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SPEAKERS

Amy, Paul Kelly, Jamie, Stump The Chump, Honey Bee

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. Welcome to another episode of Two Bees in a Podcast. In this episode, we will be interviewing Paul Kelly. He is a staff apiarist at the University of Guelph in Canada. He's going to be talking with us about Buckfast bees, as well as his university success educating beekeepers around the world using YouTube. In our Five Minute Management, we'll discuss how to hive a nuc, and we'll finish today's episode with the question and answer segment. Hello, and welcome to another segment of Two Bees in a Podcast. I am really excited about this segment because we're talking about two things, one of those being Buckfast bees. And I'm very curious and interested in Buckfast bees. I've had the privilege of being able to go to Buckfast Abbey in England a couple of times and learn a lot while I was there. And then the second thing we're talking about is YouTube training, YouTube videos, and the reason we're able to talk about both of these in the same segment is we are joined by an expert on both. His name is Paul Kelly. He's the staff apiarist at the School of Environmental Sciences from the University of Guelph. He has experience both breeding Buckfast bees and creating amazing YouTube training videos. Joining us all the way from Canada on Zoom is Paul. Paul, thank you so much for joining us on Two Bees in a Podcast.

Paul Kelly 02:12
Well, thanks for the invitation, Jamie. I'm delighted to be here with you.

Jamie 02:15
Yeah, I'm really excited about what we're going to talk about. We always talk with our guests a little bit before we go on the air, and I was already getting knee-deep in questions. So before we really talk

about Buckfast bees and YouTube videos, could you tell us just a little bit about yourself, how you got into bees and beekeeping and how you found yourself at the University of Guelph so that our listeners can get to know you a little bit better?

Paul Kelly 02:37
Sure. I'd be delighted to. I started with bees in grade six, in a way, with a science project for school. My father introduced me to a good friend of his named Honey Boy McLaughlin, and Honey Boy lived just down the road and was a commercial beekeeper. That was my first start.

Jamie 02:57
Now, wait just a minute. I've got a few comments already. So number one, the beekeeper's name was Honey Boy?

Paul Kelly 03:02
Honey Boy McLaughlin was in his 60s at the time. My dad knew him as a kid. So he was always Honey Boy.

Jamie 03:09
The second thing I'll say, Paul, too, I started keeping bees when I was in sixth grade, and I did science fair projects with them, which is kind of what pushed me in this direction. So maybe you and I are kindred spirits.

Paul Kelly 03:20
It seems so.

Jamie 03:21
From there, what happened?

Paul Kelly 03:23
Well, I got into working outdoors through high school and had found that was really my calling, doing work outdoors. And I ended up starting at the University of Guelph with the intention of getting into forest conservation. But I took an apiculture course and it just turned everything around. Every lecture, I was sitting there just imagining myself being a beekeeper working with bees and I had no idea what it was really like. But I got just kind of thrilled with that idea. So actually took a year off school to go up to northern Alberta to the Peace River area, which is kind of a beekeeper's Mecca, one of the best production areas in the world, and took a job with a beekeeper with 3000 colleagues. So I like to say that everything we did, we did 3000 times. So we got a little bit of practice at everything. I learned a tremendous amount in that first year. From there, I ended up moving on to working in different areas of Canada for commercial beekeepers in New Zealand for a period as well. And then the intention was to become a commercial beekeeper. In 1986, when I was looking at this, the cost of honey, your price of bulk honey was 37 cents a pound, cost of production was 65 cents. So it was really not a good time to get into the business and a job came up here at the university. I took it for a year or so and 33 years later here, here I still am, but I've loved almost every minute.

Amy 05:09
I hope you've loved every minute of it. Otherwise, I don't know how you would have survived 33 years in it. Sounds like you really enjoy your job. Something that we had seen online, you actually have a recorded presentation and it's about Buckfast bees. Of course, everyone learns something new every day. I learned multiple things every day. But today, I learned that Buckfast is actually in the UK. And I know that you work a lot with Buckfast bees. So can you tell us about Buckfast bees? What's so special about them?

Paul Kelly 05:42
Right. Well, when I first started working here, our main focus of research was tracheal mites. They were just coming into the US. Everybody was very concerned about them. We didn't have them at that point here in Canada. But in talking to people in Europe, they told us that tracheal mites were no big deal, but they'd also had them since the 1920s. Originally, it was called the Isle of Wight disease, and it wiped out a lot of bees in Europe, so we were concerned about the same thing happening here. My boss at the time, Dr. Gard Otis, we talked together about breeding for tracheal mite resistance to try and speed up this evolution that happened in Europe. I suggested that time that if we want to do that, we bring stock in from Buckfast Abbey because we'd be bringing in resistance stock, but also stock that was bred for a number of beekeeper friendly characteristics. So that's what we did. It was the first time that bees had been brought in from Europe to anywhere in North America since the 1920s. So we had a lot of hurdles to get over to get the stock in here, quarantine procedures and so on. But we were working with Brother Adam at that point to get stock in, and we did a number of research projects at the beginning to see if there was actually, in fact, resistance to tracheal mite brood. There was, and then we looked at all the other characteristics, how well they pollinate, how well they fit our climate here and our beekeeping practices. And they were a really good fit right off the bat. And so we've carried on ever since 1990.

Amy 07:41
Wow, I can't imagine how long that took as far as the process of actually getting them over here. And then, of course, doing all the testing and research on them.

Paul Kelly 07:51
Yeah, well, we were helped a little bit by some work that was done previously by the University of Guelph back in the 1970s. A faculty member here, Dr. Maurice Smith, went over to Buckfast Abbey and brought back eggs and semen from Brother Adam, and he was able to transport that to Weaver's of Texas. So that's how Weaver's got their start in Buckfast breeding. So there were no live bees at all. It was eggs and semen. So Maurice Smith did that work, partly because we would then be able to get stock from the southern US here into Canada, which was the practice at the time. Beekeepers throughout Canada got bees, replacement stock, and queens from the southern tier of the US on a regular basis.

Jamie 08:47

So Paul, this is really an interesting story to me. :ike I said in the intro, I've been able to go to Buckfast Abbey twice and I think a lot of our listeners may not be familiar with the Buckfast bee. You've mentioned now, in the '70s and then you guys in the '90s were able to -- the stock has come over to different ways here to North America. But, what is the Buckfast bee? What's its history? Why would it be something that people would want to pursue in the first place? Who is Brother Adam? I know there's a lot of questions there, and you could go on for days, but what's a good summary that you normally share with folks when you're describing the history of Brother Adam and the Buckfast bee?

Paul Kelly 09:25
Well, Brother Adam got involved in bee breeding at a very early age in his late teens. This Isle of Wight disease was occurring at the time and that got him interested in bee genetics because some bees survived and others didn't. So that got him started on breeding bees. And there was a lot of new information at the time about genetics and how that all works, and information about how genetics works within honey bees, which is much more complicated than, for example, cattle. The queens mate some distance from the hives in the air, and so you have a little less control over who they're mating with. So he put all that together and created a breeding program that involves a set of procedures, and then a criteria for selecting bees. And early on, he set his criteria on three main things. They were a lack of swarming behavior because that's one aspect of beekeeping that is a constant for beekeepers to try and prevent swarming and work around some of the issues that are associated with swarming. So he was selecting for a low tendency to swarm, one of the hardest things to breed for. He was also looking at temperament so that bees could be worked in a way that was easy for beekeepers to focus on their work and do their job and make it more enjoyable as well. So, temperament, and the next thing is calmness. And, in a way, that's quite related to the temperament. But we look at this as comb stability. So are bees running around on the comb? Are they flying up off the comb? Are they staying still and calm? And the temperament is basically measured by a number of stings, so it's a pretty direct way of making a measurement. It's almost like a pain threshold test.

Amy 11:35
I don't think I'd want to be the person that had to do that study.

Paul Kelly 11:39
Well, we do have standard methods for working through the colonies, and with the temperament one, we don't use smoke, and we try and use perfect beekeeping technique so that you're doing the same thing every time. And if we do need to use smoke, then they get a lower rating. So we can use smoke, but not until we've done an initial look in there. The swarming is basically we measure at swarm season whether there's any preparation for swarming or not. All these characters that I mentioned are rated one to five, five being the best, and so we can figure out a good average on that. So we do incorporate other things in with the breeding but not until we've done the preliminary screening for those basic Buckfast characteristics. As far as the the timing, the procedure and everything, it's a three-year cycle. You mate queens the first year and introduce them into test colonies, the second year you do your tests on the colonies, and the third year you use a breeder that you've selected in the second year. Because of our climate here, we basically are beekeeping from late April until mid November. Our honey

production season goes from mid June to mid September. It's a fairly short timeframe. So that three-year cycle is really necessary in our environment here.

Amy 13:13
Geez, Paul, what do you do for the rest of the year?

Paul Kelly 13:18
Well, typically I like to get out and go do some skiing in the winter, and this has been a great winter for that. Because we keep bees on islands, we've got stuff to do on islands. And this Saturday, I'm moving a building out to an island across the ice. So I'm really looking forward to that.

Amy 13:35
That's awesome. Jamie, I might leave Florida and go up to Canada instead. I think it's time.

Jamie 13:39
We all may, Amy. It's a little hot down here. We sometimes get envious of our northern colleagues.

Amy 13:44
Exactly. Okay, so where you are, is it common for most of the beekeepers to use the Buckfast line? Would you say a majority of the beekeepers use Buckfast bees?

Paul Kelly 13:57
Yeah. In Ontario, it's the most popular stock bee. There are some limits to their production capacity here, again, because we have a short season. At most, we're able to get five rounds of queens out of our mating nucs. So raising queens for commercial businesses is kind of barely viable. So anybody that does raise queens here does a number of other things as well with their colonies. But we're able to do this kind of work and make it work for the beekeepers of Ontario. We currently aren't allowed to export bees to the US. That changed two years ago. And so we're not allowed to sell queens to the US. One of the collaborating Buckfast breeders, there are three of us that are official Buckfast breeders, and here at the university, we're the only registered Buckfast breeder in Canada. But we do collaborate with two other breeders that are able to generate the numbers of queens that we can't. Unfortunately, we're not able to ship to the US. And with the videos we do, a lot of people would like to buy our queens, but I'm just encouraging them to contact breeders that do select for the kinds of things that we're looking for too.

Jamie 15:26
Paul, I'm curious. I thought about this a lot when I visited Buckfast Abbey, I don't know, a decade or two ago at this point. But how close do you believe your stock is to the original stock produced by Brother Adam's? I mean, I know that you guys continually work to improve it through your selection process. But I'm wondering how similar is it to what Brother Adam's original vision was? Do you have a sense for that?

Paul Kelly 15:54

Well, I can't. It's really hard to compare ourselves to Brother Adam because he was able to dedicate his whole life to doing that. He was a brilliant beekeeper and bee breeder. We fit this in with the rest of the research work we're doing and other teaching, and so on. So we do the best we can. I think our stock is very good, relative to what he had. And we've had a lot of help with this. So with a Buckfast breeder in Denmark by the name of Keld Brandstrup. Keld runs Buckfast Denmark, he exports queens all over the place. And he really helped us learn more about Buckfast breeding, the whole system, selection criteria, and so on. So Keld has really helped us out a lot. So we bring stock in from him, periodically. We do have the ability to import that sock in a much easier way, now, without quarantine procedures. It's proven safe. So we're able to do that. The sock we have is very good. They bees are gentle, low tendency to swarm, completely resistant to tracheal mites. But basically everything here is, now, and it's proved very popular in Ontario.

Amy 17:19
I've said it once and I'll say it again. I think I'm just gonna move to Canada.

Paul Kelly 17:24
Well, come on up. We're friendly and our bees are too.

Amy 17:28
That's great. Okay, so Paul, earlier, you had mentioned something about YouTube videos. And I feel like our listeners if they saw you right now, they would know exactly who you were. So, you and your entire, I guess the students and everyone that you work with at the university, you guys have an awesome YouTube channel. I know that you have a lot of viewers. There's so many people that learn a lot from your page. And so can you tell us more about I guess your YouTube videos, or maybe some of the other extension and outreach programs that you do?

Paul Kelly 18:06
Yeah, we started doing video production to complement the courses that we teach because we teach these weekend courses for people and it's an overwhelming amount of information. So we produced a video so that it's more of a take-home kind of project for students. Working with a lot of university students, one of them suggested that we put their videos on YouTube. Well, that's a great idea. Let's try that out. And it turned out to be a really smart move because it encouraged us to produce more videos. We now have over 60 videos, a few of them we're posting shortly, but we're close to 60 videos. Part of the reason we started doing this is because everybody was telling us so much information that was online, and it was hard to sort out what was relevant, what was good, what was poor information. And so we thought we really should be there providing information that we feel is very credible. We've had success with the uptake on that. We try to keep our videos short, to the point, and skill-based. So pick one skill at a time and focus on that. And so people can pick and choose what they want to watch. So that format has worked well with it. We will be sticking with that. We call them how-to videos. So that's kind of the focus. We're not really in the entertainment business, but at the same time we have fun doing them. And we have lots of ideas for what we can do in the future.

Jamie 19:53

So Paul, this is always a fascinating thought to me with videos. When I first got to the University of Florida, I did a few videos, and it's funny. When you put those things online, it's just like they continue to educate and continue to educate and continue to educate. And there are two downsides that I've had with the videos that we put up early: number one, that was 15 years ago, so when people see me for the first time in person, they think I'm considerably older than I was. But the second thing is I find myself, at least in the earlier videos, talking about things that are now outdated, right? I've got so many questions for you in that regard. Have you ever had to go back and reshoot videos or reupload videos that may have information that's outdated? I can think specifically, not about your videos, but about my own, anytime we talk about disease or pest management or control, they can become dated really quickly. If you mention how to use this compound, or how to apply that strategy that maybe no one uses anymore. So do you guys continually refresh them? Or do you make them in a way to stand the test of time?

Paul Kelly 20:57
Well, the latter. We've been trying to make videos where the content would not become dated. There's a bit of a problem with that, too. Our goal is to produce a library that can be used over time and really wouldn't change too much. So one of the most important things that beekeepers can learn, however, is how to deal with all the pest diseases. And that changes all the time, as you mentioned. So that's a bit of a weak spot. In the videos that we produced, I want to address that with current information and make sure that we get across the message that what we use here may not be registered for use in whatever location you're watching them in, or even appropriate wherever you're watching him. We were really surprised with how far these videos have gone. We get questions daily from every corner of a world now. And so some of that information is not going to be relevant there. But a lot of the basic beekeeping information doesn't change over time. So, we're fortunate to be working with content like that.

Jamie 22:12
Yeah, Paul, I think you guys do a great job as far as I'm concerned. And from the university perspective, you guys are the gold standard for video and educational content. I refer people to them regularly, especially when we're needing to learn a specific skill set. I really like what you mentioned, it's skill set driven. And as you just shared, I also struggle with how to teach through videos, disease and pest control. But there's lots of other videos out there that one can make that simply won't become dated just because it will always remain true. How you light smokers, how you super colonies, how you extract honey, and you guys have done such a great job of that.

Paul Kelly 22:52
Thanks, really appreciate those comments, Jamie. What we've done, really, we started these videos based on the courses that we do. And so it's information that we're sharing all the time and have done so for years. So I think, with the training that we do with all the students that come here, like working at university, as you know, there's a constant turnover of people. So educating staff is a continual process. I learned a lot by teaching other people. We've had such a great group of people working on these videos and producing them. And with all these fresh ideas and energy that we get from all the students, that's where the success has come from. It's all the support that I'm getting on the project.

Amy 23:45
That's great. So with extension and with outreach, a lot of what we have to, I guess, what we have to report and the reason why we do this is because we want to see impact, right? We want to see that people are using our content, and that they're taking the education that they're learning from us and that they're going out and doing good things and having good management practices, right? How do you determine the impact of your videos? I know that we have numbers so, of course, we can see how many people have viewed your videos. But have you all determined your impacts of the videos? Or what kind of feedback have you received from your followers?

Paul Kelly 24:26
Yeah, again, we're learning a lot there too. And YouTube is fantastic in the analytics, they are so detailed. We know what the demographics are, we know where people are watching the videos from, we know which videos are being watched, we know how long they're watching them. So there's a lot there. As far as the content and whether people are understanding what we're getting across, the comments section of YouTube has been really useful for us because we've been able to develop a list of frequently asked questions. It's constantly being edited and updated based on the questions that we're receiving from people. And because those comments stay there over time, people can read through the comments and pick and choose questions that they might have. So part of the goal of doing this was to get information out more broadly to more people than we can do with in-person courses, but have it to be good quality information. That has worked out. We've been able to get that information out. But when you're speaking directly with people, you know when people understand things, so that comment is really a replacement for seeing somebody's expression and knowing when they're not getting things. But it's really important to me that our message is clear because our goal is to help people have success keeping their bees alive and enjoying the beekeeping experience.

Jamie 26:04
I love that last comment, being able to help people keep bees alive. I really think that that's a lot of what extension does. I think you guys are doing a great job. I love the fact that you're providing training through your videos, but also providing something that beekeepers can use directly in the Buckfast bee. So it's a really neat program that you're able to be a part of there at the University of Guelph. Paul, thank you so much for joining us on this episode of Two Bees in a Podcast. You've just really been able to shed some light on two very important topics in the beekeeping world.

Paul Kelly 26:34
Well, thank you, Jamie, that was my pleasure to speak with you this morning. Thanks so much for the opportunity to speak with you and Amy, and we love what you're doing. Keep up the great shop and we'll talk again.

Jamie 26:45
Thanks, Paul. Everybody, that was Paul Kelly, staff apiarist at the School of Environmental Sciences for the University of Guelph.

Honey Bee 26:56
For more information about this podcast, check out our website at UFhoneybee.com.

Amy 27:08
We are at that Five Minute Management, and I have all the faith in the world that Jamie is going to be able to finish this one in less than five minutes.

Jamie 27:17
No pressure.

Amy 27:19
So the topic for today is how to install a nuc, and go.

Jamie 27:23
Perfect. All right. So in this particular context, we are talking about putting a nuc into full-size hive equipment. That means you inspect your nuc, and you have all the reason to believe that it is strong, it's queenright, there's lots of bees, there's lots of brood, it's in growth phase, and it needs to be hived, it needs to be put into full-sized equipment so that the colony can continue to grow and expand. So, in order to do this, you have to have a nuc, you have to purchase one or have one from somewhere, but you also have to have the full-sized equipment into which you will place your nuc. Now, for the sake of this discussion, I'm going to assume the nuc has five frames, five frame nuc, and that you're moving it into 10 frame equipment. So if that is the case, then you need at least one deep brood box. That's a 10 frame brood box. You need a standard bottom board, a lid, etc. And for that deep brood box, you only need five frames. You need either five frames of foundation or five frames of pulled comb or some combination thereof. The reason you only need five for that 10 frame box is because the nuc itself will provide you the other five frames. So what you want to do is smoke the nuc lightly, go into that nuc and make sure the queen is present, that she's laying, that you have ample bees brood, etc. Then you will transfer every frame from that nuc into the full-sized hive equipment. You also want to pay particular attention and make sure that you physically see the queen on a frame during the transfer. I tend to put those frames in the middle of the 10 frame box. If you think about it, you're putting five frames right in the middle of that box. It accommodates 10 frames. So on one side of those five frames, you'll put three frames of foundation or pulled column, on the other side you'll put two, and collectively that will equal 10. Once you've moved all those frames over from the nuc into the full-sized equipment, you can shake all the bees off the lid of the nuc from the nuc original box, the brood box that will have bees on the wall as well as the bees from the bottom board. Shake them all straight into the full-sized equipment where you've moved those frames that were formerly in the nuc, lightly smoked them, and then you can put everything back together. Just a couple of quick warnings. Warning number one: If you do this outside of a major nectar flow, the bees are going to need some source of energy to continue to expand, so you'll have to feed them. If you do this before or during a major nectar flow, there will be enough incoming resources from the outside that those bees that were in a nuc that are now in the full-sized equipment, they can use those incoming resources to grow their hive. So it's a pretty simple process. It's simply transferring the frames over, shaking all the bees in and making sure that they have enough

food as they continue to grow. It's a great way to increase the number of colonies that you have in your apiary.

Amy 30:32
Awesome. You had two minutes left. So I'm going to ask you another question.

Jamie 30:36
Yikes.

Amy 30:36
I've heard... yeah, I'm just gonna go ahead and throw that in there. So there are some people who, when they're putting a nuc into their 10 frame colony, they'll do every other frame. So is that the right way to do it or no?

Jamie 30:53
Amy, I'm actually sort of okay with that, depending on the time of the year and the resources available. What I would be more likely to do is not do every other frame. If you've got this five frame nuc, it's, generally speaking, going to be organized with frames of honey and pollen on the outside, and three frames of brood and bees in the middle. So I would probably keep those frames of bees and brood in the middle and put them into the middle of the full-sized equipment. Then on the other side of those three frames, I might consider putting a frame of foundation and pulled comb. Then on the other side of that frame, I'd put the two frames that were on the outer wall of the nuc box originally, if that makes sense. So I would only cycle in one frame into the nuc cluster, rather than every other frame being one because you can get a lot of wacky comb being pulled when you've got one full comb right beside a frame of foundation.

Amy 31:48
Alrighty. Well, there you have it. We had 30 seconds left. So we really had an extra special treat.

Jamie 31:54
I can sing for you.

Amy 31:55
I think we're good.

Jamie 31:56
I think our listeners don't want to hear that either.

Amy 31:58
All right. Well, thanks for that Five Minute Management.

Stump The Chump 32:06
It's everybody's favorite game show, Stump the Chump.

Amy 32:16
Okay, it's that question answer time. We've got three very different questions today, Jamie. So we're gonna have to move from one topic to the other.

Jamie 32:26
I'm okay with that. It's exciting.

Amy 32:29
Okay, so the first question we have, is there a recommended temperature range for using oxalic acid vaporization treatments?

Jamie 32:38
I knew this question was coming. I was not sure myself. So I brought the label up online, and I went to Dr. Cameron Jack, who is a faculty member here at the University of Florida. He's our resident OA expert. And the label does not say anything about a temperature range, at least the label that I am seeing, and Cameron said that there is no temperature range for the use of OA vaporization. Now, I want to preface all of that with this caveat, which is, when in doubt, follow the label. Not even when in doubt, when you have the product, follow the label. So if you see a labeled temperature range, then that's what you need to follow. I do not see that. And Cameron said that he doesn't think that there's one on the label. But always double double double check the label just to make sure that there's not. But neither he nor I believe that there is a temperature range for using oxalic acid vaporization.

Amy 33:38
That's fair. I thought when you said when in doubt, I thought you were going to say, when in doubt, figure it out. And I was like, that is really not the right thing to tell our audience.

Jamie 33:45
See, aren't you glad that I didn't?

Amy 33:48
You redeemed yourself. Yes. All right. So the other part of that question was when using OA vaporization on new installs with empty foundation, is it reasonable to treat only once, if they treat early morning before the bees are flying? Would treating before flying catch everyone at home and then not require a second or third treatment?

Jamie 34:08
Yeah, I totally get the motivation and the logic behind this question. They're basically saying, when they install a brand new group of bees, there's no brood. And since all the mites would be on the adult bees, maybe it only takes one treatment with vaporization to get good efficacy. The simple answer is that I won't know or I can't know unless you monitor. That's the only really way to know. So you would do alcohol washes before you do the vaporization, then you would do the vaporization treatment one time, but you'd have to do another alcohol wash to see if it dropped Varroa numbers low enough. So I

understand the reasoning. I agree that it probably would only take one treatment, but in reality, the only way to know for sure is to do some sort of monitoring after that one treatment to see if a second or maybe even a third treatment is necessary. So my recommendation here is rather than guessing, just try to monitor. Do an alcohol wash before the treatment and after the first treatment to see if additional ones are warranted.

Amy 35:11
Do you feel like people go on and they do a second treatment, then they do a third treatment, and then a fourth and fifth? I mean, like, how much is too much?

Jamie 35:18
Amy, I totally do believe that people do that. Absolutely. In this case, the idea and I love this thing that they mentioned that, if we do it early in the morning before bees are flying. Amy, that's great thinking. That's exactly the way people should be thinking with regard to treating. The catch is I just don't know if it's going to work or not. But I absolutely believe that folks might carry it a little too far sometimes when they treat.

Amy 35:48
Alright, okay, so for the second question, this person was asking if we, the UF Honey Bee Lab, has a sugar water recipe that we would be willing to share.

Jamie 35:57
We don't have a special recipe. We tend to follow what most beekeepers follow, which is the one-to-one ratio of sugar to water in spring and kind of a two-to-one ratio of sugar to water in fall. That ratio that we use is by volume. So the way I did it growing up, if I needed to make one-to-one sugar water, I would get a five-gallon bucket, I'd fill it half full with sugar, and then I'd put warm water until I filled the bucket. Alright, so that's about two and a half gallons or so of sugar, and then fill it up the rest of the way with water. If I was doing two-to-one, fill two-thirds of the bucket with sugar and then put in warm water for the rest of the third. So it's really no secret formula. We could debate for days whether or not one-to-one versus two-to-one matters. The historical anecdotal thought by beekeepers, if you're using one-to-one, it most closely mimics nectar, which bees grow on. So the idea is if you're giving them one-to-one, it simulates a honey flow in the early year when the colonies want to grow. And two-to-one is most similar to thicker honey, which is what they store in preparation for winter. So maybe two-to-one in Fall would encourage them to store it rather than grow on it. So I don't know if there's any truth any of that, and we've all been doing it for decades and eons. So the general recommendation is one-to-one in spring and early summer, maybe transitioning to two-to-one in Fall to make sure they have enough stores on to survive winter. But no special recipe other than that.

Amy 36:28
Got it. Okay, so for our third question. All of these questions actually have been really great. Every time I give a talk and I tell people that honey bees are non-native to the United States, they're like, "What? They're not?" And so this person is asking, how long does Apis mellifera have to be in an area or any

non-native species, actually, how long does it have to be in an area before it's considered native? Or, will always be considered non-native?

Jamie 38:02
I've never been asked that question either. That's pretty cool that I've got that question. Well, I know. I know it's hard to believe. But it's the simplest of all questions. If it's not native to an area, there's no length of time it can be present in that area that will make it native to that area. So honey bees, the extant species that we have, those that are alive today, will never be native to North America even a million years from now. So I will kind of circle the wagon back though and tell you a little bit more about this issue. We don't use the word, at least I don't use the word, invasive for honey bees. Now, that has really been tossed around a lot. I'm just gonna put it out there and maybe even get some hate mail as a result. But let me just put this out there. When honey bees started dying, quote, honey bee colony losses, CCD, all this stuff, believed to start in 2006, there was a huge turn towards research on native bees. In North America, there's 4500 species of bees, and around the world, there's 20,000 species of bees. Now, a lot of these have been moved around. Honey bees are one of those. They've showed up in North America, at least in the United States, at least as early as 1622. So they've been here for hundreds of years. But a lot of folks studying native bees from the native bee perspective, consider honey bees invasive. Invasive has a negative connotation. It's almost always in context with, "Well, honey bees are spreading these diseases around. They're competing with other bees." And I will tell you that that is not the scientific consensus. Those are ongoing questions trying to be answered, but there's no consensus on those points. So the way that I like to talk about honey bees, rather than invasive, which is the negative connotation, which I believe they are not, is instead naturalized, and that means they are here, they are established, there's nothing we can do about it, and they are now part of the natural environment. Naturalized carries less of a negative connotation. Now, there is one stock of honey bees that is considered invasive in North America, and that's the African honey bee, Apis mellifera scutellata, and its derived stock, you know Africanized bees, things like that. So this bee is largely not managed in North America. In Mexico, they do manage this bee, but in the United States and Canada, they certainly don't. And this bee is spreading on its own and causing problems not only for the environment, but mainly for the safety of wild animals and humans who who might encounter them and get stung a lot. Those are still considered invasive. But the other Apis mellifera derived stocks, the ones from Europe, I do not consider invasive. I don't use that term. And I try to educate folks who call them invasive. Instead, a better term is naturalized. But unfortunately, they will never be native, no matter how long they are here. The definition of native is essentially they originated here, which they did not. Now, there was a native species of Apis in North America that went extinct, they found it in the fossil records. It's Apis nearctica. But it hasn't been around in a long, long, long time. The species that we have today will never be native here.

Amy 38:07
No way, really? Do you have, off the top of your head, any examples of other insects or plants that are naturalized?

Jamie 41:39

Well, you could argue that almost all of our ag livestock, chickens, cattle, things like that, goats, things like that, sheep.

Amy 41:52
You going to throw in another one?

Jamie 41:53
Well, I can keep going. But if you think about things, there are situations where managed things can become quite invasive. And the one that I left off was for that purpose, which is the feral hog community. Feral hogs in North America largely are here because they escaped farmers' pens, and we've got this managed group of hogs that's used for livestock and food production. But we've got their invasive counterparts, which can trace their lineage back to a pen sometime. The reason I bring this up is this is an example of a managed non-invasive species becoming feral and quite invasive. And that's often how people will describe honey bees. "Yeah, you might manage them, but they also have huge wild populations that destroy things." Well, there's actually not a huge wild population of the bees that we keep. The only big wild populations occur where African honey bees are present. Those, as I've already said, I consider those invasive, but I don't consider the managed subspecies that we keep to be invasive.

Amy 43:00
All right. Well, that was a really great question and answer. Everyone, I hope you are all sending us emails and voicemails and talking to us on social media. Keep it up. Hey, everyone, thanks for listening. Today, we'd like to give an extra special thank you to our podcast coordinator Lauren Goldstein and to our audio engineer James Weaver. Without their hard work, Two Bees in a Podcast would not be possible.

Jamie 43:34
For more information and additional resources for today's episode, don't forget to visit the UF/IFAS Honey Bee Research Extension Laboratory's website ufhoneybee.com Do you have questions you want answered on air? If so, email them to honeybee@ifas.ufl.edu or message us on Twitter, Instagram or Facebook @UFhoneybeelab. While there don't forget to follow us. Thank you for listening to Two Bees in a Podcast!