

ADVANTAGES OF USING OPEN-MESH FLOORS (OMF`s)

(by M.W. Shaw, Anglesey Beekeeper's Association)

The most frequently advanced reasons for the use of open-mesh floor (OMF`s) are in connection with Varroa control.

- a) Use of an OMF reduces the mite population by about 20% - live mites fall through the mesh and cannot get back into the hive again (requires a minimum 50mm drop). Such mites die prematurely and do not complete their full potential of breeding cycles - this is what produces the 20% population reduction.
- b) Monitoring natural mortality of mites enables the beekeeper to get a quick estimate (a snap-shot) of the number of mites in a colony and time treatment accordingly.

I have no direct proof of the first of these advantages (a 20% reduction in the Varroa population) but it seems to be widely accepted and is almost certainly right. However, my experience of the use of natural mortality, as measured using an OMF with a catch-tray, indicates that its usefulness is open to question. The average daily fall of mites does NOT seem to give a useful prediction of the number mites in a hive. It is not just that the conversion factors (e.g. average daily fall x 30 in the summer) that are incorrect either. To give an example of what I mean, in mid-July 2005 I monitored 36 colonies in 6 apiaries for 7 days. The maximum fall of mites in any one colony during that period was 12 (i.e. c.2 mites/day) and most colonies were much lower (0 in several cases). Based on these results, one might reasonably conclude that Varroa was at a low level in all colonies. When treatment with `Apiguard` commenced 5 weeks later (2 trays at fortnightly intervals) kills of up to 6,580 mites were recorded (that particular colony had a 7 day fall of 5 mites in mid-July). The most extreme example was a colony that shed no mites (0) during monitoring but yielded 6,010 mites under treatment! I have obtained similar, but not quite such extreme results in other years but in no case has the result of monitoring provided useful guidance for treatment. I am sure that the predicted mortality of mites (obtained from the CSL model of population dynamics) is correct and that mites were dying in large numbers during the monitoring period. It is the fate of these dead and dying mites that is the problem. The only explanation I can think of is, that in a normally functioning colony, most of these mites are intercepted by cleaner bees, are carried out of the hive and few get to fall through the mesh floor. Similar behaviour must occur during treatment but the fall is so great that the cleaner bees are overwhelmed. Nevertheless, fall counts under treatment must be an under-estimate of the kill achieved.

It is a pity that such an apparently foolproof and elegant method of estimating Varroa populations does not seem to work. If anybody out there has made it work for them I would dearly like to know their secret. However, there are many other advantages to OMF`s of which beekeepers should be aware.

- c) Use of an OMF may well increase the efficiency of treatments like `Apiguard`. Higher kill rates are claimed for a similar product `Apilife VAR` using OMF`s.
- d) It is claimed that cold-wintering on an OMF creates a longer brood-free period, when all the mites are on the bees and can be effectively treated by oxalic or lactic acid. Again, I have found that use of an OMF (even with generous top ventilation, so that it makes the hive really cool) does not significantly increase the brood-free period. It certainly does reduce the amount of brood in the colder months - but is this a good idea?

Colonies seem to have their internal programme for brood rearing and are not easily diverted from it – nor should they be in my view. I have abandoned the use of top ventilation in the autumn and winter and also install top insulation – the mesh floor is open with no catch-tray in place. This gives the colony reasonable conditions in which to raise what brood it wants to.

- e) The design of the OMF can incorporate reduced bees space over floor and still have adequate ventilation of combs. This greatly reduces comb extensions on bottom bar making comb movement and box swapping (e.g. Snelgrove or Demaree swarm control) much easier – no need to shake bees and clean the bottom bars. It also eliminates bracing to the floor and the deposition of propolis on the mesh. I have settled on a 9mm deep floor (cf. 22-23mm for most solid floors).
- f) The colony usually starts raising brood higher up in the hive when it is on an OMF. This prevents the development of a honey ceiling in the upper box (on brood and a half) and helps give the queen space to lay to her maximum capacity.
- g) With a low height OMF (9mm), there is no longer any need to use (those horrible) metal mouseguards.
- h) An OMF enables colonies to better control their temperature in hot weather and gives good ventilation for honey ripening. Using roofs with generous ventilation holes, natural convection - in through the mesh floor and out through the roof - reduces the need for fanning. In the cool of the evening wisps of water vapour can be seen coming from the roof ventilation holes.
- i) OMF`s are good for transporting bees. There is no need to install travelling screens and the bees show no signs of distress even in warm weather.
- j) Providing the catch tray is not in place - except during monitoring or treatment - the use of OMF`s means that condensation in the hive is a thing of the past. This encourages healthier more vigorous colonies and freedom from disease. It does take courage to use an (open) OMF during the winter for the first time but it does work even for small colonies.
- k) Finally, with OMF`s there is no longer any need to ensure that the hive slopes gently towards the front - there is no floor drainage problem.

I have been using OMF`s since 1996 (2 years before we had Varroa) and would never dream of returning to solid floors. A good design of OMF is important if it is not to give problems, e.g. accumulation of hive debris and moisture and breeding wax moth. Conversion of solid floors is never satisfactory in my view. The design of OMF I have been using since 2000 appears in a separate article.