Stahlman beekeeping notes for 2021

Issue # 24 June issues – A Major Problem – No Queen / Poor Queen

A virgin queen enters a new world. She is considered a perfect female. If she passes thru/ survives the challenges of her sisters – also virgin queens, she will enter a period of development leading to mating and egg laying.

It is said that a queen leaves the hive on two occasions: 1) to mate and 2) to swarm. I would add to that -- abscond.

The mating of the queen always occurs in the air. It is very rare to observe the actual mating of a drone and virgin queen. One of the most valued books in my collection is "Breeding Techniques and Selection for Breeding of the Honeybee" by Friedrich Ruttner published in 1988 by the British Isles Bee Breeders Association.

Ruttner says, "The relative performance of a colony depends to a great extent on its numerical strength which in turn results from the egg-laying ability of the queen and on the nurse bees devotion to the task of rearing."

Queen rearing is a demanding task. Breeders can meet the requirements of providing cell building hives with a large number of nurse bees and nutrition. Worker bees must prepare the brood-nest, feed the queen larvae, and provide optimal conditions for queen development. The best queens are reared during swarming season – swarm cells are always well fed and numerous. Emergency queen cells less so.

Most of the queens sold in packages are reared in the spring. **External conditions (weather conditions, nectar flows, and drone availability) will control the quality of well-bred virgin queens.**

The problem: hives going queen-less (drone-laying worker bees), drone-laying queens and poorly mated queens!

Anyone buying a package of bees or a nucleus hive must be aware—If cold weather affects queen production in Late February, and March – the packages or nucleus hives sold with queens from **the southern layer of states** will affect their later performance.

A queen may mate with as many as 20 drones on mating flights during the week after she emerges from her cell. Thus, when we purchase a package of bees or a nucleus hive with an introduced queen raised in 2021, we can only hope that she is well mated.

The sign that she is not accepted on introduction to the hive:

A beekeeper bought a package of bees and introduced it to a hive. A little more than six weeks later, I was called and asked, "what happened to the hive?" All the bees that came with the package had died. They did while alive draw out comb, and it appears from the darken cells that they tried to raise some brood on this frame. Small hive beetles were in the process of producing larvae in the cells shown here. No bees, no queen and a dead hive! **This hive died from owner neglect.** This hive most likely did not accept the queen which the owner told me was alive when the package was placed in the hive.

Reason bee hives die out --**REASON NUMBER ONE** -- **Inspections for queen acceptance and follow up visits to check on population growth from eggs laid by the queen did not happen.**

Most beekeepers are not as neglectful!

This is a frame of all drone brood. Note the circular pattern of the capped drone brood. **This is an example of what one sees with a drone laying queen.**

In fact, most of the cells in the center of this frame have developed drone larvae. By the time I saw this frame, the bee population was drastically reduced. The worker bee population was being replaced by drones.

If one sees more than one egg in a cell, another issue arises. Something called drone laying worker bees. In the absence of a queen pheromone, a worker bee (a female with ovaries but no spermatheca) can lay eggs. **The absence of the queen pheromone for a period of 20 days or so creates this situation.**

(I want to note that young queens just beginning to lay eggs may lay more than one egg to a cell).

Drone laying worker bees have no pattern in egg laying. There will be more than one laying worker bee in the hive. The dome shaped cells are drone brood – created from unfertilized eggs with only 16 chromosomes. Rather than being found in regular drone cells (4 to the inch) they are laid in a worker cell (5 to the inch) thus the round dome is required to contain the larger developing drone larvae.

One will also recognize the reduction in population growth in this situation even though many workers may be observed.

Comment: **If this situation is not recognized early – a least 10 to 15 days before multi eggs are observed in cells, a hive will be very hard to save by introducing a new queen**. Some have done it but the cost of a new queen introduced to the hive at this point in time is a waste of

money in my opinion. A better option might be to introduce a frame of young brood. After a wait of several days, a check can be made to see if the bees have begun building emergency queen cells. By the way, at the same time the frame of brood is added, the hive should be given a healthy 2 parts sugar to one part water feeding**. It does not pay to raise a new queen with a colony of older bees lacking food stores.**

What is a failing queen and how would I be able to identify the signs?

This is a good frame of brood

The queen has laid eggs in almost all of the available cells from the top bar to the bottom bar and from end bar to end bar. The brood is solid. It is normal for several open cells to appear in a solid frame of brood.

This is what I expect from all of my queens. But things can and do change over a season. Queens can suddenly reduce egg laying **– a beekeeper needs to be aware of external conditions. This is especially true of nectar and pollen sources being unavailable.**

Some queens and colonies will use up all honey stores to raise brood while other lines seem to shut down brood rearing when food is unavailable.

However, it is now June and honey bee populations should be very strong. If we open a hive and find a frame of brood as shown below, it is not what should be happening!

This is something called a shotgun brood pattern.

There will be some larvae and eggs among the capped brood. No frames with solid brood will be found in the hive.

In mid-summer this hive will continue to decline in bee population and may attempt to requeen itself. Most likely a hive like this will not survive into the fall. A check of mites may indicate a high mite count in this hive vs. the number of bees in the hive. **Treating for mites immediately is also a chance to save this hive.**

Is it time to find the old queen and requeen the hive?

The worker bees in a colony with a failing queen will often begin a few queen cells to replace the queen. Usually, the cells are located in the center of the brood nest. This process is called supersedure.

A hive can survive when the bees supersede the queen. However, it will result in problems if the supersedure process begins too early in the season or too late in the season. Often beekeepers are unaware that a queen has been replaced. I mark all my queens (or try to). From time to time, I may find several queens in a hive at the same time. One would be my marked queen and another is unmarked. On the next examination of the hive, the marked queen is gone and the unmarked queen has replaced her.

The biggest problem is making the decision – **let the bees replace the queen or buy a queen to replace her before the bees do?** From my perspective, I replace poor queens because I want a productive hive! All of this is based on the issue of how much pressure is placed on the egg laying activities of the queen. **A honey crop depends on a large population of foraging bees.**

If one has a weak colony of bees started with a package of bees or a nuc in April, there is a problem at this time of year. Those started hives should have frames of drawn comb and a lot of bees. It is up to the beekeeper to determine the cause for the hive to be weak.

There is still time in the year to save a weak hive.

Suggestions:

1. **Think about taking a sugar roll test for mites.**
2. **Think about replacing the queen.**
3. **Ask an experienced beekeeper for help.**
4. **If another source of bees is available, build the colony strength by adding frames of brood.**
5. **Feed the colony.**
6. **I always have a few nuc hives that I make up during the spring for just this situation. Nuc's have laying queens and can be combined with a weak hive – making it stronger - giving it a chance to build up strong before fall.**
7. **Use the situation as a learning experience.**

I think I can say without hesitation, that if the hive receives no help – treatment for mites, feeding, close attention to hive populations – the hive is destined to fail even before the winter season begins.