



# Preparing hives for Spring

## Spring cleaning and hive management

The main goal at this time of year is to help your bees increase the size of their colonies so that each colony is strong and ready for the 'Spring honey flow'.

## Inspect, clean and repair all hive equipment

### Bee suit

Ensure your bee suit is clean with no holes or torn seams remember bees can crawl into small spaces and get inside.

### Boots

Ensure that your boots are cleaned regularly to stop the spread of pathogens – fungal, viral or bacterial.

### Hive tools

Locate all your hive equipment and clean any equipment used in the hives. Organise a bucket or carrier for all items for ease of carrying. Have a spare bucket ready to collect any wax or debris from the hive.

### Boxes and frames

All outdoor timber products require regular maintenance to prevent dry rot. Always keep a spare box to enable painting and repair of hive boxes. Before putting the box back in use, use no-more-gaps in all corners to reduce spaces for beetles to hide.

Comb management: plan to remove any old, thick, gnawed and broken combs from the hive as both Chalkbrood (fungus) and Sacbrood (virus) can lie dormant in the old frames and reinfect the hives.

## Inspection and management of the hive

### Bee numbers

Following winter bee numbers may be down depending on the activity of the queen.

With low bee numbers hives are more at risk of opportunistic pests such as small hive beetles and waxmoth. Additional boxes should not be added until bee numbers increase.

### Honey supplies - the super

Honey supplies become critical to feed both the larvae and the adult bees until bee numbers and nectar supplies increase. The bees will require one comb of honey as well as an amount of pollen to produce one comb of brood.

A colony with less than two well-filled combs of honey could soon be threatened with starvation when brood is being raised.

Feeding options if needed:

- White table sugar sprinkled on the top of the frames
- Sugar syrup fed via a bottle feeder or bag.
- Small colonies can be given one litre and large colony up to three litres.

Check regularly to see how much food is stored, and stop feeding when nectar becomes available.

Combs of honey can be taken from hives that have excess supplies. But be sure both donor and recipient are free from all brood diseases.

Never feed extracted or supermarket honey to bees.

Always be aware of robber bees when feeding your bees. Best to do this in the evening when foreign bees go back to their own hive.

**Only add another box on a hive when the bees are bubbling up above the frames when the hive is opened.**

### **Brood box inspection - the brood:**

- Important to check the egg laying performance of the queen
- The brood pattern should be regular with eggs larvae and sealed brood.
- Drone pupae in worker cells are bullet shaped unlike those of worker brood which are slightly convex
- Look for diseases such as chalkbrood, sacbrood, AFB and EFB

### **The queen:**

- Drone pupae in worker cells can be evidence of a drone layer queen – this occurs if the queen is infertile from either poor mating or old age.
- The queen must be observed to ensure that she is not injured and that she is present in the hive.
- An old queen should be replaced with a new fertile queen from a reputable queen breeder.
- If the queen is not present the hive may be queenless and the problem may be a laying worker.
- Are there any queen cells in the brood?
- If the queen cells are low in the frame, this may be evidence of swarming.
- If the queen cells are on the sides of the brood, this may be evidence of supercedure, i.e. replacing the queen.
- If the queen cells are placed randomly, this may be bees experimenting, and the bees will pull them down.

### **Laying workers:**

- When the hive becomes queenless and the hive has not raised a new queen some workers will develop ovaries due to the lack of both queen and brood pheromones.
- The brood pattern of a laying worker is

irregular, the eggs are placed down the side of the cell and often more than one egg is laid per cell.

- These workers will be infertile so the eggs of these workers will always produce drones.
- A colony weak resulting from a drone layer should be united with another colony after first removing and destroying the drone layer.
- Colonies with a laying worker are difficult to successfully requeen.

### **Pests:**

- **Small Hive Beetle** - Check for small hive beetle and larvae – on the comb or if a brood cell is raised above the rest it may be evidence of SHB in the cell. (Refer to the article published with the June 2021 Newsletter)
- **Waxmoth** – a trail of webbing across the comb is evidence of larvae and can easily be removed or cut out if more extensive. Any pupae should be removed and burnt. (For more information refer to the Prime Facts produced by the NSW DPI on the website – 'Useful articles for members')
- **Robber bees** – attempt to steal honey from hives, extracting equipment or exposed stickies. They hover around the hive entrance and appear nervous. They target weak colonies that are unable to fully defend themselves. The guard bees are overthrown and in severe cases the hive will be robbed of all the honey leaving the colony to starve. Robbers are aggressive and may attack nearby people and animals.
- Prevention is always better than cure.
- Good hive management by keeping the apiary clean with no exposed stickies, wax scraps or any other sticky items. Reduce the width of the entrance of hives under attack and avoid using smoke as this disturbs the guards and they are unable to defend their hive.

## Diseases:

- **Chalkbrood disease** is caused by the fungus *Ascosphaera apis*.
  - Beekeepers should replace diseased combs which can act as a reservoir for chalkbrood disease spores.
  - Clean away all mummified larvae from bottom boards and around the entrance of the hive
  - Hives should be well ventilated in a dry area with the sun facing the entrance. (For more information refer to the Factsheet from Plant Health Australia on the website- 'Useful articles for members').
- **American Foul Brood (AFB)** is a spore-forming bacterium, *Paenibacillus larvae* var *larvae*.
  - The spores can remain viable for at least 40 years, and resist boiling and dehydration.
  - The name does not represent the geographical distribution but from where it was first scientifically investigated.
  - AFB can be spread by robbing, feeding unsterilized honey or pollen, the use of contaminated beekeeping equipment or drift.
  - The test in the field for AFB is the rope test and then to cut out a piece of comb and forward it for lab testing.
  - It is a notifiable disease and the infected hive must be destroyed -all bees killed, frames burnt, and boxes irradiated.
  - (For information please refer to Prime Facts – NSW Department of Primary Industries – American Foulbrood Identification and Management on the website – 'Useful articles for members.')
- **Sacbrood** is a viral infection of brood which kills few larvae but can become more severe.
  - The first signs of sacbrood are dead or

dying larvae. The brood die soon after being capped but before changing to pupae.

- Few hives die out as a direct result of sacbrood but many are weakened where they can succumb to other threats.
- Larval remains that have recently died are highly infectious and yellow in colour. After two months they are brown and dry and not infectious.
- Spread is believed to be by feeding the young larvae contaminated nectar, pollen or water. Nurse bees also become infected within the hive. Spread from hive to hive can be attributed to infected hive tools or natural causes such as robber bees or drift from hive to hive
- Management – removal of old black combs annually and requeening infected colonies is recognised as a form of control of the disease.
- Combs with more than 20% infected cells should be removed from the hive.

## Swarm management

### Swarming

This is how bee colonies reproduce. The swarm is made up of about half the adult bees and usually the old queen.

The impulse to swarm is strongest in spring and early summer.

After the swarm has left the hive a virgin queen will emerge from her cell and will kill any rivals still in their cells. She leaves the hive to take orientation flights and then mating flights. Some days later she will begin egg laying. Poor weather can delay this up to 20 days.

Swarming has a harmful effect on colonies – a major loss of adult bees and a break in the brood rearing cycle.

**Action** - After a colony has swarmed carefully examine all brood combs that the queen has had access to and destroy all but two of the largest queen cells. This ensures that the colony

will have the best possible replacement queen.

### Signs of swarming

- Queen cells under construction on the lower and side edges of combs.
- Usually accompanied by a lack of comb space in the brood box and a high worker and drone population.
- Bees are more inclined to swarm when they are on build-up flora and storing honey.
- Congestion in the hive is a major cause of swarming.
- Colonies in single and nucleus boxes will swarm when they run out of room unless action is taken.

### Prevention of swarming is a necessary part of good beekeeping

**Minimise the number of drones.** Remove combs with large patches of drone cells.

**Destroy queen cells.** At best, removal of queen cells only delays the swarm impulse. Examine the hive every seven to eight days and destroy all queen cells and queen cups. Make sure no cup is missed.

**Young vigorous queens** play a major role in reducing swarming as they secrete more pheromones than old or failing queens do. It is ideal to requeen with young queens early in spring before swarming becomes a problem.

Another option is to kill the old queen and introduce a mature queen cell from another hive until a better queen can be introduced.

Bees inherit swarming impulse so do not rear queens from stock which tends to swarm

**Congestion in the hive.** Eliminate congestion in the brood nest and honey storage area.

Placing a super of combs or foundation on a hive will relieve congestion. However, most colonies will continue to expand and will soon need to be weakened or divided to control swarming.

Remove surplus honey and give as much comb foundation as the bees can work if there is a

good honey flow.

Extract or give the honey to hives with less stores of honey as soon as it has been sealed.

In the brood nest, remove combs of sealed brood and give it to weaker colonies. This helps to equalise the bees in hives in the apiary. Ensure both the recipient hive and the donor hive are disease free.

Some combs of sealed brood can be transferred from the brood box to the super – giving the queen more laying room

Swap the positions of weaker hives with strong hives, but only during a nectar flow.

### Division of colonies is artificial swarming

Refer to the article published in the July Newsletter 'Splitting your hive', available on our website under 'Useful articles for members'.

### References

1. Agriculture Victoria, 'Wax moth a beekeeping pest'.
2. Bee2bee Beekeeping Supplies 'What is spring management and what does it mean for you and your beehives?'
3. Craig A. & S., 'Natures Gifts'.
4. Glen Locke, 2019 'Beehive Spring Management', Orara Valley Honey, <https://www.trunchbeekeeping.co.uk> › knowledge
5. Hornitzky M, 2001, 'Literature review of chalkbrood'.
6. NSW DPI primefacts, 2007, 'Wax moth'.
7. NSW DPI 'American Foulbrood Identification and Management'.
8. Perfect Bee, 'Swarm Management in Spring'.
9. Plant Health Australia 2017, 'Chalkbrood Disease'.
10. Qld govt Dept of Agriculture and Fisheries, 2017, 'Chalkbrood'
11. Qld govt Dept of Agriculture and Fisheries, 2017, 'European foulbrood'.
12. Beehealth.bayer.us 'Beekeeping 101 getting

your pollinators ready for spring’.

13. Rural Industries Research and Development Corporation, 2014, Australian Beekeeping Guide

14. Wikipedia, ‘American foulbrood’.