



JULY 2012

NEWSLETTER OF THE ALAMANCE COUNTY BEEKEEPERS

Remember...

Early meeting and Potluck Supper!

What's Blooming in the Piedmont?

Sumac
Persimmon
Alsike Clover
Ladino, white clover
Vetch
Sweet Clover
Sourwood

Alamance County Beekeepers

This month's meeting...

This month's meeting will feature Will Hicks, Bee Inspector for Wake, Johnson & counties north. He will discuss "Preparing Bees for Winter" on Thursday, July 19th at the Alamance County Cooperative Extension Offices, 209-C N Graham-Hopedale Rd., Burlington, NC. A cover dish supper starts at 6:00 pm and the meeting at 7:00 pm.

Pharmacia and Upjohn Co., a Division of Pfizer, Inc. to control American Foulbrood

By Melanie McLean, DVM, Center for Veterinary Medicine, FDA

American Foulbrood – A Foul Disease

When beekeepers utter the three-letter acronym "AFB," they're not referring to the closest air force base. Rather, they're talking about American foulbrood, a serious infectious disease of honey bees. Caused by the spore-forming bacteria *Paenibacillus larvae* and found worldwide, AFB is one of the most widespread diseases affecting honey bee brood, and the most destructive. The disease does not pose any health risks to people, but it wrecks havoc among bees. Severe outbreaks can weaken or kill entire colonies.

American foulbrood affects the larval and pupal stages of brood development, leaving adult bees safe from infection. Young larvae may die quickly when they are curled at the base of their uncapped cells. Worker bees remove these dead larvae, leaving empty cells. Most often, death occurs after the cell has been capped. By this time, the older larvae or young pupae have stretched out lengthwise and are upright, filling most of their cell.

The capping of a cell that contains a diseased larva is moist and dark. As the larva shrinks, the capping is drawn into the mouth of the cell, causing the normally convex capping to become concave. When they find an infected larva in a sealed cell, worker bees puncture the sunken capping and remove it, along with the sick or dead larva.

If death occurs in the pupal stage, the dead pupa's threadlike proboscis, or tongue, protrudes from the pupal head and extends across the cell. A protruding tongue can be seen even after the rest of the pupa's body has decayed. Though rarely seen, the formation of the pupal tongue is one of the most characteristic signs of American foulbrood.



Lemon Dream Pie



Makes 8 servings

- 1 9-inch unbaked pie shell
- 1-1/2 cups water
- 1 cup honey
- 1/2 cup lemon juice
- 1/3 cup cornstarch
- 2 Tablespoons butter or margarine
- 1 teaspoon grated lemon peel
- 1/4 teaspoon salt
- 4 egg yolks, lightly beaten
- 1-1/2 cups heavy whipping cream, whipped to soft peaks

Bake empty pie shell according to package directions until golden brown. In medium saucepan, combine water, honey, lemon juice, cornstarch, butter, lemon peel and salt. Bring to a boil, stirring constantly. Boil for 2 minutes. Remove from heat. Stir small amount into yolks. Pour yolk mixture back into honey mixture; mix thoroughly. Pour into pie shell. Chill. to serve, top with whipped cream.

Nutrition: 480 Calories * 29.8 g Fat Total * 3.98 g Protein * 1.75 mg Cholesterol * 53.1 g Carbohydrates * 242 mg Sodium * 0.61 g Dietary Fiber * 54% Calories from Fat *

At death, the normally pearly white and glistening bee brood changes to a dull white. The color gradually darkens to light creamy brown, then coffee brown, and finally dark brown or almost black. The consistency of the decaying brood is soft and glutinous. One symptom of American foulbrood seen only in decayed brood is “ropiness.” When a probe is inserted into the body of a decayed larva and withdrawn gently and slowly, the glue-like larval remains will adhere to the tip of the probe and can be pulled out of the cell as a stringy, brown mass or rope. This technique used by beekeepers to assess ropiness is called the “match-stick” or “stretch” test. It’s probably the best-known way to diagnosis AFB in the field. In some cases, however, the larval remains are rather watery, causing a negative test result.

One month or more after the larva becomes ropy, its remains dry out and shrivel to form hard, dark brown to black scales. These characteristic scales are brittle, stick tightly to the lower sides of the cell, and contain billions of spores that spread easily. The bacteria can produce over one billion spores in each infected larva. Only the spores are pathogenic (disease-causing), and unfortunately, they are very resistant to heat and chemicals. The spores of *P. larvae* can survive for many years in the dry scales, as well as in honey, beeswax, and hive equipment.

Nurse bees transmit American foulbrood by feeding spore-laden honey or bee bread to young larvae. Larvae can also become infected by *P. larvae* spores remaining at the base of their cells. “House” worker bees spread the spores throughout the hive when they clean out the cells o “House” worker bees spread the spores throughout the hive when they clean out the cells of dead larvae.

The disease spreads quickly to other colonies in the apiary by:

Robber bees. Weak, AFB-infected colonies make good targets for robber bees from nearby strong colonies. The robbers steal the contaminated honey or bee bread from the infected colony and bring the *P. larvae* spores back to their home colony.

Beekeepers. While working with their hives, beekeepers may expose other colonies in the apiary to contaminated honey or equipment.

Drifting worker bees or swarms. These bees are in the process of leaving their parent colony to start their own colony in a new location. If the parent colony is infected, the swarm will bring the spores with them to the new location.

A colony infected with American foulbrood has a patchy brood pattern. This irregular, mottled appearance is due to the mixture of healthy, diseased, and empty brood cells within the same wax comb. The healthy cells have slightly protruding and fully closed cappings. The diseased cells may be uncapped and contain larval remains, or still sealed but have sunken and punctured cappings. The empty cells are a result of worker bees chewing away the cappings of diseased cells and removing the dead larvae. The brood pattern is also patchy because the larval remains vary from the initial state of moist ropiness to the final state of dry scales adhered to the lower sides of open cells. A patchy brood pattern alerts the beekeeper that the colony is unhealthy, and while not diagnostic for American foulbrood, it raises the suspicion for this disease.

Controlling American Foulbrood

The traditional control measure for American foulbrood is to kill all bees in an infected colony and then burn the dead bees and hive materials belonging to the colony. Destroying the wax comb is critical because, apart from the bees, combs are the main carriers of *P. larvae* spores. Burning entire honey bee colonies and their hive materials is expensive, especially considering the high cost of beekeeping equipment.

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For decades, the only FDA-approved drug to control American foulbrood was the antibiotic oxytetracycline.<sup>4</sup> But in October 2005, FDA approved a second antibiotic, tylosin tartrate, to control the disease. Due in large part to the work of NRSP-7,<sup>5</sup> there are now three tylosin tartrate products approved for honey bees:

- [TYLAN Soluble](#), sponsored by Elanco Animal Health (NADA<sup>6</sup> 013-076);
- [PHARMASIN Soluble](#), also called TYLOVET Soluble, sponsored by Huvepharma AD (ANADA<sup>7</sup> 200-473); and
- [TYLOMED-WS Soluble Powder](#), sponsored by Cross Vetpharm Group Ltd. (ANADA 200-455).

Both PHARMASIN Soluble and TYLOMED-WS Soluble Powder are [generic copies](#) of TYLAN Soluble.

The most recent antibiotic to be added to the beekeeper’s arsenal against American foulbrood is lincomycin hydrochloride. In March 2012, FDA approved LINCOMIX Soluble Powder, sponsored by Pharmacia and Upjohn Co., a Division of Pfizer, Inc. (NADA 111-636). Studies to support the drug’s approval were done by the Bee Research Laboratory, part of USDA’s Agricultural Research Service, in Beltsville, Md., in cooperation with NRSP-7. Based on the results of these studies, FDA concluded that [LINCOMIX Soluble Powder](#) is safe and effective to control American foulbrood in honey bees when used according to the label.

LINCOMIX Soluble Powder is mixed with powdered sugar and applied as a dust inside the bee colony once weekly for three weeks. The bees consume the sugar-lincomycin mixture to clean the hive.

During feeding, the nurse bees pass the drug to the larvae. Similar to other drugs approved for honey bees, LINCOMIX Soluble Powder is fed in early spring or late fall before the main honey flow begins to avoid contamination of production honey. The three weekly treatments should be completed at least four weeks before the start of the main honey flow.

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