

# The Traveling Beekeeper



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## Queen Rearing in Collin County: My Bluebonnet Encounter

**I**n Mid-April my Bluebonnet trip to Texas continued as it focused on the primary reason for this visit, a day-long course on queen rearing for hobby and sideline beekeepers, held at the apiary of John Talbert in Collin County. It is possible to transfer a great deal of information about queen rearing in eight hours, but somehow, by the time Saturday was over, many of the participants had convinced me to come back

Sunday afternoon so we could see how the bees and humans had done to start queen cells.

In the course we covered the basics of queen production in a hive, and spent considerable time discussing the starter and finisher colony system I rely upon when teaching new beekeepers how to produce queens. Of the systems I have used, this one seems to work the best for a diverse group of beekeepers with different levels

of beekeeping experience. It does usually rely on grafting, and that makes it difficult for beekeepers who are long over due at the eye doctor. While nobody admits that at the start of the program, no matter where I have taught queen rearing, someone confesses that they really need to get their eyes checked.

The program was capped at 20 participants, and more wanted in. Well, I'd like to conduct a two-day program next year, since this one went as well as it did. Credit for a huge amount of the success goes to John Talbert; for his hard work, excellent teaching facilities, and for bringing in bee colonies for the class to use and abuse. Teaching is not easy on a bee hive; with a class in queen rearing we can literally tear a colony apart making queens. My challenge is to show how this can be done with a minimum of disturbance to the bees.

In nature, queens are produced when the queen suddenly disappears. We call that the emergency response. In addition, healthy colonies routinely produce queen cells when the queen pheromone level drops to about half the level of a good queen. This happens under two circumstances: when bees are getting ready to swarm, and when the colony is undergoing queen replacement or superseding.

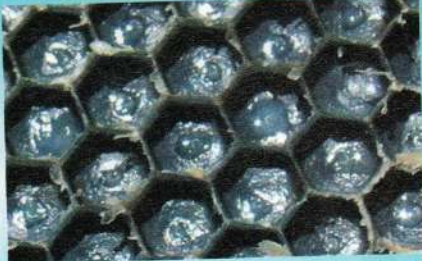
To use the emergency instinct to start queen cells, I have students divided into groups of 4 or 5 people. Each group is asked to make up a starter colony and a finisher colony. In Photo A we see the students performing that time-honored beekeeping challenge—finding the queen. I like to make sure the queen is not in with the cells we want to start. If she is, the effort will be a bust. For me, the ideal



A. Searching for the queen



**B. Pierce worker comb**



**C. Closeup of larvae on black comb.**



**D. Grafting**

starter colony has all the nurse bees out of a strong, healthy, spring colony. To that we add a frame filled with pollen, one filled with honey, and water in a sponge. The starter box is closed, but the screen ventilated. There is no brood and no queen in the box. After the bees have been gently shaken into the box and closed up, they are left to quiet down for a few hours when the grafted queen cells are then placed into the middle of the box.

The high point for most of the beekeepers was when we attempted to graft. That was also the moment of truth (regarding eye wear), and we set up outside where the lighting was the best to learn how to pick up tiny larvae and move them to waiting queen cups. The problem with grafting outdoors is that it can be warm and dry, and the larvae will dry out quickly. This reduced our success when we checked the started cells the next day, yet we did see how the process is done. Also, one student carefully kept everything covered, and her "take" was the best of the group. Even I learned (or relearned) that lesson.

One discovery worth sharing took place when we started to work with a worker comb with Pierce black foundation that the bees had added comb. Because we were working in the sun, the wax was not especially hard, and the warm April sun made it possible to push the wax off the foundation to leave the larvae and eggs floating on the royal jelly at the bottom of the cells. For beginners, this means that it is not necessary to look down the long tube of beeswax to find the right aged larvae, but to work quickly to carefully scoop the larvae onto the grafting tool. Photo B shows the dark comb with the comb removed. Photo C shows the same image but closer up. Note that the larvae at the bottom cells have little or no royal jelly under them. These are very young larvae; probably well under 12 hours old since they "hatched". Rather than taking the chance of damaging these fragile larvae, I recommend to students that they use the larvae with an abundance of royal jelly around them. This makes it possible to scoop under the larvae without doing damage to

them. At the queen cell, just reverse the process, laying the larvae down in the center of the cell base.

Photo D shows one of the Collin County Hobby Bee Club's student beekeepers. As I have described in this series of articles, the club is a strong supporter of youth programs, spending about \$5,000 to purchase bees, protection gear, and to provide a course for the young beekeepers. Here one of the 2007 scholarship members is grafting. Both he and his father are now active beekeepers, racing to keep up with each other in information learned and hives owned. The student is using one of the Chinese grafting tools. Some of the students really like these, while others were happy with the German economy grafting tool sold by Dadant and Sons.

Less than 24 hours later the starter colony has done its job. In Photo E the beekeeper is inspecting the coverage of bees in the starter colony. There is a piece of hardware cloth on the bottom of this box to provide ventilation, and the box was set on a hive bottom to insure air flow. Notice the nice coverage of bees in the box. Some beekeepers use an enormous number of bees in a starter colony, but I have found that the nurse bees from one strong colony will provide all the royal jelly-producing skills needed by the beekeeper. I do, however, try not to overload the starter colony. While it is possible to start 90 or more cells in such a unit, I would rather see half that as a starting point. It is not very hard to set up the starter (once you know what to do), and I think it is better to have more starter colonies rather than too few for the job you need to get done.

Photos F and G shows the coverage of the queen cells from the colony in E. It is not "dripping" with bees as I would hope, largely because the percentage of accepted cells was reduced by the combination of a new group of grafting beekeepers and the dry conditions under which we were working. Acceptance of the cells at this point can be indicated two ways. First, a started cell will have a layer of royal jelly on the bottom of the cell. This is food added to the young larva as part of the copious feeding necessary for top-quality queen production. Second, the bees will add an open cup of wax (even to plastic cells we were using) and create a small volcano. It is possible, however, to see some cells where wax has been added but the cell lacks royal jelly or a larva. Well, as time goes on, the number of cells will diminish as the bees sort things out and determine the best larvae, the larvae undamaged by grafting, and the larva that have genetics of interest to the nurse bees. Oh, the politics of the nurse bees, nasty business. If a larva is found to be unacceptable to them, the larva becomes a snack for the removing worker. Any royal jelly that remains in the bottom of the cell is quickly removed and consumed or recycled as food for another larva.

Cell starters work for less than a day,



E. Starter day 2



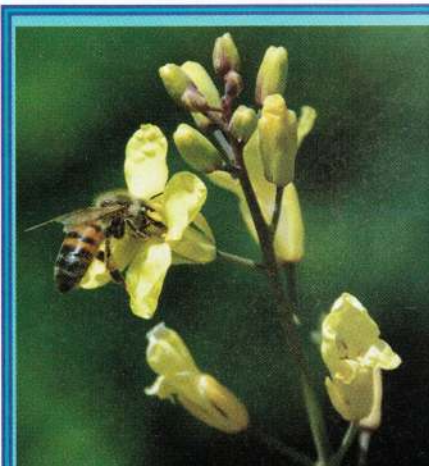
F. Inspecting the take



G. Inspecting the take



H. Bluebonnet



I. Apis on Mustard Texas

and then the bees are returned to the colony from which they were shaken. Field bees have been caring for the brood while the nurse bees were away; when the nurse bees return, all will be resorted and the colony will go back to normal. The queen never left the parent colony, as the starter was queenless. I remind my classes that they must keep looking for queens once they have found one in a colony, and before they shake frames of bees from the brood combs. Others have found what I have; there are often two queens, sometimes laying side by side, in one colony. This is especially true in the spring, while the nectar flow begins and the bees are going about queen replacement via supercedure. I am sure the old queen gradually fades away—perhaps there is a retirement home for old queens that researchers have not been able to locate. That is a nicer thought than the impersonal expulsion of the dead queen's body, but that is nature.

#### My Bluebonnet Encounter

The Sunday of the course I was able to drive around the Texas countryside and bond with bluebonnets. They are pretty lupines, and do cover certain spots of the landscape (Photo H). They did not bloom across the horizon; I did not expect that. Not one honey bee was visiting the flowers; they are, after all, a flower that evolved with bumble bees for pollination. The honey bees were busy working the less attractive mustards that grew with the bluebonnets (Photo I). They were getting both pollen and nectar. When we get a former first lady to promote mustards, we will know that honey bees have really arrived as favored pollinators. That is another fantasy!

To contact Dr. Connor, send an email to [LJConnor@aol.com](mailto:LJConnor@aol.com). Also, the Wicwas Press website, [www.wicwas.com](http://www.wicwas.com), now includes an online store where you may purchase books by credit card or check using the services of PayPal.

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