

Dividing Bee Colonies for Making Nuclei

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Honeybees naturally reproduce or increase by swarming, a process in which a new colony is created by division of the original colony. In the process, the worker bees make queen cells to raise a new queen. Nine days after the eggs have been laid, the colony divides where a large group of bees approximately third of the hive population (20,000 bees) leave the hive on a fine day with the mother queen and look for a new home. The beekeeper captures the swarm, hives it, and so doing he has an additional bee unit in his holdings. This natural reproduction occurs mainly in the spring and early summer when the weather becomes warmer and abundant flowers in bloom are available in nature.

In the old colony the newly emerged queen will experience the same swarming instincts the following year. For beekeepers, swarming occurrence is undesirable as far as the honey crop is concerned. The remaining colony becomes weakened and unproductive for the season. For the best results, colony reproduction should not be left to nature but should be a part of hive management.

If increase is desired the beekeeper does not have to leave it to nature to accomplish this by means of swarming. He can create a new colony (an artificial swarm) without allowing the bees to swarm by applying some methods that mimic the natural reproduction system of honeybees: this can be done by dividing an established colony.

Dividing Colonies

Dividing or splitting a hive or making an artificial swarm are basically the same things. It involves taking frames of brood and bees from a hive and putting them in an empty hive box and introducing either a new queen, or sealed cell to the new hive. Afterwards you have two hives. The resulting colony is called a nucleus or split which is a small colony that does not yet fill a standard brood box.

Dividing a hive and making nuclei is a simple procedure and works in practice when done properly. It is a cheap way to obtain bees as compared to purchasing package bees.

General Considerations

- Only strong colonies should be used for making divides. A hive should have at least 9 or 10 frames with bees and there are six or more frames of brood in all stages present in the hive. Do not attempt to divide a colony with less than eight combs; wait until the colony is being big enough. Divisions should not be made from first year hives - these usually will not expand enough to divide.

- Make increase from disease-free colonies only. Combs or bees may spread any infection present in the hive.
- Select the best tempered bees you have to increase from. You will have better bees.
- Colonies to be divided may be stimulated early in spring (February in warmer climates) to produce brood and bees by feeding syrup about six weeks a head. A strong colony with 16 -18 frames covered with brood and bees may be divided into several nuclei.
- You need to have extra equipment (standard 10-frame boxes, or 5-frame travelling boxes/nucleus hives, and frames of comb or foundation) ready for the divides.
- Divide colonies on a good day when the bees are flying well. Colonies will be most docile at this time. This will ensure that young bees that have remained in the hive will be transferred to the new hive.
- Colony divisions can be done from spring through mid to late summer. Early May should be a good time in cold regions. This will allow the colonies sufficient time to build up strong populations to gather the crop. Dividing colonies late in the season is not recommended. Increase made late in autumn may not build up strength to overwinter. Colony divisions will be more successful at the outset of a nectar and pollen flow. Incoming food stimulates nuclei to sustain themselves and breed. Do not divide during a major nectar flow; this will affect the honey crop.
- There should be sufficient young bees to cover the brood combs in the new hive and keep the brood warm. The new colony's survival depends on the amount of bees present in the hive.
- You have to make sure that the resulting colonies have an adequate supply of honey and pollen to feed the brood and themselves. Feeding contributes to the speedy growth of nuclei. It is essential.
- Make sure that each resulting colony has a new queen. These may be purchased from queen breeders, or may be raised locally. Queens should be raised from a strong colony of good ancestry. Queens raised haphazardly from any hives or queen cells are often of poor quality.
- Remember a strong colony will raise strong queens, and a weak colony may raise poor queens.

If queens are not available, sealed queen cells should be given. Alternatively, divides are let to raise their own queens but this practice is not recommended. Make sure you have some eggs and day-old larvae in each of the divides, and drones flying.

It is far more efficient to make increase by introducing a young, mated queen into the divide. This ensures that the colony gets a good start. It will take a colony without a queen about 30 days for the new queen to grow, mate and lay eggs, plus 42 days for the emerging bees to become foragers working in the field collecting nectar and pollen. In other words, if a queen is introduced the new hive will be about 65 days ahead of the hive that is raising their own queen.

If a sealed queen cell is introduced, it will take about 3 days for the queen to emerge and about 14 days for her to start laying eggs.

When introducing a queen or a queen cell leave the nucleus hive for 24 hours queenless so that the bees will lose the smell of the old queen. The bees in the nucleus still have the smell or pheromone of the old queen and will not accept a new queen straight away. It is best to allow the queen to remain in the cage for about 2 days so that the bees can get use to her scent. Introducing a queen 24 hours after the divide has been made will prevent queen cells being started.

How to divide a colony

Dividing hives is often made to get more hives, to make up for winter losses, to make nuclei for sale, and as a means of preventing swarming.

An increase in the number of hives can be brought about in various ways.

Making a nucleus

A nucleus is usually made by placing 2- 5 frames of brood, nurse bees; honey and pollen, into a nucleus box or hive body. As the season progresses the nucleus will grow gradually into large, producing colony.

The number of frames to be used depends on the strength of the parent hive, the more you provide the nucleus the faster it will build up, and the more you take from the parent hive the more you weaken it and become unable to produce honey.

If several nuclei are to be made from a single hive, at least 2 frames of brood should be left in the original hive with the queen.

Procedure

Place a nucleus box or regular hive body with bottom board, stand and roof beside the hive to be divided.

Open the selected hive using as little smoke as possible to prevent the queen from scurrying about. Find the queen and place the frame containing her into a spare box and cover it until the operation of making the nucleus is complete. You will be sure that she is not moved over to the nucleus. Now take out three frames of sealed brood with adhering bees and place them in the centre of the new hive. Shake young bees from two or three other brood combs into the nucleus. Take two frames of honey and pollen with their adhering bees and place them on either side

of the three frames of brood. Add drawn combs or foundation for expansion. Drawn combs or frames of foundation are given to the old hive to replace the frames used in making the nucleus.

Note: If the colony is very strong e.g. with more than 12 frames of brood divide into thirds. A minimum of three frames of brood should be given to each nucleus.

In cold weather, the empty space in the nucleus box may be filled with a frame feeder (dummy brood feeder) and some insulation material. This will keep the brood nest warm. Keeping the entrance reduced will also help in temperature control.

Put the frame with the queen on it back into the original hive now. Put the inner cover and the roof on the nucleus box and place the nucleus on the new site with the entrance lightly plugged with green grass or closed with wire screen to prevent bees from flying back to the parent hive. Clear this away after 24 hours to release the bees; they will reorient themselves to their location.

Two days later introduce a queen or queen cell using a cage introduction method. Young, mated queens are more readily accepted by a nucleus immediately after it has been made. After introducing the queen, the colony should not be opened for at least a week, when the new queen should be laying. If you open it before one week the bees might ball and kill the queen.

The parent hive that has been divided becomes a little weaker now, but the queen continues to lay eggs to build up the population again.

Variation: In cool regions the nucleus may be placed on top of the hive they were moved from, or over a strong hive, using an inner cover with fine wire screened hole through which the bees cannot pass. This inner cover serves as a bottom board for the nucleus and separates it from the hive underneath. The heat from the hive below keeps the nucleus warm above. A new entrance is made for the nucleus on top and should face an opposite direction to the main hive. Eventually, the nucleus can be removed to a permanent site.

Making up a nucleus from several colonies

Take one or two frames of sealed brood with bees on them from each of several colonies to make a nucleus containing 6-7 combs. This method of making increase does not affect the honey crop. There is usually little fighting among young bees when they are placed in this way. If fighting occurs, smoking the new colony heavily may help stop the fighting. Feed the colony straight away and introduce a laying queen by the cage method or insert a ripe queen cell.

Making Three Colonies from Two

Use one colony to supply the combs of brood and another to provide the bees.

This operation should be carried out on a fine day and in midday when the bees are freely flying.

Take three to five frames of emerging brood with the bees on them from the first hive, and place these in the middle of an empty hive body. Place frames of comb or foundation on either side of the brood combs.

Replace the frames in the original colony with drawn out combs or frames of foundation.

Move the colony supplying the bees to another site in the apiary after plugging the entrance with green grass. Place the new box with the brood in its place on floorboard, stand and cover it with inner cover and roof.

The flying bees from the second colony return to the new hive on the original site and the bee population will increase.

Feed the new colony sugar syrup about 5 litres the same evening. Provide the colony with a queen in a cage. Alternatively a queen cell can be used.

Remove the grass from the entrance of the removed hive to release the bees after two days.

Dividing a Double Hive

A double hive can be divided into two single hives. The brood, bees and honey are divided equally between two boxes. The two boxes are placed on separate stands and placed next each other in the place where the mother hive was for 3 days so the returning bees are not sure to which one to return to. If more bees have drifted to the box with the queen switch places to equalize population.

After three days check for the queenless half and introduce a new queen or a queen cell from a superior breed or let the bees raise a queen.

Feed both portions with dilute sugar syrup periodically.

Dividing a colony into two

A strong colony containing 10 frames covered with bees may be divided evenly into two parts. Remove the original hive slightly to one side so that it covers half of its original stand. Place the new hive alongside the colony so that it is partially on the stand occupied by the parent colony. In this manner half the flying bees will enter one hive and half the other. The part without a queen will begin to raise a queen. After a week later there will be emergency queen cells in the box. These can be all destroyed and an impregnated queen introduce. Feed both colonies with sugar syrup.

Swarm Control Split

When a colony is in a swarming mood, pull out every frame with any queen cells and place in a nucleus hive with a frame of honey and let the bees raise a queen. This usually relieves the pressure to swarm and at the same time creating a small colony.

Using swarm cells when making splits is not recommended. This practice will perpetuate the propensity of swarming in bee colonies. To reduce the swarming impulse in bee colonies it is advisable to destroy those swarm queen cells in the new colony and add another queen cell or a queen from a non-or low level swarming stock.

Looking after a Nucleus or Small Colony

Newly made nuclei have very few foraging bees and the food they bring in is inadequate. It is advisable to feed sugar syrup to the nuclei for the first couple of weeks. Additional feeding is given to ensure they are strong enough by late autumn to survive the winter. A 1:1 syrup (1 part sugar to 1 part water) mixture is prepared and given in external feeders in the evening at the time the nucleus is formed. Feeding nuclei with sugar syrup will allow foraging bees to concentrate on collecting more pollen, the protein food they need to raise brood and young bees.



External feeder in place. The entrance is screened to prevent bees from flying back to their mother hive.
Photo source: Soul Creek Apiary.com

As soon as the queen has started laying eggs you must ensure that the nucleus always has enough space and food to expand. Drawn combs contribute to the build up and rapid development of nuclei. A nucleus can be strengthened by adding a comb of emerging brood without bees taken from a strong colony. This will enable the nucleus to expand rapidly. If further combs of emerging brood are available another comb may be added weekly until the nucleus is occupying 8 combs. Another method of

building the population of a nucleus is to exchange its position with that of a populous colony. This is best done at midday. Robbing is most likely to occur when nuclei and small colonies are left with large entrances and few older bees to defend themselves. It is important to provide entrance reducers to protect against robbing. Keep the entrances to a minimum (e.g. 10mm wide), or move the nuclei to a site without other hives.

Nuclei that remain weak can be united with another young colonies in autumn or added to stronger colonies to ensure that they get through winter.