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SPEAKERS

Amy, Stump The Chump, Jamie, Serra Sowers, Guest

Jamie 00:10

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.

Serra Sowers 00:47

Welcome to this week's episode of Two Bees in a Podcast. I'm Serra Sowers, one of your producers and coordinators of the podcast. I work with Jamie and Amy to bring new episodes every week. You might have heard my voice at the beginning of this season, when we put out a little trailer in January talking about what we have coming up ahead. And so, this week, I'm joining you with a beekeeper talking all about beekeeping in Asia. And I'm hoping you enjoy this episode and look forward to hearing your feedback soon. Among all the places in the world for beekeeping, deep in the tropical forests of Thailand did not immediately come to mind, for me at least. But this past summer, Lauren Roberts, a junior undergraduate entomology major from the University of Florida, traveled over 12 hours by plane to a beautiful place where she learned all about beekeeping practices and honey bees in Asia. Joining me on today's episode is Lauren Roberts. Thank you so much for joining me, Lauren.

Guest 01:47

Thank you so much for having me.

Serra Sowers 01:49



Now, Lauren, you and I go way back. And you were one of my first friends at the honey bee lab back when I started last January, and you are still an intern. So, maybe for our audience, you can introduce yourself and tell us a little bit about how you got into beekeeping and what you're up to now.

Guest 02:06

Hi, everyone. My name is Lauren Roberts. I'm a third-year entomology and nematology student at the University of Florida. I typically have under five colonies back home. Since when I started beekeeping, I was the only one in my family that had any knowledge, and I was in high school and then college. So, I would like to get more eventually, but it's just not feasible right now. And then in high school, I fell in love with beekeeping, and I started doing some public speaking and educational engagement through the National FFA Organization. And then that really sparked my interest in continuing, and so, applying to UF and just being under some of the world's best researchers, Dr. Cameron Jack and Dr. Jamie Ellis, has really been very influential to my beekeeping knowledge and, really, the direction of my career. So, two things, I know today I'll be talking mainly about my study abroad experience to Thailand this past summer. So, that was definitely the coolest thing I've been able to be a part of while at UF, especially coming in as a COVID freshman. My opportunities were limited my first two years. However, I was able to work on the extension side of the honey bee lab as a public engagement technician. And so, that experience was really nice because it gave me some face-to-face interaction that I just wasn't getting from my online classes throughout those first two years of COVID and the pandemic and being in a university setting. So, definitely working in extension gave me a variety of knowledge and just being able to answer questions everyday really sharpens your skills of the beekeeping industry, what problems are being faced, and it really kept me, like, up to date on the best practices for pest control and just beekeeping in general.

Serra Sowers 04:10

Lauren, that is just so awesome. And I'm so glad you've gotten the full experience here at the lab. So, yeah, let's jump right on in. Please, tell me all about your experience in Thailand and why it is you decided to go study beekeeping overseas this past summer.

Guest 04:27

So, I had my eyes set on the Thailand study abroad the very first time it was supposed to happen, obviously COVID hit, so it couldn't happen.

Serra Sowers 04:37

Just popping in here. So, for those who don't know, study abroad is a kind of experience offered to undergraduate students and sometimes graduate students at the university level who are interested in studying in a different country or learning their trade abroad. So, this is kind of the type of program that Lauren was able to do. And she'll talk about it now.

Guest 04:59

So, I've been waiting around for two or three years waiting for this study abroad to come up and I'd asked Cameron Jack every semester, "Hey, what's going on with the Thailand study abroad?" And so, I

was super excited when I was finally able to apply and when it had the green light. Like, when it was really happening, I was so stoked, I think I booked my plane ticket the next day. And so, that experience was a four week long study abroad. And what I really appreciated about the program was that the first two weeks we were at Burapha University, that's where we were kind of hosted and centralized at. And for the first two weeks, the course was called Honey Bees of Asia. So, we really studied in depth about the diversity of different honey bee species under Dr. Jamie Ellis and Professor Gunn, who is actually over the department at Burapha University. And so, that was really cool to have the lab, the technical skills, which included, like, doing Nosema counts, we studied the different morphologies of *Apis cerana*, *Apis florea*, *Apis andreniformis*, *Apis dorsata*, and compare it all of that to *Apis mellifera*, and, you know, that being the species that we were most common with. And so, to be able to see all of the different honey bee species of Asia that I will probably never be able to see again in my lifetime was so amazing. And then the second part of the trip, so the latter two weeks, was when we were under Dr. Cameron Jack. And for that part, we actually got to travel to all the different provinces in Thailand. And what was cool about that is that we were really able to see what the villages were like, we were able to engage with commercial beekeepers who focused on royal jelly production, which is just not something that's very common here in the US. And so, I appreciate that the program, it was very different. So, if a student didn't really enjoy all of the lab work in the first two weeks, then they were more than likely going to really enjoy traveling throughout Thailand and having that face-to-face with everything that we learned about. So, it was a really cool trip.

Serra Sowers 07:29

Lauren, that sounds absolutely incredible. Right off the bat, did you notice any differences between your beekeeping practices that you use here in the US and the beekeeping practices that they have there?

Guest 07:43

So, there are a lot of differences. Now, some of the beekeepers do have *Apis mellifera*. But more than likely, they're going to have *Apis cerana* colonies, simply because, *Apis cerana*, they have better defenses against Varroa mite, *Tropilaelaps*, which is a mite that we don't have at the current moment in the US. And a lot of researchers are speculating, well, not just speculating, it would be very bad if we were to get *Tropilaelaps* here in the US, just simply due to their reproduction times faster. It'd be very hard to control. So, hopefully, our inspection people are doing a great job of controlling that. And so, seeing *Apis cerana* colonies were very different because they don't quite have the same build-up and population densities as *Apis mellifera*. They're smaller colonies, and they have a higher tendency to abscond when they're facing environmental issues, whenever they're overrun by pests and diseases, they're just simply going to leave. So, it was a bit different having the experience in the US and Florida shadowing commercial beekeepers and seeing how large those colonies are and comparing that to how small the colonies of *Apis cerana* are in Thailand, but it makes sense. And that's one of the characteristics that *Apis cerana* has as a defense mechanism. And so, that was one of the things that was a little bit different. When I first opened my first colony, I kind of thought it was a nook, to be honest. And then the Thai beekeeper shared with us that this was actually, like, a very average colony size and that it was healthy, it was looking good. And then another difference was that there was a

focus on royal jelly production, and we just don't have that in the US. So, I really enjoyed being able to meet with the beekeepers who focus on that. It was really interesting. And then, a lot of the research that we were familiar with at the Burapha University was actually several of the PhD students were doing studies on propolis collected from stingless bee colonies and using that within *Apis mellifera* and *Apis cerana* colonies as a way of controlling *Nosema*. And so, that was really cool to be able to be inside of a stingless bee colony. That was probably -- I can't pick a favorite honey bee that we were able to encounter in Thailand, but the stingless bees were really cool because they can't sting, but they would, like, pull out your eyebrow hairs, or like the hairs on your arms. And I mean, they were determined to pull off hair. So, that was kind of cool, but their colonies were really small. And, of course, every colony that we were able to encounter, I did taste a little bit of the honey. And the stingless bee colonies, their honey was kind of my preference. It was more of, like, a vinegary taste. Kind of comparing that to, like, balsamic vinegar, it was really good. I definitely bought three bottles and brought it home.

Serra Sowers 11:14

That makes me so happy to hear because it actually reminds me of some of my travel from last summer as well, and my experience with bees. I was studying abroad in Mexico and we visited a stingless bee colony with some classmates, and it was a family-owned native plant nursery and garden. And we learned a lot about Mayan culture, and, you know, the importance of honey. And so, we, you know, they really valued these bees, and so did I, and their honey was absolutely delicious. And so, I'm, you know, somewhat familiar with bees, working at the lab and helping in the apiary, even though I'm not a beekeeper. So, I knew these bees were safe, and I trusted them. And I really enjoyed interacting with them. But my peers had this irrational fear that they would just get stung. And if I'm remembering correctly, I think these were the *Melipona beecheii* species. And they were just super small, and there was this little guard bee, you know, standing at the opening of each frame or of each box. And so, I'm wondering, did you have similar experiences in Thailand with these stingless colonies or notice anything different in their behavior between *Apis mellifera*, you know, and those bees?

Guest 12:26

For sure. So, I guess to go down a line, the stingless bee, they were pretty docile, I'm sure you have that same experience. But, whenever you do start pulling apart their colony, looking inside, the best thing I can compare it to was that it kind of looked like a bumble bee colony, for those who have seen what that looks like, especially like a commercial bumble bee colony, in terms of, there wasn't the honeycomb structure, it was more cups that held brood and honey. And so, they're defending that, right? And so, they're going to be pulling out your hair, whatever hair they can. Typically, the guys that have the really bushy eyebrows, they kind of targeted them and started pulling out their eyebrows or their eyelashes. And then on the flip side of that, the most aggressive, not aggressive, the most offensive colony was actually on the first day of class, we were led into a coconut grove by a bee hunter that Professor Gunn had a lot of experience working with. And so, we were taken very far back into the coconut grove to find this colony that he had been -- that he'd spotted beforehand. And so, as soon as he shimmied up the tree with his makeshift rope tied around his feet and started smoking, the bees really started swarming us. We were all in protective gear, thankfully, but we all did get pretty stung.

And that was probably the most defensive *Apis dorsata* colony that Professor Gunn had sampled before. So, I just think that was kind of just the luck of the draw. And then, *Apis florea*, which is the dwarf, one of the dwarf honey bees, they're sting was initially sharp, but it quickly subdued, it wasn't that bad. And then, *Apis cerana* is the most familiar, in terms of size, nest structure of *Apis mellifera*, which is, you know, the honey bee that we keep here in the US. And they're a little bit more aggressive or defensive. And so, by far the *dorsata* colony and the *florea* colony was the most engaged and had the most defensive behavior towards us. But that's also partly because they are open nesters, so, they don't nest in a colony, they have one comb and it's branching off of a tree limb or some sort of structure. So, they have a lot more to defend.

Serra Sowers 15:13

I'm sorry you got stung, but that is just so interesting.

Guest 15:18

Yeah, it was, it was really beneficial to know all the behaviors and kind of what to expect in the first two weeks of class. We did a lot of the labs and the readings and the assignments. So, we got very familiar with the defensive behavior. Everything you can think of, in terms of the different honey bee species that we then encountered within the second half of the class. And something that I didn't know, and I actually learned it from reading one of the books that Professor Gunn had written herself, was that *Apis dorsata* actually is the only honey bee species known, right now, that pollinates at night. So, initially, I thought *Apis dorsata*, the giant honey bee, would be the coolest and would be my favorite honey bee after the trip. But after the first day of class, all this getting stung was not that pleasant. So, my favorite honey bee species, if I had to pick one, would probably be *Apis florea*, which is the dwarf honey bee. And it was really cool because when we were traveling during the second half of our trip to different providences in the van, we would stop every time on the major highways when there was a beekeeper that was selling a *Apis florea*, like, would just cut the comb, and so it's just a cup comb. And we were able to buy it and, like, just eat the honey, like in the van. It was so cool, comb and all. And a lot of the times, the comb was still attached to the branch. And so, that's kind of a common thing when you see it in Thailand on the side of major highways, or not just only major, but really any highly traffic road, was to see a beekeeper with their beautiful display of *Apis florea* comb that we could purchase.

Serra Sowers 17:22

That is just totally fascinating. And honestly, Lauren, I wish we had that kind of system here in the States. Can you imagine how yummy that would be to just try different honey everywhere we go? I mean, I know we have some beekeepers that do little stands. And we heard from Virginia Webb a couple of weeks ago, but that is just so cool. And, you know, speaking of somewhat cultural differences, I was wondering if there was anything else you picked up on while you were there, in that, you know, the ways honey bees play a role in, you know, the lifestyle or food or even, you know, when it comes to diet. I know you and me eat honey pretty much almost every day, but I don't think a lot of other Americans can say the same. So, do you find that more people in Thailand were more in touch with agriculture and where their food comes from?

Guest 18:13

Sure, that's a great question. So, I would first say that there's kind of a movement right now in the US, a small movement, to use honey in more medicinal purposes. However, that kind of conflicts with Western medicine. But, in Thailand, you see that being used a lot more. It's much more common to see propolis being sold in the grocery stores to be used for anything, like antimicrobial properties or, like, for brushing your teeth, chewing, like a substitute for chewing gum. And so, you see a greater variety of bee products being used. But, I partly think that's probably attributed to the people of Thailand just using every part of whatever they're consuming in a really useful and sustainable way. And comparing that to the US attitude of, okay, let's only use this portion and throw the rest away or just not use it. I think it comes down to the US just being a little bit more wasteful and not quite as sustainable. In terms of the education of people in Thailand upon, like, pollinators and honey bees specifically, I don't really know if I -- I was only there for four weeks, and so I'm not quite certain what the general public knows. However, I think it's safe to assume that there's a greater connection between, probably, where your food comes from just because so many people are involved with making their own food, growing their own food. So, I think that in itself leads for a greater appreciation of pollinators in the roles that they play, especially honey bees.

Serra Sowers 20:07

Thank you so much for sharing that. I think resourcefulness is definitely something that, you know, we're starting to think about here in the US, because we just see how important and beneficial it can be in other places, like Thailand. And I study sustainability here at UF. And I think, you know, there's definitely merit in being resourceful and making the world a little bit of a better place by doing so. And so, you know, shifting gears just a little bit, and this might be more of a question about your personal experience, but was there anything that was super unexpected while you were abroad, or any funny moments that you'd like to share from your trip?

Guest 20:46

What was really, like, surprising to me, would definitely be, it was week three, so I was kind of starting to get a little homesick, but I was still living off of mango sticky rice, so I could stick around for a little bit longer. And then we went to Khao Sam Roi National Park in the hopes of seeing Asian elephants and tigers in the wild, neither of which we saw, but it's okay. We saw plenty of macaques, and we also saw land leeches, which to my knowledge, beforehand, leeches were only in, like, bodies of water. But, not this. We were hiking through a trail in the National Park with a tour guide and beforehand, in the gift shop, they sold leech socks, which I saw, but I just didn't think anything of it, like okay, leech socks. I thought it was just like, a ploy to get kids to buy socks. I don't know. Well, turns out I should have bought a pair. And the land leeches, like, scurry. I don't know how to explain it. But they like, oh, it's the weirdest thing to see them move across land. And, like, you could see them kind of scurrying towards us on the trail. And several of us got the leeches on us. I think one woman had a leech in her belly button. My roommate had one in her armpit. And they don't transmit any, like, deadly diseases that we know of right now. But that just wasn't enough security for me. So, day two, I did purchase the leech socks. And I have a little bit of PTSD, if I see a blade of grass move, I'm like, my eyes directly go towards that. I'm like, "Oh, my gosh, is that a land leech?" Thankfully, we don't have them here. And to

my knowledge, it's only in that National Park that any land leeches, specifically that species, resides in, so, I was not prepared for that.

Serra Sowers 22:48

Oh, my goodness, I was not prepared for that story. And I honestly don't know what I would have done in that situation.

Guest 22:56

Yeah, instead of, like, enjoying, heck, we could have seen some Asian elephants or tigers, but my whole class, we were looking at the ground on the forest floor for land leeches. So, maybe there were a couple surrounding us, and we just didn't see them. But the land leeches had all of our attention and for good reason.

Serra Sowers 23:16

Lauren, after hearing that, I am just so glad that you made it back home safe, and so did your entire group. And you just have these awesome stories to tell. So, as we wrap up, I want to know, would you go back? And do you think you have any advice for people who want to try beekeeping abroad or visiting Thailand, specifically?

Guest 23:35

For sure, I definitely think it's worth everyone's while to go overseas and to see something that you're very familiar with in the US overseas in a very different light. I think it made me think more about what is sustainability in the apicultural industry? And what lessons can we take, just in general, and apply it to our lives back home? That might be being more grateful for the simple things in life that, honestly, at the end of the day, are the most important. If I had to do it over again, and I planned better, I probably would have planned to see more in the city of Chiang Mai, which is in the northern providence. That was my favorite city and a lot of my classmates also said so. And there's actually an Asian elephant refuge park there that tourists are able to come and feed the elephants. So, I would have chosen to do that. But, unfortunately, the time span, I believe we were in Chiang Mai on like a Friday, Saturday, Sunday. And we had, like, several trips planned with visiting beekeepers there, so we just didn't have enough time and the refuge park was actually closed on the Sunday. So, I would definitely spend a little bit more time in Chiang Mai, don't overlook it, instead of overseeing some of the southern islands, which were really cool, but being a Florida girl, like, I'm very familiar with beaches and keys and that area. So, I would have chosen to do a little bit more research ahead of time and spend more time in Chiang Mai. I love elephants, so anything involving Asian elephants, right up my alley,

Serra Sowers 25:37

That is just so inspiring to hear. And, you know, it's so cool that you were able to do this trip and learn so much in such a short amount of time.

Guest 25:46

Absolutely. Just being completely submersed and having so many world-renowned honey bee experts right there, one of the USDA researchers who focuses on *Tropilaelaps*, which I mentioned earlier is a mite that we don't have here in the US and I hope that we never get them in the US because they would be very decimating to our honey bee colonies, but Dr. Samuel Ramsey, he was there. And it was really cool to be able to actually, like, count brood on a frame and see *Tropilaelaps* scurry across. I had a little bit of a competition with Dr. Ellis as to who could find the first *Tropilaelaps*. And after about, like, 15 frames of just looking at brood and uncapping and trying to see *Tropilaelaps* scurry across the frame, I didn't see anything, and then Dr. Ellis -- I was pretty mad about it. Dr. Ellis found the first *Tropilaelaps*. But then, shortly after, I wasn't giving up and I found the second. So, it was really cool to be able to see everything in person. And yeah, these are experiences that I will always talk about. I will never forget. And it's super cool whenever I'm, like, reading any sort of honey bee biology books for any of my classes, or I think I watched the new *Lion King* once I got home, I have a two-year-old brother, so, I was watching it with him. And in one of the scenes, there's actually *Apis dorsata* colony, I believe, or *laboriosa*, I'm not sure, one of the giant honey bees in one of the scenes of the movies. And it's a honey bee facing off the edge of a cliff, and so it was cool to be able to be like, "Oh my gosh, I've seen that in-person before, not on a cliff, but about the same colony." It was still an open nester, so even if it was *Apis laboriosa*, I still count it.

Serra Sowers 27:49

That's just such a beautiful full circle moment. And I'm so thankful that you shared your experiences with us today.

Guest 27:56

I appreciate that because before speaking to you, today, I actually read through all my journal entries and really refresh my memories of Thailand, even though it was just this past May and June. It's a really cool way to keep your study abroad experiences alive.

Serra Sowers 28:13

Lauren, it was truly a pleasure to have you on Two Bees in a Podcast. And I'm just so glad we got to reconnect and learn all about your trip to Thailand. It just sounds totally, totally incredible and immersive. And thank you so much for sharing with us your experiences today.

Guest 28:31

Absolutely. Thank you so much for having me. It's always exciting to be able to keep all these memories alive.

Stump The Chump 28:40

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

Amy 28:50

All right, we are back at that question and answer segment. Jamie, how's it going?

Jamie 28:57

It's going well, and I know our listeners can't know this right now. But we're actually at the American Beekeeping Federation annual conference in 2023 in January in Jacksonville. All right, so we're going to be answering some questions that were asked of us and I'm a bit nervous because I don't ever sit beside you in the podcast. I'm all nervous.

Amy 29:14

So weird.

Jamie 29:15

I don't know what I should do my hands. I've got to sit on them.

Amy 29:18

For the next two or three episodes our Stump the Chump is going to be live from Jacksonville. We're going to split it up into a couple of different segments. So, I'm really excited to do this. All right, so Jamie, are you ready? We've got three questions. Are you ready?

Jamie 29:34

I think so. I have to be, right?

Amy 29:36

Yep. Let's all start with an easy one.

Jamie 29:38

All right.

Amy 29:40

Who was -- what was the name of your seventh grade teacher?

Jamie 29:43

Which one? I mean, I wasn't in seventh grade multiple times. I'm not trying to imply that. I'm just saying I had multiple teachers over seventh grade, within seventh grade, but I bet I know where this question is going. I had a teacher named Miss Wiltshire who was very instrumental in the development of my beekeeping enterprise.

Amy 30:00

Alright.

Jamie 30:01

We'll see if that's what it is.

Amy 30:02

Is that how you got started in beekeeping?

Jamie 30:04

Okay, so what happened is when I was around eight years old, I got interested in bees. Actually, when I was in kindergarten, a beekeeper came to my class and was talking about bees and gave us a publication that stayed in my toy box for a couple of years. And a couple of years later, I found it. And there was a guy close to my elementary school who kept bees, and we would ride by the beehive every day. So, around eight years old, I got interested, and my parents wouldn't let me get bees because they're not beekeepers in my family. So, it was a new enterprise for us. So, I kind of worked on them for about four or so years. And I had a seventh grade teacher, Miss Wiltshire, who we were in a biology class, and she was -- somehow bees came up and I raised my hand and said, "Well, you know, I'm very interested in keeping bees, but my parents won't get a beehive." And she said, "Well, I have an uncle in North Carolina who's a beekeeper. If I get you an empty beehive from him, will you promise to fill it?" And of course, no 12-13 year old can make that promise because you need your parents' permission. But I made the promise anyway, and she sure enough showed up at my parents' house with an empty beehive with cones, they were already fully pulled. And my parents kind of got backed into a corner. So, that was my first beehive. My dad found a mentor for me, and I got bees put into it. And I've loved it absolutely ever since. So, that's a nutshell, kind of, of how I got started in bees and beekeeping a long time ago. Okay, but wait, okay. I met someone at this conference who just ran into her on the way down from up north. Yeah, it's like a totally crazy story. He actually, we were just at the foundation luncheon meeting, Foundation for the Preservation of Honey Bees. And I'm digging in my pocket, which you can't see on the podcast, but you guys can see live. But this individual at a Welcome Center, my former teacher is retired and is working at a North Carolina, volunteering at of North Carolina Welcome Center. And he stopped and said he was coming down here for a bee conference. He's like, "Well, I know a beekeeper in Florida. His name is Jamie." And he's like, "Well, is it Jamie Ellis?" And she's like, "Yeah," and so, she wrote me a letter to send with him, to me, at this bee conference. I haven't seen her since I left seventh grade and that wasn't yesterday. So, I've got this letter from her, including her cell phone number, so I'm gonna give her a phone call. It was really a neat story. I got to thank Joe for doing that. Joe, I don't know if you're out there right now. But there he is, that's Joe, that guy out there made this question possible. So, it's no coincidence. I've got to call Miss Wiltshire when I get home.

Amy 32:36

Are you gonna read the note? No, you don't have to.

Jamie 32:38

I have to read the note?

Amy 32:39

No, you don't have to do that.

Jamie 32:40

Hi, Jamie. No, that's it. But, you know, I am going to ask her who her uncle in North Carolina was. Any North Carolina beekeepers here? You know, I keep wondering is like, someday am I going to meet the person who gave my teacher the hive to give to me to start this whole shebang?

Amy 32:57

That's a crazy, wild story.

Jamie 32:59

Alright, I hope all the questions are that easy.

Amy 33:02

They're not, that was the easiest one.

Jamie 33:03

Okay.

Amy 33:04

All right. The next question we have for the Q&A today, why don't beekeepers keep hygienic bees? But let's go ahead and start with what are hygienic bees? So, I keep hearing that. Everybody keeps talking about hygienic bees. They keep saying we want hygienic bees. They keep talking about it. But, can you explain just a little bit more about what that even means and why someone would want hygienic bees?

Jamie 33:27

So, I would say, the first question why don't beekeepers keep hygienic bees, frankly, Amy, if I could figure out what beekeepers were thinking, ever, I'd be the richest bee scientist on planet Earth. Right beekeepers, right? We can't ever figure out what it is you guys will want to do and don't want to do, so let's just answer your second question first. Hygienic behavior is the ability of worker bees to detect problems in brood, and remove or inspect that brood for that problem. For example, there's a lot of diseases or pests that occur under capped brood cells. So, a worker bee might be able to detect a problem within that capped brood cell, she'll uncap it, she'll abort the developing bee within, and it's one of those social immunity mechanisms that they use to deal with diseases and pests in their brood. And so, this is a trait that can be selected for. I know a lot of you beekeepers out there might use hygienic bees. But, I think we can broaden that question to be slightly more encompassing. Why aren't selected stocks popular, generally? And all of you have queens in your beehives, right? And there's lots and lots of queen producers. In fact, there's probably queen producers in this room. And I would argue that the industry has been slow to widespread adopt disease and pest resistant bees largely because there's a high queen turnover rate and because of the mating behavior of queens and that if you lose your purchased queen who was \$50, you know, two months after putting her in that hive, the next queen who is produced from the offspring, she going to go and mate with any of the drones available out there, right? You can't control who your kids bring home, they just bring home who they bring home. Well, when a queen goes out, when a virgin queen goes out to mate, you can't control who she mates with. So, you can invest heavily in the use of any type of resistant or tolerant stock. But you have to

stay on top of that by replacing those queens yearly in order to ensure that you've got that stock in your colonies all the time. So, I think a lot of the resistance stocks that are available are tremendous resources for beekeepers. But I think it's one of those things that will only catch hold, if, really well, if we all do it, because I feel like if we all do it, then what we're flooding the US with is disease and pest tolerant or resistant stock. It's part of the solution for the issues that we're facing, kind of in the bee world, in my opinion. Alright, so the third question, actually is a little related. So, someone's asking, are we putting too much emphasis on breeding mite-resistant queens and losing sight that we need strains that are good honey producers? What are your thoughts on that? So, I think that's a good question, because, oftentimes, in breeding programs, especially kind of in research breeding programs, there's an emphasis on a trait that we're trying to augment. We want bees to be more hygienic, right? We want them to be able to detect diseases and pests in the brood and do all that stuff that I just talked about. Or maybe there's the, you know, Purdue ankle biters, that's the famous bee that will chew on Varroa. So, we select for a trait, hygienic behavior, grooming behavior, whatever. But obviously, you can't just have disease and pest resistant bees, because just because bees are alive doesn't mean they're going to be productive, right? So, the best breeding programs, and the scientists and the bee breeders know this, the best breeding programs are those that incorporate the traits of interests that help you with disease and pest resistance, but also focus very heavily on production traits and other behavioral traits. For example, I would rather have a Varroa-resistant bee that's a really good honey producer, that's also nice. Right? So, a lot of people, yeah, a lot of people want to breed for gentleness. And so, I've seen breeding programs that score bees on multiple traits: gentleness, amount of brood, hygienic behavior, productivity. And they assign weighted scores to those things to try to push all of those scores up into bees that are holistically better. That's a big fancy word.

Amy 37:22

Yeah, so a lot of you also, you know, the podcast is just part of what we do at the University of Florida. We also have lots of other programs that we have, a lot of them are online, they're completely online. We have a master beekeeper program. I'm kind of laughing. I'm like pitching our programs now. But we do have a master beekeeper program. And we have some bee learning short courses. So, if you don't want to commit to the online master beekeeper program, we have smaller courses. And I think one of those courses is looking at the different reasons and the different strains of bees that you would want. So, depending on what you're looking for, we have information on that. And these are all pre-recorded. Anybody from around the world can take any of those classes. And so, that is available to you. So, again, part of what we do is to try to just make all that available to you at all times. And anytime you want to take it, you can be sitting on your couch, watching TV, hanging out on the weekend and taking our class.

Jamie 38:18

Or listening to us. I tell you, one of the things about doing podcasts, I'm going to tell two stories, ah, I'll tell one story because someone told me a story that was funny here this week. But I won't tell you that story because I don't want to make it too personal. But it's funny how people listen to us and recognize our voices. There was a gentleman who was telling me last year, not at this meeting, but last year. He said, "Yeah, my wife really likes to listen to your podcast, but she listens to you in the bathroom. So, I

hear her in the shower listening to another guy talking," and he's like, "I have to remind myself, oh, she's just listening to the podcast. There's not some other guy in there." I was like, that's one of my funny podcast stories. So, if you're wife is in the bathroom listening to someone, it's possibly me, but I'm being recorded. I'm not actually there.

Amy 39:04

Alright.

Jamie 39:04

Cut that part out, Amy. Cut that part out.

Amy 39:07

I'm like, I don't even know how to end that episode.

Jamie 39:09

Like right now. End it like right now.

Amy 39:11

Alright, so that is the end of that segment of the Q&A. Now you all know how it works.

Jamie 39:17

That's right.

Serra Sowers 39:18

Thank you for listening to Two Bees in a Podcast. For more information and resources on today's episode, check out the Honey Bee Research Lab website at UFhoneybee.com. If you have questions you want answered on air, email them to us at honeybee@ifas.ufl.edu or message us on social media at UF honey bee lab on Instagram, Facebook and Twitter. This episode was hosted by Jamie Ellis and Amy Vu. This podcast is produced and edited by Amy Vu and Serra Sowers. Thanks for listening and see you next week.