



# Varroa destructor

**Varroa destructor is extremely destructive and a major factor in Colony Collapse Disorder. Although they originally adapted to exploit Asian honey bee (*Apis cerana*), Varroa has more recently adapted to using the European honey bee (*Apis mellifera*) as its host. It feeds on the haemolymph (blood) of bee larvae and adult bees. These external parasites also spread viruses, wreaking further havoc in the hive.**

## Symptoms

As well as a decline in the population of the colony, Varroa destructor will result in deformed pupae and adult bees. Varroa destructor is most attracted to drone brood and if present, you should be able to see them against the white background of the pupae.

Infestation will also lead to deformities in the pupae as well as adult bees. In adults, look for stunting and damaged wings, abdomens and legs.

Colonies with Parasitic Mite Syndrome will rapidly dwindle and die. A sure sign your colony has been struck lies in the condition of the larvae. Hygienic bees will chew down affected larvae and they will

appear sunken to the wall of the cell. Larvae may be an unusual colour if decomposition has set in.

## Physical description

Adult females are a rusty red-brown and measure 1-1.8 mm (around 1/16 inch) in length and are slightly wider. They are round and shaped to fit snugly into the honey bee's abdominal folds. Although tiny, they can be seen with the naked eye, especially when against a light-coloured background, such as drone brood.

## Where they live

Originating in Asia, Varroa has spread to all the continents, except Australia.



Mother varroa mite Varroa destructor with offspring. PHOTO: CSIRO



## Life cycle

Varroa mite life cycle has two phases. The first phase is known as the phoretic phase. During this phase, mites will ride on adult workers and drones feeding on their bodily fluid. If there is brood for the mites to parasitise, this phase lasts 5-11 days. Otherwise, it can last as long as 6 months, during which the mites will spread disease as they hop from host to host. The mites then move onto brood as they enter their second, reproductive phase. After entering the cell, they move underneath the larva to feed on prepupa. The female lays her first egg 60 hours after the cell is capped, then one every 30 hours. Up to a half dozen will reach maturity within a week, feeding on the bee, impeding its development, and exposing it to disease. They mate, then adult females will leave the cell with the damaged bee, transferring to other bees, and the cycle begins again.



## Control Methods

### DRONE COMB

This method is highly recommended for those wanting to avoid using chemicals. Comb with a wider cell foundation can be installed in the brood box. The mites are attracted most to drone brood, so by creating a space specifically for drone, you can to a large extent isolate the problem. Once the cells are capped, the frame can be removed and placed in a freezer, destroying the mites and their hosts. You then

uncap the cells and place the comb (including the remains of the pupae and mites) back in the hive. The bees will clean it up and start again, creating more drone brood.

### SUGAR DUSTING

While there is little hard scientific evidence to support this method, there has been plenty of anecdotal success in controlling varroa by dusting bees with powdered sugar. It's certainly the safest and most humane method. By sprinkling one cup of powdered sugar per box through a flour sifter, there's enough dust on the bees to ensure the mites' feet can't cling on. There are many advantages to this method. It's fast, cheap, organic, results in high levels of mite drop, has no side effects and does not harm the bees or larvae at all. On the downside, if forage is scarce, this method could lead to robbing and ant invasions.

### INTEGRATED PEST MANAGEMENT

Australia RIRDC has been recommending screened bottom boards as an effective solution for varroa control. They say screened bottom boards alone will not control varroa but they can be of significant benefit in managing the pest. <http://www.rirdc.gov.au/news/2014/12/09/screened-bottom-boards-provide-varroa-management-option>

### CHEMICALS

There are a number of chemical treatments to wipe out varroa mite. Miticides can be highly effective in reducing and even eliminating an infestation. But these chemicals should be used only when you are certain of the problem, as mites will develop a resistance. They should also only be used when you don't have honey in your super, lest it become contaminated and unfit for human consumption.

### BREEDING

Some subspecies of the European honey bee, such as Russian bees, along with more aggressive species such as Africanised Bees have an overall resistance as a result of evolving alongside varroa. Natural selection and breeding programs have resulted in others adapting to use their legs to comb the mites out and the ability to detect and destroy mites in brood cells, even after they've been capped.

### SOURCES

[http://entnemdept.ufl.edu/creatures/misc/bees/varroa\\_mite.htm#life](http://entnemdept.ufl.edu/creatures/misc/bees/varroa_mite.htm#life)  
<http://beeinformed.org/2013/10/parasitic-mite-syndrome-pms/>  
<http://www.extension.org/pages/65450/varroa-mite-reproductive-biology#VXkvUxOqpBc>  
<http://www.dummies.com/how-to/content/how-to-control-a-varroa-mite-problem-in-your-bee-h.html>  
<http://scientificbeekeeping.com/powdered-sugar-dusting-sweet-and-safe-but-does-it-really-work-part-1/>  
[https://www.countryrubes.com/images/Powdered\\_sugar\\_dusting\\_in\\_bee\\_colonies\\_as\\_varroa\\_control\\_updated\\_9\\_09\\_09l.pdf](https://www.countryrubes.com/images/Powdered_sugar_dusting_in_bee_colonies_as_varroa_control_updated_9_09_09l.pdf)

### BANNER PHOTOS ON PAGE 1

1. An adult female of Varroa destructor, a mite parasiting the domestic bee (honeybee - Apis mellifera). PHOTO: Gilles San Martin
2. The parasite mite Varroa destructor (adult female) on the body of its host : a bee nymph (honeybee - Apis mellifera). PHOTO: Gilles San Martin
3. Honey bee varroa mite on honey bee (Apis mellifera). PHOTO: Scott Bauer, USDA Agricultural Research Service, Bugwood.org