For this Apiary Inspectors of America newsletter, the focus is American foulbrood (AFB), and specifically a phage-based product that may help apiarists control this disease that is arriving to market in March 2019. Many apiarists have had the unfortunate task of burning beehives due to American foulbrood, caused by the bacterium Paenibacillus larvae. We know the symptoms: foul odor, sunken wax cappings, ropy liquefied larval remains, and perforated cappings. Once the bacteria has ravaged the colony, American foulbrood will leave spores, commonly called “scale.”

According to Dr. Stephen Pernal (Canada), there are four distinct strains of AFB: two highly contagious strains, and two less contagious. Under Dr. Walter Rothenbuehler (Ohio State in the 1950s), there had been extensive research to isolate queen lines of hives that showed resistance to American foulbrood bacteria. However, with the emergence of antibiotics, Rothenbuehler’s research lines faded into academic history. For over sixty years, U.S. beekeepers have controlled and/or suppressed visible symptoms of this disease, burning when the futility of trying to control it became apparent and/or shaking bees into new equipment if states or provinces allowed such practice.

Fortunately, Dr. Sandra Hope at Brigham Young University began working with bacterial phages (naturally occurring viruses that only infect bacteria) that destroy Paenibacillus larvae bacterium. She and her team have isolated different phages from the environment and have created a phage-based product called “Broodsafe.” The team had filled out the paperwork for it to be considered Generally Regarded as Safe, but the U.S. federal shutdown delayed the approval process. Broodsafe is ready for pre-ordering at www.broodsafe.com. This website also has an excellent video that describes how phages work to destroy AFB bacteria. Shipments may be ready as early as March 2019 and should be shelf-stable for approximately 6 months. The product is a powder and can be mixed with sugar or applied as a dust. The beekeeper may need to apply multiple applications. If a hive has scale, early research seems to indicate that Broodsafe will simply adhere to the scale and destroy any spore that may become active. So, beekeepers may apply this product in a pro-active manner. This product will not work for European foulbrood. My hope is that apiarists can have another tool in their toolbox as this year begins. I do not receive kickbacks from Broodsafe, but I have burned enough hives in 2014-2015, standing helplessly by a burn pit, to never want to burn another.

A phage inserts its genetic code into bacteria, ultimately destroying the bacteria.
Veterinary Feed Directive

It is no secret that since the end of WWII, the United States has embraced antibiotics, using them in everything from our food commodities (milk, chicken, you name it) to bandaids. Beekeepers in the U.S. jumped on that bandwagon too, as the demand for honey bees began to exceed supply. The demand for honey also began to exceed supply, (the U.S. is the world’s largest consumer of honey), and that too seems to have increased the use of antibiotics. However, addressing millennials’ demand for food that is free of antibiotics, the Food and Drug Administration (FDA) has taken on the herculean task of reducing the amount of antibiotics appearing in food, including feeds administered to “food-producing” livestock. The easy availability of antibiotics to suppress American foulbrood came to a halt, Jan. 1, 2017.

Despite being classified as a Minor Species by the FDA (don’t get me started), honey bee hives have been included as “food-producing animals” because of the bees’ ability to produce honey. So the Veterinarian Feed Directive has impacted many beekeepers’ ability to purchase antibiotics over the counter at bee supply companies. The beekeeper can no longer buy antibiotics over the counter without a prescription from a veterinarian. An apianist report will not suffice.

If a beekeeper suspects a hive has American foulbrood, he or she will have to reach out to a veterinarian willing to provide a farm visit (average farm visits around Lexington, KY, average $50-75.00 USD) if the beekeeper wants to use an antibiotic to treat the hive. The veterinarian must write a prescription for an antibiotic upon a diagnosis that the hive does indeed have foulbrood. If the foulbrood persists, the veterinarian must again be summoned in six months to fill out another VFD.

In Kentucky, in 2017, I provided a diagnostic kit for both AFB and EFB to every local bee association, ideally, to be kept at the cooperative extension office for easy availability for beekeepers. There is a nominal cost of approximately $14.00 and the beekeeper can test a problem-hive and assess the disease conditions without having to call a veterinarian. Keep in mind that these test kits have an expiration date and are temperature sensitive. Beekeepers must be encouraged to maintain current diagnostic kits on hand for emergency situations. As an alternative, beekeepers may send a sample of suspected larvae or comb to the USDA Bee Research Laboratory in Beltsville, MD. For more information on how to collect samples and ship them for analysis, please see the lab’s website.
Some State American Foulbrood Programs:

**Indiana** has a company IOTRON that can sterilize bee equipment, with an alternative location in British Columbia, Canada. They use an Electron Beam process to sterilize any equipment. They used to have a beekeeper day where they would sterilize supers with frames in them, however they did not have enough beekeepers participating and no longer run this program. Now if a beekeeper wants to have IOTRON sterilize their equipment, it will cost $500.00 (100 hive bodies ready to treat, $5.00 per hive body). The beekeeper must contact the company to schedule a date for equipment sterilization, since IOTRON has to stop their other sterilization to do the hive body sterilization.

IOTRON
4394 Park 30 drive
Columbia City, IN 46725
260-212-1722

**Kentucky** has a portable autoclave that can be taken across the state to sterilize equipment (see pictures below). The person who had been hired to drive it has left Kentucky State University, so it is not currently in use. I recommend that beekeepers keep diagnostic kits on hand or at the local extension office for beekeepers to access (and reimburse bee associations if the kits are needed). Beekeepers should burn the hives if the diagnostic kits indicate an AFB infection.

Autoclave at Kentucky State University, photos taken by Tammy Horn Potter, 2017.
**Some State American Foulbrood Programs:**

**Maine:** Jennifer Lund has access to a smaller autoclave (fits 3-5 frames at a time). “I use it mostly for sterilizing tools/gloves/etc. We burn equipment if it has AFB. We have two or three facilities in Maine that could do hive component irradiation but they are unwilling to deal with beekeepers and their equipment. The facilities deal mostly with biomedical products and hives are ‘too messy’.

“Typically, Maine has 1-3 hives that test positive for AFB and are destroyed each year. Most of the time it is not living hives being destroyed but old equipment in a barn or at an abandoned apiary. In those cases I would just opt to burn the equipment.”

**Maryland:** Cybil Preston has an unusual ally in her AFB monitoring program. Tukka, a Springer Spaniel, is only the second dog licensed to detect AFB in the nation (the 6th dog in the Maryland program). An article was published in the New York Times, covering Cybil’s efforts in training these dogs:


In addition, below are the numbers listed by the AIA apiarists in response to a query about how many cases each state had recorded in 2018:

- **Delaware**, 1 case
- **Montana**, 8 cases
- **Tennessee**, 8 locations, with averages of 8 colonies per 36,000 hives
- **Utah**, 10 cases

[Decontamination unit, photo provided by Don Hopkins, North Carolina]
Announcements

New Jersey State Apiarist Position Opening

New Jersey has announced that they are looking to hire a new State Apiarist effective immediately. Below is a brief description of the position as well as information on how to apply. Please pass this information along to anyone who is qualified and might be interested.

Issue Date: February 13, 2019
Closing Date: February 27, 2019
Salary Range: $58,687.32 - $66,875.40
Announcement Number: 2-19

Applicant Requirements:
- Education: Graduation from an accredited college with a Bachelor’s degree.
- Experience: Three years of professional experience in the bee industry including the identification and eradication of bee diseases, two years of which shall have included supervisory responsibility.
- Applicants must submit a cover letter including the announcement number, resume, and transcripts by the closing date to: Heather Knox, Personnel Assistant 3, Human Resources, P.O. Box 330, Trenton, NJ 08625 or via email to njdajobs@ag.nj.gov.

Please click here to view the original job posting.

Honey Bee Health Coalition Update

Two resources are now available from the Honey Bee Health Coalition. There is an 80-page Best Management Practices Guide at this link: https://honeybeehealthcoalition.org/hivehealthbmps/.

But no one reads anymore, and so James Wilkes (HiveTracks.com) and our very own Texas Apiarist Mary Reed designed a Varroa Mite Decision Tool, which I’ve incorporated into my talks. This tool is simple and efficient. If I am giving a talk, I will have the audience “go through” it with me. This decision tool is a “game-changer” for the beginning beekeepers in my opinion. Here is the link: https://honeybeehealthcoalition.org/varroatoool/.

Below is an example of how the Decision Support Tool guides the beekeeper to making a decision about Varroa mite treatment.

Take a well-deserved bow, Mary Reed!
<table>
<thead>
<tr>
<th>2019 Apiary Inspectors of America Committees</th>
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<table>
<thead>
<tr>
<th>Site</th>
<th>Nominating</th>
<th>Auditing</th>
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</table>
| Barbara Bloetscher  
Alyssa Piccolomini  
Natasha Garcia Andersen | Karen Roccasecca  
Don Hopkins  
Barbara Bloetscher | Kathleen Prough  
Mike Hansen |

Goal: Gather more information about the ABF 2020 meeting. Work with Kim Skyrm to organize possible field trips for the group.

<table>
<thead>
<tr>
<th>Awards</th>
<th>Resolution</th>
<th>Newsletter</th>
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| Kathleen Prough  
Keith Tignor  
Mike Studer  
Mike Hansen  
Don Hopkins | Jennifer Lund  
Tammy Potter | Tammy Potter  
Mary Reed  
Samantha Brunner  
Kim Skyrm |

Goal: Nominate AIA members for the officer positions. Elections are made at the annual AIA meeting.

Goal: Audit the records made by the AIA Treasurer.

<table>
<thead>
<tr>
<th>Standard Operating Procedure</th>
<th>Honey Bee Health Coalition</th>
<th>Nonprofit</th>
</tr>
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</table>
| Chair: Mike Studer  
Barbara Bloetscher  
Kim Skyrm  
Brandi Simmons | Samantha Brunner  
Mary Reed  
Jennifer Lund | Chair: Keith Tignor  
Kathleen Prough  
Mike Studer  
Andy Joseph  
Paul Kozak  
Alyssa Piccolomini  
Meghan McConnell |

Goal: Determine service awards, retirement awards, and student travel/scholarship (requirements, timeline, etc.)

Goal: Gather resolutions throughout the year and submit to the AIA members prior to the annual meeting.

Goal: Represent AIA in the HBHC. Participate in phone calls and meetings as needed.

Goal: Gather information needed for making AIA a 501c5 and suggest changes to the AIA constitution and by-laws in order to meet the requirements of that nonprofit status.

<table>
<thead>
<tr>
<th>Executive</th>
<th>Membership</th>
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| Samantha Brunner  
Kim Skyrm  
Keith Tignor  
Mary Reed  
Kathleen Prough  
Mike Studer  
Meghan McConnell  
Alyssa Piccolomini  
Paul Kozak  
Andy Joseph | Kathleen Prough  
Mike Studer  
Andy Joseph  
Paul Kozak  
Alyssa Piccolomini  
Megan McConnell  
Kathleen Prough  
Mike Studer  
Andy Joseph  
Paul Kozak  
Alyssa Piccolomini  
Megan McConnell |

Goal: to increase membership of AIA by reaching out to states/provinces in the designated areas.