

Oxleas Wood APIARY

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WINTER INSULATION

There are lots of differing opinions about thermally insulating beehives for overwintering colonies with this opinion falling mostly into the diametrically opposed schools of 'to' and 'not to' wrap.

Anti-wrappers consider the bees are far too mollycoddled and that wrapping adds to an unhealthy anthropomorphizing (or humanisation) of honeybees who necessarily have evolved in the absence of thermal insulation, central heating and double-glazed habitats and, moreover, that insulation prematurely spurs on the Queen to higher laying rates rendering the colony prone to greater levels of *V. destructor* attack in the early Spring. Pro-wrappers reckon the presence of insulation triggers earlier laying and produces a stronger colony resourced in higher forager numbers for the May nectar flow; that overwintering survival rates are better for wrapped over unwrapped hives; and that the consumption of overwintering stores is lower.

Whatever, the brood nest temperature is of critical importance to the colony so providing wrapped hive conditions that are conducive to the homeostasis parameters assists the bees to thermoregulate the hive. The thermoregulation activities within the hive include a cooling phase that is achieved by active fanning to ventilate the hive and, when the nest is at risk of dipping below the 32° to 34°C optimum temperature range for brood production, the bees generate heat by flexing of the thorax wing muscles with the wings uncoupled, a physical exertion that ekes away overwintering stores.



BROOD TEMPERATURE INCREASE TRIGGERING QUEEN LAYING

Any delays in triggering the Queen into active brood production, particularly failing to achieve and maintain a stable temperature in the 32° to 34°C range around March-April could set back colony foraging strength for the following May nectar flow.

Other conditions giving rise to demanding thermal transients might occur: for example the early morning solar melting of a frost layer on hive surfaces can result in a refrigeration effect as the frost-to-vapour latent heat phases are dissipated. Northerly winds can overly cool the north-facing hive elevation, forcing the bee cluster to move away from that face to maintain homeostasis which could result in slowing or loss of brood production at a critical time.

So, in short, hive wrapping must not impede ventilation; where appropriate hive surfaces should be protected against frost and driving wet; afford some shielding against cold winds; and the bee entrances should not be blocked – here are some practical points if you are a pro-wrapper:-

ROOF

The zinc capped, timber roof provides an efficacious heat transfer route out of the hive so placing a 12 to 25mm thick insulation or polystyrene board inside the roof stunts heat loss – make sure that the insulation board does not block both the roof ventilation slots and the crown board Porter escape apertures and, of course, the insulation material should not be toxic to the bees.

Simple, ad hoc measures such as crumpled newspaper, egg boxes and similar placed in the roof void also form effective thermal barriers.

CROWN BOARD

Pinning a strip of metal mesh or gauze over the Porter escape apertures keeps out unwelcome visitors and enables the bees within to wax-and-propolis block (and unblock) the ventilation to suit their own thermoregulation requirements at various times in the overwintering period – if necessary, the gauze can easily be removed by the beekeeper for emergency feeding.

BASE & FLOOR

Opinion is divided on whether the *V. destructor* monitoring board should remain ‘out’ or be fully inserted ‘in’ during the overwintering period – with minimal brood production during the mid-overwintering period the corresponding *V. destructor* reproduction cycle is curtailed so inserting the board can only be an asset to thermoregulation and, moreover, the boards are sufficiently loose fitting not to impede ventilation through-flow from the hive base.

Be mindful that the *V. destructor* reproduction cycle is aligned to capped brood numbers so in early Spring check the monitoring board when the Queen should have entered a higher laying rate – if the monitoring board is to be withdrawn to allow mite fall-through, do this progressively over a few days to avoid sudden shock to the thermoregulation of the hive.

MAIN HIVE BODY – BROOD AND SUPERS

Various means of insulating the hive body include rigid polystyrene slabs clipped together, polythene sacks filled and sealed with crumpled paper, straw bales, etc..

At Oxleas Wood Apiary a flexible, aluminium foil faced, bubble wrap, dry-lining loft insulation (0.124m²/K/W) is deployed, particularly on the hives housing the weaker colonies. The wrap is held in place by two bungee straps and folded under and retained by the roof – since the bees tend to move up within the hive body as the winter sets in, the lower section of the brood chamber is left exposed and the bottom entrance remains clear for bee flying activity.

The 4mm thick foil bubble wrap although relatively expensive,¹ is an effective and convenient way to insulate the hive body – fitting is easy and quick with minimal disturbance to the bees; it is weatherproof and the bungee straps resist wind gusts; it deters woodpecker attack; and it is reusable, folding up for storage off the hive over the Summer season.

Anti-Wrappers stand aside – Pro-Wrappers get Wrapping!



FOIL WRAPPED HIVE READY FOR
 OVERWINTERING AT OXLEAS

John Large