BEE VET

Diagnostic Approach

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This semester I have been inspired to voluntarily sit in with undergraduate sophomores (19 & 20-year-olds!) and take genetics. Retake genetics. As a trained biologist and veterinarian, of course, I have studied genetics in the past. Genetics permeates just about every aspect of medicine and biology, which I have utilized throughout my career. However, the last time I sat in a genetics classroom was nearly 25 years ago – and it would be quite an understatement to simply say that much has changed in this field since the last millennium. Bees have been part of my inspiration to update my brain on the subject since genetics can play such an important role in honey bee health. With the volumes of information out there on honey bee genetics, I am attempting to equip myself to pick through the weeds of opinions and science on the subject.

It is important that we never stop learning. In the next few articles of *Bee Vet*, I would like to walk you through how a doctor, a veterinarian, works through a diagnostic process. My hope is to give you insider insight on how vets are trained to think in this scientific approach and how this process can benefit beekeepers and honey bees. This first article will focus on history, prevention, initial exams, and record keeping. Part two will focus on diagnostics and we will wrap up the series with treatment plans, medications, and return full circle to prevention.

History – Good doctors, nurses, and veterinarians are trained to get a good medical "history" about any patient before doing an exam or even seeing a patient. We will ask questions. This could seem like the third degree and some of the questions may even, at times, seem "dumb." But in our detective work, we will use open-ended questions as a technique to try to objectively learn about you, your operation, and your animals. This knowledge can help us best determine and fully understand what challenges a beekeeper and their bees may be facing. This also helps us establish the Veterinary Client Patient Relationship (VCPR) which is required by federal and state veterinary laws for us to legally practice medicine on an animal or a group of animals *(see article insert).* These laws state that "the veterinarian has sufficient knowledge of the patient" and "is personally acquainted with the keeping and care of the patient".

So, what can a beekeeper expect to be asked? The following questions are examples of typical information collected in a honey bee operation medical "history". These questions can and should be asked before a veterinarian starts any examinations of colonies.

1. What type of beekeeper (backyard, sideliner, commercial) and beekeeping operation (single yard, multiple yards, how many colonies) are you?
2. What is the reason for the consult? What is the desire/goals of the beekeeper for the visit? Are there any concerns, previous or current suspect pathogens?
3. What is the duration and severity of any concerns?
4. What are the current biosecurity practices practiced by the beekeeper? Are there any biosecurity plans in place?
5. What medications, feed, or chemicals are already in use at the beeyard/hive, including duration and dosage of any treatments applied?
6. How do you manage nutrition with your bees?
7. How do you manage *Varroa* with your bees?
8. Are any relevant hive records available?
9. Have you brought in any new stock lately?
10. Can telemedicine be used to facilitate our visit or follow-up?

Prevention

The old adage, "An ounce of prevention is worth a pound of cure." is a medical truth that is widely demonstrated in honey bee health. With all animal species, veterinarians spend much of our time applying preventative medicine. From nutrition to vaccines to parasite control to management practices, we employ preventative strategies as a rule in house cats to cattle herds. With our bees, we certainly prefer to prevent or limit diseases before they occur. Knowing what preventative practices are already employed in an operation can help us determine which diagnoses are more or less likely. I know beekeepers like their privacy. I do, too. But understand that information exchanged between a beekeeper and a veterinarian in a legitimate VCPR is confident and privileged information and it is a veterinarian's role to give beekeepers the best advice to meet your bees' and your operation's needs. We will encourage practices that not only prevent or treat one disease but improve the overall health of your colonies in the short and long terms.

The Federal definition and minimal States' definition of a VCPR:

1. A veterinarian has assumed the responsibility for making medical judgments regarding the health of (an) animal(s) and the need for medical treatment, and the client (the owner of the animal or animals or other caretaker) has agreed to follow the instructions of the veterinarian.

2. There is sufficient knowledge of the animal(s) by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s); and

3. The practicing veterinarian is readily available for follow up in case of adverse reactions or failure of the regimen of therapy. Such a relationship can exist only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examination of the animal(s), and/or by medically appropriate and timely visits to the premises where the animal(s) are kept.

Exams

After a good history is taken, it is time to examine your colonies. Full or partial inspections will be necessary depending on the situation. It is nearly impossible to evaluate a situation without an examination of the problem in the context of its environment. This is where you can be of great help to the veterinarian. Ideally these exams should take place in-person in your yard with you and your veterinarian working together as a team. First time visits and new conditions require on-site visits per VCPR laws. With the emergence of COVID-19, telemedicine has made some visits and follow-ups possible utilizing this technology.

Here are some points to remember:

1. While a veterinarian will likely have their own tools, it is best biosecurity practice to utilize your beekeeping tools (smoker, hive tools, even veils) in your yard. This helps to limit disease spread to or from your yard. Be sure to have tools ready to make the best use of time.
2. Veterinarians are great resources for making practical biosecurity recommendations that could improve the health of your colony/ies. Pick their brains on preventative medicine practices you could employ. Try to have areas where handwashing and boot cleaning can be performed.
3. Veterinarians may use disposable gloves. I know there is a wide array of opinions amongst beekeepers in using gloves, but veterinarians are well trained in how to use disposable gloves in ways that can limit disease transmission and may choose to employ disposable gloves in certain situations.
4. If a veterinarian is visiting your apiary for a sick hive or yard, they should examine that hive or yard last to prevent disease spread as much as possible.
5. Exams should be efficient but thorough. Quick, jerky or rough handling of frames should be avoided. Veterinarians will look to follow your method of working your bees, if you utilize a smooth, confident approach.
6. During an exam expect that veterinarians will want to run tests and take laboratory samples to confirm any tentative diagnosis made in the field. Confirmational objective data is always good.
7. Expect that veterinarians will keep records of the exam and any testing done. This is required by law. You may request copies of these records from your veterinarian.
8. Expect follow up calls and/or exams from the veterinarian. This is part of the process and the law.
9. If AFB is suspected, the state apiarist should be called immediately.

Record keeping

Collecting medical histories and conducting examinations are about collecting as much relevant information as possible and using this information as tools to best improve our bees' health. One of the best preventative medicine tools, helpful in both history and exams, is maintaining good hive records. Maintaining a system of individual hive identification numbers or names is critical in developing accurate records, as well.

In my travels around the beekeeping world, I have noticed that this is an area we as beekeepers can improve on. As part of my Christmas gift to you and just in time for the new year, I am sharing a simple, calendar year, hive record system with you that I developed for myself and my students. It may be helpful to backyard beekeepers, beginners or just anyone who would like to get started keeping records. The monthly records have suggestions or reminders of what you **could** be doing during that month of beekeeping depending on your management style. It focuses on regular monitoring of several key factors that determine bee health, including nutrition, hive inspections, *Varroa*, honey and seasonal management. Its seasonality is based on western Pennsylvania weather, so it could vary somewhat for you depending on the climate you live in. All you need is a three-ringed binder or an I-pad and you are on your way.

Next month, we will dive into the details of various diagnostics utilized in the beeyard and how they can help us care for our bees! BC

WEEKLY ASSIGNMENTS

NAME: _____ MONTH: _____ YEAR: 20

POSSIBLE TASKS	WEEK 1	WEEK 2	WEEK 3	WEEK 4/5
NUTRITION: Remove feeders				
VARROA: Mite check if not done in April Formic acid Remove drone brood				
EXAM: Full exam Brood check				
HONEY: Honey supers on				
SEASONAL: Swarm box out Wax collection/melt				
NOTES				

Sample calendar page. Visit www.BeeCulture.com to get a pdf of actual size for printing out or scanning to your IPad.