Chalkbrood

Chalkbrood is a fungus and was detected in the US about 1960.

1. There can be heavy losses in the hive.
2. Occurs during the cool and damp weather conditions.

Disease Symptoms

1. A fungus that affects all Honey Bees, Larvae, Pups, Drone and Queens.
2. Spores are always present but don't cause problems.
3. The development of their presence comes when the weather conditions change and there is stress within the hive.
4. Brood usually dies in capped cells.
5. If the capping's are penetrated with a small hole, it would indicate the Pupae has died.
6. If the cell is opened and the cadaver is covered with a cotton like fungus the assumption is Chalkbrood.
7. To confirm the fungus a microscope or DNA must be used.
8. The Chalkbrood starts out white. Overtime they will turn black. This indicates the reproduction structure has been completed.
9. The mummies can be found in the cells, bottom board and out front of the hive.
10. Spores can attach to various surfaces within the hive. The spores can last up to 15 years.
11. The spores are passed onto larvae by nurse bees.
12. Tools, clothing, and wooden wear must be decontaminated before using again.

Pathogenesis

1. The spore starts in the gut.
2. Once it breaks out it travels through the body.
3. The best temperature range is 88^{o} to 95^{o}F.
4. 86^{o}F is a critical temperature for the formation of Chalkbrood. 77^{o}F is where the fungus first appears and disappears at 95^{o}F.
5. It takes seventeen hours for the spore to grow in size to damage the Honey Bee.
6. Once the infection starts starvation of the Honey Bee is the results.
7. Once the fungus has covered the external part of the Honey Bee the Honey Bee hardens.
8. The Black Chalkbrood can produce 10^{8} to 10^{9} spores.

Disease Management

1. Have good management practices and sanitary conditions.
2. Old comb may have spores
3. Replace 1/3 of black comb every year.
4. Fungus grows well in hummed conditions.
5. Make sure the hives are well ventilated.
6. Old frame may contain agricultural pesticides in the beeswax and ells.
7. When checking old frame, a mixture of age, chemicals and various viruses contribute to the short life span of the Honey Bee.
8. Sterilization of wooden ware are:
    a. Fumigation
    b. Gamma radiation – not accepted because of cost limitations and availability of equipment.
    c. Antifungal can be found in honey and bee bread.
    d. Beneficial microbes found in bee bread can be reduced by the application of fungicides.

Defenses against Chalkbrood

1. Replacement of queen from good stock is one way to stop Chalkbrood.
2. Good hygienic Honey Bees remove the spores and reduces the need for treatment.