

TECHNICAL SUMMARY

American foulbrood testing: what options do you have?

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American foulbrood (AFB) is a bacterial infection that affects honey bees and has disastrous effects on a colony's health. The disease is caused by the bacterium *Paenibacillus larvae*, which produces spores that can survive for over 35 years in beehives and beekeeping equipment. The spores are able to survive in a wide range of disinfectant solutions and temperatures so the advised way to destroy the bacteria is to burn the affected equipment/honey.



Closeup of an AFB-infected cell.
Photo: Dwayne Hill.

If you want to know more about detecting AFB in your hives or controlling and eliminating an outbreak, please reach out to the AFB Management Agency. They are there to help!

How does AFB spread?

To preface, AFB does not affect the health of humans or adult bees, but humans and adult bees are the two main spreaders of AFB. The disease is spread when AFB spores are fed to

brood by the nurse bees, which allows it to germinate into its vegetative form inside the larval gut. In this form, the bacteria will **multiply** and consume the larva's tissue before turning back into spore form. This brood cell will now house up to 2.5 billion AFB spores that the house bees will then try to remove. The removal process only causes the disease to spread throughout the hive and onto neighbouring hives via contaminated worker bees.

The other common way AFB is spread is through the use of contaminated beekeeping equipment. Remember that even though you have never had AFB before, you are not immune no matter how secluded your hives are.

WHAT TESTING IS ON OFFER AND WHY WOULD YOU CHOOSE ONE OVER THE OTHER?

AFB testing of honey

Honey is the most common matrix-type test for AFB. This is because AFB testing is required by the Ministry for Primary Industries prior to export to China. Testing honey for AFB can also be used at extraction as a screening tool. Keep in mind that hives infected with low/moderate levels of AFB may still produce honey without AFB and can become a bigger problem in the future!

AFB testing of bees

AFB testing in bees is the easiest way to test feral colonies for AFB. Simply sample a handful of bees from different

sections of the colony, freeze them, and send them to Analytica for testing.

Freezing the bees is important as it is a humane way to kill the bees and it also prevents them from decomposing prior to arriving at the laboratory.

AFB testing via swabs

Testing swabs for AFB gives beekeepers a variety of ways to prevent the spread of AFB and detect AFB before it turns into an expensive problem.

The common way to use swab testing is by swabbing your hives and/or equipment and sending the swabs in to be composited and tested. This allows you a cost-effective way to screen your hives/equipment before and after they are put into use. If you get a positive result for one of your composites, you can ask for it to be broken down and have the swabs tested individually for a more detailed report. A similar philosophy is used by our clients in the housing industry when testing rental properties for controlled substances like methamphetamine.

In conclusion, there are many tools available to the industry to help prevent, control, and eliminate AFB in your hives. Analytica understands that even though testing is available to all, the cost does not always make it accessible to all. If you do find yourself stuck between a rock and a hard place in regards to AFB, reach out to the AFB Management Agency and ask for help!

