



ENTFACT-012

MANAGING TRACHEAL MITES IN HONEY BEES

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The tracheal mite, *Acarapis woodi*, is a serious and growing problem for Kentucky beekeepers. The microscopic-internal mite clogs the breathing tubes of adult bees, blocking oxygen flow and eventually killing them. Also called acarine disease, it affects the flight efficiency and causes a large number of crawling bees outside the hive that are unable to fly. The inability to fly can contribute to losses of field bees and reduction of food stores in the colony. Another symptom is the abnormal "disjointed" position of the wings of walking bees.

High levels of colony infestations can cause significant economic damage as indicated by decreased honey and brood production, increased winter mortality and reduced spring build up of colonies. Also, the life-span of infected bees is shortened. During the summer and fall, mite infested hives may appear strong and have many bees. However, they collapse in the late winter or early spring because of the shortened the life-span of infested bees and too few young bees ready to replace them at this time. During the winter, a heavily infested colony may contain only a handful of bees and a queen, even though there is lots of honey. Acarine disease could persist in the colony for years causing little damage, but combined with other diseases or unfavorable conditions, the disease increases the mortality of colonies.

DIAGNOSIS

Tracheal mites are common throughout Kentucky. If the symptoms described above are observed and no other diseases or problems (such as starvation, loss of the queen, or losses due to pesticides) are

present, then tracheal mites should be suspected. Samples of bees suspected of mite infection can be submitted for diagnosis to: Dr. Thomas Webster, Cooperative Extension Program Facility, Kentucky State University, Box 196, Frankfort, KY 40601 (502/227-6351). To collect the sample, first fill a small jar with an inch of isopropyl alcohol, then select bees with "disjointed" wings or those from honey frames.

CONTROL

Menthol pellets can provide some control of tracheal mites. A perforated packet containing 2 oz. of menthol pellets is placed in each hive in the apiary where tracheal mites are found. The packet should be placed on the bottom board during warm weather (>80°F) or on the top bars when maximum daily temperatures are cooler than 60°F outdoors. As temperatures rise and air exposure increases, the menthol vaporizes and its fumes fill the colony. As the bees breath the vapors, the mites are killed. During cool or cold winter weather mite control with menthol is not as effective. It should not be used in a colony during the nectar flow because honey supers are being filled.

MANAGEMENT

Unfortunately controlling tracheal mites with chemical treatments is not nearly effective and as cost efficient as desired; however, when incorporated into an overall management scheme it does offer an effective option when infestations have gotten out of hand. One's objective should be to approach the control of tracheal mite in somewhat of a pest management strategy. Incorporate good management practices with chemical

treatments as a preventive program. Lines of bees with resistance to the tracheal mite are commercially available. Hives can be requeened with mite-resistant queens. Mite resistance means that the mites develop more slowly in these bees, but they are not immune. Even these resistant bees may succumb to tracheal mites if no other management practices are used.

Fall: Begin the first menthol treatment and follow label instructions. Two treatments, 21 days apart, are needed to get good results. Apply vegetable shortening patties to all colonies. Patties are made of 1 part vegetable shortening to 2 parts powdered sugar, and should be placed in the brood nest. If no nectar flow is occurring, colonies should be fed a light syrup (1 part sugar to 3 parts water) to stimulate heavy brood production. A large population of young bees will be needed for successful wintering.

Early Spring: Reapply menthol treatment on colonies and renew vegetable shortening patties as needed. Feed a light syrup to stimulate brood production. Do not combine weak colonies unless you know they are mite free. They will likely be heavily infested. **Mid-Spring to Late-Summer:** Requeen colonies, but remove the attendant workers from cages. These workers are more likely to be infested. If possible, move colonies to take advantage of local nectar flows when available. A continuous nectar flow tends to retard mite build-up, stimulate more brood (young bees) and at the same time gives the beekeeper more honey.

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