

OWNER'S MANUAL



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1 Welcome

Congratulation from all the BeeHelpful SA team!

You are now the owner of a revolutionary PrimalBee® System! We hope you have the best beekeeping experience ever.

Please enjoy this User Manual and find helpful instructional videos on our PrimalBee.com website for every step of your installation and management of the system.

You can also email us directly at:.....buzz@primalbee.com

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2 PrimalBee® System

2.1 General Concept and Thermodynamic Performance



All bee hives separate two environments of different temperatures: the temperature inside the hive, for successful operation of the queen, the drones and the workers, from the outside temperature fluctuations year round. If the queen is not kept above +27°C (+81°F) by her attendants, the sperm inside her will die.

This is a classic thermodynamic problem, solved by the PrimalBee® System. Please note the following from the honeybee colony nest point of view:

- a) +36°C (+97°F) is the necessary brood constant temperature.
+27°C (+81°F) is the necessary winter average cluster temperature for the queen's survival.
- b) Outside environment can be from -30°C (-22F) to +45°C (+113°F) temperature range, depending on the hive location.

This huge temperature gap must be bridged by the colony's effort. The bees do this using their honey (ideally) or syrup, sugar and water, for energy to keep the brood, or the cluster, at the right temperature. They collect pollen and nectar to grow new generations of bees. The innovative thermodynamic design of the PrimalBee® System hive significantly reduces bee effort as we

experienced both in the field over the years and in quantitative laboratory procedures.

2.2 Hardware Description

The PrimalBee® System hive is delivered fully assembled, but without foundations.

Each PrimalBee® System kit is composed of:

1. PrimalBee® Bottom Board, with plastic net and varroa tray
2. PrimalBee® Nest
3. Qty 8 PrimalBee® Nest Frames, not wired
4. PrimalBee® Nest Cover, with Feeding Hole and Plug
5. PrimalBee® Super - optimized for standard (short) Langstroth honey super frames
6. PrimalBee® Top Cover
7. PrimalBee® Safety Strap
8. PrimalBee® Stainless Steel Hive Tool (it comes with your first kit)
9. PrimalBee® Instruction Manual

2.3 Location and Placement

Before installing a new honeybee colony inside your PrimalBee® System, you should consider the appropriate location for your hive.

The ideal location has the following features:

Plenty of available forage (flowers, plants, trees, etc).

Water nearby.

The hive entrance oriented South, typically, but avoiding the predominant wind direction is important as well.

Where bees will be minimally disturbed and are not a threat to normal human activity.

Placed on a level surface with the top of the nest about beekeeper's belt height; you will appreciate the ergonomics of such a position while visiting the nest.

2.4 Assembling the PrimalBee® Hive System

Assemble the PrimalBee® System bottom up (after assembling the frames with foundations):

- Item 1. PrimalBee® Bottom board
- Item 2. PrimalBee® Nest (with frames and foundations inside)
- Item 3. PrimalBee® Nest Cover, with Feeding Hole and Plug
- Item 4. PrimalBee® Super
- Item 5. PrimalBee® Top Cover without a hole

Please remember: "Item 3." + "Item 4." + "Item 5." should be considered as a whole top cover, and should always put in place year round.

After the hives arrive at your location, some basic steps should be followed for success: PrimalBee® hives are designed to be placed side by side to other PrimalBee® hives, to exploit the better insulation which comes from the union of the external walls. Even so, the PrimalBee® hive is so superior to traditional systems, a lone hive is completely efficient on its own. In high wind areas, providing some wind protection for hives is recommended.

3 PrimalBee® System Hive Colony Installation

3.1 Install a bee package

For installing a bee package after you have the assembled hives in their desired locations, follow these instructions:

1. Spread a bit of honey or dense sugar syrup on the foundations.
2. Install the nest frames with foundations into the PrimalBee® Nest, which can house up to 8 PrimalBee® special shape nest frames. You might want to start the colony with less than 8 nest frames, and add more frames as the colony keep growing; this strategy is mainly related to the initial quantity of bees in the package you are starting with.
BeeHelpful opinion is that you should start with at least 5 nest frames.
3. Install a PrimalBee® Super directly over the nest.
4. Prepare the queen cage as normal (if unsure of this procedure obtain help from an experienced beekeeper). Open the door of the queen cage, as the worker bees will free the queen eating the sugar candy.
Using a small wire, carefully hang the queen cage vertically in between the two middle frames.
5. Gently shake all the bees into the PrimalBee® hive from the package. Using a brush and/or smoke, encourage the bees to go down into the nest box. You can now remove the super and install the Nest Cover with the feeding hole (plugged), place the super on top of the Nest Cover, then add the Top Cover without the hole.

Repeat steps 1 to 5 for any other PrimalBee® hives, one at a time.

6. You can now add feed for your bees [See next 3.2 for feeding instructions].
Once the Nest Cover with the hole is in place, remove the plug and feed the colonies with honey or at least 60% fructose syrup using a jar placed over the Nest Cover feeding hole. Leave the plug inside the super for safekeeping.
Without natural nectar flow, this initial additional feeding is required to help the colony build honeycombs on the foundation. Replace the Top Cover.
7. Three days after, check to see if the bees have released the queen. If not, manually release the queen, ensuring she goes down into the nest between the frames.
8. Continue feeding, if required as necessary.
9. No less than 15 days after initial release of the queen, check for presence of brood.
This is done by removing the Top Cover, Super, and Nest Cover. Take a quick look at the overall position of the worker bees, and carefully first take out the frames where they are clustered over, look for the white small eggs on the bottom of the hexagonal cells: that is the brood. As soon as you will see the small white eggs, your visit is over. Don't waste the colony thermal energy, put back the frame in place and close the hive.
Hopefully you will find brood on at least one of your frames, in which case your colony is on its way! If no brood is found, continue to feed them, or add a new queen, check again three days later, same procedure.

3.2 Feeding

At the beginning of the season, the colonies will have to build up the nest from the raw foundations, so you may have to feed the colonies. To prepare the jar, fill it with syrup and make some small holes in the cap. Place the jar cap-side-down over the Nest Cover feeding hole. Keep the plug inside the super for use during the refilling or at the end of the feeding period to close the hole.

Place the PrimalBee® Top Cover over the Super. Refer to our online instructional videos for additional support.

Please note: Because the jar simply sits over the Nest Cover feeding hole, accidental vibrations or movements could move it and expose the hole, allowing the internal temperature of the nest to vent through. This is bad for the colony. No worries, however. Simply put the jar back over the hole. If you install the hive in a windy place, the jar can be secured. In this case, the best solution is to use a simple DIY panel made with the same internal dimensions of the super and pierced to hold the jar in place. That video is also available on the PrimalBee® website.

3.3 Easy Management

Reducing time and effort spent managing the hives is a HUGE advantage of the PrimalBee® System. You will have larger and healthier bee colonies. Many practices required for other hive systems are unnecessary with our revolutionary PrimalBee® System. Here is a partial list:

- No need for a Queen excluder.
PrimalBee® queens rarely climb up into the first super as they are always within the optimal temperature distribution in the nest area.
- No need for drone cutting!
Drone cutting disturbs the colony and loses a lot of thermal energy from the combs, is highly time consuming and without any effective reduction of Varroa infestation.
- No need for queen caging!
In late summer the colony must rear the coming winter generation of bees. This is not the time to limit the queen's egg production, yet many beekeepers have such rampant infestations of Varroa mites that they feel compelled to cage their queen.
The highly efficient PrimalBee® hive makes queen caging totally unnecessary.
- No need for queen cell destruction or swarming control!

Here are two suggestions:

- Catch the swarm¹ and place it in another PrimalBee® System hive for a greater honey harvest from both colonies.
- Move a couple of nest frames with the queen into an another PrimalBee® System hive and produce an artificial swarm early in the season. A honey harvest before the season's end is also possible.
- In an attempt to save a weak colony, some beekeepers move frames out of a strong colony into the weaker one. Based on our experience with the PrimalBee® System, our recommendation is to allow the survival of the fittest. Keeping your strong hives strong leads to a more stable apiary and less and less beekeeper intervention year after year. Unlike the Langstroth hive design, the unique features of the PrimalBee® System successfully fight diseases and parasites.
- The PrimalBee® System's thermodynamic capability makes external extra winter insulation unnecessary. Always leave the Nest Cover, one Super and the Top Cover in place, as the whole assembly is the best insulation ever provided. In Winter time and in extreme climate is also possible to add a DIY polyurethane panel to fill the Super between the covers and adding even more insulation. Remember: your colony hates losing thermal energy.
- PrimalBee® System's efficiency also eliminates humidity and condensation problems inside the nest in Winter. This is a side effect of the overall well insulated PrimalBee® System.
- Intense or continuous winter feeding is unnecessary, because of the ease in which the PrimalBee® colony maintains internal hive temperature.

4 Treatments

4.1 Successful results

During twelve years of BeeHelpful R&D apiary experiments at several locations treating with formic acid only, not a single case of any brood disease has been detected in our PrimalBee® colonies. This incredible success is a direct result of the superior thermodynamic performance of the PrimalBee® System. The hive makes the difference! In the same locations using Langstroth/Dadant test hives, researchers experienced every sort of brood disease.

4.2 Treatments Against Varroa

Although several diseases and parasites affect a honeybee colony all year round, treatments should be made mainly to fight Varroa mite infestation and its related negative effects. All current bee treatments can be used in the PrimalBee® System, just remember a tuning will be necessary: usually it means less quantities than Langstroth hive.

BeeHelpful trials and field test groups all showed that a natural formic acid-only treatment was far more effective against the Varroa than any other combination. Due to the thermodynamic and atmospheric capabilities of the PrimalBee® System, using the same types and quantities of any other chemical treatment may actually harm the queen and the entire colony.

PrimalBee® System hives can be managed with:

1. Standard treatment protocols.
PrimalBee® System allows all of the same kinds of treatments as in a Langstroth hive. Whatever accepted treatments you currently use, a fine tuning will be necessary.
2. PrimalBee® Organic enhanced protocol.
The PrimalBee® System has a special treatment protocol, using formic acid pads only. It works all year round and reduces most of the operations and related costs linked to

¹ As the German beekeepers were used to do in the old good times with their skep hives

standard treatment procedures.

Beekeepers will decide the type and the frequency of the treatment to be applied based upon their own experience and colony response. A transition from standard treatment protocol to organic enhanced protocol will quickly prove advantageous.

4.2.1 Treatment Efficacy

Examine the difference in bee population and inner hive environment to fine tune your treatment.

Treatments are divided into two groups:

1. Treatment activated by contact with bees (e.g.: Amitraz).
Position the contact surface in hive location where the bees reach the chemical treatment.
Adapt the total contact surface to the population (demonstrated to be much larger in the PrimalBee[®] hive).
2. Treatment activated by inner hive atmospheric saturation (e.g.: formic acid, thymol).
Standard quantities as for Langstroth hives could lead to higher concentrations in the PrimalBee[®] System hive, possibly causing colony damage.
A tuning is mandatory. Beekeepers should consider the superior thermodynamic performance of the PrimalBee[®] System which provides a more uniform and consistent inner temperature environment.

The use of some devices, such as sublimation devices for oxalic acid at hive entrances, requires verification that the substance reaches the highest part of the PrimalBee[®] System hive.

BeeHelpful researchers fine-tuned the use of the formic acid MiteGone[®] pad applied to the PrimalBee[®] System, as better explained in the next chapter.

4.3 PrimalBee[®] System Organic Enhanced Protocol

Hive treatment with the use of formic acid only is usually a challenge, because of the high sensitivity of formic acid to temperature and climatic conditions. This is the biggest problem related to the poor thermodynamic performance of the Langstroth design. The superior thermodynamic capability of the PrimalBee[®] System allows any beekeeper to effectively use formic acid as the ONLY treatment against Varroa and tracheal mites. The threshold temperature of 13°C driving pad efficacy is not an issue in the PrimalBee[®] System.

The PrimalBee[®] System enhanced organic protocol takes advantage of formic acid treatment's positive features:

1. Formic acid is an organic molecule already present in the bee venom.
2. No resistance to formic acid developed by Varroa mite has been reported so far.
3. It is effective through capped brood cells.
4. Low cost.

BeeHelpful researchers simplified and improved the MiteGone[®] procedure for the PrimalBee[®] System hive. Now it:

1. Works all year round.
2. Is successful with reduced formic acid quantities.
3. Reduces human labor.
4. Prolongs treatment effectiveness

4.3.1 Treatment preparation

Follow the detailed instructions below to effectively treat the PrimalBee[®] System colonies.

To prepare the MiteGone[®] pads, closely read MiteGone[®] instructions from their website

www.mitegone.com.

The MiteGone[®] original evaporation surfaces exceed PrimalBee[®] System needs. A flash evaporation

might result in a dangerous concentration inside the nest, so you need to reduce the evaporation surface.

Once the MiteGone[®] pad is filled with formic acid:

1. Wrap the pad with a plastic film, such as the one used for food packaging at home.
2. Open a 2" (inch) long new evaporation surface (such as one corner), using a sharp cutter. The result of this operation must be a surface free from the wrap, directly connecting air to the MiteGone[®] micro pipes saturated with formic acid. This new evaporation surface should be 2" wide and the height of the whole thickness of the pad. Cut only one side out of the two original ones (the "ends"). Check out our website for a video demo.
3. Open the top cover of the nest and lay the pad down over the nest frames, with the main face of the pad laying on the top bars of the nest frames. Ensure the pad is not directly under the feeding hole. In certain times of the year, without lifting the frames, you may see the colony is not spread over all the frames; in such cases, lay the pad down where bees are present. Don't lift the frames and don't fix the pad on the side of the comb as in MiteGone[®] instructions. It's not needed in the PrimalBee[®] System and could adversely change the internal colony temperature.
4. Replace the Nest Cover with the hole plugged. There must not be interference between the hole in the Nest Cover and the pad you put in place, or feeding will not be possible.
5. Check that the Nest Cover is perfectly in place and put on the empty super and the Top Cover. Ensure the pad thickness, position, or other accidental objects (e.g. leaves or small branches) do not create small gaps in the closure between the nest and the cover. Any small air gap will reduce the performance of the hive at the expense of the performance of the colony.
6. Close the whole system with the provided strap.
7. In the coming days, weeks, and even months (Winter times), unplug the feeding hole and smell for the presence of the formic acid evaporation through the hole in the top cover. Continue with new pads if Varroa are still present and you don't detect the smell of the formic acid.

4.3.2 Treatment timeline

Based on our experience at elevations between 100 and 2,000 masl (meters above sea level) in the Swiss Alps, for a PrimalBee[®] System colony at steady state, the suggested cycles of applications are:

- a) Late Winter application: at the very first blossom at the end of the Winter.
- b) Summer application: typically July, when the Varroa mite infestation is at its highest
- c) Late Summer application: August.
- d) Autumn application: October, this formic acid evaporation may last until February.

4.3.3 Single pad duration

The MiteGone[®] pad duration in the PrimalBee[®] System is longer than in traditional hives. Formic acid distribution is highly uniform throughout the entire nest. The duration of the formic acid action depends on the season and colony development. The higher the population inside the hive, the faster evaporation will occur. Typical pad duration is 15 days to 4 months. Check formic acid presence² by opening the hole in the Nest Cover before applying another pad.

4.3.4 Pads quantity per cycle

Start using 1 (one) MiteGone[®] pad in the PrimalBee[®] System nest at each cycle. After the application, periodically check the presence of formic acid in the nest by unplugging the hole in the Nest Cover and smelling through it, then check the plug is firmly re-inserted. Ensure the presence of formic acid in the nest for at least 21 days. If the formic acid smell is no longer present after 15 days, add another pad. If the beekeeper decides to apply other pads to control mite infestation, add the next pad 15 days after

² BeeHelpful is developing an electronic nose to automatically and remotely detect the formic acid presence. Check our [website](#) for further update.

the previous one. Opening the whole nest directly to the air reduces the distribution of formic acid and treatment effectiveness. View our PrimalBee® video on how to check for mite infestation.

4.3.5 Pads warnings - general guidelines

The population of a fully developed PrimalBee® System colony is double that of a Langstroth hive, so more than one pad might be required. It is a matter of experience and the Varroa infestation ratio. It might be necessary to add pads if there is still a high Varroa infestation ratio. It is the beekeeper's responsibility to determine mite control strategy and the consequences to the apiary. Other diseases could affect the colony, therefore common controls should be put in place such as for Nosema infestation.

4.3.6 Pads quantities used by BeeHelpful

Normal BeeHelpful protocol is 1 to 2 pads for each cycle, for a total of 4 to 8 pads/colony/year. In our experience, these quantities have resulted in raising bees from standard packages to healthy, productive colonies year after year.

5 BeeHelpful Support

We remain at your disposal for any questions you might have regarding the PrimalBee® System. We look forward to sharing the excitement and experiences with you! Seeing honeybees worldwide grow healthier and stronger is our goal. We encourage you to write and tell us about your PrimalBee® successes, and hopefully we can meet some time in the future.

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