

All About Top Bar Hives

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General design of a Top Bar Hive (TBH)

A top-bar hive is basically a long, open-topped cavity that has simple bars from which the honey bees attach and hang comb (also forming the ceiling of the hive) and an entrance for the bees to go in and out. Most TBH's have sloping sides of 30 degrees to ease comb removal: it is easier to avoid banging the comb against the hive body if the comb is tapered, and may help to reduce comb attachment. However, straight sides are easier to build and once attachments are removed by the bee keeper they are seldom rebuilt by the bees. A follower board (a solid board hung instead of a normal top bar) is often used to shrink the available volume of the hive to help the bees maintain control of the interior climate. The hive is usually elevated off of the ground to help it stay dry and make bee predation less likely. Unlike with frames the comb on the top bars cannot be centrifuged to extract honey and then reused. This may mean a lower production of honey, but the wax is highly useful in and of itself. This also helps prevent buildup of old, possibly diseased comb within the hive. The bees are exposed one comb at a time and hence the colony is not as prone to being agitated when being worked.

Top Bars

One can make top bars from any plain wood but a thickness of at least 1" should be used for rigidity and stability against warping. Ideal top bar width would be 1 1/4" for brood comb, 1 3/8" for pollen stores and 1 5/8" wide for honey storage to accommodate the varying thickness comb naturally made by bees. If using multiple width bars they should be labeled for width. This variable spacing can also be achieved with thin spacer bars and standardized 1 1/4" top bars. If spacers are used, they will need to be made out of something that will not readily warp. However, for simplicity most TBH's use a single bar width of 1 3/8" even though this does increase the propensity for cross-combing. This is one of the only important factors in a functional TBH. The length of the bars may be either flush with the outside of the hive or a little longer to allow easier handling.

It is important to give the bees a clear starting point to build comb on the middle of each top bar. The easiest may be a slot along the length of each bar and pressing a line of wax or narrow strip of foundation down the middle to



Top bar hive built in 2006 by Roger Quennell.



Example of a top bar with starter comb. Note: The center vertical bar was an experiment to increase the strength of the comb. It was successful in strengthening the comb but made management more difficult.

encourage straight comb along the center of the bars. Some way to prevent the top bars from moving side to side is often provided by either rabbeting the ends or placing stopper blocks onto the bars.

Hive body

The hive body can be made out of almost anything that will house the bees. Remember, bees evolved to live in open cavities in trees and are very adaptable. They do require a certain depth and volume, however, to be able to build a natural hive environment. A volume of between 4 and 25 gallons (optimal is 12 gal.) and a depth of at least 13" is preferred by bees in the wild. A hive that is quite deep may need a vertical bar to reinforce the comb to help prevent breakage. A interior width of up to 19" would be needed for an unmodified Langstroth frame to fit, if desired. The hive should also be placed on a level spot to ensure that the comb drapes perpendicular to the top bars.

A bee space must be maintained at the front of the hive between the hive wall and the first top bar. This can be accomplished with an attached 3/8" spacer or a top bar that is 3/8" wider at the front of the hive, which also prevents the top bars from being accidentally pushed off the front of the hive.

Entrance

Combs with pollen will tend to be in the first two combs nearest the entrance. Then come the brood combs, and furthest from the entrance will be the main honey stores.

The entrance should not be placed high on the hive as this would allow the escape of winter heat and prevent the bees from removing hive detritus. The entrance is usually at the bottom of one end but it can also be located along one of the sides of the hive or an opening along the underside of the hive. An open or screened bottom with a closable door or slide for winter, providing both ventilation and varroa mite removal, is also sometimes used.

The entrance should be at least 1/2 inch wide by 8" long to let the bees in and out. It can be either a slit or a series of holes. Again, there are very few critical aspects of a TBH and much flexibility and room for experimentation.

Roof

The top bars form a ceiling for the bees but the hive still needs a weather-proof roof. This can consist of any weatherproof material ranging from a removable framed and shingled roof to a plain piece of roofing tin strapped or weighted over the hive body. In cold regions insulation of some type (such as foam board) is commonly used on top of the hive to increase the bees' survival rate over the winter.

Bee installation

Bees are installed into a TBH by various methods similar to a conventional hive, the main point of difference being the use of framed "nucs". The frames are meant to fit into a conventional Langstroth hive so it can lead to difficulties trying to install them into a TBH. One approach is to lean the frames in the back of the hive, or better still to screw them to top bars if they will fit, making sure to keep them in the proper order. If the frames will not fit, trimming of the corners may be an option. The least desirable choice is to just shake the bees in leaving the brood comb to be cut up and installed as best you can, hopefully saving at least some of the brood with one of the above methods.

Hive management

Bars must be inspected and loosened at any attachment points before being moved to prevent weakening or worse, collapse of the comb. This is done with a hive tool and any long thin blade such as a hacksaw blade with an improvised handle. Once wall connections are



Using a hive tool to cut comb attachments.

severed they are rarely reattached by the bees making future management easier. Any cross-combing or skewed attachments should be corrected immediately by cutting and reorienting the comb to make working the hive easier in the future.

When bars of honey are removed, empty bars should be placed back into the hive alternately between well drawn comb to reduce the incidence of cross-combing. Brood comb may also be incrementally rotated out of the hive to prevent the buildup of disease. This is done by adding a top bar between the brood chamber and the hive entrance slowly pushing the old brood comb to the rear of the hive for eventual removal. The rearmost brood comb will then be converted by the bees to honey storage for the brood chamber. This should be done over time however so as not to overly disturb the structure of the brood chamber.



Beautiful natural comb!

As long as one full bar of honey is left between the brood chamber and the main honey stores the queen will generally not move beyond the brood chamber, removing the need for a queen excluder.

Honey is extracted by removing bars with fully capped comb as it is produced over the course of the season to encourage continued production. If not removed the bees will stop storing honey further back in the hive (unlike in a Langstroth hive) owing to the horizontal rather than vertical nature of the honey storage system. The capped stores will be flanked by freshly drawn or incompletely filled comb on one side and the boundary of the brood chamber on the other. If both new wax and dark reused brood comb are present these should be segregated to prepare two grades of honey. If any pollen cells are present these may also be cut out if a clear honey is desired.

The removed bars are then crushed while warm and the honey drained into a suitable container. Additional honey may then be extracted from the wax by careful heating, done in a double boiler or by placing the comb into a solar extractor.

A great web resource is Bee Natural, a site all about natural beekeeping. <http://beenatural.wordpress.com/>

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