An Introduction to Beekeeping

Introduction

Beekeeping is not complicated – if you can garden, you can keep honeybees! We have found the Top Bar Hive to be the simplest and most-sustainable family hive. When we think of bee-keeping we usually think of the sweet golden honey that bees will produce for us. But honey is not the only reason to set up and maintain a colony of bees. Our orchards and gardens are dependent on bees to pollinate flowers in order to set fruit.

The Importance of Honeybees

Bees gather nectar from blossoms, then take it back to their hive where they turn it into honey. This all-natural sweetener contains many beneficial properties – for the bees and for us alike.

Pollination

As honeybees collect nectar and pollen for their own food, they travel from one blossom to another and pollinate the plants as they go. Agriculture depends on pollination. There are over ninety crops in the United States alone that depend on pollination by bees. An almond blossom will not set fruit if it doesn't get pollinated by bees, nor will tart or sweet cherries. A cucumber blossom is open for only one day. If a bee does not visit it that day, it will not set fruit.

Some plants need to be visited several times to be properly pollinated. If an apple isn't visited by 5 or 6 bees, it will only have a few seeds. A good apple has 8 to 10 seeds. Apple seeds cause the meat of the apple to grow. If it has less, the apple will be small and misshaped.

Honey bees are not the only pollinators. There are many others such as bumblebees, mason bees, butterflies and more. But all these other insects cannot be relied upon as a main source for crop pollination for several reasons.

- They do not live year round and therefore are not able to pollinate some of the crops that bloom early in the spring.
- Butterflies do not eat pollen, thus they prefer plants that produce sweeter nectar. They skip those that they find undesirable and therefore leave many plant species unpollinated.
- Bumblebees do not live as a colony year round. A bumblebee queen starts her nest in the early spring. This nest grows to be a colony in the early summer. Then as the weather cools in the fall, the bumblebee colony dies off. Because they do not need to store up large amounts of nectar or pollen for the winter, they do not pollinate as many flowers as the honeybees.

Seed Saving

Bees are very important to seed saving. Several crops such as cabbages, beets, carrots, lettuce, radishes, onions and Swiss chard are harvested before they produce seeds. To save seeds for planting, you will need to leave a portion of these kinds of plants in the garden until they flower. Once a flower has been pollinated by bees, they will produce seeds. Once matured, the seeds can be collected and saved.

Food Sources

Nectar and pollen are the honeybees' main food source. Bees need our gardens as much as we need their pollination. During the hot dry months of the year when the native wild flowers and blossoms are not in bloom, nectar and pollen are not readily available. During these times, bees will collect nectar and pollen from garden vegetables that continue to flower throughout the summer.

Nectar

Nectar provides a main source of carbohydrates for bees. Bees gather nectar from individual flowers and blossoms, then bring it back to their hives and place it in honeycomb cells for storage.

Pollen

Pollen is the bees' source of protein and furnishes them with fats, amino acids and minerals. The bees become dusted with pollen while gathering flower nectar. As they move from one blossom to the next, the bees lose some of the pollen collected from the previous flower onto the new flower. Thus they pollinate as they gather nectar, then carry the pollen back to the hive to store as food.

Managing the Hive

A beehive is very simple to keep. Throughout the year, hive management will be similar to managing your garden. There will not be much to do in the winter, but the activities will increase in the spring and summer as flowers bloom.

Starting in the spring, the bees collect nectar and pollen as food for their hive. The more nectar they collect, the larger the hive will grow. On a good year, the bees gather more nectar for honey than they will use in one winter. This extra honey is what the beekeeper harvests for his own use.

To manage your hive, you will need to open it periodically and check on your bees. This is important for four basic reasons.

Disease Control

- It is important to watch for signs of disease.

Swarming

- As the hive grows, you will need to manage the growth of the colony to prevent the bees from swarming and suddenly leaving the hive.

Food Levels

- You will need to monitor how much food the hive has and feed your bees when necessary.

Honey Production

- As the seasons progress, you will want to monitor the amounts of honey, pollen, propolis and wax the bees are producing, watching for any surplus.

Products of the Hive

Honey

Bees gather nectar from flowers by sipping it into their stomachs with their tongues. While the nectar is in their stomachs, the bees add enzymes from a gland in their stomach. Once the nectar has been turned into honey, the enzymes preserve it from spoiling. The bees return to their hive with the nectar and place it into cells in the honeycomb.

When it is first gathered, the nectar contains about 85% water. To prevent it from fermenting in the cells, the bees have to dehydrate it to less than 18% moisture. They fan their wings at the entrance of the hive, causing air to circulate through the hive. The air flow dehydrates the nectar. Once dehydrated, the nectar becomes honey. The bees cap the full cells of honey with wax, storing it and thus preserving the low moisture level.

Honey is the main diet of bees year-round. Once stored in the hive, it can be fed to their larvae and all the other bees as needed throughout the year. Excess honey can be harvested by the beekeeper.

Pollen

Pollen is a powdered substance that comes from flowers. It collects on the bee's hairy body as it gathers nectar. Every so often, the bee will stop and comb the pollen out of its hair. It removes pollen from its head and thorax with its front legs and places it into baskets located on its back legs. When the bee flies back to the hive, it drops the pollen into a cell in the honeycomb for storage. An average hive gathers 60 pounds of pollen in one year.

Propolis

Propolis is a sticky resin that is collected from flower buds and trees near the hive. Bees gather propolis to seal cracks and polish the inside of their hive. Propolis contains antibacterial

properties which keep the hive clean. Many beekeepers collect propolis from their hives for medicinal purposes.

Bees continuously clean their hive to remove any foreign matter. If an object is too big to move from the hive, the bees will propolis it over, thus sealing up any contamination from the hive.

Wax

Beeswax is secreted from the abdomen of the bees. The bees use the wax to build their honeycombs. To create the cells in a comb, the bees hang on each other, forming a chain that hangs from the top of the hive. The bees at the bottom pass the secreted wax scales upward in the chain. The bee at the top of the chain forms the wax into cells. In this way, they build the whole honeycomb.

The honey bees store their honey and pollen in these comb cells. This is also where the metamorphosis of the bee takes place.

Questions about Beekeeping?

Submit any questions for Jacob in the Q&A section on the course homepage or post it to our blog at www.sustainlife.org/blog/category/beekeeping/

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- Setting up a Hive
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This company is owned and operated by Jacob and his family. Yuo can buy his Top Bar Hive as well as other tools and supplies you'll need for beekeeping from Texas Hives.

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ABC and XYZ of Bee Culture
by Amos Ives Root

First Lessons in Beekeeping
by C.P. Dadant

Starting Right with Bees
by Henry G. Rowe
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The Bee Keeper's Handbook
by Diana Sammataro & Alphonse Avitabile

The Hive and the Honey Bee
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