*Apidologie* (1997) 28, 149–150



**Scientific note**

# A scientific note on the current low levels of honey bee tracheal mite in southern Spain

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(Received 25 October 1996; accepted 6 May 1997)

***Acarapis woodi* / mite prevalence / acaricide treatment / Spain**

The honeybee tracheal mite, *Acarapis woodi* (Rennie), is a serious pest in honeybees. Detrimental effects associated with the mite include reduced life-span of infested individuals, reduced brood area and increased mortality of colonies (Bailey and Ball, 1991; Otis and Scott-Dupree, 1992). In Spain, *A woodi* was first reported in 1949 and was blamed for the high death-rate among colonies in the Levante region (Blanco-Loizelier, 1949; Ramirez-Gómez, 1949). It has been found in practically the whole of the Iberian Peninsula (Cordero del Campillo et al, 1994). There are few recent studies of this parasitic mite in Spain, as the general opinion is that the disease has declined considerably over the past few years.

The object of this study is to investigate the current incidence of the mite *A woodi* in apiaries in southern Spain which have been subject to 11 years of extensive treatments to combat *Varroa jacobsoni* Oudemans.

Samples were collected in 12 experimental apiaries situated in the south of the Iberian Peninsula between October 1990 and October 1992. Thirty-five Layens-type hives were sampled during this period at different times of the year in order to evaluate the development of the infestation rate by *A woodi*. Two hundred and two samples (worker bees) were collected from the 35 hives of which only six had been treated with acaricides, and then conserved in 70% ethanol pending their analysis.

The geographical distribution of the sampled stations were Cáceres, Castellar de la Frontera (Cádiz), Dos Hermanas (Sevilla), Hornachuelos (Córdoba), Lepe (Huelva), Trassierra (Córdoba), Lanjarón (Granada), Vadillo-Cazorla (Jaén), Maro-Nerja (Málaga), Pinos del Valle (Granada), Berja-Laujar (Almeria) and Murcia.

Tracheal mite prevalence was determined by means of a thoracic disk dissection (Shimanuki and Knox, 1991) of each bee (5050 bees). The thoracic disks were placed in 10% potassium hydroxide (KOH) in small vials and incubated at 35 °C for 2 days. The

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mite prevalence level was defined by the number of bees infested out of a sample of 25. Bees were taken from the brood nest, from mixed brood nests and honey storage areas, and some from the hive entrance.

*A woodi* were found in only four of the 35 hives examined (11.4%). In the 202 samples, only five were infested by tracheal mites (2.5%). Of the 5 050 bees examined, only 15 had tracheae containing *A woodi* (0.29%). The infested samples came from two apiaries situated in eastern Andalusia, a cold and mountainous area: three samples from Vadillo-Cazorla (Jaén) in October and December, and two samples in Berja-Laujar (Almería) in February and May. The average mite prevalence in these five samples was 14 ± 7.2%. This contrasts with a previous study made after appearance of *V jacobsoni* in Spain where an incidence of 18.4% was reported for *A woodi* (Pajuelo and Fernández Arroyo, 1979).

Eleven years of virtually uncontrolled treatments with various acaricides against *Varroa*, for the most part in excessive quantities (Orantes Bermejo et al, 1994), could be the possible cause of the reduction in the area of distribution of *A woodi* or of a decrease in its population to barely detectable levels. Furthermore, our research found *A woodi* in two colonies where no anti-mite treatment had been carried out, and in two where it had. In another study under the same circumstances similar results were obtained: Mossadegh and Bahreini (1994) found an incidence of 0.21% of 33 325 bees examined in Iran.

Other factors which could affect this situation are the appearance of bees resistant to *A woodi*, or the appearance of strains of *A woodi* that are less harmful to bees. Liakos et al (1995) reported that the decrease in *A woodi* infestations in Crete is due to the replacement of the Cretian bee (*Apis mellifera adami* Ruttner) by *Apis mellifera macedonica* Ruttner, which is more resistant to *Acarapis woodi*.

Another factor which could be relevant is the existence of other diseases in bees. Liu (1991) found virus-like particles in bees from Scotland and not in those from California, and suggested that the increased resistance of European bees to the parasite may be due to a control of the mite population by the virus.

**Eine wissenschaftliche Notiz über das geringe gegenwärtige Befallsniveau der Honigbienen mit Tracheenmilben in Südspanien**

**Note scientifique sur le faible niveau actuel de parasitisme de l'abeille domestique par l'acarien des trachées en Espagne méridionale**

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