

# Episode 147 PROOFED

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## SPEAKERS

Jamie, Amy, Stump The Chump, 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.

### Amy 00:43

Hi, everybody, and welcome to this segment of Two Bees in a Podcast. Today, I'm really excited to be introducing Ted Miksa with Miksa Honey Farm. He's also the Chairman of the Florida Honey Bee Technical Council. And the reason we wanted to bring Ted on today was because he is an amazing queen breeder. Ted, are you a second-generation beekeeper?

### Guest 01:09

I am a third-generation beekeeper along with my other siblings that are in the in the bee industry. Yeah.

### Amy 01:16

Third-generation. Amazing. All right. So why don't you tell us a little bit about yourself and how you got into beekeeping?

### Guest 01:25

Well, pretty much, born into it. I've had the experience of growing into the business of my parents. Back in 1936, that's pretty much when my grandfather originally started in western Pennsylvania for pollinating apples in Pennsylvania. He found really quick, early on in raising bees that the overwintering was really rough. So he actually started our outfit in migratory beekeeping to the Carolinas to try to overwinter bees better. He found that that's not far enough south to keep the bees from dying off in the winter. So then that's how we migrated to Florida. My grandfather stopped having bees after so long,

and my dad took over, obviously, traveling back and forth to Wisconsin for honey and to Florida. That was about 1974 when we purchased the land here the farm is on, current day. We produced honey in Wisconsin and queens all through that time to 1997 when we found it more lucrative to stay in the state of Florida and produce queen bees all year long rather than chasing the bloom, the honey flows, and we stopped traveling from there on.

**Jamie 02:59**

I always love listening to how folks get into bees. So you guys found it more advantageous to just stick to queen production, principally, here in the state.

**Guest 03:07**

Right. When you start looking at the numbers on what we're doing, how much it costs to travel, and how many queens we were starting to sell, our name got out there more and more on quality queens within the state and it just made more sense to stay for us, and for us kids the family life of traveling a lot. It's hard going to school and trying to get to Wisconsin to help the family business for honey production. It all kind of made more sense to stay here in Florida year-round after that point.

**Jamie 03:50**

So, you guys, of course, run a really big queen operation here in Florida, and Ted, one of the reasons we're interviewing you is because we're interested in hearing about the work associated with running a queen business. We've got this series on how beekeepers make money, the various different ways: honey production, pollination, queen production, etc. I really feel like you're really good and representative of the queen production industry. So could you tell us a little bit about queen production in general, and I do want to ask if you'll start off with this: Is queen production now 100% of your business or do you diversify?

**Guest 04:26**

Queen production is 100% of Miksa Honey Farms. We have very little hives on the side for honey. If we make it we do, if we don't, we don't. It's just for local sales for people that want to have local honey but it's just like an add-on to what we do. We provide mated queens and queen cells. 100% of our business.

**Amy 04:59**

That's amazing. So can you tell us a little bit about how you market your queens? Do you only sell to people in Florida? Do you sell one or two queens? Do you normally sell in bulk? How does that all kind of work? And how do you market this?

**Guest 05:13**

So yeah, marketing for us, we used to advertise just in a big journal. We stopped doing that because we were selling out all the time and couldn't keep up with orders. So getting advertising out there on paper for people to see, it was just becoming too much. We'd have to say, "Sorry, we're sold out," too much. So we stopped doing the advertisements. Having the quality queens and word of mouth and beekeepers tell each other where the best places to get things are, that's one of the hard things. The staple of us to keep in businesses is to have a quality thing that people keep on telling each other,

"Hey, get them from Miksa Honey Farms, they're a good quality." We sell mostly in bulk sales, commercial-level numbers. So we have to get those queens and queen cells out of the state to make enough money. It's a little bit harder to just sell enough queens within the state of Florida to make the amount of money that our business needs to sustain. So we sell all over the United States. We ship the California, Washington State, and Maine. Obviously, we don't sell or ship to Hawaii or Alaska. But everywhere else we ship.

**Jamie 06:43**

Ted, queen production is not easy. I mean, I know I'm preaching to the choir here. You've done this for a very, very long time. I've only dabbled in it in my life as a beekeeper and as a bee researcher, the process of grafting queens and selecting queens and maintaining all the colonies necessary, I mean, just to have enough mating nucs to be able to produce thousands of queens, and the timing associated with having to work colonies and all that stuff, it's just a lot of work. So I just want to ask a basic question related to you and your business and your family business. We'll just start with, if your product is a queen, what is your strategy for selecting queen and drone stock, your maintenance of that stock, ensuring that the stock is producing the level of product that you want to make sure and put into the hands of beekeepers?

**Guest 07:33**

Getting quality breeder queens is a huge thing, finding the best providers of good stocks, so we do have a really good provider of really good artificially inseminated queens. They're not always created equal, as far as the quality of insemination. You may purchase a queen for \$250 or \$350. But that service of just inseminating has to be of good quality. So we make sure we go with proven over time breeders that we will buy in, in the fall time, we will assess all those queens that come in, make sure that they're laying really good brood patterns, and we will stimulate them with a little bit of natural pollen, make sure that they're the quality that we purchase, that quality gets taken care of all the way till the time that we graft these larvae. I believe that quality is generational when it comes to agriculture, and everything, it can go from almonds, any fast crop like broccoli, or any crop. If you look back on where you got those seeds from, it really makes a difference on what your next crop is gonna look like. So, if you take the aspect of what you see outside and even within ourselves as human beings to bring the quality that you're looking at, to make sense of the quality you need to bring to other people, it really has to integrate into what you're doing. So I like to just say that if you have a group of people, we all can live healthy lives, and some of us have hard lives that that maybe we choose processed foods and we can still live and have a functioning life but our quality of health sometimes is not as good as somebody else that maybe can afford good food or something like that. But if you look at that with livestock, if you're going to feed your livestock quality feed, you're going to have a quality livestock. If you don't have that quality feed or a place to put the bees that can get quality natural food, which is the best food for them, obviously, if you can't get that, your next generation may not be as good a quality. So if you can maintain quality every year, every time you're going to produce something, you're always going to have a product for your customer that can undergo any stresses that it may encounter in its lifetime after it leaves you better than another product that may not get the same attention. So in other words, if you're not taking care of your queens all the way from your breeding stock, your drone source, all the way up, you may not have a quality product that can withstand the stresses after it leaves, after it gets to the customer and leaves to be a productive hive for somebody else. So all that in a hole is

probably -- I may not have answered your question yet, and I apologize. But to look back, the selection and keeping those breeder queens, the startup queens, the drones, it all has to do with how you take care of them, and how the last person took care of them. So looking where you get that stock from, how you take care of that stock, and going forward, is what we look at.

**Amy 11:31**

I think that's a great explanation. I think it's a great comparison. It's not just with humans and what we eat and how we can take care of our health, but also from that livestock agricultural perspective. Yeah, I appreciate just thinking about the quality and making sure that everything is up to the standards. It obviously shows that you have high-quality queens considering marketing, sometimes, is even too much because you sell out of everything, which I think is a good problem, right, Ted?

**Guest 12:04**

It's a good problem to have. It's a stressful problem because you want to say yes to everyone that you can. It's not even the money of it, it's like you're providing the husbandry, the helping of the whole system of America's food process. The more that you can help the next person along, that helps the whole system function, so then it comes back to you. You may never see the math on how it does. But everything comes back around. If you can put out into the universe something great, it should come back to you, and you can still have that greatness too.

**Amy 12:46**

Yeah, for sure. So that leads me to my next question. Jamie had kind of mentioned earlier the challenges and how difficult it can be for people with the success rate of grafting and just working with queen breeding in general. So my question for you is, what are some of the biggest challenges you face with the queen breeding industry?

**Guest 13:14**

I would have to say the changing environment around you is huge. So if I look back historically within our own queen operation, the honey flows [inaudible], I have to extract honey out of our mating nucs because we just made so much excess feed, and those nucs would bog down. And I'm talking in the 90s in the early 2000s. Nowadays, we're not seeing that. We don't we don't pull honey from the nuc site, we're feeding them constantly. So the environment around us is changing. So we had to adapt all the time to provide for our bees, the necessities to have the quantity and quality of queens come out of those mating nucs that they once had. Because of the changing of flows or the environment around us, it really takes a toll on your outcome. So maybe in the early spring, it's not so hard because we have good honey flows of getting acceptance of queen cells in our mating nucs. So then when we go along a little bit farther in the year, we have the heat stress, we have less natural flows coming in, a pollen dearth a little bit here in Central Florida. It really takes a toll on the acceptance rates of the cells to become mated queens. So looking at those factors we have to try to change our management from what it was years ago, that year-to-year to change what you're doing constantly. Troubleshooting is huge for any agriculture business. And it feels like the bee industry, because bees are fast-rate growers, you're not looking at, "Oh, I'm producing a cow, cattle, and it takes a whole year," the long-term. Bees are turning over so quickly, you're troubleshooting is in a quick time pace. So when you're looking at productivity, you're really having to tweak and experiment a lot more to try to make those

outcomes become in your favor, more and more. I think that's one of our hardest hurdles to overcome all the time. I would say, one of the hardest things of raising queens, we can compare it like we're the dairy farm of the bee industry, where we have got to graft on certain days, no matter the rain or shine. We have got to cage queens. So it's kind of like that pace of there's no time for anything else at certain times of the year, like milking cows, the bees are demanding it. The customers, not to say they're demanding it, but to get them the product you're asking for, it's very demanding, very timely process.

**Jamie 16:34**

Ted, it's funny. The whole time you were talking about that, I was about to say, from the outside looking in, since I'm not in the queen production business, to me, one of the greatest struggles would just be the time. It's funny you mentioned dairy farmers, my grandfather was a dairy farmer. That's where I kept my bees, on his dairy farm. I know that that's a unique business where it's very timed. You can't get out of synchrony. I know we rear bees here in the lab, some with what we call an in-vitro protocol. And I know that of all this stuff that we do, that's the most time demanding because you have to be here nights and weekends, and when it's time to feed, it's time to feed, regardless of if it's a holiday or a birthday. When I look at queen production, I kind of see the same thing. When you start the colonies, when you start the graft, when you start the movement of a cell over into a mating nuc, it's just timed. Rain, cold, whatever the time of year, hot, whatever, whether you don't feel good, whether you do, all of that stuff really doesn't matter because it's a timed business. You have to progress through that. I think you totally hit the nail on the head there, at least from the outside looking in. And it looks to me like that was the greatest challenge because of the scheduled part of it all. Another thing that looks difficult to me, I remember when I first started working on my degrees in the bee world, I was working with some queen breeders and small hive beetles were such a problem. And I think about just the effort to keep mating nucleus or making nucs up to par so that you can continue to feed queens into those things, just looked like a lot of work to me. So, what do you think about all of that as well? I mean, I think you're exactly right on everything you said.

**Guest 18:14**

I agree. The maintaining, like, the ending part where you said maintaining the nucs, that's a changing process to keep them going on a whole year. When we start producing mated queens here, we're going to start changing our queens here this first week of February, second week of February here, somewhere in there, depends upon the weather, and going till October, that whole time period, you have to maintain those nucs and things change. When it comes about June or July, you have to set aside more brood to leave in those nucs. Otherwise, that population generation gap, those nucs may falter. So you have to know when that's going to happen and adjust all the time for nucs. That is very true what you mentioned there. Yep.

**Jamie 19:12**

I think the other thing is where you are specifically in Central Florida is that you're also a little bit weather-dependent. You guys are doing so much work during a time of the year when it's so hot or so rainy, or hurricanes move through and all that stuff. So you guys really do work hard in this business. So that kind of leads me to my next question, which is, given everything that you know, all these years and decades of experience, this family experience that you have in this business, what's some advice you have for beekeepers interested in getting into queen rearing? Remember, we've got listeners from

all around the world. So, they're all curious, "Hey, this is something I've wanted to do." What's some advice you would give folks wanting to dive into this?

**Guest** 19:56

Well, the advice would be the style of beekeeping or how you would like to manage your hives depends on how you will go about figuring out how you want to produce your cells and then ongoing to your mated queens. There are many different ways to do it. Our way isn't the perfect way. It's the way that we find good for our management. I would say the advice is to educate yourself and find what works for you and your environment and experiment a lot. We raise our queens in a starter and finisher, all in one. Other people don't like it, and they don't find the outcome is good, and they have a queenright cell starter and they switch things around and that works perfectly for them. I think it's gonna be when you start up, look at everything and make your own out of it. You ask 10 or 15 beekeepers the same question, you'll get 10 to 15 different answers. And then you go home and you make the 16th answer. You're the 16th. You do make the 16th answer. So I would say make it your own and observe. Observation is huge.

**Amy** 21:26

Ted, I'm going to start saying that to people now. Go talk to 15 beekeepers, you'll get 15 different answers, go home, and create that 16th answer.

**Guest** 21:36

Yeah, yeah.

**Amy** 21:37

So I'm gonna segue a little into a different topic. But in my introduction of you, you are the Chairman of the Florida Honey Bee Technical Council. And you play a very important role in that council. So I was wondering if you could tell our audience just a little bit about the Honey Bee Technical Council, what it is, what your role is, and how it impacts or affects the industry.

**Guest** 22:03

So I don't have a date and I don't recall a day, I probably can ask my dad, he did help. He was one of the first helpers in finding the Honey Bee Technical Council. They're there for troubleshooting and being a voice or a bridge between the government and the beekeeping industry within the state of Florida. So in other words, if we don't tell them there's a problem, they will never know there's a problem to make legislation or ask for funding for certain things that we might need as an industry for state research. At one time, it was quarantining borders for tracheal mites or anything like that. So this technical council would be an advisory of different voices of Florida beekeeping industry of say honey production, queen raising, packers, and stakeholders, with the help of the inspection service, and then help advise the Agricultural Commissioner on helping us as an industry in Florida.

**Amy** 23:24

Well, Ted, I'm excited. I'm interested to know it, and especially from our listeners, if there's a technical council for or in their state or in their areas, wherever you are in the world. It'd be interesting to know if

you all have councils that also help kind of bridge that gap. So Ted, thank you so much for your role in being that voice for the beekeepers.

**Guest 23:47**

You're welcome. It is hard to to listen to everyone because you have different types of beekeeping, all the way up from hobbyist level to commercial level. And that gap to fill, to feel as if you are going to get that voice up to make a difference, sometimes, is the difficult part of being on a chair of such an advisory board because you want to feel as if you're getting that voice and getting heard. It's probably the number one thing for anybody in a position.

**Amy 24:20**

Yeah, absolutely. So my last question for you is what is your favorite part of being a queen breeder?

**Guest 24:28**

Oh, man, I like figuring things out all the time. Any new knowledge that I can get, maybe something that helped me produce a better queen or tweaking this, I love the troubleshooting and changing my job throughout the year. And it's humbling. It's a very humbling job. It takes a lot of work and you got to love it. But the humbleness of producing queens -- I sometimes look at the grocery store and see the people purchasing fruits and vegetables around me and I like that thought that I may have helped produce that queen that helps my customer produce bees to go to pollination to help produce that fruit, that vegetable for the person I just saw in the grocery store. So being part of that, I like it, I love it.

**Amy 25:30**

Yeah, that's amazing. I love the food industry and just seeing the whole cycle of where it starts. A lot of people forget about that bee part, right? We're here to make sure that we advocate for our industry. So it's really great to be able to speak with you. And it's good to know, and it's heartwarming to know that, you do feel good about that and you know your role in the industry. And so we appreciate that.

**Guest 25:54**

I think some of the quality things on future quality is also, when I say look at ourselves as human beings, we can live a life but it's not always a quality life. And if it's generational, you look back at -- and I hate to say this because it kind of points out some of the bad things of humanity -- if a mother chooses to be an alcoholic during her pregnancy, science has proven the development of that child is not going to be as well as another child that didn't go through that same environment of having a mother with an alcohol problem. So he's born or she's born, the baby is born with that quality of life already. So what if you're looking at the environment that the bees have got to be put into and then taken out of in their development stage? We're doing the same thing to them and what they may be encountering in their development stage. So when you're looking at raising queens, what are they being put into? What kind of environmental stressors are they being put into to have the best outcome for the next generation? So, going back to the human baby that may have encountered the alcoholic mother, it's still going to live a life, but it's going to have a rougher life because they show that the brain development is totally different. If the bees are also going to go through a struggling time because of what they encountered, it makes sense that we need to do something to help everything that we can for the best outcome for our bees and for the food itself.

**Amy 27:46**

Yeah, I think that was well said.

**Jamie 27:49**

Well, Ted, thank you so much for your time. We really appreciate it. I think it's gonna be a good episode and that beekeepers will really appreciate listening to it. Thank you.

**Stump The Chump 28:00**

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

**Amy 28:10**

Welcome back to the question and answer time. Jamie, the first question, it's a theoretical question.

**Jamie 28:15**

So I can't be wrong. That's good.

**Amy 28:17**

Yeah, so theoretically speaking, this person said they know it's all important, which it is, but if you had to choose one, which is more important, the queen or drone genetics? What are your thoughts? What has a bigger impact of that long-term survival and the traits of those colonies?

**Jamie 28:41**

What an interesting question, right? So, here's how I'm going to answer it. I would argue that, theoretically, the queen's genetics are more important at the colony level, while they are equally important to drones at the individual bee's level. So let's take it from two perspectives. If this question is saying, how important is it for a single bee to have a good mother and a good father? It is equally important because that worker bee is half her father and half her mother. But at the colony level, a queen mates with multiple drones. So the only thing that all the workers share is the queen's genetics, right? So all the workers in a colony are half the queen. But they are also all only half of one of 20 or so drones. So you could argue that if you want the trait in most or all of the workers, it would have to come from the queen because the queen is open-mating with the drones, and there are lots of different types of drones represented in the nest. But from a queen breeder's perspective, they are trying to control this from both angles, both from the queen as well as from the drones. But if you're looking strictly at the colony level, the queen is the only one who touches every bee in the nest. A given drone does not touch every bee in the nest. But still, I feel like that can be a faulty way of thinking about it given that, still, it takes drones to produce all the workers in the nest, even though it's multiple drones. So I would argue that it's easier to get the queen's genetics right and really mess it up with the drones, just because you have to do well with more drones than you do with a queen. So you could argue, based on all of that theory, that the queen is more important in this particular case. But for any one worker, it would be both. They would be equally important.

**Amy 30:57**

All right, I buy it. Okay, I'll accept that as an answer.



**Jamie 31:00**

I hope it's right.

**Amy 31:02**

That's a good answer. Thanks. I'm going to use that the next time someone asks me. Alright, so for the second question, this kind of piggybacks on that first question that we just discussed as far as the queen or drone genetics, and this question is about instrumental insemination. Well, it is, but it's not. So the person does instrumental insemination, and they have a strong colony that does really well, but that colony is a little bit more angry than most colonies. So they're wondering if they grab drones from a calm but productive drone-producing yard, will that overcome the defensiveness of that original colony, from that mother colony? So which traits would dominate in that sense?

**Jamie 31:47**

So bee breeding and genetics really are fascinating topics, right? I just mentioned, based on answers to the first question as well, the queen is the one who's the mother of everyone in the nest. So if you had to choose a single important individual who's important for the behavioral survival traits, etc, of all the bees in the nest, it'd be the queen because it's lots of different drones that are contributing to the workers, but it's one queen that's contributing to all of them. That's what they all have in common. Well, then the questioner elaborates and says, "Okay, well, I've got this defensive colony that I'm wanting to rear queens out of. If I just grabbed some drones from calm colonies, can I use their semen to instrumentally inseminate the queen and get calmer colonies?" Well, there's a lot going on in this question. So I'll try to be brief. But there are a couple of ways that I think about it. It's kind of really a nature/nurture argument. So the nature part is, what are they getting? What genes are they getting? How are genes responsible for these behaviors? Nurture is the environmental impact. So I'm gonna do the environmental impact one first. I'm aware of a research project that was done some years ago that showed, with crosses between African and European derived honey bees, even if a small percentage of the workers in the nest were African-derived, their defensive behavior influenced the behavior of the European-derived workers in the nest. In other words, they all had the same queen mother, but because a small percentage of them had an African-derived drone father, and they themselves were defensive, that influenced the behavior of the other worker bees in the nest. So just having a queen mate with just a small number of African-derived drones was potentially enough to make the whole colony defensive, even if it was a predominantly European-derived colony. So that's just an environment where a few workers can influence the behavior of lots of workers. But I had to actually answer a question very similar to this for the American Bee Journal a couple years ago. Because I'm not an expert on this topic, this question I ultimately kicked to Dr. Ernesto Guzman-Novoa, who's at Guelph University. He and colleagues, Rob Page and Greg Hunt and others, actually wanted to study the inheritance of defensive behavior in honey bees. What he and his colleagues consistently found, and this is going to get a bit technical, but it will make sense by the time I'm done, is that hybrid colonies that had European queens inseminated with African drones stung leather patches more than when they had African queens mated with European drones. What they concluded is that the paternity of the offspring influenced the defensive behavior more than the maternity. So the questioner is saying, "I've got a defensive queen stock, but if I instrumentally inseminate her offspring with gentle drone stock, will that reduce the defensive nature?" And according to Dr. Guzman-Novoa's paper, the answer

is yes. It is more likely to reduce the defensive behavior than increase the defensive behavior because they hypothesized that drones are more responsible for the defensive trait than are queens. They didn't know exactly why. They had tried to hypothesize for that but they consistently found that when workers had an African paternal ancestry, they were more likely to be defensive than when they had an African maternal ancestry. So nature, nurture.

**Amy 31:58**

Yeah, I wonder if, even outside of the defensiveness behavior, like other traits, that Beekeepers will breed for, I wonder if that would hold true as well.

**Jamie 35:59**

Amy, I'm virtually certain across the genome, there are probably other examples of things like this where the queen is more influential for certain traits and the drones more influential for certain traits. Or it's a complete wash between the two, for, yet again, other traits. Amy, honey bees are a never-ending source of questions and fascination. When we do this Q&A stuff, it's really incredible what comes to surface. I just look at this paper -- why? Why would it matter if the mom or the dad was one or the other? Why would that more significantly influence it? But it seems to. It's just so interesting. So when the questioner was asking, they might have been asking from a benign standpoint, but there's really an answer here. Nature and nurture plays an important role.

**Amy 36:50**

All right, so for the third question, this person's asking, when they're monitoring a percentage of the entire bee yard, the entire apiary, some of the colonies show high mite loads, others show low mite loads. How many colonies should be treated?

**Jamie 37:08**

Yeah, this is such a subjective thing because there's not going to be a whole lot of research to support it. There's a little bit that I've read, and the numbers that I'll be using actually come from that research. But it's funny, Amy, because we had a question a lot like this a few episodes ago where someone was saying, "I had two colonies, and one was very high and one had negligible mite loads, and I treated both. Should I have treated both? What would you have done?" And I think my recommendation was, well, if it were me, I would have treated the high one and not treated the second one. Well, in this case, that's kind of exacerbated or scaled up to the apiary level where there are more than just two colonies. So let's just pretend that it's a standard commercial apiary of about 30 colonies. Gosh, it's such a subjective thing. So at the end of the day, it's essentially, what do I recommend? What would I tell beekeepers asking me this directly? What I would say is if somewhere in the neighborhood of 30% of the colonies in an apiary had exceeded the threshold, that's three mites per 100 adult bees, I'd treat the entire apiary, especially if those that did not exceed that threshold were somewhere in the one or two mites per 100 bees. Here in Florida, we've looked at some population growth models and curves for Varroa populations in our colonies. And even though three mites per 100 bees is the economic threshold, once a colony hits one or two mites per 100 bees, there will most likely be three mites per 100 bees next month. So it's only going to take 30 to 45 days for them to reach the threshold. Since a third of the colonies have already reached the threshold anyway, you'd be treating, and some number of the two-thirds are at that one or two level, you know that it's imminent. I think an apiary-wide

treatment would be more warranted in that particular case. If, on the other hand, that third of the colonies in the apiary just exceed the economic threshold and the other two-thirds in that apiary are below one mite per hundred bees, I might consider doing it on a colony-by-colony basis. But in my experience, most of the time when a third of your colonies have reached the threshold, the other colonies in the apiary are going to be right at it or just below it and it probably is better, certainly from a commercial beekeeper and economic perspective, to treat the entire apiary.

**Amy 39:31**

Yeah, definitely. I think this is one of the things I love about asking and answering questions about bees. I mean, today's segment was all about theory and being subjective. It really all just depends, right? It depends on what's going on. I think that's why people love being beekeepers, they love to problem solve, and they're good problem solvers. I think it all just works out but yeah, those are great questions. All right, if you have other questions, don't forget to send us an email at honeybee@ifas.ufl.edu or send us a message on our social media pages @UFhoneybeelab.

**Serra Sowers 40:09**

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.