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SPEAKERS

Dr. Kim Skyrms, Dr. Kelly Kulhanek, Jen Lund, Jamie, Amy, Stump The Chump

Jamie 00:10

Welcome to Two Bees in a Podcast brought to you by the Honey Bee Research and Extension Laboratory at the University of Florida's Institute of Food and Agricultural Sciences. It is our goal to advance the understanding of honeybees and beekeeping, grow the beekeeping community and improve the health of honeybees 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. Hello, and welcome to another episode of Two Bees in a Podcast. Today, we are joined by Kim Skyrms and Jen Lund. Kim is a bee inspector in Massachusetts. Jen is a bee inspector in Maine and together they work on an amazing program where they teach integrated pest management of Varroa so you're not going to want to miss this segment. In our five-minute management. We'll be talking about how to acquire bees and queens and of course, we'll finish today's podcast by answering questions from you our listeners.

Amy 01:25

Hi, everyone, welcome to this segment of Two Bees in a Podcast. Today, we have two really great speakers, and they are state apiarists and Apiary Inspectors of America. So we've got Dr. Kim Skyrms, who is the Chief Apiary Inspector for the Massachusetts Department of Agricultural Resources. He's also the president of the Apiary Inspectors of America. We also have Jen Lund, who's a state apiarist with the Maine Department of Agriculture, Conservation, and Forestry. So we actually found them because our podcast coordinator was looking at different speakers in different, I guess, influencers throughout the United States. And they lead a very successful four-part Integrated Pest Management series on Varroa control. I know that they have lots of followers and lots of people that are -- take part in their series. And so today, we kind of wanted to discuss Varroa integrated pest management in the field. So these two have been out in the field. They work directly on the ground with beekeepers. They've seen a lot of different beekeeping practices. And so I'm really excited to talk about some of the myths that they are also going to be speaking to us about today. And with that, you know, Kim and Jen, you've listened to our podcast, you know that we generally ask our speakers to discuss a little bit about themselves, how they got into bees, and what you do in your current position. So we'll go ahead and start with Kim.

Dr. Kim Skyrms 02:52

Awesome. Thanks so much for having me. And thanks so much, everybody for listening in. I feel like wow, what an introduction. I don't know that I've ever been called an influencer before. But Whoa. I'll take it. It's, uh, yeah, it's been a long road here and in the world of bees, trying to do as much support as we can to beekeepers. So yeah, and if we can get some notoriety for preaching the good gospel everyday from the pulpit of bee hill, about Varroa mite management, we will keep doing it. So yeah, I'm really happy to be on with you all. So I am actually, um, as you mentioned, the state apiarist and also the president of the Apiary Inspectors of America. My background is a little bit different, I think, than some folks who get into bees. I actually have a PhD from Oregon State and my background and expertise was in bumble bees. So I've actually, at this point, I've been rearing bumblebees for a little over a decade, both professionally and personally. And I'm up to 15 different species. So for all the people that are really interested in bees, and maybe your spouses or significant others are also interested in bumble bees, we should talk because I love to talk bumble bees, in addition to honey bees. But I got into this and it's been really interesting being able to wear two hats. So, in our role here, the Department of Agriculture and our apiary program, we are responsible for wearing a regulatory hat. So we're kind of like, sort of like the bee police in some ways to make sure that our laws and regulations related to beekeeping are enforced and regulated. And then also we wear a hat on education. So, we're very, very dedicated here in Massachusetts, and actually the whole New England region to providing really great education for our beekeepers, both in the field, and of course, at a distance now, given COVID. And then recently, we're really excited here because we've now dipped into doing marketing of our beekeepers and, of course, beekeeping products, and we're really, really, really fortunate to have some awesome dedicated beekeepers that are producing, I have to say, biased, the most delicious honey in the world. So, I'm just going to put that out there, here in Massachusetts and Jen, you may have otherwise and we could definitely do a honey duel tasting. But yeah, that's my background. And again, thanks so much for having me.

Amy 04:54

Yeah, you're welcome. You know, it's funny, the reason I called you an influencer is because I heard you speak at the American Beekeeping Federation Conference last year, and I just thought you were really super awesome. And so, then I was like, alright, I'm gonna do what they do because they're just - I'm gonna educate like you do. And that's why I called you an influencer.

Dr. Kim Skyrms 05:13

Oh my gosh. Oh my gosh.

Jamie 05:15

Kim, I also have to say that that whole bumble bee thing is pretty cool, that you have over 15 species rearing. That's, that's pretty awesome. That sounds like another topic for another podcast someday.

Dr. Kim Skyrms 05:25

Maybe? Yeah. Yeah, I would love to. You can tell I can talk about bumble bees just as much as I can talk about honey bees. So maybe we shouldn't go down that road probably today, but maybe in the future --

Jamie 05:35

But Kim, we were talking a little bit behind the scenes and you said that you're from Georgia. So, Georgia, Oregon to Massachusetts. That's like a triangle across the country. That's ridiculous. So, you went to every corner, just about it, of the US?

Dr. Kelly Kulhanek 05:46

Yeah. And I did a little pit stop in Michigan so I worked --

Jamie 05:46

Well, why not, why not?

Dr. Kelly Kulhanek 05:48

Yeah, why not. That's where some good bumble bee rearing happens. So yeah.

Amy 05:54

That is so funny. All right. What about you, Jen?

Jen Lund 05:59

Hi, thank you so much for having me. Um, yeah, I also, I don't think I've ever been called an influencer. So I think I'm gonna start putting that on my --

Amy 06:08

Your resume and CV.

Jen Lund 06:09

My CV.

Jamie 06:11

Your business card? Yep.

Jen Lund 06:12

Yes, yes influencer, state apiarist. So yeah, I'm the state apiarist for Maine. And I um, so my background is broadly in, actually, entomology. So I grew up in downstate New York. And I went to a little environmental school for college up in upstate New York, in Syracuse called the SUNY school for Environmental Science and Forestry. And while I was there, I developed a love of insects. Turns out I had it from a very young age and I was collecting bees and wasps, you know, when I was six or seven and scaring the other kids at school, so it kind of all fit together finally. And then I finished my degree there, moved around quite a bit, worked on several different, with several different types of insects in different parts of the country, and ended up in Maine. And while I was there, I started off on a project working with ants. And the funding for that, of course, as funding in academia tends to be, pretty ephemeral. (It) Was running out, and I was offered a position in another program to lead up some honey bee research under Dr. Frank Drummond. And I told him right off the bat that I didn't know much about honeybees, and he looked at me, said I would be fine. So I started off my first year beekeeping

with five hives in the backyard, 40 research hives, and I never looked back. So we developed that program, and we ran just under 100 hives or just around 100 hives for several years doing various research projects. And then the position at the state opened up. Our long term state inspector, Tony Jad Zach, who was in this position for 31 or 33 years finally retired. And the position opened, I applied for it and got it. So just like Kim, I have, I wear a couple different hats, regulatory as well as education and extension and outreach. Typically, I give somewhere around 60 talks a year, not only in the state of Maine, but in other parts as well for beekeeping clubs, conservation organizations, and other entities that are interested in bees in general. I'm always super impressed that you all do inspection, you know, rules and regulation. And then you do a lot of outreach. And so I definitely applaud you both for that.

Jamie 08:45

I think, first of all, I'm excited to have you guys on, but I think one of the powers of the state apiary inspectors across the United States in general is that you guys are actually working with beekeepers on the frontlines, right? So you're seeing what beekeepers see, you're hearing their experiences, you know their troubles, their successes. And I know in the state of Florida, our apiary inspectors are really helpful to us here at the University of Florida as we develop research and extension and instruction programs because they see it. They're a great conduit between us and beekeepers. They work directly with beekeepers. And I know you guys do as well. And so, you know, as we kind of segue to the topic we wanted to discuss with you both, you know, Varroa is a terrible issue for beekeepers, right? I always tell people it's probably the principal killer of honey bees, at least managed honey bees around the world and Varroa is really bad. So you guys see beekeepers struggling to manage it, but the two of you have had a very successful education program for the northeastern IPM center for Varroa control and IPM. So, Kim, I'm going to start with you. I just want to ask a very broad question so our listeners can kind of have the background set for them as we get into this. But what is Varroa IPM? Can you tell us what that acronym stands for, and what it means to you?

Dr. Kelly Kulhanek 10:04

Yes, definitely. And I think I agree with you, Jamie, we have just such a unique lens. You know, I always tell folks that when I work with them and do programs, that we really do have kind of like a bees and a beekeeper lens of what honey bee health looks like. And I think that makes us really unique. It also makes us really suited to, like you said, to provide support. So, you know, for us, I'll give you just a hair background on how we got into this because Jen and I were fairly new-ish to our positions, 2015-2016 coming on board, didn't really have a lot of, sort of mentoring or you know, didn't have a predecessor to kind of help us get into these positions. So we sort of came into fairly blank slates, and we're trying to figure out how to provide support. And we're asking beekeeperse for feedback, you know, what do you want to see in these programs? What are the things that you'd like to see the for the state to provide support? What are your really biggest challenges for beekeeping? And how can we help bridge that gap, whatever that may be, to provide the best support, you know, using the resources that we have, that are maybe limited in our programs, but you know, full of love and passion and energy to do that. And one thing that we came up with and kept hearing about, and, of course, we're seeing is that these rural mites are just wreaking havoc, and it's not so much from the mites aspect. I mean, from the biological perspective, their life is beautiful, because they're doing so well as a species. But unfortunately, beekeepers need to understand that to be able to respond to provide good management and that gap was huge. There wasn't even a bridge there, there wasn't even a drawbridge there. So we

were trying to figure out how to sort of make that a little bit easier for them to get accessibility for the materials and also understand how to digest this. And we know that there's a lot of stuff out there on Varroa mite management and IPM and treatments and all the different things you can do for monitoring. But what there isn't, is a very specific guide for beekeepers that may be in, you know, inclement geographic places that have inclement weather, like what we have in the Northeast. And so Jen and I were looking, we're getting this feedback, we're doing all these, you know, talks, and we're getting a lot of discussion going. And immediately we were like, okay, we need to connect. And then of course, we were like oh my gosh, we're gonna be best friends forever. And that's going to be for real. But also we have a unique opportunity provide amazing support to beekeepers, and we reached out to the northeastern IPM center, we wrote a grant and we got a little less than 20 grand and was able to do what I would consider a huge impact in that with that money. We've actually given out 6500 Varroa mite jars to beekeepers. Again, for free. This is part of the program. We've given 123 presentations over the granting period. We've done two day-long workshops. All day, all we do is talk about Varroa mites and Varroa mite management. We also have done the webinars that you hopefully will talk about later in the show and that you mentioned earlier. They've had 2500 views to date. We've also given out 15,000 Varroa mite IPM brochures that we printed, and were actually created in collaboration with our extraordinary extension agent Hannah Whitehead at University of Massachusetts Amherst. I'm going to give you a huge shout out Hannah, because you are an integral part in making that brochure. And these workshops really come to life. So if you haven't thought about honey bee extension, or if you don't have these resources in your state, I would really, really encourage you to try to figure out who the person is or how to get funding for those physicians because they are critical for bee health. And so the other thing that we did is we partnered with the Bee Informed Partnership and with their mite check map. And so we wanted to do something that offered real time support to beekeepers, where they could take the data they've collected from using these jars to sample mites, and then put that into a system where other beekeepers could benefit from that. So that was kind of our full circle. And I know that sounds like a lot. But again, as you mentioned earlier, state apiarists are really dynamic humans, not only with what we do, but also in how we can be really thrifty with very little funds. So one thing that we really are proud of is this program and again, the impacts, and I think with Varroa mite IPM itself, so that IPM piece, to answer your question, integrated pest management, so that pest would be that Varroa mite. Of course the management of them would be in the host, in this case, the honey bee hive or the honey bee colony. And it's really critical to think about that integration. And I like to do this with my beekeepers to make it a little fun, lighthearted. I tell them that the first step in this is to be knowledgeable, so bee knowledgeable. So you've got to know the bee biology and of course you got to know this mite biology, which that seems to be a little bit of a hiccup for beekeepers to be able to kind of bridge that gap to understand that. And then once you get that down, the basics there, and hopefully enough to understand how these two organisms are interacting, you need to do you need to be a keeper. You really do, you need to be a beekeeper in a sense that you need to monitor your hives frequently. The monitoring tools that are available to you, of course, could be something like these Varroa mite jars that we've handed out to beekeepers or it could be something simple that you make at home, you know, something that you can probably find information on the web for, but it's very, very simple to create this tool. But the monitoring is really key to this. And that seems to be an area that we see a lot of people have kind of issues either getting access to those materials or sort of understanding the gravity and the importance of doing that. And then once you do that, you can understand now with that biology and you're monitoring, you got enough data, right, got enough information to make some

really good decisions of what you're going to do with the management, right, because this is an integrated approach. That means you need to bring in a couple of different tools to manage these mites. It can't just be a one stop shop, you know, you can't buy one box of mite treatments, and use the same thing over and over throughout the season. It's not going to give you really great control, and it's gonna cause a lot more damage to that ecosystem of the hive. And then, so the last thing you want to do is be active. So you got to be ready to integrate into those pieces of different tools. And we can talk a little bit about those two from the prevention aspect of non-chemical tools. So those would be things that are chemical or non-chemical and cultural. So you know, good genetics, splitting hives, caging your queen, and we can go and dig into those a little bit more. And then of course, if those things in addition to using these intervention tools, so those are the points where you want to bring chemicals into the hive. And of course, there's a range of those that are available modified products that are registered pesticides for use and honey bee hives. So those would be a little bit different. But you want again to kind of integrate those in, that's where that comes in. And then the last thing, which I'm really excited that we get to talk about today, this is my probably favorite topic in all of IPM is how to create your own Varroa mite plan. And I know all of us have been really busy, we're at home, we're trying to figure out how to juggle kind of our new world here in COVID. But now is the time, it's the perfect time for you to sit, you know, print out some of these plans that we have available. Think about what you want to be as a beekeeper and really get a good plan for how to move forward for thinking about Varroa mite management. And I know that sounds kind of silly, because most people are thinking, well, we just want to manage honey bees, right? That's the fun part of this. Unfortunately, you also have to manage Varroa mites when you do this, it is critical, or there won't be any honey bees for you to manage. So it's very important to think about that.

Jamie 17:06

Yeah, one of the things I want to say though, is number one, you basically outlined an extension program. This is exactly how a successful extension program looks. And I'll tell you what I'm most excited about was your first step. You know, you and Jennifer got together. And the first thing the two of you guys did is you asked beekeepers what they needed. And I think that that is key and foundational to success and extension programming. And look at what you guys have accomplished through all of this. And it all started with the right first step. You've got to ask your clientele group what they need, and then help them and I really applaud your efforts. This really sounds amazing.

Dr. Kim Skyrn 17:42

Thank you. Yeah, Jen and I, we've been working hard on this. And I know we're up in the Northeast in our little world. But we're very, very proud of this. So thank you again, so much for letting us be on today.

Amy 17:50

Yeah, I was about to say you are doing extension right. You are communicating science, and you are doing workshops that are having long term impacts, which is amazing. So before I get to my next question, I was just wondering, can anybody take your program? Or is this something that's only for beekeepers in the northeast?

Dr. Kim Skyrn 18:08

We have actually been approached. This has kind of sort of been unfolding as we've been offering more and more resources. We've been approached to kind of adapt or offer kind of this model for other regions and even Apiary Inspectors of America now, Jen, and maybe if you want to chime in on that for sure. And we have a committee that's dedicated to Varroa mite IPM management. And those folks are even thinking about doing a large scale program, writing a bigger grant, right, to do this on a much larger scale in North America. So yeah, unfortunately, at this time, it's only available for beekeepers in the Northeast, and specifically in New England. But yeah, we'd love to see something like this get adapted to a much larger level.

Amy 18:47

Yeah, maybe like somewhere in Florida.

Jen Lund 18:50

Yeah, it's a really great program where we're really excited to see that other areas of the country are interested in adapting what we've done to kind of their, their local systems.

Amy 19:03

Great. And I know that you were talking about collaboration and how you were working with the Bee Informed Partnership as well. We actually had two individuals from the Bee Informed Partnership on one of our podcast episodes, discussing, you know, most effective and least effective mite management tools. And so Jen, my next question is for you. You've been in the field, you've worked with many beekeepers, and what would you consider some of the most effective or least effective mite management tools being used out there?

Jen Lund 19:34

Yeah, that's a that's a good question because there's a lot of things that are being used out there. I, usually, when I'm discussing management options with beekeepers, I usually give them some basic guidance when they're -- especially when they're looking on the the internet for information, is that for any thing that you're thinking about trying in your hive, you should really see it in three reputable places. So, for instance, a couple years ago, banana peels, putting banana peels in your hive, where it was a thing that people did.

Amy 20:11

I remember that.

Jen Lund 20:12

And, you know, it was a weird idea, it didn't make any sense, it doesn't actually do anything. But you know, you want to be careful with anything that says that it's a silver bullet, that this will control your problem. Mites are not -- there is no easy solution, there is no one size fits all program for them. It's really a dedication to, you know, making sure you know what's going on in your hives and doing something about it if there's a problem. That's really the key to mite management. So when it comes to kind of best practices, and we have some data on this, which is really, it's always exciting to have data to support what you say, not just your gut feeling, but mite alcohol rolls to monitor are the most effective technique that you can use. And so we ask the beekeepers in Maine every year, we have a survey, and

they do something similar in Massachusetts as well in several states. But we do ask the question, do you monitor for mites? And how do you do that? And we were able to kind of tweeze apart the data and look at the those beekeepers who were managing or that were monitoring using alcohol washes, versus those that were using other methods. And we found on average, over a three year period, that those that of course, we're not monitoring at all had higher losses on average than those beekeepers that were monitoring. And then those beekeepers that were monitoring using alcohol washes had far fewer losses on average than those that were using any other method. So we find that, you know, if beekeepers are making really good decisions based on good data, which they're getting from their alcohol rolls, that they're better able to make management decisions when they need to. And the other, the other really great kind of effective management tool that we, that we have a little bit of data on as well is pairing both prevention and intervention methods. So Kim had mentioned during his discussion of integrated pest management that we have non-miticide techniques, and then we have miticide and we kind of break those into prevention. So management techniques like drone, brood removal, splitting hives, caging queens, that would all be preventative. So it's going to keep -- it's not going to get rid of your mites, but it's going to keep your mites lower longer in the hive. So it's preventing that buildup. And then intervention, when your mite levels get to a point where they're going to be damaging your hive. So the pairing of those is really the key to a successful management program for Varroa mites. We find that when we survey the beekeepers, those that are not doing any treatment are having somewhere around 80% losses on their hives. So that's really large and unsustainable. And those that are just using prevention or only intervention, so either preventive measures only or just miticides, have higher losses than those that are using the combination of the two. And so that's really the key. So monitoring using a alcohol roll, which is the most effective method, and then when you are making management choices, pairing both the prevention and intervention, and using them both is really where you're gonna get your lowest losses.

Jamie 23:42

Well, you guys are really inspiring. I have to say it's really neat that you're able to back up all of these recommendations with data, I love that. You've really developed a great program. You know, Jen, you just mentioned working directly with beekeepers, generating data, you and Kim being able to make very specific recommendations. That's very, very exciting. So I want to take this a step further. Kim, how do you suggest beekeepers actually create their own IPM plan for Varroa? I mean, how do they go about doing this in the first place?

Dr. Kim Skyrn 24:14

Yeah, so this is a tough one. So I think the first step to any good sort of thinking about an IPM plan is considering your apiary and what you want to get out of it. So, you know, what kind of beekeeper are you? What, you know, and it's just that, you know, are you doing this for honey production? Are you doing this for the love of bees? Are you doing this to rear queens? Are you doing this to, you know, just basically have another source of revenue of some means, or is it something where you want to have, you know, keep just one or two hives, you want to grow your operation? And these are all things that should drive how you think about mite management, of course, and how you think economically about how you manage your apiary, which will help, right, in thinking the big picture. And then the other piece that you really have to consider too is where you're located. So if you're participating here in the northeast, we have a very specific short bee season. And so if you're thinking about mite management,

you're gonna have to plan quite a bit differently versus, you know, than y'all down in the south, because you got a much longer season than we do. So you're gonna have to really be involved and ready to sort of make big decisions throughout the year versus up here, we've got a real short window, so you've got to be ready, ready, ready, ready for any issues. And once you get those two big pieces down, I always recommend folks, again, to go on to the website. And we can we'll give you that, of course, at the end. And we'll make a plug for it for our program through the northeastern IPM center. We've got just a basic plan that is just a blank sheet, and it has all the fields and you basically are sort of prompted at that point to fill out throughout the year all these different aspects. So when do you think the honey flow may happen? When are you well, let's go all the way back, where are you getting your bees? Are they ever wintered? Are they new bees? Are they packages? Are they nucs? You know, sort of how do you see them growing through the season? When is the peak population of adult workers, and of course, the brood? When are you going to collect honey, when are you going to put those supers on? Those are all the big questions that you need information for. And if you're a new beekeeper, that can be really hard to come up with that information. So I always encourage folks to reach out to their local beekeeping clubs or associations and try to really get some good mentors and have some good conversations with folks and get that information if you're brand new to this. Yeah, it's really, they're very, very supportive group. And once you get those basics down, now you got to dig in. And you, once you use that, you can sort of tailor how you would like to keep your bees. So for instance, some of the mite products that are available that are chemical aren't allowed to be used when honey supers are present, right? And so you might be really restricted on when you can use those products. And if you pair that IPM plan that we've got on the website there with the IPM brochure, it's nice to have both of those open, because we really have digested the Honey Bee Health Coalition's Varroa mite management guide, which is awesome, by the way, that is definitely the Bible for mite management. We've really pared that down and made it very condensed in that brochure form. So you can sort of get like the Cliff Notes, so to speak of, of Varroa mite management, and definitely for the tools that are available. And when you dig into that, you'll kind of be limited, right, and what you can apply based on the season. So, and I always recommend to print out a couple of copies, use a pencil, you're gonna have some scribbles and do some erases, because you're gonna go, oh, boy, I can't use that, then, I've got honey supers on, or, oh, wait, you know, I need to actually go back because I might take -- the bees may not have enough population at that point to apply this, or maybe that's too long of an application period, and I need to be able to move my hives, or maybe I want to, you know, split them or whatever. So you got to really consider those different pieces. And it might take you a couple of tries to get a really good plan. And again, if it's in pencil, as the bee season progresses, and Mother Nature does her thing with our weather, wherever you are, you may need to scratch out some of your plans and make some changes. And I think there's a little note section down there for you to kind of have those options to have that flexibility. So the biggest thing is to figure out the big questions first, and then you can sort of dig into that. And as Jen mentioned, we do have a really great set of tools as Beekeepers to manage these mites, both from the prevention or the intervention aspect of you know, cultural things that you can do, physical things you can put on the hive to help, you know, or split or queen cage or whatever, drone brood trapping, to actual chemicals that you would purchase that are modified products. The other thing that I want to just make a plug for is if you are a beekeeper doing or using these modified products, they are registered pesticides. So you need to be mindful that the label of these products is the law. And in addition to that, you need to make sure you read that label and follow the directions on there, including what we call PPE or personal protective equipment, which is something you also need to plan

for when you buy these things. Because you may need special gloves, you may need eyewear, you may need a respirator, you may need other tools to be able to apply them in a safe manner that, again, is according to that label. And if you have questions about labels, or if you have questions about how to produce a plan, your local, you know, honey bee extension agent, which again, I want to go back to you, Amy, because you're doing fantastic work down in Florida. As Jen mentioned earlier, we would love to have every state have an extension person dedicated to honeybees, but you're a great source of wealth of information to help folks do something like this. And we see this, I'll make a shout out to Emma Mullen at Cornell who has done a really great job of providing this kind of real time support to beekeepers. And if you don't have an extension agent that apiarists like ourselves, Jen and I, or most of us in other states, we'll be happy to help you to create a plan or even look over your plan. And if you have questions or sort of don't understand, you know, how you can integrate these pieces in, it's yeah, it's really fun to start with this. It's kind of like a little bit of a puzzle. You know, you've got, you kind of know the basics of bee biology, you know the season and now you got to figure out how the pieces fit to manage in a way that keep your mite levels very low. And so as Jen mentioned earlier, the monitoring of this is also really important. So I should have went back and said that at the beginning, we don't want you to just dive right into treatments, we don't want you to treat on the calendar because that's not effective, we want you to treat as needed. And when I use the word treat, it doesn't just mean chemicals. That means, again, those non-chemical tools, those intervention tools, as well. So your plan of doing pest management for this mites should include all those different pieces, and should be driven by the data that you collect from the monitoring of those mites. So again, that would be the alcohol wash, using those alcohol jars that you'll see on the website there. Or you may have a tool that you purchased that will let you monitor. There are companies, of course that are producing and selling these versions of the alcohol wash jar. So as long as you've got something that you can generate some data, and help you make decisions, that's the biggest piece here. You, in essence, are a bee scientist as a beekeeper, by the way, and you're solving problems just like a scientist would in your hive. So you've got to really look at it in that way is that there's going to be challenges, but you can totally use the data you collect to drive your management and help you come to sort of a better resolution to get through those challenges, right, with a goal of having healthy bees. That's what we want to see. That's we want you to have.

Amy 31:08

Well, I think that is some great advice. And you know, to be honest, had I used a pencil and known your advice beforehand, I probably wouldn't have a huge black sheet of paper. But, you know, I really do think that it is important. I agree with you with every point you just made. And really it's just about being present and knowing what's going on in your colony and really documenting this information. Right, Kim?

Dr. Kelly Kulhanek 31:31

Yeah, that's so important. Amy, and there's so many ways you can do it. Yeah, obviously, there's apps that're available that'll help you track this data. If you're somebody that's really techie and likes to record things kind of on your phone or on the device. Then of course, you can just do it old school. I've got a lot of beekeepers that get a Sharpie out and write on the top of their hives at the end of the season. They take some alcohol, rubbing alcohol and wipe it off and start again. I mean, it can be very involved.

It can be really, really low, low-key. I mean, no, there's no judgment in how you collect data. I just, we want you to collect that data because we want you to use it to drive your decisions. That's so important.

Amy 32:02

Absolutely. All right. So for the last question I have Jen, can you share some of your favorite myths about Varroa integrated pest management? I'm excited for your answer.

Jen Lund 32:17

Well, I was, I was thinking about this question ahead of time, and I came up with -- we came up with a huge list of them, but I'm going to keep it down to two.

Amy 32:27

Great.

Jen Lund 32:27

So the first one is that if you have a new hive that you started from a package or a nuc, you don't have to worry about mites. I hear that all the time, non-stop. I have beekeepers who after their first year, they contact me, I go do a hive autopsy. And they said, I didn't know I needed to worry about mites on a new hive. And so that's completely false. One of the things that we find, which has been increasing over the last couple years is that we actually have beekeepers right out of the gate. So as they're installing their package or their nuc, do an alcohol wash right at that point. It seems like you're taking a lot of bees out of a small population. But if you think about a package that's about 10,000 bees, you're removing 300, they're not going to really miss them. And so what we do is you take your queen out, put her in the, in the new hive and then scoop, right, half a cup right out of that package, put it in your alcohol, close up the jar, start your -- finish your installation and then later on you can check. We have found over the last couple of years that most hives test pretty low for mites, or most packages, test low for mites. But we do have some outliers that are missed, I guess, in the treatment schedules. And we've had beekeepers that are rolling so you, in an alcohol roll you never want to be above nine mites in 300 bees, so that's 3% infestation, never above that. And we were seeing, a little too regularly for my, my liking, 30s, 40s and 50s being rolled out of packages. And if you start a hive with that sort of mite population, it will not make it to the end of the year, the end of that season. If you're starting with a lower, but still high population of mites, you're going to be chasing those mites for the rest of the year. And then they will probably die before winter really sets in. So the second one is that doing alcohol rolls is too hard, it takes too much time. I'm just going to assume that I have mites and treat on a schedule. And that one, some years you may be okay with treating on a schedule. But some years you may not. Most years, over the past couple years we've had a lot different weather patterns, you know, with climate change, things have been changing very rapidly up here in the Northeast. And as a result, we're having really different years consecutively. So every year is different than the one before. And it's hard to predict how one year is going to turn out versus another. So what you used to do 10 years ago and treat on a schedule, or even five years ago, will most likely not work, not still be working. I'll give you two examples. So 2019 up here in Maine, we had a beautiful, beautiful year, we had plenty of rain at the right times, we had back to back honey flows, we had no dearth, we usually have a little bit of a jerk in July and August. And that's when, typically, beekeepers are pulling their honey supers and pulling their kind of summer, mid-summer honey, and if they need to do a treatment, they're doing it during that

dearth time because the population, everybody's kind of home and there's no honey supers on. 2019, what happened is beekeepers left their honey supers on because they were still making honey. And they were monitoring, those that were monitoring found they had to do treatments, they were doing treatments with honey supers on, those treatments were not as effective as they normally would have been. Beekeepers who didn't do follow up monitoring, so one of the things that makes an IPM program successful is not only monitoring to check when you have to do something in your hive or when you should be performing a miticide treatment, but also monitoring doing an alcohol roll after you do a treatment to make sure what you did worked. And so in 2019, a lot of beekeepers that were doing alcohol washes, after they had performed those mid-season treatments to control their mites, found that they did not work, that their applications failed for some reason. And most likely it's because of bee population, and also having too many supers on, it was just too much space for those miticides to work properly. And they had to do follow up treatments. Those that did not, were not monitoring following a treatment, lost their hives by fall. So that monitoring piece is really important. And you would not have picked that up if you were just treating on a schedule, you would not have caught that your treatment didn't work, and your hives probably would have been dead by fall. The other example is this past year we had a really severe drought in Maine. And in a typical year, our bee population is growing pretty rapidly, we have a very short season, so it kind of skyrockets in the spring, your mites are keeping pace, and they kind of are also skyrocketing, but they're delayed, so they don't overtake the mite population, until we get to the middle of the season when our bee population starts leveling off, and they start prepping for winter. But the mites are still increasing because there's brood. What happened this past year with a drought is that a lot of hives were food stressed, so they didn't grow as -- the angle of their growth was a little bit more level. And so the mites actually were able to grow at the same rate that they normally do because they were still brood in the hive. But the bees were growing slower than they normally do. And so mites were actually a problem earlier in the season than they would in a normal year. So beekeepers who were monitoring regularly found that out, and were treating, on average, two to three weeks earlier than they would have normally if they were treating on a calendar. And so not monitoring and just treating on a schedule may work some years. But more often than not, I think that monitoring and taking the time to do that, it takes a couple minutes per hive, taking the time to do that will really hone in when those treatments are the are being made at the best time. You want to make sure that you're hitting those mites when they need to, you're knocking them down when they need to be knocked down and not just kind of shooting randomly at the hive.

Jamie 39:05

I think that's all great information. One of the things, Jen, that happens to me a lot is people will email me or call me or meet me at a conference and say hey, you know, my bees died. I can't explain it. The first question I always ask is, you know, what were your mite levels and what did you use to treat the colonies? And they all, no, no, no, no, no, don't worry. I treated back two months ago, it's okay I had them under control. It's not a problem, or I just finished a treatment and then they died. Don't worry, it wasn't mites. People always want to tell me all the reasons that it's not Varroa, and I always tell people, you know, if you are talking to me and tell me well, I don't know what my levels were, or I, you know, it's been a few months since I treated, then my mind automatically assumes that Varroa killed the bees. And I think one of the things, I often tell people this and let's see if Kim and Jen, you guys agree, I often tell people, you know, for some reason, over the last 20 years, we have convinced ourselves that Varroa don't kill bees. You know, commercial beekeepers know this, but a lot of hobbyists and stuff,

we've just convinced ourselves Varroa don't kill bees. And we, we think of every other reason that our bees die, you know, pesticides, nosema, whatever. But it's often Varroa. And I think, Jen, your advice there about checking levels after you treat to make sure the treatment works is absolutely spot on. I mean, I agree wholeheartedly.

Jen Lund 40:34

Yeah. It's really interesting. So it's, when I first started this position we had -- so because we asked the beekeepers, what they, what their practices are every year, we only really had about 11% of beekeepers that were monitoring using alcohol rolls and about 50% monitoring in some form for Varroa. A lot of that was I don't -- I was looking for Varroa on the adult bees, which we know, with the way our eyes are, you're not going to see, you're not going to see a lot of mites on the back of bees just because of their biology and all that. So we only had about 11% and a lot of beekeepers, when I asked them, when I first started, why their hives, why they thought their hives were dying, a lot of it was moisture issues or it was too cold or it was all these other reasons. And you know, I knew in my heart of heart that it was really Varroa was driving a lot of this loss. And I have seen over the last four or five years this change where we have, because we've been talking about it so much, now we have 50% of people, of our beekeepers are now using alcohol rolls, which is pretty amazing. 75% are monitoring for Varroa, most are using two different methods. So they're using maybe a sticky board and alcohol roll at the same time to kind of look at two different aspects of how their mites are increasing. And the number one causes constantly on survey now is Varroa mite and viruses. They're, the beekeepers up here, just because I think we're talking about is so much really are recognizing that that is their number one driver of losses.

Jamie 42:16

You guys really have put together an amazing program. In fact, Kim you had mentioned some of the websites earlier while you were answering your question. So I brought it up on a separate screen. I was looking at the stuff that you guys have produced, including your presentations and the Varroa IPM guide. Kim, can you, can you plug some of these things? And I just want to make sure that our listeners know that everything that Kim and Jen have referenced, we're going to make sure and put in the show notes to today's program. But Kim, I want to give you a chance to tell us what some of those resources are that you and Jen have produced because I've been looking at them, and they're really amazing and support everything that you guys have been talking about.

Dr. Kim Skyrn 42:57

Oh, yeah, definitely. No, thanks so much again, yeah, for being able to share this. So we again, have a huge shout out and thanks to our granting agency for the funding for this project, the Northeastern IPM Center, amazing folks to work with. And again, we were able to get a grant to do this. On the website for them, there is what they call an IPM toolbox. And so we've got on that, that main page, you can, you can actually take sort of a deep deep dive if you would like to spend eight hours with Jen and I, if you like our voices and want to hang out with us, I promise we're a lot more funnier after a couple of hours into this. We have eight hours of webinars on Varroa mite, from biology to PPE, you know, from management, to how to create a plan, we have a whole program on how to make a plan. Yeah, so you can get all of that and sort of dig in quite a bit more, we also have a link to the plan itself. So you can download kind of a blank template for that. Again, nothing super fancy with that, it's just a really great

tool for you to have. And I think it can be, you know, if you want to change it up, I mean, it's a great place to start, you will also get access to the IPM brochure that's on the website. So if you want to download that brochure, you can get that. And of course, we also want to make sure that you also have the Honey Bee Health Coalition guide to Varroa mite management as well. That's that's sort of definitely been the Bible of doing this. And we created kind of the summary from that. So that's all on that main page. And if you go into that, and you have questions, we're always happy to help. You can reach out, of course, if you're in Maine and Massachusetts, one of our beekeepers, if you'd like additional support, let us know. There is a picture too, of what a Varroa mite jar looks like that we have made for beekeepers. It's super easy to make one at home, if you've got a canning jar that has a solid lid, a removable solid lid and has an option to put a piece of screen in. You can make your own jar and we have some guides in there in the presentations on how to do that. And we actually, like I said earlier, have been given out these jars and screens and stuff. So if you've got questions or can't sort of figure out how to make it work, you can reach out to us. And then finally I do want to give one plug and again, thanks Jamie for letting me do this, for the Apiary Inspectors of America. So we are, as the president of that organization, we represent apiary inspectors in the US and Canada. And so we've got a very dedicated bunch of apiary inspectors here in North America really to service you as a beekeeper. So if you've never heard of the term apiary inspector, if you're not sure who your state apiarist is, or apiary inspector, this will be a great place to go, apiaryinspectors.org. And those folks, you can get on to our website and see all the different apiary inspectors for the state territories and provinces that you live in, and get a really great resource to reach out to those, they may have a program similar to this. And of course, they would be a great resource for you to bounce ideas off of and get additional support. If you've got questions about Varroa mites or management, or even if you just want some of the states to, well, and our states are similar that will actually we do a lot of visits to beekeepers in the field. So you may be able to get an apiary inspector to come to you and go through your hives and even demonstrate how to do an alcohol wash or roll with you in the field. So that's one of my favorite tasks to do with beekeepers. I love it. And so especially if they have two hives, I usually start with one, and I'll show them how to do it. And then we sort of have like a cooking show. Let them do the other hive, and then I'll step back. And if they have questions, we're there to provide support. So I can guarantee you I do alcohol washes much better than I cook. So you're in good hands.

Amy 46:21

That is so great. Well, thank you so much, Kim, thank you so much, Jen, this was a really great conversation. I know that our listeners are going to absolutely love the advice that you have shared. And I'm just very grateful for your programs and what you do for beekeepers across the country. So thank you so much. Alright, everyone that was Dr. Kim Skyrn, the Chief Apiary Inspector for the Massachusetts Department of Agricultural Resources, is also the president of the Apiary Inspectors of America. And Jen Lund, a state apiarist for the Maine Department of Agriculture, Conservation and Forestry. Thanks for joining us on Two Bees in a Podcast.

Stump The Chump 47:06

For more information about this podcast, check out our website at ufhoneybee.com.

Jen Lund 47:17

So we're recording this Five Minute Management in April of 2021. And I have been receiving a lot of questions about where to acquire bees and queens. And so we are going to make that our Five Minute Management today. And Jamie, I am going to start the timer. Go.

Jamie 47:36

That is absolutely one of those questions we get in spring every year. There's usually all of these local bee clubs stepping up and doing a lot of spring training for brand new beekeepers. And it's a great thing to do, right, because colonies are coming alive. The downside is that bees are hard to get this time of year. So everybody's trying to find them. So let's do this in two halves. I'm going to talk first about how to acquire bees, you know, the actual colonies and then secondly, I'll tell you how to find some queens and we'll make sure and link a document I wrote about this topic in the show notes. Alright, so finding bees. There's quite a few ways, about six or so that I'll talk about where you can acquire colonies of bees. The first of those is probably my favorite is that's purchasing nucs. Nucs are basically small colonies in small hives. So usually nucs are sold as five frame nucs and nucs come with those frames. They have honey and pollen. They have brood, they have bees, they have a queen, it's a functioning colony. And when you purchase it, it's usually ready to move over into a full size hive to not miss a beat and continue to grow and expand. They're really a good bang for your buck, nucs are. Packages are the second way I want to tell you how to get bees. Those are, like the name implies, just a box of bees. Usually you get them by pound, two to three pound package range that don't come with combs. They don't come with brood or honey or pollen packages. If you purchase a standard package, usually comes with about three pounds of bees plus a queen. The queen is suspended in that package and a separate cage and that's because she is not the mother of the bees in that package. So they keep them separate but in the same thing. Packages are good economically, they're cheaper than nucs, but they have a lot of work to do to get established, right? They have to build comb, produce brood and all of this stuff. You can also purchase full-size colonies, and of course, full size colonies are ready to go, right? You're purchasing a functioning production colony just ready to just jump and get moving. The downside of that is that they tend to be more expensive. This is probably the most expensive way, in fact, that you can acquire colonies. The fourth way is you can put out swarm or bait hives, monitor them with regularity and see if colonies will move into those. And if they do, it's a free way or a nearly free way, to acquire colonies. It's not quite free because you have to purchase the bait hive or the swarm trap and you have to monitor them. But you know, the bees themselves are free because they'll move in. Those, that's good because it's a relatively cheap method. But there's some downsides. If you live in areas African bees are present, you know, there's a reasonable probability you might end up with an Africanized colony, you know, so just some other things that can result is that. Cut outs is the fifth way. Now cut outs are real simple. Basically, you are removing a colony that is already established somewhere someone doesn't want it to be, you're taking it out of the wall of a house, out of a chimney, out of a water meter box, just, you know, there's people whose job it is to do this. So just a word of warning that might be considered pest control wherever you live. So if you're performing cut outs, you might be engaging in pest control, again, depending on where you live. And you might need a license and specific training and insurance. Nevertheless, a lot of beekeepers acquire bees by removing them on behalf of other folks. And then the sixth way, the final way to acquire bees is by splitting colonies, by splitting colonies. If you have bees, bees make bees and so you can take a colony, split it and make it two. This is a really cheap and economical way to do it. It's a very natural way to do it. And it can be part of standard management practices. So acquiring queens is a little bit easier. And because you're

not having to purchase whole colonies, a little bit cheaper too, right? So how can you get queens? There's five quick ways I want to share with you. The standard way is purchasing mated queens. There are people whose job it is to produce mated queens. You can purchase them, they will come to you in the mail in little wooden cages or plastic cages. You also, similarly, can purchase queen cells, usually from the same place as you purchased mated queens. You can even purchase, as the third option, virgin queens from the same place that you purchase mated queens. Virgin queens are queens that have not mated yet, right, and they'll ship them to you. They're a little bit more difficult to manage, because you've got to get them accepted in your colonies, as well as mated, but it's still a cheaper option than purchasing mated queens. Fourth, you can graft and produce your own queens, a bit labor intensive, but it's still possible. And the fifth and final way is to allow your colonies to requeen themselves, which is what they do naturally anyway. It's cheap. It's not without risk, but it's a reasonable way to do it, especially if you're outside of production season.

Amy 52:22

So you know what, Jamie, I can tell that you're really good at time management. And it's because you're able to answer the question with eight seconds left in the five minutes. So congratulations.

Jamie 52:34

Thanks. I was honestly a little nervous because when I was cruising through the bee part, I was like, well, I'm spending too much time talking about the bees and not going to spend enough time talking about the queens. But the good news with all this, Amy, is we've got this document we'll link in the show notes and folks can read all about it. I think the bigger thing to remember with bees and packages is that there's times of years that they're relatively easy to get and times of the year that they're not so easy to get, right? And then in early spring is when everybody wants bees, colonies packages, queens, nucs, etc. If you're willing to purchase these things in summertime, you'll have a greater abundance. But if you're pushing for spring, it can be difficult to get your hands on some of these things.

Stump The Chump 53:15

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

Amy 53:29

Welcome back to the question and answer time. We've got three questions today. We always have three questions so I don't even know why preface with that. But I'm excited to share the questions today. Jamie, the first question was actually from someone who took our Master Beekeeper Program, and this was at the apprentice program and he was wondering, you know, what is crosswire foundation and does it differ from crimped wire?

Jamie 53:53

All right. That's a very interesting question I've also never received so I love the fact that you listeners out there are asking some fantastic questions. All right. So they are different. Crimped wire foundation means the wire is already in the foundation. Crosswire is something you do to it. All right, let me explain what I mean. Crimped wire foundation is when wires are embedded by the manufacturer straight into pure beeswax foundation. They are embedded in there because pure beeswax foundation, while it's great and holds a lot of honey, when you turn it horizontally, it loses all of its structural integrity, right?

Bees build combs up and down, vertically. But if you were to take those same combs and turn them on their side full of honey, they are very weak that way and it will just fall out of the frame. So if you're using beeswax foundation, you would purchase it with crimp wires already in it. They run vertically and add that support to that beeswax foundation. Now, if you are using crimp wire foundation for shallow or medium frames, that is usually sufficient. When you, you know, have those crimp wires already in that foundation, it usually adds enough structural integrity, that if you put it in those smaller frames, there's a low risk of the combs bursting through the frame when you turn it sideways. But when you are using crimp wire foundation in deep frames, you want to reinforce that foundation by running wires horizontally through the frame. And that process is called cross wiring. You cannot purchase cross wired frame, foundation, that is something you do to it after you've purchased it. So people who use crimped wire foundation, those wires, again, run vertically up and down, you put that into a deep frame. And then you would want to reinforce that wired foundation by cross wiring it, running wires horizontally through the frame to add that extra support. And again, you do that on deep frames because there's so much weight of comb in those deep frames. I see a lot of people do it for shallow frames and medium frames as well. And incidentally, that's why the end bars of shallow, medium and deep frames have pre-drilled holes in them. Those pre-drilled holes are made to accommodate the cross wiring that you do after you put in the crimp wired foundation.

Amy 56:22

Sure. Okay, so they're used together. It's not like --

Jamie 56:37

Exactly, yeah, exactly. But you don't purchase cross wired foundation, you have to make it that way once you purchase it.

Amy 56:43

And it just helps with the stability.

Jamie 56:45

Absolutely.

Amy 56:46

Great. Okay, so for our second question, we have had so, you know, we always talk about getting a mentor. And that's usually the best way to get started into beekeeping is finding a mentor. So we had a listener who sent us an email and they said that their mentor has been beekeeping for a really long time. And he said that queens today just don't last as long as they used to. And so the questioner was asking, are queens dying earlier than they used to historically? Or what's the deal with that?

Jamie 57:17

I love this question principally, because I'm struggling internally as well with this issue. And let me tell you why. One of the things that the Bee Informed Partnership has shown that beekeepers routinely say as the leading cause of their colonies is poor quality queens. And anytime I give discussions, or talks or lectures or engage with people about this topic, you will commonly hear that statement, queens aren't as good as they used to be. They don't live as long as they used to be, they run out of steam and faster

than they used to. And so this is a very important topic. Amy, I don't know if that's a true statement or not. I also don't know if it can be known if it's a true statement. And let me tell you why that's the case. When Colony Collapse Disorder was born in 2006, we started looking at colonies, we, the scientific community and beekeepers, in ways that we never have before. There's been surveys of beekeepers, colony surveys for diseases and pests, there are samples being collected and held in freezers, we're looking at loss rates, real loss rates for the first time in the history of beekeeping. And we're discovering things now about our bees that we never knew before. For example, the Bee Informed Partnership tells us that the average yearly loss rate's 40%. And people will say, well, that's not normal. And they'll base that whole, it's not normal off the idea that in the same surveys, beekeepers say 15% to 20% is normal. Well, we don't really know if 15 to 20% loss rates are normal. That's just what people say they feel should be normal. So why does this have to do with queens? Well, everybody remembers the good old days when queens didn't, you know, didn't die. They lasted for 15 or 20 years. Well, I'm not sure those days ever really existed. You know, we always, it's a human thing to look back at the good old days with nostalgia with you know, the good old days when this was well, the bees were stronger, the swarms were bigger, the queens lived longer, the bees made more honey. But the problem is, Amy, we don't have data on any of that stuff. No one that -- I can't find good studies about the longevity of queens prior to 2006 when people started looking with regularity at the longevity of queens. You know, I did a study around that time where we were seeing, we were following some commercial beekeepers colonies who, and the queen longevity in those colonies and we're finding that you're a lot of them turned over within six months. Some still in eight months, some still in ten months --

Amy 59:57

That's crazy, yeah.

Jamie 59:57

Yeah, some still in 12 months. So we were asking ourselves, well, is this normal? The problem is if you don't clip and mark your queen, you don't know what the longevity actually is. A lot of people who don't clip and mark their queens might have two or three turnovers in a year, but swear they have the same queen in there. And the reason you have to clip your queen is because marks come off. The wings don't grow back. So, so the only way to really know if you've got the same queen from season to season is to clip her because you can see that clipped queen. So, Amy, I just don't know if what we're saying is true or not, because it's based purely on human ability to remember the way things used to be in the absence of records. And frankly, we just don't have good records. And so, I anecdotally, I kind of believe it, because enough people say queens aren't as good as they used to be and live as long as they used to. But scientifically, I'm just not sure we have the data to support that statement.

Amy 1:00:54

I kind of wonder, you know, in 20 years, what we're gonna look back on for 2021 and think of it as we're living in the good old days, I guess.

Jamie 1:01:02

Yeah, we're living in tomorrow's generation. Someone once told me, oh, we all harken back to the good old days. In the good old days, people had to hand wash their clothes in a tub. I don't remember that being --

Amy 1:01:12

Wait, you don't still do that?

Jamie 1:01:14

So the point is we all look back with nostalgia, but in reality life was hard in the good old days, right? So I just, I just don't know if we have the data to support that statement. And unfortunately, without the data, we can all say whatever we want to. We all think -- I'll give you a very classic example, Amy, to support this. Before Varroa were here, things were terrible. Well, that's true. I mean, sorry, before Varroa were here, things were great. Now Varroa are here, things are terrible. Well, I buy into that, I really do. But if you look at the National Ag Statistics Service that's been monitoring honey bee colony numbers in the US since the late 40s, sorry, the late 30s, what you'll see is prior to the introduction of Varroa, we had a net loss of colonies about a percent a year. So everybody's like well, Varroa's killing colonies everywhere. It's the worst, everything's terrible. Well, since the introduction of Varroa, we've had a net loss of colonies per year of about 0.4%. It's actually gone down since the introduction of Varroa into the US. So it's just really hard to know what things were in, quote, the good old days, they just don't have good data. So maybe queens are worse than they've ever been. Maybe their lifespans shorter than it's ever been. I just don't know that we have the data the backup the anecdotal stories.

Amy 1:02:34

Sure. Alright, so for our third question, this person wants to move all their stock to VSH. What is the best way to go about this?

Jamie 1:02:43

Easy breezy answer. Here you go, kill all of your queens. Seriously, this is true.

Amy 1:02:48

I know, it's just really funny.

Jamie 1:02:48

You euthanize all your queens. And you do it on the day that you've got queens arriving that you've purchased from a VSH queen breeder, so VSH means Varroa sensitive hygiene. There are lots of breeders who specialize in the production of Varroa sensitive queens. You order reputable stock and how you find the reputable breeders is you do a little bit of homework. You contact folks who've used VSH stock, see some sources of VSH stock that they trust that they really endorse, getting some good word of mouth endorsement. You might even call the breeder and say how do you maintain VSH stock? If they're willing to talk with you and you've got good recommendations, you place your order for queens. When they come in, you dequeen all of your colonies from the old stock. You requeen all of your colonies with the new stock. And I tell people if you're going to invest in using a Varroa resistant or Varroa tolerant stock, it's all or nothing. So every year, you requeen all colonies with queens purchased from a VSH breeder. Why do I say every year? Because think about our last question. And I just said, you know, in the last answer that I saw, with my own eyes, queens turning over as early as six to eight months, so probably in your -- if you've got 20 colonies and you requeen them all with VSH stock that, you know, August 1, some of them are going to die throughout the year. So the only way to truly

maintain that stock is once a year requeen everybody with VSH stock because if you allow colonies to requeen themselves and outcross and all of this stuff, it's really easy to lose the stock. So I go all in and if you're really going to use it, you got to use it. Follow a recommendation of requeening once a year with VSH stock. I wouldn't, you know, if I'm working my colonies, if I requeen everybody April 1 and I'm working my colonies in June and see that three of them have, you know, requeened themselves, I wouldn't necessarily requeen them with VSH stock. I'll reset, push the reset button next year when it's time to requeen everybody, but I do like the idea of going all in once a year and requeening everybody with the stock from the reputable breeders. Alright, and there we have it our question and answer time.

Amy 1:05:05

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 1:05:17

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!