Swarm behavior

Swarm prevention is often the goal with the beekeeper, and swarm promotion is often the goal with the hive. Nature's way of propagating the species often gets in the way of the production of honey. The beekeepers goal is to get the population of the hive as high as possible without triggering the swarm. It is the bees that gather the honey, and the more of them, the more they will gather. A certain number of bees are necessary to maintain and care for the brood nest. For the sake of argument let's say that a brood nest is at full size of 8 deep frames and it takes 3 to 4 pounds of bees to cover and tend it. This comes to about twelve to fifteen thousand bees. These are the consumers of the hive. They are fed and kept alive by the efforts of the foragers, a work force of about forty to fifty thousand bees. Because there are three times as many producers (foragers) as there are consumers more food is brought in than is used up, and that is the good news for the beekeeper. It is about at this population level that the bees tend to reach full strength and decide to swarm out in search of a new home (taking half of the hive with them and a couple of pounds of honey with them). The house bees stay behind because there is still all that work to do. It is the extra foragers who go off to start a new home. If we look at the population dynamics of the hive after the swarm we now have about the same number of consumers as we have foragers and the income of food does not greatly exceed its consumption as it used to do. In fact it may that the bees eat up the surplus honey that they have while raising another batch of foragers. Therefore, there is no surplus for the beekeeper to take advantage of. This is why it is bad news for the beekeeper to have a swarm if they are in the honey business. If the intent of the beehives is strictly for pollination then it makes little difference because the bees are still in the area but are now in two homes. Knowing the signs of swarming and being able to predict it helps the beekeeper keep ahead of the bees and will increase the honey yield. As far as I know bees can't count. They need to rely on some other method to let them know when the population is large enough to be able to split the hive into halves and go their own way.

It is suspected that bees rely on a combination of things that give them the idea that the hive is becoming crowded. Increased congestion and lack of good airflow are certainly factors. To the beekeeper this means that the bees are filling up all the spaces between the frames with their bodies. Loss of ventilation and air circulation will lead to a buildup of carbon dioxide and heat. If the bees have no space to expand into to relieve this congestion, the bees are very likely to swarm. A common method for providing more room is reversing supers. By this the beekeeper takes the lower super that is empty of brood and places it above the brood nest. Queen cells generally form along the bottom bars and around the edges of the comb during swarming time. A key point to remember is that it takes a queen 16 days to go from egg to emerging queen. Swarms leave the nest prior to the emergence of a new queen. For practical purposes, this means that when a swarm cell has an egg deposited in it, there are approximately 14 days before the bees

swarm. To the beekeeper, this means that if part of the swarm prevention measures that the beekeeper employs includes removing queen/swarm cells. The beekeeper must remove the cells within this 14 day time period. The presence of queen cells indicates to the beekeeper that the bees think something is wrong with their home. If swarm cells are present, add a super to give more space. The beekeeper should also keep in mind that all developing bees spend three or four days as an egg or young larvae that is basically indistinguishable from any other type of bee. For practical purposes this leaves only a ten day period in which a beekeeper can find a swarm cell before it is too late.

In my personal swarm prevention program, I provide extra supers for the bees to move into before they become crowded. Religiously inspect the hive once every ten days. I remove all queen cells even the empty ones whenever I find them. I have noticed that I rarely get swarm cell before the middle of June. After the middle of June, my hive inspections are more detailed and thorough as I carefully examine all frames in the brood chamber. Caging the queen will also prevent swarming but only after the hive has been inspected a few days later for emergency queen cells that can be found anywhere in the brood nest. Make a very careful inspection. Emergency cells can be very hard to find because they may not stick out too far from the face of the comb as the bees can reshape the cells under the queen cell to give room for its shape.

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