Biosecurity New Zealand
Ministry for Primary Industries
Manatū Ahu Matua

Chalkbrood Disease

What is Chalkbrood?

Chalkbrood is a disease of honey bees caused by the fungus *Ascosphaera apis*. It kills the developing brood in the late larval stage producing mummified and/or calcified larvae. Normally, the disease does not kill the infected colonies. However, infected colonies can be weak, have poor honey yields and are susceptible to other pests and diseases. The fungus produces highly infectious spores which can persist for many years in the environment.

What should beekeepers look for?

In infected colonies some larvae are covered by white fungus. This gives them a "chalky" and whiter appearance than that of healthy larvae. The brood may appear scattered with cell caps of dead larvae containing small holes and slightly flattened. Worker bees tend to uncap the cells of dead larvae, exposing mummified larvae. Sometimes they remove the mummies from the cells and deposit them on the floor or entrance of the hive. A rattling sound may be heard when a comb is shaken gently and the mummies are still in capped cells.

What can it be confused with?

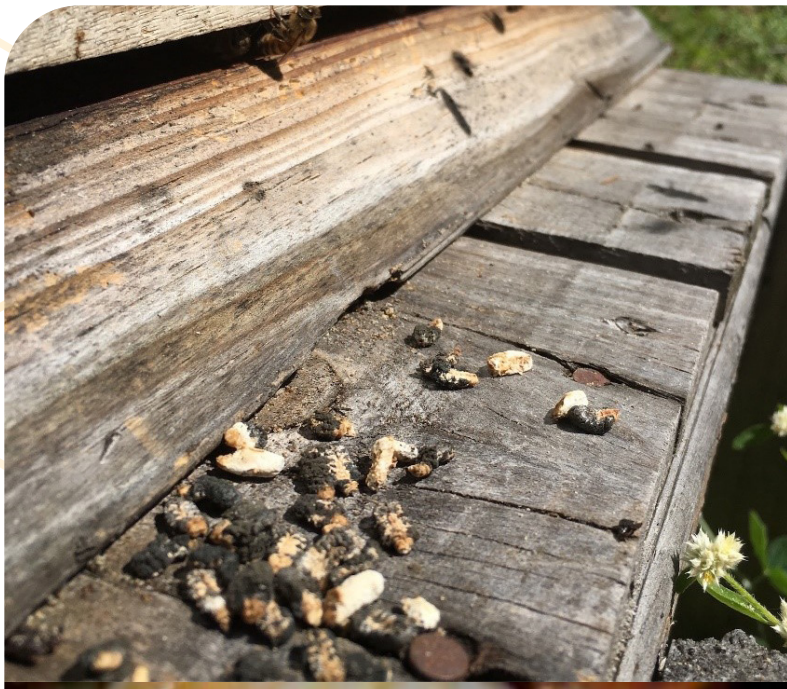
Chalkbrood could be confused with American foulbrood (AFB), European foulbrood (EFB) or sacbrood because the brood appears scattered with perforated cell caps. However, the distinguishing feature of chalkbrood is the presence of mummies in the cells, the hive entrance and bottom boards. Further, there is no ropey thread when the ropiness test is conducted.

How does it spread?

Chalkbrood is spread through the dispersal of its highly infectious fungal spores. Unhygienic beekeeping practices, and honey bee behaviours such as drifting and robbing, are the main ways through which the spores are dispersed. Infected foraging honey bees can also leave spores on plants and in water. Chalkbrood spores remain viable on equipment and in soil for as long as 15 or more years

Where is it now?

Chalkbrood occurs worldwide but is most serious in some warmer climates. The disease is present in New Zealand.



Photos courtesy of Rob Snyder, Bee Informed Partnership and Bens Bees, bensbees.co.au

How can beekeepers protect their hives from Chalkbrood?

Good beekeeping and biosecurity practices are important for preventing chalkbrood infection or minimising its impact. It is important to use clean equipment and avoid exchanging hive-ware between apiaries. Pollen, honey and wax may contain spores, therefore, the transfer of these products between apiaries should be avoided. Brood combs can act as reservoirs for the spores, hence, regular replacement with new ones is recommended. Keeping hives clean, well ventilated and dry helps to reduce the levels of infection. Well-fed colonies withstand chalkbrood infection better. Re-queening is helpful where persistent chalkbrood infections occur as some honey bee strains are more resistant to chalkbrood than others

Further Reading

BeeAware (2021). https://beeaware.org.au/archive-pest/chalkbrood/#ad-image-0

AFB NPMP (2021). https://afb.org.nz/chalkbrood/

FAO (2017). Chalkbrood and stonebrood. http://www.fao.org/3/ca4052en/ca4052en.pdf