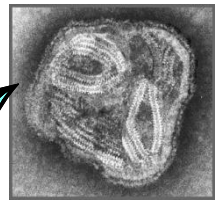
HONEY BEE PESTS, PATHOGENS AND DISEASES

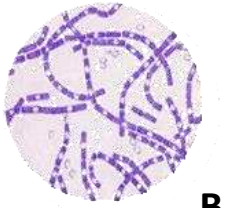
JUNE 2014

Honey bees under attack

Insects



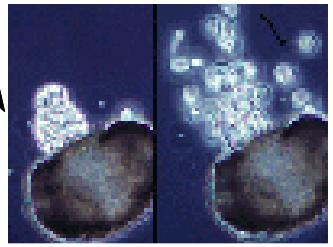
Virus



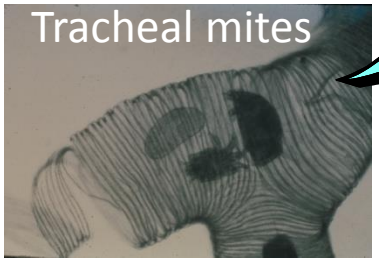
Bacteria

Varroa Mites

Yeast & Fungi



Tracheal mites



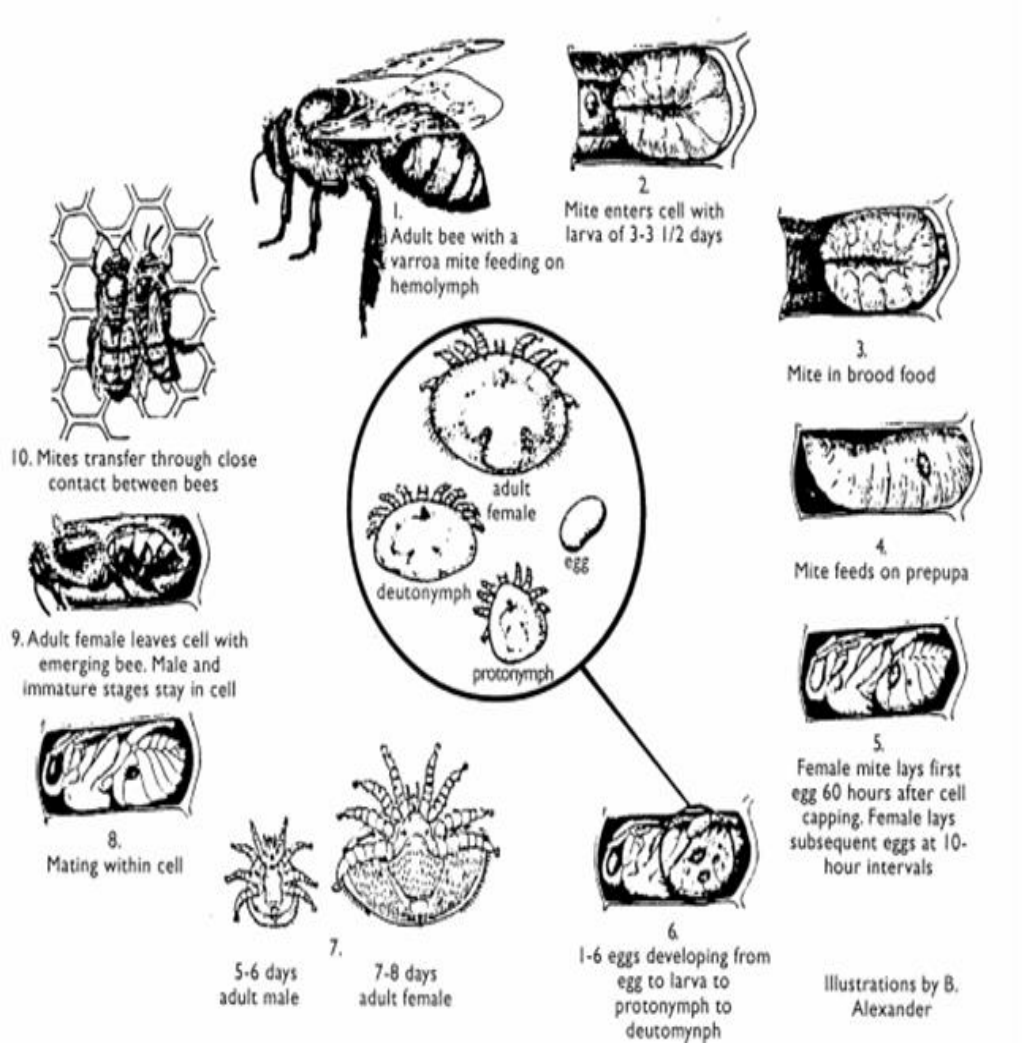
Pesticides

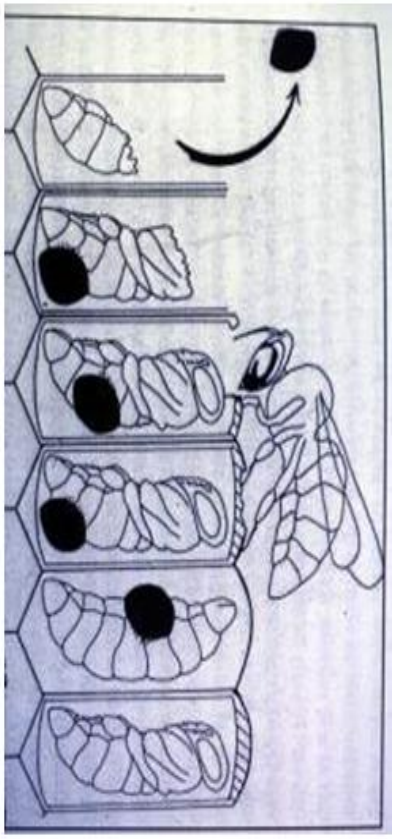
VARROA MITE

- A honey bee pest and pathogen.

ADULT FEMALE VARROA MITE ON A DEVELOPING BEE

Varroa Mites – life cycle





VARIOUS MITE STAGES FEEDING ON DRONE PUPA JUST BEFORE EMERGING

EMERGING WORKER WITH VARROA

VARROA ON DRONE PUPA

FIELD DIAGNOSIS

- Monitoring and recognizing varroa infestation.
- Before a critical level is reached.
- Checking drone brood.

SUGAR SHAKE

ASSESSING MITE COUNT

STICKY BOARDS

SIGNS OF SERIOUS INFESTATION DEFORMED WING SYNDROME

PMS
PARASITIC MITE SYNDROME

SPOTTY/IRREGULAR BROOD PATTERN

TREATMENT

- Cultural Control-drone comb culling; drone foundation, requeening with hygienic queens.
- Physical Control-screen bottom boards.
- Chemical Control-miticides, essential oils.
- Don’t be chemophobic but not use chemicals too readily.
- FOLLOW DIRECTIONS-BE RESPONSIBLE!!

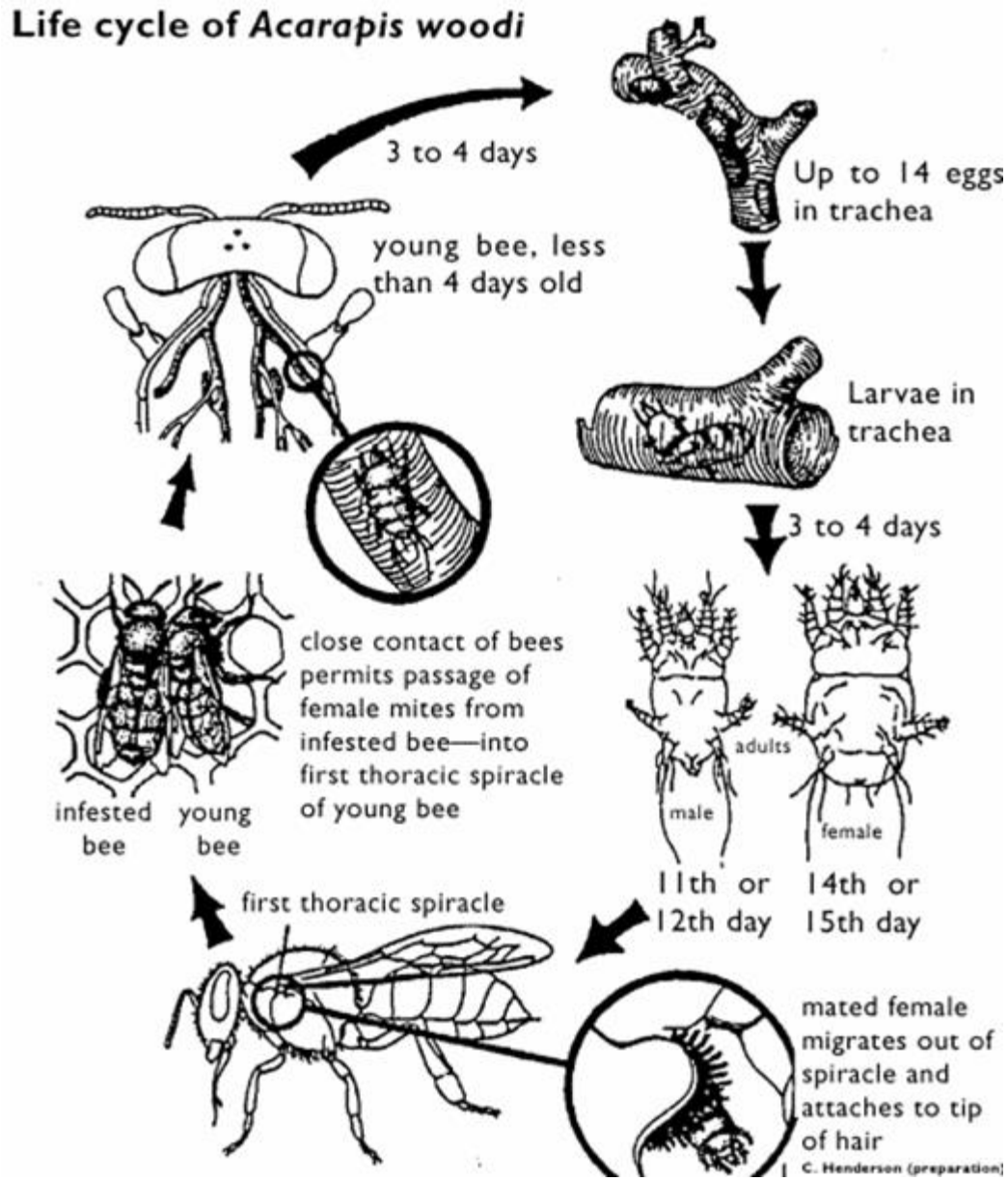
BEE INFORMED PARTNERSHIP

Dennis vanEnglesdrop

- “What is clear from all of our efforts is that varroa is a persistent and often unexpected problem. Every beekeeper needs to have an aggressive varroa management plan in place. Without one, they should not be surprised if they suffer large losses every other year or so. Unfortunately, many small scale beekeepers are not treating and are losing many colonies. Even beekeepers who do treat for mites don’t treat frequently enough or at the right time. If all beekeepers were to aggressively control mites we would have many fewer losses.”

TRACHEAL MITE
ANOTHER PEST

- An internal mite, living within the trachea, or breathing tube, of adult honey bees.
- Mites pierce the trachea walls and feed on the hemolymph or blood of the bees.
- Tracheal mites are difficult to identify because of their small size.


Life cycle of *Acarapis woodi*
3 to 4 days
Up to 14 eggs in trachea
young bee, less than 4 days old
Larvae in trachea
3 to 4 days
close contact of bees permits passage of female mites from infested bee—into first thoracic spiracle of young bee
infested bee
young bee
adults
male
female
11th or 12th day
14th or 15th day
first thoracic spiracle
mated female migrates out of spiracle and attaches to tip of hair
C. Henderson (preparation)

Dissected Trachea

TRACHEAL MITE INFESTATION

K-WING

TREATMENT FOR TRACHEAL MITES

- Grease patties should be in the hive all year round.
- Mix 1:2 ratio, 1 shortening (Crisco) to 2 granulated sugar. Using an ice cream scoop, place one scoop onto a sheet of wax paper. Flatten and place on the top of the brood chamber. As the bees feed on the sugar, they become coated with the grease which impairs the mites ability to latch onto the bees.

ADDITIONAL PESTS

- Wax Moths-problematic in weak hives. Protect your combs when stored for winter.
- Moth crystals, not moth balls, is available from bee supplier. Place 1 TB on an index card and place it on top bars of every super you store. Cover with outer cover, to allow evaporating crystals to fumigate the frames.
- In the spring, air out the frames 48 hours before use.

ADDITIONAL PESTS,(con't)

- Wax Moths-freezing the frames for several days will destroy the wax moth larvae. They can then be placed in air tight plastic totes. The colder the area for storage, the better.

- Small Hive Beetle-problematic in the South.

- Yellow Jackets-traps, entrance reducers in the fall when they are after the brood.

ADDITIONAL PESTS (con't)

- Bears-The only really effective defense against bears is to install an electric fence around your apiary.
- This must be done PRIOR TO ANY BEARS ATTACKING YOUR HIVES. ONCE THEY HAVE DISCOVERED YOUR BEES, THEY'LL BE BACK!

BROOD DISEASES

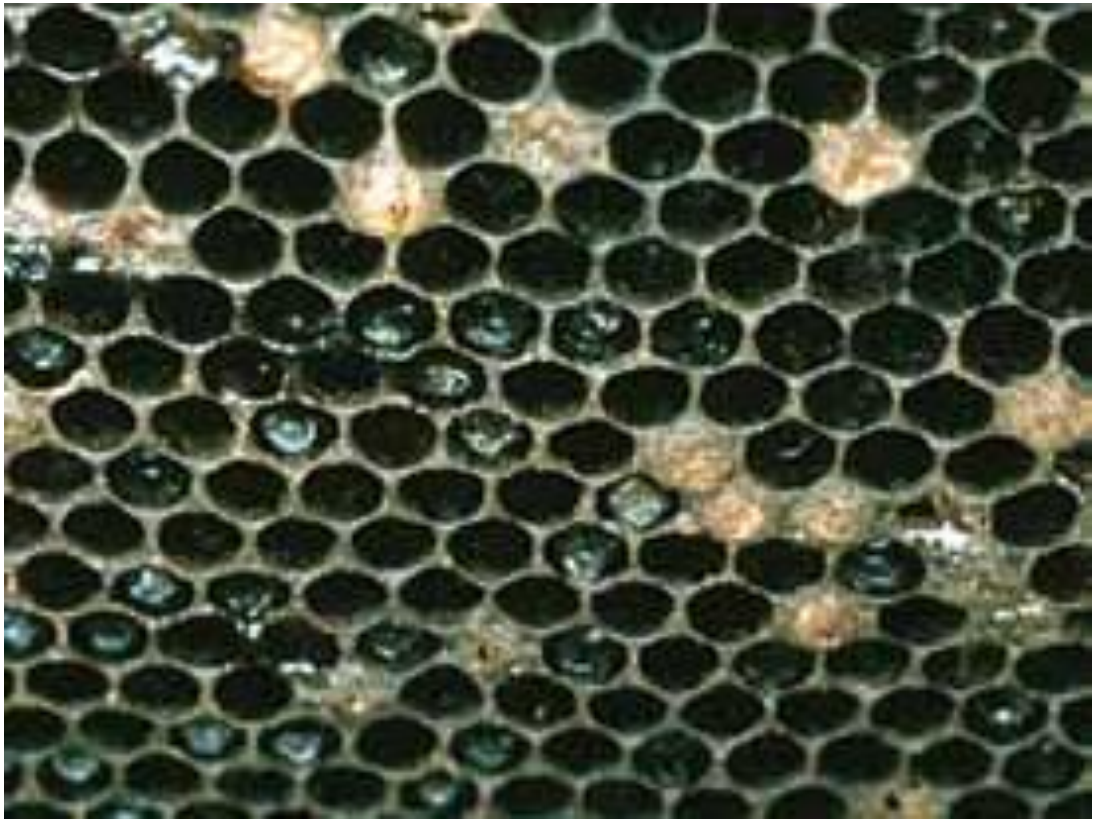
- AMERICAN FOUL BROOD-BACTERIAL DISEASE
- AFB ATTACKS LARVA AND PUPA
- AFB IS HIGHLY CONTAGIOUS; FOUL SMELL
- IF AFB IS FOUND, ALL EQUIPMENT MUST BE BURNED TO DESTROY SPORES.
- SPORES CAN REMAIN ACTIVE 70 YEARS.
- **BEWARE WHEN PURCHASING USED HIVES.**

PUNCTURED, SUNKEN CAPPINGS

AMERICAN FOUL BROOD

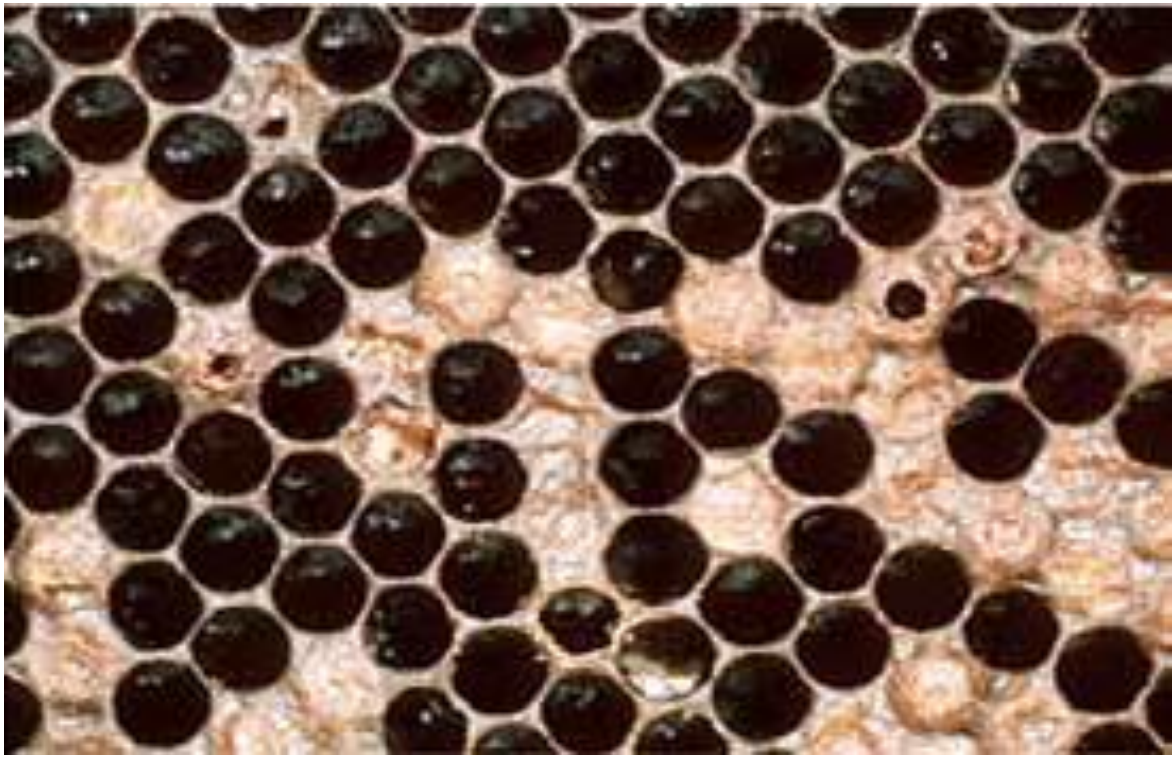
AFB-MELTED LARVA

AFB Scale



AFB-PUPAL TONGUE

AFB-IRREGULAR BROOD PATTERN



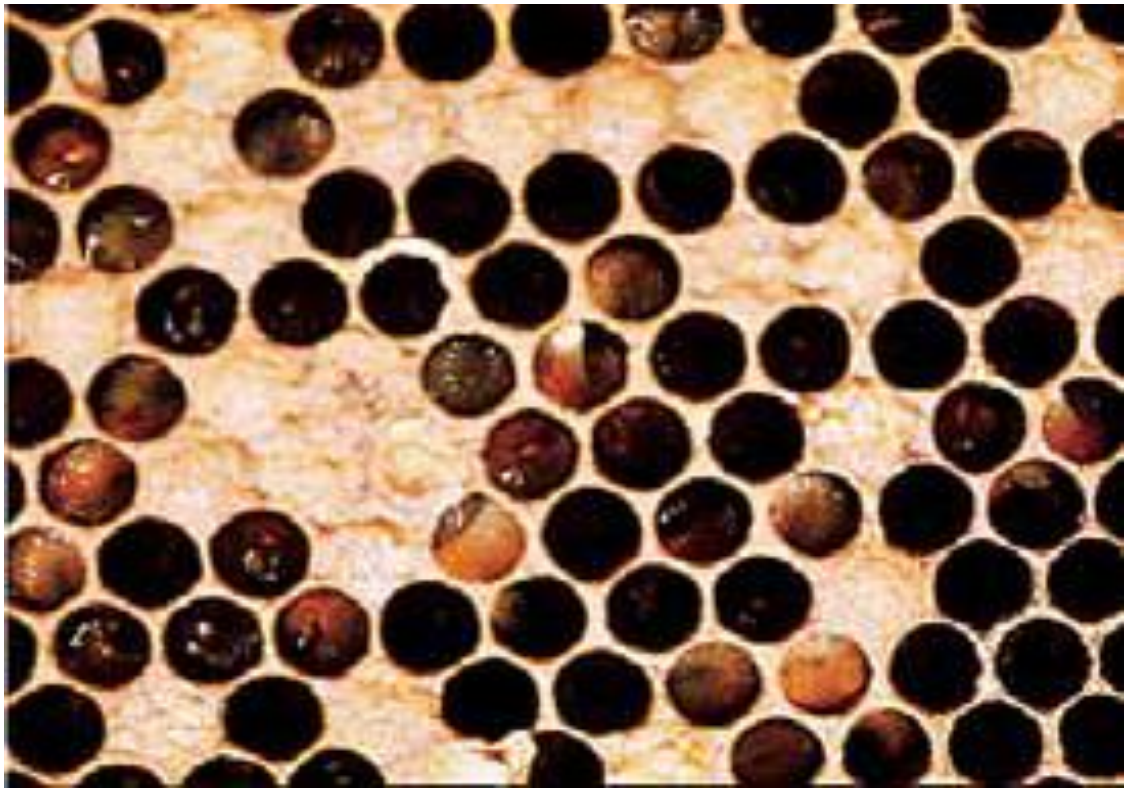
ROPINESS OF FRESH DEAD LARVA

EUROPEAN FOULBROOD

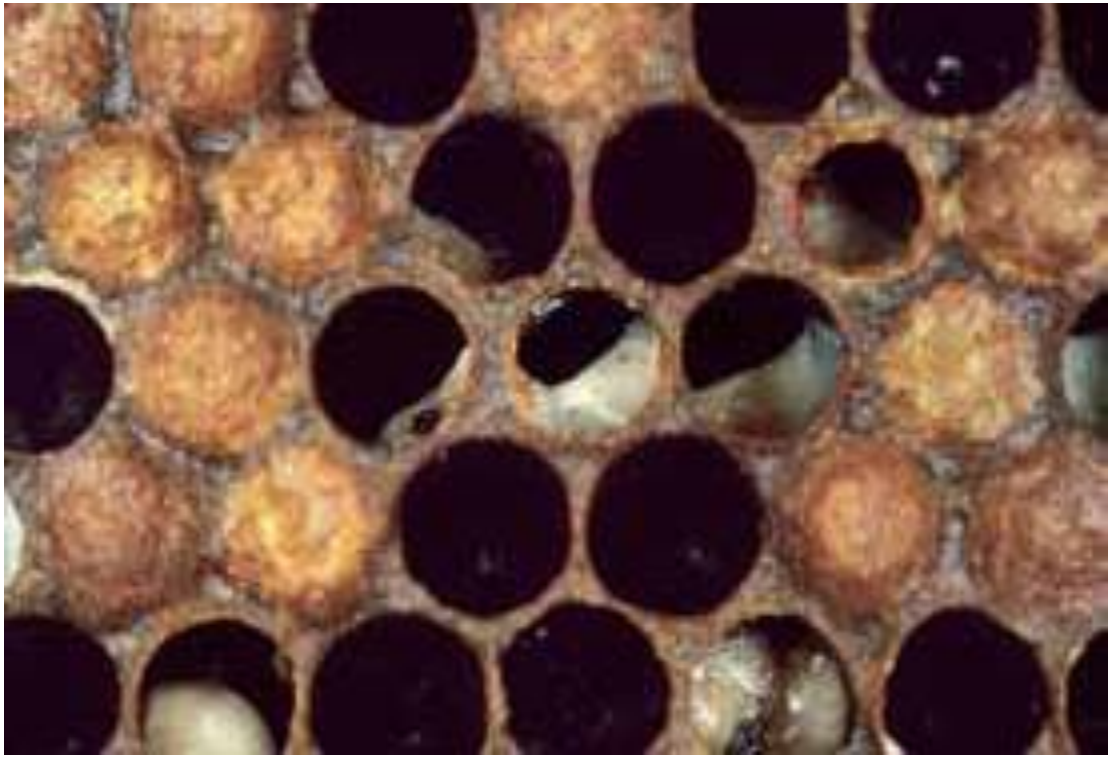
- EFB-BACTERIAL DISEASE
- INFECTED LARVA DIE BEFORE CAPPING
- EASY TO SEE DISCOLORED LARVA
- CAPPED CELLS MAY BE SUNKEN
- DEAD LARVA WON'T "ROPE" AS IN AFB
- SOUR SMELL (NOT AS BAD AS AFB)

DEAD LARVA IN OPEN CELLS

NON-UNIFORM COLOR CHANGE



EFB-MELTED IN CELL



EFB-TREATMENT

- EFB DOES NOT FORM PERSISTANT SPORES.
- COLONIES CAN RECOVER BY THEMSELVES
- FREQUENTLY EFB WILL DISAPPEAR WITH NECTAR FLOW
- REQUEENING MAY BREAK BROOD CYCLE AND ALLOW COLONY TO REMOVE INFECTED LARVA

CHALKBROOD-FUNGAL DISEASE

- MOST OFTEN SEEN IN SPRING
- COMMON, NOT SERIOUS
- NO TREATMENT NECESSARY. COLONY WILL RECOVER. REMOVE MUMMIFIED CARCASSES FROM ENTRANCE BOARD AND GROUND.

CHALKBROOD MUMMIES

CHALKBROOD AT HIVE ENTRANCE

SACBROOD

- VIRAL DISEASE OF BROOD
- NOT CONSIDERED A SERIOUS THREAT
- INFECTED LARVA TURN YELLOW, THEN BROWN TO BLACK
- DEAD LARVA EASILY REMOVED AS A WATER FILLED SAC
- PERSISTANT SYMPTOMS MAY REQUIRE REQUEENING

SACBROOD

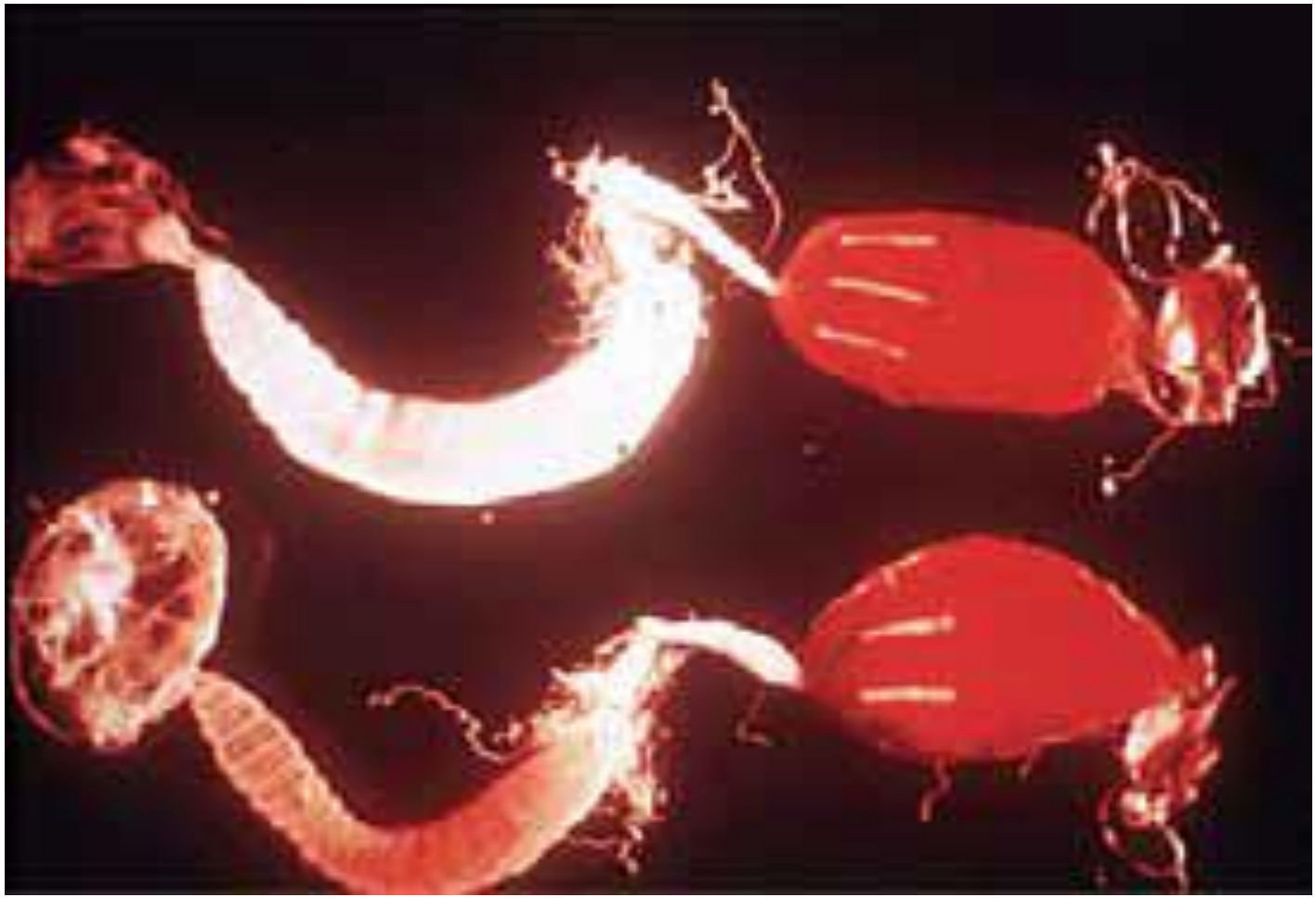
NOSEMA

- NOSEMA APIS- MAY BE PRESENT ANY TIME OF THE YEAR-FECAL STAINING OF FACE OF HIVE

- NOSEMA CERANAE-MORE COMMON IN THE SUMMER-SOMETIMES REFERRED TO AS “DRY NOSEMA” BECAUSE IT DOESN’T CAUSE FECAL STAINING.

HIVE STAINING

COMPARING BEE GUTS



CONTROL OF NOSEMA

- The drug, fumagillin (Fumidil-B) is approved for Nosema control. Feed it dissolved in sugar syrup during supplemental feeding. Mix and follow directions carefully. 100mg (2 tsp) to a gallon of sugar syrup (2 parts sugar to 1 part water. It is fed in the spring and fall.
- Treatment can increase honey yields.

POSITIVE DIAGNOSIS for Honey Bee Issues

Bioenvironmental Bee Laboratory

Agricultural Research Center

Beltsville, MD 20705

- Be sure to print or type your name, address, and zip code on the return label.