

Dealing with American Foulbrood

American foulbrood (AFB) is a highly contagious bacterial disease of honey bee larvae. Diseased colonies usually die. The unprotected, spore-contaminated nectar, honey, and pollen stores of the diseased colony are robbed by healthy colonies within flight distance, bringing inoculum to the next colonies. There is no method by which your bees can be prevented from robbing a dying or dead colony. So, if you are keeping bees in an area known to have a history of American foulbrood, it is a good idea to use limited prophylactic antibiotic treatments during the periods when your bees are most likely to be robbing (nectar and pollen dearths).

Diagnostic signs of AFB are fully described in beekeeping textbooks and on numerous Internet sites. If you observe brood that appears to be diseased, do not poke in it with your hive tool. If it is AFB, then your hive tool can spread the spores to many other colonies. There is a diagnostic kit on the market (produced by Vita and sold in beekeeping supply stores) that allows users to collect and process samples of bee tissue, then analyze the mixture in a chamber that produces one line to show that the system is working and two lines if AFB is present.

Currently two antibiotics are registered for controlling AFB. Oxytetracycline hydrochloride (sold under the trade name Terramycin[®]) is sold in foil packets containing TM 25 soluble powder. The 25 stands for 25 grams of TM per pound of mixture. However, the foil packet contains less than a pound, and that has to be figured into any recipes that are used. The easiest recipe is to blend four parts of powdered sugar with one part of TM 25 and spread two tablespoonfuls (200 mg active ingredient) along the top bars of the brood box holding the youngest brood. Three treatments, at ten day intervals, in the spring are recommended, especially during dearth periods. Try to get the final treatment on the colony six weeks before the beginning of an anticipated honey flow. A single treatment in the fall should be adequate, after the honey crop has been removed.

Using TM 25 to "cure" an infection in a colony is apt to lead to later problems. Although disease symptoms are no longer seen, AFB spores have contaminated the bees' stored food. At some later date, the bees will get back into the spores and symptoms will develop, again. Then more antibiotic is used. Frequent or persistent exposure to Terramycin can select for resistant strains of bacteria. Such strains are being found around the U.S., as well as other places in the world. Increasing the dose of Terramycin may lead to control of symptoms, but at concentrations much higher than the recommended dose, Terramycin causes mortality in the brood. Attentive beekeepers examine their colonies frequently for AFB. If any is found, the whole colony and hive are burned, or the combs are wrapped in paper, then plastic, and buried or sent off to the landfill. Bottom boards, covers, and boxes that housed an infected colony are scorched with a torch before being used again. Burning and disposal in the landfill require interacting with the County Agricultural Commissioner in the county of disposal and cooperation with the Air Resources Board or the landfill operator.

Use of Terramycin in vegetable shortening-based "extender patties" showed that the effective life of the antibiotic could be lengthened with this formulation, but there was a tendency to leave the patties on the colonies longer than the powdered sugar treatments would have lasted. At least in part, that is due to the effectiveness of the patty against tracheal mites. However, the longer the antibiotic is in the hive, the more chance there is for selecting resistant bacteria. So the extender patty must be limited in its use to the same period of time that the powdered sugar formulation would have been used.

A second antibiotic, tylosin (a veterinary medicine), has been registered for use in AFB management. The trade name is Tylan[®]. Unlike Terramycin, Tylan is registered solely for "therapeutic" treatments. That means treatment only after the disease has been observed in the brood. Tylan is a very effective therapeutic agent at 200 mg per treatment. It eliminates symptoms of disease very quickly. It also persists in the hive longer than did residues of Terramycin. No residue tolerance has been set for tylosin in honey in the U.S. or California, because it was determined that, when used as directed on the label, the residue was below that which would affect an organism consuming the honey. However, this antibiotic should not be applied in sugar syrup. It persists for six months in the hive in sugar syrup and for a year in honey. Be certain to follow the label instructions, exactly, to prevent contamination of your honey crop.

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