Animal health update: European foulbrood (May 26, 2023)

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Current situation

European foulbrood (EFB) has been found in Ontario honey bee colonies during 2023 spring inspections at a higher prevalence than seen in recent years. A significant number of bee yards have been found infected, resulting in an increase in prevalence of the disease, and the level of infection found in colonies is more severe. Samples have been confirmed EFB-positive by a laboratory. The Niagara Region has presented the highest prevalence of infection, but is not the only area where EFB has been found this spring. Eastern Ontario and the Hamilton Region have also had EFB findings during inspections. European foulbrood is a named disease under the *Bees Act* and beekeepers are obligated to report it to the Provincial Apiarist. Compliance actions have been initiated in yards where EFB has been found including, destruction of infected frames or colonies, and infected yards placed under an order to retain. Retain orders will be eligible for revocation when no EFB is found upon reinspection by the Apiary Program.

EFB was prevalent several decades ago in Ontario, followed by a period when EFB was relatively rare and seemingly addressed through antibiotics. However, within the last decade EFB has re-emerged and is much more virulent in many regions of North America.

European foulbrood is caused by a non-spore-forming bacterium, *Melissococcus plutonius*, and is a serious brood disease of honey bees. EFB is highly contagious and the disease will contaminate beekeeping equipment, bees and honey, and will weaken, and in severe cases, kill a honey bee colony. While EFB is most commonly found in early spring, it may appear at any time of the year in honey bee colonies.

Clinical signs

Signs and symptoms of European foulbrood will vary depending on the stage of the infection. Observations may include abnormal or discoloured larvae, watery, rubbery or dehydrated scale that adheres to the wax cell wall, sour smell, spotty brood pattern, sunken or perforated wax cappings and/or watery dead larvae.

Learn more about the signs and symptoms of EFB.

Biosecurity

Since EFB is highly contagious, it can spread to neighbouring apiaries if not well-managed and can survive in honey bee colonies and on used beekeeping equipment.

European foulbrood can be spread through 2 primary mechanisms: bee activity and beekeeper activity. Bee activity includes, drifting or robbing, while beekeeper activity includes, exchanging equipment between colonies, packages, purchasing infected honey bees or equipment, swarms or improperly stored equipment.

Learn more about prevalence and spread.

Refer to general best management and biosecurity practices for Ontario beekeepers.

Prevention

Beekeepers can take steps to mitigate an EFB infection from establishing itself in their beekeeping operation.

A number of management activities influence the health, production and population of honey bee colonies. Management practices can and will vary depending on the focus of the beekeeping operation (such as honey production, queen and nucleus production and pollination), but should incorporate basic biosecurity and essential practices for beekeepers in Ontario (best management practices or BMPs). Good biosecurity practices and basic colony BMPs have been found to be the most effective and practical means of mitigating EFB infections and include:

- familiarizing yourself with the symptoms of EFB and other pathogens of honey bees
- examining your colonies regularly to ensure that they are healthy and disease free, keeping an eye out for the symptoms of brood diseases
- conducting a thorough inspection of the brood nest for brood diseases at least twice a year, in the spring and fall, and before treatment with drugs (such as oxytetracycline for American foulbrood) which can mask some symptoms of EFB
- properly store used beekeeping equipment, promptly manage dead colonies in a bee yard, and have equipment inspected before a sale or transfer of ownership

Managing infection and treatment

Work with an apiary inspector on steps to address EFB where it is confirmed.

- Do not extract honey from an infected colony.
- For a **mild infection**, promptly **destroy infected frames** of bees. Replace destroyed frames in mildly infected colonies with new or used uninfected frames.
- For a **severe infection**, promptly **destroy the entire infected colony and associated equipment** (for example, bottom board and other woodenware that cannot be scorched).
- Retain all colonies at the EFB infected bee yard until a Ministry of Agriculture, Food and Rural Affairs (OMAFRA) apiary inspector determines no infected colonies are present.
- Provide sugar syrup (2 sugar:1 water) and pollen patties if colonies appear to be under nutritional stress.

- Monitor the health status of the yard that was infected with EFB on a more frequent basis and be vigilant for EFB in your other bee yards or in the surrounding area.

Consider treating symptomatic, mild infected colonies (after infected frames are removed and destroyed) and all non-symptomatic colonies remaining in the yard with an antibiotic (this will depend on the time of year and conditions). Antibiotics are not a guarantee that the infection will end. Beekeepers should be aware that EFB infections can still take place even when antibiotics have been used. Antibiotics are not a replacement for the destruction or removal of infected materials or proper biosecurity practices.

Beekeepers require a prescription from a veterinarian to access antibiotics for their honey bees. For general information on antimicrobial use in agriculture visit the Antimicrobial resistance in agriculture webpage. For more specific information on antibiotics for beekeeping in Ontario refer to the Ontario Beekeepers' Association's antibiotic access resources for beekeepers.

Consult the Ontario treatment recommendations for honey bee disease and mite control for recommended monitoring methods, treatment methods and timing of treatments for honey bee pests and disease.