

Chalk Brood

Cause

Chalk brood is caused by the fungus *Ascospaera apis*

The Disease

Spores of the fungus are present on the bees, comb and hive parts. They require climatic changes to be present in the hive before they can develop. A drop in temperature combined with high Carbon Dioxide (CO₂) levels allow the spores to germinate and it is likely that protein deficiency in the bees allows them to grow. After germination the vegetative growths (hyphae) of the fungus invade the larval tissues and kill them after they have been capped.

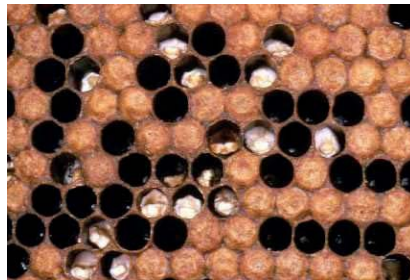
The fungus then produces fruiting bodies containing many spores to spread the infection. It is believed that there needs to be 2 strains present before reproduction can occur.

The dead larvae become chalky white and fluffy and swell to fit the cell. They then shrink and harden to become 'mummies'

Signs in the colony

Adult bees will tear down the cappings of the dead larvae to reveal the chalky white mummies. These lie along the length of the cell and often take on the hexagonal pattern. The bees remove the mummies from the hive and they can often be seen on the hive floor and outside the hive.

The mummies are usually found scattered throughout the brood nest and can reach high numbers.



Chalkbrood – Infected Brood



'Mummies' on hive floor

The disease often appears in a peak in the late spring/early summer as the colony expands and the brood outnumber the bees. This is because there are insufficient bees to maintain the temperature and control the ventilation (CO₂ build-up).

Care needs to be taken to differentiate chalk brood from mouldy pollen but this is usually concentrated around the periphery of the brood nest and tends to be a different colour.

Diagnosis

This is done by the typical appearance of the larvae

Spread

Chalk brood spores are sticky and will attach to the comb and bees as they remove the infected larvae.

They are also readily transmitted by robbing/drifting bees. The beekeeper can also spread the disease on hive tools and comb transfer.

The disease is considered to be endemic in Britain but levels of infection will vary from colony to colony. The beekeeper has to aim to keep the infection level down.

Control

There are no fungicides available for the larvae and spores on the bees and combs are unreachable.

Combs can be fumigated with acetic acid but heavily affected comb should be destroyed.

Viable spores will still be present on the bees and may be present in honey stores.

In severe cases re-queening from a disease free colony is recommended.

Because of the temperature/ventilation aspect of the disease it is more likely to occur in small colonies or nuclei. Ensuring that there are sufficient bees will reduce the risk.

Some strains of bee are more resistant and queens from these should be selected as part of an integrated breeding policy