

**AGRICULTURAL RESEARCH FOUNDATION
INTERIM REPORT
FUNDING CYCLE 2020 – 2022**

TITLE: Investigating the prevalence of honeybee bacterial diseases and improving beekeeper access to antibiotics by expanding veterinarians' knowledge base

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EXECUTIVE SUMMARY: American foulbrood (AFB) is a rare but serious honeybee brood disease caused by spore-forming bacteria. The disease is highly contagious and untreated colonies will die. Antibiotic therapy can be used to prevent the infection from worsening and spreading. Oregon beekeepers have the option of treating colonies with antibiotics. European foulbrood (EFB) is a more common honeybee brood disease, caused by non-spore-forming bacteria. Signs of disease may clear spontaneously, especially during resource abundance. However, EFB has recently become more pathogenic and infection may persist in the hive. In these cases, beekeepers may use antibiotics for treatment of EFB. In Oregon, the prevalence and cyclic nature of AFB and EFB are not well understood.

Since the 1940s, livestock producers (including beekeepers) have used over the counter (non-prescription) medicated feeds containing antibiotics to prevent, control, or treat bacterial infections in animals. Some of these animal producers had never directly consulted a veterinarian or had a veterinarian visit their farm. However, on January 1, 2017, the Food and Drug Administration implemented the Veterinary Feed Directive (VFD) to promote the judicious use of antibiotics in food-producing animals (including honeybees). Many beekeepers are unable to obtain a VFD because veterinarians have not been trained to examine beehives. As a result, beekeepers are finding serious challenges in getting antibiotics necessary for treatment of AFB and EFB.

OBJECTIVES: The objectives of this research are to: (1) quantify the prevalence of AFB and EFB in Oregon commercial apiaries and (2) increase the number of veterinarians in rural and urban areas of Oregon willing to write VFDs for beekeepers.

PROCEDURES:

Objective 1: The plan was to sample larvae from honeybee colonies in six large commercial beekeeping operations in Oregon (3 in eastern, 3 in western regions) during spring and summer 2020 and 2021 to develop valuable insights on the prevalence and seasonal nature of two important bacterial diseases. Because there were no cases of AFB or EFB in 2020 (see SIGNIFICANT ACCOMPLISHMENTS TO DATE), *these samples will be collected in 2021.*

Objective 2: A one-hour program on the VFD and honeybee disease identification was developed for delivery to veterinarians. The trainings have been provided within individual clinics in rural and urban Oregon. Following the training, veterinarians who are willing to work with beekeepers are added to the Oregon State Beekeepers Association website (<https://orsba.org/veterinarians/>). *Thirty additional veterinary trainings are planned for 2021.* To assess the efficacy of this veterinary program from the perspective of beekeepers, a survey developed in Qualtrics (https://oregonstate.qualtrics.com/jfe/form/SV_9t7PIqdLHitvk2N) was distributed to participants of the Oregon State Beekeepers Association virtual meeting in November 2020. *Additional surveys will be distributed in 2021 through the Oregon State Beekeepers Association, Central Oregon Beekeepers Association, Southern Oregon Beekeepers Association, Eastern Oregon Beekeepers Association, Willamette Valley Beekeepers Association, Lane County Beekeepers Association, Portland Urban Beekeepers Association, and the Oregon Master Beekeeper Program.*

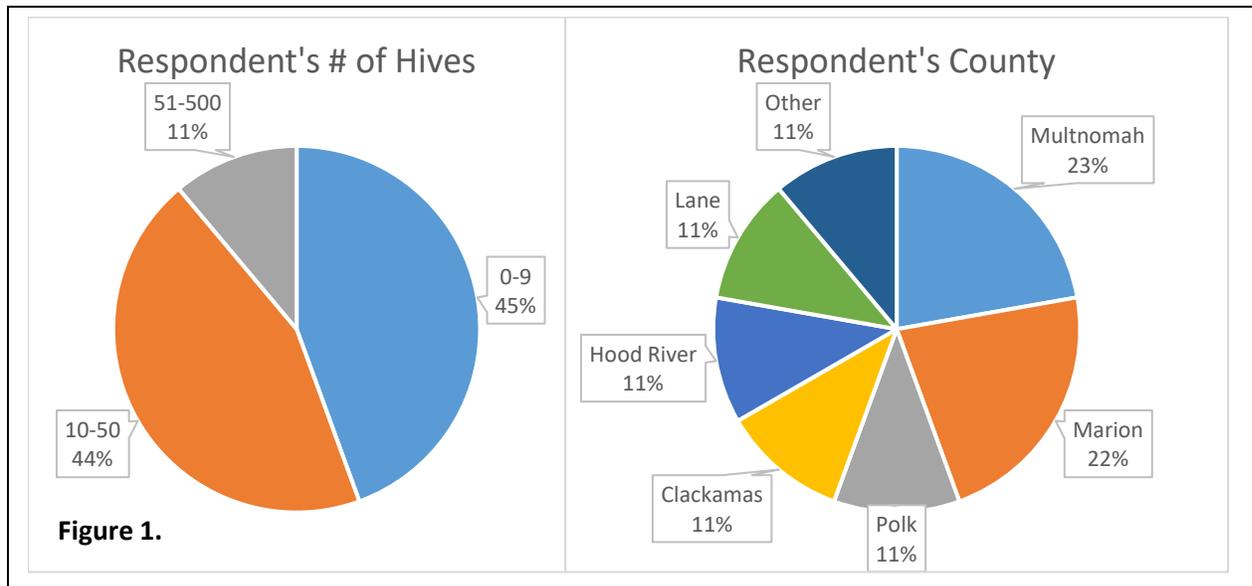
SIGNIFICANT ACCOMPLISHMENTS TO DATE:

Objective 1: Fortunately for the Oregon beekeepers, there were no EFB cases reported in 2020 and as a result, there were no samples collected for testing. However, the climactic conditions in 2021 have been like conditions in 2019, when EFB was widespread and problematic. We will continue to seek out EFB cases and collect samples when found.

Objective 2: Due to university closures and travel restrictions from Covid-19 and wildfires, completion of this project has been significantly delayed. Despite this, a one-hour program was provided at Oregon State University to veterinarians (n=24) on how to diagnose and treat bacterial diseases in honeybees. From this, 71% (17/24) of the veterinarians surveyed responded that they would issue a VFD to a beekeeper if requested. In addition, a two-hour program was provided at the Oregon Veterinary Conference to veterinarians (n=10) on how to diagnose and treat bacterial diseases in honeybees. Moreover, individual 1-on-1 trainings were provided to veterinarians (n=7) in their own clinics (see below):

Name of Veterinary Clinic/Hospital	County	Name of Veterinarian
Pacific Veterinary Clinic	Josephine	Rebecca Hall Cross
West Eugene Veterinary Hospital	Lane	Mara Supan
Del Oeste Equine Hospital	Lane	Kathy Connell
Periwinkle Pet Clinic	Linn	Kim Millhollin
Scio Animal Clinic	Linn	Brian Dietrich
Santiam Equine/Cordon Rd Veterinary Clinic	Marion	Terry Geros
South Valley Animal Hospital	Umatilla	Greg Proctor

Demographic information from beekeepers surveyed in 2020 is illustrated in Figure 1 (next page). Forty-four percent of beekeepers surveyed were using antibiotics to treat honeybee bacterial diseases and 100% of these beekeepers did not have a VFD to use antibiotics. These beekeepers reported that their source of antibiotics was either stockpiled antibiotics prior to 2017 or obtaining antibiotics from other beekeepers with VFDs.



ADDITIONAL FUNDING RECEIVED DURING PROJECT TERM:

No additional funding has been received for this research.

FUTURE FUNDING POSSIBILITIES:

Our research team plans to expand the veterinary training efforts into Washington, Idaho, and Montana and seek funding through the USDA Sustainable Agriculture Research & Education (SARE) grant for this work.