Stahlman beekeeping notes for 2021

Issue # 8 [2-21-21] Building Frames and installing foundation

Even with it being cold outside, beekeepers have work that can be done!

In my case, I am building frames and putting foundation into frames. I am in a unique position of having an air compressor to help put frames together fast. I am using two types of frames: those for plastic inserts (I like these for several reasons) and frames that need to be wired using natural beeswax foundation.

Commercial beekeepers have for the most part adapted plastic inserts and wood frames into their beekeeping operations. Let me explain - I have ordered four boxes of black plastic inserts for the 400 frames I am putting together for this bee season. I prefer black plastic.

Plastic foundation requires frames that allow the inserts to be slipped into the groves in the top bar and bottom bar. No wiring of the frame is necessary. This allows one to put foundation into frames fast.

Advantage of plastic foundation inserts:

1. **Less labor involved in putting foundation into frames.**
2. **Moth damage is reduced – foundation can be recycled simply by power washing it.**
3. **Eggs can be seen in cells much better if the foundation is black.**
4. **Plastic foundation is sold with a wax covering. Often a double coating. (One can buy plastic foundation that is not coated with wax.) Inexperienced beekeepers often find that bees refuse to build comb on it and thus, feel it is not good.**
5. **The bee keeper can add extra wax to the foundation using a common paint roller dipped in liquid wax. This can be done with new foundation or used foundation.**
6. **During the extraction process, plastic foundation holds up much better than natural wax. (See comments when I discuss natural beeswax foundation)**

Disadvantages:

1. **It adds weight to hives vs. natural wax foundation.**
2. **One must understand how to use it in a hive so the bees draw it out correctly.**

3. **It does cut down on the number of drone cells in a hive! (See a later article about why drones are needed in a healthy hive)**
4. **If steam heat is used to clean the foundation, the heat will distort the plastic.**

Advantages of natural beeswax foundation:

1. **First, bees will work it before they work plastic.**
2. **Beeswax foundation is available in several thicknesses (thin, cut comb, medium brood, and wired).**
3. **Beeswax can be recovered using simple devices such as a solar wax melter.**
4. **Starting a new hive with natural wax foundation avoids the many problems encountered by new beekeepers – especially comb built on the face of plastic foundation.**

Disadvantage:

1. **Takes more time to install wax foundation in frames.**
2. **Little errors can add up to big problems.**
3. **Wax foundation is brittle to work with in cold temperatures.**
4. **Wax moth damage (A topic I will discuss in later issues)**

The information listed below applies only to those who will build frames and then put foundation in them. There are other methods used to get bees to build comb. An example is the top bar hive in which a strip of wax (called a starter strip) is placed in a top bar. I might mention that starter strips can be used in any hive frame, but the comb is often not uniform and can fall out of a frame during the manipulation of a frame during examination.

This is a picture essay on various ways to install foundation into frames.

Before I begin with the photos, let me point out that honey bees have some rules about building wax. If the beekeeper violates the principle of the "Bee Space Rule" the consequences will result in burr comb and comb constructed in spaces between frames.

One mistake is using only 9- frames of new foundation in a 10- frame hive. The picture shown below shows what happens to plastic foundation spaced too far apart in a hive. This hive clearly shows that the bees preferred to build the new comb from the front edge of the top bar rather than on the foundation in the frame. It happens to frames with natural comb as well. See the 2nd photo.

It is common practice for those beekeepers that have drawn comb frames to use 9- frames in a 10- frame hive. Bee space between drawn comb in a 9 - frame hive is not as wide as the picture shown above and thus to fill the space the bees will add to the depth of a cells on the frame and make it easier for beekeepers to uncap stored honey in those frames. Commercial beekeepers use ten frame mediums with as few as 8-frames for honey production. They get as much honey from those 8 frames as they would from 10 frames. Uncapping equipment used by commercial honey producers is far different from what I use now. I am now all hands-on-deck and handle each frame individually when taking a hot knife to remove the cappings.

I want to point out a few facts about frames. They differ from one manufacturer to another.

A frame designed for plastic foundation is not designed for natural wax foundation. The top bars, end bars, and bottom bars are cut to fit the desired foundation to be put into them.

First: Installing plastic foundation into a frame:

This can be done in a cool room and the beekeeper should have little concern about breaking the foundation. Plastic foundation is somewhat flexible but not brittle.

The end bars of frames used for plastic foundation are not drilled for wires. The plastic foundation is held in place by the grove in the top bar and bottom bar. No nailing or other support is required.

Photo of frame parts:

I am sharing two types of frames: one for wax foundation and one for plastic.

If you are using plastic foundation, you do not want the top bar to have the cleat/wedge as the top bar in the photo on the left shows. The wedge is removed from the top bar and nailed back in place to support natural wax foundation.

To the right are the frames for plastic foundation. They may look alike but they are very different.

The top bar has a deep grove cut into the top bar to slip the top edge of plastic foundation into and the bottom bar likewise will hold the bottom of the plastic foundation. The proper fit and cut into these frame parts is important. Note the end bar for plastic foundation has no holes cut for wiring the frame.

This is a sheet of black plastic foundation being waxed. I consider this important to get the bees to draw the plastic foundation. Plastic foundation that is double waxed can be purchased for far less than the labor and cost to wax your own. If the bees mess up a frame of plastic foundation, the beekeeper can easily snap the foundation out of its frame, scrape all wax comb from the surface, pressure wash the foundation, and apply new wax to its surface. THAT CAN NOT BE DONE WITH NATURAL WAX IN A FRAME!

Fitting plastic foundation into the proper frame is a snap as well.

There are no supporting wires required and a sheet is simply dropped into either the top or bottom slot and pressed into the opening until the sheet snaps into the opposite slot. It may take all of two minutes but often is much faster.

Bees will work plastic foundation just like they do natural beeswax. The trick is simply use 10 frames with wax coated plastic foundation in a new hive. I normally place a new frame of plastic foundation between two frames of drawn comb. Bees will draw the new comb on the plastic foundation like this:

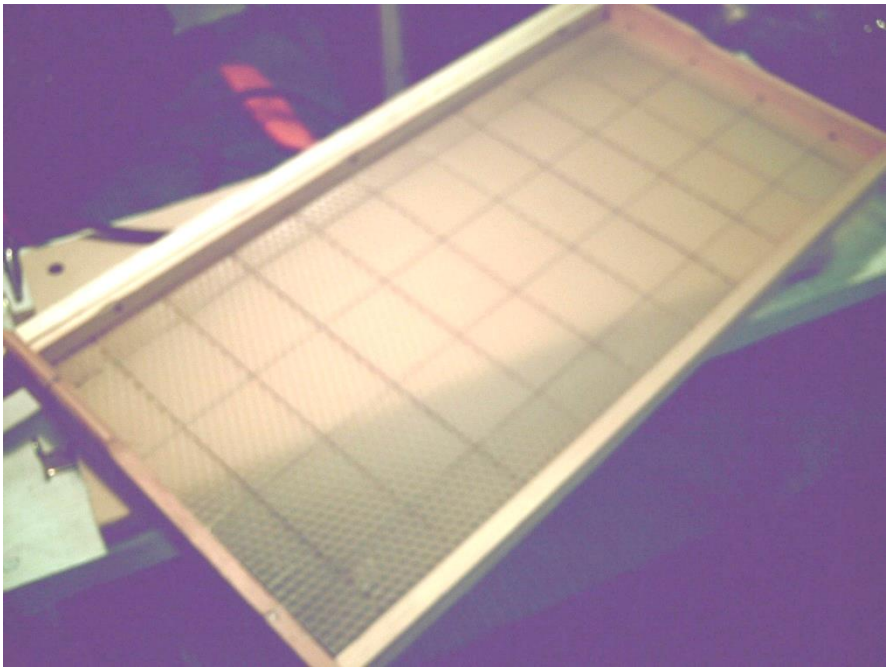
New foundation needs to be put into a hive early in the season. A beekeeper can stimulate wax glands of the honey bee to build wax foundation by feeding sugar syrup. The reason it is best to put new foundation on early in the season is [that is when plants are in bloom and when honey flows are common].

Queens will begin laying eggs in the new comb as the bees begin to build cells. In a new hive, the bees will begin on a few frames and expand the nest. It takes a lot of bees and resources for a hive to draw comb in two deep boxes if the honey flow ends in mid-summer. Any box of new frames with foundation added after the honey flow will not be drawn out by bees. If one is looking for a honey crop, it is best to have frames of drawn comb in honey supers. (Later issues will discuss the ebb and flow of honey crops.)

Installing new 100% beeswax in frames takes time!

Frames support comb within the frame.

This is a sheet of new beeswax foundation installed into a frame.



There are several steps needed before a sheet of wax foundation is firmly installed in a frame.

After frames are built, the beekeeper will need to support the wax in the frame.

From my experience mentoring new beekeepers this is a step missed by many bee schools.

Learning to build frames and install foundation is one of the basic jobs to make sure that bees get off to a good start.

This picture shows a wiring board. Bee catalogs may refer to it as a form board.

Frame wire is an additional expense if one is using wax foundation. However, many beekeepers can speed up the process by using metal or plastic support pins.

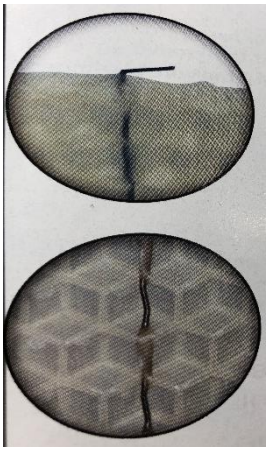
(Personal note) I don't like the plastic or metal support pins. Wire secures the wax to avoid the warping of comb. Pins do not. Wiring a frame can help prevent blow-outs. I often extract deep and medium frames full of honey. An extractor works by centrifugal force. The weight of the honey being removed from frames by centrifugal force causes the comb in a frame to be thrown out of the frame. This is called a blow-out. Without wire supports, extracted frames are prone to blow-out! Extractors run at high speed can even cause comb to blow out of a wired frame.

This is an additional reason commercial beekeeper's use plastic foundation – extractors can be run at higher speeds to get all the honey out of the comb.

Since I work with and mentor many new beekeepers, I recommend wax foundation for them. This may sound like a contradiction, but if done right once a frame of foundation is drawn correctly, the errors individuals make with plastic foundation well out-weigh the justification to buy wax foundation.

This is a frame with wax foundation. The frame is not cross wired, but the foundation does have wires.

Buying crimp wire foundation to be used in the brood chamber or medium honey super is a wise investment.



If one looks closely at the photo above the wires can be seen.

In this case cross wiring would add additional support as will support pins.

Just remember, the investment in equipment and building frames correctly is

[A long term investment]! The bees may need to be replaced from time to time but the equipment has value if it is maintained and correctly assembled.

Experienced beekeepers know that **not having** the right equipment available at the worst possible moment is exasperating. Every colony ready to expand into a new hive chamber must have frames and boxes ready. This occurs when honey flows are going full blast, when colonies are going to be split, or a beekeeper suddenly finds a swarm needing a new home.

There is another subject related to building frames and chosing foundation.

Comb honey production and the frames, devices, and foundation used to produce comb honey.

I have had some experience in this area but buyers today are satisfied with chunk honey which can be cut from a honey frame, placed in a jar filled with honey and sold as such.

There is an art involved in producing real comb honey! If you are interested in that area, I refer you to books written by C. C. Miller and Carl E. Killion.