

Stahlman beekeeping notes for 2021

Issue # 29 Mini-nucs for raising queens

Queen rearing can be fun. I started when I was 16 years old. I fell in love watching new queens emerge from cells. It is a sight that I will never get tired of watching.

Most individuals wanting to raise a queen will go to a bee catalog and muse over the various items sold to raise queens. Some bee supply catalogs have sections of the book dedicated to queen rearing supplies.

For starters: The Mann Lake Catalog list 10 pages of items sold under the queen rearing category. Anyone not familiar with the equipment needed to raise queens may give up on the idea because of equipment cost.

Paying \$30.00 for a queen may be a better idea!

One standard mini-Mating Nuc can cost almost as much as a queen. The Nuc's size is listed as 6"x 9" x 6 ½" It consist of three small frames, a built-in feeder and a removable bottom and a ventilation grid.

Just remember every queen raised must have a mating compartment of her own. If two queens are placed into a mating nuc, the nuc will only raise one queen. The two virgin queens will fight until one is dead.

The biology:

A queen can lay two types of eggs (fertilized eggs and unfertilized eggs). To lay fertilized eggs a virgin queen must be mated with several drones – some report as many as 20. I would suggest a small very informative book by Lawrence (Larry) Connor called "Bee Sex Essentials" if you are serious about knowing the in's and out's of raising queen bees.

Fertilized eggs produce female bees. Unfertilized eggs produce drones.

Worker honey bees can feed a fertilized egg to become a queen under three conditions:

- 1. (Swarming – swarm cells)**
- 2. (Supersedure – bees replace an existing queen)**
- 3. (Emergency queen cells – the queen pheromone is missing and the bees try to feed a young worker bee larva to become a queen).**

One can raise queens without buying grafting tools and all the other stuff sold in these catalogs. You could spend \$24.00 for a queen dial but the math is pretty simple.



The biology of queen development is simply 16 days from egg to adult emerged virgin queen. It may take 5 days for a virgin queen to mate successfully and another few days for her to lay her first fertilized egg.

The easy way to get queen cells is during swarming season. Cells can be carefully removed from frames and placed into properly prepared mating nucs. I have seen frames with 10 to 20 swarm cells. Some of them are easy to cut from the comb or bottom bar of a frame.

In a later issue I will get into topics for next year. I will share information about how to use the Miller method to raise queens, as well as simple emergency queen rearing. These do not require one to learn to graft larva as is done by those raising a lot of queens. I would advise anyone not familiar to avoid those queen rearing kits which seem to be error free. They advertise a system in which a queen lays directly into a cell cup – maybe producing 110 queens.

I have raised queens in 2 to 5 frame nuc's, queen castles, partitioned queen nucs (as many as 8 units), and several sizes of mini-nucs. Some of these used various frame sizes such as deep frames, medium frames, shallow frames and smaller custom-built frames.

Before I get into the subject of mini-nuc built in cheap Styrofoam coolers, I would like to point out that the size of a mating nuc one uses will require skill in handling the queens raised in them.

A deep five frame nuc allows a long period of time for a queen to lay eggs. A small mini-nuc has a limited number of cells available for a new laying queen.

What effect does this have on raising queens? If one is using 5 frame deep mating nucs the queen has plenty of cells in which to lay eggs. A 5 frame nuc avoids the need to bank queens.

The mini-nuc must be attended to frequently. If left unattended, the young queen will exhaust all available cells for eggs and most likely abscond – fly away with the bee population. Thus, a queen raised in a mini-nuc must be removed shortly after egg laying begins and moved to a larger hive or banked in a queen cage.

One other point needs to be addressed. Bees abscond from a hive without a queen or brood present. When a mini-nuc is started, one frame in the mini-nuc should have drawn comb with some brood in it. The brood will hold the bees in the nuc. Often it takes only a cup of bees to keep a queen cell warm until she emerges. A method of feeding the mini-nuc is also required.

The equipment: The little Styrofoam cooler I have adapted to raise queens.



Each Styrofoam cooler cost \$1.00. The exterior size is 13" x 8" x 6 ½ ".

Styrofoam in a cooler is fragile. I paint the interior and exterior to add stability to the nuc. I have also added a plate to cover the bottom of the cooler. This plate is made of ¼ inch plywood and is glued in place after the box is painted.

The top is painted and a plate is glued to the cover and a hole is sawed into the top lid so a feeder jar can be placed in it.

A frame rest must be added to the interior of the cooler so frames can be supported. The inside area of the cooler is smaller at the bottom than the top.

The frames I use are homemade except for the end bar. The shallow end bar is the perfect depth for this nuc. The top and bottom bars are cut to fit on my table saw.



This pictures illustrates well the difference in the size of a mini-hive frame in front of a standard deep frame.

I use medium shallow wax foundation with two support wires

running lengthwise in the frame.



Since the top of the cooler is wider than the bottom, I built two follower boards out of Masonite. This keep the side space within the cooler straight and avoids burr comb the bees would build in this area.

Note that I also added handles to the front side of the nuc box so I could carry it easier.



This photo gives an idea of what a top view is like --looking down at the mini-nuc -- with three frames in the middle and a follower board to the outside of the frames.

The top fits snugly onto the top edge of the mini-nuc.

I thought the Styrofoam mini nuc idea might work for raising a few queens at a time. The cost of the cooler was nothing compared to what one would pay to buy something similar from a bee catalog. The results are the same – one mated queen.

Anyone can build one of these custom mini-nucs out of scrap lumber. All sizes could be adjusted to the builders need.

I would suggest frame depth be made to fit the standard foundation sizes available.

And what do they look like when they have bees and have raised a queen?



This mini-nuc with bees is shown while I am dodging rain drops from Tropical Storm Elsa. Because of their light weight, it was necessary to tie them securely to a cement block.

And one more point – How do I get frames drawn with comb. I have a hive dedicated to drawing comb. It is made up of scrap plywood built to the same dimensions as the mini-nuc.



I had to support the boxes with fence posts so it would not get blown over easily. I started it much like one would with a newly established hive with a package of bees. I am using 7 boxes that hold 4 frames each.

One advantage of this technique is I always have drawn comb available with brood and bees which I transfer into the mating mini-nucs.

I use grafted cells to make up my nucs but one could easily have a cell building hive like the one shown with an excellent queen. Frames with eggs and young larva could be removed from this hive and placed into a mini-nuc allowing the bees to use the emergency queen rearing response to raise queens. (No grafting needed!)

I also use these boxes as supers for the Styrofoam nucs. I have even built a special inner cover with a cut out the size of my mini-nucs to place over a 5 frame nuc. It is a great way to introduce a queen to a 5 frame nuc.

Thus, I always have queens available to make the hive increases that I discussed in Issue # 28.