 Distribution of Varroa jacobsoni Female Mites in Honey Bee Worker Brood Cells of Normal and Manipulated Depth (Acarina: Varroidae)

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The ectoparasitic bee mite Varroa jacobsoni Oudemans 1904 was offered 2 different types of worker cells for invasion on brood combs of Apis mellifera Linnaeus 1758. Female mites entered altered cells (less deep than normal) more frequently than normal cells.

Key words: Varroa jacobsoni — brood cell invasion — protuding worker cells — Apis mellifera.

1 Introduction

In respect of the problems Varroa jacobsoni Oudemans 1904 is causing to bee-keeping, it is important to add to the knowledge of the biology of this parasite. Adult ♀ mites are able to feed on adult bees of Apis mellifera Linnaeus 1758, but reproduction only takes place inside capped worker and drone brood cells [Ritter 1981, De Jong et al. 1982]. Prior to reproduction ♀ mites leave the adult bees and invade brood cells which are shortly before capping. The mites enter the larval food and stay there until the bee larva frees them by eating the food. At this time the cell has been capped [De Jong et al. 1982]. Significantly more mites are found in drone cells than in worker cells [Koeniger 1982, Rosenkranz & Engels 1985]. There seems to be chemical attraction which is stronger in drone larvae than in worker larvae [Rosenkranz et al. 1984].

In queenless colonies more mites were found on drone pupae in drone cells than on drone pupae in worker cells [Issa et al. 1984]. De Jong & Morse [1988] report that more mites were found in raised worker cells than in regular ones. These 2 observations indicate that features of the cell are also important in respect of the distribution of Varroa mites within brood combs. In our experiments we tried to establish this by offering types of cells on the same brood comb to Varroa infected colonies.

2 Materials and Methods

In a worker comb, drops of melted beeswax were put in a regular pattern into certain cells: in every fourth horizontal row of cells, every fourth cell was made 3–4 mm less deep than the neighbouring normal cells (Fig 1, 2). This comb was placed into the brood nest of a Varroa-infected colony. When most of the brood was capped, the content of treated and untreated cells of the different rows was examined. The number of adult Varroa-♀ that had entered the different cells was scored. This was done separately for 5 age classes of the bee brood, according to Ifantidis [1983].