



B-PLUS

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HONEY BEE MITES

INTRODUCTION

There are many mite species found on, and around honey bees. Of these different mites, only three are considered of importance, and only two of these are found in the U.S. and Michigan. The two are: the tracheal mite *Acarapis woodi* and the varroa mite, *Varroa jacobsoni*.

Tracheal Mites



Figure 1. Tracheal mite

This mite lives and reproduces in the large trachea of the thorax of adult honey bees. (See Fig. 2) First discovered in England about 1920, the mite probably developed from a mutant form of the external mite *Acarapis externis* that lives on bees everywhere. The external form does not cause much harm, whereas the internal tracheal mite does.

LIFE CYCLE

A young fertilized female leaves an infested bee and crawls onto a young, newly emerged bee and enters the large thoracic trachea. There it lays eggs which hatch and the mites feed on the hemolymph through the walls of the trachea.

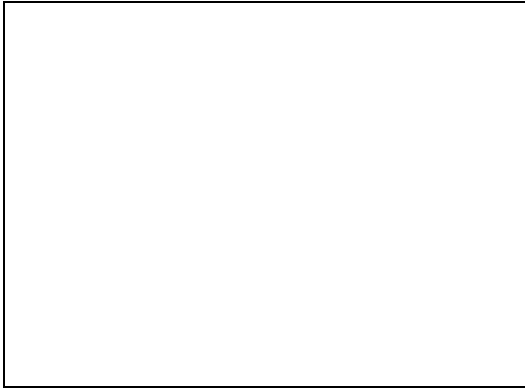


Figure 2. Internal view of the respiratory system with the larger trachea.

Often the trachea will become dark brown from the feeding. This darkening may be caused by microorganisms. The time necessary to develop from egg to adult is about 14 days. At that time the new adult mites will mate and the young females leave the trachea to find a new bee. Because of the nature of finding a host, and possibly due to population pressure, a bee may only have mites in the trachea of one side. Detection of these mites takes a microscope as they are very small. Dissection of the thorax is necessary to locate the trachea and find the mites.

In heavy infestations of the mite the trachea become spotted with brown. Sometimes this darkening can be seen with a hand lens. If you cut off the head of a bee and look down into the thorax with about a 15, or 20X hand lens, the large tracheal trunks can be seen. If they have small brown spots on them the bee has many mites within these trachea. (Fig. 3)

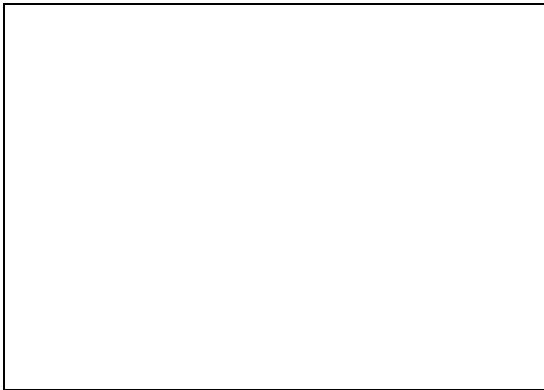


Figure 3. Anterior view of trachea within the thorax of a bee after removal of the head.

CONTROL OF TRACHEAL MITES

The only chemical control currently available is menthol crystals or pellets. These are applied in 50 gm. packets on top of the brood nest early in the spring. If the temperature is expected to go to 85-90 degrees then the packet should be placed on the bottom board.

Resistant stock is available from a few queen breeders, and more resistance should be coming to other stocks as well.

VARROA MITES

Varroa are external mites that feed on both the adults and developing pupae of honey bees. They were found originally on the smaller hive bee of southeast Asia, *Apis cerana*. On this bee the varroa mites develop and feed mostly on the drones, and thus cause little damage.



Figure 4. View of a varroa mite from the side.

On the European bee, *Apis mellifera*, that we have in the United States, varroa mites will develop and feed on workers as well as drones. The effect is that varroa will kill the colony because the parasitized workers are often crippled and deformed. Once a colony becomes infested (by contamination through drifting or robbing bees) it may take two to three years before the damage and the mites become very obvious to a beekeeper. At that time it may be too late to save the colony.

LIFE CYCLE

A fertilized female crawls into a larval cell just before it is capped over. She then lays eggs on the developing pupa. It takes about 12 days for the mites to mature. The males will mate with the females before the bee emerges from the cell, and the fertilized female mite then exits the cell when the bee emerges, or attaches itself to the adult worker or drone.

These mites are quite large and can be readily seen on the developing pupae or larvae because the dark brown mites show up against the white body of the pupa. Examine the exposed pupae that sometimes are found between brood chambers, or use tweezers to remove some drone pupae from their cells. It is important to monitor your colonies in this way in order to know when to treat for this pest.

CONTROL

The currently available chemical control is fluvalenate, which is formulated by impregnating plastic strips with the chemical and sold under the name Apistan[®]. The strips (2/hive body) should be put into the hive in the Spring up until the honey flow, and again in the early Fall as soon as the honey is removed. The strips are to be left in the colony for 45 days.

Emmigration from heavily infested colonies has caused damage to many other colonies. This movement seems to be greatest in the early fall. It is important to keep monitoring your colonies during this period (August-early September). If mites are increasing rapidly then a treatment is strongly recommended. You can monitor populations of mites by using a white paper sprayed with PAM[®] or other "non-sticking" pan coating. The mites drop to the bottom of the hive and get caught in the oily material. If you find 200+ mites in 24 hours then it is best to treat your bees. Another sampling tool is the either roll method. About a cup (300) bees are put into a quart jar and sprayed with either (diesel starting aerosol). The bees rolled around in the jar and most of the

mites are found stuck to the wall of the jar. If you have more than 7-10/ 100 bees then you should treat.

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