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SPEAKERS

Dr. Cameron Jack, Jamie, Amy, Stump The Chump, Serra Sowers, Guest

Jamie 00:10

Welcome to Two Bees in a Podcast brought to you by the Honey Bee Research Extension Laboratory at the University of Florida's Institute of Food and Agricultural Sciences. It is our goal to advance the understanding of honey bees and beekeeping, grow the beekeeping community and improve the health of honey bees everywhere. In this podcast, you'll hear research updates, beekeeping management practices discussed and advice on beekeeping from our resident experts, beekeepers, scientists and other program guests. Join us for today's program. And thank you for listening to Two Bees in a Podcast. Hello, everyone and welcome to another episode of Two Bees in a Podcast. Amy, I am so incredibly excited today about our guest. I've met our guest a few years ago, and since then, she has just been truly a wonderful person, a wonderful collaborator, a great inspiration for me in my program, and I really have enjoyed getting to know her, her family and her team in recent years. And Amy, of course, I'm talking about Professor Guntima Suwannapong who I've now known for a few years. She manages the honey bee laboratory in the Department of Biology and the Faculty of Science at Burapha University in Chon Buri, Thailand. I've had the great pleasure of visiting her at her university multiple times. We've hosted her here at the University of Florida, and I think we've maybe got a great future of collaborations together. Gun, thank you so much for joining us on this podcast.

Guest 01:43

Hello, everybody. Good evening, there. I would like to thank Jamie and Amy for inviting me for the podcast. Yeah, it's a pleasure to be here today. And my name is Guntima Suwannapong. I'm a professor at the Department of Biology, Faculty of Science at Burapha University, Thailand. I graduated with my PhD from Chulalongkorn University where I started my research there. Thank you very much, again, for having me here.

Jamie 02:24

Again, I said now multiple times, I've known you for a few years, and it's been an absolute pleasure. You're a wonderful collaborator and even more wonderful person. And so I've really been excited about

interviewing you for the podcast because I'd like to have our listeners get to know you. So, Gun, since this is your first time on our podcast, could you tell us a little about yourself and how you got into honey bee research?

Guest 02:51
Thank you very much about the question. I'm a professor in Biology at Faculty of Science, Burapha University. I graduated with my bachelor's degree from the Department of Zoology, Chulalongkorn University, and also got my master's degree and PhD at the same University, Chulalongkorn University from Bangkok, Thailand. Well, how did I get into the honey bee research? Because I like having honey. Also, when I was an undergrad student at Chulalongkorn University, I took a beekeeping course that had been taught by Professor Wongsiri, he's a very well-known professor of honey bees. At that time. I learned a lot about honey bee biology and also, I had the chance to visit many bee farms in Thailand. And at that time, it made me realize that honey bees are such amazing insects, and I think they are lovely, and they are really interesting. That is why I decided to start my senior project or individual study about honey bee thermoregulation. And I focused on Apis florea, and yeah, I started from that. That is why I have a long story about honey bee research. Yeah, thank you.

Amy 04:43
Dr. Gun, I think anyone who meets you knows that you live and breathe and love honey bees. So I always like to see photos of you working bees and I love seeing your bee research in Thailand. Thailand is really a special place to keep honey bees. So here in Florida, we work with Apis mellifera and that's the only honey bee and species of honey bee that we have here in Florida. And so can you tell our audience how many species of honey bees are there in Thailand? And which one is your favorite and why?

Guest 05:23
Thank you for that really good question. So yeah, the fact that Thailand is a tropical country, that is why we do research on honey bee species. In Thailand, we have five honey bees species. It's four native species and one imported species. I will start with the biggest one, the first one we call the giant honey bee, or Apis dorsata. This one is really, really important for pollinators in Thailand because they can forage many flowers, both crop plants and wild plants in Thailand. So, for our research, this Apis species can forage more than 68 bee plants in Thailand. It's very interesting that they can forage many plants species, wild plants and crop plants. They build a nest, hang on a big tree, and the nests of this species is very big. People, especially bee hunters, love hunting them. One myth of the species is they can take about 20 to 25 kilograms for a colony and this one is really big and really interesting. And Thai people love having this honey from this Apis species because they believe that the honey of this species contains medicinal plant, medicinal property, and that is why they like consuming them. The second honey bee species of Thailand is Apis florea. We call the dwarf honey bee and sometimes, many people call them red dwarf honey bee, because when we look at the body structure, the abdominal segment look red. That is why we call it red dwarf honey bee. The body size of this species, they are quite small when compared to the first one. When compared to your bee, what you have, Apis mellifera, that is why we call it dwarf honey bee because of the abdomen being red and because the

size is small. That is why we call it red dwarf honey bee. This species also is very important for crop plants and very important for, also, wild plants. You can buy them very easily when you drive on the highway and you can see people sell this bee species on the long side of the road. And the third one is also the small bee we call black dwarf honey bee because the first abdominal segment of this species looked black and they are very small. This species is the smallest species of honey bee. Unfortunately, this species is very difficult to find in this day because, in Thailand, we have a big problem about deforestation so they cannot adapt to new environment well when compared to Apis florea. That is why it's very difficult to find them this day. This one is really interesting as well but we try to find more to study, find more colony to study them more. The first honey bees species is also the native species of Thailand is Apis cerana. The species is the most important native species for beekeeping in Thailand. This species can be found throughout Thailand. Thai beekeepers like keeping them especially in the South of Thailand because the weather there is very hot and Apis cerana can adapt themselves in hot weather well when compared to Apis mellifera. This one is also important for pollination. We use this species to pollinate in many agricultural farms in the east of Thailand and the South of Thailand. The last species of honey bee we have in Thailand is Apis mellifera, which is an imported species. We introduced this honey bee species since 1944 beekeeping because Apis mellifera adapt themselves to a new environment quite well. They can produce much more honey when compared to what we have in Thailand. But the big problem of keeping this species is they cannot adapt themselves with the mite we have in Thailand, especially tropilaelaps. This is the big problem when beekeepers in Thailand keep this bee species here. So yeah, this is an overview about what we have in Thailand. Yeah, thank you very much.

Amy 12:19
So, Dr. Gun which one is your favorite?

Guest 12:24
Really interesting and good question. Actually, I love all honey bees species because I love honey bee but if I have to say my favorite one, the most favorite one, I like to say I like Apis florea the most because I started working with bees when I was an undergrad student. As I mentioned earlier, I study thermoregulation in Apis florea colonies. And then I found out that this specie can control the temperature in the colony, between 29 to 32 degrees Celsius even in the weather in Thailand. It's not constant like that. So they can keep the temperature in that range. It's very interesting and they are so cute and when you look at the body structure of this bee species, they are very, very beautiful. I like orange color and that is why this honey bee species is the most favorite one yeah, thank you. Thank you very much.

Jamie 13:44
So Gun, your enthusiasm about honey bees is so contagious. I know when I when I spend time around you just listening to you talk about bees and beekeeping in Thailand, it's amazing. So you mentioned five species, Apis dorsata, the giant honey bee, Apis florea, the red dwarf honey bee, Apis andreniformis, the black dwarf honey bee, Apis cerana, which is the bee you say most beekeepers keep, and then of course, Apis mellifera, which you say struggles with some of the mites that you have

in Thailand, particularly tropilaelaps, as well as the environmental and weather conditions since you have a tropical climate. So you've got five honey bees there. So what makes beekeeping in Thailand so unique? What makes it different from other places around the world?

Guest 14:38
Thanks for the question. It's really good question. I think in Thailand, we have a wide variety of plant species. This means that we have many choices for honey bees to select. They have some preference of the bee plant and some bee plant we have the group of medicinal plant, meaning that when honey bees forage and collect nectar or pollen or both, they can collect some medicinal property. This means that in the colony they can help the immunity against pests and disease in some way, somehow in our country. And one thing I like about beekeeping in Thailand is beekeepers in Thailand don't move Apis cerana around the country. They just live there and then they can harverst often. But keeping Apis mellifera, some bee farmers move their colony because they want to harvest longan honey, lychee honey, sunflower and all other species of a bee can provide honey for the bee species. I think because they don't move colonies around. If a company of beekeeper moves their colony, this means that, one point, if a farm, they have a bee and their bee gets a disease or get infection, for example, by Nosema, or even their colony might have Varroa mite in their farm, if they move to other places, this mean that they might bring disease and bring the mite to other places. So, for our country, it's good that they don't move bees around. I think the farm that keeps the bees, I think it's, it's really, really interesting, and it's very good for the bee, in this way. Thank you so much.

Amy 17:40
That is so interesting. I have so many questions for you. I want to try the logon and lychee honey, I've never had that before. It sounds very good because I like those fruits. Just the immunity to some of the pests and diseases and the fact that Thai beekeepers don't move their bees around like we do here. So my next question is what are some of the major issues that you see with beekeeping in Thailand? I know that Jamie had mentioned, earlier, tropilaelaps, and we don't have that here. And hopefully, we don't get tropilaelaps anytime soon. But what other major issues do you see with beekeeping in Thailand?

Guest 18:30
Thanks for the question. The main problem and the main issue about beekeeping in Thailand, I think, yeah, Thailand is a great culture, country. So Thai farmers use chemical spraying, pesticide, insecticide in their farm. This means that it's not good for honey bees. Some areas, they use too much, and honey bees die a lot when they go out to collect food, and it's a big problem. We try to educate them, try to save the bees and use chemical in the right way, and Thai people they seem to not listen to what the government tried to educate them. They just use too much chemical. And, yeah, this is a big issue in Thailand. And some beekeepers try to grow the plant for their bees. It's much more overtime this day, and it's good for our country that beekeepers have their own land, and then they try to grow bee fauna or bee plants for their bee and yeah, it's good. But in some areas, they live nearby and surrounded by other people that don't have the honey bee and they keep using chemicals for their farm. So this is a big issue in our country for beekeeping. Yeah, thank you. Thank you.

Jamie 20:34
So, Gun, because you guys have five species of honey bees, there are really so many things we could talk about with regard to beekeeping. Just listening to you talk about the issues that beekeepers have, the strategies that they use to work with different species is really amazing, but I want to change topics a little bit because you are also a professor. You have your doctorate degree, you're a world-renowned honey bee expert. And so you do a lot of research, you've done a lot of research over the years, you do research now, and I know you'll continue to do so. Every time I visit you, you have a team of graduate students and undergraduate students who are working with you. So, if you don't mind, could you tell us a little bit about your research? Can you provide us an overview of the types of projects that you and your team like to investigate?

Guest 21:25
Thank you very much for the question. Yeah. I have been focusing, for the fifth decade, I have been focusing on honey bee pathogens, especially Nosema. Yeah, we study the distribution of Nosema throughout Thailand. And we found out that Nosema had been everywhere we've been to and every honey bee species, we found Nosema in or Nosema ceranae. We found out that two locations in Chiang Mai get infection by Nosema Apis is very few. I can say that most Nosema in Thailand is Nosema ceraneae. I also try to screen natural products to control Nosema in Thai honey bee and we found out that propolis extract from stingless bee, especially from trees like Tetrigona apicalis is the best one this day. So we use propolis from stingless bee species to control Nosema. Not only in the laboratory, also we try to promote propolis extracts in the colony level. We provide our extract to many bee farm in our regions and it works quite well. They said that not only can this extract can control Nosema in their farm, it can also make the colony become stronger. That is good. And we also study about the collateralization of propolis extract from different species. Colleagues from different region sof Thailand want to study which one has high content of this compound because this group of chemical is very important. We can apply them to use in many ways, yeah. And also, not only for honey bee research, we can also suggest the characteristic of the good one of propolis extracts to add a group of scientists. For example, for pharmacy and dentistry as well becausethey have very important properties. For example, they have anti-microbial and anti-bacterial activity and anti-tumor and anti-cancer cancer. So, yeah, this project is also very interesting. We have quite good data from our group and we also study hosts change of the mite. In Thailand, we have Varroa mites, we have tropilaelaps, and also, [inaudible]. All are serious pests of honey bees in Thailand, especially tropilaelaps, and it's very difficult to control them. We try to study more and try to control them. Yeah, it's very interesting. We found out that some chemical bee extract from Thai herbs can control the mite, but we have to do more research because we need to find the appropriate concentration that can control the mites but not repel the bee because sometimes we use too much chemical, and then they also control the mite and bees leave the colony. That is not good. We have to find an appropriate or suitable concentration ofthat extraction to control the mite. And another topic we study is the property of honey from different bees species. We also compared the property from honey from honey storage area. We study about the community of good bacteria in honey and also compare the property of honey from different companies we bought in Thailand. Yeah, that is our project today. Thank you very much.

Amy 27:44
Well, it sounds like you're doing a lot of really great research projects, and especially with the chemical properties of propolis and looking at different herbs and the properties that may help with mites and everything above. So, I wanted to ask you, I want to just kind of cycle back to one of the projects that you were working with. So when I started working at the honey bee lab at the University of Florida, that was in 2019. That was when you were there visiting with one of your former PhD students, and that was Dr. Sanchai Naree. He was studying propolis to treat No, Seema. And can you tell the audience just a little bit more about this research? Were you comparing propolis and Thailand versus Florida, and what did your research look like?

Guest 28:47
Thanks for the question. Because we had very good data before about using propolis extract from Tetrigona apicalis, what we have in Thailand, to control Nosema in Apis florea, Apis cerana, we moved to another species of honey bee. When I had a good chance to visit your lab, we try to apply our knowledge using propolis extract from Apis mellifera we collect here in Florida, and we try to apply them in experimental cages. We use 50% propolis extract, I mean, extract from Apis melliferala. We use 50% to control Nosema bee. We did phosphating. We provide Nosema spores. The dose is 100,000 spores per bee to Apis mellifera, and then we provide them with propolis extract. And we leave them for 30 days, and after that we start the infection. So, we found out that propolis extract can reduce Nosema infection in Apis mellifera here in Florida. Also, we investigated protein content produced from hypopharyngeal glands. This gland is very important for the bee because they produce royal jelly for young larvae bees, and also produce royal jelly for the queen. So, after we provided them with propolis extract from stingless bee and from mellifera, we found out that propolis extract can increase protein content in this plant as well. Also, we measured the protein content from the gland and also from hemolymph. We took hemolymph and then we measure the protein content. We found out both have higher protein content after we provide them with propolis extract. That is very interesting data and not only the data we investigate, we have got, when we work at University of Florida, we also work with other Apis species. We moved to study Apis dorsata as well. All honey bee species, after we provide them with propolis extract, they can against Nosema very well, and also can produce protein content higher when compared to without giving them propolis.

Jamie 32:27
So, Gun, it really was a joy to have you and San in our lab, and I learned so much watching him do the research and collaborating with you guys on this topic. I know that you spend a lot of time with Nosema and you spend a lot of time with honey bee pathogens and mites recently. Do you happen to have a vision for where your research is going to go in the future? Do you see yourself continuing to study the same types of topics? Are there other topics you hope to study as well?

Guest 32:57
Thank you. It's a very good question. So, in the future, after we went to the field trip, so many places in Thailand, we found out that when we collect the bee, even from the colony and from the flower, we

found that there are other insects besides the honey bee that forage for the same flower. This means that if honey bees get infection by some disease, they might share some disease to other insect species. For example, wild bee, solitary bee, or Cape bee. I think we will move to another insect besides the bee and we also want to study the foraging area. They might contain some DNA from honey bee species and other bee species or other insects. So, we can study from that and also study the community of bacteria on the flower or foraging area, where the bee and other insect species share when they forage in the field, so, we want to study that. Yeah, it's very interesting. Thank you so much.

Amy 34:42
Well, thank you so much for being on our podcast today. I I feel like I could talk to you for days and just ask you so many questions. You're just so knowledgeable and you know about all the different species of honey bees so I'm really excited to come visit you sometime, and hopefully, in the near future. But I did want to ask if there was anything else that you would like to discuss?

Guest 35:11
Yeah. I heard about tropilaelaps. They already found this mite in Europe. I don't know, in the future, they might, spread in US or not. For US, you have something, for example, the mite inspection or things you want to protect in case this mite spread in US or not. It's very important to have the plan to protect this mite because what I found out from our research is when infest this mite to Apis mellifera colony, in just a few days Apis mellifera leave the colony. It's pretty bad for the bee. I mean, tropilaelaps, when compared to this one, it's much more worse for the bee. So yeah. So I think it's good to have a plan to protect in case this mite spreads to your country, and even in Europe, as well.

Jamie 36:48
So, Gun, I think you're right. I think tropilaelaps is one of those international concerns right now. A lot of people are talking about it around the world. And I thank you for bringing it up. Gun, it's really been great to have you on this podcast. You've given our listeners around the world so much new information and appreciation about beekeeping in Thailand, as well as the research that you do with your students and your colleagues at your program. So thank you so much for joining us on this podcast.

Guest 37:19
It's my pleasure. And thank you very much for having me here. And thank you, everybody, for listening.

Amy 37:36
Well, Jamie, I think I definitely want to be Dr. Gun when I grow up. She's so cool. She's got so many projects. She's just hard-working. It's infectious, her love for honey bees. It's amazing.

Jamie 37:51
She's a really good person. We didn't talk about our commonality but my PhD supervisor from years ago in South Africa was actually on her student evaluation committee. And so in some ways, we're almost academic siblings. And I didn't find this out until I met her a few years ago. She proposed to

send San to our lab and come with him to do some research. And when they came, they were just so nice. She is such a good person, beautiful inside and outside, just so accommodating, such a great collaborator. She's a hard worker, so many people visit her, she's up early in the morning, out late at night, works really hard to ensure a good quality program in Thailand. She's really done a great job, Amy. I mean, she's really done a great job.

Amy 38:39
Yeah, definitely. I was laughing because when they were here, so our listeners, I don't think they know this, but we have a lab breakfast meeting every week, and it's with us and the grad students. We always joke around saying that the person who wins lab meeting is a person who brings data, right? But not only did San, as a student, not only did he bring quality data, he brought the cleanest, most crisp, most beautiful data he could bring. He won lab meeting every single week.

Jamie 39:18
When you use those words, "clean data," for those of you listening who might not be familiar with that, when you do a research project, it's common to just get messy data, which is data you're not really sure what it's telling you, or if the treatments behaved appropriately. San, on the other hand, he produces clean data, his results are unequivocal. And you're right, Amy, he always, always, always won lab meeting. Honestly, San's dedication and his research and his efforts are a clear testimony to Gun's leadership and mentorship in her program. I think it's a really good testament to the quality of a supervisor that she is.

Amy 40:00
Absolutely. I loved all of her responses. I felt like she knew her honey bees, she knew the different species, she knew what they were used for, and she just really knew her stuff. I'm excited, because I just I hope that our listeners are able to follow some of her research as well. She's just doing a lot of really great things for beekeepers, not only in Thailand but around the world.

Jamie 40:24
Amy, one of the things we didn't even talk about with her is Cameron and I went over in 2022 to do a study abroad program where we took students from the University of Florida to her laboratory. I was there for two weeks. And then Cameron replaced me and stayed an additional two weeks with the student. But, Gun and her and her research family, hosted us for a month. They hosted our students for a month. And while we were there, the first two weeks, she taught us a lot about the diversity and ecology of the different Apis species that she had in Thailand. In the second two weeks, when Cameron was there, they actually went around the country looking at different beekeeping operations and research programs in Thailand. So she was an amazing host. And every time I watched her or her students give lectures and we went out to the field, they're just so knowledgeable about a region of the world that is so important to honey bee health. It was just really a great opportunity for me, personally and professionally, to learn a lot about the other Apis species but also learn a lot about managing lab and managing people. She just did a really good job and really is a good collaborator. I can't say enough good things about her. She truly is a good person.

Stump The Chump 41:41
It's everybody's favorite game show, Stump The Chump.

Amy 41:51
Hey, everybody, welcome back to the question and answer segment. You know what? We are going to do something new today. I don't think we've ever done this before for Q&A. But Jamie is not going to be the chump in this episode. Right, Jamie?

Jamie 42:05
I have passed the chump responsibility to someone else.

Amy 42:09
Chump baton.

Jamie 42:09
Not permanently. We just want to chumpify him today.

Amy 42:13
That's right, just for today. And then, we'll leave him alone. We have, today, Dr. Cameron Jack who is also a professor here with us at the University of Florida Honey Bee Research and Extension Laboratory. And we decided to ask him some of the questions for the Q&A segment because he really is our oxalic acids specialist. And Cameron, you've been doing talks all over the world. You just got back from Australia to talk about Varroa control. So we wanted to invite you on, one to make fun of you, just a little bit. Not really. But two, to really ask questions that beekeepers are asking about the current status of a lot of what's going on right now. So, just to kind of preface to the listeners, when you're listening to this podcast in 2083, one day in the future, this information may not be relevant. So a lot of the information we're sharing out there is -- right now, we are in July of 2023 but I'll go ahead and move forward at this point. Okay, Cameron. So the first question we have is about extended release oxalic acid. So I guess the first question is just tell us what extended release OA is, and if you have any information on permit requirements or the availability, let's just talk about what it is.

Dr. Cameron Jack 43:37
Sure. So first of all, let me say that I'm honored to be chumpified today and maybe be the first chump other than Jamie. If you ask my wife and kids, I'm chumpified all the time because I know nothing at home. So oxalic acid or extended release oxalic acid, so let me quickly just start off by just telling you a little bit about what I know about how it works and kind of what it is. With regular oxalic acid that you're either vaporizing inside of a colony or you're trickling, you're delivering them in a way that is kind of like a flash treatment. I mean, actually, in my opinion, one of the beauties of oxalic acid is that it breaks down very quickly, but it works for a short amount of time, but it doesn't build up inside of the hive because it breaks down so quickly. But, if you're thinking of a practical standpoint of wanting to control Varroa, it's beneficial to have a chemical treatment that can hang around for a while. So as the mites

are emerging from the cells, as bees emerge, the mites that are reproducing down in those cells will emerge, and then there's still this chemical that's there that they are going to come into contact with and die. So, that's kind of the goal. You're taking a compound that breaks down readily in the environment, and you're trying to get it to last longer. Some of the ways that people have found to do this is to find some kind of a carrier that will allow it to stick around for a while. So people have been experimenting this with glycerin for a long time. Now, there's some other types of mixins that you can help keep oxalic acid stable for periods of time. So, there is actually a registered product for this, but it's not registered in the United States. In South America, there's a product called Aluen Cap that has been tested in the United States, but it's this extended release oxalic acid treatment. From who I've talked to, I've definitely heard varied reports. And so in certain locations, particularly, some areas in the southeastern United States where it can be really hot and humid, it really hasn't worked very well. And maybe in some other locations, typically, where it's a little bit drier, not as humid, they've seemed to have a little bit better success with that registered product. But, also the formulation of it is not terribly complicated. And if you looked online, people are doing all sorts of concoctions in their kitchens and can basically make the same product. But this is where it would definitely be tricky. You'd really need to know your own state regulations because you're, most likely, since this is not a legal registered product in the United States, if you're making your own thing, you're technically going against the law. You would probably need to get some kind of a permit from your state. Now, this is where it would be really not good of me to just start to recommend anything for anybody because you would really need to do the research and talk to your apiary inspectors or regulators in your state or your local jurisdiction, wherever you are in the world and find out what you can and can't do. In some states, you can get an experimental use permit to test this and to try this. In some cases, in some states you would not be able to do that. So that's basically what extended release oxalic acid is and does. But, you'll have to do some more digging in your own location to see if it's something that you can actually do in your own colonies.

Jamie 47:51
I'm curious, I'm wondering if other folks around the world have some sort of equivalent extended release oxalic acid use that they can do, but it sounds like at least here in the US, that it's not currently possible, and we don't know for sure when it will be. Is that essentially the take-home message?

Dr. Cameron Jack 48:08
That's a really accurate statement. We're not entirely sure when. I do know that there are some states that have initially passed some, I guess, legalization, I'll say, of doing some experimental use of this and have also kind of removed that after a short period of time of having some other EPA, the Environmental Protection Agency, coming down and being like, actually, you shouldn't be doing this yet without these proper steps. So, I think even in the United States, it's very much in a state of flux right now. Probably over the next few months, we'll get some clarity as to what you can and can't do.

Amy 48:54

So speaking of flux, I'm going to transition to the next question. And everyone's gonna laugh after they hear the second question. The question is about a new product called Amiflex. I don't know if you've all --

Dr. Cameron Jack 49:09
Amiflex?

Amy 49:09
That's right. I almost feel like, Jamie, I feel like I need to be like, Ami, and you have to like --

Jamie 49:14
Flex.

Amy 49:15
Yeah, exactly.

Jamie 49:16
Sorry. My bad. That was my best tough man impersonation.

Amy 49:22
Flex. Cameron, the second question is from a local beekeeper who's curious about the current availability and efficacy of Amiflex treatment. So I guess that's a new treatment that's just recently come out. We're not endorsing it, but we are interested to know about new products that come out for beekeepers. So do you have any information that you can share with us on what you know about the treatment?

Dr. Cameron Jack 49:48
Yeah, sure. Let me tell you a little bit. I was a few weeks ago, I was in a meeting with a few different honey bee researchers from around the country and there was somebody from Vyto pharma, that's the company that produces Amiflex's new treatment. And she was able to tell us a bit more about the treatment, how it worked, how it will be used, etc. So I have a little bit of a background with this. So having not tried it myself or verified any of these findings, let me just tell you kind of what I was told. So the basic concept of Amiflex is kind of like what we were talking about just a moment ago when I was talking about oxalic acid having an extended release where oxalic acid is like a flash treatment. I's something that acts quickly and then does not hang around. And then extended release is trying to make it hang around longer. So now, let's move to like amitraz. So, typically, at least in the United States, right, if you're going to apply the compound amitraz, you're going to get a product, also, from Vyto pharma, that's Apivar. These are the strips that will hang around for 42 days, so about six weeks, where they're hanging and staying inside the colony. So what they're trying to do with this product is it's using the same active ingredient of amitraz, but it's meant to be that flash treatment. And the reason that this could be useful is that there are periods of time, maybe, if you're a beekeeper, and you're going to go into a major nectar flow in two weeks, but your mite counts are high, and you want to do

something to help your bees to bring those mite counts down, and you really can't stick in a strip and put it in and have it for 42 days or else you'll totally mess up your opportunity to make and produce honey during that time because you'll have chemical strips in there. So, this is intended to be that kind of in-between that quick flash treatment that you can use to drop mites in a hurry, and then put your honey supers on soon after and make your honey. So that's kind of what the goal is. And the way it's applied, you would purchase the chemical that is going to be mixed, it almost looks like a caulk gun. If you're squeezing caulk down and you would form a line, like on a tongue depressor, and the idea is that the bees would go, they would clean it up and spread it all over their bodies, spread it all over each other and quickly, kind of flash treatment, again, kind of hit all the mites in a short amount of time. So that's kind of how it's applied, what it's for. So how it can be used, at least currently, is actually incredibly limited. In fact, it's not something that everybody can just go out and buy. The way that the permitting works for this treatment is that you will actually have to be a registered pest control operator. So you'll have to have some kind of what we call a PCO license, a pest control operator license, which means you'll have taken tests and had some training about how to safely use and manage pesticide use. So in order to even buy the chemical or buy the treatment, you have to have that PCO license. So a lot of commercial beekeepers do have somebody on their team or on their staff that has this license. But probably for the vast majority of backyard or hobbyist beekeepers, I mean, they're not going to be able to touch this stuff because they don't have that licensing. So at least a little bit of what they shared with us, in terms of the treatment efficacy, is that they do see a little bit of a drop. Sometimes, that could be helpful at certain times. It really wasn't like a massive reduction in your mite population because, really, the way that the product is designed is, since it's meant to be a flash treatment, it's actually a low dose that doesn't stick around for too long. So it kind of hits the mites that are currently on the bodies of the adults but is only going to last for a couple days. The researchers who were developing this product didn't necessarily see massive reductions in Varroa counts but it might be enough to hold you through that period of when you don't want to be treating, which is maybe during like a nectar flow or something. So, I see that, potentially, this kind of product has a place in the market and can be useful for beekeepers. Personally, I mean, I'm I'm a little nervous about having another amitraz-based product where beekeepers are noticing resistance throughout the world to amitraz already and, potentially, this could work to exacerbate the problem if a lot of commercial beekeepers are running out and doing this frequently. We're just basically adding more amitraz into our repertoire, which, I don't know, in my mind, it could exacerbate some of the resistance issues. But nevertheless, as beekeepers, we're all kind of desperate for good Varroa control. And this is a product that is, hopefully, going to fill at least a little niche for a few beekeepers.

Jamie 55:40
So Cameron, the next question comes from someone who asks, what is the airspeed velocity of an unladen swallow?

Dr. Cameron Jack 55:49
Was that person from Monty Python?

Jamie 55:51

Yes, yes, they were from Monty Python and the Holy Grail. I looked this up online, it's actually 32.4 kilometers. So nine meters per second, so for the Americans out there --

Dr. Cameron Jack 56:02
He wouldn't have gotten thrown off the bridge if that question has been posed to me.

Jamie 56:05
I thought you were going to ask me well, what do you mean? Is it an African or European swallow?

Dr. Cameron Jack 56:10
I'm a little rusty on my Monty Python.

Jamie 56:13
In all seriousness, we did get a question related to potential impacts of oxalic acid on queens. There's always the concern about the products that we use to control Varroa and how they might impact bees. But this questioner says, are there known impacts of oxalic acid on queens?

Dr. Cameron Jack 56:30
That's a really great question. It's something that I do get asked fairly frequently. I will tell you kind of right off the bat, I have heard everything, right? I've heard some people tell me, "I used oxalic acid and killed all my queens and I'm never gonna do it again." I've heard the exact opposite of people saying, "I've never had any issues." So let me tell you, at least from my perspective, and then I'll work in what I know about the literature, the scientific literature out there. So, from my perspective, where a lot of, maybe our listeners know that we've done quite a bit of oxalic acid work where we've done trickling, we've done vaporization, and even recently, I'm hoping that later this year, we'll have a publication that will show you some of the extended release work that we've done as well. So we've kind of applied oxalic acid in different ways. I have never had any issues with my queen or queen health after treatment. At least not during the periods of time where we are, experimentally, really looking and monitoring colonies closely. I mean, there's never been any discernible issues with our queens and queen health. But let me tell you, at least what I've kind of found in the literature when people have asked me this question before, I've kind of gone back to some of the work, there was a really great review article about the effects of like oxalic acid for control of Varroa. And this was done, gosh, oh, I mean, I hate to even say this is, almost two decades ago. It makes me feel old because I've been reading and citing this paper for so long from Eva Radmacher back in 2006. They basically took all this European data of oxalic acid use because, at least, in terms of Varroa control and oxalic use, I mean, most of that work had been done in Europe in the 80s and 90s. They kind of went through hundreds, dozens, I guess, of oxalic acid papers and looked at the different methods of applying it, trickle or vaporization, or in Europe, I mean, in some locations, they can spray it onto frames. They looked at how oxalic acid impacted queens, specifically. At least for vaporization, there was no reported cases of queen loss. Trickling, there was one paper where they experienced about 20% loss in their queens. But then, there were several other papers that cited no issues with queens. With spraying, similarly, kind of like the tricklers, they had maybe a little bit of loss with queens or queen issues, and then most

everybody else said no. So to answer that question, Jamie, I guess from what the literature says, and from my own personal experience, oxalic acid, I assume when applied correctly, does not particularly harm queens or have any issues with queen health. Certainly, I could be wrong in the future if somebody or if anybody misapplied it or directly applied it to the queens or something like that. Then certainly, there could be some issues but when applied correctly, it seems like the overwhelming majority of the time your queens are going to be okay.

Jamie 57:02
So Cameron, I appreciate you coming on and answering these questions for us today. We get so many questions from listeners all around the world and I would argue, a high percentage of them concern Varroa. So you were able to come on and talk to us a little bit about new Varroa compounds that might be coming out or new ways to use existing Varroa compounds. I really appreciate your time. Maybe Amy, you someday can step into the jump seat because Cameron, you did a great job. You made me look like a chump because you just answered those questions so fluidly.

Dr. Cameron Jack 1:00:35
Thanks for letting me be chumpified today.

Amy 1:00:38
I'm a chump every day, just not on air.

Jamie 1:00:41
Chumpification, that's what we try to do here. So thank you guys for joining us on this segment.

Serra Sowers 1:00:47
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.