

**Stahlman Beekeeping  
Notes for 2022  
Thinking about comb  
management**



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## **Some beekeeping topics remain current year after year.**

In fact, as a long time beekeeper, I face a number of issues when each New Year begins. I remember the introduction of Pierco plastic foundation in black. I heard both positive and negative viewpoints about using it.

It took me some time to see the reason why I should spend more for a sheet of plastic foundation over the natural wax foundation I was getting from the Walter Kelley Company. In those days, I could take my wax to Kelley's and exchange it for wax foundation.

But friends of mine were converting entire beekeeping operations over to the plastic foundation in wood frames. Because I was selling and raising queens, the black plastic foundation made seeing eggs very easy. But there were other advantages. Wiring and inserting wax foundation into frames takes a lot of time and effort. Plastic foundation is easy to snap into frames.

The bees did a poor job drawing wax on unwaxed plastic foundation. Plastic foundation has been manufactured with wax coatings to encourage the bees to draw cells. That made a big difference in the bees using it. In fact, I see it sold today with the options of two or three coats of wax. Three coats of wax on plastic foundation make using plastic frames much like using beeswax foundation.

Natural wax foundation is very fragile. The supers I had with plastic in frames could be handled in cold weather. Plastic foundation avoided a lot of blow-outs during extraction.

There is no question in my mind that honeybees will work natural beeswax foundation before they will plastic. That is the reason for plastic foundation being coated with beeswax.

**So the question is still current. Some beekeepers insist on natural beeswax foundation as the best. Some will say plastic is the best. Caught in the middle is the new beekeeper.**

I like the material on foundation found in "The Beekeeper's Handbook" by Diana Sammataro and Alphonse Avitabile. I am a bit prejudice in selecting the best book for beginning

beekeepers. Many are available. But this book will allow detailed instruction and will help those intending to keep bees in future years.

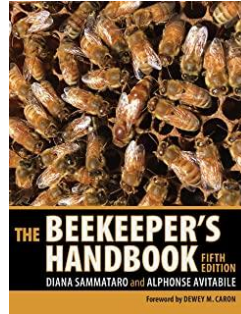
## The Beekeeper's Handbook

by Diana Sammataro, Alphonse Avitabile, et al.

4.9 out of 5 stars 88

Paperback

\$21.51 \$29.95



The cost is quite reasonable ordered on Amazon.



### Some facts about foundation:

Honeybees build wax comb. Comb is essential within the bee colony. It is used for brood, pollen and honey. It makes up the nest where honeybee live.

Bees will build comb almost anywhere they locate their nest – cavities in trees, buildings and other spaces the bees select.

I rely on information from "The Archaeology of Beekeeping" by Eva Crane. Honeybees have been managed by people for centuries. I sought out the question, "What is the history of managing honeybees using movable frames?"

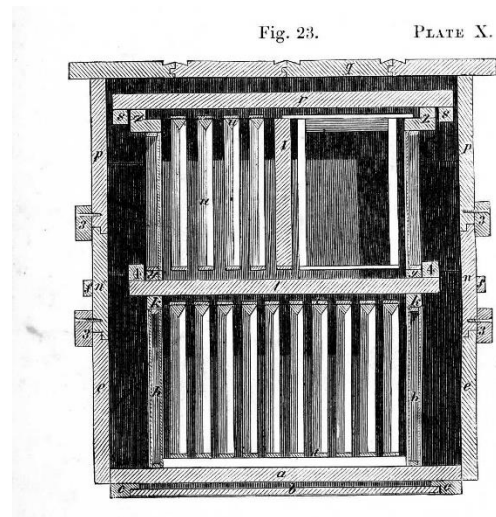


Illustration taken from Eva Crane's book

She found in her research that the Greeks kept bees in hives made of willow wide at the top and narrow at the bottom. The top was covered with broad flat sticks. The bees put into a hive like this would build comb down from the sticks.

This method of keeping bees still remains with us today. (Top Bar hives). I don't want to get into any arguments about the current design of frames but Crane points out that the bee space for which Langstroth is credited was well known by beekeepers of the late 1700's. The importance of the spaces between top bars and side walls was written about and used in

Huber's leaf hive and earlier by L' Abbe Della Rocca described in his book *Traite complet sur les abeilles* written in 1790.



This is a plate from Langstroth's book published in 1853. It shows frames.

The advantage of a frame was that the bees had a guide on which to hang natural comb.

Note: it would take just a short time for Johannes Mehring to invent a press to make foundation 1857.

Foundation eliminated a number of problems frames with a guide had.

So much for a little history.

We are faced with a number of choices in selecting foundation for the frames that go into our hives.

I picked up a bee supply catalog and turned to the foundation section. I came across a number of terms used to describe foundation.

- Deep plastic foundation, medium plastic foundation, and shallow plastic foundation.
- Thin foundation, cut comb foundation.
- Brood foundation
- Crimp wire foundation.

Frames and hive bodies vary in depth. The first thing to recognize is that foundation also comes in varying sizes to fit these frames. But also involved is how the frame in the hive is going to be used!

Let me start with brood comb foundation:



Every managed hive must have a brood chamber. Bee schools will recommend frames going into the brood area can be deep or medium sizes. But other choices can be made – what about using shallow hive bodies for all hive boxes. I use mini mating nucs  $\frac{1}{4}$  the size of standard frames to raise queens.

This picture shows a standard deep brood frame started with wired brood foundation. The comb in the frame is straight and well supported.

One cannot usually see the foundation. We see the cells built by the bees. The choice is 100 % pure beeswax or plastic.



This is 100 % pure beeswax foundation installed in a wood frame.

Note the wires in the comb. This is crimp wire foundation.

A frame like this is ideal in starting a new hive or replacing old frames. The wire will support the comb built by the bees.



This is double coated plastic foundation being used in the brood chamber.

The choice of using plastic is more or less restricted to honey supers or brood supers.

Note the bees have already started drawing wax cells.

Some beekeepers desire comb honey supers on their hives.



Beeswax for producing comb honey is made from virgin cappings wax. One can see thru the wax because it is so thin. This foundation is used in various ways to produce comb honey.

This is an example of cut comb honey.

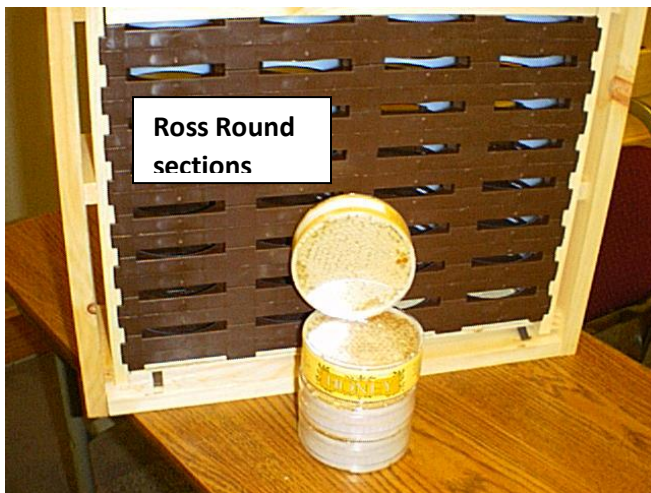
This honey will be sold to customers who will possibly eat the wax.

As shown here, the honey is capped and cut from the frame for sale. These sections are usually packaged in either jars or plastic containers.

The wax foundation for comb honey should be thin and when held up to printed matter, the printed words behind the wax should be visible. A 12.5 pound box of thin foundation will have 275 sheets approximately while a box of 12.5 pound brood foundation will have 150 sheets approximately.

I strongly feel that one is not saving money by using thin foundation in frames that need wiring. Any exposure to high heat conditions will cause the thin foundation to melt quickly. The weight of the bees is enough to pull new thin wax foundation from the wedge in a top

bar. Thus, comb honey is produced in special sections.



Basswood sections



**Comb management** is an important part of being a successful beekeeper. I use both plastic and beeswax foundation in my hives. Let me

just point out some of the pluses and minuses for each:

**100% beeswax foundation:**

- Bees work it better.
- It is less expensive.

**On the down side:**

- A major problem is the time it takes to install natural wax foundation in frames.
- Proper wiring is required to hold the foundation in place. Any short cut in installing the foundation in the frame will result in problems.



This comb was placed in a hive after the honey flow. The bees did not draw cells on the foundation. Instead, they actually chewed the wax from the foundation.

Another example is the frame shown below. It was not wired by a beekeeper.



Look closely at the cells and sagging of the comb in this frame. The comb in this frame will most likely be thrown out of the frame with the weight of the honey during extraction. Because the foundation was not supported by wire, it sagged and almost all the cells are deformed. Note the fold in the wax toward the bottom. Hot weather accounts for some of the issues with this frame. But had the foundation had a good support of wire to support the foundation, it would not look like this. This is a beekeeper problem – not a bee problem.

Plastic foundation advantages:

- It snaps into a frame with little effort. It does not require wiring. The plastic insert is durable.
- Plastic foundation can be removed from a frame, cleaned of any comb building problems, re-waxed and reinstalled in a frame for future use.
- Stronger support for comb and no likely blow-out in the extraction process. Extractors can be run at a higher speed recovering more honey from a frame.

**Down side:**

- **Violation of the bee space can cause the bees to build comb in unwanted places on the foundation.**
- **Plastic frames or foundation placed in a solar wax melter will warp making them unusable.**
- **They require frequent inspection during the time bees are beginning to draw cells on the foundation.**

**This is an example of using 9 frames in a 10- frame hive.**



**The bees may begin to build comb between frames. Early inspections of new hives can correct this issue. The hive**

**tool can be used to remove this new comb from plastic foundation (one can put it in a bucket to be re-melted), and the frame can be placed back into the hive for the bees to work.**

**One of the big advantages with plastic foundation is that wax moth, mice and badly drawn comb on the plastic foundation do not completely destroy future use of the foundation. Many use power washers to clean the foundation for reuse. The foundation can be re-coated with a new wax coat.**



**The next issue will continue with two pieces of equipment one can build during this cold weather.**

- 1. One is a solar wax melter to recover wax. Recovered wax is valuable.**
- 2. The other would be to build swarm traps to get those free swarms this spring.**