

Honey Bee Pests and Diseases

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Honey Bee Pests and Diseases

Pests

- Varroa Mite
- Tracheal Mite
- Wax Moth
- Small Hive Beetle

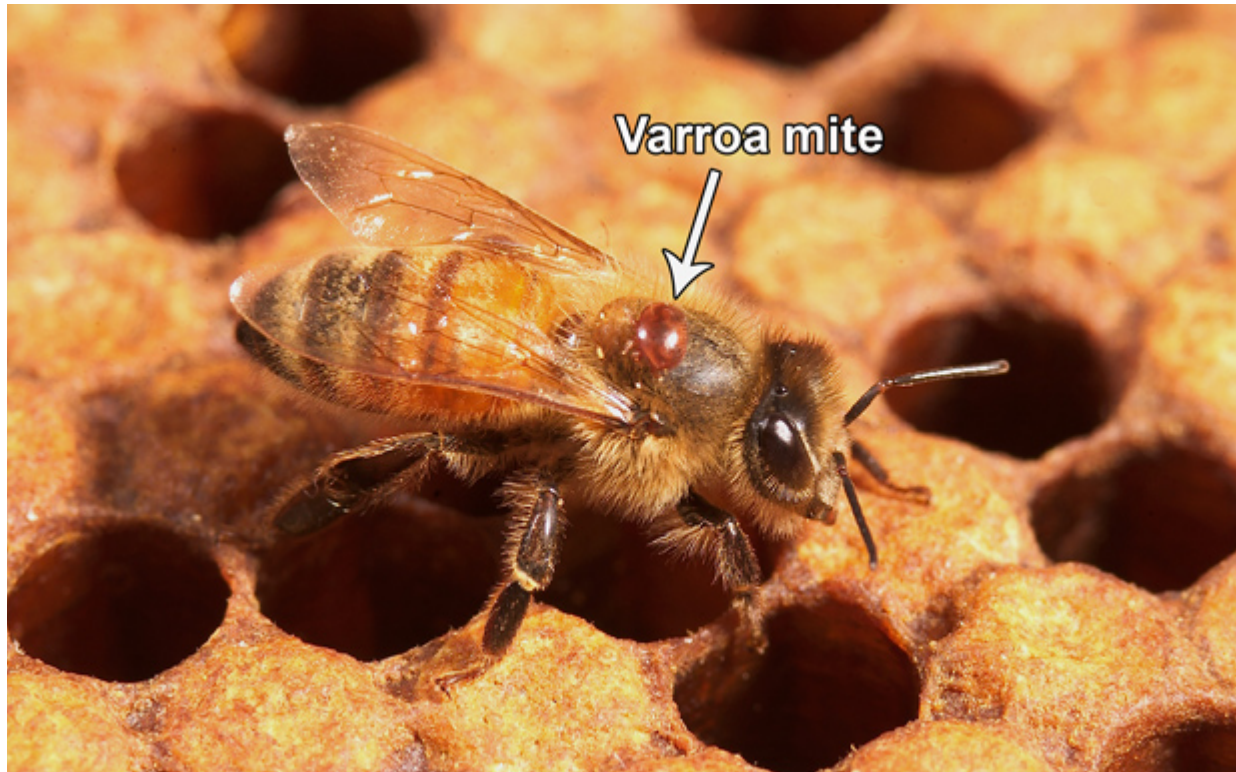
Diseases

- American Foul Brood
- European Foul Brood
- Nosema
- Chalk Brood
- Sac Brood
- Deformed Wing Virus (not covered)
- K-Wing Virus (not covered)
- Israeli Acute Paralysis Disease (not covered)

Varroa Mite



Varroa Mite on Adult Bees



Varroa Mite on Pupae



Varroa Life Cycle

Varroa Lifecycle

Egg laid by the queen



A bee larva is deposited in the open brood cell.

8 days after laying



A fertilized female Varroa mite enters the cell 15 hours before it is capped.

9 days after laying



The cell is sealed with a wax cap and the fertilized Varroa mite is enclosed within the cell, where it feeds on haemo

10 – 11 days after laying



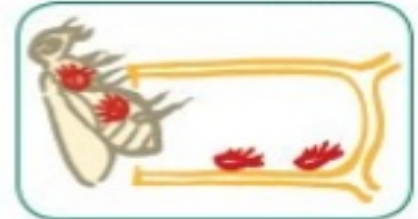
The female mite lays an egg every 30 hours. The first offspring is a male; the subsequent offspring are all female.

12 – 20 days after laying



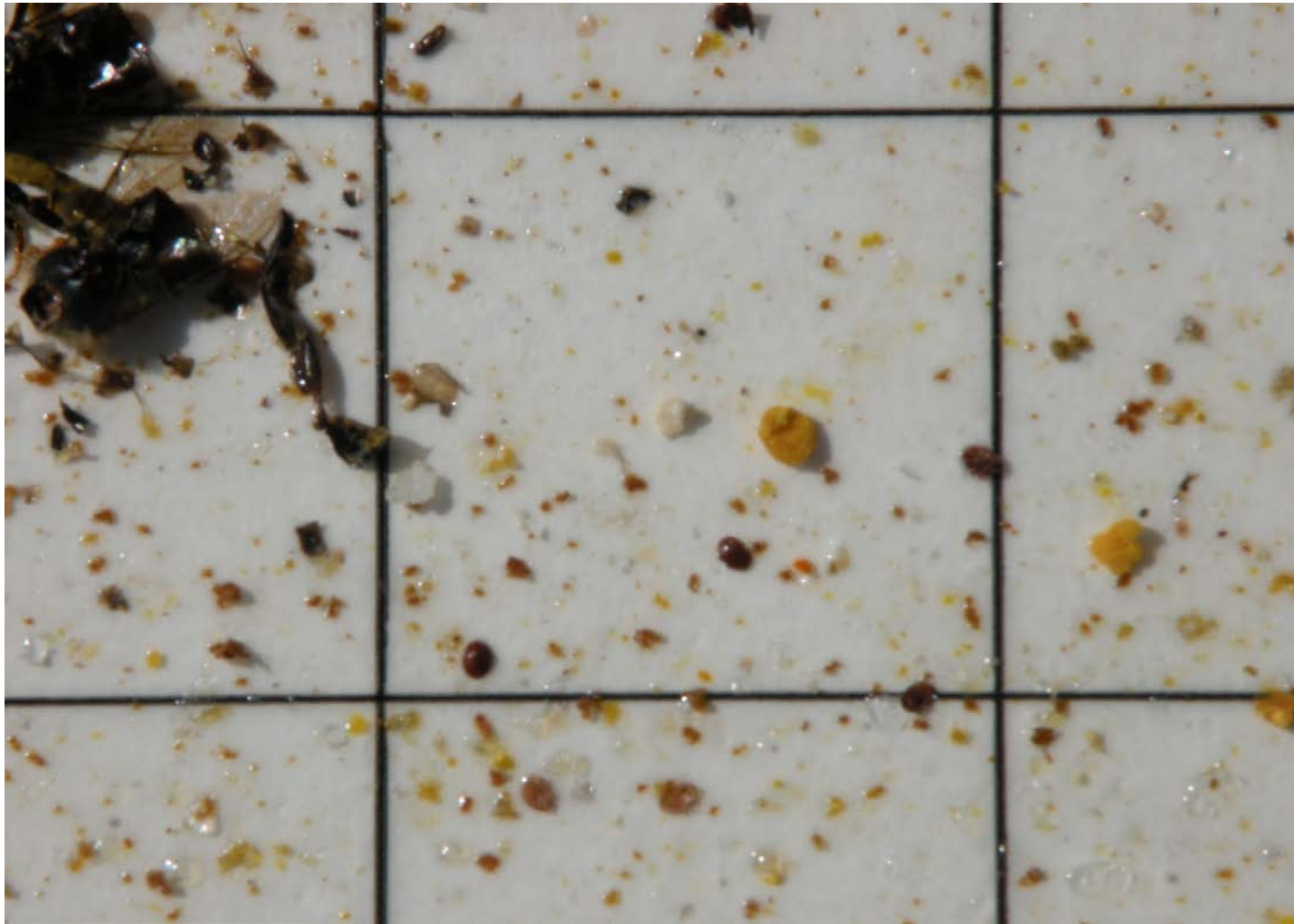
The female mite continues to lay eggs. As soon as the female offspring reach sexual maturity (in 5 to 6 days), they are fertilized by the one male mite in the cell.

21 days after laying



The young bee leaves the cell carrying two fertilized female mites. Immature mites and the male remain within the cell.

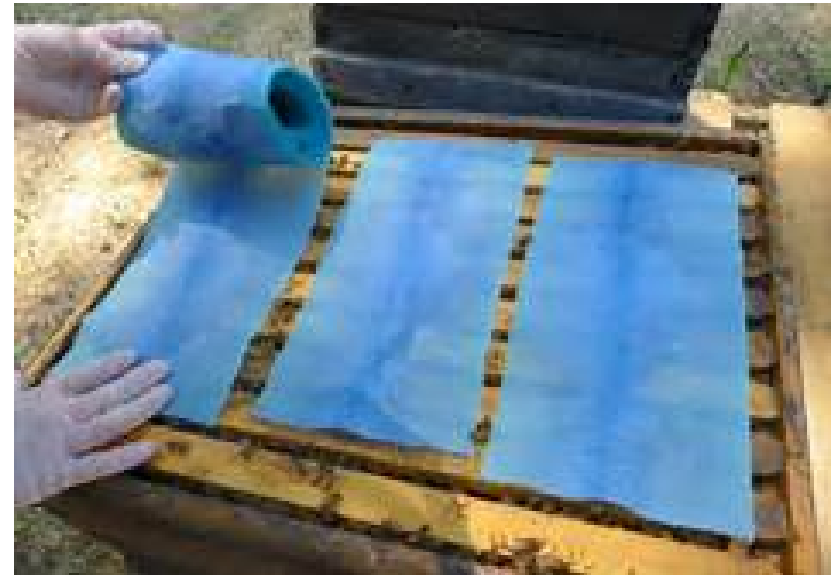
Sticky Board Method to Monitor Mite Levels



Sugar Roll/Alcohol Wash Methods to Monitor Mite Levels



Varroa Treatments



Varroa Treatment Guidelines

- There is a bewildering number of treatments available. Some claim to be organic, natural, non-toxic to bees. Don't believe it. If it kills mites it will kill bees too
- All treatments are based on chemicals that can and sometimes do kill honeybees.
- Remember, no matter which method you choose....the label is the law. Follow directions religiously
- Some treatments can't be applied with honey in the hive, some cant be applied with brood in the hive.
- Since varroa mites reproduce in capped cells keep in mind that some treatments cannot penetrate the cell caps and must be repeated three times to ensure an effective mite reduction
- Oxalic acid shop towel method is showing promise but it is early
- The only non-chemical method of control is using drone frames
- Varroa is a vector for deformed wing virus (DWV) and Israeli Acute Paralyisi and may be a visible indicator of mite infestation

Nosema

(A gut disease caused by a microsporidian)



Nosema Detection

- Two types of nosema: 1. nosema apis, 2 nosema cerana
- Spread via spores which can live 22 – 50 days outside the colony
- Low temps – not warm temps kill nosema (39F or lower for 4 days)
- Spores enter thru trophylaxis then to esophagus to proventriculus (honey stomach).
- Most noticeable because of spotting on front of hive and top of frames.
- Nosema cerana is a silent killer. NO SPOTTING
- Both types causes malnourishment, early death of bees
- Because of early death many adult bees revert to performing the duties of younger bees

Nosema Detection and Treatment

Collect at least 30 bees in a sandwich bag from inside cover of colony

Place baggie in freezer for 30 minutes

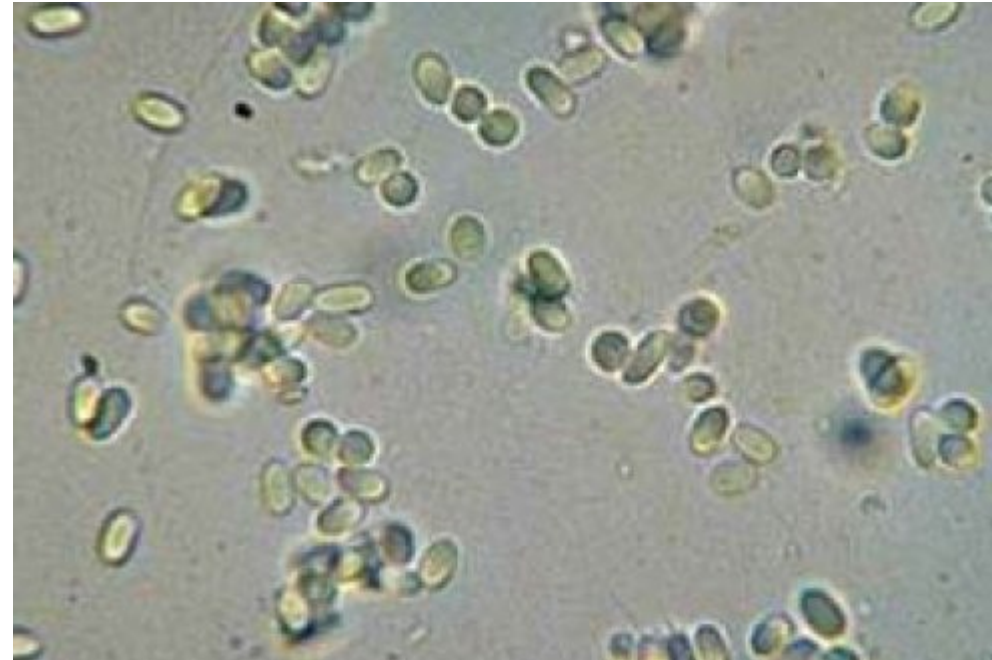
Select 15 bees and macerate them in 15 mL water

Filter the bees and water thru a tissue paper

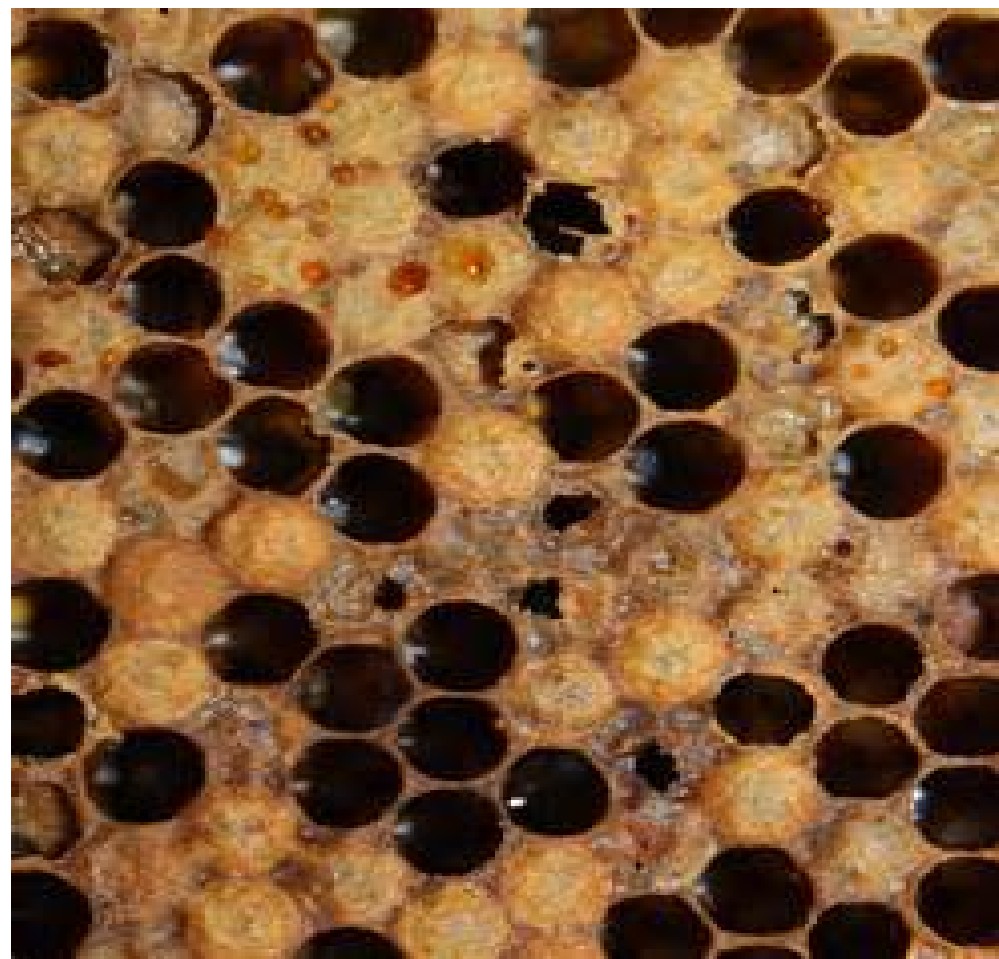
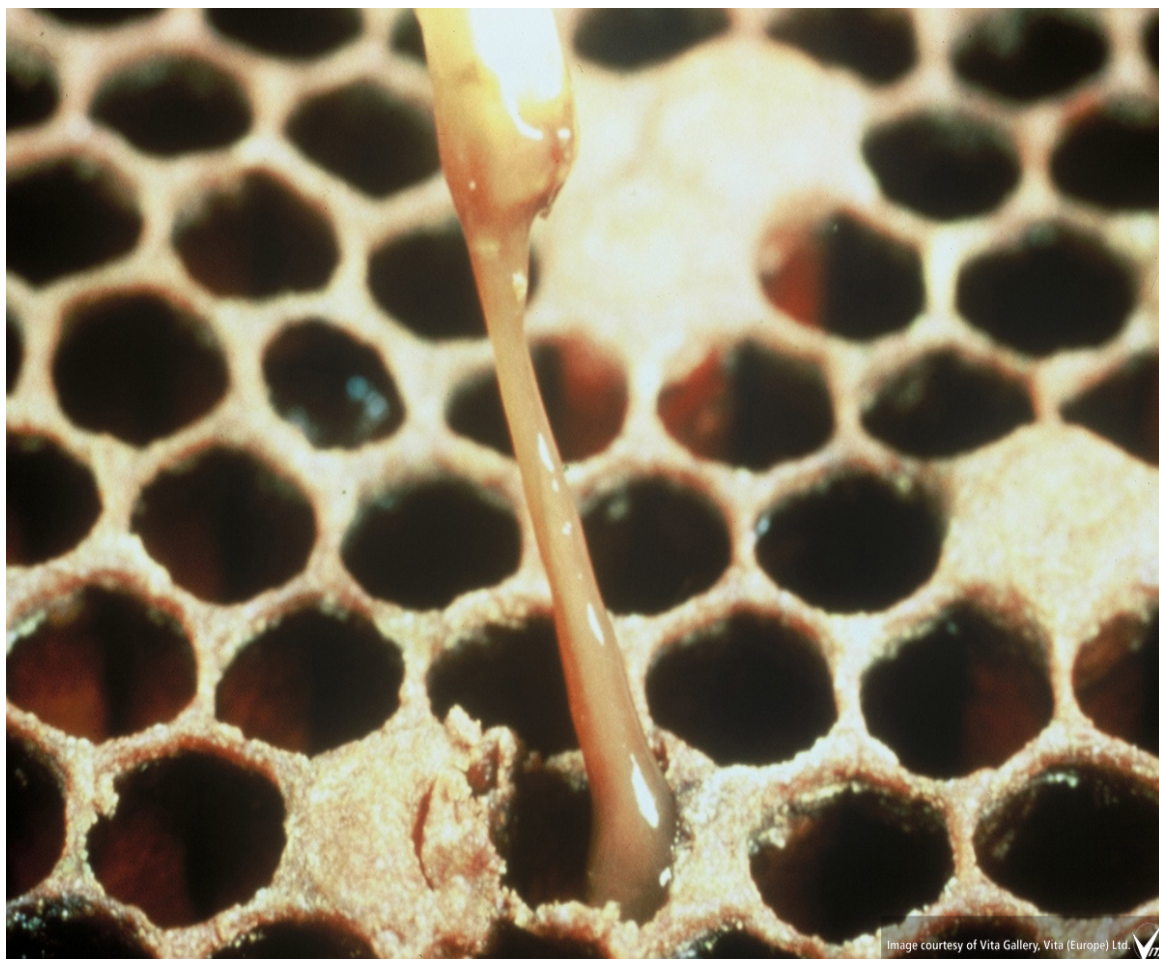
Place 1 drop of filtered solution on microscope slide, view at 400X

If three fields of views show an average of 15 spores per view treatment is required.

Treat with Funagillin B per instructions on package



American Foulbrood



American Foulbrood Diagnosis

- Sunken, perforated cell caps
- Dirty socks, sulfur (foul) odor
- Decimated brood in irregular pattern
- Fecal matter in cells
- Place a toothpick into a brood cell, swirl it around and slowly pull it out of cell. If contents in cell come out with toothpick in a stringy rope this is most likely AFB

American Foulbrood Treatment

- Spread via spores (similar to anthrax)
- Spores may live 40 years
- There is no approved treatment for American Foulbrood. But many beekeepers use Oxytetracycline or Tylosin as a preemptive measure
- This disease is highly contagious and must be contained
- Bees and equipment must be burned
- Contact state apiarist if you are unsure of diagnosis

European Foulbrood



European Foulbrood Treatment

- Can be treated when no nectar flow is occurring
- Pull existing honey off of colony
- Musty, fish like smell
- Not rosy like AFB
- Can be treated with Terramycin, Tylosin

Tracheal Mite



Tracheal Mite Monitoring and Treatment

- Monitoring
 - requires collecting adult bees and dissection
 - Adult mites pierce the tracheal wall and feed on hemolymph
 - Normal trachea are white
 - Infected trachea are brown to black
 - No one symptom defines tracheal mites
 - Colonies appear normal until death occurs, usually in spring
 - May be a vector for K-Wing virus
 - Could also show dysentery and excessive swarming.
- Treatment
 - Menthol based treatments are effective
 - Apiguard
 - Thymol

Chalk Brood/Sac Brood

Chalk Brood



Sac Brood



Chalk Brood/Sac Brood Treatment

Chalk Brood Treatment

- Fungal Disease
- Mummies drug out by bees appear to be white and sometimes black (mummified)
- Disappears in summer
- Requeening helps

Sac Brood Treatment

- Fungal Disease
- The larvae appears to be encased in a sac
- Disappears in summer
- Requeening helps

Small Hive Beetle



Small Hive Beetle Trap Examples



Small Hive Beetle Detection and Treatment

- Small hive beetles hide in the dark recesses within the hive
- There are many traps that all function on the same principle – lure the beetle into a tight space and drown it in oil or a miteicide
- CD Jewel case is an easy and effective homemade trap
- If beetles are not evident perform this test – place outer cover upside down on ground then place top super into cover in full sun. Beetles will crawl to bottom of super to get out of light. Wait 10 minutes and lift up super to reveal beetles in cover
- A deterrent is to always place colonies in full sun and away from wooded areas.

Wax Moth



Wax Moth larva and adult



Wax Moth Control

- Wax moths usually occur in late summer and fall
- Wax moths will invade stored empty supers and weak hives
- Stack empty supers 5 tall and place a paper plate or newspaper on frames of top super
- Sprinkle $\frac{1}{4}$ cup paradichlorobenzene on paper
- Cover stack of supers with large garbage bag or tarp
- Cover must be air-tight