

Sacbrood virus

What is sacbrood virus?

Sacbrood virus is caused by the *sacbrood virus (Iflavirus)* which affects worker bee larvae thought to be infected by consuming contaminated water, pollen or nectar. Infected larvae die shortly after capping and become a fluid filled sac. Infected brood are found scattered amongst healthy brood and the cappings may be discoloured, sunken or perforated. Sacbrood virus may remain viable in dead larvae, honey or pollen for up to four weeks.

What should beekeepers look for?

Beekeepers should look for symptoms of sacbrood virus such as an uneven brood pattern with discoloured, sunken or perforated cappings. Infected larvae change from a healthy pearly white, to yellowish, then grey-brown and finally dark brown-black. Darkening begins at the head of the dead larva and spreads to the rest of the body. The skin of the dead larva also changes into a tough plastic-like sac, which is filled with fluid. The larva dies with its head characteristically raised in a banana shape toward the top of the cell and stretched out on its back in the cell. Nurse bees usually uncapped the cell exposing the dead larvae.

What can it be confused with?

Brood symptoms of sacbrood can be confused with other brood diseases such as European foulbrood (EFB) and American foulbrood (AFB). Unlike AFB infected larvae, the dried remains of sacbrood infected larvae are easily removed from their cells. The diseased remains appear first as a plastic like sac with darkening at the head and later as a dried scale, both of which appear banana shaped. If the ropiness test is used where a matchstick stick is put into the larval remains and the remains are drawn out in a ropy thread of up to 2-5 cm long, it indicates that the hive is infected with either EFB or AFB.



Larva affected by sacbrood virus with its head raised in a banana shape and stretched out on its back in the cell, with healthy larvae around

Rob Snyder, www.beeinformed.org



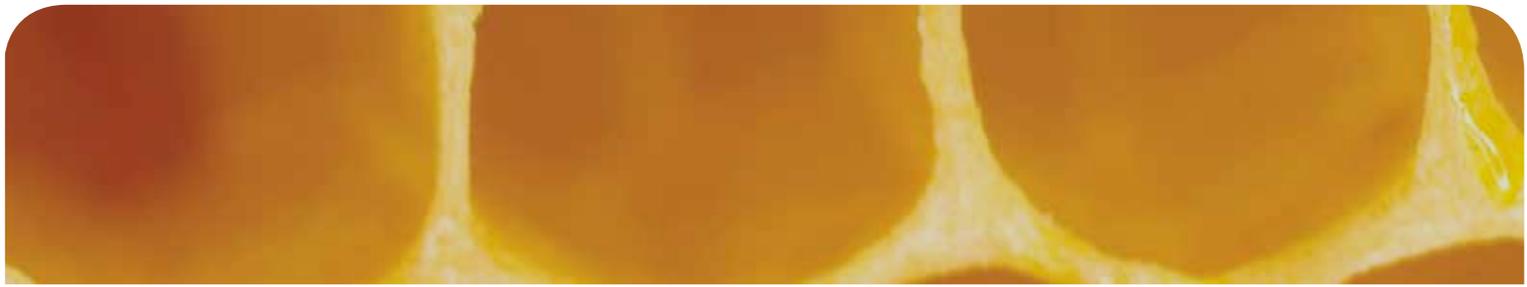
Infected larva in cell showing the change in colour and the mouthparts turning black and pointing upwards

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Old sacbrood virus infected larva turning brown

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How does it spread?

Nurse bees transmit sacbrood virus when they feed larvae with infected brood food. Sacbrood virus may remain viable in larval remains, honey or pollen for up to four weeks. Honey bees drifting between hives, contaminated water and equipment can also spread sacbrood virus.

Where is it now?

Sacbrood virus is present throughout Australia; however, it has not been reported or confirmed in the NT.

How can beekeepers protect their hives from sacbrood virus?

Honey bees are usually able to control sacbrood virus in most colonies through hygienic behaviour and the ability to detect and remove infected larvae. However, sacbrood virus can become severe when combined with other stresses, such as a shortage of nectar or pollen, unfavourable climatic conditions, a poor queen bee or infestation with other pests or diseases.

Beekeepers can protect their hives by removing infected brood combs and taking other management measures to restore colony strength, such as providing food and adding to the worker bee population.

Honey bee stocks can also differ in susceptibility to sacbrood virus, so beekeepers should replace the infected colony's queen bee with one supplied by a reputable breeder. This variation in susceptibility is due to differences in the hygienic ability of the honey bees to uncap and remove the infected brood. By selecting queen bees or obtaining honey bees from hives that show this trait, the effects of sacbrood virus can be reduced.



Infected larva in cell that has become dark brown-black

Rob Snyder, www.beeinformed.org



Body of a sacbrood virus affected larva that has become a fluid filled sac

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For more information about sacbrood virus, go to www.beeaware.org.au/sacbrood. The BeeAware website contains extensive information on sacbrood virus, including:

- Disease cycle
- Symptoms
- Similar pests
- Spread and distribution
- Management options
- Additional fact sheets

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