



Beekeeping Insect Note 3A

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Tracheal Mite Disease

Introduction

Bees infested with the tracheal mite (*Acarapis woodi*) were first identified in North Carolina in 1984. The introduction is believed to have arisen through infested bees brought in from Florida. Since then, the mite has spread throughout the state leaving few hives unaffected.

Economic Importance

In North Carolina, severe losses have been encountered causing entire apiaries to die. Infested colonies are most likely to succumb during the stressful overwintering period, regardless of honey stores. In addition to the economic losses incurred by beekeepers from reduced honey production and pollination fees, vegetable and fruit often rely on rented hives for crop pollination. A shortage of hives could adversely impact grower production or cause pollination rental fees to increase.

Mite Biology

This mite lays its eggs single in the trachea (breathing tubes) of the honey bee where the entire development process occurs. The developmental cycle is completed and adults emerge to seek another host bee (usually younger than 9 days old). Mites feed on the body fluids of the bee from the inside of the trachea and can be very numerous. Damage to flight muscle may result. The actual process by which mites cause the death of a bee is uncertain.

Detection

Because there are no reliable field indications, the presence of the mites in a colony may go

unnoticed for as many as five years until the mite population builds to a point where the colony becomes weak, unproductive and eventually dies. A severely infested colony may show crawling bees on a warm winter day or walking adults with unhooked "K" wings. However, the only way to positively identify tracheal mite infestations is by microscopic examination. Fifty living bees from a hive are placed in alcohol, sliced through the thorax, cleared in a solution and the breathing tubes examined for the presence of mites. Mite levels are usually highest in the fall.

Tracheal mites are found across the state. If you notice any signs of tracheal mite disease and would like a free hive inspection, you may contact Logan Williams, [Chief Apiary Inspector, NCDA](#), Raleigh, NC, at (919) 733-3610.

Control

Tracheal mites have spread throughout the country aided by the movement of man. It may be helpful to avoid mixing populations of heavily infested bees with noninfested or lightly infested colonies.

There is presently only one chemical registered for use in a bee colony against the tracheal mite, and that is menthol crystals. Each colony should be treated with 50 grams (1.8 oz) of crystals in screened packets on the top bars above the brood nest. The best time for application is in the late summer/early fall depending upon your climate. With temperatures below 60 degrees F and above 80 degrees F, the menthol can be ineffective or harmful to the colony. Do not allow it to contaminate honey intended for sale. Menthol is not recommended as a preventive treatment. Do not apply it unless needed.

Helpful cultural methods include keeping bees of a less susceptible stock. These bees may still carry mites, but are less affected by their presence. Breeding work is still being carried out and be wary of unsubstantiated claims. Maintaining young and productive queens seems to reduce colony losses. Adopt a conscientious requeening program of no less than every other year. Recent data from Georgia and Texas suggest that use of vegetable shortening/sugar patties reduces mite infestation. Additional study is needed to determine the effectiveness of this control measure.

Conclusion

It is often too late to take preventative steps once bees are crawling or dying. Check hives for infestation before problems arise. An infestation level of 0 percent may mean that the mites are merely BELOW detectable levels. Do not assume that bees are totally free of mites.

Mites require honey bees to survive. Any equipment that once held infested bees may be reused without treatment as long as it has been empty of all living or dead bees approximately 48 hours. If you suffer colony losses, be sure to protect your empty equipment from wax moth destruction with appropriate treatment.

Use of chemical product names is for the aid of the reader and does not constitute an endorsement of any product to the exclusion of another or one not mentioned.