smooth and all joints free from cracks and gaps.



FIG. 43. A top bar taken from a hive with straight sides.

accuracy. However, the same effect can be achieved with hand tools as long as time is taken to ensure absolute accuracy. The bar must be 32 mm ($1\frac{1}{4}$ inches) wide. This is important as the tropical honey bee builds a comb which has a thickness of 25 mm (1 inch). The comb is attached to the centre of the bar thus leaving a space of 3.5 mm ($\frac{1}{8}$ inch) on each side. When two neighbouring top bars develop combs the gap is 7 mm ($\frac{1}{4}$ inch) (3.5 mm + 3.5 mm, $\frac{1}{8}$ inch + $\frac{1}{8}$ inch). This inner space (bee space) is vital to allow the bees to walk freely on the comb. A hive of this kind needs to hold between 20 and 33 top bars. It is strongly recommended that the top bar should be 480 mm (19 inches) long, as there has been an attempt to make this standard and so enable interchange with other top-bar hives.

It is very important to create a starter of wax along the centre of each top bar. This encourages the bees to build their comb along the bar. If accurate cutting equipment is available the bars can be made with a groove that can be filled with wax strips.

It is also very important that all the top bars fit tightly together – hence the need for extreme accuracy. Tropical bees readily fly off the comb when the hive is opened and may sting the beekeeper. However, the merit of having tightly fitting bars is that the only opening through which they can come out is



FIG. 44. A top bar taken from a hive with sloping sides.

that where a single top bar and comb has been removed and this gap can be constantly smoked.

The hive entrance can be a slot or a set of small holes 8–10 mm ($\frac{1}{8}$ – $\frac{3}{8}$ inch) in diameter. Another alternative is a small triangular shape with 8–10 mm ($\frac{1}{8}$ – $\frac{3}{8}$ inch) sides. This is easier to cut and can protect the colony from attacks by beetles and other pests.

Scrap blocks of wood can be used to reinforce secure points on the ends of the hive if it is to be suspended above the ground.

Getting started – the apiary

In most places it will be necessary to mount or suspend the hive to protect the bees from pests and predators.

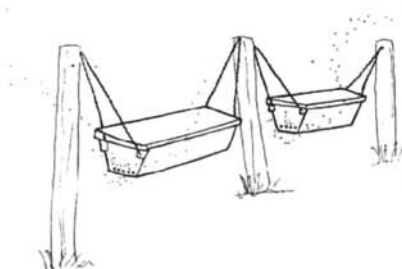


FIG. 45. The hive can be hung from wires so that animals cannot push it over to reach the honey.



FIG. 46. An apiary of top-bar hives.

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When constructing a hive stand there is a need to remember the height of the beekeeper. The hive should be at the optimum working level for the individual that manages it but in general at least 450 mm (18 inches) from the ground.

If a stand is used it needs to be of solid construction and every effort made to prevent ants using the legs as ladders to the hive. Various methods can be employed such as standing the legs in cups of old motor oil, putting bands of grease around the legs and spreading ashes around the stand to discourage grass growth.

None of these are totally satisfactory, although the best alternative is to suspend the hives from solid poles – at least 150 mm (6 inches) cross-section – or from trees. Again consideration needs to be given to the working height as the comb structure within is fragile and can easily break if the hive or bars are moved roughly or excessively.

Always keep the apiary tidy, cut the grass short and remove any stones that would cause the beekeeper to stumble while working.

Where to put top-bar hives

Location can sometimes be a problem. The ideal site should be a little way from dwellings as bees can be aggressive.

- The site should be quiet – away from areas where children play or any source of continual noise.
- Near a fresh water supply – this can be a river, pond or even a dripping tap.
- Near food sources and cash crops that need pollination. However, the hives should not take up fertile land but can be placed on rocky outcrops and on the poorest soil for which the farmer has no use. Bees sited about 150 metres away from the productive area allow workers to tend the crops and avoid annoying the bees so they feel their colony is not 'under threat'.
- Hives need to be away from marsh or land liable to flooding. Humid conditions encourage fungal growth and prevent honey maturing.
- The hives need to be sheltered from strong winds and shaded from strong sunlight.
- Finally, the bees will appreciate being away from smoke, fire, vandalism and unfriendly neighbours.

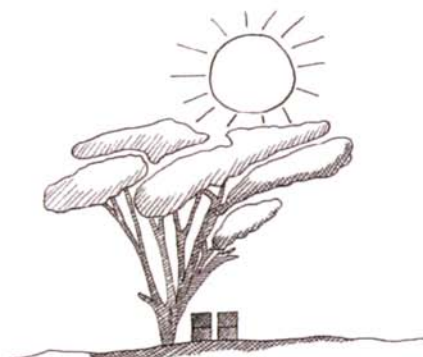


FIG. 47. Keep hives in the shade under trees.

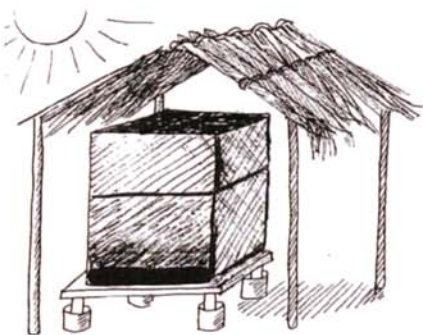


FIG.48. Shade can be provided by a shelter, made out of banana leaves, which does not have sides so that the air can keep the hive cool.