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SPEAKERS

Stump The Chump, Guest, Jamie, Amy

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 00:48
Hello, everybody, and welcome to this segment of Two Bees in a Podcast. Today, I am joined by Dr. Robyn Underwood with Penn State. She's the extension educator in Apiculture with the Department of Entomology at Penn State University, and she is the EPIQ program leader. We're going to talk a little bit about EPIQ in the program. Today. She is with the Center for Pollinator Research at Penn State. And we're really excited to have her. So thanks so much, Robyn, for joining us today.

Guest 01:16
Thanks so much for having me.

Amy 01:17
I cannot believe, and I was telling you this behind the scenes, that we've been doing this podcast for four years now. And we haven't had you on but I'm excited and I'm happy to finally have you on this podcast. And before we get into the topic of EPIQ and that whole program, our listeners, I'm sure, would love to hear a little bit about yourself and your background and how you got into the beekeeping world.

Guest 01:37
Okay, well, I'm an entomologist by training. I got an undergrad degree from University of Delaware in entomology. So, insects. My academic advisor happened to be Dewey Caron, who's a pretty well-

known honey bee person, although I didn't know it at the time. I was trying to get this honors certificate, which pretty much no one in entomology does. So I was like, Dr. Caron, what classes can I take that fulfill this need? He's like, take my Apidology class, and we'll do a special project and we'll call it honors. So that's what I did. And I got to experience this amazing class that was three credits of lecture, and a Friday lab from one to four in the apiary. And I just couldn't believe that there was a whole class on a species that wasn't humans. I fell in love with honey bees at the time. I was also doing some undergrad research with birds where I met my husband. He's an ornithologist. And it was research that didn't work and it was very frustrating to me. And I was like, I quit, I never want to do research, again, not going to grad school. I'm just going to take some time off. I ended up getting married, moving where my husband was doing his PhD in Winnipeg, Manitoba, Canada, could not find a job. I was waitressing, and my husband saw this advertisement for three master's degree positions in the Department of Entomology at the same school he was going to, all about honey bees, fully funded. And I was like, I can get paid more to be a student than to work. So I approached Rob Currie, and I was like, "Hey, you have these positions. I'm wondering if it would be a good fit for me." I ended up joining his lab and studying honey bees further. It was a really wonderful experience. It was cool to see Canadian beekeeping with bees being kept indoors for winter, completely different than what we do here in Pennsylvania. And that solidified my career in honey bees. Since then, I have taught Introductory Biology at a small school here in Pennsylvania called Kutztown University. That's all undergrad, so Punnett squares and parts of the cell and was really lucky to meet Margarita Lopez-Uribe at a meeting of the Pennsylvania State beekeepers where she was a new faculty member. We had lunch together, and that resulted in a grant proposal that was funded. That brought me to Penn State. So it was the best thing ever. Thank you for taking me away from teaching Punnett squares and parts of a cell and back to honey bees full time, because that's my real passion. So ever since 2017, I joined Penn State as an assistant research professor. And then in 2022, a position opened up to be an extension educator of apiculture. And this is the best job in the world. Extension is so fun, talking about bees, writing about bees, reading about bees, still keeping my toes in research so I have new things to say. So that's kind of my life story related to bees.

Amy 01:40
I agree with you. I think being an extension educator, especially in apiculture is the best job that anyone could have.

Jamie 04:56
Well, I have to talk about this because you said it but I'm just gonna give you a little bit of background, Robyn, before I make this comment, before I ask the first question. But, my wife's undergrad is in wildlife biology and her master's is in zoology. And so when she was thinking about what to do research in for her PhD, I said, well, honey, why don't you go do ornithology so that we can be world experts in the birds and the bees, and she thought that was stupid. And now, you and your husband did exactly the joke that I've been telling people about my wife forever. Have you guys ever made a play on that?

Guest 05:30
Every single time Rob Currie introduced me. And guess what? David Peck from Betterbee, from Cornell University, is also married to an ornithologist.

Jamie 05:42
Oh my gosh, what is it about you guys? I just think it's hilarious. I would always tell my joke, "Hey, honey, we could travel the world talking about the birds and the bees. People would be amazing. We could write books." And she just didn't think it was funny. And now you've done it. So, I'm very jealous. But that's not why we brought you here, Robyn. I'm sorry. It's just that the moment you said that, I'm like, dang it. She stole exactly what I've always wanted to do.

Amy 06:04
Jamie wants to be you when he grows up, Robyn.

Jamie 06:06
That's right. But it's too late. All right, Robyn, I'll get back on the script. I'll quit chasing rabbits. So we brought you on to talk about EPIQ. Could you tell us a little bit about what that is?

Guest 06:18
Yes. First, let's define what those letters stand for, and that is education about production and insemination of queens. So since 2022, we've been meeting with a group of beekeepers from the northeast, because this is a northeast SER funded program. So we promised to focus on the 12 states plus Washington DC up here in the northeast. Since 2022, June, we had our first what we call a lunch and learn session, which is pretty much a virtual meeting, where at each of these meetings, we discuss one topic in depth. So the participants go to the Google Classroom, they have materials that they're supposed to read, listen to a podcast, watch a video or do an apiary activity. And then we come together to discuss whatever it was that was their homework. So in that way, it's a flipped classroom. And what we've been doing for over two years, well, it's just about the two year anniversary, I guess, in a couple of weeks, is every two weeks we meet, we dive into a topic, and we learn as much as we can. So to give you an example, we could just talk about size of eggs that the queen lays and what impacts that for a whole two week session. Right? So these participants, the ones that have hung on and are getting the most out of it are the ones putting the most into it. Reading scientific journal articles and learning, really in depth, every piece of queen production. Our goal is to have an army of queen producers making excellent healthy queens in the northeast, available for sale or trade or whatever they want to do in the region. So we hope in the future to call on these people who we've basically trained in how to make really good healthy queens, and perhaps have a regional breeding program, for example, because we harp a lot on data collection, how to use your data, how to make selections, what should you be looking for, we've had in person workshops. So some of these people came in having never grafted and made a queen before in their life. So they were invited to a workshop where they learned how to make a cell builder, how to graft, things like that. And then there were other participants that were already queen producers, who, if they attended the classes, and were doing the homework and were full participants, were eligible to be considered for instrumental insemination training. So last year 2023, we had two workshops where we trained six people each, and we're geared up to do that again this summer. Our goal is to have one proficient inseminator in each of the northeastern states, which by the way, takes several years to hone those skills. So they just learned the skills last year, so they're not ready yet to be selling inseminated queens or anything like that. But we want to have an inseminator with the equipment, with the scope, with the skills so that they can either do inseminations in their own operation and sell inseminated queens, or even provide it as a service for beekeepers in

their state that have really great genetics and want to close their mating system or whatever. But really, basically, we're trying to improve queen production in the northeast. We kind of want to be a little bit more self-sufficient and be able to rear northern queens in the north.

Amy 06:19
Yeah, so I think that's great. I'm really excited to hear more about the program. I know that, within extension specifically, we're always trying to figure out what the needs of the industry are and how we can promote that through programs, through educational programs and workshops. My next question -- I have a couple. I have so many questions for you, Robyn. But my next question for you is where did this idea come from? I'm also wondering, I know that you said that you had six beekeepers that were working on instrumental insemination. How many beekeepers, in general, do you have in your overall program?

Guest 10:21
I think that was like four questions.

Amy 10:23
Yep, that's right. So the first question is, how many people do you have in your program overall? And then the second part is just where did you get this idea?

Guest 10:33
Sure. This was our first time doing a program like this, and we weren't sure how it was going to go or how these virtual meetings were going to go. And so we accepted 225 people into the program. There were about 500 applicants. And from there, it's kind of dwindled down, because people realized what our expectations were. Our expectations are very high. We expect people to actually do their homework, do the reading, and have something to say, and that was a bit much for some people. But in the end, we had about a core group of 80 that really participated for about a year and a half, at least. The feedback we've gotten from those people that have kind of put into it what they wanted to get out of it has been really great. They're very happy. I feel like a lot of beekeepers are lifelong learners. They're just hungry to learn more and more and more. So that's what this is providing for them. And to be honest, we felt like, if a person cannot withstand meeting every two weeks and doing some reading in between, they're probably not going to be a great queen producer, and they definitely can't do instrumental insemination, right? Because it takes time scheduling, determination, focus, all those things. That's how we weeded out the people that shouldn't spend their time and money on learning II anyway. But we did, you had the number a little bit off, we had two workshops of six each last year, and one workshop of six is coming up in June. So overall, we will have trained 18 people in insemination and one in each state will also be receiving or have already received the insemination rig and a microscope that we technically still own until they prove themselves. So if they're using it and doing good things and learning, we're happy for them to keep those, perhaps forever. But if they decide, this is too much, it's not for me, we will take those items back and train another person with that equipment. That's kind of our plan. I have to mention my partner in this. That is Kate Anton. Kate is the lab manager for Christina Grozinger's lab at Penn State. We met eating lunch outside at Penn State one day early on when she and I both started with Penn State around the same time, around 2017, and we started talking and we hit it off immediately. Both of us were in bee labs. But we didn't really have

anyone to just talk about bees where you didn't have to explain, oh, yeah, a queen flies off to get made it or whatever. We were at the same level, and we could just talk and understand each other. And we were hungry for that because we felt like we were each in a bubble because Kate was in State College at the University campus. I was remote. Felt like I was alone in my house in my head thinking about bees. So we would call all the time and just be like, "Oh my gosh, this happened in the apiary, do you have any advice?" Or, "I went to a bee club meeting and experienced this. Can you believe it?" Or, whatever. We found each other to talk about bees. Through those many conversations, we both independently went to either workshops or lectures about queen rearing education. They were usually really short, like the grafting workshop would be like come to my house for an hour, we'll graft and I'll send you home with those larvae, and you can go ahead and try to make those into queen cells for yourself. Or there would be one lecture going over the basics, and we both felt that it was almost like agritourism. It's like oh, I want to go see that. But the people weren't getting enough information or education in our opinions about how to make really, really good queens. And a lot of them just went home and didn't bother to do anything. They just kind of went because they were curious. And we felt that there was this need for a real education about queen rearing. And even people that are doing it always have something to learn and could improve their practices. That was the impetus for EPIQ, just not being satisfied with what we saw as the current queen rearing, queen production education. We knew we could do it better. We applied for this grant to northeast SER. Luckily, they gave us the money and a chance to go ahead with this program. And it's been really rewarding.

Jamie 14:57
So, Robyn, this all sounds really neat. As I'm listening, you've got this cohort of beekeepers who you are training specifically. That's great. But what are some other program outputs? In other words, how does your course, maybe, expand beyond the beekeepers who are directly reporting to you in this project?

Guest 15:13
Yeah, I like that you're asking me that question because people are constantly asking if they can join, and unfortunately, it was kind of like a one time thing. But luckily, we learned a lot. We have collated a lot of information and materials that could be really useful to any beekeeper, and we are in the process of creating a lot of fact sheets. So, in extension of fact sheet, to me, is just a short one or two page document that gives you information about a very specific topic. Some of the fact sheets have come out. We have the best one, the one I liked the most, Kate wrote as an introduction to how to be a queen breeder. So like, what does a breeding program look like? There's some queen biology, how to make a cell builder, those kinds of things are available now on the extension website. But we have about 50 more that we'd like to write and publish. And they will all eventually appear on the extension website. They'll be free. They'll be these nice downloadable PDFs that are just like little chunks of the queen production process. Also, we have money from the grant. Still, while the program is ending in August, the active part, we have one more year of funding. What I'm supposed to do during that is create an online course. So that will be something else that will come out in the future that people can register for and take. And we have learned so much about how to teach instrumental insemination and queen production that we can offer future workshops. They'll be for a fee because they won't be grant funded. But we've gotten better at doing those workshops, and we're gonna have all these people that are trained that might want to come and be our co-teachers and things like that. So lots of educational

materials will be coming forward and will be available online and relatable to most geographic regions because they're just very basic, very specific topics.

Amy 17:11
Yeah, that kind of leads me into my next question, Robyn, is how would someone like myself, an extension person or just an apiculture educator, how would they implement a program like this in their area?

Guest 17:22
I feel like there are several ways that this could be implemented. It depends on what part of EPIQ you think would be most impactful. One thing that we do is sometimes our homework is reading scientific journal articles. And then when we get together, we kind of tear them apart a little bit, which I think is a really important skill for science literacy, and I want beekeepers to feel comfortable reading scientific journal articles, and that they're allowed to criticize. So I think having reading groups is really fun. We have had some spin-off reading groups. I was like, why don't you guys that are all in New York go ahead and have your own reading group. You can get to know each other, and you get to pick the papers you read, instead of me always telling you, and maybe you want to read something that's not related to queen production. So that's a fun thing you could do. I definitely think that we could all improve our queen rearing workshops by, for example, maybe having them do some reading or listening or watching videos or listening to podcasts or whatever about topics before they arrive so that the hands-on portion is really skill-building. But then there was the theory beforehand. I think improving workshops in that way could help but you could totally completely copy EPIQ if you wanted to. If you want to have bi-weekly lunch and learn sessions and get a group together and dissect individual topics, you could totally do that. It really depends on how much energy you have, how much time you're willing to devote to such a thing. Perhaps there could be a grant in our future with a national EPIQ or a southeastern EPIQ or whatever. I mean, the sky's the limit.

Amy 19:08
I agree.

Jamie 19:08
Let's talk about that. I think that really perfectly segues into the next question, which is you've been successful, there's great momentum, so what are some of the next steps you plan to take to expand the program? What do you have up your sleeve next?

Guest 19:22
I'm super excited to announce that we got a grant for a program we're going to call DUDE, deep understanding of drones education program because the missing piece, as well, in many of these queen production classes and workshops is the drones. Everyone ignores the drones. You just assume the bees are making enough drones, you assume they're healthy, and really they're little princesses that require a lot of babying and nutrition and care and great temperatures and everything else. So our next program, which is going to come right off of EPIQ and start in September all about drones. It's going to be similar to EPIQ. We're going to have our biweekly lunch and learn sessions, we're going to have workshops coming up, those workshops are going to be really fun because we're gonna find

DCAs, drone congregation areas, which I think is something everybody wants to do. I've been learning about bees for almost 30 years, and I've only seen one DCA in my entire life. So even for me, because we got the grant, I can spend a ton of time learning how to find DCAs and showing people how to find DCAs, and I hope they go back to their clubs and show everybody they know how to find DCAs, so we can know where they are and utilize them and make sure we're putting our drone mother colonies in the right place for the breeding that we're interested in. Those guys get so ignored. It's time for the dudes to get some attention.

Amy 20:50
Robyn, you do --

Jamie 20:52
I could not agree more. Gotcha, Amy.

Amy 20:55
Jamie, don't interrupt me!

Jamie 20:57
I had to say that before you got out whatever you were going to say, which I'm sure is also important.

Amy 21:02
No, I was just going to say that Robyn has so many awesome programs. And I feel like you are so great at naming the programs that you have and having acronyms, and I don't know, I really liked that DUDE program. So good job. That's what I was gonna say.

Guest 21:18
Well, I have to say, EPIQ took a long time to figure out. We threw out a lot of things. But DUDE was pretty easy.

Amy 21:25
That's so funny.

Guest 21:27
I just want to say, Amy, that extension is supposed to be fun. Most of the people that are coming to our programs, this is their hobby. We should all be having fun and naming things crazy things, right?

Amy 21:38
I have no idea what you're talking about. Jamie and I don't have any fun at all while we record these podcast episodes. Right, Jamie?

Jamie 21:46
I just can't get away from DUDE. So, whatever you said, I agree with Amy. But, DUDE.

Amy 21:54

Alright, Robyn, along the lines of other programs, can you tell us a little bit more about some of the other extension programs that you have that may benefit beekeepers local to where you are, but also beekeepers around the nation and around the world?

Guest 22:08
Penn State has a Beekeeping 101 online course, which I had nothing to do with. It existed before I came to Penn State. It's wildly popular. So if people are looking for that kind of education, like self-paced basics, we have Beekeeping 101. I'm really excited to say that very soon, we're going to be launching Beekeeping 102, which has, after the colon, "Organic honey bee colony management." So that is a result of a research project that I did comparing conventional organic and chemical-free management for three years. The data show, the organic system was the best for the health and productivity of the colonies. And so it's a data-driven extension product, where I've developed a fact sheet about that management system. I did a series of workshops and webinars about it. And now, it's time for that topic to live on its own. So that's another thing I like about extension is I can use the same materials in various different ways, different media types. I'm very excited for this new course, which kind of just explains what organic is. And I'm not saying that if you take this course that you can have certified organic honey bee products. You cannot because I'm not talking about what's in the landscape around the bees. It's only management. So check that out when it comes out. We also have a beekeeping basics book that's pretty outdated that we have turned into our creative services team to make into a new updated color photo book. So just a beekeeping basics book that can be used for classes. Another thing that I do, two years running now, and I'm planning to do it again next year, is I run a beekeeping around the world webinar series, usually in January, February, March, when it's not my bee season in Pennsylvania. I have guest speakers from all around the world that talk about what's unique in their area. It's really fun. It really breaks down barriers and biases to what people think happens in those countries, for example, and we get to see firsthand some really unique things. It's not an educational series. It's really just for curiosity sake, but that's a really fun one. We've done it two years in a row. Seems to be popular enough that it would be worth doing again, and we visit different countries each time. So it's not like it's a repeat. It's just another series going around to different continents. So those are some highlights.

Jamie 24:40
Robyn, I really appreciate you joining us. Is there anything else you'd like to add or discuss?

Guest 24:44
I don't know. I was gonna blame you and ask you not to send those yellow legged hornets up here, but you don't have them either.

Jamie 24:50
Oh my gosh, yeah, we don't have them. It is the thing, isn't it?

Amy 24:54
Not yet.

Jamie 24:55

Hopefully they won't get established. But assuming they do, then, who knows, it will absolutely change what we talked about for a while, won't it?

Guest 25:04
Yes, I don't want to be an expert. You know, there's stuff you don't want to know about? That's one of them.

Amy 25:08
Well, thank you so much, Robyn, for being on our podcast today. I'm excited. And I'll be sure definitely to make sure that your resources are on our resources page. So I'm excited to share the resources that you've made available to beekeepers. Thank you so much for everything you've done for beekeepers. I'm really excited for EPIQ, I'm excited for DUDE. I think Jamie and I will probably be saying DUDE to each other for the rest of eternity. So thank you so much again for joining us today.

Guest 25:34
Thanks so much for having me. I'm excited for DUDE as well.

Amy 25:37
So Jamie, I'm a little biased. I really love extension education. I love apiculture. Any of my colleagues that are around the nation that are apiculture extension, educators, and specialists are some of my favorite people. I love people. But I'm excited to hear about some of the programs and I'm happy that Robyn is taking on the queens and the drones and holding programs related to those.

Jamie 26:13
Yeah, I think it's great. She obviously did a really good job explaining it. I'm glad that she got funding and support. She's helping beekeepers, and one of my more general take-home messages supports what you just said. You and I do extension here at University of Florida honey bee lab. And we have different things we do. We do the podcast, the Bee College, the master beekeeper program, our new YouTube series, things like that. But Robyn is taking a different approach. She's got EPIQ, she's got DUDE, she's got these other things. And I think the way that technology is advancing, I think the growth of apiculture programs, not just within the US, but globally, means that there's a lot of high quality information out there available for beekeepers. So beekeepers can shop around, they can see what resources are available, certain university teams are focusing on certain things and that's what their strength is, other universities, different strengths. Beekeepers can really gain a lot by knowing who their extension specialists are, knowing who those providers of information are, and get a lot of information, get a lot of different insight from the experts on different topics. And it's just great to hear Robyn talk about her emphasis on queen production, queen health -- I was about to say DUDE production -- drone production and drone health and contributions to this whole thing. It's just really great to see that happening.

Amy 27:28
Absolutely.

Stump The Chump 27:37

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

Amy 27:46
Welcome back to the question and answer segment. Jamie, the first question we have is about plastic hives, specifically related to American foulbrood. So what happens if a beekeeper has plastic hives, they have American foulbrood, they really don't want to burn their colony, and they really don't want to burn the hive, especially because the hive is a little expensive. So what would you recommend?

Jamie 28:11
Wow, what a tough question. There's actually a couple of tough questions in this list today. Well, let me just say that American foulbrood is a regulated disease in a lot of areas, not just in the US, but globally. And so as a result, you may have an obligation to do something very specific, regardless of what I'm about to say that comes out of my mouth. So what I would say, always then, check with your local bee inspector or regulatory agency or whoever watches over American foulbrood where you are to see what you're supposed to do. I really do appreciate the idea behind the question. Historically, beekeepers have used wooden hives, right? So in the US, let's just pick on Florida, for example, since we live here. In Florida, we have a very good regulatory agency, great bee inspectors who will come out and spec colonies and if they find it, they burn the colony. Well, that's an easy recommendation. The boxes are made of wood. Burning the colony is a big deal. It's a big deal. But it's not as financially a big deal as a burning plastic hive that, as this question rightly points out, maybe two or three or four times more expensive. So it's not just the loss of life of the bees, but it's also the loss of the use of that equipment. And so, if you use plastic hives or some of these styles of hives that are more expensive than, for lack of a better phrase, these old school wooden hives, that's kind of a risk that you assume. I don't really have a formal recommendation other than contact your local regulatory agency because you may be obligated to burn that hive. I will say, from a biology perspective, it's difficult to disinfect any surface except maybe a stainless steel surface from American foulbrood. It just forms these spores that are incredibly long persisting. That would be in plastic hives, wooden hives, Styrofoam hives, etc. And so if you get American foulbrood in these hive styles, these hives that are made from these different components, it's going to hang around, regardless of whether or not you think you can clean that style. And my guess is that, in most regulatory situations, you're going to be required to burn it anyway. And that's just kind of a risk that you assume when you take on these hive styles. If you're going to pay more for the hive styles and the benefits that you get, then there might be times that you have to do away with them through burning or other other ways that are not great from a pocketbook standpoint, but great from a bee health standpoint. So I can't just straight out say, well, if you just dip them all in 10% bleach solution, you'll be okay because we just don't know. First things first, I would check with your local regulatory authority. But even if you think, well, it's plastic, I can disinfect this thing, note that you probably cannot easily disinfect it and that stuff will still be in there, and it may come back later. It's not worth the risk of having come back later. So if it happened to me, check with my regulatory officials. But I'd know here in Florida that I'd need to burn it. So I just kind of bite the bullet and probably do that. I know it's tough. But American foulbrood is certainly one of those diseases that you don't want to have in the apiary, which, by the way, is why the other things are so important. Having a good hygienic stock of bees, making sure that your colonies are well-fed, good queens, Varroa are under control so that they're able to take care of maybe low incidences of American foulbrood, because once you do see it, you're kind of at the point of no return, and then you're kind of stuck doing what you're required to do.

Amy 28:27
Yeah, it's kind of interesting. I feel like the industry, there are lots of things that have stayed the same. But at the same time, there are little minor changes that are happening with the industry. Something that I feel like I've seen at many of the trade shows, just in the past couple of years, is this increase of different hive types, like different materials. It'll be interesting, I think, to see the adoption of this on a larger scale as well.

Jamie 32:08
Amy, you're right. In my mind, change is coming. So I've been keeping bees for over 30 years now. And obviously, when I was keeping bees, it was mostly wood, but even then, some plastic and Styrofoam hive types quickly were born. Now, there's all sorts of modifications based on new research about insulation and orienting things this way versus that way. So there's this explosion in hive style innovation, which is great. I'm not knocking any of that. So excited about it. But now, we're going to have to figure out what to do when we get these kind of one-off situations where an American foulbrood pops up, and we've got this very expensive hive style and now we got to deal with an AFB infection. So it's tricky. And you're right, you go to trade shows, you see these kinds of things all over the place. Change is not just coming, it's here. And a lot of these are very, very positive changes. I'm excited to see where this goes. But there are some collateral issues like how to deal with AFB that we're going to have to face as we move into these, for lack of a better term, uncharted waters.

Amy 33:10
Yeah, definitely. So you mentioned different modifications that beekeepers have, which leads me into my second question for today. And this individual is looking to use nucs and using nucs as a permanent way of managing their colonies. And so they're wondering, what recommendations do you have to minimize swarming? Obviously, if you're going to be keeping bees and you're managing them in a nuc box, they're either going to swarm, or how high can a nucleus colony be stacked? You just keep adding boxes, and at what point are those bees gonna decide this is not enough space for us and we're gonna leave. So what are your recommendations on management of nucs?

Jamie 33:49
I really love this question. Years and years ago, Amy, probably 20+ years ago at this point, I started giving talks about using nucs in beekeeping operations. I wrote a document about using nucs in beekeeping operations because I became a really big advocate, especially from a hobbyist perspective, of having one to three nucs in your apiary available should your production colonies, your full-size production colonies, have problems. So let me give you an example one of the clearest ways that production colonies can have problems. They become queenless at a time that's inopportune. Maybe it's during the honey flow, maybe it's during winter when you can't produce a new queen, things like that. And having nucs on hand in your operation, your apiaries, allows you instantly to fix those queenless issues. You've got these queens, these spare queens and these nucs year round. All this stuff. So I wrote this document around the idea of here's all of the ways that you can use nucs in your beekeeping operation. For me, it was originally born out of the idea of solving queen-related issues. But there are times when all of your production colonies are doing well and your nucs are doing well. Nucs are basically a small colony living in a small box, and that small colony doesn't want to remain small. It

does just what a production colony wants to do, it grows. So there are times where your production colony is doing great, your nucs are doing great, and you got to do something, otherwise your nucs are going to swarm, they're going to grow too big. What do you do? That's really the theme of this document. We need to make sure and link it in the show notes because I give a number of recommendations, and I'll go over some of those here. But one of the things I'll start off by saying is that I love to use five frame nucs because you can buy deep boxes, medium supers, shallow supers, queen excluders, inner covers, outer covers, migratory covers, bottom boards, screen bottom boards, all of these things for five frame nucs, but you can't really find in three frame or four frame sizes. So first of all, when I use these quote, helper nucs, I usually use five frame nucs, and that allows me to grow the nuc. I can add a second deep, I could add medium supers, I could add queen excluders, I could do all the things to a nuc that I'd do to a full-size hive. If everything is going well, I can use my nucs to make nucs. I split my nucs and sell the nucs that I split from it. If everything's going well, I may take bees and frames of brood from the nucs and move them into my production colonies and empty combs from my production colonies into my nucs. That way, I'm always taxing the nuc populations, so that they never get to the swarm level. And then, I'm always making my production colony stronger than they otherwise would be on their own. So there's almost this constant flow of frames in and out of those, again, helper nucs that are in the apiary to support my production colony. So how do I use nucs throughout the year for requeening, for making strong colonies stronger? I take bees and brood from the nucs, I can add supers to the nucs, I can overwinter nucs because you can have supers that you can put on those nucs, and they'll store honey in them. So there's just a lot of ways that you can manage nucs to keep them below that swarm overcongestion threshold that will benefit both the nuc and the production colonies in your apiary. So that's how I do it. I use them to keep my production colony stronger than they otherwise would be by taking frames of bees and brood out from those nucs and putting them into production colonies and everybody wins. In those scenarios where I have queen issues, boom, I've got a queen in the apiary that's ready to go. So have a look at that document we'll link in the show notes about nucs, and you'll see all of the strategies and even more that I discuss there.

Amy 34:03
Sounds good. All right, for the third question that we have, this person, for the first time, they've had European foulbrood in their bee yard. And so they're wondering about the ethics of selling these nucs next year. Are there guidelines to this? What are your recommendations? If you have found EFB spores in your apiary and you wanted to sell your bees, what would you do?

Jamie 38:03
Yeah, this is a tough question, because I really appreciate the motivation behind the questioner. They see themselves as kind of having this ethical obligation to sell strong healthy nucs, but they recognize that they have a European foulbrood problem, at least this year. What should they do in the future? Well, I would say, if you have European foulbrood, you've got to address it, right? And so the way you do it is you might requeen, you might feed your colonies, you might treat with an antibiotic, all of these ways are ways to help you clear up the issue. You couple all three of these things, I guess you're not coupling things if there's three issues, but you put all three of these things together, feeding, requeening, treating with antibiotics, etc., you put all three of these things together and you're doing everything that the recommendations are about dealing with European foulbrood. So if you do not see clinical signs of infection in the nucs or in the colonies that you're selling when you sell them, I think that

that's okay to do that, to sell those colonies. If you see clinical signs of infection of European foulbrood, I would argue you have an obligation not to sell those nucs until you do what it takes to make those nucs or those colonies healthy again, the standard ways that you would work to do European foulbrood, like some of the things that I've just mentioned. So, I mean, you can make a similar argument for Varroa. If you're selling nucs, you're selling people Varroa. So it's impossible to get all the Varroa out of the high but you should just be following best practices for Varroa control so that when you sell those nucs or production colonies, Varroa are under control. So similarly, when you have a European foulbrood outbreak, say in your apiary, your etc., you need to get that under control using best management practices. And once you have it under control, I don't think there's a problem selling those nucs because you're you're following standard management practices dealing with it. But again, if you see an active infection, active clinical signs, I would hold off on selling those until I did what was necessary to make sure the disease was controlled in those colonies. It's easier to deal with Varroa because Varroa is everywhere in every colony. So, with European foulbrood, well, it's not everywhere in every colony. So it's not as easy as saying, well, if I see one cell, I can still sell it because it's okay. But I would say there are things that you can do to bring EFB under control. And once you do that, I don't think it's a problem to sell those colonies.

Amy 38:04
Yeah, then I think just from the other perspective of the person purchasing these colonies, we always recommend that when someone is purchasing a nuc that they go through and actually examine and make sure that there aren't active clinical signs, right? So being able to identify some of those signs is really important from that side as well.

Jamie 40:51
Absolutely.

Amy 40:52
All right. So these are really great questions. Jamie, I feel like the questions that we receive gives us a lot of really great insight of what people are doing. Especially some of the questions about the different types of hives because we don't have some of those hives here on campus. And so it's always fun to kind of hear from listeners, including us into your conversation, sending us emails about what you're kind of thinking about and what you're doing. So we really appreciate it and hope that you all continue with your great questions. Don't forget to send us an email or send us a question on one of our social media pages. Thanks for listening to today's episode. This episode was edited and produced by our podcast coordinator Mitra Hamzavi. Thanks Mitra.

Jamie 41:42
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