

AFB

American Foul Brood

Contagious & Deadly

Compiled by David Hopkins

Notes and illustrations courtesy of:

The Ohio State Beekeeper's Association
NY Bee Wellness Workshops
Peter Loring Borst Collection

Managing Honey Bees for Good Health.

The foundation of disease management.



“The number one way to healthy and sustainable beekeeping is to keep hygienic bees.”

-Peter Loring Borst



Hygienic behavior is heritable, so buy hygienic stock and make new colonies from it. As far as possible, weed out susceptible colonies, and destroy those with incurable diseases like American Foulbrood.

-Peter Loring Borst



IPM (Integrated Pest Management)

“IPM emphasizes monitoring and using non-chemical controls.
Chemicals are always viewed as the last resort.”
-Peter Loring
Borst

Chemical Controls

Pesticides, Antibiotics

Cultural Controls

Management Methods

requeen - feed - add brood

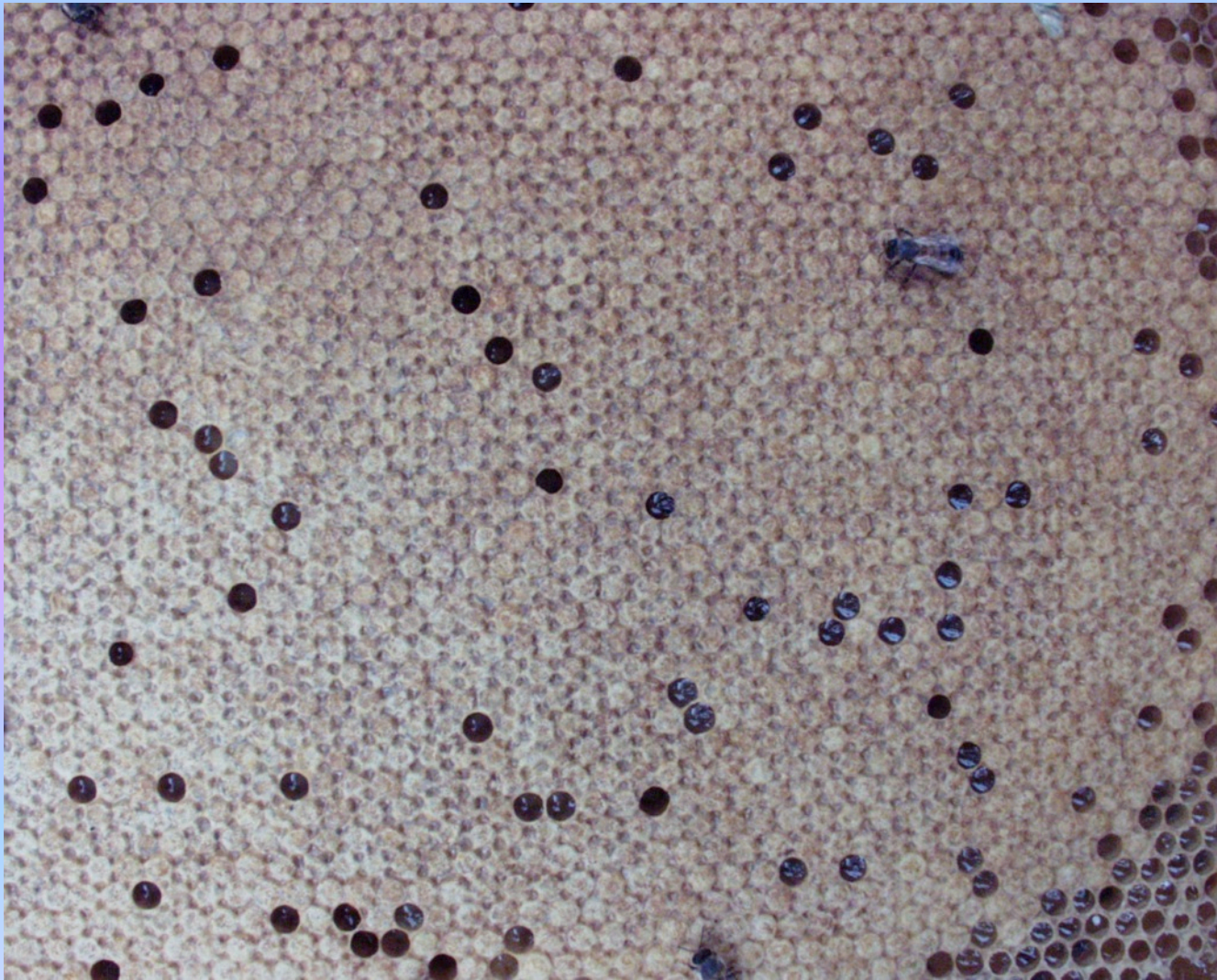
Biological Controls

Well Populated Strong Hygienic Colonies

Quality Locations with Ample Flora, Water & Sunshine

Foundations of Good Beekeeping

Healthy Brood



Look closely.

Learn to spot a single cell of suspicious brood.



AFB suspected & likely



Symptoms of AFB

Brood pattern is irregular rather than compact.

Larvae turn from light brown to dark brown and die upright, not twisted, in cells.

Cappings are sunken and punctured.

Surface of cappings is moist or wet rather than dry.

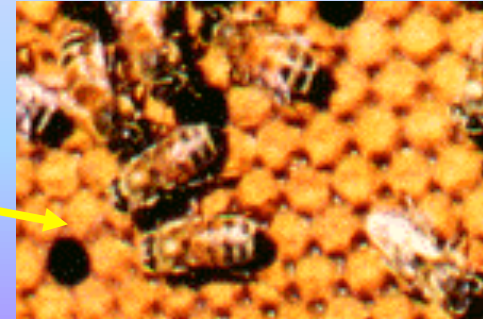
Larvae long-dead develop the consistency of glue and are difficult for bees to remove.

The dried-out brood or scales adhere to the bottom, back, and side walls of the cell and are difficult to remove.

Dead pupae have their tongues protruding at a right angle to their scale or straight up.

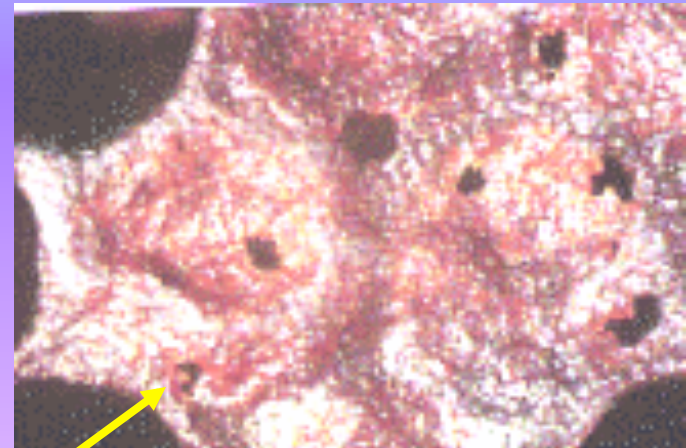
There is an unpleasant putrid “foul brood” odor, which can permeate apiary if many colonies died over winter.

Healthy brood

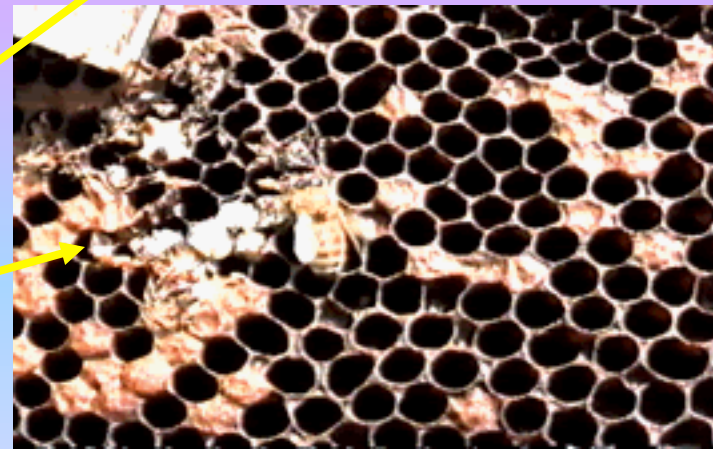


**2005 Apiary Statistics
by Ohio Dept Agriculture
Colonies Inspected . . . 21,389
Number with AFB . . . 388**

**Potentially fatal and very contagious.
This incidence is less than 2%, yet it is
said that most beekeepers will
experience AFB.**



AFB infected brood



American Foulbrood Disease

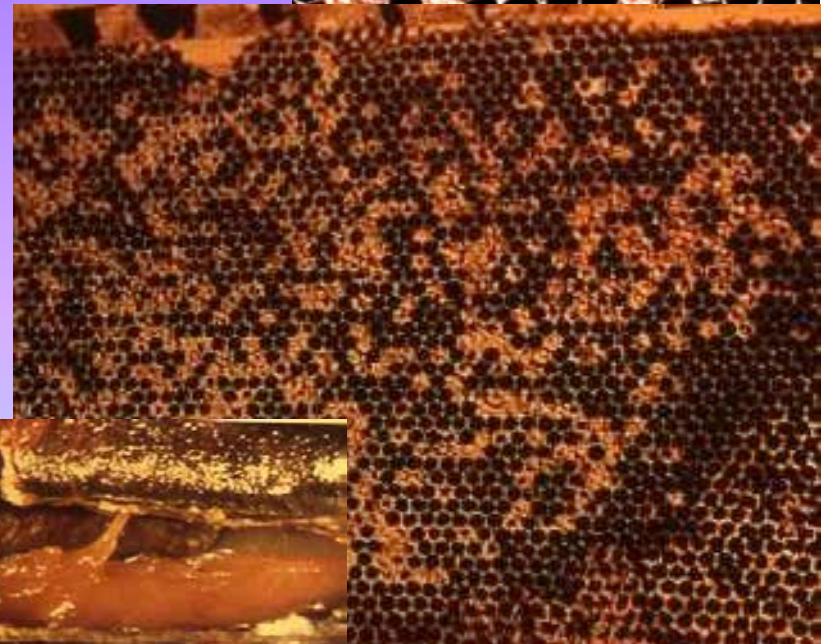
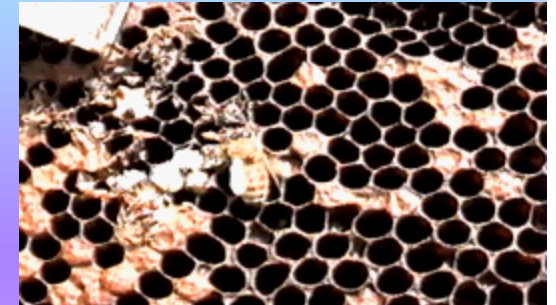
Young larva ingest the bacterial spores when fed by nurse bees.

The spores germinate (vegetative stage) and grow rapidly. Death to the larva usually occurs at the pupae stage.

Larva that die turn to a coffee brown and melt down into a gooey mass. Housekeeping bees then try to remove the dead larva becoming contaminated with the dormant bacterial spores.

The spores are exposed to other bees, to the honey stores or are fed again to new larva. The disease can spread within the colony rapidly.

As the colony dwindles robbers spread the infection to healthy colonies of the apiary and neighborhood.

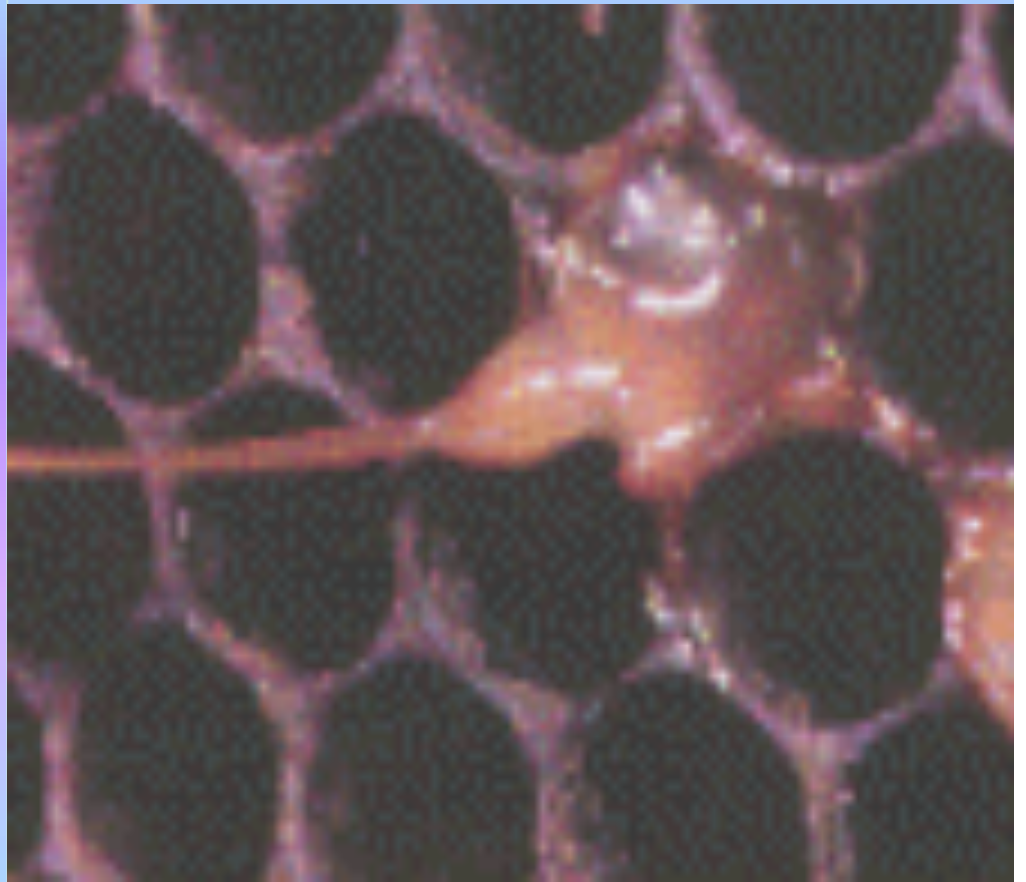


FIELD TEST

To test for AFB place a thin stick or twig into a suspicious cell. Stir and draw out the stick. If the gluey substance sticks and ropes, it is most likely AFB.

To be certain, a sample of comb from this frame should be shown to a bee inspector or other expert. It can be sent to a lab for confirmation.

Note: A beekeeper's hive tool should be cleansed with fire if exposed to a contaminated hive.



“Rope Test” for AFB



AFB Infected Colonies an invitation to robbers

Infected colonies decline rapidly and become susceptible to robbing.

Robbing is a significant, natural mode of spreading AFB.

Robber bees will take contaminated honey to their own hives resulting in larva being fed with spore laced honey. The disease spreads.

The disease can quickly spread to many colonies within several miles of the infected hive.

**Beekeepers should always look for AFB when examining their hives.
When caught early, further spread can be prevented.**

Treatment of AFB in New York

NY State law requires that colonies discovered to be infected are to be burned or buried.

NY allows the use of oxy-tetracycline-HCl, Terramycin®, as a preventative, not a curative, medicine. It is best used on uninfected bees that are in a 3-5 mile range of AFB infected colonies.

NY laws pertaining to honeybees are posted online in their entirety.

Send Samples

USDA Bee Research Lab, Beltsville Maryland

To verify diagnoses of any bee disease, beekeepers, bee businesses, and regulatory officials may submit samples for testing without charge. Samples are accepted from U.S. states and territories, and from Canada, but not other countries.

Include a short description of the problem along with contact information.

For additional information call Bart Smith at (301) 504-8821
or e-mail: bart.smith@ars.usda.gov

Send Samples of Adult Honey Bees

Gather at least 100 bees, about ¼ cup. They should be bees that are dying or that died recently. Decayed bees are not satisfactory for examination. Bees should be placed in, and soaked, with 70% ethyl, methyl, or isopropyl alcohol as soon as possible after collection and packed in leak-proof containers.*

*USPS, UPS, and FedEx do not accept shipments containing alcohol. Just prior to mailing samples, pour off all excess alcohol to meet shipping requirements.

NO HONEY SHOULD BE PRESENT IN THE SAMPLE.

To send brood samples, cut a comb sample at least 2” x 2” with as much dead discolored brood as possible. Comb samples can be sent in a paper bag or loosely wrapped in a paper towel or newspaper, in a heavy cardboard box.

The field probe can be sent as a sample if comb cannot be sent. The probe used to “rope test” a diseased larva in the cell may contain enough material for the lab. It can be wrapped in paper and sent to the laboratory in an envelope.

Do not send samples in impervious wrappings such as plastic, aluminum foil, waxed paper, tin or glass. They promote decomposition and mold.

Send wrapped samples to:

Bee Disease Diagnosis, Bee Research Laboratory
Building 476, Room 204
Beltsville Agricultural Research Center - East
Beltsville MD 20705

Terramycin® or not?

- Several factors affect a decision whether or not to use Terramycin® to prevent AFB.
 - Concerns about using chemicals in your hives.
 - Requirements of the market you serve. TM is not appropriate for producers serving the natural foods market.
 - Assessment of the risk your bees face. If the AFB incidence in your area is low, you may do fine without the use of antibiotics. However, if you live in an area with a high incidence of AFB, you may want to consider using antibiotics.
 - Terramycin as part of an AFB management program is only as a PREVENTATIVE. It is illegal in NY to treat colonies with AFB scales or active AFB. If a colony is infected with AFB, the owner must destroy the bees, combs, honey and hive parts. The NY Department of Agriculture can provide specifications for local requirements.

Terramycin® treatment mix

Terramycin® should be mixed as a dust with powdered sugar to deliver 200 mg active ingredient per 1 oz dose of TM/sugar mixture.

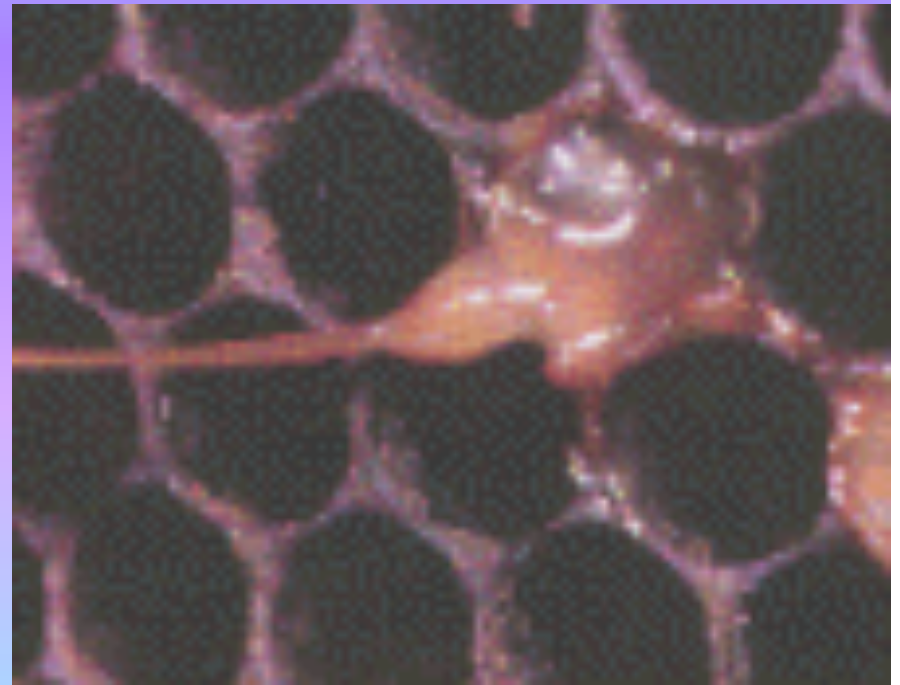
Three, 1 oz doses are applied at 4 - 5 day intervals in the early spring and again in the fall after removing the crop.

Terramycin® can also be applied in sugar syrup or in an extender patty with vegetable shortening and sugar.

Treatment of AFB in Ohio, PA and other states

If diagnosed as AFB, and the Bee Inspector concurs, the colony and bees can be treated with oxy-tetracycline -HCl (Terramycin) or tylosin, (Tylan) using **diligent** procedures to effectively suppress AFB.

These antibiotics prevent the vegetative state of the disease. The spores are not killed and can re-infect the hive with a lapse in treatment.



There is one sure way to get rid of AFB . . .

. . . Burn with fire. . .

Sadly, the only way to effectively destroy AFB.

AFB is so contagious it's most practical and responsible for beekeepers to address AFB openly and collectively. Beekeeper Clubs, Associations and State Inspection Programs can be most effective.



Join your local bee clubs, know your neighboring beekeepers, create partnerships and work together to keep healthy and productive bees.







The End



Questions?

Thoughts?

Comments?