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The honey bee tracheal mite, Acarapis woodi (Rennie)

(ACARINA:TARSONEMIDAE)[1]

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INTRODUCTION: In October 1984, the honey bee tracheal mite, Acarapis woodi (Rennie), was found in Florida. Although it was first described by Rennie in 1921, the mite was not found in the United States until 1984. Rennie described the mite from bees on the Isle of Wight and associated it with the "Isle of Wight" disease. Symptoms of this infestation were described as "bees crawling about unable to fly, and with wings disjointed; dwindling and mortality of colonies have been said to occur rapidly with colonies dying within a month". It was later shown that the tracheal mite was not the cause of the "Isle of Wight" disease (Bailey 1964), and later reports (Bailey 1968, Morse 1978) indicate that A. woodi is not as serious a pest of honey bees as previously thought. In combination with other adverse conditions, however, heavy mite infestations may cause a reduction in bee activity.

DISTRIBUTION: With the exception of Australia, New Zealand, Scandinavia, and Canada, A. woodi has been found wherever honey bees are found (Delfinado 1963). In the United States, it was first found in Weslaco, Texas in July 1984, in New Iberia, Louisiana in August 1984, and in Florida, North Dakota, South Dakota, New York, Nebraska in October 1984.

HOST: It is probably specific to the honey bees.

ECONOMIC IMPORTANCE: Although it has been shown that a mite infestation does not cause acute disease and devastating losses, the life of bees may be shortened, but only by a few days.

The mites puncture the tracheal wall of young bees and feed in the haemolymph but do not appear to transmit diseases during this process. Infested bees may behave normally until they die or as described in the introduction. Infested queens can live for many years (Fyg 1964). Morse (1978) estimated a 5 percent reduction in the population of a colony of infested bees. Honey production and pollen collecting are also reduced. Colonies that develop severe infestations ususally do so in late summer and die in late winter.

Some British bees and some North American strains show a certain amount of resistance to the mites (Bailey 1965). American bees are somewhat less resistant than the British bees.

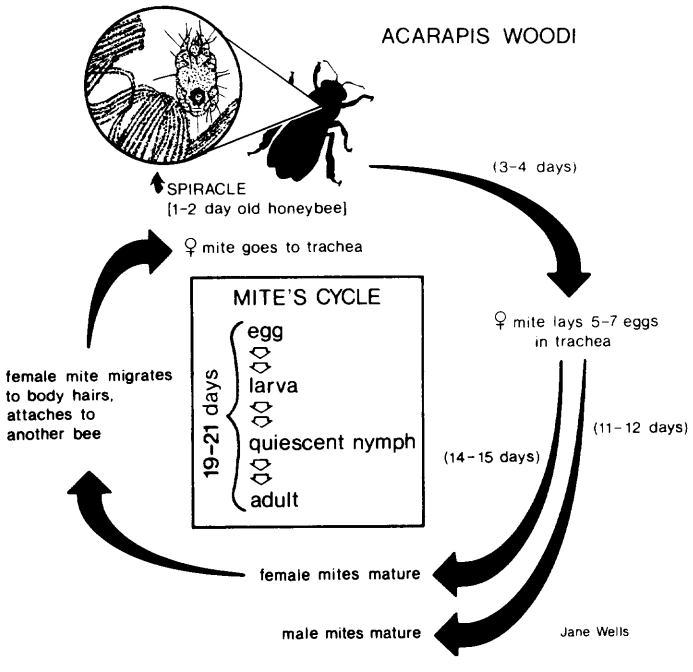

Fig. 1. Life cycle of trachael mite of honey bee.

DESCRIPTION: FEMALE: - Length 140-175 microns, width 75-84 microns (fig. 2). Idiosoma ovoid or nearly pyriform; dorsal shield and plates faintly sclerotized, with indistinct punctures. Propodosoma lacking pseudostigmatic sensilla; 2 pairs of long, attenuate setae, verticals V1 and scapulars Sce. V1 setae shorter than Sce, about 1/4 longer than distance between bases of setae Sce. Ventral apodemes I forming Y-shaped structure with anterior median apodeme, not joining transverse apodeme. Apodemes III weakly extending laterad to bases of trochanters III. Apodemes IV extending to bases of trochanters IV. Posterior median apodeme rudimentary, sometimes as faintly formed Y-shaped structure. Leg 1 robust with single hooked claw. Legs II and III each with paired claws. Leg IV stubby, widely spaced; femur-genu and tibiotarsus functioning as 1 segment; tibiotarsus IV 2 times as long as broad; femur-genu broader than long, with 3 setae unequal length; tibiotarsus abruptly narrowed, almost straight, about 2 times as long as broad. For a more complete description see Delfinado-Baker and Baker (1984).

MALE: - Length 125-136 microns, width 60-77 microns (fig. 3). Similar to female except for sexual differences. Apodemes III-IV not developed, barely discernible. Posterior median apodeme indistinct, sometimes forming weak Y-shaped structure. Apodemes V present as weakened transverse apodeme barely discernible. Leg I more robust than others. Leg

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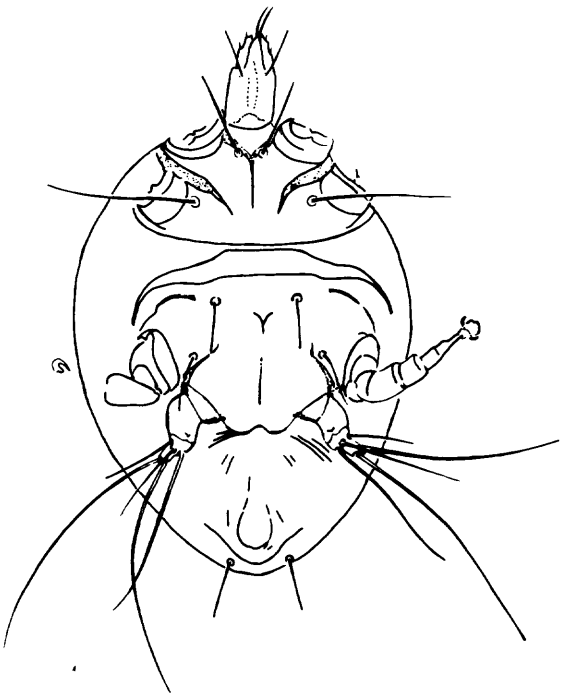

Fig. 2. Adult female (after Delfinado-Baker and Baker, 1984). (DPI Photo #703053)

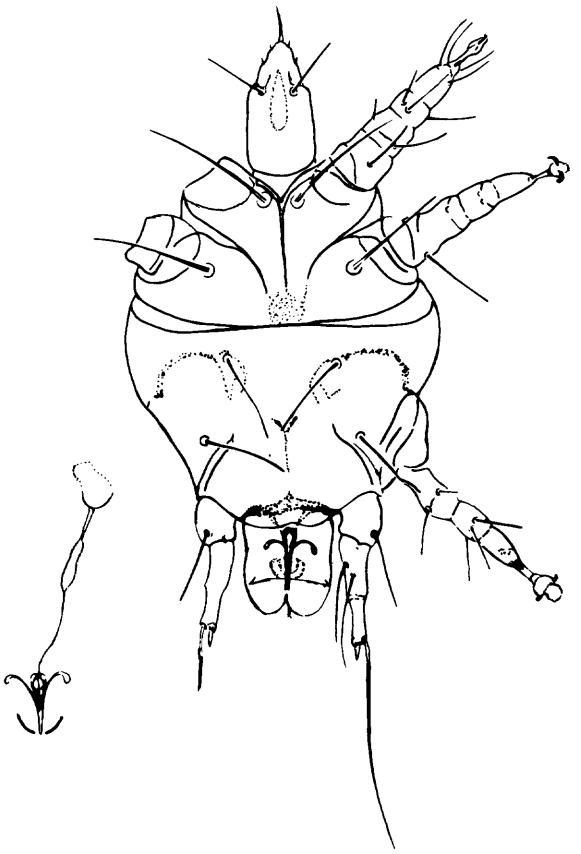

Fig. 3. Adult male (after Delfinado-Baker and Baker, 1984). (DPI Photo #703053)

IV short, about 3/4 as long as leg III, without claw; trochanter large, slightly longer than wide, with seta; femur-genu slightly more than 2 times as long as wide, without flanges, 3 setae of unequal length; tibiotarsus nearly straight, slightly shorter than femur-genu; apical with slender pointed solenidion and 1 very long seta. Males and nymphs are difficult to separate from other known species.

SURVEY & DETECTION: A close examination of the trachea is required to determine mite infestation. Occasionally adult mites are found on the external surface of the bee. Gravid female mite crawls to the tip of a hair and attaches to a young bee.

CONTROLS: Acaricides that have been tested in Europe and Mexico are Acarol, Menthol, and Folbex Forte. Currently, no decision has been made to use these controls in the United States. For further information see Guzman-Novoa and Zozaya-Rubio (1984).

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