

Parasitic Mite Syndrome (PMS)

Also called Bee Parasitic Mite Syndrome (BPMS)

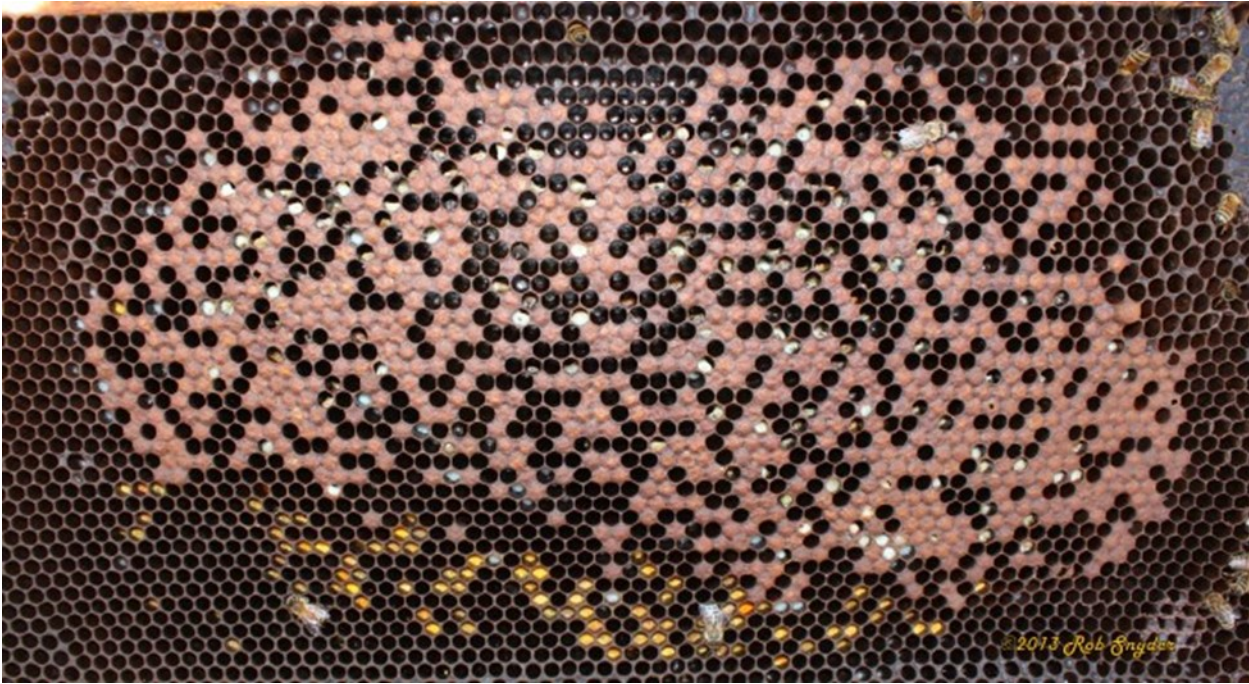
When there are a large number of Varroa mites in a colony, the brood will show a range of disease symptoms. When colony is near death, most of the brood will show symptoms.

Parasitic Mite Syndrome causes honey bee colonies to deteriorate, dwindle, and die.

No pathogen or cause has been detected yet, but Varroa mites are always present in the hive when PMS is found. PMS may be associated with mites and viruses or a combination of both.

Symptoms:

- Symptoms can occur any time of year, but especially common mid-summer to fall.
- Symptoms can be seen in brood and adults. Not all symptoms may be present.
- Varroa mites are always present.
- Large colonies are aggravated by high varroa mite levels and often show increased aggressiveness.
- There may be a lack of eggs and developing larvae (due to unfit conditions for raising brood).
- Supersedure queen cells are often present.
- Hygienic bees make holes or perforations in cappings to remove varroa mite infested cells and or larvae/pupa from cells.
- Spotty brood pattern.
- Cell cappings may appear sunken, dark and perforated (similar to AFB).
- Mites can often be seen crawling across sealed brood.
- Brood symptoms look similar to the early stages of EFB, AFB, and Sacbrood.
- Larvae does NOT rope out.
- Brood affected from the "C" stage larvae to prepupa stage (before and after capping).
- Prepupae are usually stretched out along bottom wall of cell, often with their head slightly raised.
- Larvae may be twisted and look deflated.
- Larvae and prepupae can be a dull white or yellow turning light brown to dark brown.
- White larvae are chewed or pecked down by worker bees.
- Larvae may spiral up the walls of the cell (like larvae with EFB).
- Larvae may curl around the entrance of the cell.
- Larvae may appear sunken to side of cell and may show symptoms of white with some debris at the posterior end.
- Pupa will be chewed down/removed or the pupa face may be partially chewed.
- Larvae may be colored due to age and decomposition of larvae or the presence of secondary bacteria. This may create an odor.
- Scale may be seen. They can be easily removed and are NOT brittle.
- Reduction of adult bee population (time-dependent).
- Crawling bees near hive entrance or bees with DWV (Deformed wing virus).
- Tracheal mites may or may not be present.



Note the spotty brood pattern. The mite infestation is so bad that the bees start to chew down pupa/larvae and stop brood production. You may also notice supersedure cells. Photo: Rob Snyder, Bee Informed Partnership



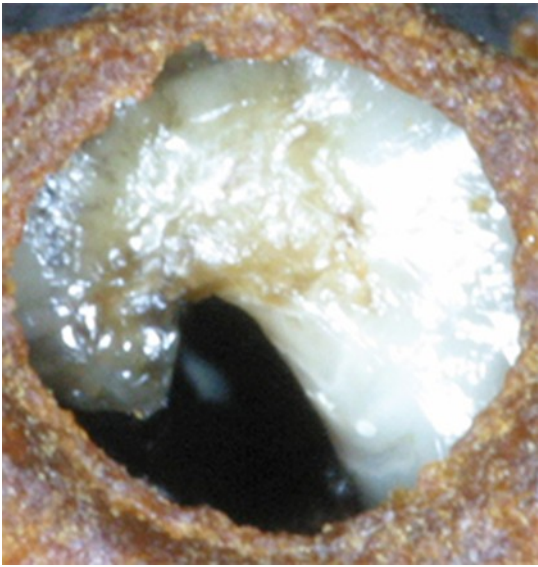
PMS affected prepupa stretched out along the lower cell wall. Photo credit: The Management Agency, National American Foulbrood Pest Management Plan, New Zealand



Here is an image of PMS. Photo: Rob Snyder, Bee Informed Partnership



A PMS larva spiraling up the wall of a cell. Photo credit: The Management Agency, National American Foulbrood Pest Management Plan, New Zealand



PMS larva curled around the opening of a cell. Photo credit: The Management Agency, National American Foulbrood Pest Management Plan, New Zealand



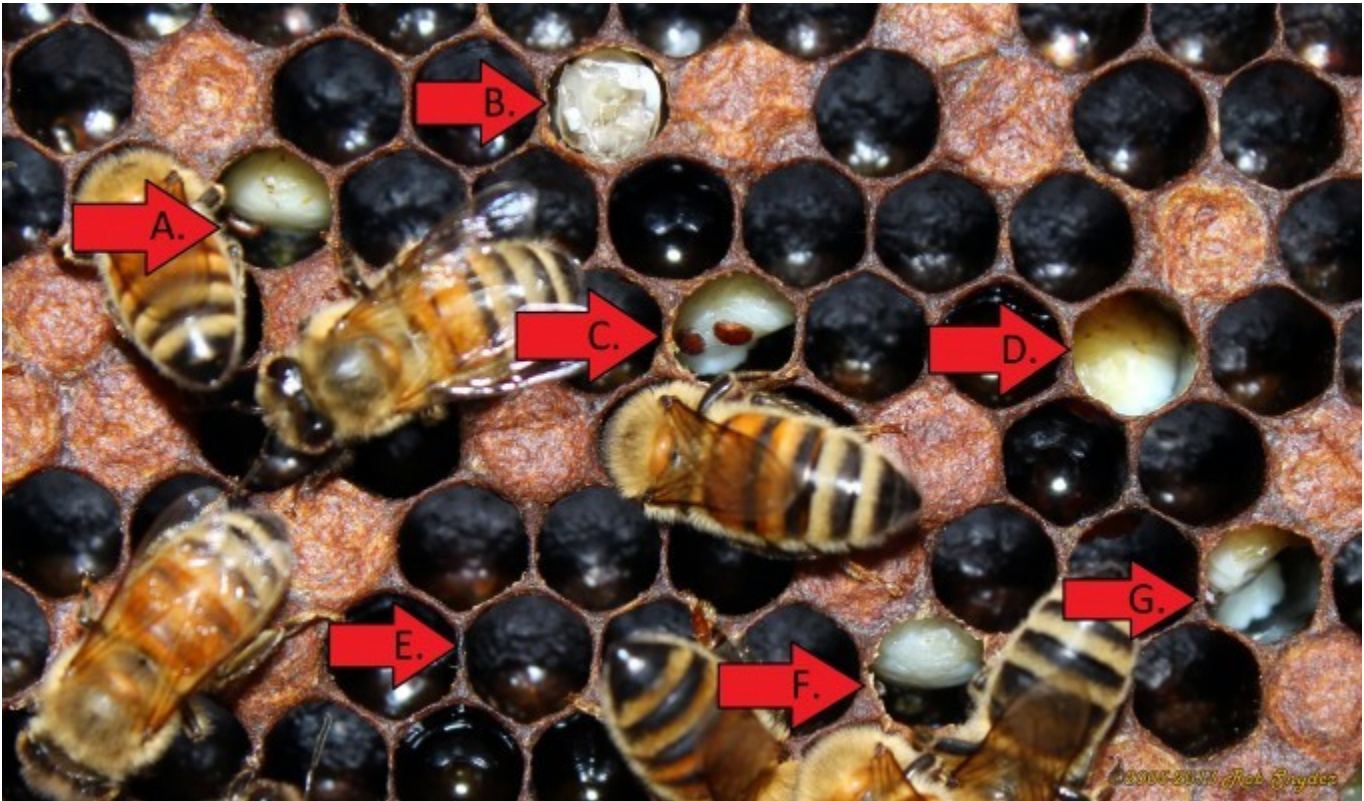
PMS affected larvae being completely removed from a cell. Photo credit: The Management Agency, National American Foulbrood Pest Management Plan, New Zealand



When you start to see pupa with their face chewed down (multiple cells), this is a sign that your mite levels are starting to climb. Photo: Rob Snyder, Bee Informed Partnership



You will often find Supersedure cells in colonies with high mite infestations. You will also see supersedure cells with other disease like EFB. Photo: Rob Snyder, Bee Informed Partnership



This photo shows BPMS or bee parasitic mite syndrome. A. Varroa mite on larvae, B. This pupa was uncapped and a mite was detected so the bees started to cannibalize the head and will eventually remove the pupa, C. There are 2 varroa mites on a larva, D. This is similar to B. The bees have chewed down a larvae or pupa because they detected a mite, E. Note the absence of eggs and larvae; the colony is unable to rear healthy brood, F. A varroa mite on a larva in a cell, G. Here you see another mite on a larvae in the cell. Photo: Rob Snyder, Bee Informed Partnership



Chewed down pupa, larvae and a varroa mite hiding in the bottom of a cell. Photo: Rob Snyder, Bee Informed Partnership



PMS and Deformed Wing Virus(DWV). Photo: Rob Snyder, Bee Informed Partnership



This is what PMS looks like once the population of the colony has dwindled. You will not see many mites present at this stage of PMS; there will also be very little open brood present in the colony. The population will be small and you may see multiple supercedure cells.

At this stage PMS looks very similar to European Foulbrood except the larvae are different ages and there is no uniformity when it comes to open brood symptoms. Photo: Rob Snyder, Bee Informed Partnership

Parasitic Mite Syndrome (PMS); 2013

<https://beeinformed.org/2013/10/15/parasitic-mite-syndrome-pms/>

Ohio State Beekeepers Association – Parasitic Mite Syndrome (PMS)

<http://www.ohiostatebeekeepers.org/resources/ohio-fact-sheets/parasitic-mite-syndrome-pms/>

The Management Agency, National American Foulbrood Pest Management Plan, New Zealand

<https://afb.org.nz/parasitic-mite-syndrome/>

A Quick Reference Guide to Honey Bee Parasites, Pests, Predators and Diseases by Penn State Extension; 2017

<https://extension.psu.edu/a-quick-reference-guide-to-honey-bee-parasites-pests-predators-and-diseases>