OP-164 [Bee Health]
Taking the sting out of honey bee medicine: training and tools for veterinarians

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BRAP - Bridging research and practice

In 2017, federal policy changes in the United States required that beekeepers work with a veterinarian to access needed honey bee medications - treatments that used to be directly available. Honey bees, like other animals, can be affected by viral, fungal, and bacterial diseases, but finding good care can often be difficult, as honey bee medicine is not covered by most standard veterinary schools. Trained veterinarians are needed to provide access to needed antibiotics, but in time can also help to address other issues with the bee crises, including optimizing nutrition, and managing parasites.

In 2022, four universities began working together on developing training materials for veterinary professionals. We first administered a survey to determine the level of interest, confidence, and ability of veterinarians to take on beekeeping clients. This survey also highlighted training gaps and needs to focus our materials. In the second objective we provided hands-on training for over 100 veterinarians in four states, and we developed and disseminated over a hundred honey bee veterinary medicine kits. In the third objective we developed online training materials to address gaps from the survey including a diagnostic training module and financial guidance to help veterinarians set up a honey bee medicine side business. Finally, we increased our work with veterinary students, developing rotations and special problem courses at veterinary schools and two traveling externships for students to work in the industry.

We have had positive results from our work and are developing materials that can be shared with other extension educators and specialists to help train veterinarians in other states.

Taking the sting out of honey bee Medicine:

Training and tools for veterinarians

Meghan Milbrath 2025

Michigan State University,

East Lansing, Michigan USA

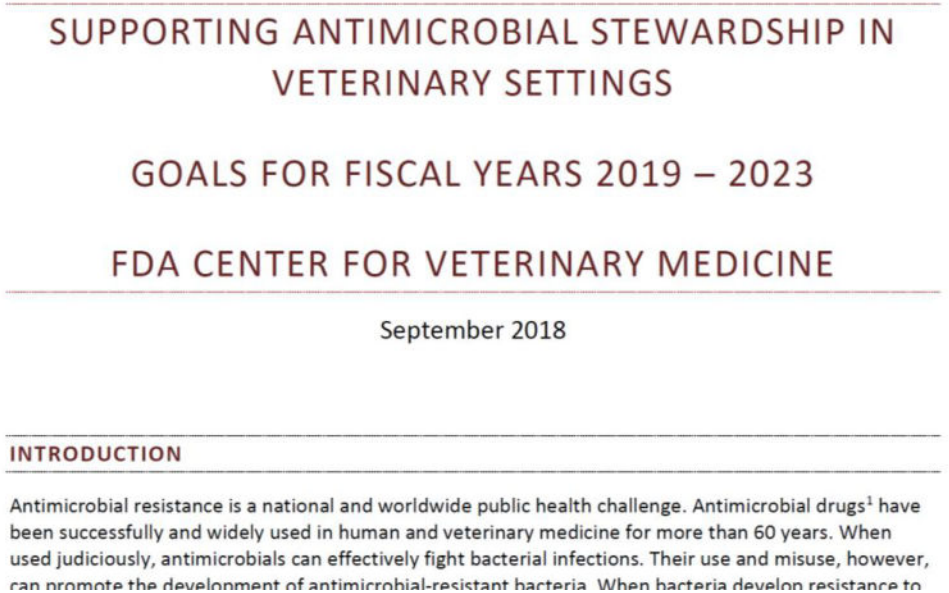
Photo by Ana Heck

The history of honey bee veterinary medicine in the United States of America.

- Historically, beekeepers could purchase antibiotics directly from a beekeeping supply company.
- If inspections are needed (e.g. for health certificates) they are performed by Inspectors from the State Government (Department of Agriculture, usually plant division).
- Generally, all inspectors and all regulations regarding honey bees are at the state level.

Apiary Inspectors of America

In 2018, the United States Food and Drug Administration (FDA) released a 5 – year action plan to support antimicrobial stewardship in veterinary settings.



SUPPORTING ANTIMICROBIAL STEWARDSHIP IN VETERINARY SETTINGS

GOALS FOR FISCAL YEARS 2019 – 2023

FDA CENTER FOR VETERINARY MEDICINE

September 2018

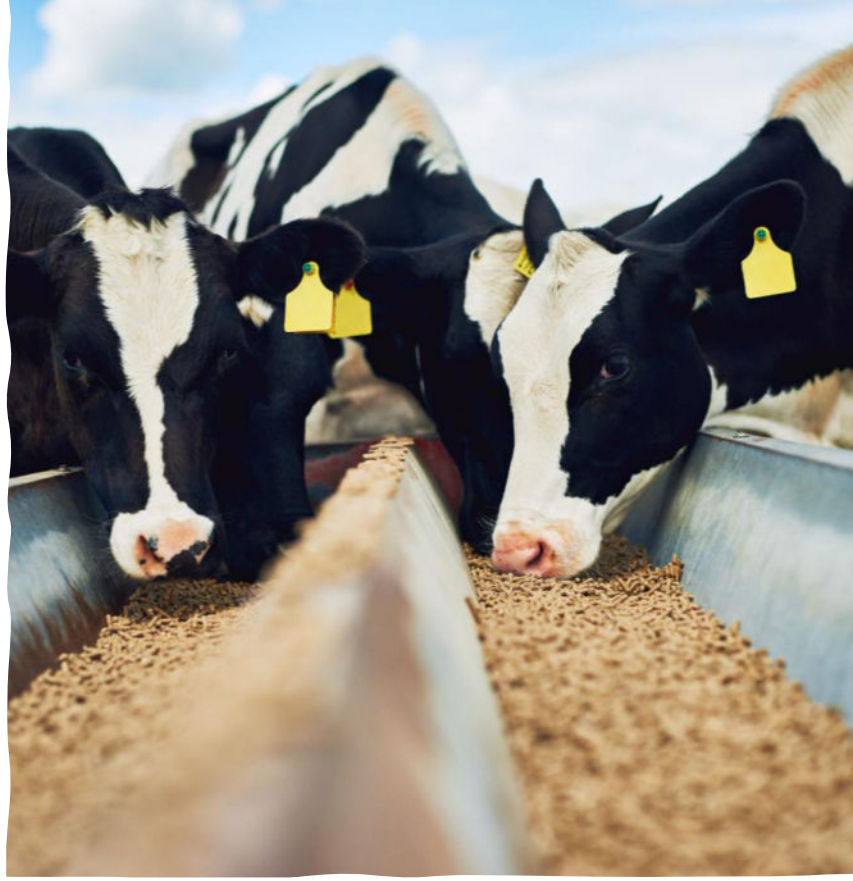
INTRODUCTION

Antimicrobial resistance is a national and worldwide public health challenge. Antimicrobial drugs[1] have been successfully and widely used in human and veterinary medicine for more than 60 years. When used judiciously, antimicrobials can effectively fight bacterial infections. Their use and misuse, however, can promote the development of antimicrobial-resistant bacteria. When bacteria develop resistance to

- 32 points to reduce / improve antibiotic use in veterinary applications.
- One point was to update the federal “Animal Drug Availability Act.”
- Any animal feed containing a VFD drug can only be fed to animals based upon an order issued by a licensed veterinarian.

Purpose of FDA Changes

- The changes were made to address cases where large amounts of antibiotics were used in feed (swine, cattle, poultry).
- Honey bees were not the intended target, they fit the definition of food producing animals using medically important antibiotics (fish too).



Outcomes of federal changes - 2018

We had a requirement of veterinarians but we did not have any trained honey bee veterinarians.

- Not a required part of the curricula
- Not a part of licensing exams
- Confusing –
  - Not all drugs are covered – only those that are medically important to humans
  - Multiple types of ‘orders’ for the same drug, depending on the manufacturer.
  - VFD order is not familiar to small animal vets.

Antibiotics in the US

The United States has about 2.7 million honey bee colonies.

Many are migratory - high risk for bacterial disease.

Beekeepers would approach a veterinarian, get turned away (and then call me).

Funding to support Training for veterinarians from the US Department of Agriculture

- NIFA Veterinary Services Grant Program (VSGP)
- SARE Research and Education Grant

This work is created with funding from the Veterinary Services Grant Program (VSGP) Education, Extension, and Training (EET) competitive grants program of the USDA National Institute of Food and Agriculture (NIFA) (2202-04170) and the USDA NIFA Sustainable Agriculture Research and Education (SARE) Research and Education Grant program (LNC22-468).

Extension Partners

Katie Lee

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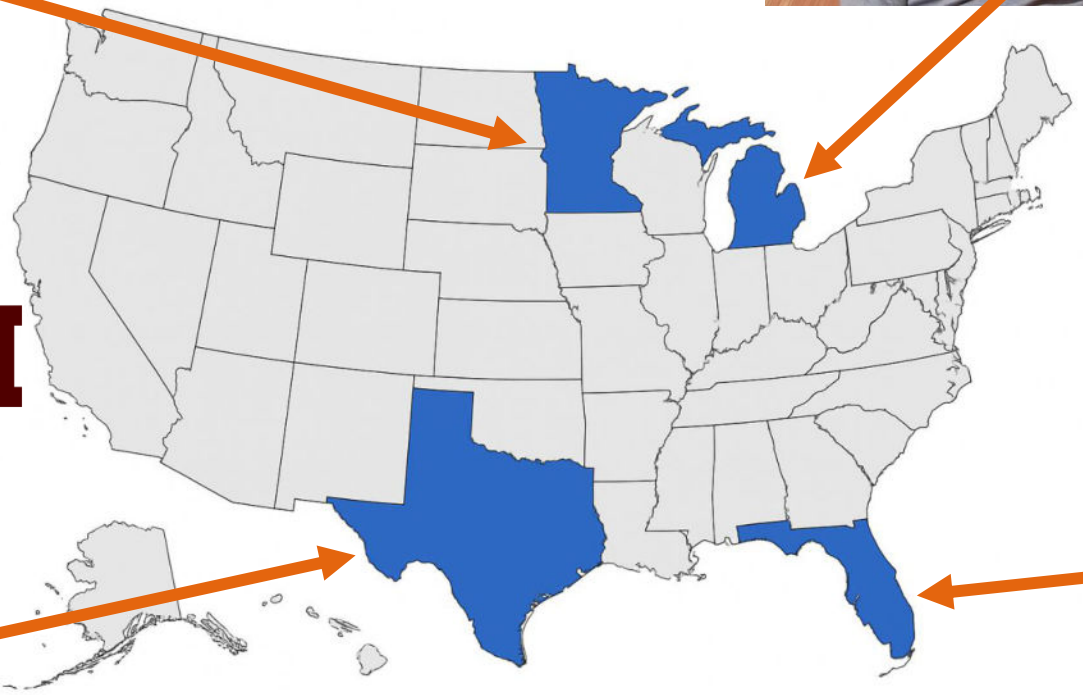
MICHIGAN STATE UNIVERSITY



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Business

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Diagnostics

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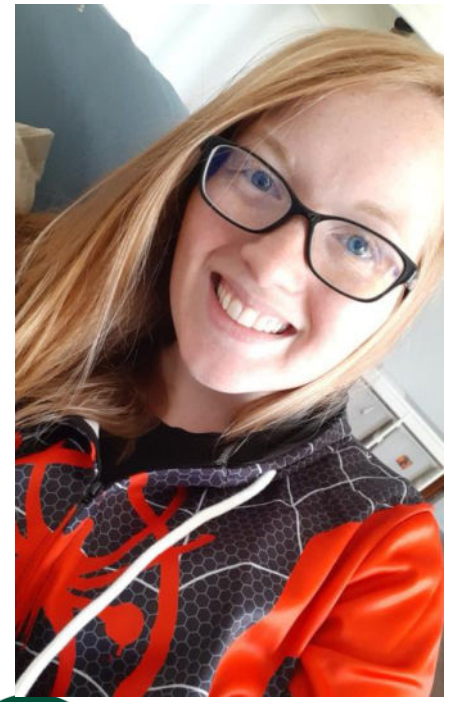
Heather Chapman



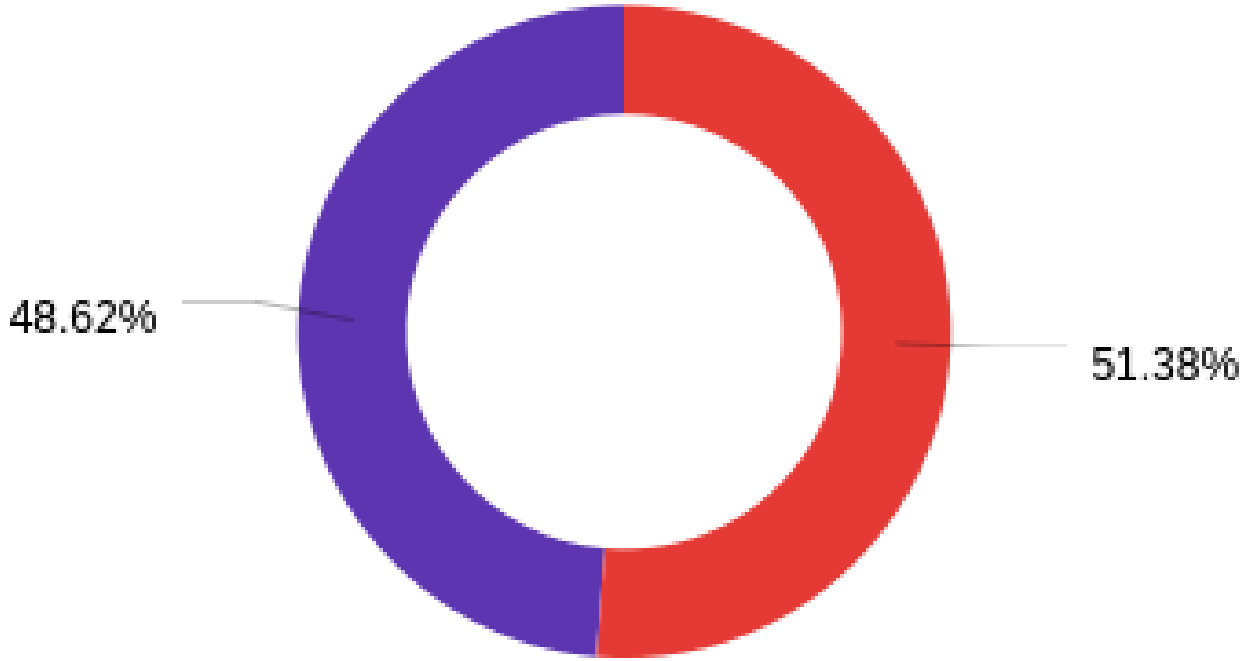
MICHIGAN STATE UNIVERSITY

BeesNeedVets.com

Objective 1 - Survey

As of September 2025, 1,744 responses have been collected from all 50 states, DC, Canada, and outside the US & Canada.

Of the veterinarians who have been approached for help from a beekeeper:



51% DID provide a beekeeper with assistance.

49% DID NOT provide a beekeeper with assistance.

Veterinarians were asked about obstacles to providing care

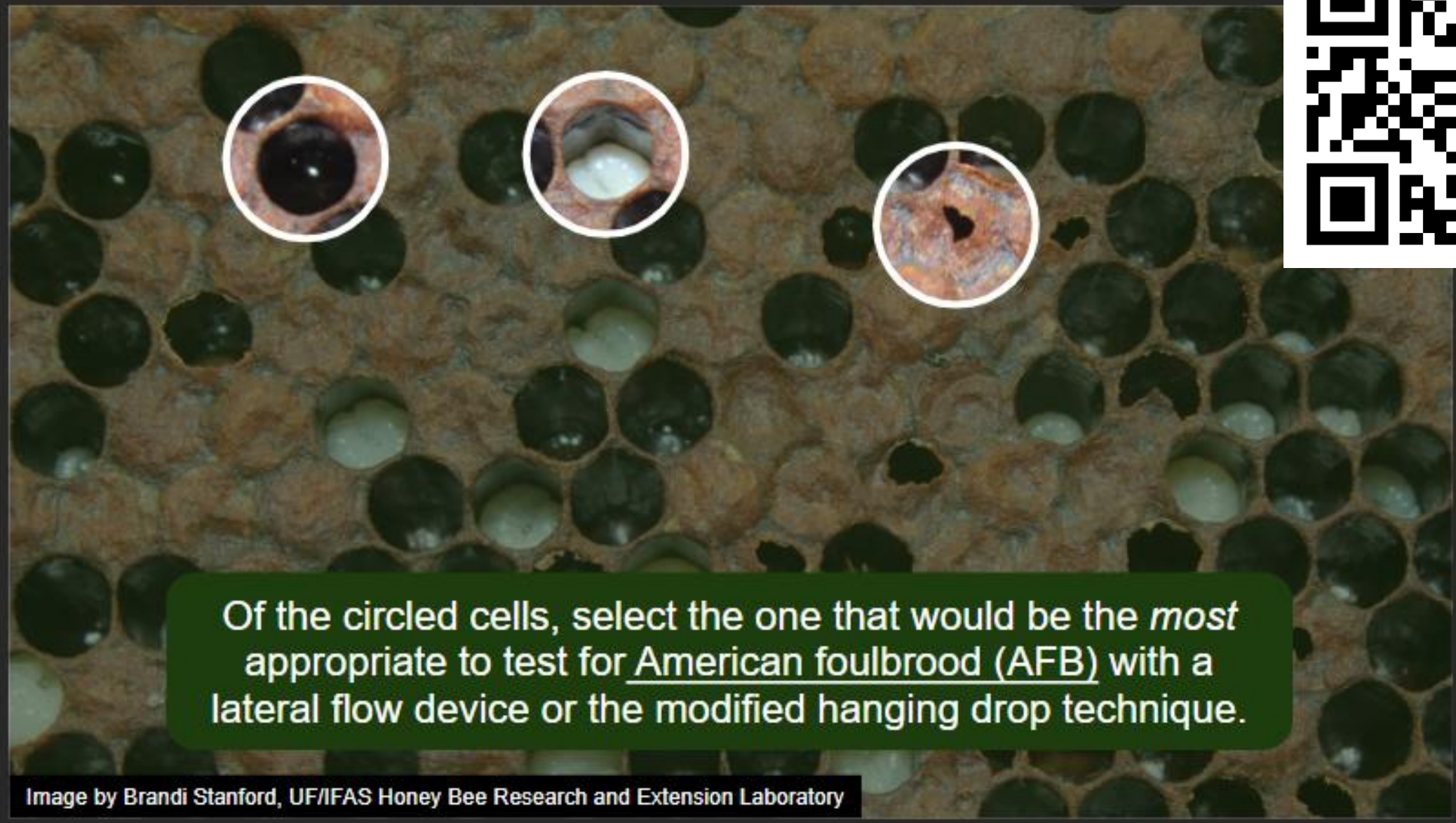
Only 10% of respondents said that they could identify honey bee diseases.

Diagnostics

Diagnostic Tools for honey bee diseases

- Image galleries of sick brood
- Games to identify different diseases (and healthy brood)
- Works on phones
- Printable one-pagers (www.beesneedvets.com)
- Step by step instructions for field tests and microscopy

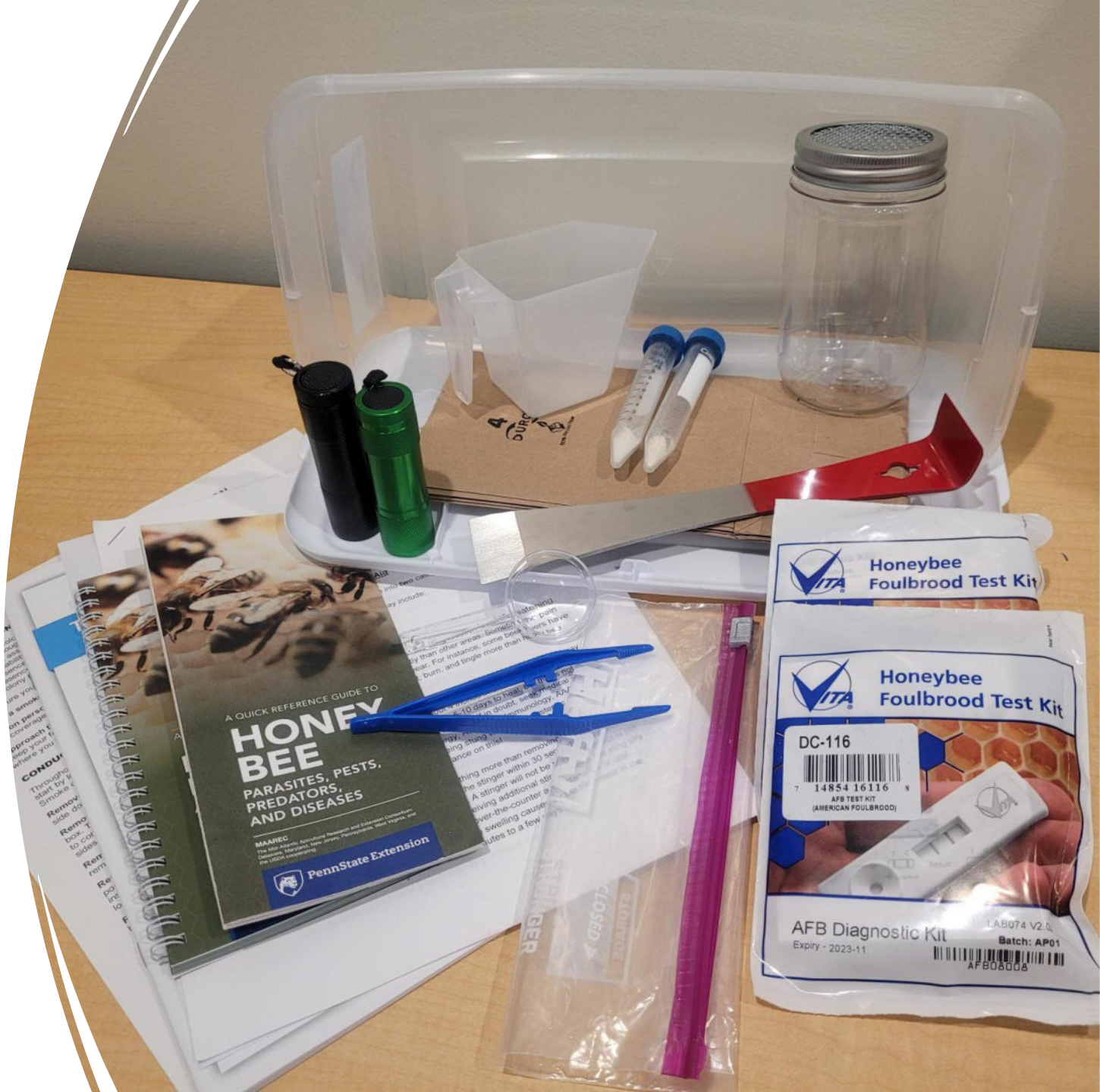
Choosing the Right Cells (LFDs and Modified Hanging Drop)



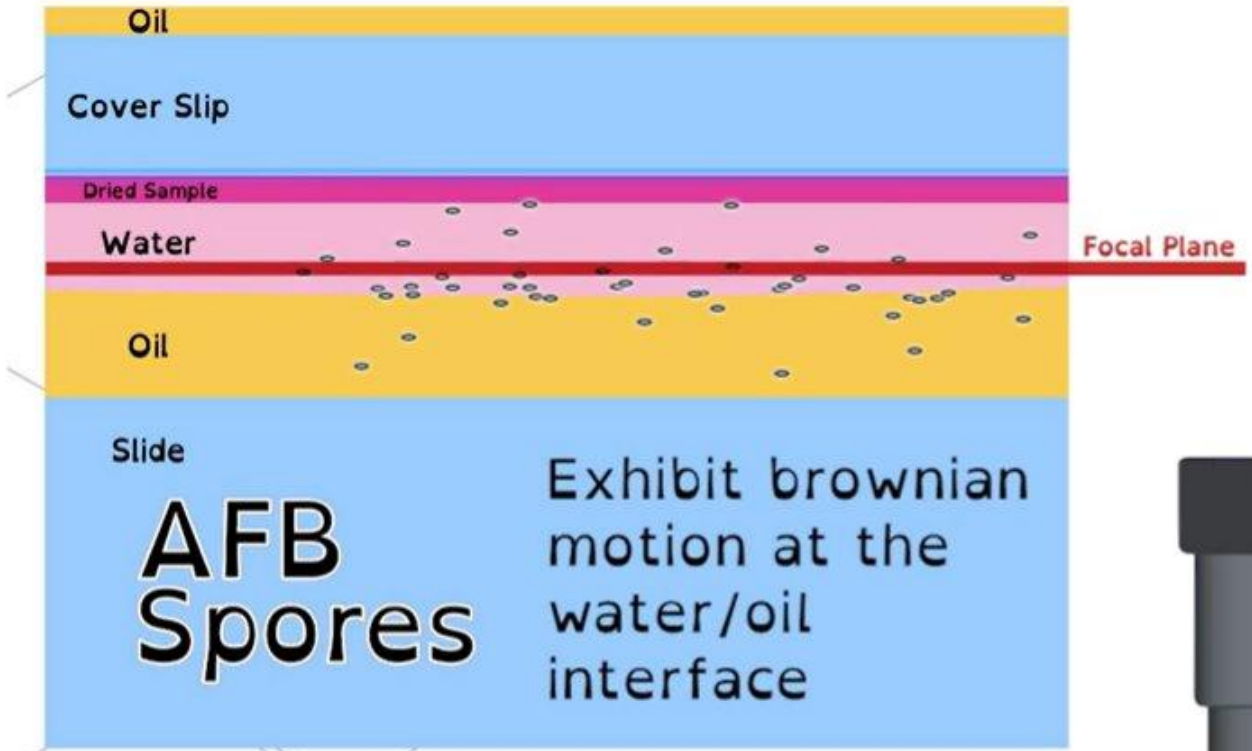
Choosing the Right Cells (LFDs and Modified Hanging Drop)

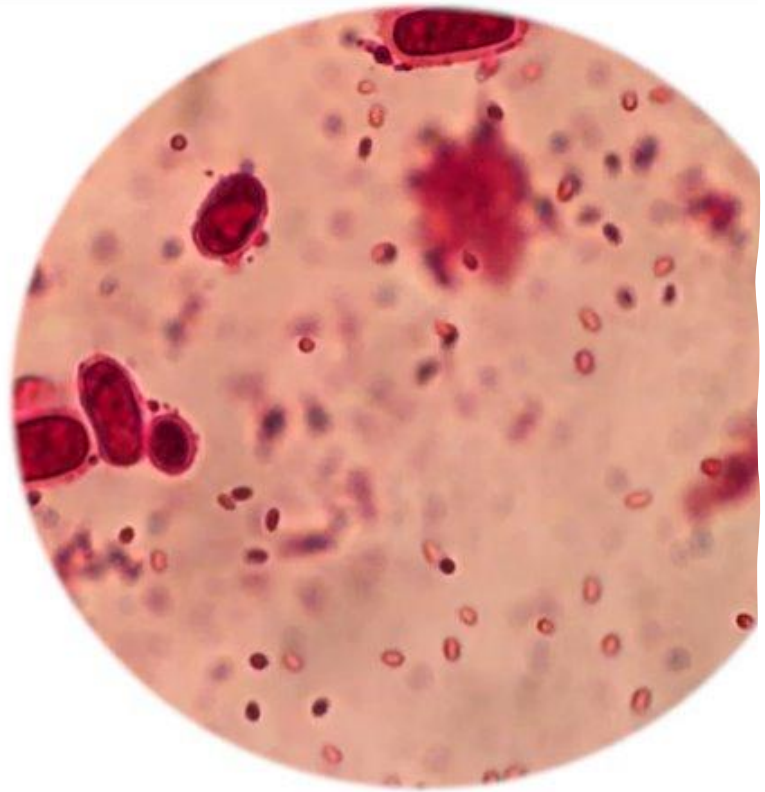
Diagnostic kits

Created and handed out over 100 kits to veterinarians.



Hands-On Training – Microscopy


Oil
Cover Slip
Dried Sample
Water
Focal Plane
Oil
Slide
AFB Spores
Exhibit brownian motion at the water/oil interface



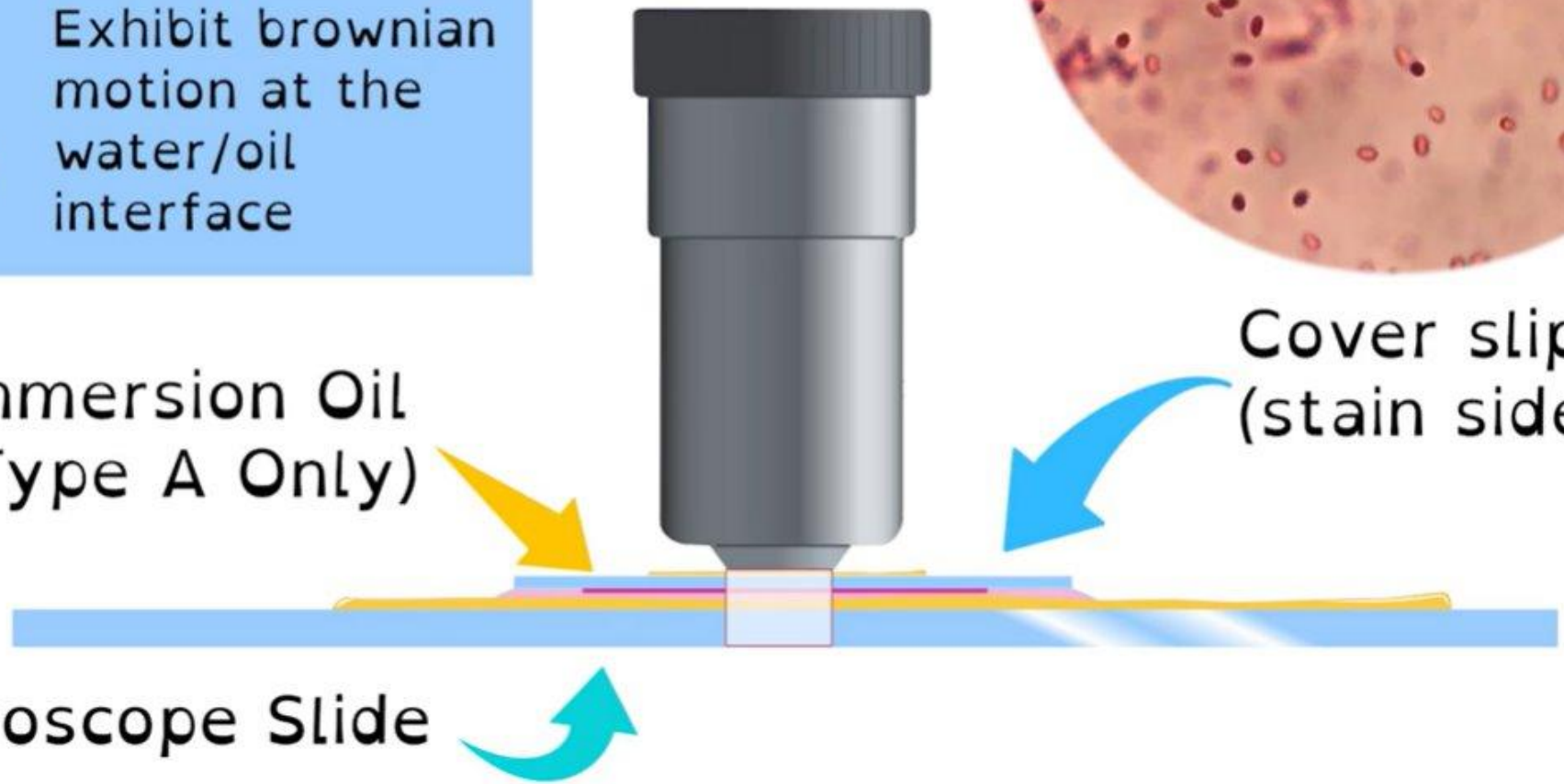
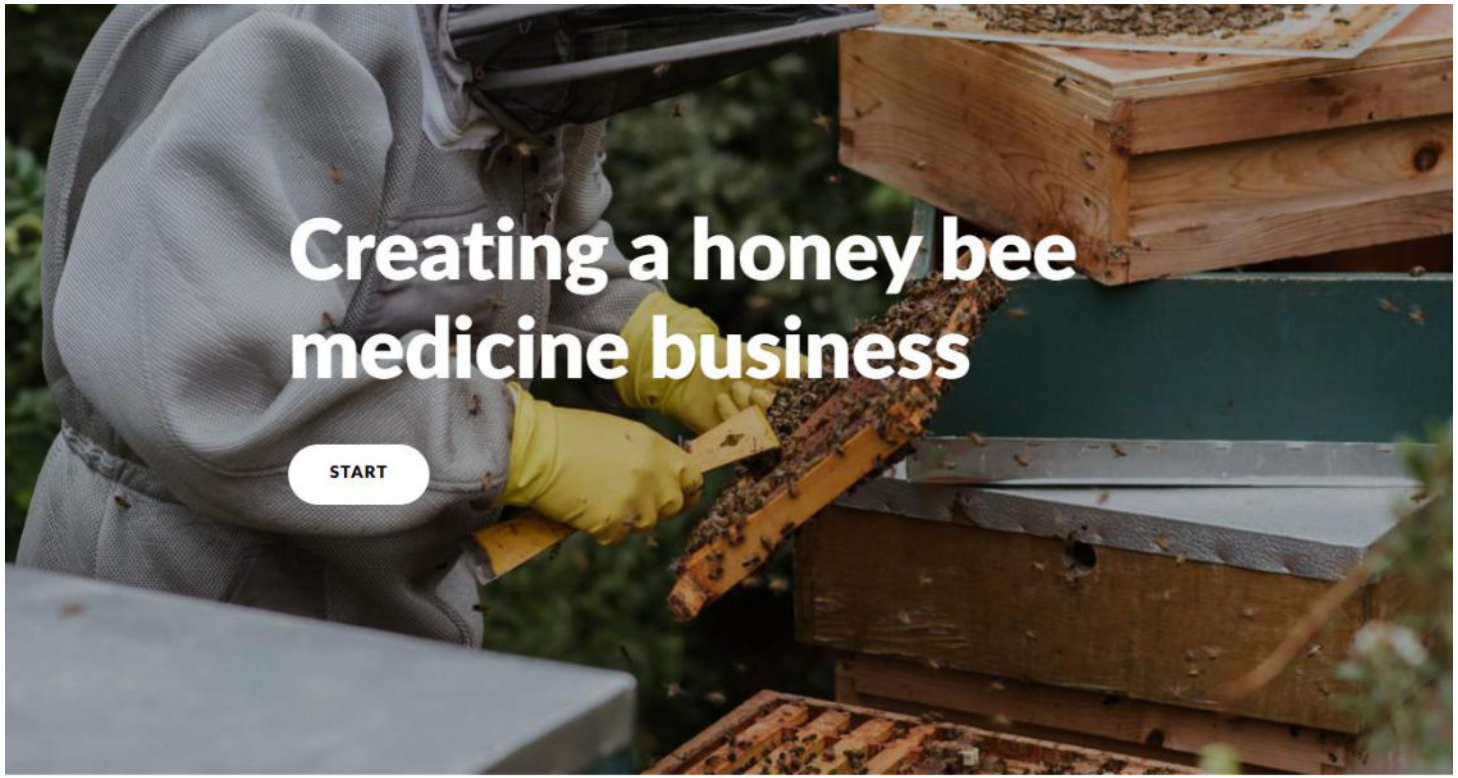

Immersion Oil (Type A Only)
Cover slip (stain side do
Microscope Slide

Photo by Heather Chapma

Kendra Jiannuzzi
Kristol Stenstrom
KIMTECH

Obstacle 2: How do I incorporate bee medicine into my practice?

Online course - Business



MICHIGAN STATE UNIVERSITY · TEXAS A&M UNIVERSITY · UF UNIVERSITY of FLORIDA · UNIVERSITY OF MINNESOTA

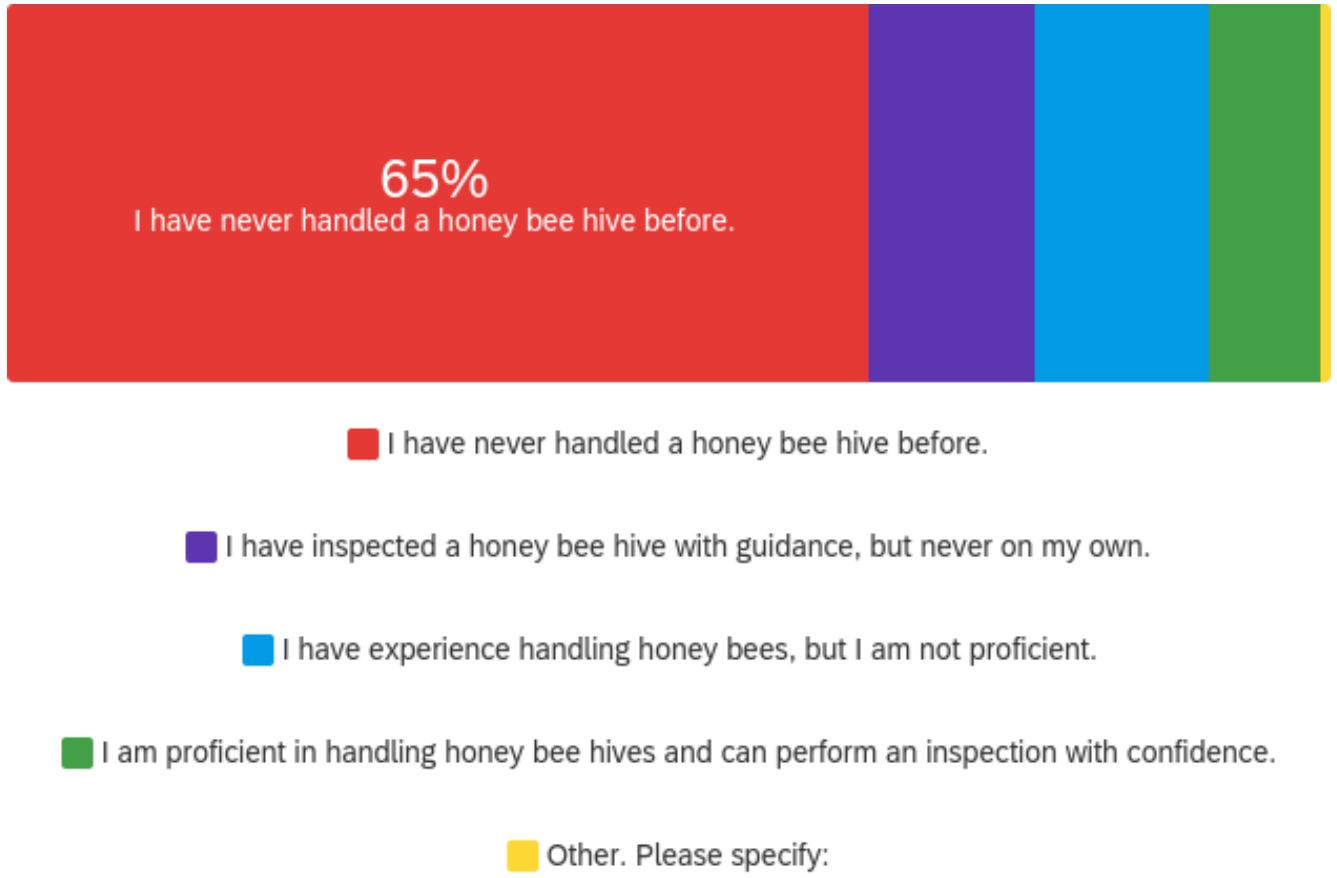
USDA · NIFA · SARE Sustainable Agriculture Research & Education

Creating a honey bee medicine business

0% COMPLETE

- INTRODUCTION
- START HERE: Introduction
- Should you become a honey bee veterinarian?
- Market analysis
- Adding honey bee medicine or starting a new practice
- Financial management
- Logistics and legalities
- Business plan
- Resources

Obstacle 3: Hive handling



Hands-on Training – In-hive clinics

Over 230 attendees at hands-on clinics:

- In Michigan, Texas, Florida,and Minnesota.
- Over 3 years:
  - Year 1 – Basic Inspections
  - Year 2 – Diagnostics
  - Year 3 – Case study

Built a community of practice

- Monthly calls during the bee season for veterinarians.
- Quarterly national calls.
- Resources – meet beekeepers and extension.

Student training – CVM Selectives / Rotations

- Michigan – Since 2018 – 3 week course
- Minnesota – 2024 – 2 week rotation
- Wisconsin – 2025 – 1 week selective

Student training – Research

Photo by Meghan Milbrath

Student training - Externships

Goals

Short term goals

- A few vets in each state that are comfortable taking on beekeeping clients.
- Many veterinarians with a basic /increased understanding of honey bees
- Resources that veterinarians can refer to (e.g. know when to prescribe antibiotics).

Long term goal – Good veterinarians that are useful for many aspects of bee health (nutrition, varroa, etc.).

Next steps

- Manuscript to publish the survey results.
- Guidelines on best practices (Standards of care) for bacterial disease.

Photo by Meghan Milbrath

Questions?

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BeesNeedVets.com

Photo: Peter Fowler