

NEW BIOSPHERE AGRICULTURE



APIARY BEEKEEPING & HONEY

European honey bee. *Apis Mellifera*.
The European honey bee is one of an
estimated 6–10 honey bee species
worldwide and the only one that
occurs in Australia.



PASCAS FOUNDATION (Aust) Ltd
ABN 23 133 271 593

Queensland, Australia

Pascas Foundation is a not for profit organisation

www.pascasworldcare.com www.pascashealth.com

Em: info@pascasworldcare.com

Em: info@pascashealth.com

NEW BIOSPHERE AGRICULTURE – the GOAL:

It is possible to feed 2,000 people all year round from 1 acre of land, that is, 5,000 people can be fed all year round from 1 hectare of land. It is possible to do this almost anywhere on the planet. Okay, the diet may be limited however it will be nutritious, but it is possible without utilising large volumes of water, and it can be all vegetable and fruit based, with products appropriate for the community, thus complementing their existing diets.

The first objective for New Biosphere Agriculture (NBA) is to establish demonstration units of the production of appropriate vegetables and fruits. These core modules are to be demonstration units at the optimum commercially viable scales as well as demonstration of small cottage units. These demonstration units are to be training units.

A core aspect of these modules is the incorporation of viable, stable, sustainable, renewable energy supply technologies. Without a continuous supply of electricity, then these demonstration units cannot be deployed to remote and emerging communities.

Though the capital cost of establishing these units may be high, once they are in operation, their ongoing operating costs are nominal, thus once the capital equipments are installed into the remote community, they become viable within that impoverished community.

Consider bringing all these technologies together within a refugee camp of any proportions, but more appropriately, to their traditional home regions to enable their return. Train members from that community at the NBA demonstration unit whilst the equipment is being installed. Then leave the ongoing operations for the benefit of the community, whilst providing ongoing technical and administrative support.

We do not have to allow situations mass hunger to continue. We have the solutions!

Type of adult bee	What they do	How many in a honey bee colony	How many in a bumble bee colony	What they look like in a honey bee colony	What they look like in a bumble bee colony
Queen	Lay eggs	1	1		
Worker	Take care of larvae, build and clean nest, forage	10,000-50,000	Less than 50 to over 400, depending on species		
Male	Leave nest to mate, then die	100-500	0-50, depending on species and season		



BEE HIVE JOURNAL:beehivejournal.blogspot.com/

A depository of over 276 different beehive designs, 93+ plans for beekeeping equipment and bee hives, beekeeping information and links from around the world.

The Anastasia Bee Hive:

Advice from Anastasia

page 83 of Book 1

“You need to make the hive in the shape of a hollow block. You can either take a log with a hole in it and hollow it out to enlarge the cavity, or use boards from a deciduous tree to make a long hollow box 120cm long. The boards should be no less than 6cm thick and the inside measurements of the cavity at least 40 x 40 centimetres.

“Triangular strips should be inserted into the corners where the inner surfaces meet, to make the cavity somewhat rounded. The strips can be just lightly glued in place, and the bees themselves will firm them up afterward. One end should be fully covered with a board of the same thickness, with a hinged panel at the other end. For this the panel needs to be cut in such a way so that it fits neatly into the opening and sealed with grass or some kind of cloth covering the whole bottom. Make a slit or a series of slits (to provide access for the bees) along the bottom edge of one of the sides approximately one and a half centimetres wide, starting 30cm from the hinged opening and continuing to the other end. This hive can be set on pilings anywhere in the garden plot. - at least 20-25 cms off the ground, with the slits facing south (if you are in the northern hemisphere).

“It is even better to set it up under the roof of the house. Then people will not interfere with the bees flying out, and will not be bothered by them. In this case the hive should be aligned horizontally at 20-

30 degree angle, (41cm – 60cm) with the opening at the lower end. The hive could even be installed in the attic, provided there is proper ventilation, or on the roof itself. Best of all, though, attach it to the south wall of the house, (if you are in the northern hemisphere) just under the eaves. The only thing is, you need to make sure you have proper access to the hive so you can remove the honeycomb. Otherwise the hive should stand on a small platform, with an overhead canopy to protect it from the sun, and can be wrapped with insulation in winter.



I remarked to Anastasia that this type of hive could be rather heavy, and the platform and canopy might spoil the appearance of the house. What to do in that case? She looked at me a little surprised, and then explained:

“The thing is that your beekeepers do not really go about it the right way. My grandfather told me about this. Beekeepers today have concocted a lot of different ways of constructing a hive, but all of them involve constant human intervention in its operation – they move the honeycomb frames around within the hive, or move both the hive and the bees to a different spot for the winter, and that is something they should not do.

“Bees build their honeycombs at a specific distance apart to facilitate both ventilation and defence against their enemies, and any human intervention breaks down this system. Instead of spending their time gathering honey and raising offspring, the bees are obliged to fix what has been broken.

“Under natural conditions bees live in tree hollows and cope with any situation perfectly well on their own. I told you how to keep them under conditions as close to their natural ones as possible. Their presence is extremely beneficial. They pollinate all the plants much more effectively than anything else, thereby increasing the yield. But you must know this pretty well already.

“What you may not know is that bees’ proboscis open up channels in the plants through which the plants take in supplemental information reflected by the planets – information the plants (and, subsequently, human beings) require.”

But bees sting people, don’t you see? How can somebody get a good rest at a dacha (house) if they’re constantly afraid of being stung?

“Bees only sting when people act aggressively toward them, wave them off, become afraid or irritated inside – not necessarily at the bees, but just at anyone. The bees feel this and will not tolerate the rays of any dark feelings. Besides, they may attack those parts of the body where there are channels connecting with some diseased internal organ or where the protective aura has been torn, and so forth.

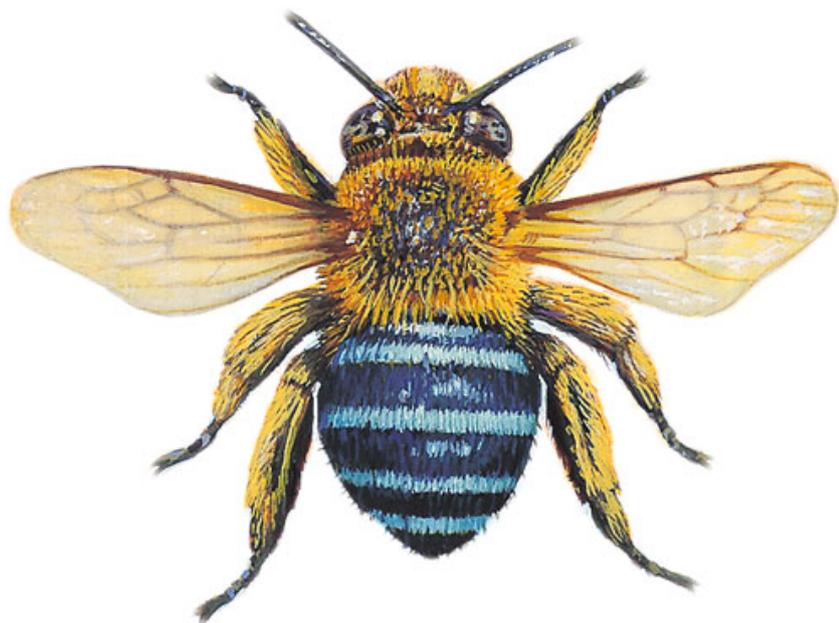
“You know how effectively bees are already used in treating the disease you call radiculitis, but that is far from the only thing they can do.

“If I were to tell you about everything, especially showing the evidence you are asking for, you would have to spend not just three days but many weeks with me. There is a lot written about bees in your world, all I have done is introduce a few correctives – but please believe me, they are extremely important correctives.

“To establish a colony of bees in a hive like that is very easy. Before dumping a swarm of bees into the hive, put in a little chunk of wax and some honey-plant. You do not need to put in any hand-made frames or cells. Afterward, when there are colonies established on even a few neighbouring land plots, the bees will multiply all by themselves, then as they swarm, they will occupy the empty hives.

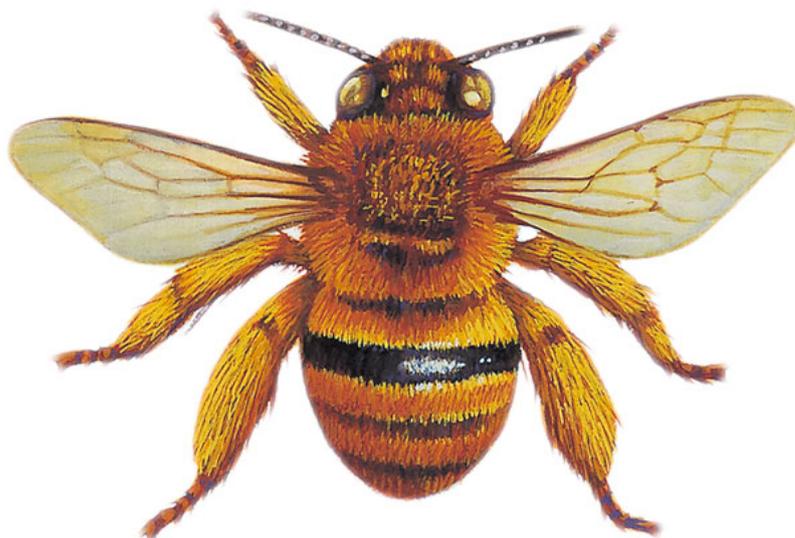
To gather the honey, open the panel, break off the hanging honeycomb and extract the sealed honey and pollen. Only do not be greedy. It is important to leave part of it for the bees for the winter. In fact, it is better not to collect any honey at all during the first year.

Thankyou to Vladimir Megre and Anastasia for these instructions.

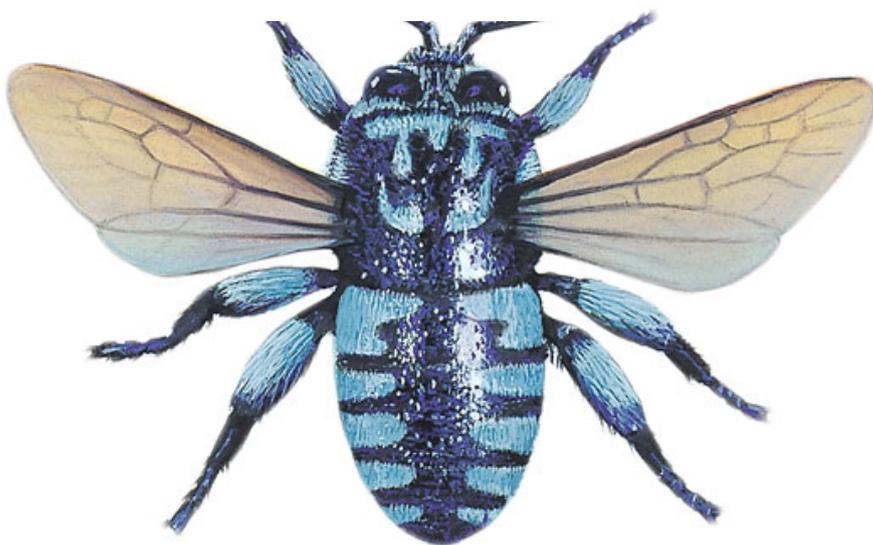


Blue-banded bee. *Amegilla cingulata*. Size: 1.4 mm. This species is particularly attracted to blue, even people's clothes. It occurs Australia-wide (except Tasmania and the NT), making solitary nests in burrows, often in soft rock such as sandstone.

Teddy bear bee.
Amegilla asaropoda.
Size: 1.8 mm. Round bodies covered in dense orange-brown "fur" give this bee its name. It nests in soil or soft-rock burrows. Compared to honey bees, its flight is faster and more erratic as it darts between flowers.



Cloak and dagger cuckoo bee.
Thyreus nitidulus. Size: 1.4 mm. This bee exploits other species to raise its offspring. Females stalk their hosts, sneaking into nests under construction and laying their eggs, which hatch early to plunder the nests' nectar and pollen reserves.



BEEKEEPING:

According to Anastasia in every garden-plot there should be a minimum of one colony of bees. She gives special instructions on how to make a beehive (see below).

She states that the way people have been raising bees until now has “just gets in the way”. (pp 81 of book 1 of the Ringing Cedars series)

In regards to bees Anastasia says that the products that come from bees are “so useful for Man”. (pp 82)

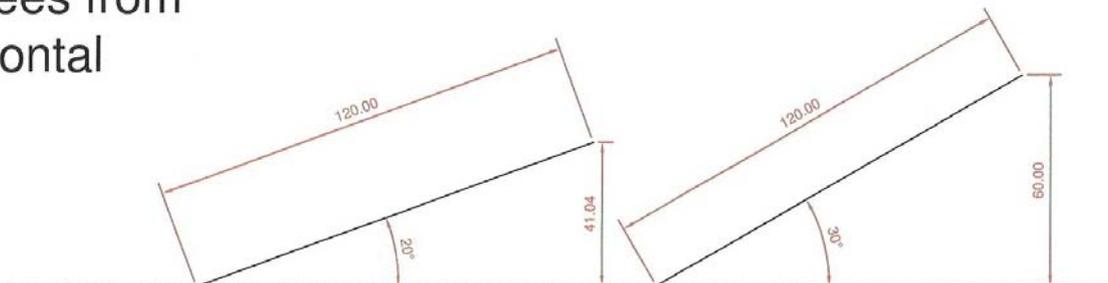
Instructions for making a beehive:

- Make the hive in the shape of a hollow block.
- Use a log that already has a hole in it and make it bigger.
- Or use boards from deciduous trees to make a long hollow box 120 centimetres long – 4 feet (the boards should be no less than 6cm thick – 2.5 inches). The inside measurements of the cavity should be at least 40 x 40 centimetres – 15 inches x 15 inches.
- Triangular strips should be inserted into the corners where the inner surfaces meet to make the cavity rounded (lightly glue the strips so the bees can firm them up later).
- Cover one end with a board of the same thickness, with a hinged panel at the other end. Cut the panel so it fits snugly into the opening and seal it with grass or cloth covering the whole bottom.
- Cut a series of slits in the cloth (not too many) along the bottom edge of one of the sides approximately one and a half centimetres wide, starting 30 cm – 12 inches from the hinged opening and continuing to the other end.
- Set the hive on pilings anywhere in the garden-plot at least 20-25 centimetres 8-10 inches off the ground, with the slits facing south (if you are in the northern hemisphere). Stand it on a small platform, with an overhead canopy to protect it from the sun, and wrap it with insulation in the winter.
- Whenever possible place the hive under the roof of the house so as not to interfere with the bees when they are flying in and out. Attach it to the south wall of the house, just under the eaves.
- Align the hive horizontally at a 20-30 degree angle, with the opening at the lower end (20° elevation at one end is 41cm - 30° elevation at one end is 60cm).
- The hive can be installed in an attic as long as there is proper ventilation, or it can be installed on the roof of the house.
- Make sure that no matter where you place the hive you have proper access to it and can remove the honeycomb.

- If the hive is not made properly the bees will spend their time to fix what is broken instead of gathering honey and producing offspring.
- Under natural conditions bees live in tree hollows. They should be kept under conditions as close to their natural ones as possible.
- The bees pollinate the plants more effectively than any other means.
- Bees' mouths open up "channels in the plants through which the plants take in supplemental information reflected by the planets".
- Put a little chunk of wax and some honey-plant in the hive to attract bees. Once the colonies are established on a few neighbouring plots the bees will multiply by themselves.
- When gathering the honey do not be greedy. Break off the hanging honeycomb and extract the sealed honey and pollen. Be sure to leave part of it for the winter. It is better to not collect any honey at all for the first year. (pp 82-85)

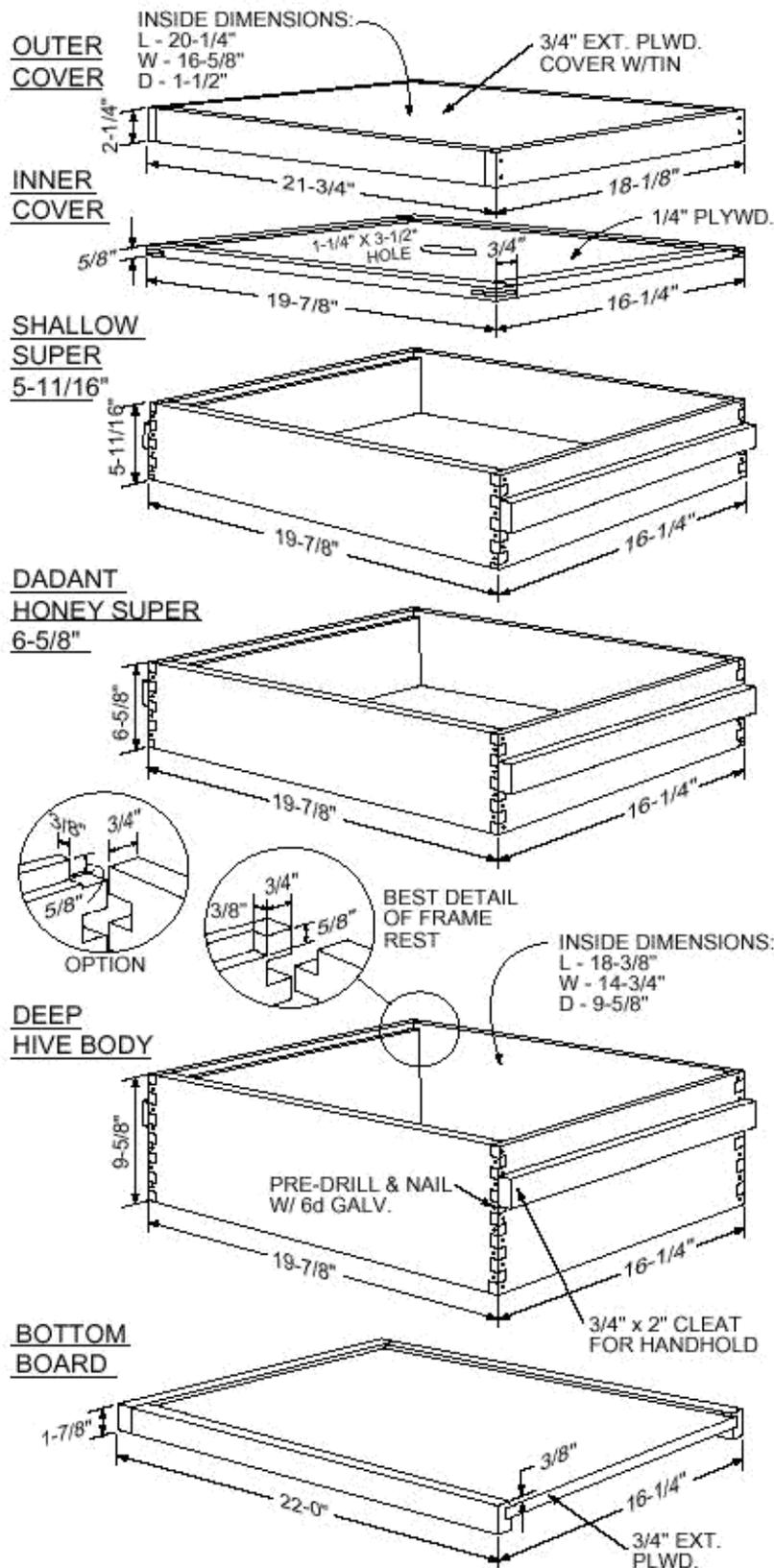
20 and 30
degrees from
horizontal

20° incline for the hive lifts the end 41cm – 16inches,
whereas a 30° incline lifts the end 60cm – 24inches.



10-FRAME LANGSTROTH BEEHIVE

CONSTRUCTION DETAILS FOR 3/4" THICK LUMBER



The species of wood used to make a beehive can vary depending upon what is available in your area. The minimum thickness should not be less than 3/4". If you are using standard dimensional lumber, you can use 1x6 (3/4" x 5-1/2") for the shallow super, 1x8 (3/4" x 7-1/4") for the medium super and 1x12 (3/4" x 11-1/4") for the deep hive body.

Start by cutting the boards to length. For fronts and backs, cut them a smidgen over 16-1/4". For sides, cut a smidgen over 19-7/8". At this point, follow the steps described on how to make a box joint from the PDF 'Box Joint' files.

Now that you have the joint cut and the boards cut to finished size, cut the 5/8" x 3/8" rabbet on the 16-1/4" boards stopping just short of the box joint pin at each end. (Chisel these square after the boards are assembled). Note detail of frame rest at left. Pre-drill holes for nails in each pin.

Assemble boxes with glue and nail each pin with a 6d galv. nail. Attach 1x2 handholds with screws and glue. Attach metal rabbets on the frame rest notch. Fill any holes and paint all surfaces, both outside and inside and top and bottom edges, with two coats of paint.



Hive registration

http://www.dpi.qld.gov.au/27_10965.htm

Under the *Apiaries Act 1982*, it is a requirement to become a registered beekeeper in Queensland if you own one or more beehives. Registration is required for the orderly conduct of the industry, and to enable control of important honeybee diseases. A fee is charged annually.

Send the completed form and payment to:

Apiary Section

Department of Primary Industries and Fisheries

LMB 17

Warwick Qld 4370

Phone: 13 25 23 (cost of a local call within Queensland) or +61 7 3404 6999

8 am to 6 pm Monday, Tuesday, Wednesday and Friday

9 am to 6 pm Thursday

Em: callweb@dpi.qld.gov.au

Fx: +61 7 3404 6900



AUSTRALIAN NATURE CONSERVATION AGENCY:

<http://www.environment.gov.au/biodiversity/invasive/publications/bees/index.html>

Summary

Feral and managed colonies of honeybees have been present in Australia for about 170 years, but their distribution and abundance has increased dramatically over the last 60 years. There are over 500,000 managed hives in Australia and an unknown number of feral colonies. Managed colonies are patchily distributed in time and space, with beekeepers usually shifting loads of around 100 hives into and out of areas for 2-4 month periods coinciding with peaks in flowering of key plants (often species of Eucalyptus). A concentration of 100 hives at the site of an apiary is only equivalent to about 0.1 colonies per hectare, because honeybees forage out to distances of at least 2 km from their hives, covering at least 12 km².

Feral colonies are also patchily distributed being least abundant, if not absent, from alpine areas and inland areas away from water. Limited quantitative data show densities ranging from 0.001 feral colonies per hectare in inland mallee-heaths to locally high densities of 0.77 colonies per hectare in riparian woodlands. Locally high densities, however, may reflect restricted availability of suitable hollows and not effective densities in the area as a whole.

The hollows used by feral honeybees broadly overlap with those used by a variety of native birds and mammals, but feral colonies appear to occupy only a small proportion of the available hollows (often < 1%). This suggests that interactions between feral colonies and hollow-nesting Australian fauna may not be substantial but few studies have adequately assessed the availability of suitable hollows, particularly their internal characteristics.

Honeybees visit the flowers of at least 200 Australian plant genera and interact with a wide diversity of native flower-visiting animals. For many plants, honeybees were the most frequent floral visitors, and often consumed more than half of the floral resources' being produced.

Numbers of native bees may decline following influxes of honeybees into an area but data on this relationship were equivocal. Reproductive performances of several species of native bee also did not change dramatically following influxes of honeybees to areas. However, honeybee densities may not have been manipulated adequately to cause a measurable response, and second order interactions involving responses by predators or parasites may have disguised the responses of native bees.

Responses of honeyeaters to influxes of honeybees varied. In *Banksia ornata* heathlands where there was a surplus of floral resources the numbers of honeyeaters did not change following influxes of honeybees, but at patches of *Callistemon rugulosus* New Holland Honeyeaters increased the sizes of their feeding territories and reduced the frequency with which flowers were visited. Population densities in patches of *Callistemon* were reduced by 30-50% when honeybees were prominent.

Honeybees also influenced the production of seeds by various plants. At some plants seed production was reduced when honeybees were frequent floral visitors (eg *C. rugulosus*) while at others seed production was enhanced (eg *B. ornata*). Plant species whose seed production increased were those that received inadequate attention from their native pollinators. Plant-pollinator systems are vulnerable to perturbations like habitat clearance and degradation, and some Australian plants may now depend on

honeybees for full pollination because their native pollinators have declined dramatically or even disappeared in some areas.

Whether honeybees should be included or excluded from selected areas will depend on which native taxa are to be favoured in those areas. Some plants may benefit by the presence of honeybees while other plants and animals may continue to suffer degradation in their presence.

Future research should measure the effects of honeybees on a wide diversity of native flora and flower visiting fauna to firmly establish the extent of detrimental interactions. Both descriptive and experimental studies are needed. The spatial and temporal scales of manipulative experiments must be carefully considered. Manipulations that reduce rather than increase the numbers of honeybees working flowers in an area may be more relevant to future management programs that are likely to reduce the numbers of honeybees in an area. Some priority should also be given to studies on the population dynamics of feral colonies of honeybees and broadacre methods of efficiently removing feral colonies from selected areas.

Management of honeybees in areas set aside for conservation will remain contentious while there is insufficient information about interactions between honeybees and the Australian biota. A regional approach that leads to at least some of the natural resources within each region being maintained free from honeybees would promote conservation of regional biodiversity and provide an alternative management strategy that is not reliant on measuring the effects of honeybees on natural systems. Ultimately effective management of honeybees and natural resources will depend on cooperation from the beekeeping industry.



Visit the above website for further information.

Also visit <http://www.honeybee.org.au/pdf/NBPFBIAE.pdf>

Health Benefits of Honey <http://www.organicfacts.net/organic-animal-products/>

Natural honey has been used by mankind since the past 2,500 years, all over the world. While the numerous health benefits of honey have made it an important aspect of traditional medicines such as Ayurveda, scientists are also researching the benefits of honey in modern medicine, especially in healing wounds.



Known as Honig in German, Miele in Italian, Shahad in Hindi, Miel in French, Miel in Spanish, Mel in Portuguese, мед in Russian, Honing in Dutch, and μέλι in Greek, there is hardly any region in the world where honey is not cherished.

What makes honey so popular? It is the ease with which it can be consumed. One can eat honey directly, put it on bread like a jam, mix it with juice or any drink instead of sugar, or mix it with warm water, lime juice, cinnamon and other herbs to make a medicine. It is savoured by all due to its taste as well as health benefits.

The health benefits of honey include the following:

Sweetener: Sugar can be substituted with honey in many food and drinks. Honey contains about 69% glucose and fructose enabling it to be used as a sweetener.

Energy Source: Honey is also used by many as a source of energy as it provides about 64 calories per tablespoon. One tablespoon of sugar will give you about 50 calories. Further the sugars in honey can be easily converted into glucose by even the most sensitive stomachs. Hence it is very easy to digest honey.

Weight Loss: Though honey has more calories than sugar, honey when consumed with warm water helps in digesting the fat stored in your body. Similarly honey and lemon juice and honey and cinnamon help in reducing weight.

Improving Athletic Performance: Recent research has shown that honey is an excellent ergogenic aid and helps in boosting the performance of athletes. Honey facilitates in maintaining blood sugar levels, muscle recuperation and glycogen restoration after a workout.

Source of Vitamins and Minerals: Honey contains a variety of vitamins and minerals. The vitamin and mineral content of honey depends on the type of flowers used for apiculture.

Antibacterial and Antifungal Properties: Honey has anti-bacterial and anti-fungal properties and hence it can be used as a natural antiseptic.

Antioxidants: Honey contains nutraceuticals, which are effective in removing free radicals from our body. As a result, our body immunity is improved.

Skin Care with Milk and Honey: Milk and honey are often served together as both these ingredients help in getting a smooth soothing skin. Hence consuming milk and honey daily in the morning is a common practice in many countries.

Honey in Wound Management

Significant research is being carried out to study the benefits of honey in treating wounds. Nursing Standard provides some of these benefits in the document - The benefits of honey in wound management. These have been given below:

- Honey possesses antimicrobial properties.
- It helps in promoting autolytic debridement.
- It deodorizes malodorous wounds.
- It speeds up the healing process by stimulating wound tissues.
- It helps in initiating the healing process in dormant wounds.
- Honey also helps in promoting moist wound healing.



The healing powers of honey are not hyped. The Waikato Honey Research Unit provides details about the world-wide research that is being carried out on the benefits of honey in medicine. Further, BBC reported in July, 2006 that doctors at the Christie Hospital in Didsbury, Manchester are planning to use honey for faster recovery of cancer patients after surgery. Such research will provide scientific evidence to the so-called beliefs held by honey lovers all over the world and help in propagating benefits of honey to more people.

Now that you know the benefits of honey, how do you eat it? You can eat it raw, add it in water and different beverages and you can add it in several recipes also. Organic Facts has published an ebook on quick and easy honey recipes.

Honey Heals

Written on the 13th of July 2010 by Don Tolman

Increasingly, people are choosing honey to replace sugar as a sweetener in their foods because they are realizing the damage, which particularly processed white sugar, can have on their health.

Honey is much sweeter than white sugar and is assimilated directly into the bloodstream very quickly. Honey contains more minerals and enzymes.

Raw honey has been used as medicine for centuries. It works naturally to harmonize the liver, neutralise toxins and relieve pain. Its warming / cooling energy is neutral. Honey moistens dryness and treats dry or hoarse throat and dry cough.

Both raw and heated types of honey are useful for treating stomach ulcers, cancer sores high blood pressure and constipation and can be applied directly to burns. Honey's sweet and toxic removal properties are used to break the cycle of alcoholism. Alcohol is a sugar. Snack on honey by the spoonful when more alcohol is craved during a hangover. Honey's harmonising effect is also beneficial when a *person is overworked, having menstrual problems or exhausted.*

A small amount of honey is normally adequate for those whose diet is primarily grains and vegetables. For most purposes, *dilute one to three teaspoons of honey in warm water or mix with other food to reduce it's strong effect.* Heated processed honey should not be used by people who have a build up of mucus. Raw, completely unprocessed, unheated honey is preferable because it has the ability to *dry up mucus and is helpful for those with oedema and too much weight.*

Raw honey is not recommended for infants under 12 months.

Honey has strong probiotic properties. It also has sleep-inducing, sedative and tranquilizing properties.

The nutrients in honey are believed to assist in cancer, heart and other diseases in the same way that raw fruits do. According to certain studies, dark coloured honey, such as buckwheat honey is generally thought to contain higher levels of nutrients than the light coloured varieties.



The Health Benefits Of Bee Pollen

<http://www.nutritional-supplements-health-guide.com/bee-pollen-benefits.html>

Bee pollen is sometimes called 'the perfect food'. Bee pollen benefits stem from the fact that it **contains more than 96 different nutrients**, including every single nutrient that is needed to sustain human life. It is made up of 40% protein, nearly all of it usable by the body without any further breakdown or metabolism.

The health benefits of bee pollen have been known for thousands of years. It was a mainstay of traditional Chinese herbal medicine, a discipline that is gaining a great deal of respect among western doctors recently.

Bee pollen combines 22 amino acids, vitamin C, B-complex and folic acid, polyunsaturated fatty acids, enzymes, and carotene - all of the major antioxidants that have so far been discovered.

In addition, bee pollen benefits your body with a number of vital trace elements that it can't manufacture, but needs in order to stay healthy. Those trace elements include **iron, zinc, manganese, copper, calcium, magnesium, and potassium** - all minerals that have proven health benefits.



It's been suggested - and accepted by most doctors and nutritionists - that **35 grams of bee pollen daily contains all the nutrients needed by the human body to sustain life**. Because bee pollen contains EVERY KNOWN NUTRIENT that your body needs, it's a highly recommended health supplement to "fill in the cracks" when your diet sometimes falls short of ideal. In fact, bee pollen supplements are often used to bolster nutrition in famine-stricken areas.

Besides the obvious, though, there are specific health benefits of bee pollen.

- Bee pollen **benefits your immune system**. Bee pollen contains proteins, mono and polyunsaturated fats, vitamins B, C, D, E, and beta-carotene, calcium, magnesium, selenium,

nucleic acids, lecithin, and cysteine, all of which have been proven effective in strengthening the immune system.

- Bee pollen helps **build resistance to allergies**. Because bee pollen contains traces of the substances that can trigger allergic hay fever, some allergists prescribe it to help lower sensitivity to local plant pollens.
- Bee pollen helps you to **cope more easily with stress**. Because it has a full complement of amino acids, essential fatty acids and vitamins that help regulate mood, taking bee pollen supplements can help you control the stress in your life.
- Athletes have used bee pollen for centuries to help them **increase their energy and endurance**. While studies have yet to bear this out, it makes logical sense that the long-term effects of using a bee pollen supplement are extremely beneficial to athletes. Considering the full spectrum of nutrients that bee pollen provides, it only makes sense that long-term bee pollen supplements would help athletes - who deplete their bodies of necessary nutrients on a regular basis.

Bee pollen should be avoided by those that have an allergy or sensitivity to bee venom. Other than a worsening of allergic symptoms in those who are already allergic, there are few bee pollen side effects.

Because of the incredible potential of bee pollen and the very low risk of side effects, we recommend supplementing your diet with a daily bee pollen supplement. There's one small problem with that - **bee pollen consists largely of indigestible "husks"**. In order to get enough of [bee pollen benefits](#), you'd have to eat enormous amounts of it. Only about 5% of the total volume is bioavailable to your body.

One exception to this rule is Natural Energy with NZ Bee Pollen, a product made by Xtend-Life Natural Products. Xtend-Life uses a patented process to prepare the bee pollen, and make an incredible 95% of its nutrients available to the human body.

As the evidence of bee pollen benefits mounts, we suggest a daily bee pollen supplement in addition to a standard multivitamin to help keep your body healthy and in top shape.

How Is Bee Pollen Made?

http://www.ehow.com/how-does_5407217_bee-pollen-made_.html

Collection

1. A [flower](#) is a bee's work place, and all flowers contain pollen. Pollen is the "milk" the bee needs to raise [babies](#). When a worker bee arrives at a flower, it sets to work and scrapes the male part of the flower, called the anther, using its front legs and jaw, to take the yellow powder known as pollen.

Mixture

2. As the bee takes the pollen, it mixes the powdery substance with a bit of honey which it has carried from the hive. At this point, the substance is sometimes called "bees' bread," and has become a protein which scientists have been unable to replicate in a laboratory setting. This substance will be fed to the next generation of bees being raised in the hive.

Pollination

3. It is during this process that bees perform their greatest service to nature--pollination. As a bee leaves one flower, laden with its collection of pollen from the anther of the bloom, it will move to a second flower to continue its work. The bee is likely to drop some of the pollen into the female part, called the stigma, of the second flower. This creates pollination, which allows the plant to reproduce--which means the continuation of nearly the entire food supply for people and animals.

Flight

4. As the bee returns to the hive, it packs away its day's stash in flight. Using segments of its legs that include special bristles, known as pollen combs, it brushes the pollen it has collected from its coat and legs. The pollen it has gathered is then placed in "baskets," which are concave areas located on its body. The bee tamps down its collection within the baskets; at the end of this process, each basket will hold one grain of bee pollen in it.

Feeding

5. The bee's pollen that the worker bee has spent the day collecting will be fed to the next brood of bees being raised in the hive. Bees begin their lives as eggs and then develop into larvae. In the larval stage, bees must be fed the pollen to continue in their development.

Bee pollen is an interesting compound that is the result of the combined effort of flowers and bees. Flowers [create pollen](#) so that the particles will spread to other plants and propagate their species. When bees fly from flower to flower, they pick up pollen on their bodies, which is then sprinkled on other plants they visit. But this is not the only interaction bees have with pollen. In addition to getting carrying it on their bodies, they also gather the microscopic powder and take it back to their hive.

What many people don't know is that bees actually live on pollen as their primary [nutrition](#) source. When a bee visits a flower, it gathers some pollen and then mixes it with some of the nectar in its honey sacks, which are located on its legs. When they mix the powder and nectar, they create [larger granules](#) that are much easier to tote around than the original fine particles.

Once taken back to the hive, the bees continue to alter the pollen. They add enzymes to keep it from deteriorating, and then digest the pollen to turn it into honey. Honey, being already digested bee pollen, keeps for much longer and feeds the bees in the hive.

Pollen is a very nutritionally rich substance, and provides everything the bees need to survive. In fact, bees would die without pollen! As a substance, pollen contains a great deal of protein, iron, zinc, potassium, and natural sugars. It even contains a little fat to keep the bees pleasantly plump during the winter months.

Better beekeeping in top-bar hives - Choose a site, making hive stands and attracting bees

<http://www.beesfordevelopment.org/info/info/topbar/better-beekeeping-in-topb-4.shtml>

So, you have made an appropriate hive, accepted as the design standard for your region, built from materials suitable for your needs. The top-bars are cut exactly and you have made a roof of some type. What happens next?

Preparing

If you are not already an experienced beekeeper, you will need to do a bit of research. Talk to local beekeepers with practical experience. You need to know two important things:

- The time of year when the main honey flow occurs;
- The times of year when bees are swarming and when they migrate or abscond into your area.

I will come back to swarming, migrating and absconding in future articles. Briefly, swarming is where a strong colony divides to make several new ones, with part of the colony remaining in the nest place. Migrating and absconding are where all the bees in a colony leave the nest place. These are the times when top-bar hives are most likely to become colonised and they need to be ready in good order, clean and in the right place for the bees to make them their home. Otherwise you will miss the opportunity, perhaps for several months.

Siting hives

Choosing a good site is very important. Remember that bees maintain the brood nest temperature at around 35°C. This means in cool places (or in cold weather) they have to use energy to maintain the temperature. In hot places or times they have to use energy and water to prevent nest temperature rising.

Also remember that beeswax combs become very soft and fragile at high temperatures and melt at 64°C. If combs collapse they make a mess and you may lose the queen, the honey or the whole colony.

This gives us some clues about what makes a good site for bees. Shade, forage availability (food), water and protection from severe weather - rather like our own homes really! However nice the house is, if there is no food or water in the vicinity the bees will not stay. (Would you?) Local beekeepers are the best source of information about flowering types and times. Agroforesters may also help in the selection of multipurpose trees or crops that benefit beekeepers especially when planning planting. Shade helps bees to maintain a comfortable temperature and protects the colony from the full force of the sun or rain. Shade also lets the beekeeper work comfortably with the bees. Research has shown that bees kept in the shade produce over 10% more honey. I have come to believe that temperature is one of the factors that affect the manageability of tropical bees - the higher the temperature the more defensive they can be. After all, who wants to be disturbed at the hottest time of the day? Water can be supplied by the beekeeper in very dry times if necessary. It may be needed to prevent bees from being a nuisance to others by taking water from around water collection points or home taps.

This brings us on to other reasons for choosing a site. These are mainly for people's comfort, convenience and profit. Firstly, protection of people has to be considered. Bees can be a danger to the

public so avoid putting them near frequently used places. Bees are best out of sight anyway because, sadly, they often attract the attention of thieves. However, it is helpful to the beekeeper if colonies can be conveniently situated to allow easy management and honey collection. A good-crop can be heavy to carry. Permission needs to be sought to use the site.

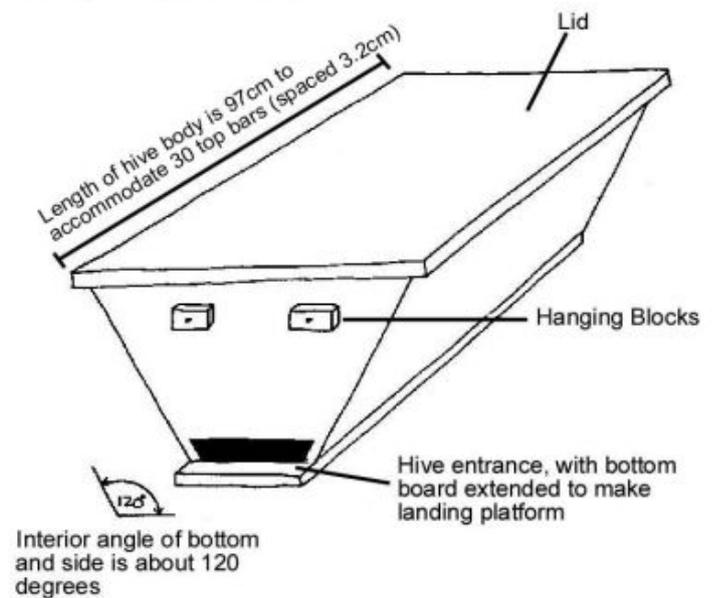
Making stands and installing the hive

There are two choices of installation for a top-bar hive. This will depend on the chosen apiary site and to some extent local practice, hence the value of talking to local beekeepers. Crucially, you need to know whether the honey badger or other large mammals are a problem for bees in your area. This is an important factor in determining what style of stand is best for your apiary.

The two main choices are hanging hives with strong wires from suitable supports, or to make a solid stand. As with any other beekeeping equipment, there will be different opinions about which style is best and traditional regional customs and variations in methods. The choice is your own and trying both ways allows you to choose which you prefer from personal experience - always the best form of learning.

Usually hives hung by wires are slung between two trees. If no suitable trees are available a stand that incorporates a shady roof (preferably thatched) can be constructed. If you go for the solid stand it is important that it is at least one metre high from the ground. If the uprights are made from a type of timber that will take root when pushed into the ground to eventually become a growing plant there will be less likelihood of hive stands collapsing with termite damage. It is essential with this type of stand that ants are not allowed to climb up the legs to attack the colony. A barrier of oil or grease will prevent this from happening. There are several methods of doing this. Non living stands can have their feet placed in old tin cans containing oil (or even water - but this evaporates quickly). Living stands or those that are inserted into the ground need a grease band around the legs. Sometimes this is done by wrapping oily rags around the legs or by brushing waste sump oil from the local garage directly on to the legs of the stand. In each case the oil / grease needs checking and renewing on a regular basis to make sure it is still effectively keeping ants away from the colony.

Kenyan Top Bar Hive

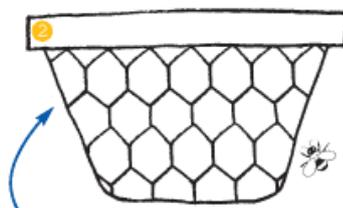


Taken from: Small Scale Beekeeping by Curtis Gentry, US Peace Corps

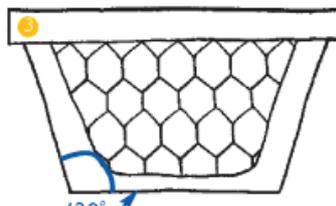


THE TOP BAR HIVE EXPLAINED

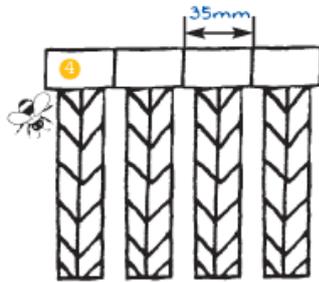
The design is different from hives you might be used to seeing in the UK, because it follows the natural shape of the honeycombs, which hang from horizontal bars laid across the top of the hive. These can be carefully lifted out, one by one, without disturbing the bees. This method produces more honey, more beeswax and gives a greater economic yield from a smaller investment.



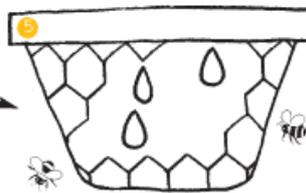
The hive keeps the natural stable u-shape of a comb, so they can be easily harvested.



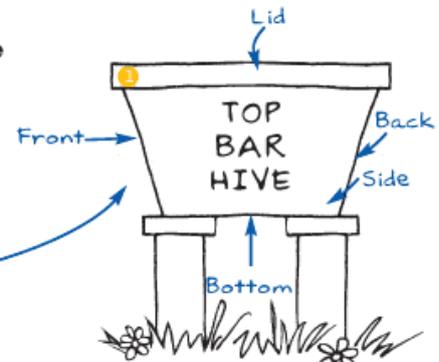
Sides of combs should be inclined at an angle of 120°. to stop wastage as combs don't stick to the sides of the hive.



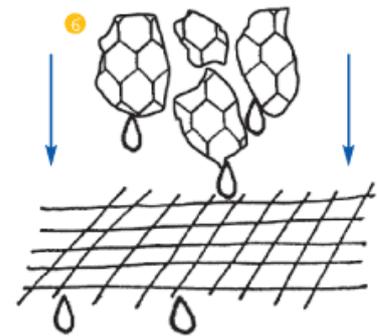
Each top bar is the natural width of a comb plus one bee: 35mm. Any wider, and predators could get in. Any smaller, and the bees couldn't build combs.



Bars are removed one at a time, minimising exposure of the colony. Comb is simply cut from the top bar.



Stilts keep predators out and hive at working height.



Combs are squeezed by hand then strained twice through a coarse strainer or screen, then a finer one.



Honey is bottled and capped ready for sale.

Diagrams not drawn to scale

Priming the top-bars with wax

The next job is to prime the top-bars with wax. You could think of this as the 'building instructions' for the bees, letting them know exactly where you want them to build their comb. As ever, there are different methods of priming the top-bars and this to some extent depends on the materials you have chosen for them. For carpenter cut top-bars which are 'V' shaped underneath, rubbing them hard with a softened block of beeswax may be sufficient. Softer strip material such as raffia palm top-bars should have a small slot cut into them that can be filled with melted beeswax - a beeswax candle makes an easy method of doing this. Another method is to make sheets of beeswax (using a wooden board) and then

cutting them into starter strips before melting them on to the top-bars. The fresher the wax and the more generous the strip the more likely the bees are to take notice of the 'instructions'. Once honey is harvested, a strip of wax will already be in place on the top-bar and, provided there is no wax moth present, this will just need refreshing with a bit of beeswax melted from a candle.

Baiting hives

When bees require a new home they send out scout bees to find good places and assess their value. The scout bees report back to the main group of bees about the places they found. They do this using the bee dance and eventually one place will be selected by the swarm as the best choice. This means that you have to encourage the scout bees to think your hive is the best home for the swarm. This is done by baiting the hives put out to be colonised. Beeswax is considered to be the best bait to attract swarms and the starter strips on the top-bars may be enough to do this. If not you will need to spread more beeswax around the hive. A hive that has had bees and harvested honey will always be more attractive than a new hive because of the lovely bee scents in it. Bees also find the scent of brood very attractive so a top-bar with a small section of comb containing brood (even though it is dead) will make excellent bait. However beware - if you try this you must ensure that there is no disease present in the brood. If it is left for more than a week or so it will attract wax moths and will be no longer attractive. If you try this you need to be able to visit the hive often during the colonising season.

Other baits to attract bees

Beekeepers in different places have their own baits (see for example the article from Nigeria on page 10 and *BfDJ* 33, 49, 59). Honey is not useful as a bait; bees just rob it out very quickly although a little could be smeared above the top-bars where the bees can smell it but not reach it. It does also mean that bees quickly know the location of the hive and scouts may come back to it later. Other things I have heard being successfully used for baiting hives are urine (not very hygienic but attractive due to the salts it contains), palm wine, fermented banana skins (both sweet and sticky) and cassava powder (a protein source). Basically, substances that bees like or need will attract them but be careful you do not also attract unwanted pests.



Active management of baited hives

Keeping a check on empty hives during the colonising season will pay dividends. In particular, make sure that some unwanted creature has not taken up residence in the hive and is repelling the bees. These could be ants, beetles, rats or spiders to name a few. Often, despite your best efforts the bees will still reject the place and it will not be clear why. Clean everything and try another place or store the hives safely until the next swarming period. A good way of disinfecting hive bodies is to scorch them over a fire or with a burning brand.

How to Raise Bees <http://beginnerbeekeeping.beekeeping-for-beginners.com/2009/07/27/how-to-raise-bees/>

Though originally viewed as a hobby by many, training to be a beekeeper today is an billion-dollar activity which requires a lot of skill, much of which is time consuming. [Beekeeping](#) has come a long way since it became a simple hobby, and its end product, honey, is now frequently seen on tables across the world.

It is necessary for beekeepers to be well versed in bee anatomy and behavior, and among those who were not raised in a family of beekeepers, it is often necessary to seek the expertise of another beekeeper. Since bees thrive on flowers, winter would be a struggle if they did not produce honey, which is simply regurgitated food.

Bees have an amazing way to survive the winter months. Bees normally produce honey during the warmer months only, and many beekeepers farm during the cold off season. You might think this is an inexpensive hobby where you simply place boxes out for the bees to come to, but that is an oversimplification that misses the expenses involved in training.

There are numerous other insects, such as yellow jackets, wasps, mites, and hornets, which will attempt to prey on your bees, and recognizing them requires a good deal of familiarity with entomology. Science is very important in a [beekeeper's training](#) and experience, and most people do not have this training initially, which is essential to have some idea how to manage bees, their habitats, and their natural pests. There are many steps involved in proper education of a beekeeper, and you need to look for someone who is serious and dedicated to a way of life that has tradition going back generations in some families.

Courtesy of grandparents and parents, many keepers learn their skills through tradition and see their skill as a way of life. It wasn't even about making money it was actually just one other chore on the farm, but in the years it slowly progressed into a farm staple that was being sold like it was produce, meat and dairy, but it's still a profitable market anyway you look at it and it's one of the sweetest things in the world.

The Equipment Needed For Beekeeping

Your beekeeping activity will require you to gather some basic equipments before you can embark in this fun and challenging activity. Before the post office notifies you to collect your bees, you must have purchased this equipment already. You cannot get started without investing in the beehive first.

Your beehive should have five supers. These supers are vital parts of your beehive because this is the area where the honey will be stored. The beehive bottom should be below the five supers and the cover must be on top. Young honeybees will also be breed in the supers, apart from the storage of honey.

When the hive starts buzzing with activity, each of these frames will show nine to ten frames. You can make your choice from among them. The merit of getting a deep super hive is that you will need only a single size of foundation. You must be ready for the weight though.

Take precaution to place your beehive on a level surface; otherwise there is the risk of the entire unit toppling over in a strong gust of wind. Take care to confine your beehive in an area where pets and people are not likely to disturb it. A spacer is a piece of equipment [beekeepers](#) use to keep an equal amount of space between the frames while they are in the super.

The next device you will need is a smoker. The smoker is a tool that will help you to get the bees to leave the hive as you are harvesting the honey within. The design of the smoker is actually quite minimal. A smoker contains only three parts – a funnel, a chamber where combustion takes place and bellows. Many beekeepers claim that old, clean burlap is the best material to use in the smoker because burlap is easy to ignite and smolders and smokes. You can also use dry corn cobs. At the same time, the smoke can be taken into the beehive using the funnel.



Your next bit of stuff is the metal hive tool. You can prize open the hive with this tool then the compartments can be divided and hygiene of the hive can be maintained. This single device is actually quite versatile in its usage for beekeeping. No beekeeper is ready to receive their shipment of bees until they have a bee brush. A bee brush is used to gently brush bees out of the way so that the [beekeeper](#) can examine the frames.

When extricating the honey, you will have to use a fumer board. Bees don't like the chemicals that are dabbed onto the fumer board. eBay has lots of inexpensive beekeeping material. You get beekeeping material from several websites too, and you can even get stuff designed for amateurs.

The demand for honey and its by-products is constantly booming and all related costs of producing it are extremely minimal.

Honey consumption is over 300 million pounds per annum, just in the U.S alone. So you can imagine the consumption in the rest of the world for this extra special food.

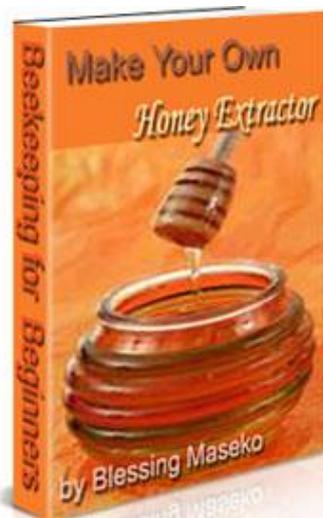
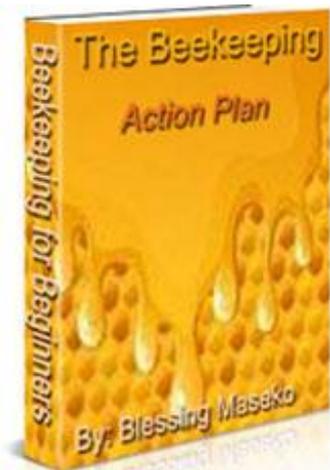
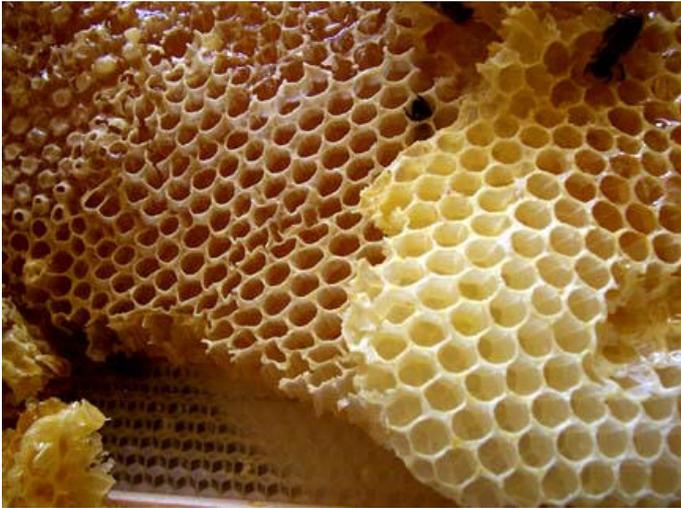
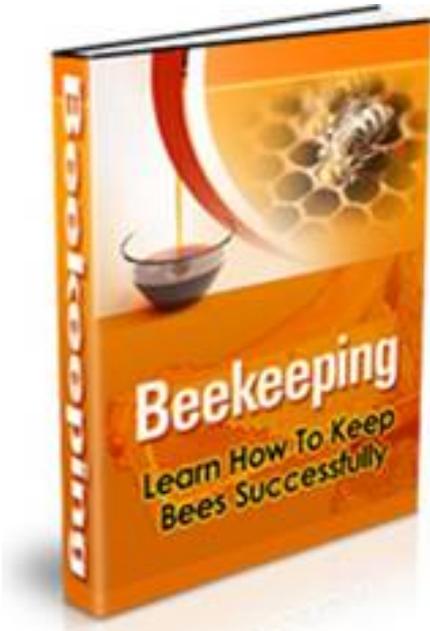
Now, picture yourself and your family positioned to produce enough honey to meet the endless list of bee products. This is a worldwide market ready for you to satisfy. It takes much less effort on your part. All you need is to be equipped with quality beekeeping information and a results-driven mindset.

Beekeeping can be a fascinating hobby and at the same time you can turn it into a lucrative business, the choice is yours. It is a healthy way of making money while enjoying the honey with your family and friends.

The Benefits of Beekeeping...

- ✓ Beekeeping is an activity that anyone can undertake as it requires minimal or no land. Men, women, elderly and youth can participate!
- ✓ It takes minimal time and effort in a season, therefore allowing for normal work-a-day activities to carry on. It has relatively low technology requirements!
- ✓ It is a low investment activity which requires only bee hives, bee suits and a few simple tools. Beekeeping basics are easy to master!
- ✓ Bees pollinate the indigenous flora, adding value to wild harvested fruits, nuts and economic trees and plants as well as 1/3rd to any food production through targeted pollination!
- ✓ Beekeeping projects can be linked with many other production projects to bolster participant numbers and income generation!
- ✓ Beekeeping provides employment and self-esteem, there is opportunity for quick return on investment, and minimal land requirements!
- ✓ Honey is a valuable non-wood forest product thus contributing to the preservation of forests around the world!
- ✓ Honey is a commodity that can be traded internationally as well as locally or regionally without special consideration as to storage or loss!
- ✓ Honey is a high value product with a stable and lucrative supply versus demand economy. Honey is very portable as well!
- ✓ Honey and its by-products have many healthy benefits for the consumer and are lucrative trade commodities in value addition form!
- ✓ Most honeybee products can be consumed as food, dietary supplements or used as medicine. And bee products have a long shelf life and are a valuable food source!

Whether you want to learn to be a beekeeper or just want to master the art of making honey, it is important to have the correct information needed to start your new hobby or small business. Without information we would all be floundering in the dark. Knowing where and how to start will prevent you from making costly mistakes.



STARTING BEEKEEPING:

<http://www.deanforestbeekeepers.co.uk/?module=Pages&func=display&pageid=12>

To anyone interested in keeping bees, welcome to our web site and we hope you will find it useful.

It is important to say that although a vast amount of very useful information and help is available online and in many different books and publications, it is a very good idea to join a beekeeping association **before** starting to keep bees. Almost all associations have their own apiary, where you will be able to see and understand how bees live, how they are looked after, and how to deal with things that can go wrong. There is no substitute for that practical experience, and of course you will also be able to get information and advice about keeping bees in your local area.

Why keep bees?

Bees perform a vital role in the pollination of fruit, vegetables and flowers. Looking after them will give you a greater understanding of the intricate system of plants and insects which exists all around us, and how that life is affected by the seasons, and by the changes that we make to our environment.

Beekeeping is a sociable and rewarding hobby which can be enjoyed at various levels. Many people have just a few hives in their garden or on a neighbour's land, but others go further and keep dozens of hives producing large amounts of honey. Although you do not need any specific skills to keep bees, it is not an occupation for those in a hurry! One of the attractions is that beekeeping is a peaceful hobby, and you need patience and attention to detail in order to get it right.



Traditional hives

Where could I keep them?

There is one essential question to consider when starting: do I have a suitable place to put my hives?

Bees can be kept anywhere in most countries: there are beehives in our towns and cities as well as throughout the countryside. A beehive can be sited in any corner of a garden, but the bees will do best if they are in a sheltered and warm position. If there are paths or neighbours nearby, it is a good idea to place the hive with its entrance facing a hedge or fence. This will encourage the bees to fly higher, thus avoiding passers-by or neighbours.



An Omlet hive next to a fence showing the bees' flight path

A bee will fly up to three miles (five kilometres) to find pollen and nectar, and most of their collecting will be done away from your garden. Bees love dandelion, blackberry flowers and ivy as much as lavender and peonies. Bee-friendly plants in your garden will help of course.

If you don't want to have hives in your garden, you may be able to find a friend or neighbour who has a suitable area.

Wherever they go, you must be able to visit them easily in the spring and early summer when hives need to be checked regularly.

Buying a hive and bees

Your biggest purchase will be the hive.

The modern hive, with its replaceable frames, is a recent invention, perfected by Langstroth in the mid 19th century. Key to its success is that it largely avoids damaging the colony when honey is removed. It comes in many forms starting with the most basic and very common British National to the Langstroth and the traditional peak roofed one that we all associate with beehives, the WBC (named after its designer, William Braughton Carr). Many beekeepers use the National type, and starting with that type is probably a good idea. After you have some experience with one or two hives you might want to try another design.



A National hive

If you would like to understand what makes up a hive, and read about the different types, there is a good explanation here: Cedar is the wood of choice for hives, so check when buying as some homemade hives may be made of other wood. Cedar wood is preferred because it's strong but not heavy and does not need to be treated with preservative.



A WBC hive

It's worth saying at this point that when buying a hive, it doesn't usually come with bees in it!

Some hive suppliers do also supply bees, but it is best for beginners to buy bees from a local supplier. Locally bred bees are likely to be more successful and easier for a beginner to manage. Bees are normally supplied as a 'nucleus' which will consist of four to six frames of brood, food and bees, with a laying queen.

Your local beekeeping association will be able to recommend suitable suppliers of bees, and may be able to sell bees from their own apiary.

Equipment and clothing

You will need to have suitable clothing:

- a bee suit and veil
- suitable boots
- gloves

A full bee suit gives total protection, though some beekeepers use just a jacket and veil. Wellington boots are fine. Gloves will get sticky from the propolis



Bee suits

in the hive, and could transfer disease from one colony to another, so thin disposable gloves are best. Leather gloves can retain bee stings, which will annoy the bees, and also disease, so are not recommended these days. For all clothing, it is vital to have overlaps to stop the bees entering your clothes as they walk upwards.

As far as equipment is concerned, as a minimum you will need:

- a smoker
- a hive tool
- a good book for reference

The smoker is used to keep bees away from the part of the hive you are working on. It burns slowly and produces cool smoke which will not harm the bees. When they encounter smoke their instinct is to go to their honey stores and feed, which in the wild would be their way of dealing with a fire which might threaten the colony.



Two different smokers

The hive tool is used to separate the parts of the hive when opening it and to free the frames before removing them. A tool is needed because the bees seal small gaps in the hive with propolis, which is essentially a resin glue.



A hive tool

During the early spring and autumn you will need to feed your bees, so you will need a sugar syrup feeder.

When clearing the bees before removing honey, you will need a bee escape (a one way valve for bees). For handling and marking queen bees you will need a queen cage and a marking pen.





A beekeeper removing frames from the hive



A capped honey super frame



Smoking the hive



Using a blower to remove bees from honey prior to removal to honey house



Opening the cells: Uncapping



An uncapping fork



Uncapping the cells by hand using an uncapping knife



Extracting the honey



Filtering the honey



Pouring in pots



HONEY PROCESSING PLANT :

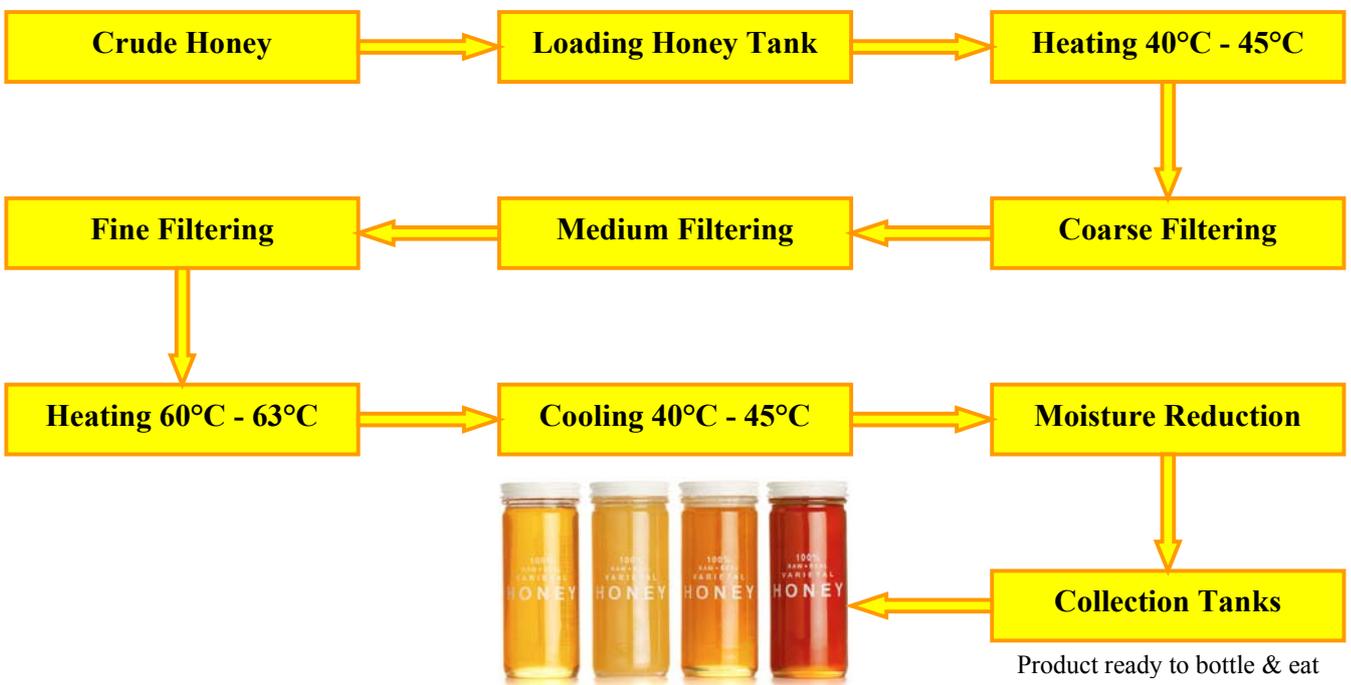
<http://tiwanabeefarm.com/honey-processing-plant.html>

Tiwana Honey Processing Plant is a sleek, compact, easy to operate, energy efficient, safe-to-handle and eco-friendly honey processing unit used for processing of raw honey obtained from honey combs into edible grade honey of high quality by removing impurities, wax, pollens, and water.

Tiwana Honey Processing Plant ensures processing of raw honey hygienically to meet best possible quality standards. All the parts that come in contact of honey are made of stainless steel to ensure high product quality and hygiene. Electricity requirement for the entire plant is just 2 KW. Thus it is well in reach of a small innovative entrepreneur to produce high quality honey.



PROCESS



Honey Processing Plant

<http://www.starenggcorp.com/honeyprocessingplant.htm>

The processing of honey is done mainly to prevent fermentation and retard granulation. The plant has been developed and modified recently by us to process honey efficiently.

STAR HONEY PROCESSING PLANT



Service of Unit To Process Raw honey.

Type Continuous.

Capacity 500 kg per Eight hour.

Moisture Reduction 8-10% Maximum.

Removal of Suspended Material :- 100% of 100 micron Size and 95% of 40 micron Size.

Purpose / utility - Processing of raw honey obtained from honey combs into edible grade honey of high quality by removing impurities, wax, pollens and water.

Raw material for plant - Honey obtained from honey combs.

Finished product - Edible grade honey of high quality ready to be bottled and branded.

Flow Hive: Honey on Tap Directly From Your Beehive

<https://www.indiegogo.com/projects/flow-hive-honey-on-tap-directly-from-your-beehive>



<http://www.honeyflow.com/>

Byron Bay, Australia

Flow™ Hive - "It's Literally Honey on Tap Directly From Your Beehive!"

