

## THE USE OF QUARANTINES TO ELIMINATE AFB

Dr Mark Goodwin  
Apicultural Research Unit  
HortResearch

The most powerful tool for American foulbrood disease (AFB) control, other than adequate inspections, is the use of quarantines. Quarantines restrict beekeeper movement of equipment, and consequently AFB, between hives or apiaries. The effectiveness of a quarantine is dependent on how strict it is. They do however usually require more time and a higher level of organisation.

Quarantines are effective because most AFB is spread by the movement of equipment between hives rather than by the bees themselves. We know this because there are many of examples where two beekeepers have their apiaries interspersed in the same district. One of the beekeepers may have a very high level of AFB where the other beekeeper has a very low incidence. If AFB was mainly spread by bees, rather than beekeepers, the incidence of AFB would be expected to be relatively uniform within an area.

### Hive quarantine

By far the most effective type of quarantine is a hive quarantine. This is where equipment is not moved between hives so that the only way for a colony to become infected is through robbing a diseased colony or even less likely by drifting bees. As long as care is taken to ensure colonies don't die robbing, should be a reasonably rare event in most cases.

Those beekeepers with AFB problems who have initiated a hive quarantine have found it has been a great comfort to know that they will no longer spread AFB between their hives. The value of peace of mind when you are struggling with AFB cannot be over emphasised. Once a hive quarantine has been instituted, all a beekeeper usually needs to do to solve their AFB problem is to try and keep all hives alive and find the hives that are already infected with AFB and destroy them.

To be able to implement a hive quarantine it is necessary to individually number each hive. This can best be carried out by nailing a numbered sheep or cattle ear tag on the front of the floorboard (Fig 1). You can buy tags with printed numbers or blank tags that can be written on with a tag pen. It is important that the ear tag is attached to the floorboard rather than to a brood box. Even if the tag is attached to the bottom brood box, brood box positions get changed and the box may end up as a honey super. This will then be removed with the honey crop leaving the hive unnumbered.

Fig 1 A hive marked with a cattle ear tag.

For a hive quarantine nothing should be removed from a hive with the exception of honey supers. These must be numbered with a felt pen, extracted and the frames returned to the same super. The numbered supers need to be dried out on the hives they came from or be stored where they cannot be robbed and then put back on to the same hives in the spring. Feeders, excluders and other equipment should only be

removed from a hive if they are also numbered so they can be returned to the same hive.

Hive quarantines have the advantage that AFB inspections do not need to be carried out when the honey is being removed as the supers and frames will be returned to the hives they came from. A second advantage is that the AFB inspections need not be as frequent or as comprehensive. If an AFB hive is missed, unless the hive is robbed out, there is little opportunity for the disease to spread.

Hive quarantines require significant additional work, however, they are not as bad as they sound. You do not have to save burning many hives before they are worth carrying out. They can also be very effective. One commercial beekeeper we were working with had a 25% AFB incidence when the problem was detected. The beekeeper destroyed the infected colonies and instigated a hive quarantine. The next year the incidence was 10 %. These were almost all AFB colonies that were infected the previous year. The incidence the third year was only 2%.

Hive quarantines have the advantage that they can be easily used by migratory beekeepers or beekeepers carrying out pollination as the hives do not have to be returned to the same sites. Lists of which hives are at which apiary need to be recreated, however, so the boxes can be sorted in the correct order in the spring.

Careful thought needs to be given to stored equipment. If there is a high AFB incidence it might be better for it to be destroyed or wax dipped.

#### Apiary quarantine

An apiary quarantine is significantly less effective than a hive quarantine at dealing with AFB problems but very much easier to institute. It consists of keeping the equipment from each apiary separate. Although AFB will still be spread between hives in the same apiary it will not be spread between apiaries. Once an apiary is clear of AFB it should usually stay clear. Hives in an infected apiary may however still become infected until the disease is eliminated or all the hives have been burnt.

Apiary quarantines are also a good safety precaution. If an AFB problem does occur it will be restricted to a single apiary rather than being spread through an entire beekeeping outfit.

It is possible to carry out a hive quarantine at the same time as an apiary quarantine. The hive quarantine can be used in apiaries with AFB while the equipment from hives in apiaries without AFB can be mixed together.

Apiary quarantines are difficult to manage for pollination beekeepers as the hives need to be sorted and returned to their original sites after pollination.

#### Outfit quarantines

The third option is an outfit quarantine. This is where a beekeeping outfit is divided into two on paper rather than physically. All apiaries where AFB has been found are included in one half and the clean apiaries in the other half. As apiaries are cleaned up or become infected they are swapped between halves. The method is much less useful than a hive or an apiary quarantine but can have its place.

Again it can be used in conjunction with an apiary or hive quarantine. Uninfected apiaries can be managed together while an apiary or hive quarantine can be instituted for infected apiaries.

