

Sterilising AFB-contaminated equipment

By Dr Mark Goodwin, Apicultural Research Unit, Plant and Food Research, Ruakura

New Zealand legislation (National American Foulbrood Pest Management Strategy Order 1998) specifies that all bees, bee products and appliances associated with an American foulbrood (AFB) diseased colony must be burnt.

The only major exception to this ruling is people sterilising equipment in accordance with their Disease Elimination Conformity Agreement (DECA). If you do not have a current DECA that specifies how you will sterilise equipment rather than burn it, you must burn all equipment associated with an AFB diseased colony.

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Fortunately, relatively large numbers of spores are needed to infect a colony with AFB. Because of this any sterilising technique is not required to remove every last spore, but only to lower spore counts to levels that will not cause re-infection. High and low risk equipment, based on the likelihood of being infected with high spore levels, can be treated differently.

After handling American foulbrood (AFB) infected equipment, gloves, bee suits and the decks of trucks etc. (which are all likely to be carrying low numbers of spores) are best cleaned by washing them thoroughly. Some beekeepers use disinfectants (e.g. Dettol®, Savlon®, methylated spirits) to try and sterilise their gloves; however, most disinfectants do not kill AFB spores. Spores can even survive being soaked in methylated spirits or alcohol. Washing gloves in soapy water is probably the best treatment as it dislodges most of the spores that may be present.

Hive tools are best cleaned in a hot flame. This can be achieved by removing the lid from a smoker and pumping the bellows until the material inside is burning vigorously. The hive tool should then be held in the flame for several minutes (Figure 1). Some beekeepers use a small gas burner to scorch their hive tool. This has the advantage that it is quicker and probably does a better job.



Figure 1. Sterilising a hive tool.

Approved salvaging methods

There are three approved methods for salvaging infected beekeeping equipment for those beekeepers with a DECA. It is illegal to use any other methods. The economics of sterilising equipment rather than burning it needs to be considered carefully. In many cases when realistic labour costs are taken into account as well as the condition of the equipment, it is usually cheaper to burn it.

Paraffin wax dipping

The most common method used to sterilise infected hive parts is paraffin wax dipping (Figure 2). Hive parts need to be dipped in paraffin wax at 160°C for ten minutes. The time and temperature is very important

so a thermometer and timer should be used. Even at this temperature there may still be the occasional AFB spore that survives. However, there will not be enough live spores to infect a colony when the equipment is used again.



Figure 2. Paraffin wax dipper.

A great deal of care also needs to be taken to ensure the wax doesn't get too hot or boil over if a fire is being used to heat the wax. Many beekeepers have met their local fire brigade after mishaps with their paraffin wax dippers, and a few have lost buildings when the burning wax flowed under walls. It is a good idea to have on hand a cover that can be placed over a wax dipper to put out any fires, and an extinguisher to put out spilt wax that may be on fire. It is important also to wear protective clothing because of the high temperature of the wax.

To check that the paraffin dipping is working the boxes should be painted immediately after dipping with a special colour. The hives the treated boxes are put on can then be followed closely to see if they become re-infected.

Floorboards, boxes, lids, excluders and wooden or metal feeders are the most common items of equipment that are sterilised by the wax dipping method. Frames are better burnt, whilst the wax is too hot to dip plastic hive components in.

Sodium hypochlorite

Plastic hive parts and frames of foundation can instead be sterilised using sodium hypochlorite. Janola® contains 3% sodium hypochlorite while some swimming pool products contain about 35%. Sodium hypochlorite is mixed with water and so →

has very limited penetrating power. Anything that is to be treated needs therefore to be free of wax and propolis. Because of the air pockets that develop in cells it is not possible to sterilise drawn comb using hypochlorite.

Equipment to be treated should be immersed in at least 0.5% hypochlorite for 20 minutes. Care should be taken with dipping metal as hypochlorite can dissolve some metals, as we have found out to our cost. Similarly, continually dipping leather gloves can be expensive as it causes them to rot. Sunlight breaks down sodium hypochlorite so it is important to keep it in the dark.

Irradiation

The third approved sterilisation method is irradiation. This is a method commonly used in Australia. We have only one irradiation plant in New Zealand situated near Wellington. If irradiation is going to be used, it is important that all the equipment is sealed in plastic so that bees do not get access to it. Irradiation has the advantage that comb can be treated as well. Brood

comb should, however, be burnt rather than treated.

There are a number of other methods that are used overseas to attempt to sterilise AFB infected equipment; e.g., scorching boxes and steam chests. These are not recommended and should not be used because they are not sufficiently effective.

[Editor's note: This is the fifth article of a series that has been written for the Management Agency for the American Foulbrood National Pest Management Strategy. These articles were first published in 2003, and have been reviewed and updated where necessary. The original title was 'Sterilising equipment contaminated with American foulbrood spores.'

We will run these articles on a regular basis over the year. The articles will cover a range of aspects of American foulbrood control, including how to inspect for and identify diseased colonies, the management of colonies to prevent American foulbrood and a beekeeper's legal obligation with regard to American foulbrood.]



Unregistered sites found

By Rex Baynes, AFB NPMS Manager

In December 2011 the Management Agency, in partnership with the Bay of Plenty Branch of the NBA, undertook an aerial surveillance operation on the East Cape to check beekeeper compliance with the AFB NPMS.

This operation was on a shared-cost basis with an independent person undertaking the aerial survey. The helicopter flight in total lasted about four hours, with a stop for refuelling in the car park outside the local garage at Waihou Bay.

Approximately 215 apiaries were plotted by GPS during the time in the air, covering a wide area from Opotiki to Te Araroa towards the top of the East Cape.

The exercise is considered very cost effective, especially considering the time in the air versus sites plotted and unregistered sites located.

The GPS data obtained was then downloaded onto a mapping facility that allowed direct comparison between 'actual' apiary location details and the information that is held in the apiary database. A number of inconsistencies were identified which warranted further investigation.

In early February 2012 a ground operation was commenced that involved AP2s from outside of the region spending three days attempting to locate the unregistered apiaries, with the objective being to identify both the owners and ascertain the disease status of the hives in question. Further, notices to register the apiaries were placed

A big thank you to Jane Lorimer

Jane is stepping down as Chairperson of the NBA Research Committee as her mother is terminally ill with cancer. Jane will remain as a member on the Research Committee, to which she has given an enormous amount of time and commitment over many years. We are very fortunate to have someone of Jane's experience and calibre working within what is an increasingly vital committee within the National Beekeepers' Association.

NBA Executive member Kerry Gentleman will take over her role as Chairperson.

On behalf of myself, the NBA Executive Council, Research Committee members and Secretariat, I would like to extend a heartfelt thank you to Jane for all the work she has done as Chairperson of the Research Committee.

Kind regards,
Barry Foster
President, National Beekeepers' Association

under the hive lids reminding the beekeeper concerned that hives must be registered under clause 15 of the Order in Council. The beekeeper was also left in no doubt that under clause 25 the hives can be destroyed.

On the lighter side, I have been informed that our intrepid AP2s were confronted with a range of obstacles, not the least being a hungry and particularly nasty guard dog and an irate farm manager's wife.

The AP2s provided AsureQuality Limited with a detailed report of their findings, which have been used to track down the owners of the apiaries. In some cases these apiaries were registered but the co-ordinates in the database were incorrect, and in other cases the apiaries were unregistered. Owners were identified for all but one of the apiary sites.

AsureQuality Limited has passed this information back to the Management Agency, which will assess the seriousness of each non-compliance and take appropriate action.

