



# The Hive

## Langstroth vs. Top Bar

### Introduction

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Two main hives are commonly used today in beekeeping – the Top Bar Hive and the Langstroth Hive. Your focus on beekeeping will determine which hive is the best for your use. Each one is built differently, which has an effect on honey production and sustainability. Both hives have advantages and disadvantages.

This lesson covers the parts of each hive and the pros and cons of their use.



### Bee Hives and Their Individual Parts

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#### The Langstroth Hive

The **Langstroth Hive** is named after Lorenzo Lorraine Langstroth. In the middle 1800's, Langstroth kept bees the way most beekeepers had been keeping them for thousands of years. Beekeeping simply consisted of keeping a swarm of bees and containing them in some sort of cavity or container.

Traditionally down through the ages, Europeans kept a hive of bees in a straw **skep**. They would catch a swarm, place it inside the basket, then place the basket on a flat surface, leaving the bees inside all summer.

Near the end of summer, beekeepers would either dunk the whole basket in hot water or put it over a fire, killing all the bees and the brood. Then they would scrape out the combs the bees had built inside, and squeeze the whole mixture together. The liquid that came out was what they used for honey. This destroyed the hive every year. Then every Spring, they had to collect a new wild hive.

Beekeepers began to realize that in order to be more productive, they needed to be able to manage the individual combs. They wanted a way to remove the comb and separate the brood combs from the honeycombs. They tried constructing hives with all sorts of apparatuses and frames hoping that the bees would use them as a place to build their honeycombs. But the bees never did.

In the 1850's, Langstroth made an exciting discovery. He realized that both domestic and wild bees built their combs  $1 \frac{3}{8}$  inches from center to center every time. He began to build frames and apparatuses to hold honeycombs  $1 \frac{3}{8}$  inches from center to center. For the first time, his bees began to build their combs on his apparatuses. This enabled beekeepers to manage hives in such a way that the brood and bees didn't have to be killed each year and a new colony did not have to be started every Spring.

Langstroth's original hives were a combination of the Top Bar Hive and the hive we know today as the Langstroth Hive. Both were developed from his original hive. He started with a box hive with top bars and little wax starters. Later, he added a frame to encapsulate the starters.

As beekeeping became more industrialized, the focus of beekeepers became honey production rather than bees and pollination. They made the boxes stackable to maximize production, resulting in the modern Langstroth hive.

### Parts of the Standard Langstroth Hive

- Lid
- Boxes

A 9" box sits on the bottom of the stack. The brood is always raised in this deep box. When full of honey, the box weighs nearly 80 pounds.

The shallow box is 6 1/2" high. It stacks on top of the deep box and is used for honeycomb. The box weighs almost 60 pounds when full.

- Frames with foundation

The hive contains 10 frames, each containing a sheet of wax or plastic foundation. The foundation guides the bees in building their combs. It is embossed with a honeycomb pattern, so the bees just draw it out with wax. It adds rigidity to the comb when you place the whole comb in an extractor.

The combs are built with the 1 3/8-inch spacing Langstroth discovered. The frame itself is 1 3/8", so that puts the center of each comb 1 3/8" from the next comb.



- Queen excluder

In between the deep and shallow boxes lays a wire grate called a queen excluder. The wires are spaced so that the worker bees bringing the honey into the hive can pass through into the top box, but the queen cannot because she is bigger. This keeps her laying eggs and rearing all her young in the bottom box.

- Bottom board

The lower brood box sits on a screened bottom board. This board provides entrance to the hive as well as ventilation during the summer. The screen helps rid the hive of mites that hosts themselves on the bees. They fall through the screen onto the removable white board below and are unable to crawl back to the bees.

As a colony expands, you will add more boxes. For an active hive, you will want 2 deep boxes for the brood. Then stack the shallow boxes on top as needed. You can stack up to 8 shallow boxes on the deep bottom boxes.

### Part of the Top Bar Hive

Jacob has been working with Top Bar Hives for the past 13 years and has developed a version adapted for Southern climates, although it can be used in every locale.

- The Roof

The traditional Top Bar roof is pitched. Jacob insulates the roof with styrofoam to keep the summer heat from going down on the top of the hive itself. He has also added two wooden spacers underneath. These keep the lid 3/4" above the hive which allows ventilation and air circulation over the top of the bars.

- Top Bars

Twenty-four top bars hang from side to side inside the hive. When you first start your hive, you will only be using 10 of them. The 1 3/8" spacing that LL Langstroth discovered is likewise used on this hive.

- Starter Strips

The top bar has a wax or plastic [starter strip](#) attached beneath each bar. The bees build their combs downward from these strips.

- The Divider Board

This solid board helps the bees build their combs straight. When placed near the front of the hive, it condenses the space the bees have to seasonally keep warm or cool.

As the hive grows, move the divider board back to give the bees additional space. Always keep 3 bars available for comb building. In a good honey year, the bees will build on all 24 bars, and you will eventually move the board all the way to the back.

- Entrance

A traditional hive has one entrance. Jacob has modified his hives to have an entrance on both ends. If you divide this hive in half with the divider board, you can raise queens in one part. Or, you can split your colony within the hive, keeping 2 colonies of bees in one hive. This cuts back on swarming.

## The Pros and Cons of the Two Hives

### The Langstroth Hive

This hive was developed for maximum honey production. If you keep more than 10 hives, consider a Langstroth hive. For a small family homestead, the disadvantage of this hive is the honey extraction process and tools. The equipment is fairly expensive and you have to harvest an entire box or more at one time.

As the bees dehydrate their nectar into honey, they cap each cell with a wax seal. To harvest the honey, the wax caps need to be sliced off with a hot knife. Once the capping is removed, the frames are placed in a spoke-like fashion inside a big, round barrel extractor and spun. The centrifugal force pulls the honey out of the comb.

After you harvest, you return the empty combs to the hive. Rather than having to build combs, the bees spend all their time gathering nectar and producing honey. Langstroth hives have a high yield of 3 to 7 gallons per year.

### The Top Bar Hive

This hive is great for those who want a hive for pollination and would like to harvest honey on the side. You can harvest as many combs at one time as you want. Harvesting requires only household equipment. Anytime you check the bees and notice a full comb, you can harvest. On an average year, you should get 3 to 5 gallons of honey from a Top Bar Hive.

To harvest a full comb, simply remove it from the hive and slice it off into a bowl with a serrated knife. Then mash the comb with a kitchen potato masher. Pour the mashed wax and honey through a cheesecloth stretched over a bucket. The wax will stay on top and the honey will drain down to the bottom of the bucket.

A disadvantage to the Top Bar Hive is the removal of the comb from the hive. Every time you harvest, you take the comb from the bees. They will have to rebuild each one you remove.

All the bees you want can be raised right within a standard Top Bar Hive. With entrances on both ends, queens can also be raised.

### Conclusion

If you are primarily interested in honey production and will be keeping 10 or more hives, the Langstroth Hive would be the way to go.

For beekeeping on a homestead, 2 or 3 hives should be just what you need to pollinate your gardens and provide ample honey for your family.

### The Langstroth Hive

A lot more equipment • A lot more production

### The Top Bar Hive

A lot less equipment • A little bit less honey



## Questions about Beekeeping?

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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/](http://www.sustainlife.org/blog/category/beekeeping/)

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### Other Videos in this Series

- Introduction to Beekeeping
- Tools of the Trade
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*This company is owned and operated by Jacob and his family. You 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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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**

by Joe M. Graham

**American Bee Journal**

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