

Varroa Mite Notes

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Sadly, the damage caused by Varroa mites [*Varroa jacobsoni*] is well known to many beekeepers. The history of the spread of this parasite and how this mite reproduces have been researched and this information offers some help in dealing with the pest.

The Spread of Varroa jacobsoni

There is not complete agreement on how the varroa mite spread from place to place, but it is clear that the mite was found exclusively in Java, Indonesia at the beginning of the last century (Oudemans 1904). It is reported that Javanese bees were resistant to the varroa mite. Throughout the fifties and early sixties varroa mites spread to most of the other countries in that region, but a critical event appears to be a large movement of native Javanese bees to Japan in 1965. The relocation of the parasite to Japan is important because Japanese colonies were moved to Paraguay in 1971 and it seems that this movement was responsible for the eventual infestation of most colonies in South and North America.

A single varroa mite was found in Maryland in 1979, but a larger scale invasion was confirmed when large numbers of mites were found in Wisconsin and Florida in 1987. Now, with the exception of some isolated Canadian locations, it appears that varroa mites are everywhere in the world.

Varroa Mite

Adult female mites are brown to dark brown or dark red, shaped like a crab, measuring 1 to 1.8 millimeters long and 1.5 to 2 millimeters wide. Their curved bodies fit into abdominal folds of the adult bee and are held there by the shape and arrangement of ventral setae. This protects them from the bee's normal cleaning habits. Adult males are yellowish with lightly tanned legs and spherical body shape measuring 0.75 to 1 millimeter long and 0.7 to 0.9 millimeters wide. Mature adults have eight legs (four on each side). If the mite is not mature it is smaller, lighter in colour and may be seen to have only six legs (three on each side). Other pollinators can spread Varroa mites, but they can only reproduce in the brood cells of honeybees.

Varroa Reproduction – Worker Cells

Each mated female varroa mite will enter the worker cells during days 7, 8 or 9, she will lay her first egg sixty hours after the capping of the cell. The first egg can be male or female. The second egg is laid 30 hours after the first and it is normally male. The mite will lay up to five eggs, each of the last three eggs will normally be female and they will also be laid at 30-hour intervals. The male eggs will hatch after 5.5 days and the female eggs will hatch after 7.5 days. If time permits the mites will mature and mate in the capped cells, virgin females will be lighter in colour, the normal red / brown colour develops once the female is ready to lay eggs. The workers normally emerge after 21 days and this means that

only one of the female varroa will have an opportunity to mate in the cells. In the case of the bees in Java some of their resistance can be traced to the accelerated emergence of the bees. The Javanese strains emerged after 19 days giving the varroa mites no time to mate.

Caspian Solution offers this same type of emergence advantage to any type of bees. When a colony is treated with Caspian Solution the workers will emerge after 18.5 days, therefore, the varroa mite's opportunity to mate and increase their population is reduced. This is not a treatment only a method to prevent rapid population increase. Mites must be treated with medication.

Varroa Reproduction – Drone Cells

The mated female varroa enters the drone cells in the 8 to 10 day period; this later entry is due the slower maturing process of the drone larvae. The mites prefer the drone cells to the worker cells because of the stronger pheromone signal from the male larvae. The varroa mite egg laying and timing in the drone cells and worker cells are the same, but because the drone larvae take longer to mature and emerge (24 days compared to 21 days for worker cells) two generations of the new varroa can mate in the cells. Caspian Solution can reduce the average emergence time from 24 days to 22 days and this restricts but does not eliminate the mating of the second generation of mites. Once again to eliminate mites medication must be used.