

BACKYARD

QUEENS

Jennifer Berry

Marked queens are soooo much easier to find. (photo by Jennifer Berry)

**Grafting, splits,
swarms or
supersedure cells
– Making a few
queens can be easy!**

Raising your own queens can be a rewarding adventure. First, you know the history of your queen – her roots, her mother’s background, her age. Second, she’s your baby. You were responsible for bringing her into this world. Too sappy? Maybe, but there’re not too many people who aren’t fascinated and overjoyed at the sight of their first queen. But the best part about raising queens is you can have one emerged (16 days), mated (21-25 days) and laying eggs in 23- 28 days and it didn’t cost you a dime.

Still, why raise your own when there are so many good queen producers out there? One answer is the local queen producer has no queens until next year and the following has occurred: your colonies are busting at the seams, the queen just died, disappeared, left the building, you mashed (southern for smash) her, you didn’t order enough, your relatives, friends, and neighbors decided they really like your honey and want more, more, more so you have to expand. Or maybe you have decided to join the “Brethren of Better Beekeepers” and rear queens that you’ve selected from colonies that can thrive in this rough world we have created for them. What ever the reason is, you can do it.

There are many ways to rear a queen, the most popular being the Doolittle or grafting method. Simply put, grafting is the transference of young larvae into artificial queen cells. Mastering this technique takes time plus a variety of equipment and supplies: grafting tools, queen cell cups, grafting frames, queenless starter colonies, queenright finisher colonies, and mating nucs to name a few. This can be overwhelming for the beginner especially one who just wants to raise a few queens. So let’s simplify queen rearing the best we can.

First, you will need to order, build or set aside the number of hives/nucleus colonies needed to raise the queens. One complete hive or nuc per queen desired. Four or five frame nucs work the best since it takes fewer frames and bees to set them up.

Next, you need to select the colony from which to rear a queen. This is a very important step because the queen is the HEART of your colony. Starting off with excellent breeding stock is the key to producing an excellent queen. When you have an exceptional queen you have the right

ingredients for an exceptional colony. 50% of her genetic makeup comes from the mother queen. Her genetics, like brood production, gentleness and disease and mite resistance, is what she confers onto her progeny, which in turn makes the type of colony you desire.

Here at the bee lab each colony goes through a series of tests before a queen is selected to become a breeder queen. This may be a bit extreme for your operation however you may want to incorporate a few of these techniques. For disease and mite resistance we want queens which display hygienic behavior (something Marla Spivak has been talking about for decades). We test for hygienic behavior by freezing a circular section of capped brood with liquid nitrogen. The frame is returned to the colony for 24 hours, and then the number of cells removed are counted. Knowing the number of cells within the circumference, then counting the number of cells removed results in a percentage of hygienic behavior. The higher the percentage the better. In conjunction with mite resistance each colony’s *Varroa* mite population is measured with 24 hour sticky sheets. Next, we determine how well the queen is laying by measuring brood production. We take a plastic, frame sized grid which is marked off in centimeter squares, place it on a frame with brood and then count the total. Again the higher the number the better. Another trait we measure is colony temperament. Every time we manipulate a breeder colony we evaluate their temperament on a scale of one to five with one being extremely gentle and five being extremely hot. Finally, we measure honey production and brood spottiness to determine the rate of inbreeding. Granted, this is probably more than you want to tackle for raising a few queens, however, you can definitely evaluate mite population, brood production, honey production and colony temperament.

Now we need to locate the queen in the colony you have selected. The best advice I can give for finding queens is spend the extra dollar and have your queens marked. This makes life so much easier when trying to find queens. But you still need to find her, mark or not. Let’s say you have several hive bodies and supers with no queen excluders. Where do you begin? Remove the honey supers and place them on the inner cover. Next place the second hive body (if you have one) on the lid, leaving the main

hive body intact and start your search there. More than likely you will find the queen on frames with a mixture of empty cells, eggs and milk brood. Queens are usually, not always, but usually **not** on frames with honey/pollen, sealed brood or frames void of bees much like the empty ones you find on the ends. Scan for the queen from left to right, flipping the frame over and scanning again from left to right. Don't forget the bottom or end bars. If she is not on that frame, place it outside the colony, leaning it up against the box you are working. Don't lean it against the other boxes since she may be on that frame and travel into those boxes. If you can't find her on the frames check the sides of the box. If no queen is found move to the next hive body, or supers and resume your search like before.

Still can't find the queen? You're not alone. Even the most experienced of beekeepers can't find queens every time. You can either continue on with another pass or put the colony back together with queen excluders between each box and return in four days. Look for eggs and your search is at least narrowed to that box. When you find the queen, temporarily cage her or set aside the frame with her on it until you are finished with the next step.

You are now going to transfer frames from the parent colony into the new hive. Whichever colony not housing the old queen must have eggs or at least very young larvae, (preferably less than 24 hours old), in order to produce a viable queen. The queenless colony will also need young nurse bees in order to raise a queen. One way to ensure nurse bees are in the box is to do the split while the foragers are out in the field. If using a four or five frame nuc, remove one frame of eggs, milk brood, and bees, one to two frames, depending, of emerging brood with bees, and two frames of pollen/honey. Transfer these frames into your new box. Put the brood frames in the center, with honey/pollen frames on either side. Shake several frames of bees into the box. If using a 10 frame hive, fill in the spaces with foundation or drawn comb. To the remaining colony add foundation or drawn frames to fill the hive. You will need to move the new colony to a different location until the new queen has emerged, otherwise all the field bees will return to the original colony. Take care in transporting the hive. Frames tend to sway back and forth, thus mashing bees, including queens.

Another easy way to rear a few queens with the least amount of work is to take advantage of the swarming season. If you come across a colony that is preparing to swarm (visual swarm cells), make a split from this colony. Make sure you have a queen cell and not a queen cup. Queen cells have the egg/larva in place while the cup is empty. Take the old queen along with half the bees, brood and honey/pollen and place them into a new hive. Make sure to cut any queen cells from this colony if you want to keep that queen. Move this colony to a different location. In the remaining colony, leave the swarm cells intact, moving them to the center of the brood box. Make sure this colony has plenty of honey/pollen and young bees. Not only does this give the illusion to the workers from both colonies that they have swarmed, but now you get a free queen.

A new item just introduced by Brushy Mountain Bee Farm is worth mentioning. It is called the queen castle and simplifies queen rearing even more. Basically, it consists of a hive body that has been separated into four compart-



You can use an emergency cell to raise your queen.



You can use a swarm cell to raise a queen.

ments with alternating entrance holes into each section. Each compartment holds two frames, so you now have four-2 frame nucs in one box. You can also remove the dividers to make two-4 frame nucs. Take one frame with eggs/milk brood or one with swarm cells along with one frame of honey/pollen and place it into one section. Don't forget to add plenty of bees, enough to cover each frame and the walls. Continue until all four sections are filled. Carefully move the box away from the parent colony. If you transferred capped queen cells be extra careful. This is a delicate time for the queen pupa so try not to bounce the box too much.

Just a few quick reminders. Maturing queen larvae need an abundance of royal jelly to develop into healthy, vigorous queens. Royal jelly is produced by young worker bees which need plenty of honey and pollen to do so. Make sure the colonies rearing your queens have plenty of both. Also, try not to bother the colonies too much once they have started rearing the queens or during the queen mating flights. Remember it takes 16 days for a queen to emerge from the egg, three to five days before she takes her first mating flight, two to four days to mate and then two to three days to start laying eggs. The earliest you will begin to see eggs are 23 days if your queen started from an egg. Don't be alarmed if you see a few eggs per cell in the beginning. Sometimes young laying queens will put a few eggs in a cell. However, if this condition continues you either have laying workers or a bad queen.

After your queen is laying and you are pleased with her performance, don't forget to mark her. Now sit back and enjoy your newest title, Queen Breeder Extraordinaire. See ya! **BC**