Episode 89 Mixdown PROOFED

Mon, Apr 04, 2022 10:02AM • 40:02

SUMMARY KEYWORDS
varroa, bees, colonies, compounds, beekeepers, queen, honey bees, hive, ccd, brood, mating, honey bee, inspect, control, kaylin, mites, beekeeping, blooming, propolis, bee

SPEAKERS
Stump The Chump, Jamie, Serra Sowers, Guest, 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 00:43
Hi, everyone, welcome today's episode of Two Bees in a Podcast. Today, we have Miss Kaylin Kleckner, who is a PhD student here at the University of Florida Honey Bee Research and Extension Laboratory. She worked with Dr. Cameron Jack on a project screening for new compounds to use against Varroa, and so I'm excited to hear a little bit about this project. The paper just came out. So we'll be sure to link the paper in our additional notes and resources. But first, Kaylin, please tell us about yourself, what you do at the lab, and what you hope to study for your PhD.

Guest 00:51
Hey, Amy, I started out as a volunteer at the lab about three years ago. So I started out washing dishes, just doing some small tasks around the lab, and eventually, I started to work with Dr. Jack and some of his projects with his PhD. I immediately fell in love with the world of beekeeping and how fascinating they are as social organisms. I finished my bachelor's degree, continuing to work at the lab, and now I've just transitioned. It's my first semester as a PhD student.

Amy 02:00
That's great. Every time I hear your story, you started by washing dishes at the lab, and I'm wondering, Jamie, is that just like what all volunteers have to do when they first get to the lab and then they just progress forward?

Jamie 02:11

So it's very common for undergraduates to do that kind of stuff. When I work at the University of Georgia Honey Bee Research Lab, I also washed dishes and took care of colonies and cleaned out frames. So it seems to be the kind of work we all get to do before we start getting to do the science part of it. So Kailyn, you're in good company. So Kaylin, we're excited to have you as a PhD student here in the lab. And we, of course, can't wait to see what you're going to do for your research. But in the particular project that we're discussing today, you and Dr. Jack were working, specifically trying to find new compounds to use against Varroa. These beekeepers who are out here listening to this podcast episode will surely know that there are really not a lot of things that we can use to control Varroa. Probably the most common active ingredient used to control Varroa, at least in the US, is Amitraz. But there's evidence that mites are becoming resistant to it, at least in some pockets. We know Varroa have become resistant to other compounds used against them in the past. So the industry, in many ways, is in great need for new compounds and new strategies to use for Varroa control. I know Cameron was looking at this as part of his PhD student work years ago, and you came on to help him out with that. So you're intimately familiar with the project. So if you could just tell us a little bit about the background of the project and why is it so difficult to find compounds that are safe for bees, but that are toxic to Varroa?

Guest 03:43
I think you summed up the background pretty well. Cameron, Dr. Jack, and I had long discussions about how important it was to find new compounds for beekeepers to use, hopefully in a rotation as a part of an integrated pest management system. So the idea there is that beekeepers are using chemical control options when needed based on monitoring Varroa populations in their colonies, and they can be used in rotation with other compounds to avoid that resistance phenomenon that you described. Finding new compounds that are toxic to the mites but relatively less toxic to bees is difficult because the life history and the biology of Varroa and honey bees are so similar. I always like to use the analogy of a flea on a dog. When I go to treat fleas on a dog, I am applying medicine to the dog and because that is an arthropod on a mammal, the flea medicine, hopefully, isn't really affecting the dog that much. But Varroa on a honey bee is an arthropod on an arthropod so they are more closely related and therefore, some of the compounds that might affect Varroa may also affect honey bees. So it's a delicate balance of examining both sides of the coin in selecting new, promising compounds.

Amy 05:06
Yeah, I think that's a great analogy. I mean, that would make sense. I guess if you had a pet or a dog, it's like, you've got to treat for fleas, you've got to treat for ticks. Like how do we do this for Varroa on honey bees? Sounds very difficult. Now, your study, you were working with Dr. Jack, and this was before my time, so I don't really know what methods you guys did. What were the methods that you used? And how were the compounds tested to examine the effects on Varroa?

Guest 05:34
There were two main components to the study, one, screening compounds against bees and another for Varroa. In both cases, the compounds were applied to the individual or exposed to the individual inside the laboratory. So our entire study was just looking at initial exposure and toxicity of these compounds to each half of the puzzle. So the Environmental Protection Agency, or the EPA, they have a three-tier system, and that very first tier is laboratory-based bioassays. And so that's the very beginning level that we were working on for honey bees. We were selecting healthy individuals, and we

were applying a very small amount of compounds at a variety of concentrations directly onto their backs. And then measuring the mortality over periods of time, it's a little bit trickier, you can't just put a small amount on their backs considering how small they are. So instead, we were coating the inside of a glass file with a certain concentration of a compound and allowing the mites to walk over the glass, therefore, being exposed. And once again, measuring mortality.

Amy 06:49
Hmm, that's actually really interesting. So I guess, you're talking about that three-tiered system, how long does that normally take? And what is that process?

Guest 07:00
it's definitely a long time, as it should be. It's a very thorough process to ensure that the compounds that are eventually going to be put in the hands of beekeepers are safe for bees and the beekeeper in our environment, both in the short term and the long term. So while I don't know an exact length of the process, it's definitely a long one. Our research took place over a year and a half simply because the availability of mites varies with the time of year.

Jamie 07:30
One of the things too, Kaylin, and I think you're spot on when you talk about this, one of the issues that we have is just the assay itself needed a little bit of love, right? We didn't think at the time of a really good way to do this and it took some tweaking and all of that stuff. Could you give us a little bit of background about assay development? Before you can even screen for compounds you have to have an assay that you can believe in so that you can believe the results that you're actually generating. Right?

Guest 07:58
Exactly. And one of the main ways we do that is by ensuring a variety of controls are in place alongside the specific experimental compounds of interest. And so we include some negative controls, or those are simply things that should not affect, should not kill the mites or the bees, and this is simply to prove that nothing other than the compound of interest is having the effect on mortality. But at the same time, we have to have a positive control to prove that if we want to induce mortality, we can do that given our procedure. So there is a lot of trial and error piloting to ensure we have good negative and positive controls so in the end, when we're looking at our data, we can trust that the compounds that we're examining, the new compounds, they are what are working, not some other outside factor.

Jamie 08:55
Yeah, Kaylin, thanks for that. So I think one of the things our listeners are totally going to want to know is how you do this assay. I know you mentioned you put it in a vial, you put Varroa in there, you can apply it to bees, etc. But how do you determine when it's okay to move a compound forward to the next step versus holding it back? What makes a successful compound in a screening of new compounds for Varroa efficacy?

Guest 09:21
So we, essentially, are looking, as we've talked about already, for something that is toxic to mites, but not as toxic to bees. And we are quantifying that in a kind of magical number in the toxicology field

Transcribed by https://otter.ai

that's considered the lethal concentration or the lethal dose 50. And that's simply the amount of a compound that kills 50% of the population. That's the standard and the golden rule when doing toxicology studies, what we're looking for, and so we found the lethal concentration 50 or the LC 50 for Varroa, and we found the lethal dose 50 or the LD 50 for bees. And the real distinction between there is a concentration is just a level of compound applied or a certain concentration, but the dose is a specific amount we know is delivered to each individual in our experiment. And given those really difficult methodology with Varroa, we've had a really hard time applying a specific amount to Varroa. So we can't say that we know the exact dose that each mite was receiving because they were just walking around on the vial. But essentially, we compare those two numbers, the LC 50 for mites and the LD 50 for honey bees, we compare those indirectly. And so we used Amitraz that is commonly used, currently, by beekeepers as our industry standard, and we compared the ratio of toxicity between mites and bees to that of Amitraz. And if compounds behave similarly, and were about the same or more effective than Amitraz, we would go ahead and move them forward. But there were some cases where the ratios were quite different, where compounds were extremely harmful to bees, or not that effective with mites. And so at that point, we held them back.

Amy 11:21
So you're talking about the compounds that you're examining, and can you tell us what compounds you were looking at? And was there a best compound that you found that controlled for that had the least amount of harm to bees?

Guest 11:34
Yeah, absolutely. We, as I mentioned, tested Amitraz just as our industry standard, and then we examined matching FlyNap and two carbonates. Of the four experimental compounds, carbonate two showed the most promise. And so interestingly, carbonate two, we couldn't even get 100% bee mortality in our laboratory bioassays. We, moreso, had to hypothesize what that 100% mortality would be using statistics and modeling. So that's really just a testament to how little toxicity carbonate two has to honey bees. While at the same time, it was nearly just as effective as Amitraz in controlling Varroa.

Jamie 12:22
So Kaylin, that's great. We tested a few compounds, we identified some that looked promising, so we should be okay. Right? We can just produce this stuff up, put it in bee colonies, all the Varroa are going to die. Right? Well, I know that's not right, how things are going to go. So Kaylin, could you tell us a little bit about what's next? So what would be the next step? We've got some compounds identified. I mean, I know the answer because it's the lab here. But are we going to continue to screen for more? How do we move promising compounds forward? How do we leave less-than-promising compounds behind?

Guest 12:56
There's a lot of work to be done for sure. I believe the process of screening new compounds at this very beginning level needs to continue because there is such a great necessity for a variety of control methods to be rotated into an integrated pest management system. But in terms of moving compounds forward, we need to begin looking at, potentially, the long-term effects that these compounds are going to have as bees are exposed to them for long periods of time. We also need to see if they can be delivered in a field-realistic way. So beekeepers are often applying strips, chemical strips, that's one way a compound could be delivered. But we aren't even sure at this point if something as promising as

carbonate two would be effective delivered in that way. So we need to start doing research, thinking about things more field-realistic, looking at long-term effects of these compounds on honey bee health and perhaps Varroa resistance, and eventually, we'll be moving into research fully in the field doing studies on the entire colony and colony health when these potential new compounds are being exposed.

Amy 14:10
I mean, even if the compounds are effective, it would have to be cost effective for beekeepers.

Guest 14:16
Exactly.

Amy 14:17
So what would you say is the takeaway for beekeepers with this research?

Guest 14:21
I think one of the main takeaways for beekeepers is the importance of following the label when using chemical control methods for Varroa, as well as other pests, as well as the importance of using chemical controls when needed and rotating them when possible to help avoid some of the resistance issues that really led to the need for this paper. But I think there's also a takeaway for beekeepers that here at the University of Florida and many other institutions across the country and world we are doing research to hopefully better beekeeping as a whole and are really doing things for them.

Amy 14:59
All right. Well, thank you so much for being a guest on our podcast Kaylin.

Guest 15:04
Thanks for having me.

Amy 15:05
Okay, everyone, that was Kaylin Kleckner, a PhD student here at the University of Florida Honey Bee Research and Extension Laboratory. She is a great public speaker. If you have the time to come to our bee college, I would highly encourage you to go to one of her classes. Thank you so much for listening to this episode of Two Bees in a Podcast. Okay, we are at our last Five Minute Management about queen rearing. We've discussed selecting your colonies when you're trying to rear queens, we have discussed establishing the type of hives you need, and the grafting process. And so today, Jamie, for the Five Minute Management, what we're going to talk about is mating. So I'm going to go ahead and push the timer and I'll let you go from there.

Jamie 16:20
Alright, perfect. So this is the last step in producing queens through the standard grafting process. So in the last episode, I talked about how to select the larvae that you want to graph, how to graph them into these starter queen cells, those cells move into starter colonies where they remain for about 18 to 24 hours so the bees will pull out those cells, they'll put a lot of royal jelly in the cells for those developing queens. Following that, they'll be moved to builder colonies for about seven to nine days where those

Transcribed by https://otter.ai

colonies continue to grow out those cells, take care of the developing queens, and get them ready. And once those cells are kept there, at the end of that seven to nine day period, they can be moved into mating nucs. So we talked about mating nucs, what they are, but they're these small hives that contain a good concentration of bees, maybe a frame of honey, a frame of brood, a frame of pollen, and a couple of frames of drone comb. So you'll take that right queen cell, the queen cell that is capped, and you'll stick it between the tops of two frames and that mating nuc. And if you do your timing right, that queen will be somewhere in the neighborhood of two to three days from emerging from that cell. So after that two to three day period, probably three days is safest, you'd go back and you can check and see if the queen emerged naturally out of the tip of that cell. And then if she has, you'll simply wait anywhere from three to 16 days for her to mature sexually and go on her mating flight. This is important to think about though. As you've heard me say many many, many times in this podcast, biology is very messy. So queen mating can happen very quickly, or it can take the maximum amount of time, which is somewhere in the neighborhood of two to three weeks. But in general, it's going to take about two weeks for that newly emerged queen to take her mating flights, get mated, store semen, and come back and mature enough to begin laying eggs. So after about that two-week period, you'll come back and see if the queen is laying eggs. A lot of queen producers will take up the queen and cage her and sell her at that point, but a lot of other queen producers, and this is the better route to go, will take the additional step of allowing that queen to remain in the mating nuc three weeks or longer just to make sure that she is producing worker offspring. Right? Just because she's laying eggs doesn't mean she's producing the type of eggs that you want her to produce. Maybe she poorly mated, maybe she didn't mate at all, maybe there's something wrong with her and all she's producing is drones, and you really wouldn't know that for a couple of weeks until those cells are capped. So I even remember reading a research project years ago that showed that leaving queens in colonies for around 35 days is kind of optimum. You don't really want to take them out of those mating nucs really any earlier than about three weeks, but leaving them in about five weeks is even better to get a good indication the queen is okay, she's laying worker brood, and she's fit and worthy of moving on to wherever you want to go, either moving it into your other colonies if you're using it to requeen your own colonies or selling her. I do want to just make one final comment. You've got to remember that mating nucs are only half of the equation. You need these good queens that you're grafting and whose cells you ultimately put in these mating nucs, they emerge and mate, etc. But you also have to have those good drone source colonies we talked about in a previous episode just so there are enough drones in an area to inundate the area and be available to mate with those queens as they emerge and are going through the mating process.

Amy 20:07
All right, well, you did that in less than five minutes. So congratulations, good job.

Stump The Chump 20:18
It's everybody's favorite game show, Stump the Chump.

Amy 20:31
Hello, everyone. Welcome to this segment of our question and answers. Jamie, this is everyone's favorite segment. People love listening to the people that we invite to speak, and they love hearing about different papers that are being published. But they really love the question and answer segment.

Jamie 20:51

Transcribed by https://otter.ai

I almost feel like it's because they like hearing me mess up so bad and always get it wrong.

Amy 20:55
That's exactly right. That's exactly right. Well, anyway, I'm excited. We're continuing the question and answer segment. People love it. We always love having questions emailed or sent to us on our social media pages. And as much as I try to respond to them as soon as I can, it's always fun to just record the questions because I think that if one person has that question, there are probably many, many more that have the same question. So we'll go ahead and get into it. And the first question today, it's a question in regards to how to determine if a dead out is due to colony collapse disorder, or if the colony has absconded, and how do you suspect whether it's colony collapse disorder? What does that actually mean versus whether it's just left? And how would you prevent either one of these things from happening?

Jamie 21:44
Well, I've probably got a fairly slanted perspective here on CCD. I'm afraid to say, I've never personally seen CCD in my own colonies or in our colonies here at UF. I do know that colony collapse disorder was absolutely the craze in discussion in the bee world from about 2006, probably til, gosh, 2012, 2015. And following that, our discussion of bee losses became a discussion of just that, bee losses, rather than CCD. Now, when folks come to talk to me about bee losses from outside the bee world, they almost always talk about CCD, but I stop them in their tracks and say, "Hey, CCD, even in its heyday, was only a minor issue representing a smaller number of colonies than what you might have guessed. The bigger issues that we're facing are things that beekeepers point out like Varroa nutrition, queens, viruses, things like that." So colony collapse disorder, then, describes a very specific set of phenomena associated with your colony, right? It's when the majority of worker bees are no longer present in your hive, where there are just a few nurse bees perhaps present, they may leave behind the queen, but there's plenty of food and a lot of brood in the nest. So let's rethink this again. You have a nest full of brood, a nest full of resources, honey, pollen, etc. but very few bees and those that are present are kind of the young adult bee age, and then the queen will be present. So there seems to be this mass disappearance of adult bees. And so, colony collapse disorder was a term used to describe this. I would argue that a lot of things in honey bee colonies can present that way. For example, heavy Varroa infestations, heavy virus infestations, and lots of things can present that way. So those very strict criteria are what define CCD, lots of brood, lots of honey, lots of resources, but very few, like surprisingly few adult bees present to take care of that brood, those adult bees being younger, and probably the queen is present as well. And I would add that a lot of folks say that this happens over a very short period of time. You worked the bees last week, the colony was booming with adult bees, you worked the bees this week, and all of a sudden you see all the things I've described up until this point. So I don't see that happen a lot. It certainly was the craze, it's what everybody started speaking about in 2006. But when surveys started coming out, even the surveys suggest that it was a minority number of colonies that were actually lost that first showed those signs of that phenomenon. So again, it's very specific. It doesn't happen in a lot of cases. I know that there's been a lot of beekeepers, specifically commercial beekeepers in 2006 over the next five years report that phenomenon, but it's just not something folks talk about seeing a lot much anymore though. I do hear folks say that they see it from year to year. I know I have over-discussed that to answer a very specific, easy question. But I just wanted to get that out there, that a lot of people who are kind of new to beekeeping might think that they're seeing it, but it's usually not, it's usually attributable to something else and easy to spot. Now,

you're specifically asked CCD versus absconding. Well, absconding, for the benefit of everybody here, is when all the bees leave. In a swarming, the old queen and half the adult bees leave, and the other half of the adult bees stay behind to make a new queen, etc. When absconding, everybody leaves. More often than not, absconding is a planned event. When I have seen absconding in research colonies, the adult bees will start cannibalizing the brood so that there was very little brood left in the colony by the time the colony absconded. The queen was able to leave so they prepared her, they probably did exactly what they would do when they were leading up to swarming, kind of put her on a diet and include some exercise, she'd lose weight to get down to flying weight, she'd curtail her egg laying, so you get hardly any brood, maybe very little brood, and then all the adult bees leave. Now, if there's any brood at all when the adult bees and the queen leaves, there will be some bees that emerge from the capped cells that were left behind. So you might get a few adult bees, which gives the appearance of CCD, but in absconding, everybody leaves, just flat out leaves, the queen goes with them, and you get a small amount of bees emerging. And there's hardly any brood left and even reduced resources because the absconding bees plan to take that with them. With all of that caveat, I will say, so with all that background, I'll give this caveat. Absconding is not as common in European-derived subspecies of honey bees. So I hardly ever see it in my managed colonies. I saw it a lot when I lived in South Africa and worked with some of the African subspecies of honey bees, but I don't see it very much at all with European colonies. And I have seen it specifically with heavy beetle populations, but it was linked to heavy small hive beetle populations, and really not so much else. So I would argue that both of these things are not going to be so common in your colonies. I would argue that what a lot of people are mistaking for CCD, or something else like that, it's just heavy Varroa and virus infestations that come along with having lots of Varroa. So I know that's an incredibly long explanation but it's important to me. I learned something a few years ago that I really like. When we see things happening in colonies, our minds always go to the worst-case scenario. Is it CCD? Is it pesticides? Is it this? And what we should do is rule out the obvious things first. I always start with the most obvious of all the obvious things, which is, is it Varroa and the viruses they carry? If I can conclusively rule that out, then I move to something else. And so sorry, Amy, that it took so long. It's just CCD is kind of one of those pet peeves or discussion topics of mine. And absconding is not as common as what folks think. And so they're often thinking they're seeing it when, really, Varroa took their hive out, and their mind is finding something else.

Amy 28:19
Yeah, yeah. I mean, I guess the answer is to keep your colonies healthy and to check Varroa. Right? And so we're really just trying to prevent them from swarming or just leaving the colony.

Jamie 28:33
Like we've talked about a lot, Amy, if you can control Varroa, nutrition and queens in your colony, the vast majority of your problems are going to go away. That doesn't mean you won't have a beetle kill or a pesticide kill or a virus kill or a Nosema kill. It doesn't mean those things won't happen. It just means that the majority of your losses will be mitigated. So I know exactly why this question was asked. Probably, the beekeeper went to this colony, saw this kind of dwindling issue, and thought it might be one or the other. My guess is, let's just start at the top. What did you do for Varroa? And did it work?

Amy 29:06
Yeah, absolutely.

Transcribed by https://otter.ai

Jamie 29:07
If we can rule out Varroa, then let's work our way down. Absconding and CCD are usually very low on my triage list. I usually work through a lot of other things first before I kind of arrive at those two as a potential answer.

Amy 29:19
Yeah, I was actually going to visit commercial beekeepers last week. I saw three of them, and they all said the same thing. If you guys at UF could just fix Varroa, if that was the only thing that you could work on, you could fix a lot of our issues in the beekeeping industry. And I would say I agree with that. So they have a point. Alright, so the second question we have, this is actually a question that I had when I had first started keeping bees and I was in Virginia. Up in Virginia, we'd have like two and a half or three feet of snow every single year and so the bees would just hang out in the snow and it would just be cold for so long. And so this person is asking what trigger would let us know that it's okay for us to start inspecting again, just because it's really cold and sometimes you'll have a warm day and then all of a sudden it'll get cold again. So, is it okay to just go into a colony on an unusually warm day? Or are we supposed to wait for certain blooms to come out? Or when do we start inspections to make sure that we prepare so that we can prevent swarming?

Jamie 30:29
Yeah, these are great questions that a lot of brand-new beekeepers ask and I really like it. And the reason I like it is because it's easy for me to say, well, you just start your inspections in March. But Amy, you and I live in North Florida. We would actually start our inspections, potentially, in February. If you live in the northern US or in Northern Europe, you might not start your inspections until April or May. So it's really hard to put a time of year stamp on the answer to that question. It's more important to be able to learn to read the biology of the hives. What I would say is a couple of things. Number one, as a beekeeper, you need to know what your major early spring blooming plants are. And what I mean by major are plants that you know kick off the growth season for honey bees. Let me give you an example. Where we live, Amy, where you and I live, that's red maple. And red maple actually begins blooming for us, in North Florida, in late December over Christmas holidays. And again, we're recording this in January 2022. But back in Christmas holidays, my oldest son and daughter and I went fishing down a nearby river close to our house. As we were kayaking down the river, red maple was hanging over the river and in bloom and honey bees were on it. So our colonies, where we live, start bringing in nectar and pollen as early as late December. Would I start inspections then? No, not necessarily because I know January and early February here can be cool. But that red maple blooming told me that colonies are going to start investing in the production of brood. Now, also where I live, there's a wild cherry tree, a lot of wild cherry trees that bloom. And these particular trees start blooming in late February. And so if maple in late December, early January kind of wakes them up, then I know by the time late February rolls around that cherry, which produces a lot of nectar, is going to start growing those colonies fast because other pollen resources are available. So I know in late February, early March is when I'm going to be able to start inspecting my colonies because the resources and the environment are available. So the very first thing you need to do as a beekeeper wanting to know when to start inspecting in late winter, early spring is to ask other beekeepers in the area what the major nectar and pollen-producing plants that colonies use to grow coming out of winter heading into early spring. And if you can know those, here's a second trick, go to your local nursery, buy some of those trees and

shrubs, plant them in your yard so then you have a real-time calendar for you for the rest of your existence. When those things are budding in your yard, they're budding in the environment, and you'll know that growth season inspection season is right around the corner. I love that idea. I love the idea of putting the important nectar and pollen trees and shrubs in your yard, landscaping with them so that you can, in real-time, see the triggers that you know will start your colonies' growth. Then, I will add to that you want to inspect colonies when the temperature is at or above about 60 degrees Fahrenheit, that's roughly 15 degrees Celsius. So if you get those two sets of triggers, the right plants are blooming and the right temperatures are coming around, you can put two of those together and know that it's safe to begin working colonies kind of late winter, early spring. And I'll add, the bees will tell you as well. You'll see increased activity at the nest entrance, they'll be taking cleansing flights, and you might even see bees coming in with pollen on their legs. And as long as you're above 60 degrees Fahrenheit and 15 degrees Celsius, you know you can inspect your colony to see what's going on in the nest.

Amy 34:31
Well so let me ask you this. If beekeepers are living in a mild climate, if it's been snowing, or it's just been really cold, and there's one day where it's over 60 degrees, but then you know that it's going to be ice cold the following week, would you recommend avoiding going into your colony?

Jamie 34:50
Yeah, so I don't like to work colonies consistently until I know that the main winter season has passed. To use the very example that you gave, and I like this example, this idea that, "Oh, it's warm today, maybe warm tomorrow, but it's been cold leading up to today and cold after tomorrow and I know where I live and I live in a place that's going to be cold through March," then all I would do is on that first warm day, just go and inspect to see the colonies. Are the bees flying, are they taking cleansing flights, do things look good? I might be tempted just to pop open the lid and look down from above to see if they're clustering, see if everything looks good from above, I would certainly hoist them from behind to see if they have the right amount of food reserves. But pending the hive is heavy and difficult to rock forward when you hoist, pending the bees are flying and there's a sufficiently sized cluster when I pop the lid, I wouldn't really inspect further until I know that I'm mostly out of winter proper. Again, winter proper slides for everybody where we live. I can work colonies consistently starting from mid-February onward. But I know many places in the temperate world can't do that until mid to late March, maybe even April.

Amy 36:07
Yeah, so this brings us to the third question of the Q&A for today. What is the best way to clean up all the frames if they've propilized the lid and all the comb was all smushed up together, and it's just kind of crazy the first few times you inspect. So what are your best practices just cleaning up both comb and propolis that builds up over winter?

Jamie 36:35
Yeah, that's an interesting question. I tend not to clean up propolis so much. I like the bees using propolis, propolis is important to them. And so unless it's a major glob or amount of propolis that's just in a place that I don't want it, I tend to leave it. If I don't want it there, I'll just take my hive tool, scrape it off the top of the frame or maybe the bottom of the frame if that's where it is, and I actually scrape it off of the hive tool, and toss it on the ground. But I will tell you something my mentor told me. I take a very

Transcribed by https://otter.ai

different approach with beeswax. And let me tell you what my mentor shared. Personally, I hate burr comb. And as we all know, bees will put comb in areas that are greater than bee space. So a bee space is three-eighths of an inch. If the gap is greater than three-eighths of an inch, bees are going to build burr comb. I hate burr comb. I hate it. I hate it on top of the frames, I hate it on the bottom of the frames. If I've mis-spaced, two frames, I hate burr comb being built between two frames. And my mentor told me, "Jamie, you can hate it all you want to. But that's beeswax, and in the very least, you should save it rather than throw it on the ground." So he would always tell me that anytime I go and inspect my hives, yeah, cut out the burr comb if you want to, that's fine. But carry a small little bucket with you so that when you do scrape out the burr comb, you can toss it in that bucket and save that wax until whenever you render wax later in the year. So what I do, when I see burr comb, I'll scrape it off the top of the frames, the bottom of the frames, or if there's a gap between two frames where they started building burr comb, I'll scrape it off there using my hive tool, it's just a very common thing that I do. If it's just pure beeswax, there's no brood in it, and there's no honey yet stored in it, then I'll throw it into the little pail that I carry with me. And then I'll throw it into my wax pile maybe back at the shop for rendering later. If it's got honey in it, which it often does when spring rolls around, I might sit it out on a hive stand or somewhere in the apiary and let the bees rob it out. And the next time I come back, I'll put it in my pail and take it back with me. But I just scrape it as I see it and I don't want it there and then I'll scrape it and toss it out if it's propolis or save it for later if it's beeswax.

Amy 38:58
Alright, I think that's fair. So there we have it, everyone, the question and answer segment. If you have other questions, please feel free to send us emails, send us a message on social media. We are on Facebook, Instagram and Twitter @UFHoneyBeeLab. So if you have questions, feel free to send those over.

Serra Sowers 39:21
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.

Transcribed by https://otter.ai