

# STAHLMAN BEEKEEPING

## NOTES FOR 2023

**Vol. 5 Issue # 17 Is your hive queenless? April 29, 2023**

Here we are almost into May and one issue keeps coming up every year.

I spend a lot of time looking at friend's hives and this allows me to find topics to write about. And it reminds me that there is a difference between beekeepers that just begin keeping bees and those that are in their second or third year keeping bees.

There is a reason to question what is going on in a hive year around. Honeybees by the book should do everything according to the natural plan explained over and over by instructors in bee schools.

The first indication of a bee problem occurs when brood is examined. Perhaps for the new beekeeper starting a hive with a package of bees -- The question would be, "was my queen accepted by the bees?"

We teach the basic biological fact that the queen lays eggs and the eggs hatch into larvae, and larvae develop into pupa and emerge from their cell in 21 days. Every beekeeper needs to know that and use it when they examine a frame taken from a hive.

The first challenge faced by new beekeepers is installing a package into a hive. The best book "in my opinion" is the Fifth Edition of The Beekeeper's Handbook. This book list four methods used by beekeepers to install package bees. It devotes several pages to reasons package bees fail or have delayed development.

The first inspection is to check to see if the queen has been released by the bees – Some say wait a week but in my case I recommend three days. From personal experience, I have introduced queens and forgot to remove the cork in the candy end of the three hole queen cage. That delays the colonies normal development. In some cases the bees have not released the queen and after three days it is considered safe to open the candy entrance so the queen can be released. The earlier a queen begins laying eggs, the faster the colony will develop.

We know that honeybee development is a fixed biological fact: for a worker bee to develop from egg to adult bee is 21 days (temperatures in the brood nest may delay or speed up the process by a few hours one way or the other).

### IMPORTANT POINTS

Our honey flow in Raleigh has slowed down with cooler weather and a lot of rain. I was in Ohio last week and beekeepers there were faced with similar conditions. I compared temperature differences for last week and noted that there was about a 10°F difference – highs and lows.

10° can be a big difference especially if one is raising queen bees.

This past winter was very mild in both Ohio and North Carolina and from what I am told, bee survival was good in both states.

#### Finding the Queen -- from The Beekeeper's Handbook

- Use as little smoke as possible.
- She will be found usually on frames containing eggs and uncapped larvae.
- If the queen must be found:

Place queen excluders between brood boxes – five days later, the queen will be in the hive body whose frames contain eggs.

This is the least disruptive method one can use. There are other methods but most are very disruptive.

Authors of The Beekeeper's Handbook are Diana Sammataro and Alphonse Avitabile.

Now to the problem faced by all individuals keeping bees. Do you see eggs, larvae, or capped brood?

Check sheets are handy. This link will provide a good source for items to check during an inspection: <https://www.dadant.com/catalog/m01940-hive>

Check sheets will include questions about the presences of a queen. Usually a question will ask if one sees the queen. Another question will ask if one sees eggs, larvae, or capped brood. It may even ask about a queens laying pattern.

It is not necessary to see the queen when inspecting a hive! In fact, when I inspect a hive I have trouble finding the queen. My hives have large populations of bees at this time of the year and even when I inspect my queen mating nucs, I sometimes have trouble finding young unmarked virgin or mated queens.

One can easily see larvae and capped brood. I understand why it is hard sometimes to see eggs especially in new white comb. As a commercial beekeeper, I bought black plastic foundation because it made seeing eggs easier. Really there were other advantages as well such as not spending time wiring frames and not having blow-outs when extracting honey frames.

**Getting to the point:** No queen present in a hive = brood interruption. Brood interruption is normal when a hive swarms. In the age of the Varroa mite, brood interruption is one way to stop the reproduction cycle of the Varroa mite. Swarming in this respect is good for a hive of bees.

No laying queen in the hive = delayed development of the hive. In other words, no eggs results in no new bees for a period of time in the hive and hive population decreases. If a new laying queen is present, brood production will begin and the colony will be on the path to survival.

There are periods during which a colony has a queen but no eggs are present when an inspection is made.

- A virgin queen raised by the bees during swarming season is in the hive, she may be mated or unmated, but she will begin laying eggs after all brood is capped – the development of the worker bee cycle will indicate no eggs and no larvae in cells. Only capped brood. One may see a number of open swarm queen cells along the bottom of frames.
- A beekeeper moving frames in a hive may accidentally kill the queen. Pulling a frame from the center of the brood nest rolls bees and some get squashed. The queen could very easily be one of them. The bees set about building emergency queen cells. This hive will have a longer brood interruption period than a hive that swarmed.

- I am passing over the supersedure phase of beekeeping because generally the bees will not have a period of brood interruption and may in fact, have two queens. I have written about different kinds of queen cells in the past so will leave that issue for another time.

Let's take a look at a time line:

New queen introduction: (Any new mated queen introduction -- generally starting a package)

Day 1 – 3	Day 4 –	Day 7	Day 12 to day 23	Day 24
Queen in the cage	Egg laying begins	Larvae present	Capped brood	First new bees emerge

In this example, the queen should be accepted by queen-less bees. If an old queen is in a hive or has been accidentally shook into the package, the new introduced queen will not be accepted. One still should see eggs as the old queen with her bees will continue to lay eggs.

**A hive that has a virgin queen will not accept a mated introduced queen! With queens costing about \$40.00 each in today's market, it is costly to introduce a queen to a hive that already has a virgin queen.**

For a swarm colony – a virgin queen mates and matures into a laying queen. This takes time:

**Virgin Queen:** A swarm queen emerges and has a head start over a queen being raised by the emergency queen replacement process. The swarm queen must mate, return to the hive, and develop into an egg laying queen. This process takes about two weeks or a little more. During that two to two and half week time there will be no eggs in a hive. All worker bee larvae will have reached the pupa stage of development.

Day 1 Virgin queens fight – only one survives.	Day 3 – 8 Virgin queen leaves the hive to mate. This varies with weather conditions	Day 12 – 20 after mating, the young queen develops the ability to lay eggs. This time varies but normally one may see eggs as early as 12 days following the virgin queen leaving her cell.	If no eggs are observed by the time all capped worker bees have emerged, the beekeeper must take action.
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Before buying a queen the beekeeper can try this option.

- One method is to remove a frame from the hive suspected of not having a queen. Replace that frame with a frame from a hive that has eggs and young larvae in it. If a hive is queen-less they will try to build emergency queen cells. If queen cells are observed two days later, it can be assumed the hive is queen-less.
- In fact, one suspecting any hive being queenless can use this method anytime.

- Allowing a swarm hive to replace a queen by letting the hive raise an emergency queen is possible. However the recovery period (brood interruption) will place unnecessary stress on the bees expected to carry out raising a new queen and then feeding and caring for developing larvae.

**If using the frame insertion method, be sure to remove the emergency queen cells when a new mated queen is introduced to the hive.** It would be helpful to the hive and new queen to add a frame or two of capped brood. This would provide young nurse bees to feed young bees and allow the older bees to do the foraging work of the hive.

Signs to look for if a hive has raised a queen:



These are queen cell cups located close to the bottom bar of a hive. Some are old and the lighter color cells are this years old queen cells. They have no larva in them. This is a sign the hive has swarmed. Bees tear down queen cells and it is not unusual to find evidence like this on frames showing the hive has swarmed in the past.

New queen cell cups can exist along side old cell cups. In this picture a hive with a queen cell being built has a larvae in it. During swarming season it is important to check frames often and check bottom bars. Hopefully when a hive does swarm, the new queen will survive and serve it thru the rebuilding stage by laying a lot of eggs.

Other than a super of honey, not much is lost in a hive swarming. Swarming is a process of reproduction.

