

The Phenomenon of Bee Bearding

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What is bearding?

It's the clustering or hanging of older bees out at the front of the hive during very hot weather. When bees do that it looks like the hive has a beard. This behaviour coincides with the onset of the hot humid days and nights (mid-June to August). Bearding begins when the summer temperatures reach 38°C (100°F) or more.

On hot and humid evening, many bees will loiter through the night and even during the day outside the hive clinging to the front of the hive or on the landing board doing nothing.

Some hives will form large beards of bees, covering the whole front of the brood box. Some will beard much more. This has to do with the temperature inside the hive, space available, and the population (crowding) of the hive. A hive with plenty of ventilation will probably have less bees gathering on the front of it.



Photo credit: Back to Basic Living.com



Photo by Sonja Jernstrom
Chris and Sonja.blogspot.com

Bees bearding on the outside of the hives

Bees bearding is usually a result of hot and humid weather. The bees are not preparing to swarm. Bearding is related to ventilation when the weather is extremely hot and not to swarming. It is an indication that they are hot. As the temperature cools and humidity lowers, they will stop.

Why do bees beard?

The average temperature in the beehive is between 32-35°C (90-95°F). Honeybees have the ability to regulate the temperature of their nest throughout the year. If it is cold, bees raise the temperature within the hive by huddling together to keep warm and vibrating their wing muscles to generate heat. If it is hot, they lower it by fanning their wings to circulate air through the hive. If it is really hot, they collect water for evaporative cooling. Droplets of water are placed inside the hive, then the bees stand in a line facing the hive entrance fanning their wings creating air currents that evaporate the water, thus cooling the hive. Whenever fanners are at the entrance, there are many inside the hive doing similar fanning to control the hive temperature.



On a hot day bees gathered at the hive entrance are fanning with their wings to ventilate and cool the hive.

Photo credit: Lloyd Ziegler

In extremely hot weather, when the hive's internal temperatures can rise to excessive levels and the hive population is so great, bees make their way out and cluster outside the hive in a huge numbers, here they can try to escape from the heat and remain cool. Honeybees do this mostly to keep the inside of the hive from overheating and killing the brood (immature bees), and to help regulate the brood nest temperature. Brood and too many busy bees in the hive increase heat output. It is a simple way to regulate the internal hive temperature.

Often bees beard because the temperature outside is high, lack of ventilation and overcrowding. During lack of honey flow in summer the field bees don't have any work to do, therefore if the hive is hot, they will crowd together out on the front of the hive out of the way of the busy house bees.

Bearding and swarming

Bearding and swarming tend to happen at different time. Bearding happens in mid to late summer. Swarming mostly occurs in mid spring (March-May) in warm regions and in early summer (May & June) in most cold climates. Swarms usually emerge from the colonies particularly between 10am and 2pm on warm, sunny days.

Bearding happens most often late in the day and into early evening, where some bees evacuate the hive and hang in a cluster resembling a swarm outside the entrance of the hive. A hive that is bearding will have its bees coming and going in and out of the entrance, and the bees are often fanning to keep the hive cool. By the next morning all or most of the bees are back inside the hive because the outside air temperature has dropped and it is “business” is as usual. This is not likely to be seen in the spring when swarming is at its peak. If the clustering is taking place during spring weather, it is most likely the hive will swarm.

A hive that is at the point of swarming looks different. The bees are clinging to the outside of the hive coating the front in a scattered fashion facing downwards, or hanging from the bottom in a conical fashion. The hive emits a roar sound signaling swarm departure. Thousands of bees emerge and hover around the hive. Once the queen joins them they fly off at once in a buzzing cloud. The process of leaving the original hive may last 10 -15 minutes.



A swarm preparing to cast off. Photo by Ira Seskin

What should the beekeeper do?

Once this behaviour is observed, the beekeeper should intervene and make sure the bees have good ventilation and enough room. More ventilation is required in the hive during hot weather. Less-ventilated hives get hot.

Screened bottom boards (sbb's) help with the ventilation in the hive in the summer and reduce bearding. The sbb is put on the hive stand instead of the regular bottom board to give more ventilation in springtime and summer and taken out when weather turns cooler in autumn. Screened bottom boards can be made easily from plans on the Internet or purchased from bee equipment suppliers. Another technique to aid the ventilation and relieve the heat is propping open the outer cover about 2,5 cm (1 inch) with a piece of wood.



Country Rubes Screened Bottom Board

The beekeeper may need to add additional boxes (supers) to give the bees more space to spread out and relieve congestion.

Unshaded hives would probably overheat in full sun in warmer summer days and bees would cluster at the entrance. It will help to put them in a shady location, for example, under a tree or build some sort of shade to screen them from the intense sun during the summer months. However deep shade is unnecessary. The ideal location should be where hives are shaded from the midday sun. This allows the bees to concentrate more of their efforts on raise brood, collect pollen and nectar instead of having to bring in water to cool the hive. A hive with afternoon shade will often produce more than hives sitting in the hot afternoon sun.

Tips

Hot weather is hard on the bees, especially if hives are not very well shaded from the sun. Here are some tips to help them to get some ventilation inside the hive and to reduce heat stress.

- Nothing beats the screened bottom board for ventilation.
- Increase the entrance space. Larger entrances are good for hot weather.
- Place shade boards to shade the hives, especially if the sun is beating on them. A hive of bees that is exposed to the direct rays of the sun has a much more difficulty in keeping the interior of the hive cool than when the hive is in the shade.
- If you have 10 frames consider going to 9 to allow more space for ventilation.

- Provide an upper hive entrance to improve ventilation in warm humid conditions during the summer. An upper entrance can be made of a wooden frame with a landing board similar to a screened bottom board but without a screen. While the bees will use the lower entrance mainly, they will also fly from the other vent.



An upper entrance placed between the brood chamber and the super.

(Photo credit: Barnboy.com)

- Place a ventilation box with screened openings on top of the inner cover, then place the outer cover on top of the ventilation box. This way allows for good airflow through the hive. Ventilation boxes can be made out of unused honey supers, drill holes in the sides on a slant so rain would not enter and screen them on the inside so no robbing would occur.



Screened ventilation boxes. Photos by Bill Mondjack

- Painting hive bodies with white paint or some other light colour helps to reduce overheating. White reflects the sun's heat in the summer months and keeps the hive cooler, especially in hot region. Dark colour paint would absorb more heat.
- Use an inner cover with either a wider or two openings.

- Provide a source of water for the bees in a partially shaded position near the apiary (within half mile or less). On a hot day a strong colony will use over a litre of water to cool the hive and to prevent overheating. A strong beehive will use over a litre of water on a hot day. The Boardman or entrance feeder is a good way to provide water in hot summertime.
- Sliding a super back about 2,5 cm (one inch) to improve airflow is not a recommended approach. This may encourage robbing and allow rain to get inside the hive.
- Remove a few frames of honey or harvest supers when sealed, and add new boxes of frames to provide space and ventilation.