

# Queen Banks

**IF YOU ARE BUYING QUEENS, ALWAYS ASK IF YOU ARE BEING SHIPPED PREVIOUSLY BANKED QUEENS.**

Larry Connor

After a month of beekeeping meetings, I feel a very strong need to write about queen banks again, since, when I asked audiences, less than ten percent of the beekeepers confessed to ever having used one. So I've combined material from previous articles with some new thoughts – regular readers may find I have changed my views on a few things. So many of you like to keep me on my toes – I don't mind returning the favor. Thanks – you keep me writing.

## QUEEN STORAGE IN NUCLEUS COLONIES

### INDIVIDUAL QUEENS

A four- or five-frame nucleus is one of the best places to store queens – a single queen in a small colony where she is allowed to lay eggs and run on the comb. Introduce the queen onto a frame of brood using a push-in cage where the queen is confined and cannot

get out. Wait until the queen has eggs and larvae under the cage before you remove the cage and allow her free run of the nucleus. Hold the queen in the nucleus hive for as long as necessary. Feed the colony before and during the introduction process with 1:1 sugar syrup – and anytime there is not a nectar flow.

Or place the queen into a plastic "hair curler" cage and position her between two frames of brood. Cylindrical screen/hardware wire cages may be made and used, but probably damage the queen's tarsal pads and this undoubtedly leads to queen problems. Inside the plastic cage, there should be a cavity filled with queen candy to allow her to feed herself. Feed the colony *before and during* the introduction process with 1:1 sugar syrup. After seven to 10 days allow the queen to walk out of the plastic cage onto the frame of brood. The queen should walk

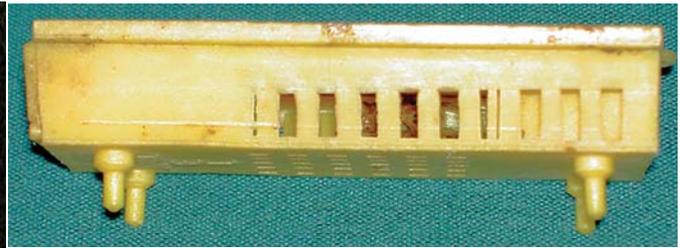
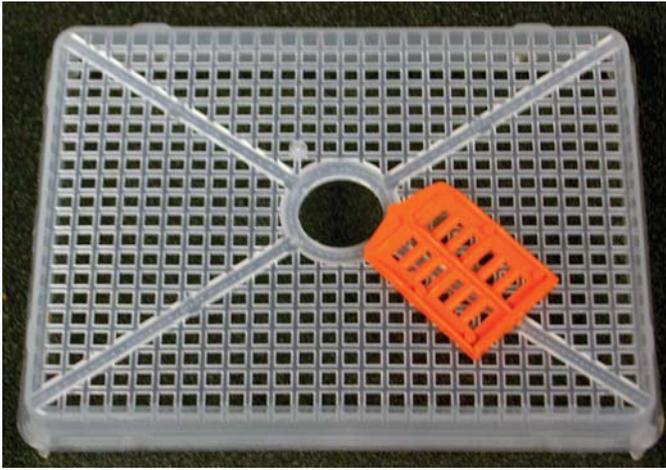
about as if nothing has happened, and the workers should react as if she has *always* been out of the cage. If there is any aggressive behavior toward the queen (balling), re-cage her and attempt introduction into another nucleus hive. The more unrelated the queen is, the more difficult it is to introduce her to a group of bees.

Use of nucleus colonies is ideal for breeder queen maintenance. Establish a routine inspection schedule, and clip the wings of all queens to insure queen identity. This is not an intensive labor effort, since you can inspect a nucleus colony quickly to determine if brood should be added to boost the bee population. If you space four frames in a five-frame nucleus box you will reduce damage to the queen during inspection. Nucleus colonies should always have their entrances reduced to one to two inches, with a piece of queen ex-



Typical queen delivery cages. Not the best for introduction, but acceptable.





*Plastic push-in cages are easy to use, effective, safe for the queen, and inexpensive insurance.*

cluder placed at the entrance if the queen is really important, or if there are invading African swarms in your neighborhood. A robbing screen may be needed in some areas, since strong colonies find nucleus colonies easy prey and set up robbing behavior – remember to consider this colony queenless if the queen is special (expensive) or at all inbred.

#### NUCLEUS COLONY USED TO STORE A SMALL GROUP OF QUEENS

The five-frame nucleus may be used to store and even transport moderate numbers of queens (mated or virgin). To make up a small nucleus sized queen bank, do it much the same as if you were making a strong increase nucleus. Select two or three nice frames of worker brood where bees are emerging – your goal is to have plenty of young nurse bees in this hive to care for the queens. Use two full frames (85% or more brood), or three partial frames (50-60% brood), plus a frame each of pollen and honey.

Place an empty five-frame nuc shell over the hive and use it to house a jar of sugar syrup. Continuously feed 1:1 sugar syrup with medication (Fumagillin) to prevent

*Nosema apis* from growing in the mid-guts of the bees, including the queens. We know that *Nosema*-infected queens lay fewer eggs and are superceded earlier than uninfected queens. The feeding also keeps the queens well fed and sometimes will continue to lay eggs in the cages – a sign of good queen storage conditions.

The five-frame queen bank is a suitable place to store up to 30 queens and transport them to remote sites for introduction. The queens are less likely to be stressed in such a bank, and if you do not use them all they are well protected. To move the bank, screen the entrance and remove the feed shell. If you plan ahead, you may open vent ports on the side of the box for ventilation. Several cardboard nucleus boxes on the market have these ventilation features built in for your use.

Carefully maintain the queen holder. At least once a week inspect all frames for queen cells (the last thing you want is a mated queen to start laying in this box, for all the confined queens will die). Remove frames of brood that have emerged and replace them with fresh brood frames. After a month, you may

want to relocate the holder a few feet away so the older field bees will return to a dummy hive you set up for them. This keeps only young nurse bees in the queen holder.

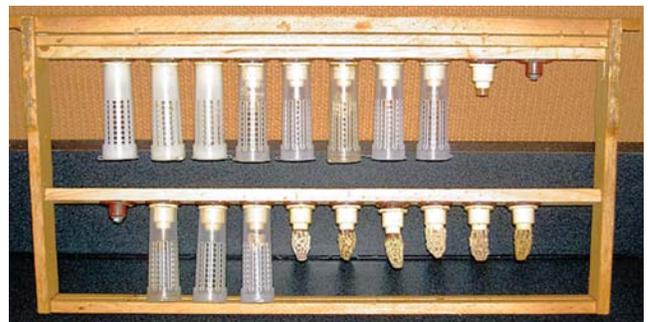
#### QUEEN STORAGE IN STANDARD SIZED COLONIES

A full sized queen bank is run much like a cell builder used to finish cell construction in a queen rearing operation. A young, vigorous queen is kept in an eight- or 10-frame hive body. Every week the open brood she has produced is moved to a second box above a queen excluder. If the queen is not seen, the brood should be gently shaken or brushed to remove enough bees to eliminate the chance of transferring the queen into the queen bank. Move empty brood frames to the bottom hive body – extracted if filled with nectar or syrup

Queen-holding frames should alternate between frames of open brood. As in the nuclei, these cages may be made of plastic or another material, keeping in mind the problem of possible damaged footpads in metal screen cages.

There may be 30 to 60 queens stored in one queen holding frame,

*The modified hair curler cell protectors on a frame holder. Without them, you could lose a whole bunch of queens.*



with up to two frames per queen bank. That is a lot of queens (and dollars) in a single hive, so make sure you are confident of your queen bank skills before storing a large number of queens. Banked queens should be of the same age and genetic makeup. Given a choice, worker bees select queens of similar genetics and care for them better than 'foreign' queens of unrelated stock. Do not mix young virgin queens with old mated queens in the bank, for this may put one group at risk.

Queen banks MUST be constantly fed, preferably with a division board feeder or a top feeder to reduce robbing. *Your goal is to duplicate conditions found during swarming season, the peak of the season, where colonies have lots of incoming food and young bees.* Inside a queen holding colony where the bees are well fed, you may find that the queens are laying eggs in their cages! See that as a very good sign. Equipment must be bee tight so the host queen cannot get in to the area where queens are being banked. Once she starts egg-laying in the

*The mesh wire cages. Too-large openings allow colony workers access to the queen's foot – and tarsel gland damage can occur. Avoid these.*



queen holding area, the other queens die quickly.

#### USING BANKED QUEENS

Dr. Diana Sammataro and her coworkers at ARS-USDA, Tucson, have been looking at what happens to a queen pheromone signature when multiple queens are stored in a queen bank. Their preliminary information shows that banked queens shut down their individual pheromone production when stored

in queen banks. They find that laying queens have a stronger pheromonal signature than those not engaged in egg laying. Therefore, the stored queen, one that cannot lay eggs because she is caged and not normally fed, cannot compete with a recently removed queen laying hundreds of eggs/day.

The significance of this should sound an alarm in all beekeepers regularly using commercially produced queens. A non-laying queen ➤

must be allowed the opportunity for her ovaries to develop and lay eggs before being introduced into a hive and expected to perform like a racecar at the Indy 500. Even removal for a few hours, and certainly overnight, undoubtedly affects a queen's egg laying, total body weight, and pheromone production. There is much more research to do in this area, but the evidence is that the queen is, in part, perceived by the bees as a function of her pheromone production and that is based on her egg laying. A queen that is not laying eggs normally is not detected as a normal queen.

Bottom line: the biggest questions every queen buyer *must* ask his or her supplier – have these queens been in a queen bank? And if so, for how long? How long have these bees been in transit?

This may provides valuable answers to problems some beekeepers have with introducing queens taken from queen banks: they are often not accepted or may be quickly superseded if they make it through the introduction process. For that reason banked queens should al-

ways be introduced into smaller units, like splits or nucleus colonies, held in their cage or introduction cage for a week or so before they are released. And feed before, during and after the holding and release process. This should allow the queen to return to normal egg-laying and pheromone production levels with her ovaries again swollen with developing eggs. For those not wanting to wait the week or so to introduce the queen, ask yourself which takes more time – the week

for delayed introduction or introducing another after the first one has failed to take?

After a banked queen is out and laying, inspect the colony every 14 days to check for supersedure cells. If found, see if the previously banked queen continues to build the colony normally and cut these cells out. The egg laying can be fine, but the pheromonal response may be lagging. If you are buying queens, always ask if you are being shipped previously banked queens.

So we have ended where we started – queens should be introduced into smaller, nucleus sized colonies, and they should be delayed in their release until their egg laying is on par with colony expectations. Banking queens can be done, but it comes at a cost of increased management effort. **BC**

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*Having returned from another month-long lecture/book-selling road trip, Larry Connor interrupted work on the final pages of Increase Essentials to write this article. Or re-write it, depending on you viewpoint. He sometimes answers emails sent to ebeebooks@aol.com.*

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