

# Swarm Control for Beginners

## A BBKA Advisory Leaflet

**S**warming is the only means of reproduction for a honey bee colony. It is achieved by the old queen leaving the nest with a large proportion of the bees after the colony has made provision for new queens to be raised to replace her. This ensures reproduction and survival of the parent colony.

### The swarming process

It is a common failing with beekeepers to attempt to control swarming without understanding the process. This is simple to learn, is usually very reliable and is as follows:

**Day 0.** The first egg is laid in a queen cell cup with a number of eggs laid in other cups in succession over several days. For the purposes of swarm control, it must be assumed the first egg will be the most advanced in all stages and be the first queen to emerge.

**Day 3.** The first egg will hatch into a larva.

**Day 8/9.** The first queen cell is sealed. This is usually the time you should expect the swarm to issue, but it may be held up due to poor weather or timing. Other queen cells will be sealed in succession.

**Day 15/16.** The first virgin queen will emerge and one of two things will happen, either:

- The workers or the first virgin queen to emerge will kill the un-emerged queens so no further queens emerge. She will get mated and start laying, usually after at least eight days, and take over the colony, or
- She will fly off with another smaller swarm called a cast and let the next queen to emerge take over the colony, or swarm again with another cast. There may be several subsequent casts.

The above is what generally happens but there are some occasions when bees do not do what is expected of them. This may be to vary the above timings by a day or so, or to swarm before the first queen cell is sealed. Experience will help beekeepers observe such situations.

### Swarm control – the measures taken to prevent swarming

There are two main reasons why we should prevent a colony swarming if possible:

- To avoid being a nuisance to non-beekeepers. Bees that are allowed to swarm are likely to make a nest in someone else's property e.g. in a roof space, cavity wall or chimney. These colonies when established are often difficult to remove and can be a nuisance for some time. Once bees have made a nest in one place it becomes attractive to other swarms when they have died out or been removed. Feral colonies, like these, can be an undetected source of foulbrood infection for some time.
- In most seasons, a swarmed colony will not produce as much honey as it would if it did not swarm.
- It is considered irresponsible to leave bees unmanaged and let them swarm at will. The responsible beekeeper will take steps to prevent it and use one of the accepted methods of swarm control.

There is absolutely no point in attempting to control swarming without the knowledge of what the bees are trying to do. All methods of swarm control will be attempting to disrupt the swarming process in some way. A swarm issuing from a hive generally clusters near the hive before moving off to its new nest site. See the BBKA leaflet *Collecting a Swarm*.

Factors which will help prevent swarm preparations by a colony include:

- Using a strain of bee with a low tendency to swarm. Some bees, for example Carniolans, are known to swarm excessively.
- Using a young queen to head the colony, especially with prolific bees.
- Giving the colony ample room in the brood nest and supers in advance of requirements.
- Give the hive shade. This will help the colony to ventilate the hive properly.

### Marking and clipping the queen

Many swarm control measures involve finding the queen. This is much easier if she is marked on her thorax with paint or a numbered disc. Clipping about a third off one pair of the queen's wings stops her from flying far. She may come out of the hive and attempt to fly, but may drop to the ground where she will either go underneath the floor or settle on the ground with a small group of bees. The queen may be lost, but the swarm is not. Clipping should not be seen as a method of swarm control, only as a delaying tactic by increasing the maximum time that can be left between inspections.

### Giving enough room

When the colony is expanding in the spring, make more room by adding a queen excluder and super in advance of their needs. It is probably better to super too early than too late. Experience will tell you when that should be, otherwise seek local advice. Those in an early area, where they may have oilseed rape growing locally, may need two supers. Bees need room for themselves and to store nectar until they evaporate water from it to turn it into honey.

### Inspect for queen cells

The swarming season varies considerably from one year to the next. It depends on the weather, the state of the colonies and the part of the country. Generally, swarming is likely between late April and July.

Inspect the brood nest of your colony every seven days if you have unclipped queens or 7–14 days if you have clipped queens. Many beekeepers can only tend their bees at weekends and find it convenient to make inspections on a weekly basis. This ties in with the lifecycle of the queen and enables you to take measures in time to prevent, or have a chance to prevent, swarming. During the summer, a colony usually builds queen cell cups or 'play cups'. These are the start of queen cells and look like acorn cups. If you find these, it does not necessarily mean that the colony is preparing to swarm. Check these cups every time you inspect a colony. Swarm control measures should begin when queen cells contain eggs or young larvae.

### On finding queen cells

If you find sealed queen cells, it is possible that the swarm has left. If the queen was clipped and you cannot find her, look under the floor or on the ground around the hive. Sometimes the swarm can stay with her, crawl along the ground and cluster on a post or tree. It has been known for a swarm, with a clipped queen, to crawl along the ground and go into an empty hive.

If you are sure that she has gone, check through the brood box to make sure that there are eggs or young larvae in worker or queen cells. If so, remove all the sealed queen cells and those containing large larvae. Leave those containing eggs or very young larvae. This should ensure that no swarm will issue for around eight days with the first virgin queen to emerge. Gently smoke each comb or gently pat the bees with an outstretched hand to move them so that you can see all parts of the comb. Pay particular attention to the edges of the comb and any gaps as bees will often hide queen cells at the side or bottom bars or near holes. Check again in seven or eight days' time and follow the steps from 9 (below) onwards.

If all the queen cells are unsealed, inspect again after seven or eight days and follow the steps from 9 (below) onwards to allow the production of one good queen.

#### **If the old queen is present:**

1. Find the queen.
2. Take the comb she is on, another comb of largely sealed brood and a comb of food together with bees to make a three-frame nucleus, and place it in another box. This can be a brood box or a nucleus hive.
3. Shake bees from other brood combs into the box. The aim is to add enough young bees to the nucleus to cover the brood and keep it warm after some have flown home.
4. Push the frames against one side of the box. Fill the vacant gap with drawn comb if you have it, if not then with foundation or use a dummy board.
5. Give the nucleus a small entrance so that the bees can easily defend it, and move it at least two metres away. Face the entrance close to a hedge bottom or other barrier to confuse robber bees.
6. In the parent colony fill up the brood box with drawn comb or foundation. It is important to fill the gap with frames or wild comb will be built, especially in a nectar flow.
7. Leave the nucleus for three days to get established.
8. As the nucleus develops, add empty combs to expand the brood nest and keep an eye on the food situation.

#### **To choose a queen cell (in the original brood box):**

9. Eight days later (seven if this is a convenient time), examine all brood combs carefully for queen cells. As the queen was taken away and some queen cells may have been removed, the colony may have built emergency cells.
10. Select a queen cell which is a good size and has dimples on the surface. Mark the position of the cell by placing a drawing pin in the top bar, vertically above the cell.
11. Carefully smoke the bees to move them and destroy all other queen cells on the frame. Treat this frame gently. Do not jar or shake it or you may damage your chosen future queen.
12. Shake the bees off all the other brood combs into the brood box and break down all the queen cells. It is important only one queen cell is left otherwise the colony is likely to swarm with the first queen to emerge.
13. Re-assemble the hive.

### **Be patient**

Do not open up the original colony that is raising a new queen for at least fourteen days. If the young queen is on her mating flight, she may be confused when she returns to find the hive open and may fly into an adjacent colony or get lost. Vital inspections that cannot be avoided should take place after 5pm when the young queen is likely to be inside the hive.

When you do inspect to check if your new queen is laying. Try to do so quickly. Look for a patch of eggs or very young larvae. Failing this, check for an area of cells that have been highly polished by the workers ready for the queen to lay in. Close up the hive, be patient, and check again in a few days.

A young queen will generally start laying ten to fourteen days after she emerges, longer in poor weather or in a larger colony. If your new queen has not started laying after three weeks, seek advice from an experienced beekeeper, as she may have been lost or failed to mate.

### **A drone-laying queen**

When your queen is laying, check the sealed cells to make sure it is worker brood, with even, flattish cappings. If you find uneven, domed cappings with the comb misshapen, your new queen has probably failed to mate and is laying unfertilised drone eggs. Seek advice about replacing her as soon as possible or your colony will dwindle and die out.

### **Uniting the colonies**

A nucleus is always a useful item in even the smallest apiary. It can be used for many things including increase or providing a queen in case one needs to be replaced. This method of making one is good, but if you do not want to increase your total number of colonies, the nucleus with the old queen can be united back to the original colony with the new queen. It is best to do this in the evening, when flying is reduced.

- Move one or both of the colonies together; moving a maximum of three feet per day.
- Remove the roof etc. from the original colony with the new queen.
- Place one large sheet of newspaper to completely cover the frames and cover it with an excluder to stop the paper blowing away.
- Place an empty brood box on top.
- Find the old queen in the nucleus hive and kill her.
- Transfer the combs from the nucleus, with their adhering bees, into the top brood box in the same relative positions to each other.
- Replace the inner cover and roof on top.
- As the bees chew through the newspaper, their scents will mix and they will unite without fighting.
- After seven days, check whether any queen cells have been started in the top box.
- Break them down. All the combs with brood on can be put down into the bottom box, if room. Surplus combs that are free of brood can be shaken clear of bees and taken away. If there are too many combs of brood for one box, surplus ones can be given to other colonies.

### **In summary**

When queen cells are seen:

- Remove the old queen and make up a nucleus with her.
- Remove all queen cells that are sealed or contain large larvae.
- Re-assemble the hive.
- After seven or eight days, select one good queen cell and remove the rest.
- Do not open the hive again for at least two weeks.
- Unite the two parts if you do not want to increase colony numbers.

### **In addition**

- There are times when colonies will swarm without building swarm cells. One example is when a queen has been removed and emergency cells have been built. If the colony is strong enough it may swarm.
- If a colony builds one or more supersedure cells in the summer, it is common for it to swarm.
- Swarming colonies often give the beekeeper the chance to improve their bees. Assessment of the characteristics of your bees will give you an idea of what queens to breed from and which to cull. When queen cells are built, you can use those from good colonies and replace those from poor colonies.