

Queen Bee Introduction

By Dana Stahlman

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- The queen is the foundation of every colony. Beekeepers have the responsibility to give her all the protection from injury that is possible to give.
- When a queen bee is removed from the hive by a man, that is an unnatural situation. Normally a queen honeybee leaves a hive during the time she mates and when the hive swarms. They are fragile and can be harmed in many ways.

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- By the mid 1800's many changes occurred in the keeping of bees. It was learned that queen honey bees could be raised under certain conditions. Study and observation proved beyond a doubt that the queen was the egg layer in the hive, thus she was a female. And from that observation, it was also learned that queens produce fertile and unfertile eggs.
- Queens are raised from fertilized eggs (the same egg can produce a worker bee or a queen bee). The only difference is how the young larvae is fed by the bees.

A hive of bees require a mated queen



- I have joked that I can sell bees that don't sting. Problem is some people would pay a lot of money for bees that don't sting.
- And it is possible to sell bees that do not sting and can not sting. They are called "drones".
- But the reason we have worker bees in a hive is because every queen must be mated to lay fertile eggs. A queen may mate with a number of drones and the genetic traits of the worker bee depend upon both a mother and father.

Selection of Genetic Stock

- Honey bees have been so genetically interbred in the U.S. that a beekeeper is usually faced with a daunting array of choices. Pure races of honey bees have been replaced with hybrid variations of the races. No longer is a Carniolan a black bee or maybe it never was according to the research of European experts such as Friedrich Ruttner.
- The term “**survivor queen**” is nothing more than hype. Every queen you buy today is from a “survivor queen.” Think about it – dead bees produce no queens. Some beekeepers are willing to pay a lot more for a “survivor queen” than another queen without that label.

Selection of Breeding Stock

- A queen breeder is developing stock which has traits that are uniform and transmitted from one generation to another. This is only done with highly selected queens tested over years and maintained thru artificial insemination with selected drone stock from drone mothers that have also been evaluated for the traits desired by the breeder.
- It is not possible to buy one of these queens and open breed her daughters to unknown drone stock to produce the same quality of traits. It is almost impossible to find anyplace in the U.S. where a queen producer can raise queens without exposing virgin queens to unwanted drone stock.

Choices for getting queens

- Select a known queen bee source that has a track record for producing quality queens. You have a number of traits to consider – gentleness, winter survival ability, diseases resistance, honey production, quick build-up, and even color although color is just that -- color. A good example is the Cordovan queen. These **Queen bees** are a very gentle and blond/ gold color bee variety of the Italian race. The most beautiful “blond” bee sold in the U.S. They build large populations but have one trait that cause northern beekeepers problems – they eat away stores in brood rearing so they often starve when all honey stores are exhausted. However, they revert quickly back to Italian when queens swarm or are superceded. And the blond and gentle characteristic is lost to the hive when her daughter queens mate to drones that are not carrying the cordovan gene trait.

Choices for getting queens

- In early spring the only queens available are from warm areas of the U.S. Thus, Florida, and a southern tier of states stretching from Georgia across the U.S. to southern California and Hawaii. Expect to pay premium prices for Hawaii queens but they are available early in the season.
- Local sources: Ohio has been blessed with an active effort to develop home grown queens. In 2011 over 75 individuals took the queen classes offered around the state by OSU and OSBA. Many areas now have someone raising local queens of various stock.

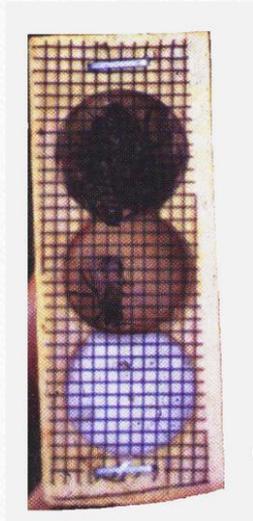
Choices for getting queens

- Another source is from brokers. These are individuals who do not raise queens but buy them for resale. Problem with buying from a broker is that there is not much assistance for the buyer if something goes wrong. Generally, it is like buying a package of bees. “If they are alive when you pick them up, they are yours!”
- Also brokers tend to exaggerate the value or quality of the queens they sell. Profit is the primary motive and they have no way to replace a queen without loss of income.

Queens are sold in cages



- There are generally three types of queen cages sold in the U.S. today.



**The Benton
Cage**

The purpose of a queen/shipping cage is to confine the queen so the bees she is being introduced to can not harm her during the time they are adjusting to her queen pheromone. Honey bees are loyal to the “queen substance” of the old queen and will kill any queen that enters the hive while that queen’s “Queen substance” is still strong. It dissipates in a period of several day. The screen on the cage allows bees to feed and have some contact with the queen. By the time the bees are able to eat the candy and thus open up a hole to let the new queen out of the cage, enough time will pass to allow them to adjust and accept the new queen. In this cage, beekeepers often push a nail into the candy end of the cage to speed up the release of the queen. This is not wise to do with the modern smaller cages shown in the next slide.

Working with the Benton Cage

- The Benton cage is large. Usually it will require the beekeeper to remove one frame when placing it in a hive. It will also require the beekeeper to remove the cork on the candy end of the cage. It is a popular practice to help the bees eat through the large candy cell in the cage by inserting and removing a nail into the candy end to release the queen quicker.



All queens shipped in packages of bees must have something to prevent the bees inside the package from releasing the queen prior to the beekeeper opening the package and introducing the queen properly. This is usually a cork or metal covering of some kind. **The beekeeper must make sure the bees can reach the opening for the candy end of the cage in order to release the queen.**

Queens are sold in cages



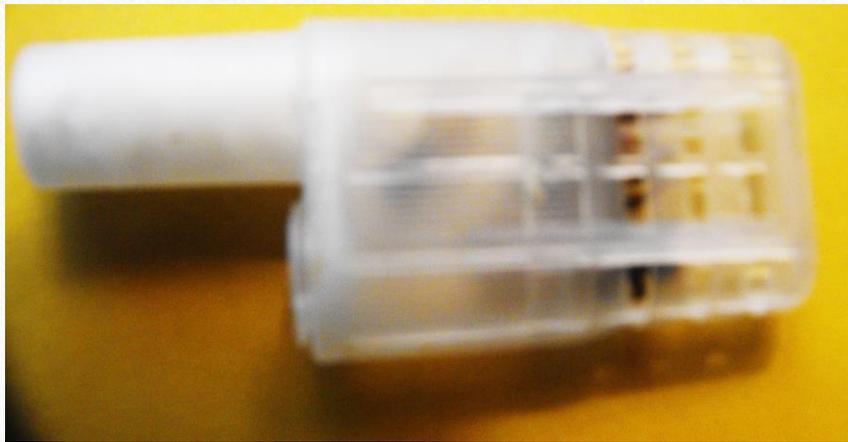
- This is the California queen cage developed by Koehnen a large California queen producer.

This cage is wood with a screen wire much like the Benton cage but has only one single chamber for the bees and queen. The candy end of the cage is a hole with a plastic tube filled with queen cage candy. It is also easier to slip between frames when placed in a hive.

Often the candy end of the cage must be covered with a cork as shown in the top cage in this stack of three cages. It must be removed when the queen is introduced to the hive.

This cage can be slipped between frames easier than the Benton Cage. **It is not wise to poke a hole in the candy in this type of cage.** The candy fills a small tube which the bees eat thru quickly.

Queens are sold in cages



The Plastic EZ-BZ cage

A queen cage popular with queen producers is the EZ-BZ queen cage. The advantages to this cage are many over any other style cage. They will easily slide between the frames and not cause burr comb to be built. Much more communication area is available. And if the beekeeper wants to allow bees to enter the cage there is an additional break out bar in the bottom to allow worker bees to enter. The cages are readily available from a number of equipment suppliers.

This cage has a tube filled with queen cage candy for bees to eat thru to release the queen.

Working with queen cages

- Queen cages are intended to keep queens safe for introduction to bees or for shipment. They are not intended for long term confinement.
- A queen can be held for several days safely.
 - Keep the queen in a quiet warm dark location.
 - Keep the queen and attendant bees supplied with a drop of water for each day of confinement. The moisture is to help bees dissolve the sugar candy.
 - Keep the bees warm (Not too hot or too cold). Ideal temperature would be normal room temperature for humans or slightly warmer. The cooler it gets the more sluggish the bees become and the hotter it gets the more active the bees become. Both conditions create more stress on the bees being held in confinement.

Successful introduction of a queen depends on a number of factors

- **Most important factors:**

- **There must not be another queen in the hive [including a virgin queen] to which a new queen is to be introduced.**
- **[It is not wise to kill an old queen to be replaced until the new queen has arrived]**
- A hive that has been queenless for a long period of time is very hard to requeen. Worker bees often develop the ability to lay unfertilized eggs and a new queen introduced to this kind of hive will most likely be killed.
- Nor should a hive have started queen cells – such as emergency queen cells – if a new queen is to be introduced. All the queen cells must be removed before the new queen is admitted to the hive.

Additional factors

- A colony should be made queenless for a few hours before a new queen is introduced. When nucleus hives or splits are made up, it is wise to wait a few hours or introduce the new queen immediately.
- If bees are queenless for more than 24 hours, they usually begin building queen cells and if this is started, the beekeeper must examine each frame of the nucleus hive or split to make sure all queen cells started have been removed. If they are not removed, the bees not you make the decision to either keep the queen or kill her.

And if you are replacing an already established queen

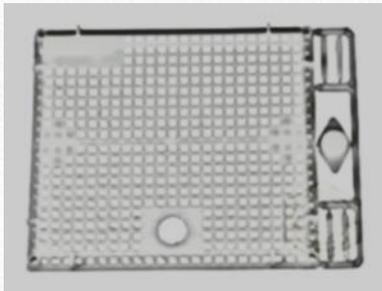
- **You must find the old queen and remove her!** If the bees want a younger queen they can make one! Old queens are replaced for several reasons
 - The bees are aggressive! The brood pattern is spotty indicating the queen is failing
 - You want a young queen for honey production (Young queens produce more brood).
- **The bees in the hive most likely have a larger population than a package of bees or a nucleus hive. Therefore it is important to delay the ability of the bees to release the queen early.** Do not put a hole in the candy end of the cage regardless of the cage being use. It might be a good idea to plug the candy end for a day and then allow the bees to eat through the candy to release the new queen or the beekeeper can use his/her judgement as to the best time to release the new queen. Place the new queen in the hive before the bees start queen replacement cells.

What is an A.I. Queen

- Artificially Inseminated queens present challenges in being introduced to a hive of bees.
 - First, they are expensive – some costing hundreds of dollars. This does require more effort on the beekeepers part to make sure every effort to introduce the queen leads to success.
 - Often A.I. queens are quickly superseded by the bees. It is not at all unusual to find the bees building queen cells in such hive and cutting them down or in fact replacing the queen. I have never received a sure answer on why this happens but it is recognized and expected.

Improve chances on queen introduction

- Introduce the queen into a small two or three frame unit with only capped brood available and plenty of food. This nucleus hive can then be united with a stronger hive later.
- Introduce the queen in a special introduction cage placed over young capped brood just about to emerge.



These are called push in cages. Most are made of plastic and must be firmly pushed into the comb. This prevents bees from the outside of the cage from reaching the queens inside. As young bees emerge from the brood, they quickly accept the new queen. Make sure the cage is also placed over some honey stores. Bees outside the cage will feed the new queen but it is best to provide her with some food just in case the bees are aggressive toward her.

Marking and Clipping a new queen

- New queens are usually sold without being marked or clipped. Most selling queens charge extra for this service.



I am not big on clipping a queens wings. Some injury may happen when doing it.

Some claim it prevents swarming but if the old queen tries to fly from the hive she may end up on the ground and be unable to climb back into the hive. I have seen comb built under a raised hive by bees who stayed with the old queen. Usually the bees leave the hive in a swarm with one of the new virgin queens.

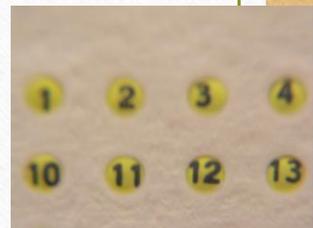


Marked queens



- There is an international color code for marking queens. However, not all beekeepers follow the code. Most marking is done with a marking pen sold by bee supply companies. The standard colors are: **White for years that end in 1 or 6. Yellow is used when a year ends in 2 or 7. Red if a year ends with a 3 or 8. Green when 4 or 9 is the last digit. Blue if the year ends in a 5 or a 0.**
- **No question, white is easiest to see followed by yellow.**

Honey bee queens are also marked with numbered plastic disk of various colors. The people raising queens use tags to identify them for research or other special purposes.



A marked queen is easier to see and find in a hive of honey bees.

But have you been successful

- I am called often by beekeepers to report the queen can not be found in the hive. A hive may or may not have a queen if you can not see her but one thing indicates there is a queen in a hive. **One egg per cell. And the number of eggs indicate the laying ability of the new queen. Eggs become larvae.**



Eggs are hard to see on new comb. Darker comb allows eggs to be seen easier. After three days eggs become larvae as shown in the photo to the right. Even if you can not find the queen, something is laying these eggs and creating the larva. I would be alarmed only if I could not find eggs or larvae in a hive within a week of the queens introduction.

