



A Comparison of Honey Bee Swarm Prevention Techniques

Swarming

Swarming is a mechanism of honey bee colony reproduction. Although it is natural and was once considered a sign of productive beekeeping, beekeepers manage their colonies to prevent swarming, to avoid bee losses and to avoid disturbing their neighbours. There are several colony conditions that influence the initiation of a swarm such as a failing queen and lack of ventilation, but the most common cause is congestion within the hive.



Honey bee swarm in a tree.

This fact sheet compares management strategies beekeepers use to control and prevent colonies from swarming; and

will be useful to beekeepers who see the following signs of colonies preparing to swarm in their apiaries

- The presence of swarm cell queen cups at the bottoms of the frames in the brood chamber(s), especially if there are developing larvae within them (i.e. provisioned).
- Restless queen that appears to have lost weight to allow her to fly more easily.
- A high abundance of capped brood cells in the hive and a decrease in the availability of empty drawn comb for the queen to lay additional eggs.
- Worker bees are backfilling cells with fresh nectar; this is a shift in the colony from consuming nectar stores around the brood nest to refilling these cells with nectar again.

Dividing/ Splitting

To make a split transfer three frames of brood and two frames of food (i.e. contains nectar and pollen) from a colony with a minimum of six frames of brood to an empty hive box or nuc box. If a nuc is not being created, five additional frames of empty comb or foundation will be needed. It is best to keep the brood frames together in the centre bordered by empty frames followed by the food frames. Make sure the parent colony's queen is not transferred with the frames.



Funders and Contributors:

Bleuets NB Blueberries

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Jasper Wyman and Son

Move the newly made colony to another apiary site at least five km away to avoid bees drifting from the new colony back to the parent. If this is not possible, place the new colony immediately beside its parent – ideally on the same hive stand – so that half of the returning forager bees will enter the new colony and half will return to the parent.

Walkaway Split

Divide the colony as described above and let the new colony rear a queen independently with emergency queen cells.

Pros:

- Requires little skill and time.
- The break in the brood cycle helps control varroa mite population.

Cons:

- No newly laid eggs for a minimum of two weeks.
- Risk of brood mortality and laying workers.

Installing New Queen

Immediately after dividing the parent colony into a daughter colony or nuc, install a new queen in a cage or grafted queen cell.

Pros:

- New eggs will appear within a few days of the installation of a new mated queen.

Cons:

- This process is more time consuming to the beekeeper.
- Purchasing mated queens can be costly.
- It can be difficult to find local queens in the summer.

Supering

Congestion in a hive can arise from either inadequate brood laying space or nectar storage space (or both). At this point in the year, hives with single brood chambers, should have another hive box added to them. Ideally, this would have been done earlier in the year prior to the main honeyflow. Hives with double brood chambers and ample egg laying space displaying signs of swarming can be corrected with the addition of honey supers. If the hives are used solely for pollination and honey is not extracted from them, it may be useful to consider other swarming prevention techniques listed below.

Note: Sometimes beekeepers have no access to drawn comb and are forced to add honey supers containing only frames of foundation. A trick to encourage bees

to draw out frames of foundation is to add one or two frames of capped brood to the honey super, making sure to separate the brood chamber from the honey super with a queen excluder. If the honey super is shallow or medium, try spraying the frames with sugar water to encourage the bees to draw the frames.

Pros:

- Adding brood chambers will encourage colonies to build up their populations without swarming, allowing splits to be made from them increasing the total number of colonies.
- Adding honey supers can supplement a beekeepers income when it comes to extracting the honey and selling it.

Cons:

- Buying more hive boxes and frames can be expensive.
- If honey will be extracted later, the hives will not be able to be treated during this time.

Reversing

If there are empty frames in the bottom super and the bulk of the bee cluster is in the uppermost super, switch the positions of the two supers. Colonies prefer to build upwards and so ensuring there is room above the main cluster of bees and the queen with empty comb or foundation reduces congestion.

Interchange Colony Position

Within the apiary, the positions of a relatively weak colony may be switched with a strong colony exhibiting signs that it may soon swarm. Returning foragers from the strong colony will drift into the weak one, thereby reducing congestion.

Separate Brood from Queen

The idea of separating the queen from the brood is to simulate queen-less post-swarm conditions in the hive so that the initiation of a swarm is no longer necessary. The most common method of doing so is the Demaree method:

1. Remove the congested hive off of its bottom board and place a super with empty drawn comb in its place.
2. Remove two frames from the centre of the empty super and set aside.
3. From the original crowded brood chamber(s),

remove the frame of brood on which the queen is found and one other frame of brood (both containing bees).

4. Place these frames in the place of the two empty frames removed from the empty super.
5. Place a queen excluder or a division screen on top of this super now containing the queen.
6. -- Above the queen excluder/division screen, place a honey super with empty drawn comb or foundation.
-- Place the original brood chamber(s) that the queen was removed from above the honey super.
-- Push the brood nest to the centre and place two additional empty drawn frames on either end of the box.
-- Top the hive off with the original inner cover and telescoping lid (not shown in diagram).

Pros:

- Reduces congestion and separates brood from queen.
- No reduction in population through colony division.
- An effective remedial method of swarm prevention when signs of colony swarming are imminent (i.e. presence of capped swarm cells, large cluster of bees at hive entrance).

Cons:

- Must first find the queen.
- Many time consuming manipulations and trips to the apiary are required.
- Need access to empty frames or frames with foundation.

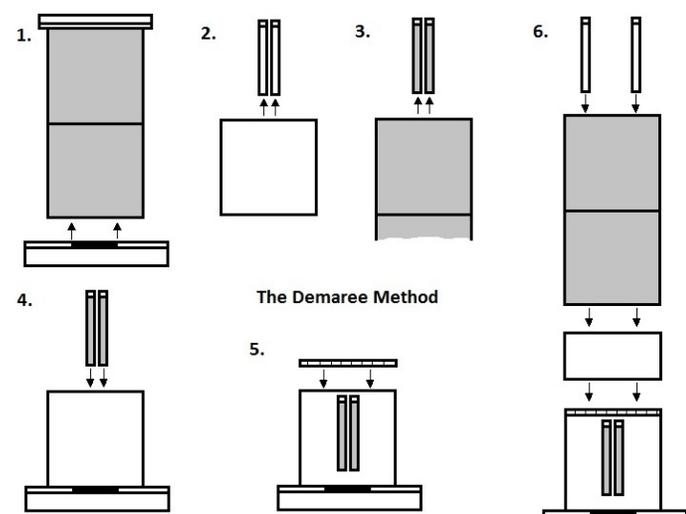


Diagram of the Demaree method (shaded boxes and frames indicate congested boxes and frames covered with bees: white boxes and frames indicate empty boxes and empty frames or foundation. (Drawn by Cameron Menzies)

Note: The bees in the upper congested super(s) will no longer sense the presence of a queen. Naturally, the bees in the top super will begin to build emergency queen cells in an effort to rear a new queen. Beekeepers may wish to allow this and later split the hive into two, as long as there is a second apiary site more than five km away to place the split. Otherwise, the newly formed queen cells will have to be regularly removed until the honey super in between the two brood chambers is removed to allow the queen pheromone to permeate the entire hive again and eventually remove the queen excluder/ division screen.

Ineffective Remedial Measures

When a colony is showing imminent signs of swarming, it is difficult to halt its initiation as it has already decided to swarm. Beekeepers may attempt to destroy all provisioned swarm cells, but it is easy to miss one unless all the bees are shaken off each frame.

Beekeepers may also clip the wings of a queen but she can still flutter outside of the hive and land on the ground. It is important to be observant of the signs of swarming before it is imminent.

Resources

Sammataro, D. and Avitabile, A. 2011 The Beekeeper's Handbook. 4th ed. Cornell University Press.

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