

Small Hive Beetle in California

The small hive beetle, *Aethina tumida*, was first properly identified in the U.S. in Florida in 1999. Through various beekeeping practices, the beetle spread through the eastern states and then was introduced into California in colonies that were trucked here for almond pollination.

Reports of limited infestations in the San Joaquin Valley occurred years ago. With the large increase in importation of out-of-state colonies to meet the demand for almond pollination in 2005, small hive beetles (SHB) were noted more frequently. A survey is being conducted in California to determine how wide spread the beetles really are.

The California Department of Food and Agriculture is the regulatory body that deals with outbreaks of potentially harmful agricultural pests. At this time, the administrators have assigned the SHB to category “Q.” That means that, temporarily, the SHB should be treated the same as a category “A” pest – quarantined and eradicated.

As the truckloads of bees arrived at the border stations, it was apparent that quite a few colonies were infested with SHB. Stopping the loads of bees at the border and sending them back to the states of origin would have had two very severe consequences: 1. almond growers would not be able to obtain enough colonies to pollinate their crop and 2. beekeepers had invested so much money in shipping their bees that they would have gone out of business if they could not get pollination contracts.

As a result of the pressures for bees to enter the state, it was decided that infested colonies would be allowed to enter, if the County Agricultural Commissioner of the county of destination gave his or her permission. Then the Commissioner had to decide how next to deal with the infestation. In the Sacramento Valley counties, the Commissioners decided that, in order to protect the queen and bulk bee industry (that provides about half of the queens and bulk bees produced for sale in the U.S.), infested bees would not be allowed to enter the northern California counties. The details of the regulations that relate to this quarantine action can be examined at the following CDFCA Web site: www.cdfa.ca.gov/phpps/pe/Bees.htm. Dealing with the SHB in this manner is equivalent to giving the beetle a “B” rating.

The life cycle of the SHB, and the damage that it causes to bee brood and honey in the combs, can be viewed on many Web sites. Control of the beetles is difficult. The registered treatment of placing CheckMite+[®] strips under cardboard or plastic corrugated sheets only kills those beetles that are entering the hive and crawling beneath the sheet to avoid the bees that are harassing them. Apparently, resistance to coumaphos already has been found in some beetle populations. Once up in the combs, the strip on the bottom board no longer affects the beetles.

Fully fed larval beetles crawl out of the hives to pupate in the soil. The coumaphos strip under the cardboard does not injure them. Currently, a soil application of permethrin (GardStar[®]) is lethal to burrowing beetle larvae. A few beetles escape this treatment, if there is adequate debris on the bottom board in which they can pupate.

Researchers and entrepreneurs are conducting studies on trapping beetles inside or outside the hives. Three types of traps currently are being marketed for catching adult small hive beetles in hives. The West Beetle Trap is a slotted floor for the hive that sits above a tray of solution (often vegetable oil). When the bees chase the beetles across the slots, the beetles fall through to their deaths. The Hood Beetle Trap replaces a portion of comb and fastens to the bottom bar of a frame. Partially filled with vinegar or vegetable oil, it will catch many beetles before needing to be cleaned out and refilled. The AJs Beetle Eater is suspended between the top bars, partially filled with vegetable oil. The bees chase the beetles down through the slots into the oil. Another less expensive trap, which works on the same principle, is the Cutts Beetle Blaster.

Because nitidulid beetles frequently enlist an aggregation pheromone to find each other, chemists are following that lead. So far, it appears that the odors of decaying or fermenting hive products (vinegar, pollen and honey) are extremely attractive to SHB.

As SHB become more numerous in California, we will learn how damaging they may or may not be to the beekeeping industry.

Dr. Eric C. Mussen

ecmussen@ucdavis.edu

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