UF IFAS
UNIVERSITY of FLORIDA

EPISODE 196 TRANSCRIPT

Jamie

Welcome to Two Bees in a Podcast brought to you by the Honey Bee Research Extension Laboratory at the University of Florida's Institute of Food and Agricultural Sciences. It is our goal to advance the understanding of honey bees and beekeeping, grow the beekeeping community and improve the health of honey bees everywhere. In this podcast, you'll hear research updates, beekeeping management practices discussed and advice on beekeeping from our resident experts, beekeepers, scientists and other program guests. Join us for today's program. And thank you for listening to Two Bees in a Podcast.

Amy

Hello, everybody, and welcome to this segment of Two Bees in a Podcast. So, for 2025, what we've decided to do is we're going to take all of our amazing speakers from the past episodes that we've conducted from 2020 until now. We're reinviting them here to speak with us on updates of what they've been up to, research updates and just industry updates that they have for us.

So, today, I'm really excited to be introducing Dr. Dewey Caron, who is a retired professor, had a very successful career at the University of Delaware. He is currently the Content and Communications Specialist and oversees the Oregon Master Beekeeper program in the Department of Horticulture with Oregon State University. So, thank you so much, Dewey, for coming and joining us today.

Dr. Dewey Caron

Well, thank you, Amy. Thank you very much. It's been my pleasure.

Amy

We brought you on and asked you what you wanted to talk about. We opened it up and said, Dewey, we want to have you back on the podcast. What do you want to talk about? And you said, I really want to talk about Citizen Scientists. So, that's exactly what we brought you on for. But before we get to discussing Citizen Scientists in the bee world, why don't you go ahead and let our audience know a quick summary of your background and your bee history.

Dr. Dewey Caron

OK, thank you. I'm glad to do that. I started out in the university as a chemistry major, switched to ecology, did a master's, then at University of Tennessee in Knoxville in ecology, tromping around the mountains and went to Cornell, and then started my intense studies with honey bees because as an ecologist, I had a chance to work with insects to keep them alive rather than many entomologists try to kill insects. I started teaching apiculture when my professor went to the Philippines all the way back in '68, had a position at Cornell, and then started faculty positions at

University of Maryland for 11 years. Went on the University of Delaware for 29 years as department chairman for some of that, and then as a regular faculty. In 2009, I retired, and since my sons and daughter, all University of Delaware grads, had moved to the West Coast, I also did and so resettled in Portland, Oregon. Since I've been active with bees with a 32-year marriage to Boliviana, I come to Cochabamba in Bolivia for the winter in the Northern Hemisphere to switch to the Southern hemisphere in summer. So, that's where I'm coming to you from today. I am in coach Cochabamba, Bolivia. That's the largest valley in the Andes Mountains. The family keeps bees here. I started bees here and the family nephew keeps bees here. And I have some backyard bees in Oregon, but mostly my daughter is managing those at the present time. So, a thumbnail, I've had a great experience with bees and entomology. I think I've been very blessed to be able to continue now into my 80s with being active with bees, talking about bees, helping to teach others, and now of course, with the Oregon Master Beekeeper program.

Jamie

So, Dewey, in your time at University of Maryland and University of Delaware and now Oregon State, would you principally say that you've spent most of your time doing research projects or engaged in extension or a mixture of both?

Dr. Dewey Caron

I had a mixture of all of that. Even at Maryland, I had an appointment in regulatory and the bee inspection when I first went to Maryland in 1970. Primarily, though, I would characterize myself as a specialist in extension outreach from projects at the university, that being my strength rather than research, Jamie.

Jamie

I think I sort of knew the answer to that because I've been looking at your stuff as long as I've been involved with bees. I really appreciate all the stuff that you've done over the years, which is why it's a great honor for me to be able to interview you. I love the fact that you're joining from Bolivia in your 80s, still working with bees and educating people around the world about bees. That's really neat. But we specifically brought you in to discuss, at least initially, Citizen Science. We've got a global audience, Dewey, people listening to us all around the world. I'm guessing there are variations of citizen science everywhere, but they may call it different things. So, could you give us a brief introduction to what Citizen Science is and why it's important?

Dr. Dewey Caron

Yeah, Jamie, exactly. Right on. Citizen Science is a very broad aspect and it's not necessarily science as such. We have beekeepers that are in the bees for the artistry as well as for the science.

Some do both. But Citizen Science, as I like to try to define it, is individuals that bring some other expertise into a project or projects that involve basis in university review, university

research that has tended to be peer reviewed research. So, they are essentially a component of a project that someone at industry or university is doing to try to find out something new, of course, in bees that often means the science more than the artistry of bees, but it can be both. So, it's a very broad definition. The citizens that are involved are bringing different types of expertise. So, they usually are not scientists, but because a project has been outlined and specific tasks identified within that project, these individuals can collect information that then can be used in peer reviewed research publications.

Amy

So, Dewey, I'd love to hear about some of the current Citizen Science projects that you're working on. I know that you and others oversee the Oregon Master Beekeeper program, so I'm wondering if you work with the Oregon Master Beekeepers on Citizen Science projects, or if there are any other Citizen Science projects related to honey bees that you'd like to share with us.

Dr. Dewey Caron

Yeah, we've got several that are going. Currently, with the appointment I have at Oregon State University, it is primarily working with the individuals in the Oregon Master Beekeeper Program. I have worked with others in other of the master beekeeper programs that have assisted with master level, master craftsman levels in states such as Georgia, North Carolina and their programs and, of course, extensive experience with the EAS Master Beekeeping certificate program. But in our Oregon Master Beekeeper program, we get new beekeepers in their first, second year that are assigned a mentor. It's not someone that is necessarily an accomplished beekeeper. So, we do a fair amount of mentor training, that is to get individuals so that they can help mentor other individuals. As they progress through the levels of the Oregon Master Beekeeper program, they get credits for that mentoring.

But we do need to do some training. So, part of our efforts in Citizen Science is to get beekeepers, beekeepers that have -- usually, we ask for a minimum of three years of experience that want to help pass their information along, and we can then help direct that, help them be in a position and have some training, some information so that they can be more effective in helping train the brand new beekeepers.

A second of our levels, the journey, what we call the journey level. The first level is apprentice, then journey involves a lot more self-study. In there, we have what we call guided studies, and these are efforts to help individuals work on various aspects of bees and beekeeping. We use individuals to ground truth these guided studies so that they are relevant, they are current, and they then can assist individuals as they individually progress on their journey and their beekeeping experience. And finally, our master level, we have 3 levels. Some states have a master craftsman, a fourth level, but ours is a master's level. The master level, they're directly involved in either in outreach project or participating in a research project. Most of the research

project participation is with our 2 bee professors at Oregon State University, the bee lab with Ramesh Sigili and the extension lab with Andoni Malathopoulos. So, they're directly involved in doing some aspects of their research projects. They may also elect to do an outreach project, something that they design. Then it will involve, let's say, developing a community-based organization of beekeepers to each of them helping one another, such as through cooperative buying of sugar or equipment, that type of thing. Another outreach project was developed through extension in terms of Ask an Expert. We had an individual that came up with the questions and again, science based. So, our Citizen Science is sort of cooked in, built in to all three levels of our Oregon Master Beekeeper program. We could not do it with just the three of us from the university. So, it is citizens helping citizens become more effective, efficient and successful beekeepers.

Jamie

So, Dewey, I think this is really actually kind of creative. Essentially, what you're doing is you're integrating, then, two things. You've got a master beekeeper program, and there's similar programs around the country, and then there's Citizen Science programs, but you're integrating that Citizen Science approach into your master beekeeper program as you request or you require participants in that program -- as they're trying to pass through those different stages of completion, you require them to participate in these types of projects and that's a really creative way to do that. So, if you're not in the master beekeeper program, how might beekeepers or non-beekeepers still get involved in Citizen Science type projects?

Dr. Dewey Caron

Great question, Jamie, you're right. We have really baked this into our Oregon Master Beekeeper program, but not everyone wants to go through a program of that nature. We do request that they confirm that they have learned something, so we have exams. They are open book, but you know, individuals that have been away from school for a number of years are sometimes hesitant to try to be involved in a program where they have to document, they have to take, quote, an exam even though it's open book, etc. So, other types of Citizen Science projects involve a number of different aspects. In our Oregon Bee Atlas, we are attempting to determine what is the the bee and pollinator fauna of Oregon. So groups will be organized to go on a combined collecting trip to try to bio blitz, if you would, try to identify in certain types of habitats, usually very specifically under surveyed habitats, what is there. They're trained to then take the collections and treat the collected insects so that they can be identified. We have specialists in the program that'll do the identification, but we actually train the individuals to do the basics of identification. So, some genera are somewhat easier to do to species level. But we do hope all those are trained to that, that they may recognize at least a different genus, more than just the family level, but a different genus in, in that grouping of native bees. So, that's one example. These individuals do not need to be into an organized program, and they come from all walks of life. Some have never really spent much time out in nature, but others have had more time.

So, what it is, it's more eyes, more collectors in a specific type of habitat to enhance just one or two students and a professor going out to make those collections. And then the individual students actually do begin the process of identifying. So, that's one with our extension specialist, Andoni Malathopoulos in the bee program. We involve Citizen Sciences in a training program to help train others. They do not need to be in the Oregon Master Beekeeper program, but we have, as you do in Florida and, and all the other states, we have a number of local or county beekeeping associations. And so, we have a training program to do a couple of different things. One is to train others. So, basic beekeeping 101, how you get started and working through the first year of beekeeping basically, the basics. The second is we no longer have an apiary inspection service in Oregon or in Washington. So, what we have been doing is training a local task force so that if some person in the community, whether a member of the local association or simply a beekeeper in a community has an issue, is wondering if their bees have disease, wondering why their bees are not doing well, wondering why their bees are dying out over winter, then the task force mobilizes a couple of the individuals that have been trained and go out and do an individual visit to the member of the club or as they say, just a beekeeper that has an issue and then make that determination. So, they're essentially doing the work of apiary inspection. A lot of it is winter die out, certainly. Like everywhere else, our Oregon beekeepers are suffering extensive overwintering losses. And for newer beekeepers, it is a mystery. I did everything I thought I should be doing, I fed them, and I cared for them, and I looked in on them, etc. But why did they die? And so, the task force can go out, and you can't always say 100%, but we can narrow some of the issues down as to help that individual be a little bit more successful with replacement bees with the die out. And of course, the serious issue of foulbrood disease where the task force members are trained to recognize if it is American foulbrood or European foulbrood, chalkbrood, and we have done information sheets that we can leave with the individuals. So, these are ordinary citizens, individuals that have had some experience, that want to help others, that pass on their information. So, citizens helping other citizens with their beekeeping.

Amy

Yeah, Dewey, I like the idea of mentorship and basically the trainer program that you have. And you've mentioned it a couple times, just how many people get involved with things like this. Also, it sounds like there's kind of a variety and a range of experience that people go into this and there are, I assume, lots of challenges, but also lots of benefits with doing Citizen Science.

So, I was wondering if you could talk to us a little bit about some of those benefits of having, that many people coming together to collect information for a common purpose. And then, maybe let's talk about some of the challenges of doing that as well.

Dr. Dewey Caron

Yeah, benefits and challenges and certainly there are both aspects. Benefits are if you and your experience in bees or in your interest in knowing what the pollinators in an area are, in a community, if you go and you actually participate in that project, you're going to learn more. It's more than looking at YouTube, it's more than reading a book, it's more than your personal experience because these are guided, these are programmed, these are developed projects, as I say, towards a peer review of what the results will be. So, they're well designed, hopefully well designed and well executed.

One of the biggest challenges is that it's hard enough at a university to get your own students that are working in your program, your own graduate students, for example, your own undergraduate students. It's hard enough to get them coordinated when you you've got a big project where a number of people are involved. It's doubly so with outside individuals. In other words, citizens that have busy lives, that are working, that have families, family obligations, just getting that coordination. So, if we want to, for example, we have funding to do a large European foulbrood study, and it involves following marked colonies for a three-year period of time and gathering information. And so, we've got two individuals that are involved right now in that project and all was arranged.

We would meet at 10:00 AM at this particular location and one of the persons got lost, could not find out where we were. So, we really didn't get started that morning until like 11:00 trying to get our team there together. So, it's a huge, immense coordinated coordination in terms of trying to get a project. One of our other projects is not where most of the individuals live. It even involves an overnight stay with meals. So just trying to get it all coordinated is one of the biggest issues. The other challenge is that the end result we hope will be validly collected data, and so we have this information that needs to be collected in a certain way and then protected as well. So, designing that so that individuals that we elect to involve select the information in a manner that we have designed rather than trying to improvise or certainly try to make up any numbers if they're often a more remote location from where a person with the program is located directly. That possession of the information, most of these people are not proficient and doing follow up in the lab or in writing up the results. But we do require that they at least write up their own individual participation in these events. Usually, we do, depending on what the type of project is. So, the benefits and the challenges kind of balance each other, I think.

Jamie

I think this is all amazing. It's really inspiring. It gives people the opportunity to be involved specifically in research. I think we're going to switch gears just a little bit here, as fascinating as all that is because we want to chat with you about another fascinating topic. We had you on, gosh, I don't even remember at this point, but some number of podcast episodes ago to talk to us about The BeeMD and you updated us then about what the status was and how things were going, and that's been a while. I'm curious, could you talk a little bit about The BeeMD again and assume, I guess, Dewey, for safety reasons, just assume that there are people who I haven't heard

about this at all or haven't listened to that podcast episode. So, could you talk a little bit about The BeeMD and tell us where you are in that particular project?

Dr. Dewey Caron

OK. I have to give kudos to you, Jamie, because the concept of BeeMD developed during a meeting of NAPPC, North American Plant Pollinator Campaign, NAPPC, or what is in their website, P2, Pollinator Protection. It's a group out of headquarters in San Francisco and they bring together individuals that are interested in the broad topic of conservation restoration ecology in terms of pollinators, not just honey bees, but all pollinators that are involved.

They're organized as task forces and one of the task forces is bee health. So, at a meeting back about 10 years ago, you and Dennis Van Englesdorf and Olaf Repels from a school in North Carolina now in Alberta and others were brainstorming ideas of what might a project of P2 involve that would be helping individuals with this big aspect of honey bee health, and came up with the concept that, well, we can go on the web for our own personal health issues. What if we had a BeeMD website where people could go on and find out about bee health issues? Because it can be confusing for beginners. Some things that are very normal, and bees do sometimes, on very rare occasions, but these are often the things that new beekeepers find or see and then puzzle over. So, what about a site that would help individuals determine, what am I seeing? What's going on here? The way the task force works is individuals without pay develop that concept with minimal financial resources from NAPPC, from P2.

That was then developed. Resources were forthcoming from the US Department of Agriculture APHIS, Animal Plant Health Inspection Service, to be able to involve a programmer, someone that Dr. Debbie Delaney in Delaware arranged to come together and put some of this whole concept together. So, you and University of Florida and University of Maryland, and some others then contributed to resources, contributed time, and the programmer then put together a type of what we call a dichotomous key. In other words, a two-decision question. Do you see the abdomen extended in the air or is the abdomen normal? Something as simple as that. We actually start with, are you inside the bee colony or are you outside the bee colony? A simple type of decision, and then hopefully within fairly limited number of questions to answer of that nature be able to then come up with an issue that you might be looking at. And with bees, certainly honey bees, we may have several different issues that are involved. So, you may not come up with a definitive answer, but it could be this or could be this or could be this and then having aids to decide further.

Let's say, are you looking at normal foraging behavior as you're outside your colony? Are you looking at robbing behavior of the honey bees outside of your county? Are you looking at orientation flights outside of your county? All things that that can be confusing and difficult to discern initially for beekeepers, even those that may have a fair amount of experience. So, that's what BeeMD is designed to try to do. I came into the program to try to make it more visually

useful and also then to attempt to bring more information into making a decision. As I indicated, you often come up with, well, it could be this, or it could be this, or it could be this, and you need some additional information. So, the information is all in one package. Let's say it comes down to is it orientation flights? We have a fact sheet that talks about that. Is it robbing? We have a fact sheet that talks about that. And each of them includes additional visuals that help to identify what you might be seeing. Now, this is of course designed to figure out is this something that is, quote, normal or is this something that is critical that I as a beekeeper need to intervene with my colonies? So, things such as is this a disease that I'm seeing? Or is this a normal bee cleaning out of a pupa, that for whatever reason may not be diseased, but they are getting rid of it in their colony. Not all the eggs that the queen lays, for example, will develop to the pupae stage and not all bees that reach the pupa stage will eventually become adults. Some of this could be disease related, but some of this is also normal. The BeeMD is designed to answer, what's going on in my colony? Is this something that serious? Is this something that I need to intervene? Or is this a curiosity that, gee, that's interesting to look at. Gee, maybe I can point that out to my beekeeping partner or tell the family that today I saw my bees doing this XYZ thing. So, BeeMD is that program to help.

Initially, it has been on the computer and still is. We got additional funding from the information technology people of the US Department of Agriculture, APHIS. So, it has been moved from the P2 server to U.S. Department of Agriculture server where there are other programs that are very similar. Most of them are developed to ID something. There's a program for bee mites and bee colonies. There's a big variety of mites that might be there. So, that program is designed to help identify which mite you are looking at. There's a program on wild bees and native bees to help you find out if what you have is an imported bee or native bee, for example, a pioneer bee population in the country or something. And then The BeeMD for honey bees, honey bee health issues directed around honey bee health issues, but also those things that can be confused as being health related or very serious, and in fact, they are not.

Amy

So, Dewey, I don't know how you and the team that worked on The BeeMD actually slept at night because, beekeeping is so much problem solving, right? And there's so much going on and there are just so many possible things that can be going on in your colony. So, to be able to kind of take that and categorize things and put them into a system I think is just really impressive. And you know, I know that there's always input that needs to be put into these databases, right?

Dr. Dewey Caron

Right, right. Definitely.

Amy

So, can you tell us where people can find the information and how they can get access to The BeeMD?

Dr. Dewey Caron

For the website, it is The BeeMD. If you use a search engine, you'll find it through that. It is USDA, US Department of Agriculture, APHIS Information Technology Program, ITP, and you'll find that and the bee mites and the bee ID etc., and lots of other things that are on there as well.

The BeeMD is a bit different in that it's not that if you are looking and trying to determine it, what's the name of this bee that I just found on this flower? You can use that program, and it will then walk you through the steps until you can come up with a tentative identification of what you are actually looking at. With The BeeMD program, you are not likely to arrive at one single point. You're actually likely to arrive at -- it could be this, or it could be this or might be that. And then, the program offers you further visual and verbal information to help you make your own decision as to what you're what you're looking at. And then advice in terms of some things, some resources, other resources that you might go to some YouTube, for example, YouTube visuals publications, extension publications. We use a reference to a good number of those in the University of Florida Extension Service, for example, as things to go to, to find more visual, more information to help you make your own decision as to what you're looking at.

But we want it to be evergreen. So, what we're asking as people go on to this, if it's not working, if it's coming up with too many choices, if the visuals are not informative, that they provide that feedback. So, with it being on this U.S. Department of Agriculture APHIS server, we have that ability to make the changes or to add additional visuals or additional verbal information to help get to a single choice rather than being stuck with, well, I don't know, this eliminated some things, but I'm still uncertain what it is that I'm seeing or, or if this is very serious in my bee colony that I need to ask someone else or get some more information or do something about myself in this case. So, evergreen means making those changes. The app, so far, is on Android and so again, it is The BeeMD. Go in the App Store, you'll find it that way. So far, it seems that there's an issue with the Apple app related to -- I'm not sure what's going on -- the European Union and some of the regulations they have. So, it's not yet available on Apple, but it is available on Android servers.

Amy

Well, great. Yeah. I think, just coming back full circle, what you're requesting is that people go to The BeeMD, either the website or the app, only on Android for now. But if they have any feedback or if they're having issues with the site or if they feel like they have any information or photos to contribute, I think, yeah, absolutely, it'd be great to contact The BeeMD directly and be able to share that information just because, as you feed it more information, it's better to help others kind of go through and decide what's going on in their colonies.

Dr. Dewey Caron

Oh yes, indeed. I have been involved with the Honey Bee Health Coalition and wrote the original tool for diagnosis of the issues with Varroa. We are now in that. We're going to be working this spring on our 13th update. So, issues related to Varroa, these are tools for Varroa control on the Honeybee Health Coalition. Our first edition was only in 2016. Already, we've had to update and come through to, as they say, this spring we're working on the 13th update. So, we have plans with The BeeMD to keep it evergreen and to add to and refine the information so that it is easier to use. So, that feedback would be especially valuable to be able to do that.

Amy

Absolutely. Dewey, I'm cracking up over here because I've been working on some projects and we're on the 1st edition, and I can't even imagine the amount of patience that you have to have to be on the 13th revision of a project. So, I applaud you and I thank you for having that patience to work on a project and continuously making it better. So, we're very happy that you were able to join us today and really appreciate you joining us. Again, thank you so much.

Dr. Dewey Caron

Oh, you're more than welcome. I applaud your project that you're working with, what is it, 25 beekeepers in Florida? That's an amazing project that you're doing there. So, I applaud that very much, your effort with the with that particular project. That's a lot of people to coordinate and get all the information done for.

Amy

Definitely. Thank you, Dewey.

Jamie, I think Dewey's my hero. He said he was 82, and he's still working bees. He got hired on at Oregon State and he's such a nice guy. He's very knowledgeable, has done a lot for the beekeeping industry.

Jamie

Those are all true, and I remember when I first started keeping bees. He would have been one of the leaders at the time in beekeeper education. So, I had read a lot of stuff from him and, of course, was fortunate to meet him many, many times. So, it's great to have him on the podcast because he does like extension, he does like outreach, he likes training folks. It continues even now. I keep thinking to myself, when I retire and I'm 82, am I going to keep talking to people about bees? I don't know, we'll see. But he's a good guy to do it for sure.

Amy

Definitely, we're talking about Citizen Science. I think whenever I think about Citizen Science, I guess I think along the lines of people just kind of collecting information and submitting this information, right? And then it just all kind of collects into the database of, is something present or is it not? And when we start thinking about beekeepers and their role in Citizen Science, we've got researchers here at the University of Florida who work and actually across the world, researchers who work with beekeepers. I'm wondering, would you consider that Citizen Science? I mean, if the beekeepers are, I guess, if they're just providing the colonies, maybe that's not Citizen Science. But if they're actually going and collecting data and then sending it to the researchers, is that Citizen Science or is that just a collaboration?

Jamie

So, I think it really all depends on the depth of what's involved. So, I'm sitting here thinking about what you're saying, and let's say, for example, that we had a big project that we needed to do here at the University of Florida, and we needed 300 colonies for a Varroa control study. So, a beekeeper, commercial beekeeper, allowing us to use his or her colonies to do that work. That would be more collaboration right now. Let's say I wanted to know the seasonal Varroa populations throughout North America, and I created a Citizen Science project and asked beekeepers all over North America to check their Varroa numbers monthly using an alcohol wash and then go to this particular website and upload that information. And then, I, as kind of the master keeper of all these data would be able to use these data that are being poured in by beekeepers across North America. I'd be able to say, hey, look, in the northwestern US in July, you have really high densities of Varroa in Eastern Canada. It seems to peak at this time. So, that's where citizens are participating in science. They're not just loaning their equipment or supplies or bees to us. They're actually engaged in data collection. In fact, they're facilitating the science because they are by default, basically, research technicians that are deployed around North America, in this case, setting up their projects per our experimental design, collecting data, entering into the data sheet, and allows me as the researcher to get way more data across a much larger area than I would be able to do by myself.

I had a PhD student here, Jason Graham, years and years ago who did a Citizen Science project, I think it was called UF Native Buzz. And at the time he was encouraging people to set up native bee nesting sites and then just simply document when the nesting sites were occupied and what might be hatching out of those nests. And they could take pictures and send them to Jason. So, that's another example like citizens remote to us engaged in the facilitation and collection of data. It can work really well, but it also can be very difficult to manage because everybody might be doing things slightly differently and the person who's archiving and manipulating and handling and analyzing the data has to keep all of that in mind when he or she's kind of considering. So, it's a great way to get lots and lots and lots of amazing data and to participate citizens in the research process. There are some challenges, again, like what Dewey had mentioned.

Amy

Yeah. So, leading into the second part of the interview, we talked a little bit about The BeeMD. I think that there's a conversation to be had there about, I guess just AI in general. Is that considered AI? And then the other thing is I know that they had requested photos from people, and if people sent photos, would that also be considered Citizen Science? Or is that a different type of data collection?

Jamie

Yeah, good questions. So, I vividly remember the history of The BeeMD because I was part of that history, and I remember speaking to Dennis van Englesdorf and others at a meeting. Gosh, I remember years ago when we were talking about a place that beekeepers could go to and go through a checklist and the computer say, given the information you've provided, here are the likely condition, the likely issues that are with your bees and it was inspired by The Web MD. Almost everyone globally will probably be familiar with The Web MD. You could just Google Web MD and people use that to diagnose their own health problems. Oh gosh, I've got an ache here, what could it be? When you go into The Web MD and you click where it hurts and you click certain symptoms that you're feeling and it says, well, here are the options that best fit what you describe. And that was the inspiration for The BeeMD. The idea is that you don't know what's causing what you see, but you know what you're seeing. So, you can go to The BeeMD, click a few boxes inside, outside the hive, worker bees, queens, brood, you can click on the things where you see these issues and what you're seeing.

And then the computer tells you, well, given the information you put in, this is the most likely cause, but these are some other matches that you might consider as well. And you can click on those causes or matches to get more pictures related to that condition as well as textual information related to that condition. So, you can say, aha, here's the top five fits. I've read all of these. Now, this one here most matches what I'm saying. I'm probably dealing with European foulbrood. What happened is, as that project grew and grew and grew and grew, it was obviously we needed more pictures, etc. So, Dewey and others took over. It was moved to the USDA APHIS platform. It's now out and available, and they just made it something that can be long lived. And you talked about that request for pictures. Essentially, when people are trying to figure out what's in their colony, they need a number of options to look at.

So, let's just think about it this way, Amy. Let's say that your colony has European foulbrood, and you don't know it. So, European foulbrood doesn't just present one exclusive way. So, you need a number of pictures to represent all the ways that European foulbrood might present so that you can match what you're seeing to it. So, they put out a call for pictures for those types of things. Could you send us images of European foulbrood or American foulbrood or chalkbrood or deformed wing virus so that folks going to The BeeMD have an opportunity to go through lots and lots of images, a good image database to say, aha, this match is what I'm seeing. It's probably this. Like Dewey said, it's a dichotomous key that helps you to narrow in on what your colony might be facing. I know a lot of you listeners out there are going, well, gosh, this is probably US

specific. It's not US specific, it's Apis mellifera specific. So, if you keep Apis mellifera on planet Earth, then this is relevant to you. You can go to The BeeMD and try to diagnose conditions that your colonies have as well.

Amy

We'll be sure to link the website to our additional notes and resources. That is, on our website.

Stump the Chump

It's everybody's favorite game show, Stump the Chump.

Amy

Welcome back to the Q&A segment. This time, Jamie, we're going to start with something different. I heard that you had a visitor at the lab, and I would love for you to share with the audience about this visitor.

Jamie

Yeah, Amy, thank you for giving me the opportunity to do this. For those of you who are listening to us around the world, we have a really nice facility here at the University of Florida. It's relatively new. The Florida State Beekeepers Association, beekeepers around the state, outside the state, the state government, and the University of Florida put resources together in to build this nice facility. So, Amy, as you know, we try to share our facility with the world. So, we do public tours once or twice a month. We have a volunteer who comes in and does that for us. And one day a public tour was going on in the building and I walked out into the hall and there was a young gentleman here with his mother, and he got to meet me and got really excited because he listens to the podcast and was just so excited to meet me. Amy, I don't think you were here at the time, but he would have, no doubt, done the same with you. One of the cute things about this is that he had made us or had written for both of us a little joke book about bees, and he colored some of the images that he wrote. So, these are all original jokes, he claims.

Amy

Oh, I cannot wait.

Jamie

His name is Chris. So, this is a shout out to Chris. Chris, I wanted to read your jokes about bees on the air. And Amy, I'm going to ask you these questions. Some of them are questions, and so I'll see if you get these right.

Amy

Okay. Am I going to be the chump? Am I the chump right now? Is that what's happening?

Jamie

It's about time. It's about time. OK, here we go. The book says to Two Bees in a Podcast. That's cute. There's a picture of two bees on the front here. It's so adorable. It says, what did one bee say to the other bee?

Amy

Wait, is it me saying it to you or you saying it to me?

Jamie

No. You're supposed to give me the answer. What did one bee say to the other bee?

Amy

I don't know, buzz off?

Jamie

Nothing. Bees can't talk.

Amy

Oh my gosh. Duh.

Jamie

Question #2, okay. Why do bees hum?

Amy

Because they can't talk?

Jamie

Because they can't whistle.

Amy

Okay.

Jamie

Cute. See, right?

Amy

Yeah, it's good.

Jamie

OK, what did Winnie the Pooh say to his agent?

Amy

I have no idea. I don't even want to guess on this one.

Jamie

Show me the honey.

Amy

Oh my gosh. That's a good one.

Jamie

I like that. All right, you ready? How do you shoot a bumble bee?

Amy

Oh my gosh, I don't know.

Jamie

With a BB gun.

Amy

Oh, that's a good one. That’s probably my favorite one.

Jamie

OK, this is the last one he wrote, and it says love Chris afterwards, so I really appreciate this from Chris. It says, why do bees itch?

Amy

'Cause they have Varroa.

Jamie

Because they have hives.

Amy

Oh my gosh.

Jamie

Thank you, Chris. I just wanted to give a thank you to Chris. It was really great to meet you, and I appreciate being able to read your jokes on the air. So, listeners, we have amazing listeners all

around the world. You guys really do mean the world to us. Everywhere Amy and I go, we meet people who share they've listened to us. We don't know why you listen to this podcast, but you do. We're incredibly appreciative of it.

Amy

Honestly, I feel like Chris just needs to write a joke a day and so we'll just do like start off with the Chris joke at the beginning of all of the Q&A's. That's great. Thank you so much, Chris.

Jamie

That's a lot of pressure.

Amy

I know. Well, good. OK, so we'll get into the Q&A now. The first question that we have for today, this person is asking about the successes and failures of placement of frame feeders. So, do you have a preference or recommendation of where to place frame feeders and what has worked and not worked for you?

Jamie

OK, I like this question a lot because our listeners don't know this, and Amy, I'm going to try hard not to date this because we talked about it beforehand, but we actually just received and answered another question related to it. We're not sure what order these Q&As are going to go out, but the point is, is if you're listening to us out there, you might hear us answer a similar question either before this episode or after this episode. Don't think it's the same question. This is actually from a different questioner who essentially said I want to use frame feeders. What are some recommendations you have about it? Well, a frame feeder is a feeder that hangs in a hive in place of a frame. In the US, they are commonly called division board feeders and elsewhere around the world, they may go by different names. But think about this thing that hangs down in a hive box. You have to take out a frame or two to be able to put this frame feeder into the hive. A couple of things that I'll give as pointers. I like to put it on one wall of the hive, either frame position one or ten, if you're in a ten-frame box or frame position one or eight if you're in an eight-frame box. I don't like to split up my brood nest, so I don't like to have frames on one side of the frame feeder and frames on the other side of the frame feeder. So, I do like to keep my frame feeders in the brood box down where the greatest concentration of bees happens to be, right? I don't like to put it far up in the supers. I like to have it down in the lowermost box. The whole premise of a frame feeder is that you're filling this trough this tray, as it were, with sugar water. We both know bees have wings and bees have feet, but bees don't have flippers, so they cannot swim. In order to prevent bees from drowning, you've got to put a flotation device in that frame feeder so that the bees have something to stand on while they're drinking the sugar syrup.

Now, a lot of frame feeders or division board feeders today have flotation devices or screened cages built into them for the purpose of providing bees with a structure onto which they can hold while they're collecting sugar syrup from the sugar feeders. Another thing about frame feeders is I love the fact that you can usually put a gallon, which is 3.7 liters, or two gallons, which is over 7 liters of sugar syrup, in them. They hold a lot of sugar syrup. One downside about them is you physically have to go into the hive to see if they're taking it or to refill it. That's a little bit annoying to me.

Frame feeders come in multiple styles, but the two general styles are they're open at the top and all the way to the bottom. Those are the ones you have to put some sort of flotation device in. The second style is they're kind of closed at the top with maybe two or three small openings in that top that have these kind of cone-shaped screen enclosures that go down. Those are the newer of the two. The one that's completely open at the top as if it's a trough. Those are the ones you've got to put those flotation devices in. That's the one that I was trained on. But if you don't get to it quickly enough and the bees empty it, they will build burr comb in it because it's just this cavity in the box. So, you've got to keep that in mind. So, I could go on and on and on and on about frame feeders. I think I've given enough for you to think about. Just a couple of comments, Amy, you know this, our listeners may not know this. We just started in 2024 a YouTube series called Beekeeping Academy that's just free videos about beekeeping. And we actually have multiple videos about this very topic. One is about the pros and cons associated with the various feeder types that you can use in your hives. And the second of those is knowing when your bees need to be fed and how to feed them using these various feeder types. So, there's those two videos available in our YouTube series Beekeeping Academy that goes into greater depth about this and you can watch some more pros and cons associated with all the feeder types and not just frame feeders.

Amy

Yeah, we'll definitely make sure to link those and link the Beekeeping Academy and our show notes as well. OK, so, for the second question that we have, this is a questioner from Alaska, and they said that one of their 15 colonies in Alaska was hit pretty hard. They had deformed wing virus in the summer, and then the colony now seems small. But they seem healthy. They seem like they've recovered, and the questioner is wondering, if these bees make it through the winter and they make new queens from this colony, would this necessarily mean that they're resistant to deformed wing virus? Could they be resistant to any of the viruses like they were vaccinated?

Jamie

So, first things first, this might be our first question from Alaska. Is that the case?

Amy

I don't know. I'm not sure.

Jamie

I don’t know. A lot of beekeepers don't even try to overwinter their bees in Alaska. They'll just buy new bees every year that will get frozen out. So, it's neat that we got a questioner who's asking questions about bees overwintering. That's impressive. Deformed wing virus is in most colonies, and it is usually only a significant problem not if you have a deformed wing virus problem, but if you have a Varroa problem. So, my guess is the real root of your deformed wing virus problem was that you had Varroa spreading it in those colonies. So, your question is essentially, like, look this if let's just say this colony survives, maybe they're resistant to deformed wing virus, I should breed off of this. I wouldn't suspect that that's the case. I would suspect that more often, more likely than not, you controlled Varroa or the Varroa population went down, so the viral titers went down and then it was less of a problem. It is conceivably possible that bees can develop resistance to deformed wing virus. So, conceptually, the question you ask is something that is possible to achieve, but it is very unlikely that you would have achieved it just in the circumstances that you're describing. So, I would say no, it's very unlikely that if you reared queens off of this, that the subsequent generations would be resisted to deformed wing virus. Remember that the best defense against deforming virus is controlling Varroa in your colonies. So, my guess is it's unrelated to resistance to deformed wing virus and probably something else entirely.

Amy

I'd be interested to know if the listener with the 15 colonies, like how long they've had those 15 colonies there because as you mentioned, I've heard the same thing about Alaska where beekeepers just kind of bring in colonies every single year. So, I'm wondering if all 15 overwintered or just one of them overwinters? Or how long they've been there?

Jamie

Yeah, I do too. I'd love to know more about it too. I also like the fact that we've got people listening to us from Alaska. We know, Amy, we just looked at the stats from last year, 2024, and we had people listen from over 66 different countries. We want all of you guys out there in those other 65 countries to submit your questions as well. So, Amy, I think you got another question for us, but I just wanted to motivate our listeners, even our international listeners. We know a lot of facts about international beekeeping. So, we'd be happy to take a stab at questions you may have too.

Amy

Absolutely. OK. So, for the third question that we have, this questioner was asking about the use of oregano oil in treating Varroa. Has there been any research showing the effectiveness of oils being able to help with treatment? One question would be, is there any research that shows that

any of the oils treats Varroa? And then the other kind of question that comes with it is, if so, is there resistance from Varroa?

Jamie

These are very important questions. These questions come to people's mind all the time because I've been asked these questions millions of times, it feels like, in my years of being at UF. So, the short, shortest possible answer to your question is yes. People have looked at every kind of oil I can think of, oregano, neem, others vegetable, all kinds of things to control Varroa. They've also looked at every essential oil I can think of on top of that, peppermint, thymol, eucalyptol, menthol, camphor, all of those kinds of things. So, yes, yes, yes, yes, yes, yes, yes. In fact, there's lots of review topics on this. In fact, you could read on this topic until your head falls off. And before I add a little bit more commentary, let me tell you how to do that. First of all, to our questioner, if you go to Google, just go to your search engine Google and type in the search box Google Scholar. And when you do that, your first option will be Google Scholar. Google has a search engine designed to look exclusively at the refereed scientific literature to kind of weed out discussion boards and all that other stuff. Scientists use Google Scholar all the time. In fact, when I answer a lot of questions on Two Bees in a Podcast, I have to use Google Scholar. So, if you Google Scholar and go to Google Scholars page, you'll get a search box. In the search box type oil control of Varroa. Or in your specific case, you're interested in oregano oil control of Varroa, thymol control of Varroa, neem control of Varroa. You're going to find bukus of papers related to oils, essential oils, all of these things where people have tried. OK, so that's the direct answer to your question. But the practical, what should you do with this information answer to your question is, listen, I'm not a fan of home remedies and home brews. If these things worked well and were efficacious and were economic, there would be a product based on it already because so many people have studied these things. So, I get it. The same is true in medicine. When people have exhausted everything they can and still can't control, they tend to move out into some more of these, I'll say peripheral treatments. And I feel like Varroa, we're kind of stuck there because we got these three or four things we can use, and we're so desperate for controls that we're looking for anything that we can find.

But remember, there's a reason labeled products exist. Their efficacy has been demonstrated. There's a level of control about their release and all of this stuff. Furthermore, their safety towards bees or lack thereof, has been documented. All of that's been coded into a label that, if you follow, you'll maximize its impact against Varroa but minimize its impact on bees. So, even if you were to find 50 papers that say oregano oil works, I would not recommend you use it because we just don't know dosing and treatment and efficacy and latency and all these other things impact on bees, etc., that you really need answered before you can just go and use it. So, yes, I do encourage you to go to Google Scholar, search this, read until your heart's content. But at the end of the day, I would base my Varroa control on using resistance stock and available

treatment options and some of these other things that have been demonstrated to work and are available legally to use.

Amy

Sounds good. Well, thank you so much, Adam and Jason and Austin. I'm going to try to give shout outs where I can when we have listeners call in. So, I appreciate you all sending in your emails. I hope this Q&A helped you. For all the other listeners out there, keep those questions coming.

Thanks for listening to today's episode. This episode was edited and produced by our podcast coordinator, Mitra Hamzavi. Thanks, Mitra.

Jamie

Visit the UF/IFAS Honey Bee Research and Extension Laboratory's website, UFhoneybee.com, for additional information and resources for today's episode. Email any questions that you want answered on air to honeybee@ifas.ufl.edu. You can also submit questions to us on X, Instagram, or Facebook @UFhoneybeelab. Don't forget to follow us while you're visiting our social media sites. Thank you for listening to Two Bees in a Podcast.