National Bee Unit

The Food & Environment Research Agency

Fumigating Comb

Fumigating comb has many benefits and is used by beekeepers to sterilise brood and honey frames. This is a useful technique and saves colonies time and energy in having to draw out new foundation. Acetic acid is usually used in late autumn or winter to sterilise combs against the adult bee disease *Nosema spp.*, chalkbrood and wax moth.

What about brood comb?

Buying sheets of foundation can be expensive and time consuming when having to fit it to the frame and wait for a colony to draw it out. However, along with replacing frames, it is an easy way of 'cleaning out' the hive and removing pathogen build up. The existing brood comb can then be burnt. It isn't worth rendering brood comb because a lot of the wax will be absorbed by the shellac and brood casings. Professionally made foundation poses no disease risk.

What about super comb?

It is considered that fumigating super comb with acetic acid has benefits in reducing the disease incidence of *Nosema spp.* within a colony. Otherwise, one alternative is to render down super comb and exchange it for foundation sheets.

Are there other ways to 'fumigate' comb?

There are various ways. Radiation is very effective. Unfortunately it is not really practical for the average beekeeper. Equipment needs to be sealed in packs on pallets and total costs are similar to replacing the combs with new frames and foundation. Heat can also be used in relation to *Nosema spp.*

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Pictured, is a simple method of sealing up a brood box for acetic acid fumigation. Place masking/duct tape around any gaps and make sure the box is air tight.

Photograph supplied by Adrian Waring.

How do I fumigate using acetic acid?

You will require 80% acetic acid and absorbent pads. The acid must be treated with care; it will burn the skin off your hands and anywhere else on your body! It attacks concrete and corrodes metal hive parts. You must take proper safety precautions and use suitable containers when handling it.

a) Scrape the wooden frames to clean off propolis and other excess material. Clean out the relevant brood box or super, coat any exposed metal parts with Vaseline and replace the combs in the box.

b) Place a clean hive floor on the ground and put on it an absorbent pad containing 140 millilitres (1/4 pint) of acetic acid. It is best to do this away from the house. Acetic acid has a distinctive smell, which many find objectionable.

c) Place a box of comb on the floor.

d) A stack can then be built placing absorbent pads as on the floor between each brood box or two supers. The stack is then closed with a crown board and roof. Seal it up using sticky tape. Polythene tubing as used for wrapping carpets makes a very good covering effectively sealing the stack if you make each end airtight.

e) After a week the stack can be opened and the boxes aired for at least two days before using.

f) Acetic acid does not affect food stores but any honey should be returned to the same colony from where it was taken.

What about heat treatment?

Heat treatment of combs and other hive equipment is a method of decontaminating a potential source of *Nosema spp.*. It involves heating combs and equipment in a room or suitable container at 49C, (120F) for 24 hours.

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Points to watch are:
1) The temperature needs to be accurately maintained with no hot spots.
2) Combs need to be upright to prevent warping or collapse.
3) Combs should be free of stores, pollen, etc.
4) Free air circulation is needed.
5) Combs must be slowly cooled before being moved or they may be damaged.

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