

Top-bar Hive Beekeeping



By Richard Ridler, Chairman, Bees Abroad

African beekeepers are experienced in the use of top-bar hives with good reason as explained by Richard Ridler.



KTBs in use in Africa. The lower image shows a KTB with a raffia and grass roof. All photos are courtesy of Bees Abroad.

For 'Bees Abroad' the top-bar hive is fundamental to our success. It is the tool which is the means of achieving our mission of relieving poverty in the poorest parts of the world. This article attempts to explain why top-bar beekeeping is preferred and the practicalities involved. I have attempted to make some comparisons between two very different types of top-bar hive. My next article will be about the challenges faced in developing countries of converting the honey produced into money, which is a lot easier said than done.

The idea of top bars is not new; it can be traced back to Greek times. The KTB (Kenya Top-Bar Hive) was invented at Sparsholt College of Agriculture in Hampshire in 1965. Originally to be the Ugandan Top-Bar Hive it only became the Kenyan Top-Bar because travel to Uganda became impossible during the time of Idi Amin. The Warrè hive is another top-bar hive invented for very different reasons and of a totally different appearance to the KTB. Invented in France in the early 20th century and known as the people's hive it was intended to provide an environment closer to nature. The Warrè hive consists of stacking boxes like a National and allowing the colony to expand vertically, whereas the KTB has a single box allowing the colony to expand horizontally. I have seen it suggested that vertical colony expansion is more natural to bees, but they can thrive in either. Both KTBs and Warrè hives have a following in the UK among the small, but growing, number of beekeepers seeking a less interventionist style of beekeeping. Their study and understanding certainly helps us examine and question the methods of beekeeping most of us were brought up with.

The KTB consist of a row of adjacent parallel bars on the top of a box below which bees build their comb. The bars sit tight alongside each other and are covered by a waterproof roof. There is no need for the precision woodworking required in making fully framed hives with the necessity of maintaining bee space accurately. The bees build comb naturally with the correct separation all round.

The KTB is the hive of preference in the developing world. It is particularly suitable where low cost, easy maintenance and simple construction are requirements. However, like all top-bar hives the KTB does not enable the more complex manipulations that are possible with fully framed hives. Before the advent of the KTB, African beekeepers had the same problem our British predecessors had with skeps; it was impossible to inspect inside the hive and the removal of honey was destructive.

The design requirements for what became the KTB were an absolute minimum cost and an ability to make it with very few, if any, tools, often just a machete (known as a panga in Africa and a cutlass in the Caribbean). Also vital is an ability to withstand hot, destructive environments and, of course, ease of use. The only critical dimension in a KTB is the width of the top bar, which is, conveniently, the same as a beer bottle cap and this is often used to measure it. As long as the box is about the right shape and size the hive will work. It is important that there are no gaps through which predators can enter. I have seen many a fat lizard sitting on the top bars comfortably feasting on bees!

KTB design in Africa

KTBs in Africa are generally made from local hardwoods as softwoods would soon rot. An even lower cost method is to make them by covering a structure made from small branches, bamboo or wicker, with mud. Roofs are needed to keep them waterproof and can be made of anything from a sheet of plastic or split bamboo to a piece of corrugated iron held down by rocks. Banana leaves placed on top are a great way of cooling hives. Hives are raised from the ground using anything available, such as rocks, and they may be suspended from trees by ropes or wires depending on the predators in the area. My recent local costing for all the materials to make KTB hives from wood in Uganda was £10/hive. Prior to use the top bars must be primed along the mid-line of the underside of the bar to encourage the bees to start their comb building in the right place. This is best done with a line of fresh wax.



Unripe honey comb from a KTB

African bees, *Apis mellifera* scutellata, have an absconding habit developed to avoid hazards such as drought and pests, and in an apiary it is common to find several empty hives. Hives are populated by 'catching' these absconding colonies or with passing swarms. To encourage the bees to enter, hives are baited by smearing the inside with various concoctions including lemon grass, local beer or wine, cassava, maize flour and banana skins. Apiaries must be in shady locations otherwise the hives will overheat.

KTB beekeeping involves few interventions, no queen rearing, no artificial swarming and no Bailey frame changes. However, dividing colonies is widely practiced to replace colonies that have absconded and ensure hive use is maximised. Colony division is akin to the Pagden method of artificial swarming. The prerequisite is a strong hive with eggs. Combs from the old hive are selected with eggs, brood and pollen. All the bees, including the queen, are carefully brushed off into the old hive and the combs are placed in the new hive. The flying bees return to the new hive, make a queen and a new colony is made. Should queen cells be present they can be transferred to the new colony and any in the old colony can be destroyed. The old hive with the remaining comb is placed elsewhere in the apiary.

Of course there is no British summer and winter in Africa; just wet and dry seasons, so the bees have no need to build up the large amounts of stores needed to survive the long winter and there is no need to feed them. It is too hot for honey to ever crystallise so that is something else it is not necessary to worry about; none of the problems with oil seed rape so many of us struggle with. African bees have the contrary habit of staying at home during the hottest part of the day and being most active early and late.

Both varroa and small hive beetle are endemic in tropical Africa and neither is managed by beekeepers. Bees have learnt to chase and bite the beetles aggressively and can herd them into corners, trapping them. Beekeepers are encouraged to pour used engine oil onto the ground around hives to kill the pupae, which develop in the soil around hives. The greater separation and lower density of hives reduces drifting and the spread of varroa but bees seem to have adapted to live with the mites. The nature of top-bar beekeeping is that used comb is not put back into the hive and this undoubtedly helps with reducing diseases. As in the UK pests and diseases will kill weak colonies. The secret is to have strong healthy colonies.



Removing honey from KTBs is simple. The beekeeper looks through the colony and decides if it can spare any combs containing honey. The comb is cut from the top bar, dropped into a bucket and taken away.

We at Bees Abroad are all beekeepers and we are all volunteers. We can make a real difference to the lives of the very poorest people in the world by helping to form beekeeping groups which produce and sell honey, the extra income paying for education and medicines. It is a very 'low tech' and sustainable way of helping that works.

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