

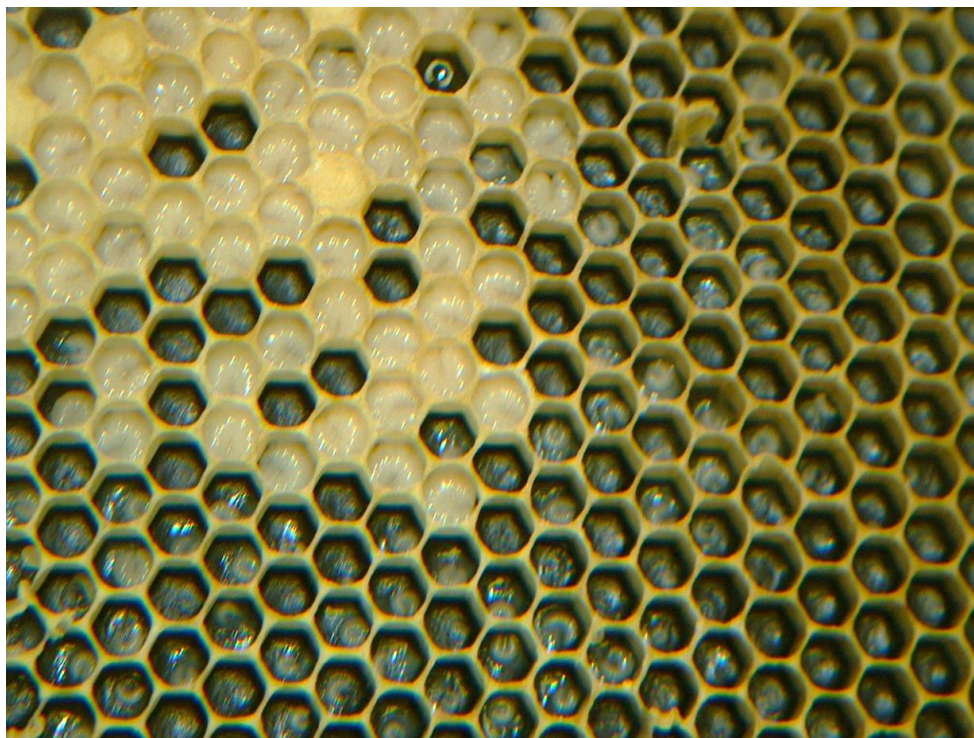
STAHLMAN BEEKEEPING

NOTES FOR 2023

Issue # 14 April 8 , 2023 Inspections – Brood Diseases

Knowing some biological facts about honey bee development will help the bee keeper spot something that is “Abnormal” when doing a hive inspection. First, healthy larva is always pearly white – not grey, yellowish, brown, or black. Last week we discussed AFB. Larva die after the cell is capped and dead larva have a unique appearance.

First, this is a normal look at healthy larvae.



A larvae is -- worm like -- growing in a cell from an egg that hatches. They will vary in size depending on age. The cells in the upper left of this photo are older than the larvae located near the bottom right. As they grow they form a “C” shape which can be seen above.

This is a good brood pattern – every cell holds larvae except the open cells in the bottom right. I might mention that black plastic foundation makes it much easier to see brood than light colored wax comb.

The next photo shows healthy capped brood. Remember your biology that the development of a worker honey bee takes 21 days. This is the early development of a honey bee. Day 4 to day 9.

IMPORTANT POINTS

Disease is caused by pathogens:

Virus: Usually no cure for a disease caused by a virus.

Bacteria: A disease caused by bacteria can usually be treated with an antibiotic. However, since 2017 the common treatments are available only by prescription.

Fungi: Several bee diseases fall into this category. Fungi are common in the environment and are found everywhere. Most are not dangerous or life threatening.

Honey bees like all living creatures do get sick. Long before the mite arrived in the United States, honey bees died of various diseases. CCD may have existed for a long time and went by other names: Disappearing Disease, Spring Dwindling, stock deterioration for just a few. In fact, CCD is used so much by the news media because everyone is looking for a word that would explain honey bee death.



This is capped brood.

The cappings are light brown. There may be a few open cells but this is about as good as it gets.

Compare this with the AFB comb from last week. No pin holes in the cappings and no attempt by the bees to

remove any of the caps. Young pupa under the caps are developing. Older pupa will have legs, facial features and in the last stage wings.

Brood Diseases

Viruses: Signs to look for....

1. Bees crawling on the ground at the hive entrance.
2. Bees that have lost body hair and appear shiny and greasy looking.
3. Bees that walk around in a stupor.
4. Bees born without fully developed wings.
5. Dead bees on the ground in front of the hive. [note: could be confused with a chemical kill by insecticides]



Acute bee paralysis of any kind – currently as many as 20 have been identified. There are many strains of these viruses and it takes an electron microscope to see and identify the strains.

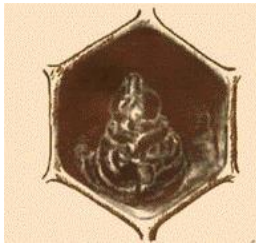
The best advice is to keep Varroa Mite populations down, keep a watchful eye for symptoms listed above, and isolate any hive showing the symptoms. There are no treatments available that I know of to treat for viruses!

This is a good link to more information concerning viruses.

[Honey Bee Viruses, the Deadly Varroa Mite Associates – Bee Health \(extension.org\)](https://www.extension.org/honey-bee-viruses-the-deadly-varroa-mite-associates)

This is a quote from the linked site: “One of the serious problems caused by Varroa is the transmission of viruses to honey bees which cause deadly diseases. Viruses found in honey bees have been known to scientists for 50 years and were generally considered harmless until the 1980’s when Varroa became a widespread problem. Since then, nearly twenty honey bee viruses have been discovered and the majority of them have an association with Varroa mites, which act as a physical and or biological vector (Kevan et al. 2006).”

G. F. White (1917) USA. BULLETIN No. 431 February 9, 1917 “Sacbrood A Virus”



SACBROOD was described as:

Color -- very deep brown

The surface is the wrinkling of the skin referred to as the sac. The larva is in the state of decay due to drying and does not melt and become unidentifiable as in the case of AFB.

Cells are either partly capped over or not capped. Unlike AFB, individual larvae can be removed from cells intact. (No roping)

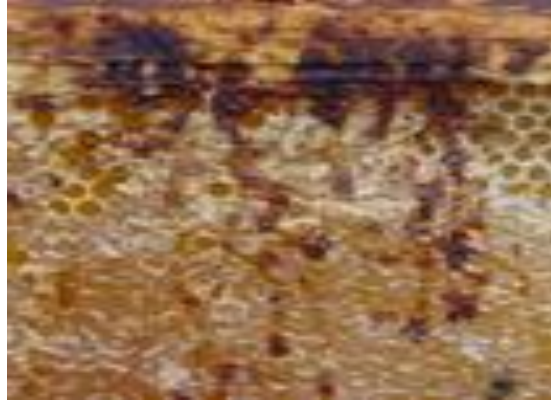


As can be seen in this photo, the pre-pupae fails to pupate. It dies and darkens prematurely from white to pale yellow, to light brown to dark brown.

Signs are usually seen in spring and late fall. In the many years I have kept bees, I have never observed this disease. It is not considered a serious threat but if seen, contact a state bee inspector. We are learning more and more about honeybees and viruses.

Fungal Diseases:

- **Nosema:** Nosema is considered a serious disease of honey bee colonies. Nosema is much harder to diagnose and there are two separate species of this disease. It is a disease of the bees gut.
- “Nosema disease in U.S. honey bees is caused by one of two (or both) fungi named *Nosema apis* and *Nosema ceranae*. *Nosema* species are obligate, fungus-like, intra-cellular parasites that are limited to specific hosts species. *Nosema apis* and *N. ceranae* cannot be reared in laboratory culture, as is possible with most bacteria and other fungi. They can multiply in living honey bee midgut, and perhaps other cells.”
- If one suspects Nosema disease, a sample of bees can be collected and sent to the U.S.D.A. lab in Beltsville, Md. Nosema unlike some fungal diseases can be treated with an antibiotic.



Signs for Nosema looks somewhat like tobacco juice spit on top bars and comb surface but this is bee poop. There will be similar stains on the front of the hive around the entrance.

Other causes such as poor food could look like this and the staining might not

be Nosema. A microscopic examination is required for positive identification!

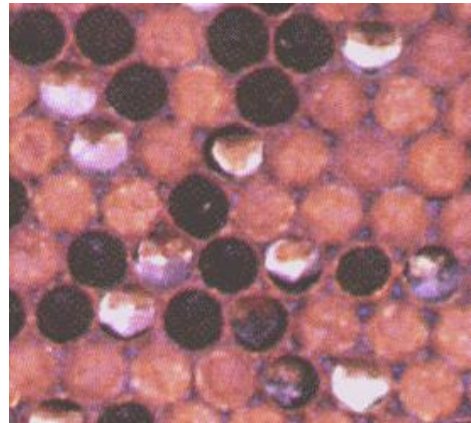
There is one control for Nosema – Fumagillin but I am not sure if it is available. The Mann Lake web site does list the product for sale but also includes this:

****Current stock expires June 2023****

Chalkbrood:

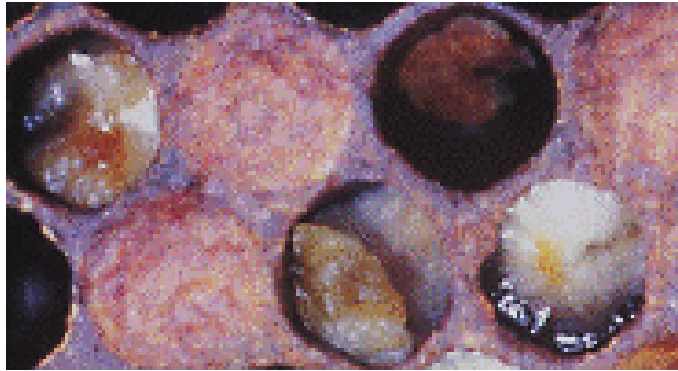


Larva turn into a chalk mummy.



Infected larva are overgrown with a white cotton-like mycelium which fills the brood cell. It is an easy disease to spot. Often the bees are able to clean cells and carry the mummies to the front entrance of a hive. If one is examining a frame of brood, these solid chalk mummies can clearly be identified because a toothpick can remove them easily.

There is no treatment available other than keep hives strong, and buy stock that shows some resistance and hygienic behavior to clean it up.



And finally, (EFB) European Foulbrood is a bacterial disease that affects honey bee larvae before cells are capped. Larvae die and turn curled upward and change color – cream, yellow, brown and usually rubber-like not chalk like. This is usually a disease compared to a human cold. Since the use of

antibiotics requires a prescription, many beekeepers find that it goes away if the hive is not heavily infected.

If you see any of these signs of disease, it is best to move the diseased hive some distance from other hives. One can clean equipment with household bleach. It is best to clean hive tools used to open other hives. Gloves should be washed as well.

In all cases, hives with a disease will need special attention. It is important to prevent the spread of a disease. A beekeeper should practice good sanitation such as shown below:



- Keep all the tools you use clean. You do not want to spread disease.