

Building a Beehive

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Read this manual in conjunction with "Practical Beekeeping in NZ", by Andrew Matheson. Pub. Govt Printer 1984. Referred to in text as (PBK Page Number).

Introduction

The design of the Hobby Hive (also known as the Top Bar Hive) is based on the African bee keeping method of using hollowed out tree trunks which utilizes the natural rounded shape of honey comb to prevent the bees attaching the comb to the side of the hive.

The Hobby Hive is designed around this natural comb building activity of the honey bee. There are two critical factors that make this hive work so well. One is the particular angle of the sides and the other is the width of the top bars. Bees build their comb to a standard thickness. Therefore the correct width with a strip of foundation wax as a starter, enables the bees to centre each comb on the top bar.

There is a lot to learn about bees as they are far more complex than you first think. Give yourself time to learn. The Hobby Hive is designed for the amateur so that you can now enjoy having a few hives without the harvest hassles and financial outlay of a commercial hive. There is a knack to beekeeping which comes more naturally to some people than others. Each colony is different, and with experience you learn to read and manipulate them.

Your Responsibility as an amateur beekeeper.

(1) To the beekeeping industry. Ensure your hives are free of American foul brood disease (PBK 145). It is not poor management to get a hive infected with A.F.B. but it is poor management to fail to eradicate it. In New Zealand it is a legal requirement to do so, and the disease is notifiable.

(2) Check and abide by your government and local body laws that may have restrictions and / or conditions on having bee hives.

(3) You have a responsibility to your neighbours and the public. Not everyone shares your enthusiasm for bees. You must respect this. Position and work your hives in a manner that reduces any inconvenience.

Positioning Your Hive

Give serious thought to the placement of your hives because once the bees have homed in to their hive it is difficult to reposition them.

The ideal is to position your hives with the entrance facing the rising morning sun. This gets the bees up and out foraging early. It is morning the flowers generally have the most nectar from overnight production. This is not always possible because there are other factors to consider.

The bees develop a flight path. This can generally be worked out in advanced so consider the nuisance factor of bee droppings in flight (your neighbours washing line and / or house) and bees flying were people walk.

Once you have identified a good place, keep it off the ground on blocks and tilt it slightly down hill. This prevents any rain water landing on the landing pad running into the hive.

Dressing to Handle Your Bees (PBK 49-50)

(1) White overalls: Ones with a zip front are best sew up all side pockets to prevent any bees getting through. Wear the overall legs out over the gumboots to prevent bees falling down them when you are working the hive. As bees generally crawl upwards have the leg bottoms elasticised or secure.

(2) Veil: There are several types on the market, but a basic one worn over any hat with a wide firm brim will do for the amateur. A straw sunhat available from many department stores for just a few dollars works well. Buy the veil first to ensure the hat fits the veil. Wear the veil under your overalls to be good and bee proof. You can buy bee suits with the veil, hood and overalls all in one, but they are relatively expensive.

(3) Gloves: Specialty leather gloves are available from any beekeepers supplier. Some people use kitchen rubber gloves. If these are used extra care must be taken to see that there are no gaps around the wrists, as this area tends to be particularly vulnerable to attack.

(4) Gumboots: Ones with long legs are best. Any colour.

Management Tools and Equipment:

(1) Smokers: A must. Do not work bees without one.

(2) Hive tool: For the Hobby Hive something like a large screwdriver for loosening the top bars and a paint scraper for removing propolis and bur comb is all that is required.

(3) Bee brush: Recommended for removing bees from the comb. A proper soft bristled bee brush must be used so bees don't become caught in the bristles as this makes them very agitated. Wing feathers from a hen, turkey, goose or similar bird may be used with satisfactory results.

(4) Entrance Block: It is used over winter to reduce the entrance of the hive and lessen the risk of attack by wasps and mice. If the colony is small the guard bees are more able to defend their hive against robbing bees with a small entrance.

(5) Hive Divider: For reducing the hive area. This may be necessary during winter, when the colony is small, or for producing section honey.

Acquiring Your Bees (PBK 50-55)

There are four ways to acquire your bees.

(1) Swarms: The most common and cheapest way is to catch a swarm. Leave your name with the local Agricultural Department., Police Station and Local Body office and you are bound to get a call. The peak swarming season in New

Zealand is usually mid October to late November, but swarms are often available right up to and after Christmas. Swarms, however, can carry American foul brood and frequently have an old queen.

(2) Package bees from a queen breeder: This is similar to a swarm, but you purchase a known quantity (1 kg') of bees, a new vigorous queen and you know pretty well when you are going to get them. Package bees are not to be confused with Nuc, or nucleus, colony which contains frames of brood and food as well as the bees. A package is really a swarm of guaranteed disease free bees with a young quality queen.

(3) A bait hive: Not recommended for your first hive as this is a very unreliable way of acquiring bees. A bait hive is an empty used hive which attracts swarming bees by its smell. One with wax foundation will also work. It is put outside over the swarming season in the hope that a swarm will find it and move in. Worth trying for fun when you are established.

(4) Getting a Hobby Hive Nuc from a person with a Hobby Hive:

Take two combs of sealed brood out of the hive along with a comb of honey and attached bees. Put in a queen cell or mated queen and you are away. These are easily made and can be sold to others once you are established. Spring is the best time to get your bees, as this allows one full season for the colony to establish itself enough to survive the winter without too much feeding. You can expect a small harvest of 3-4 kgs in the first year.

Feeding (PBK 79-85)

Whichever way you start off your hive, you should feed them about 400 ml of sugar syrup twice weekly. There are two reasons for this:

(1) To supplement natural food supplies: If it is early spring there may not be much nectar about.

(2) To stimulate the bees to build wax comb and breed. A little and often is more effective than a large quantity less often. Use either a special feeder that is shaped to fit in one section or put a bowl of syrup inside the back of the hive with the hive divider between it and the bees. If your colony is small put the entrance block across the front so it is easier for them to defend their hive against robbing bees and wasps.

Keep this up for two to four weeks until they are well established and a natural nectar flow is available.

Handling the comb

When new, the combs are rather delicate especially when they are full of honey or brood. Keep them hanging downwards at all times otherwise they will bend and possibly break from the top bars. Once the brood comb has been used for a period it darkens and becomes considerably more robust. If you wish to remove the bees from the comb, brush them off rather than shake the comb. You will find it easier working your hive by removing some of the undrawn bars at the back then loosening the ones you wish to inspect and move them back as you go. This will give you plenty of room to move. If you wish to remove some of the combs from the hive you will need a Nuc or box large enough to hold them during your inspection.

The Queen

The hive is dominated by the queen. The ideal hive is one which is high producing, quiet and easy to handle. Each hive has its own personality. If you have a problem with a hive more often than not requeening will solve it.

Requeening (PBK 94-100)

(1) Caged Mated Queens. First de-queen your hive. There is no easy foolproof way, however, the queen is usually found on the brood combs. Look first where the larvae are very small or where there are eggs. Once found remove her with the comb she is on, plus another comb of brood and a comb of honey and place these into a Hobby Hive Nuc box. The bees which are on these combs go into the Nuc as well.

Remove the attendant bees from inside the queen mailing cage before inserting it in the hive. To do this, place the cage in a large plastic bag and lift the gauze. Gently shake all the bees out, return the queen to the cage and close it. Do this inside with the windows and doors shut as an extra precaution. Take care not to damage her. If there is a cover over the candy on the outside then remove it. This will allow the bees in the hive to eat their way in, to release the queen. Attach the cage to a top bar with the wire gauze downwards and place it in the hive between two brood combs. Leave for a week. Once the queen has been released remove the cage. Do not disturb the hive anymore than necessary. After another week or two the queen should have settled in and a thorough check can be made.

If there are eggs and/or very young larvae present then she is laying, alive and well. You can then either discard (i.e. kill) the old queen and return the combs from the Nuc back to the main hive, or use this Nuc to start another Hobby Hive.

If the new queen has not been accepted then return the old queen with the combs from the Nuc until you can organise another new queen. Check for and remove any queen cells that may have been started in the queenless hive.

(2) Queen Cells

If you requeen using this method remove the old queen as explained (in mated queens). Carefully place the queen cell into a queen cell protector and hang it down between two combs of brood. Close the top bars gently back together leaving a little wire protruding. This queen will emerge as a virgin, so time must be allowed for mating flights before you check for eggs and larvae. This can take as long as 3 to 4 weeks in the spring and 1 to 2 weeks in the autumn. (PBK14& 106)

Increasing your hive numbers

Once you have one hive, you can increase numbers quite rapidly. This is simply done by taking 2 or 3 brood combs and a honey comb and placing them in the new hive after ensuring that the queen has been left behind. Introduce a queen into the new hive by one of the above methods.

Feed the new hive sugar syrup as explained earlier, to get the queen breeding and to build up the colony. Increases are best done in the late spring so that the colony is strong by the late Autumn close down.

Rearing your own Queens (PBK 100-106)

You will need:-

1. A queen raising bar.
- 2 Queen cell cups to match.
3. A grafting brush.
4. A Nuc hive.
5. Queen cell protectors.

Step 1

Feed the hive a little (500 mls) sugar syrup about three times a week for two weeks to ensure the queen is laying well.

Step 2

One day before grafting put the queen raising bar, with all the plastic cups in place, in the hive for the bees to clean and warm.

Step 3

Remove the queen on a comb of brood plus an extra comb of brood if available and one of honey. Put into a Nuc hive. The main hive is now queenless. Leave as is for eight to twelve hours.

Step 4

Select a comb with twenty four to thirty six hour old larvae. These larvae are about 1 to 2mm long. Take this frame and the queen raising bar to a warm, sheltered place and graft the larvae into the plastic cell cups (PBK 102).

Your aim during these manipulations is to try and get all the young uncapped larvae into the nuc with the queen, and leave the capped brood in the main hive. If you can achieve this it will prevent the bees making queen cells other than the ones you have introduced. You will be grafting from combs out of the nuc.

Step 5

As quickly as possible after grafting, return the queen raising bar back to the queenless hive. Because the hive has been queenless for twelve hours the bees should readily accept them. Place the grafted cells between two brood combs. Feed the hive again and close up.

Step 6

Check in three days to see how many cells have been drawn. Don't expect too high a rate the first time, as grafting is more difficult than it appears.

Step 7

Five days after grafting quietly go through your hive and check to see if the bees have started to raise any other queen cells off the brood combs. If so, gently remove them.

Step 8

On the tenth day from grafting the cells are at their most robust and can be moved (PBK 105). Remove them from the bar and place them into the queen cell protectors. They are now ready to be transferred (PBK106).

Step 9

If you wish to requeen your queen raising hive then leave a cell in place on the bar and it will hatch. Otherwise, return the old queen along with the brood from the nuc hive. Check again after a few days to see that there are no queen cells being raised on the combs.

Harvesting your Honey

You will need:

1. A bee brush
2. Hive tool and scraper
3. Smoker
4. Box large enough to hold as many combs as you intend to harvest.
5. A cover for the box (a wet sack is ideal).
6. Replacement bars with foundation attached.

This is where the Hobby Hive comes into its own for the amateur. Use your extra top bars and wax starter foundation. Prepare these by waxing in the foundation. The hive does not have to be full before you start harvesting.

Remove the hindmost (rear) comb of honey then with one hand, hold on firmly to the top bar, and with the other, brush the bees from the comb onto the ground at the front of the hive or directly back into the hive. Don't expect to get every last bee off. Then place the harvested comb in your holding box and cover it to keep robbing bees out (PBK 20). Proceed to the next comb and repeat the procedure.

When your harvesting is complete, replace the combs you have taken with the foundation top bars. If the honey flow is still on these will soon be drawn and filled. You can take a little honey often or leave it till the hive is full then do a major harvest. However, DO NOT let the hive get over full as this will make it difficult to harvest as the bees will build burr comb.

Burr comb is comb built in areas other than the comb face. They will join combs together and to the sides of the hive if space is short.

Extraction

You will need:-

1. A large sharp knife.
2. A garden sieve or similar.
3. A bucket that the sieve fits neatly in to.

Take your harvested combs inside to a bee proof place. Bees will smell the honey and if they can get to it a robbing frenzy will start. Bees are particularly prone to robbing in the autumn after the honey flow.

With the knife, cut the honey combs from the top bars allowing them to drop into the sieve which is sitting over the bucket. Mash the comb well with the knife and let the honey drain overnight. If it is cold it will drain better in a warm room.

The honey may need to be put through a second finer sieve. You can make one special for the job or use an old pantyhose.

Store the honey in an airtight container as honey is hygroscopic (absorbs water from the air). If enough is absorbed it can start to ferment. To process your honey further refer PBK 122-123.

The top bars can now be scraped clean of wax and the honey washed off ready for new starter foundation.

Alternatively, you can leave 10- 15mm of comb on the top bars and return them directly to the hive for the bees to clean up and commence rebuilding.

Comb Honey (PBK 125-129)

There are two types of comb honey. One is CUT COMB HONEY where squares are cut from the comb and fitted neatly inside a plastic cut comb box (PBK 129). The other is called SECTION HONEY where you fit thin foundation to square wooden sections (PBK126) and the bees fill them for you in the hive. The section comb honey holding frame is designed to hold three of these in the Hobby Hive.

Hive Management for Section Honey (PBK 127)

You need four conditions to successfully fill sections. Plenty of bees, a young queen, a confined space and a good honey flow.

The first three are under your control. To get plenty of bees feed your hive sugar syrup in the early spring to get the queen breeding well (PBK 79). Generally you would put at least three or four holding frames in at once. If your hive is not already full to the back put the sections right up against the last fully drawn comb

in the hive with the open face of the sections facing to the back. Remove any partly drawn combs from the hive. These can be returned at a later date when you have finished with your sections.

To confine the space in the hive put the hive divider up against the open face of the last holding frame and put a block of wood on the floor to cover the hole.

Keep a close eye on the hive. If the flow is heavy you will have to manipulate the sections frequently or the hive will become congested.

Fitting the Foundation into the Sections

Fitting foundation into the sections with the centre groove is outlined on PBK 126. However, ones with grooves are not always available. To fasten the foundation in those you require a block of wood cut to fit neatly inside a made up section which when laid flat is thick enough to come halfway up the width of the section. The made up section is then laid over the block and the foundation put in place and secured with a hot implement. A wide paint scraper is ideal or you can make a tool for the job.

Heat the scraper in a flame (camping stove or barbecue), touch the wax sheet to the hot scraper and quickly push against the section Hold the wax for a second or two until the wax has stuck The wax should be stuck to the scalloped side which when placed into the holding frames should be the top and bottom. Ensure the foundation is around the right way with the point of the hexagon to the top and bottom.

Processing Your Wax (PBK 135- 139)

Wax is a saleable commodity. You can also use it yourself for moulding and candle making. Acquire an old preserving pan or similar and use it to melt down the wax. This can be done in two ways:

1. **In an oven.** Be very careful as hot wax is inflammable. Do not boil it. Use a timer as a reminder to check it every ten to fifteen minutes. Put the oven on a low heat, round 110 C(225F). Do not overfill the pan. This method recovers all the honey that may still be in the mashed wax. This is not usually pleasant to eat however, it can be fed back to your hive.

2. **On a hot plate.** Put some water in the bottom of the pan, the amount is not that important, then the wax on top. Heat the water until all the wax has melted. As with the oven method, do not over fill the pan and do not boil vigorously.

With the wax melted pour it through a kitchen sieve into moulds. A 2 Lt ice cream containers are ideal. As the wax sets the water and other impurities sink to the bottom. Once a sieve has been used for wax it is no good for anything else so keep it aside for this job.

Other methods are described in **PBK** 137 but these involve special appliances which many of you will not have to begin with.

Wax processing is best done at night or on a cold winter's day, otherwise you could end up with a kitchen full of bees.

Spring Cleaning the Hive

The spring is a good time to give the hive a thorough clean and at the same time check for American Foul Brood disease. Starting at the back remove all the top bars without comb and scrape all the propolis off them. Then scrape down the inside of the hive brushing all the loose propolis forwards. Next, move the top bars with comb on them to the back scraping and brushing the hive as you go until you get to the front where the rubbish can be discharged out the entrance. When complete move the top bars forward to their original position and close the hive to let the bees settle down again.

Don't be in too much of a hurry to remove the entrance reducer. October is generally early enough, however if you can see congestion around the entrance then this indicates a very active hive and it is generally quite safe to remove it earlier if this is the case.

Wintering Down

In the autumn (fall) go through the hive and check for American foul brood. Assess the amount of honey for winter supplies (**PBK** 79). Put the entrance reducer over the front to keep the mice out and to enable the bees to defend their hive easier. Put the hive divider up against the last frame of honey with a block of wood over the gap at the bottom. This prevents the bees propolis up the empty part of the hive over the winter and contains the hive size.

Beekeeping Clubs

If there is a club in your area it is a good idea that you become involved. They give support and valuable interaction of ideas. Contact your local Department of Agriculture officer or public library for your local club contact.