Methods of Making Increase Colonies

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My first beekeeping book,* Increase Essentials, *was first published in 2006. A great deal has happened since then. Colony Collapse Disorder appeared. Many beekeepers moved away from package bees to increase nucleus production, and developed a wide array of amazing methods to make increase nuclei. Many routinely winter these colonies with different levels of success. So, as we work to produce a second edition of* Increase Essentials, *we will put both new and updated materials out to the thousands of people who have purchased the book. For them, I hope that they will see it as an upgrade, and for those who have not read the book, I hope it will incentivize them to read it. In this issue we continue the discussion about making increase nuclei.

Nuclei to mate and hold queens.

Make up small nuclei if you plan to produce, mate and hold queens during the season. The key is to keep these nuclei small all summer, allowing each successive queen to fill the brood nest with eggs before she is moved to another hive or sold. I recommend using three to five-frame deep or medium Langstroth frames so you do not have unique sized frames and boxes in your operation. A ten-frame hive may be divided into two or three mating units and an eight-frame hive may be divided into two sections. Such colonies require special management so they do not become too strong and promote swarming—remove extra frames of brood and bees and add them to mating nuclei that have had a queen failure or any colonies that are weak. Or use extra frames of brood to boost honey production colonies just before the nectar flow. If you mate and store laying queens in these units, you will be able to requeen hives used for honey production at any time without being forced to order queens on a rush basis. Here are some simple steps to establish these colonies:

Select one brood frame. Go to one of the colonies you have selected and managed for increase colony production. Find a frame of brood that is sealed, ideally with young adult bees emerging from the center of the brood cluster. This ensures you will have the stronger nucleus with and increasing number of young bees.

Check for queens. Carefully examine this frame for a queen bee. Your records may indicate that the queen is clipped and marked, but 10 to 20 percent of all spring colonies have two queens (mother and daughter) existing side by side. So even if you have found a marked queen in a colony, continue to check the frame for another queen! A second set of eyes is very helpful while making nuclei colonies.

Move the frame to a prepared nucleus box: There are wood, plastic, and cardboard versions of nucleus boxes. You may divide a ten-frame hive body into two sections by using a thin plywood or Masonite™ sheet as a divider. The double five-frame nucleus allows the two colonies to share heat and build up better.

Give each nucleus colony an entrance facing a different direction. You do not want all the entrances on the same side of the box if more than one nucleus colony is being setup inside. Place entrances at opposite sides so the bees remain separate.

Add another shake of bees. Select another brood frame covered with bees. Again, carefully check the frame for a queen. Gently shake (or brush) the bees from the frame into the nucleus box. Your objective is to cover the brood with bees. If you do not think you have enough bees, shake bees from one or two more frames to finish the job letting the older bees fly home.

Add a frame of honey and pollen. This will provide food for the young bees that emerge, and for any brood that is still unsealed. You may add the frame of honey and pollen in advance, or pull a frame from a colony in your apiary.

Add a queen. Install a purchased queen in a push-in cage or another introduction system. You may use a queen cell you have produced yourself, or purchased from a local beekeeper. Install the queen or queen cell on the brood frame so it will be covered and cared for by nurse bees. Do not let such a small nucleus produce its own queen—it may be substandard and subsequently superseded.

Add drawn combs to fill the nucleus box. Then close up the hive body.

Position the increase hive in the same apiary or in an out apiary. If you only add nurse bees, few bees will fly back to the parent hive. If you shook bees from the outer frames where foragers are located, you should expect to lose part of the bee population if left within 2 miles of the source apiary. Move new hives least 2 miles away.

Feed the increase colony. Use a division board (frame) feeder, top feeder, or a sugar syrup jar on the top of the nucleus or in a feed shell. Keep feeding for at least a month or as long as you are putting new queen cells into the colony for mating.

In semi-commercial and commercial beekeeping operations, teams of beekeepers inspect hives on pallets to equalize open and sealed brood in different hive bodies separated by queen excluders. These are set off the hives at night without smoke so the nurse bee population covers the brood and those units without queens are given one after the colonies are moved to a new location.

Reduce the entrance. Limit the entrance of the hive since small increase colonies are vulnerable to robbing by stronger hives. Use screen vent holes to avoid overheating the colony during hot weather. Protect the colony from strong winds and provide the bees with a water source.

Manage this unit. Once a mated queen has been producing eggs long enough to fill the frames with brood, she may be used to requeen another colony. Use the old queen you removed to keep this nucleus going until you are ready to replace the her. If you used a ripe (almost ready to emerge) queen cell when you made the increase colony, check the unit for eggs in the bottom of the cells 14-16 days after you set it up. Allow the queen time to build up the nucleus, checking often for crowding. I recommend that you set up a 21 to 22 day cycle to pull the queens from nuclei of this sort. The queen will function more normally, and the colony will have adequate eggs and brood for continued growth.

Remove extra frames of brood. Small units containing a new queen may become quite crowded when new brood starts to emerge. Remove a frame of sealed brood whenever the colony is overpopulated to prevent swarming. Boost a weak colony or nucleus with this brood.

Decide the fate of the nucleus. By July, decide if this colony will be allowed to grow into regular equipment and expand to full size on a summer and fall flow, or will be combined with another colony to requeen it. Another option would be to over-winter the nucleus.

Making a nucleus to create a new colony

If you want to make a new colony from a nucleus, I suggest you start out with two fully or three partially filled frames of sealed and emerging brood, as well as a queen cell or a queen (virgin or mated).

Locate two or three frames of sealed and emerging brood from one or more colonies. After you have checked for queens, place the frames of brood and bees into a nucleus box or a standard hive body, depending on your equipment supply. Some open brood extends the emerge time in the nucleus and better maintains a balanced unit.

Add at least one frame of honey and pollen. Add more if you have it, seeking 10+ pounds by the end of the first month.

Fill the box with frames of drawn comb. Lacking drawn comb, add frames of wax, plastic foundation or starter strips to promote natural comb building.

Install a laying queen or a queen cell. Check for laying; 7 days for a mated queen, 10-12 days for a mature virgin, and 14-16 days for a ripe queen cell.

On future apiary visits, move the frames and bees to eight or ten frame equipment. Add frames of emerging brood (no bees) to the increase unit to boost its strength. Your goal is to have this unit at the same population level as other colonies at the start of a nectar flow. Some of this buildup may take place during the flow if you made the unit weak or weather has been uncooperative.

In midsummer, evaluate the colony for strength, queen performance and defensiveness. If you do not like the queen or her colony, replace the queen. In areas where African bees are found, eliminate any defensive colonies while they're still small to avoid troubles later. If a production colony's queen fails or disappoints you for any reason, use one of the queens laying in your smaller nuclei to requeen the colony.

Doolittle's method to harvest brood and bees to make a new colony

In Gilbert M. Doolittle's classic work, *A Year's Work in the Out Apiary* (Reprinted by Wicwas Press), based on a full year of apiary visits in 1905, he explained how he increased the number of colonies in an out-apiary he had purchased. While I will not get into the details of his 'set-off' system, we will review his simple method of making new colonies. To go step by step, let's review his methods:

1. He removed two frames of emerging brood from a colony with eight frames of brood. This is the first hive he uses in this system.
2. He removed the bees by brushing (or by shaking) and placed the frames into an extra hive body along with extra drawn comb, including one with honey. He did not attempt to find the queen.
3. The box was then filled with combs.
4. The box was then placed on a strong colony where a queen excluder is placed, over the brood nest.
5. After two or three hours, the nurse bees in the second colony had covered the brood combs and started working on the honey frames.
6. This box was then placed onto a new hive stand, in the same apiary, and given a cover. The queen excluder from the second colony was removed and hive closed.
7. The entrance of the hive was closed to under three inches.
8. Doolittle added a purchased queen or a queen cell. He did not allow this small colony raise its own queen—he tried to select frames with mainly emerging bees that will quickly fill the box with bees. Two fully sealed frames of brood, corner to corner, will produce between 12,000 and 14,000 bees if they all emerge.

Using the Doolittle concept to make an increase nucleus

Since most new beekeepers, especially those in their first year, have difficulty finding a queen, I recommend this method for those who have trouble finding a queen or choose not to in the interest of time. The photos show key steps of removing brood from a hive, shaking the bees onto the ground in front of the hive, replacing the combs that were removed from the donor hive (which reduces swarming), placing a queen excluder and/or conversion board on the top of a strong hive, and filling the nucleus with the two brood frames, a frame

Time to make increase! Texas beekeeper Brandon Pollard shows a frame of brood with different colored cappings. The center area is the first, and oldest area of sealed brood, while the outside semicircle shows the younger sealed brood when bees had fresh nectar to produce lighter wax. Such expansion is a good indicator that it is time to make colony increases and nucs or face the risk of swarming.

of honey, and drawn comb.

Add a mated queen next, if you can get one locally, a virgin queen under one week since emergence, or a ripe, ready to emerge queen cell. Do not fool around letting these bees make a queen, a point where Doolittle and I strongly agree.

After a few hours, the nucleus increase may be moved to a new hive stand, either in the same apiary (as in most small-scale operations), or to another location. Give the time for the mated queen to emerge and start laying, or for the virgin/queen cell to emerge, mate and start laying.

Make sure to reduce the entrance.

Should you make up the colony so it has too few bees, shake more bees at the entrance, removing the frame from a strong hive. Be absolutely sure the queen is not on that frame! Old bees fly back to the parent hive, while the young nurse bees will crawl into the nucleus.

Check www.wicwas.com for the new book Swarm Essentials by Steve Repasky and Larry Connor. Watch for the second edition of Increase Essentials on this same website.