



European foulbrood (EFB) is a bacterial disease of bee larvae. Nurse bees feed the bacteria to young, developing larva. As numbers of sick larvae increase the disease spreads to other larvae. Dead and dying larvae do not maintain the typical C-shaped, curled appearance within their open brood cell and frequently are seen twisted on the lower cell wall. They may be yellowish or have yellowish streaks of color or the tracheal tubes become prominent on the larval body. Larvae die before their cell is capped. Dying larvae are easily removed from the cell as a rubbery glob. It has a sour odor.

EFB disease, sometimes termed a “stress” disease of spring, may be nutritionally related. The disease appears if the adult nurse bee to larvae ratio is not adequate, as often occurs in cool, wet, drawn out spring conditions. Once foraging conditions improve outside and more fresh bee bread and nectar is available in the adult bee diet and for feeding the larva the disease goes away. When conditions permit rearing of greater numbers of nurse bees to replace older aged hive bees, the disease often disappears. However the bacteria remains in the brood cell walls and it may reappear in the fall (sometimes in conjunction with Bee PMS situation – another hive “stress”) or reappear the next spring.

There appears to be a genetic component to EFB and replacement of the queen (by bees or beekeeper) later in the bee season or a different more favorable subsequent spring keeps it from re-appearing. In severe cases, colony death can occur but it is rare – more frequently the colony is weakened and then unable to store enough resources to harvest by beekeeper or for their own use to survive the winter.

How to look for (field symptoms) of European Foulbrood

- A. Larva twisted in cell
- B. Larva with yellowish color or yellow color streaks, distinctly not healthy white
- C. Rubbery scale is easily removed from cell without damaging cell walls as glob
- D. Only larvae appear sickly – capped cell appearances are normal
- E. Dead larvae does not rope out, nor show false tongue
- F. Odor mildly sour, not distinctive AFB foul odor

How to confirm the field test if you suspect EFB

- 1 Use an EFB diagnosis kit (available from several beekeeping suppliers)
- 2 Send a comb sample to a diagnostic lab that includes several suspect cells
- 3 Have the colony examined by an individual trained in disease identification.

What to do if confirmation of EFB is positive:

Recommended:

1. Strengthen the colony by feeding sugar syrup and/or protein patties and shaking adults into the colony (from another colony) or transfer a frame of fully capped brood (not open brood) from a healthy colony to the diseased colony (this last option might further stress adult population).

ALTERNATIVE

2. Move the colony to an apiary site with better forage and less competition (if available).

TO DO LATER IN SEASON

3. Cull older darker brood frames once the colony is healthier (before subsequent season).
4. If EFB conditions persist or if the infestation is heavy, requeen with a different queen stock before the fall season.

NOT RECOMMENDED

5. Consider obtaining a VFD to use oxytetracycline antibiotic. This should only be used as a last resort.

References:

<https://bee-health.extension.org/european-foulbrood-a-bacterial-disease-affecting-honey-bee-brood/>

Inexpensive booklets

CAPA: **Bulletin Honey Bee Diseases & Pests** 3rd Edition 2013 (Amazon \$25.97; Mann Lake \$18.95)

BIP: **Diagnosis and Treatment of Common Bee Diseases** Rev 2019. (Mann Lake \$35.00)

Penn State: **A Field Guide to Honey Bees and their Maladies** (<https://extension.psu.edu/a-field-guide-to-honey-bees-and-their-maladies> \$12.00 + shipping); or directly from Dewey (author) \$15; or Amazon \$38.59; or Mann Lake \$19.95)

Websites

www.Honeybeehealthcoalition.org/varroa

The Bee MD www.thebeemd.com Bee app from Alberta

<https://play.google.com/store/apps/details?id=ca.ab.gov.beehealth&hl=en>

How to Submit Samples to Beltsville Lab

<https://www.ars.usda.gov/northeast-area/beltsville-md-barc/beltsville-agricultural-research-center/bee-research-laboratory/docs/how-to-submit-samples/>

Vita Bee Health Test kit website: <https://www.vita-europe.com/beehealth/products/afb-diagnostic-test-kit/> + <https://bee-health.extension.org/diagnostic-kits-for-american-and-european-foulbrood/>

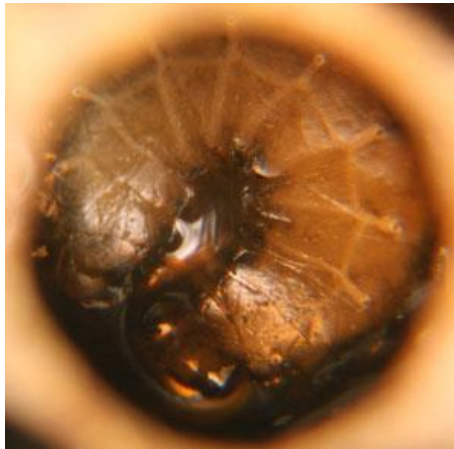
Veterinarian Feed Directive (to permit use of antibiotic for EFB):

https://honeybeehealthcoalition.org/wp-content/uploads/2019/06/HBHC_AFB-EFB-Final-061119.pdf

Twisted yellowish larva w/ EFB



Dying larva showing the prominent tracheal tube symptom



Spotty brood pattern showing dry larva (little food) and yellowing twisted larvae dying of EFB

