

Control of Small hive beetle

If Small hive beetle *Aethina tumida* (SHB) arrives in the United Kingdom and eradication is not possible, beekeepers will have to put in place measures to control infestations. There is no simple way to control this bee pest and an Integrated Pest Management (IPM) system will have to be used. To control infestations it is necessary to disrupt or prevent the life cycle of the beetle. This sheet gives an outline of measures that may be used.

What is the single most important measure?

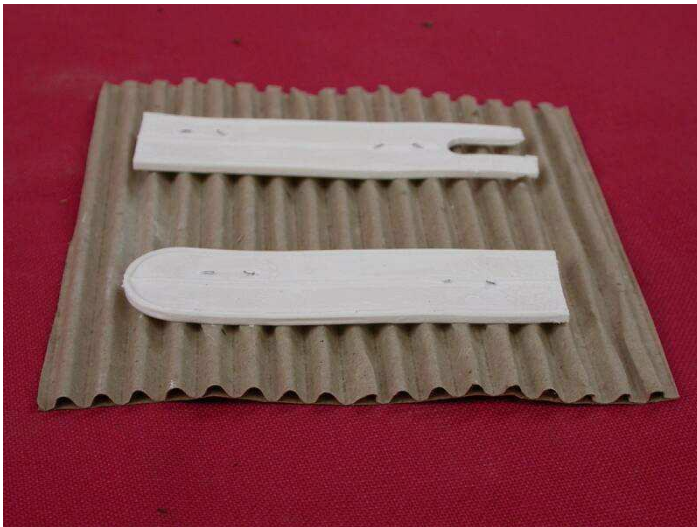
Following experience in USA it is clear that cleanliness in the extraction area is most important. As with many pests strong healthy colonies can exert considerable control over this pest. Weak colonies, supers or crates empty of honey bees are a prime target for rapid infestation. Ensure that the extraction area is kept clear of hive debris, supers extracted quickly and stored in a suitable manner to prevent infestation. Removal and destruction of any comb infested with this pest is similarly a primary control measure.



Pictured, is the complete life cycle of the Small hive beetle. At the bottom is the larva, distinguished from wax moth by the protruding spines on its back and the three pairs of legs near the front. From left to right are the different developmental stages of the beetle.

What chemical control methods are available?

In the USA the varroicide 'Checkmite+' is used to control Small hive beetle. Should this pest be confirmed in the UK, it is most probable that this product will be used for control, initially by means of a Special Treatment Authorisation. At the time of writing this product is not approved for any use in the UK (updated March 2014). A single strip is cut in half and stapled to a square of corrugated material. This square is placed strips down onto the floor of the hive so that when beetles burrow under the ridges they contact the strip. Beekeepers in North America report that this treatment is insufficient to control beetles if used alone. The treatment period is six weeks. It must not be carried out with supers on the hive and these cannot be placed on the hive for at least two weeks after removal. Strips of corrugated plastic that bees don't chew are available.



What management techniques are there?

Many techniques have been proposed and are being developed. The most basic husbandry techniques such as the maintenance of strong colonies and good apiary hygiene are simple but essential when combating SHB. Boosting natural hygienic behaviour in honey bee colonies will also help and narrowing hive entrances to repress beetle access is important.

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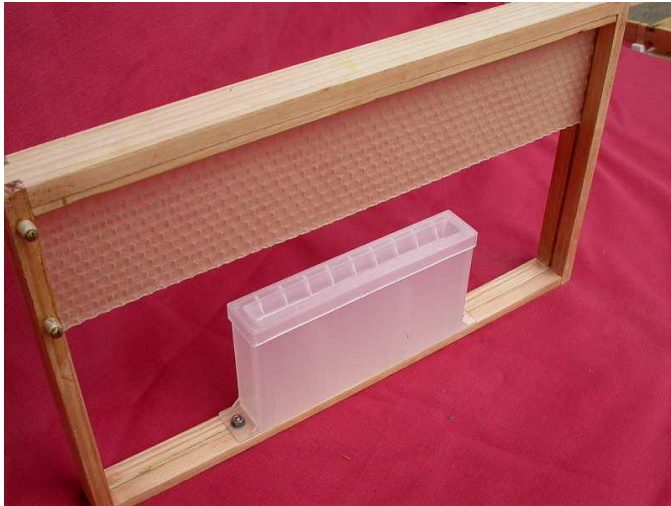
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Hood Small Hive Beetle Trap.

This trap is used in colonies where small hive beetles are actively moving around, which is generally at temperatures in excess of 18C. The container is half filled with food grade mineral oil or cider vinegar and placed where the beetles are most active. This can be in the brood nest adjacent to brood combs or in honey supers. Traps can be fitted to either brood or super frames. Bees often block the funnel slot at the top with propolis so it will need to be cleared regularly using a hive tool. If used in the brood box the space around the trap can be used for drone brood removal as a control measure for *Varroa*.



West Beetle Trap.

This plastic floor tray is marketed and used in the USA, It is made for the Langstroth hive but could be adapted for use with other hives. The under tray is filled with vegetable oil and covered with a plastic mesh grid so that when beetles go down to the floor they drop through the slots and drown in the oil. Any SHB larvae leaving the hive to pupate would similarly drop through the slots. The floor is only used during active beetle periods and is easily cleaned if it has not dried out. The floor needs to be maintained in a level position and unless the hive is truly watertight, may flood out when it rains.



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Is there anything else that I should be aware of?

The probable impact of SHB on North European beekeeping is unknown. The beetle is sub-tropical so its survival and reproductive rate in our temperate climate is unknown. Knowledge is being gleaned in North America where the beetle is found as far north as Canada. However the continental climate there will create differences in its survival and life cycle. We can learn from American beekeepers but if this beetle should arrive, we will have to adapt known methods of control to our circumstances. Research is being carried out to develop alternative control techniques such as pheromone traps.

Additionally, soil treatments are being explored. The use of permethrin, fenitrothion, chlorpyrifos and methomyl have been shown to work. Fenitrothion proved most toxic to larvae and it was concluded that these chemicals were more toxic than coumaphos (the active ingredient in Check- Mite+). However, many (including permethrin) are also very toxic to other (non-target) insect species as well as honey bees and can lead to the development of resistant populations of beetles.



Photograph of Small hive beetle in an *Apis mellifera* colony. Supplied by Jessica Lawrence .

www.Forestryimages.org.

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