



National Bee Unit

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.

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.*

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 or anywhere else that it comes into contact with. It attacks concrete and corrodes metal hive parts. You must take proper safety precautions and use suitable protective clothing and containers when handling it.

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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) Begin treatment by stacking the brood and/or super boxes containing combs to be sterilised on solid surface such as a board or solid hive floor. It is also important to block off hive entrances, as acetic acid fumes are heavier than air and will travel from the top to the base of the stack, leaking out of any gaps or holes at the bottom.

c) Place a non-metallic dish (saucer or similar container) on the top of the frames of the top box.

d) Very carefully, put 80% acetic acid into the dish, allowing 120 ml acetic acid/box (e.g. 600 ml would therefore treat 5 boxes).

e) Place an empty hive box on the top of the stack, closing off the empty box on the top of the stack with a hive roof. Seal any joints between the boxes with wide adhesive tape to stop fumes escaping.

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 49°C, (120°F) for 24 hours.

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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