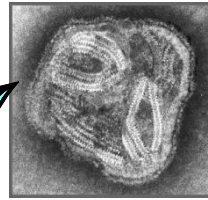


# HONEY BEE PESTS, PATHOGENS AND DISEASES

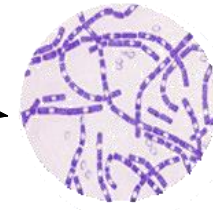
JUNE 2014

# Honey bees under attack

Insects



Virus

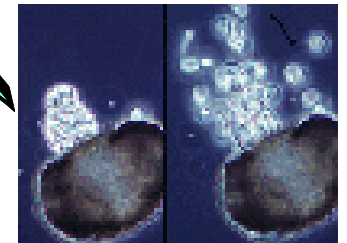


Bacteria

Varroa Mites



Yeast & Fungi



Tracheal mites



Pesticides



# VARROA MITE

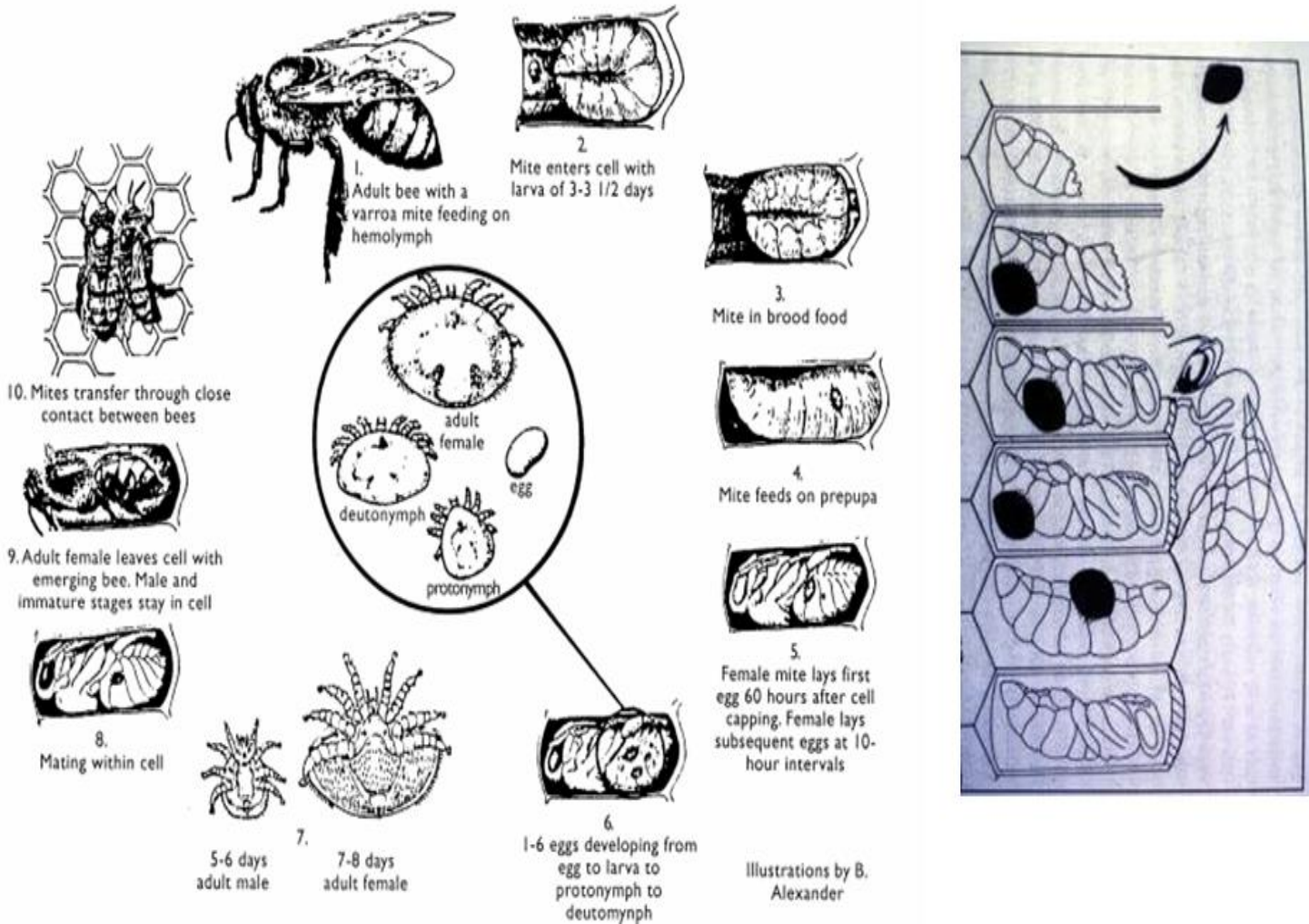
- A honey bee pest and pathogen.



# 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



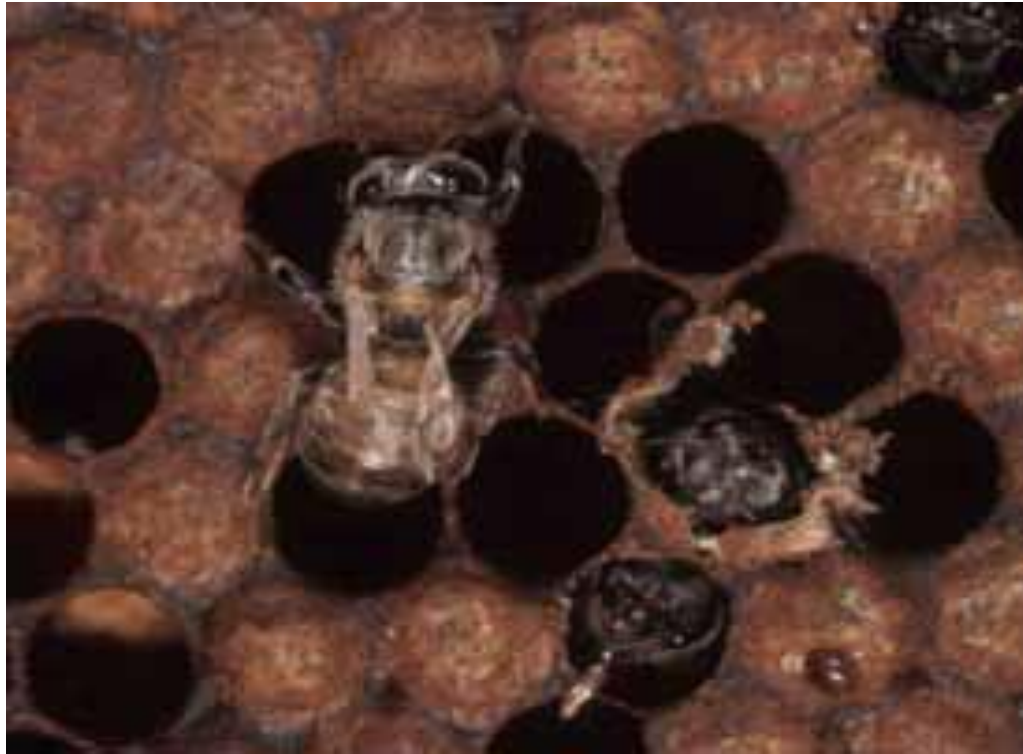
# ASSESSING MITE COUNT



# 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

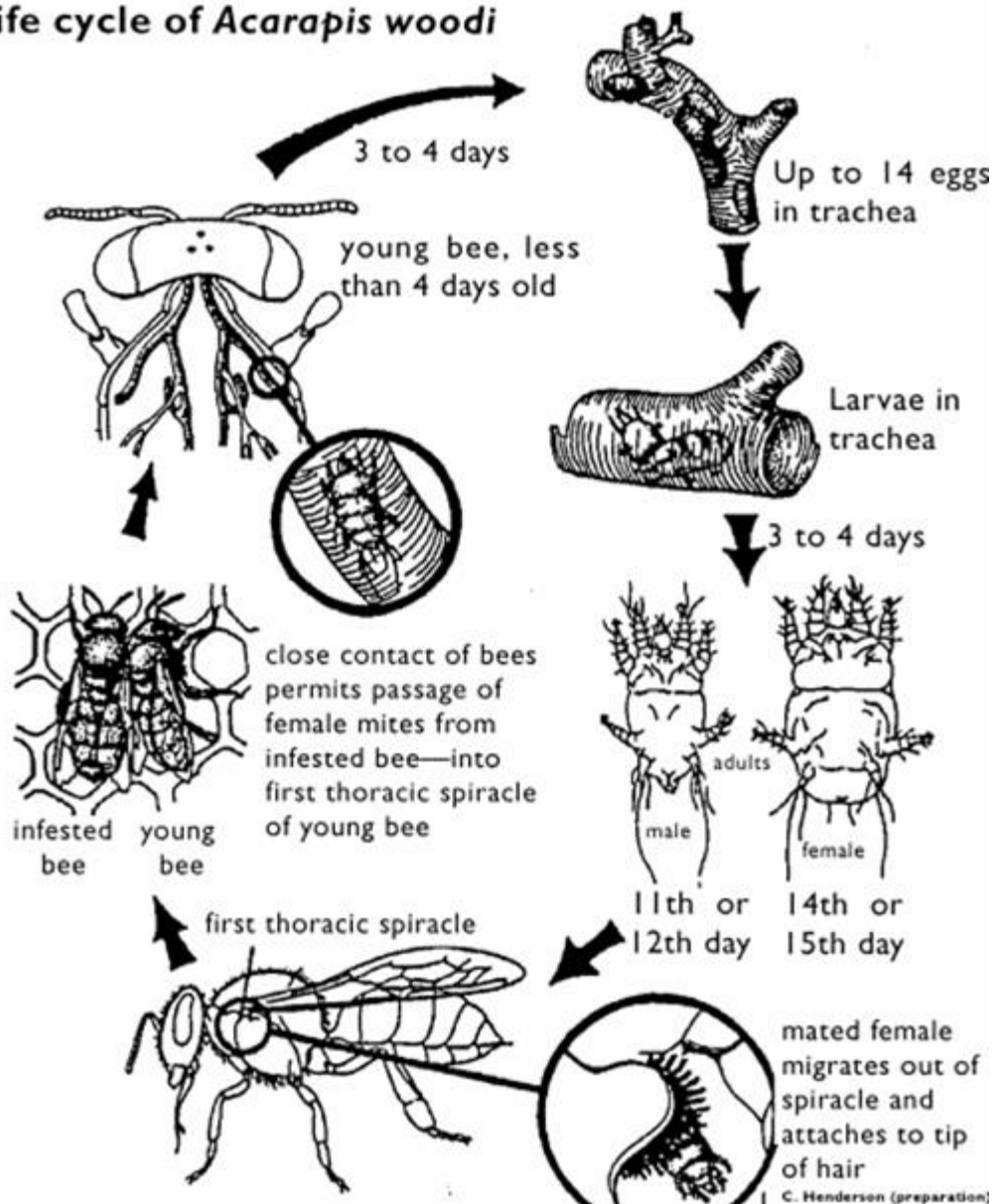
- “What is clear from all of our efforts is that varroa is a persistent and often unexpected problem. Every beekeeper needs to have an aggressive varroa management plan in place. Without one, they should not be surprised if they suffer large losses every other year or so. Unfortunately, many small scale 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

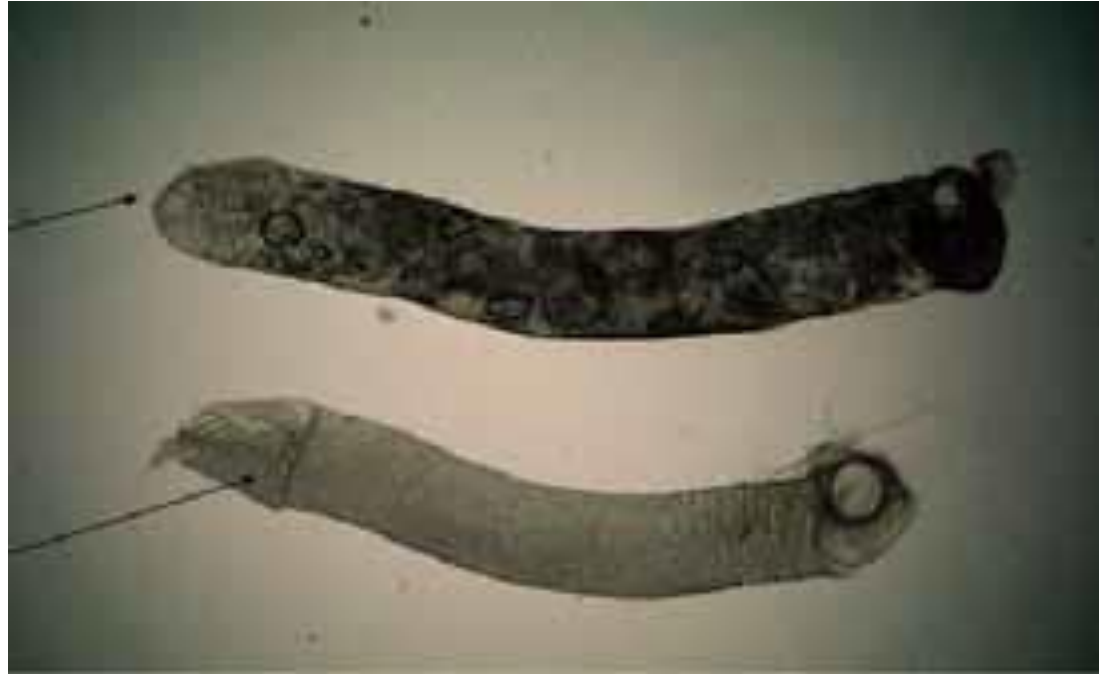
## ANOTHER PEST

- 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*



# 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



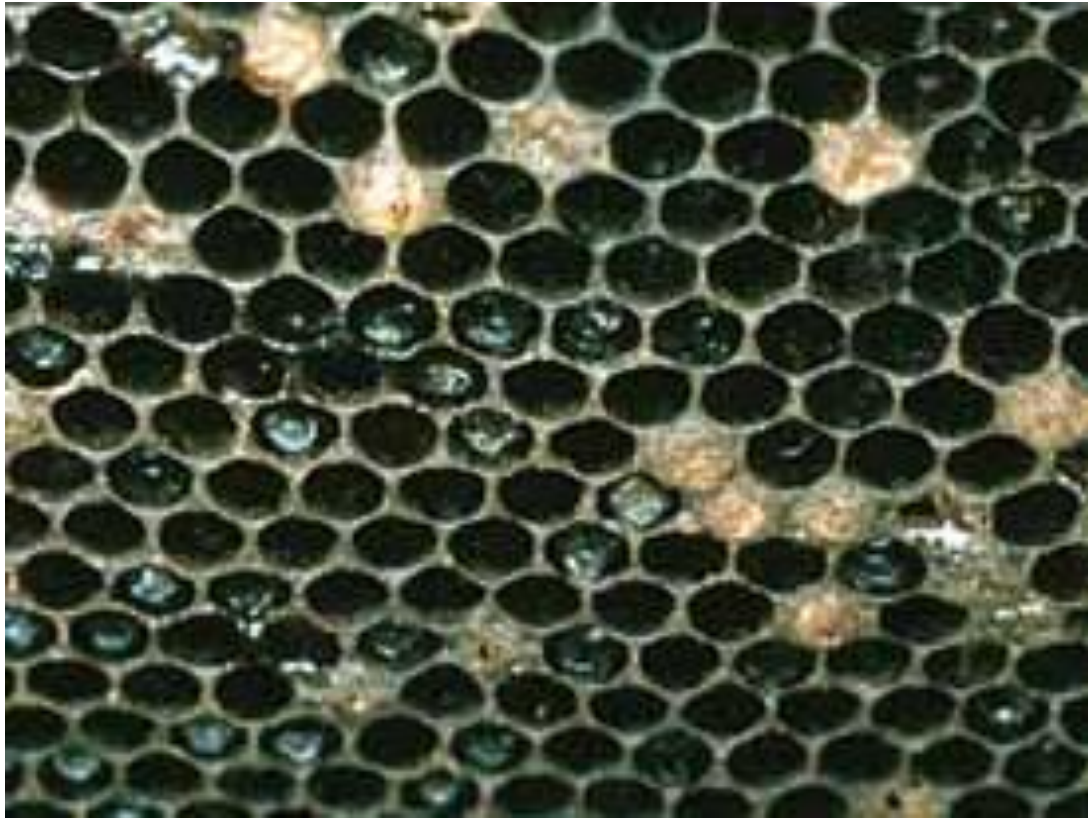
# AMERICAN FOUL BROOD



# 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



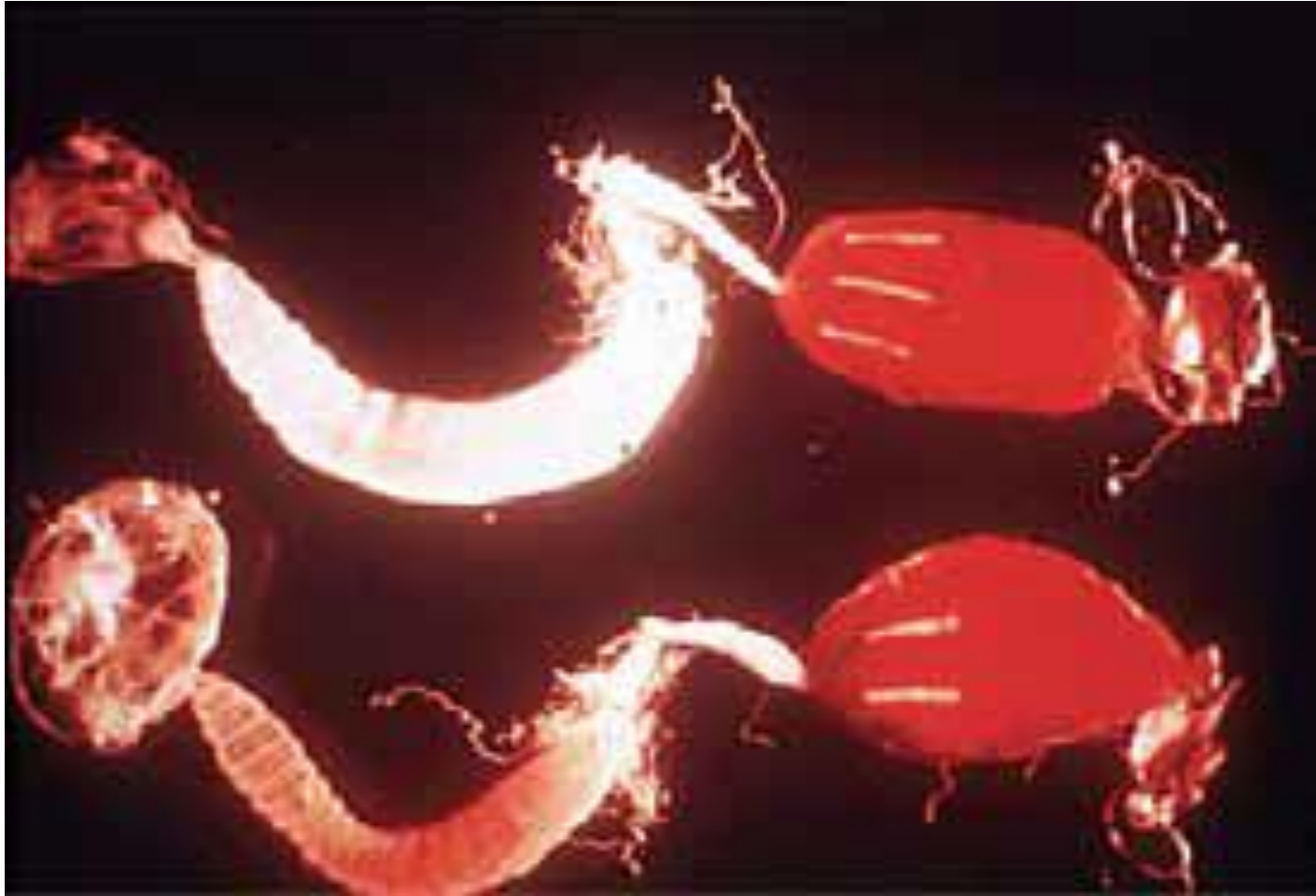
# NOSEMA

- 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.