

Queens for Pennies

or

How to produce 8-10 queens for a couple bucks in less than a month

PowerPoint presentation goes with Randy Oliver's
"Queens for Pennies" article at
<http://scientificbeekeeping.com/queens-for-pennies/>

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A Simple Method

What you'll need

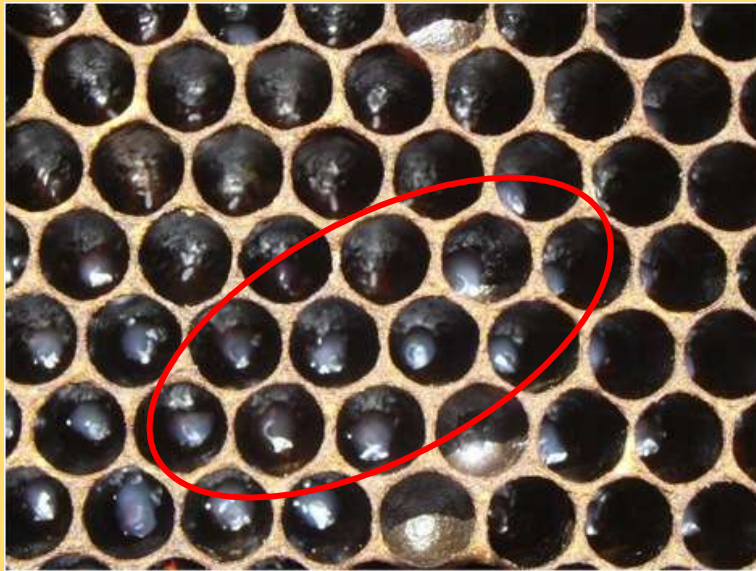
- A chosen Breeder Queen hive (larva donor colony).
- Strong queenless colony to be your Cell Builder hive
- Other colony(ies) to donate nurse bees.
 - Alternative:** Empty brood box & bottom board/cover to make Cell Builder hive.
- A syrup feeder.
- A lighted magnifying headband.
- A few Chinese grafting tools.
- JZ's BZ's plastic cell cups.
- A damp towel (and maybe an empty egg carton)
- Nuc boxes or queen castle(s) in which to mate out the queens.

Timing

- Raise them during swarming season.
 - During strong nectar flow and when hive has lots of emerged drones.

Day “Minus 4”—Prepare future queen larva

- Select Breeder Queen hive to donate larva for grafting.
- Place a clean, empty, dark, drawn comb into the center of your Breeder Queen colony 4 days before Day 0. Four days later, it will be full of larva the right age for grafting.
 - This will be your “breeder larva frame.”
 - Graft from the youngest larva possible—still the size of an egg, and just starting to curl (see next photo).



These larva are the right age for grafting.



Day 0

Set up Cell Builder hive

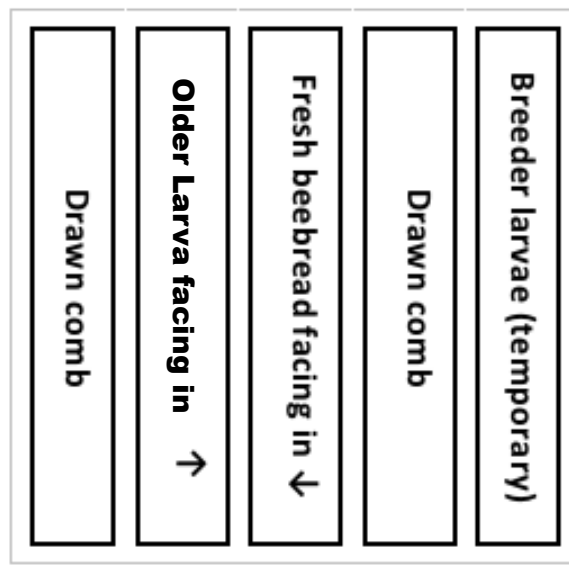
- Cell Builder colony must be queenless. Set the queen and the frame she's on aside in a nuc box for safekeeping. Add lots of nurse bees.
- Alternative: Make a split including the queen and all eggs/young larva.
- Donor colony(ies) providing nurse bees must be healthy, full of nurse bees, and have larva well fed with jelly.



- Select comb of larva (not the very young-these are not breeder larva).
 - This will be core of Cell Builder, where nurse bees will cluster.
 - Don't want competition for food with queen cells —just want to stimulate nurse bees to produce an abundance of royal jelly.
 - The rest of the frame can be sealed brood, beebread, or whatever.



- In a pollen frame, cut a channel the width of a hive tool.
 - Scrape out the comb right down to the foundation.
- Insert this pollen frame into Cell Builder hive.
- Also, temporarily add the frame of breeder larva to be grafted.
 - Bees will feed extra jelly to the best queen-candidate larva



Cell Builder hive makeup; remaining frames can be older brood, pollen, or anything except very young larva.



Add the nurse bees

- Add nurse bees to your Cell Builder hive from any other hive(s).
OK to use queen excluder as “queen strainer”.

ALTERNATIVE

- Shake *all* the bees from *all* the frames of the donor hive (except frame queen is on) into cell builder hive.
- The older bees will quickly fly back to the donor hive, leaving your cell builder full of young nurse bees.



One-hour check back for strength

- After an hour, your Cell Builder should look like this—
bees covering the frames and hanging from the lid.
- If there are not this many bees, shake additional bees (through queen excluder) off brood combs from other donor colonies.

Now wait a few to several hours. It takes a few hours for the bees to recognize that they are queenless, and to be ready to start building emergency queen cells. You are going to give them chosen larva from which to rear those cells.

While you're waiting, gather your gear.

- A lighted magnifying headband
- A few Chinese grafting tools
- JZ's BZ's plastic cell cups
- A damp towel (and maybe an egg carton)



Closer view of Chinese Grafting Tool

Prepare your “dark” room

Could be a:

Pop-up blind

Tent

Garage

Vehicle

Bathroom



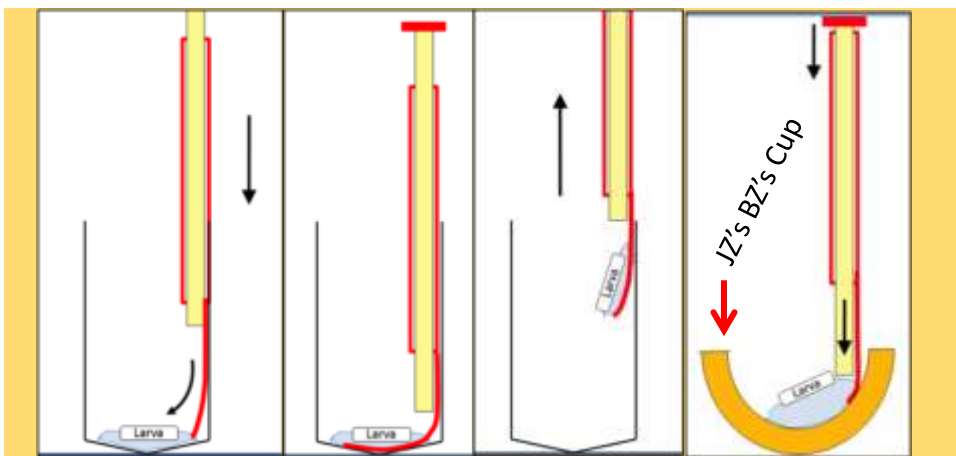
Grafting

- Pull grafting frame of breeder larva from Cell Builder along with pollen frame with gouged channel
 - Old bees gone, only nurse bees left; don't use smoke
 - Do not return this frame to Cell Builder (young larva, duh!)
- Gently brush bees from frames (don't shake)
- Wrap frames in damp towel and go to “dark” room
- Set larva frame in front of you, put on magnifier (lamp on), pick up Chinese grafting tool
- Take a deep breath and relax!
 - “Don't have a heart attack—if you are manually adept enough to trim your nose hair, you can use a Chinese grafting tool! ”

Grafting, continued

- Moisten the blade of the tool; if you've used it previously, it will likely be stuck to the plunger.
 - Most graftpersons just lick the tool to keep it clean ^[17]
 - Practice on a few larger larva to get the hang of it
 - Put grafted JZ's BZ's cups in egg carton in order grafted
 - If you find you're much better at the end and make extras, you'll know which to discard
- You'll see some of the larva have been given extra jelly
 - These are the ones that you want to graft (since they've already been chosen by the bees). The extra jelly makes grafting really easy.
- With a bit of practice, you'll be able to transfer a larva in a couple of seconds.

Author's note: [17] You'll wind up eating plenty of royal jelly, so forewarn your spouse, in case it has an aphrodisiacal effect on you.

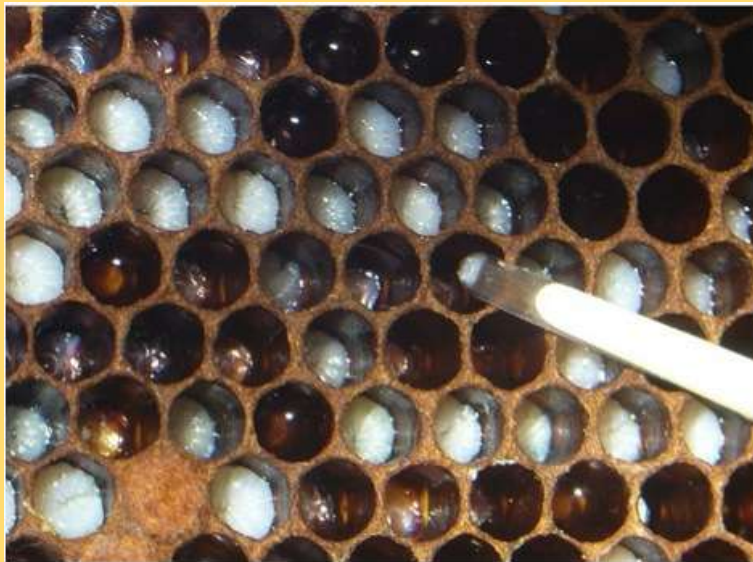


Step 1: Slide the tool straight down the cell wall so that the blade approaches the larva from the outside of its body curve. Do *not* push down on the plunger at this time.

Step 2. The blade will follow the curve on the rounded bottom of the cell and scoot under the jelly without disturbing the larva.

Step 3. Now pull the tool straight up. The jelly (and larva) will stick like glue to the blade.

Step 4. Hold a plastic cell cup in the fingers of your other hand. Push the tool down into the center of the cup until the blade is slightly bent. Now you push down on the plunger with your index finger to push the jelly (and undisturbed larva) off into the cell cup. With practice, you'll pull up slightly on the tool at the same time. Easy!



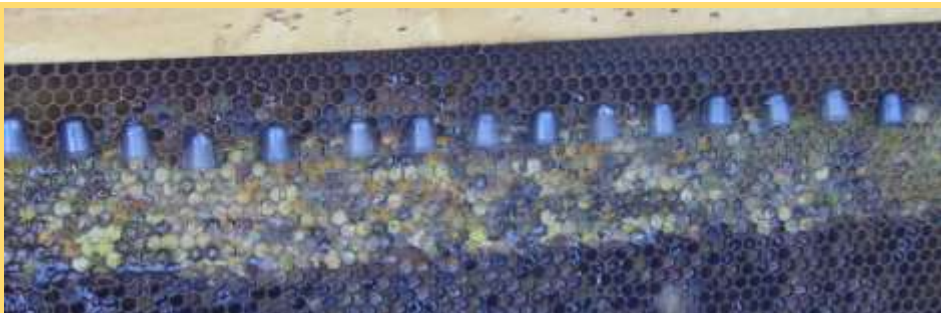
This is what it looks like: Here's a photo of a larva and jelly on the end of a grafting tool.



Grafting in progress



Don't let them dry out! Place the cups face down on a damp towel (or egg carton) after you graft each one. This keeps the larva from drying out.



- Gently push grafted cells into the top of the channel.
 - Cup openings must face *downward*).
- Space the cell cups as close as $\frac{3}{4}$ " on center.
- Channel allows nurse bees access around open end of the cup in order to build the queen cell.



- Put pollen frame/grafted cells back into the Cell Builder.
- Face them toward a frame of **older** open brood.
- Ensure all eggs and very young larva are removed from Cell Builder.
- Replace the lid and put on a syrup feeder.



- Allow bees to build queen cells.
- OK to inspect progress.
 - Check brood frames for and remove any volunteer queen cells.
- Here's what cells look like after 2 days.



- Bees will have completed feeding the larva, and will cap the cells by about Day 4 after grafting.



- Day 9 -- make up your mating nucs.
- For best acceptance, allow nucs to sit for 1-2 days before inserting queen cell(s). Author rarely feeds his nucs.



Day 10: Pry out ripe cells with a hive tool, being careful to only touch the plastic cup! Well-fed ripe queen cells should have plenty of uneaten jelly visible in the plastic cup.



Handle cells gently: Keep the cells at body temperature, and don't drop or jar them.



Insert the ripe cells into nucs: Spread the two brood frames in the nuc slightly and push the cell gently into the comb, cup end up. Press only on the plastic cup. Pry the frames back together.

NOTE: Jerry prefers to make a “thumbprint” in the comb and insert the queen cell at the top of the indentation.

Final Steps

- Queens will typically emerge on Day 11 or 12 after grafting.
- Two weeks later—check for mate out: (Up to three weeks if there wasn't good mating weather).
 - In good flight weather the queens will emerge, mate, and then start laying eggs 8-12 days after putting in a ripe queen cell.
 - Typically, about 4 out of 5 will have successfully mated and returned.
- **Now share them!**

Queens for Pennies

Summary

- Select strong colony with desirable traits to donate larva
- Select or make queenless colony to raise cells (Cell Builder)
 - Insert frame with older larva (no eggs or young larva)
 - Gouge channel in pollen frame; insert facing brood frame
 - Insert frame with day-old larva— ensure no other eggs or young larva in Cell Builder
 - Add LOTS of nurse bees, shaken through queen excluder
- Take out brood frame after few hours and choose youngest, best fed larva to graft; do not return this frame to Cell Builder
- Graft larva into plastic queen cups ; place on damp towel
- Insert grafted larva cups along upper edge of “gouged channel”
- On day 9 make up mating nucs
- On day 10, carefully transfer queen cells to mating boxes