

Fall Beekeeping

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SPEAKERS

Christa Hartsook, Randall Cass

C Christa Hartsook 00:15

Hello, and welcome to the small farms podcast, a production of the small farms program at Iowa State University Extension and Outreach. Our podcast covers the opportunities and challenges associated with rural life. In this episode, I visit with Randall Cass, bee extension specialist with Iowa State University Extension and Outreach on harvesting honey and other fall chores for your apiary. I'm Christa Hartsook, small farms program coordinator and we hope you enjoy the show. Randall. Welcome. It's great to have you back.

R Randall Cass 00:47

Hey, I'm glad to be here.

C Christa Hartsook 00:49

Awesome. So for those people who might be a little bit unfamiliar with hives or beekeeping in general, the bees have had a very busy summer. Do you want to talk to us a little bit about what's been going on? Sure, this spring and summer, the bees have been very busy, and there's been a lot for them to do. I'm talking with my colleagues at University of Nebraska and they're experiencing the same thing which is a large nectar flow. So their hives are producing a whole lot of honey. Our hives here at Iowa State are producing a whole lot of honey. So it's been a good year. It's been a big boom year for honey production. That's awesome. So this is kind of the typical time Randall to start harvesting honey, is that correct? I know that we definitely can harvest. Now. This is my first year harvesting honey in Iowa. Prior to this, we weren't harvesting our honey because all of our hives were specifically for research. This year with some support from the Dean of the College of Agriculture and Life Sciences. We are producing honey from some of our hives. So pretty exciting. And from what I understand that it's a little early this year, it's an early year for honey harvest, but a lot of people are already doing it. Yep, they've been. They've got their honey supers on there, honey supers are full. And they're able to do it. I think typically, end of August 1 week, first couple weeks of September, right before the goldenrod starts coming out and changing the flavor of the honey. A lot of

people like to get their honey supers off before the goldenrod is out. That makes total sense. So we're taking those supers off, Randall, what is that kind of process? What does that look like? Or how much are we leaving for the bees? Yeah, I think most beekeepers take all their honey supers off. Now honey supers are the smaller boxes that sit on top of the larger boxes, which we call deeps and sometimes function is the brood box. So that let's say you have two deeps two larger boxes at the base of your hive. And then one two or three honey supers which are slightly smaller boxes, which means that they have shorter frames. And then, and that's nice because if anyone's ever tried to lift a full size deep pool of friends that are full of honey, it's backbreaking work. So the honey supers make work a little bit lighter for us. So when people are taking out frames of honey, there's a few ways to do it. Depending on how much time you have, I prefer just to go through frame by frame and pull out the frames that are completely covered with kept honey. When the bees bring back nectar to the hive, they put it in the cells and then they use their wings to get rid of some of the humidity to bring that nectar humidity down get rid of the water. And once that honey is at the right level, they cap it open. So you only want to select frames that with honey that's been capped. So I'll go through remove frames that have full cap honey on them. And then I'll shake those bees off the frame and put them in another super or box to take to our harvesting equipment. There are some people that like to get some chemicals that sort of forced the bees down into the hive has a smell that they that they don't like and that won't affect the taste or the flavor of the honey. But that's not something I've ever needed to use, at least not on the honey production scale that I have. So I mostly just pull a frame shake the bees off, set the frame aside in a covered place otherwise the bees will be right on it. Exactly, they'll follow you right back. And then your other question was how much do we leave for the bees? Yeah, most commercial beekeepers are pulling all of their honey supers and I intend to pull all the honey supers as well. And then within the brood box usually bees have a good amount of storage of pollen and honey and if we do a hive inspection and we see that some of them are looking on the slim side, we will we plan to supplementary feed in the fall with some some sugar syrup and maybe some pollen patties so that they are well stocked going into the winter. You bet Absolutely. So Randall we've taken our supers off. We're ready now for that kind of extraction process. Can you walk us through what that looks like? Sure, because we just had a test run at extraction a couple of weeks ago, currently where our ISU honey apiary is located, is it a research farm called the horticulture Research Station. And they produce a lot of veggies and other produce there that they sell. And so they have a full certified food handling area. So since we want to be able to sell our honey, we need to make sure that we cover all those bases. So it's a pretty good setup, when we brought the honey into harvest for the first time off the frames, we brought the frames in. And then we have a hand crank extractor, which is pretty small, you can just fit a three frames in it at a time. And so the first thing you want to do before putting the frames in the extractor is to uncap the honey frames. So as I mentioned before, when honey is ready, it'll be kept over by the bees. But then you have to remove those cappings. So we have a couple of tools that we can use to remove the the frame cappings. Before we put the frames into the honey extractor, we've got a serrated knife that we can use that you can just kind of basically like you're you're cutting the turkey on Thanksgiving, cut those caps all those cappings right off. And then we also have what's called a scraper. But contrary to the name, it's best used not to scrape or scratch along the comb, but rather get right under the comb and kind of lift. So you can go frame by frame and using the scraper, lift up just that thin layer of capping on it. Because you don't want to accidentally remove a lot of your honey and lose a lot of your harvest, you want to focus on just trying to get those cavities. With the scraper. It's a good tool to do that with a little more finesse, but it can be a little bit time consuming. Absolutely. So then you're putting those frames into your harvester Randall. And then I'm assuming you're just kind of turned in that. Yeah, so the extractor is a big centrifuge, basically. And they make some smaller ones. Some hand crank ones, for people that are backyard beekeepers, they can be kind of on the

expensive side. So if you have a friend or a neighbor, that's also a beekeeper, maybe you can borrow theirs or talk to another larger beekeeper about using theirs. But the extractor is essentially sort of a large metal cylinder that then has places inside to hang the frames. And once you place those inside, you cover it up and using the hand crank or if it's a electric one, you can plug it in, and just spin those frames out. And that central force forces all the honey out. And so then that honey falls to the bottom. And at the bottom, there's a little spout or spigot, we call it a honey gate. And you can open that up and just the honey will blow from the honey gate into a bucket. So you usually will place a five gallon bucket under there. And we put a sieve on top of it or a filter to filter the honey out because Yeah, honey isn't the only thing on your friends you might have. Well, propolis, which is another product that was produced, you'll have chunks of wax, you might even have, you know, parts of bees in there. So you want definitely want to filter all that out for storing it. Sure. So once it is filtered, you can kind of go through that bottling process. And Randall is there anything else that needs to be done to the honey? No, honey is a unique product. It has basically limitless shelf life. And it has natural antimicrobial properties to it. So a lot of food safety regulations for honey are special and different from the handling of other types of food, you definitely want to store it in a container that is food grade, and you want to store it in a container that has a good seal on it. But for the most part that honey should maintain itself. One more step that you want to take even after using a filter, there still can be some little bits of sediment in there. So once all the honey settles after a few days, you can go back and scrape off any sediment that has settled at the top of the bucket just to make sure that you're only getting that clear and nice looking. Sure, that makes sense. Randy, you've talked a little bit about the Iowa State University apiary and what you've been doing out there. Can you talk to us a little bit more in depth about what that apiary looks like? How many hives you know, are you managing all those good things?

R

Randall Cass 09:35

Sure. Yeah. I'm excited to talk about it. The apiary is relatively new. We put it in place in March of this year. And so putting it together, we received a little bit of funding from the dean's office. Luckily we had plenty of research hives that over winter so instead of buying brand new packages or nukes of bees, we were able to take second year hives and hives colonies in their second year tend to produce more honey anyway, so that was a pretty great opportunity to take advantage of. So what we ended up doing was buying new hive equipment, and then shaking overwintered hives from last year into the new equipment. We took 20 colonies in total. So we ordered new equipment, we painted the equipment, our deeps are all white. Our lids and bottom boards are all ISU red and our honey supers are all ISU gold. So it's a very appropriate Yeah, got a lot of ISU pride in the aviary. And yeah, we tried to buy most of our materials local. So for example, I bought frames and honey supers from PNP honey supply which is in goodal, Iowa. And we tried to kind of source all of our stuff pretty locally, support Iowa and Iowa's beekeepers. And our goal overall is to not only have this be a honey production apiary but also use it as a learning apiary. So we're hoping to engage more students out there. We're hoping to eventually take students in classes out there. But also beekeepers, we want to use the site as an extension demonstration site for beekeepers to come and visit and we could do different hive demonstrations. What else do we want to do with it, we want to incorporate people from the School of Design, or from pre medical and bioillustration to create informational materials about bees, and bring those students out there that are creating the materials to get to know the bees and see the highs. So overall, we want to use it as a point of engagement with students and with the greater community.

C

Christa Hartsook 11:46

That's awesome. It'd be a great learning opportunity for all varieties of students to from food science to to the design and everything in between. Yeah, absolutely. And what's great is we will everywhere pretty enthusiastic about bees, which makes my job really easy because anytime I show up to talk, people are excited to ask me questions and learn more about it. The one thing that we do have to warn people about is that these bees do stings. So we do have to take the right precautions to make sure people aren't getting stung a lot or find out what are the reactions? Sure, absolutely. So Randall, we've kind of gone through our honey harvest and what we need to do there, you know, if we kind of turn our attention back to the hive, then you know some people I know will treat for different mites and other potential pests during the fall before they kind of seal that hive up for winter.

R

Randall Cass 12:38

Right. So that is the big question is whether or not to treat your hives and after honey harvest is a great time. A lot of beekeepers will treat in the early spring to make sure that their hives enter the honey production season with really low mite levels. And then you basically have to wait even if your hives do get mites, a lot of the treatment options that are out there for trading for mites you can't complete while you have your honey supers on your hive. So once you get your honey supers off, I know we for example, did mite checks in all 20 of our hives about two weeks ago, and we've got a couple there that are pretty high, high mite loads. And so as soon as we get the honey supers off, which I think we're going to be doing next week, we plan to treat there's a few different ways to check for mites. And we have some how to videos that we put online with the assistance of the ISU IPM center. So I highly recommend people check those out.

C

Christa Hartsook 13:34

Great

R

Randall Cass 13:35

One method is the sugar shake method, which involves collecting bees in a jar and putting powdered sugar on them. It'll agitate them and they'll push any mites that they have on their body, they'll force them off. And then you can shake them over a wet paper towel or something like that. And you'll shake it in powdered sugar and mites will fall out and you can get a pretty decent mite cap that way. Another Mite check method is a ether roll where you get engine starter fluid and you take some beads and put them in a jar can spray into the jar a couple times. Shake them up really well and then the greasiness of the fluid was caused the mites to stick to the side of the jar and you can get a pretty good mite count that way. And then there's also the alcohol wash which is something that we do whenever we're doing research. In our research trials we use the alcohol wash because it gives us probably the best mite check numbers and that involves getting ethyl alcohol and a mesh fabric and then you dump the bees into a cup and the mesh fabric sort of acts as a catchment and filter so it catches the bees and the mites will fall to the bottom of the cup. And that can give you a very accurate

mite count. I know a lot of beekeepers are hesitant to do the last two recommended mite check techniques because you end up killing some of the bees. If you use a half cup of bees that's about 300 bees. So for us it's worth it, we choose that rather than losing the entire.

C

Christa Hartsook 15:00

Exactly.

R

Randall Cass 15:02

And then once you know that your mite levels are pretty high, I mean, I would recommend treating. You know, if you have more than a handful of mites, I recommend treating some of our hives only had three, some of them had over 20. And one thing that we want to do is what we do to one hive we want to do to the rest if you only treat your highest mite level hives, that doesn't protect them from getting infested by the neighboring hives. So there's a lot of different options out there. In terms of treatment, there are a few different levels of treatment as well, you have sort of the natural chemical treatments, something like hop guard, or something like apaguard, which is a timeline based treatment. And then you have synthetic chemical treatments such as APA var, which isn't the active ingredient is amitraz. Okay, each different treatment type you want to take into consideration time of year, different treatments have different temperature recommendations as well. I think that after we take our honey supers off, we plan on using apaguard, which is the time all based treatment, you can use it up to at least I'm not sure how low it goes. But I know I can use it up to when the temperatures get around 85 degrees during the day. That I think that's the maximum temperature. So it's not something you want to use during peak summer when we've got 90 degree days. But it's something that I think we're able to use right now that our days are mostly in the 70s and low 80s.

C

Christa Hartsook 16:25

Yeah. So Randall my kind of follow up question to that is going to be let's say you are doing a little bit of a mite test. And you picked one of those methods to try and determine a mic load in the high. Is there a certain percentage or I know you mentioned you know, if you're looking at 20 mites, that's a lot that's a significant amount. Where's that kind of borderline? You know, if you're only seeing a few versus how many you need to see to know you need to treat?

R

Randall Cass 16:53

That is a tough question. I formed a group called IPM for bees integrated pest management for bees. It's a Midwest working group. And so we brought together researchers and scientists and extension people that do this type of research on bees related, integrated pest management. And it was a topic that came up was how do we define what the threshold for treatment is with mites? Because most of us feel, even if you see one mite, you're going to want to treat we really see treatment as something that's sort of inevitable. So it's tough to establish a threshold in the past I think threshold was 20 mites, maybe 10 years ago. And then as many as five years ago, I think the threshold was seven. I think I've heard the state apiary. Andy Joseph say three, but I mean, if you if you have one, you've got three

C

Christa Hartsook 17:43

Yeah, exactly.

R

Randall Cass 17:44

You're gonna, if you don't treat now you're going to end up treating later. And so the best thing to do is just plan on treating for me checking mite levels just gives me a better idea of how intense the mites are that year or gives me a better idea of maybe if one hive is expressing different issues, you know, maybe the Queen isn't producing very well. Or maybe I'm seeing strange brood patterns. Doing a mic check might tell me a little bit more about that hive story and give me a better idea. Oh, you know, maybe this hive is kind of sickly because they do have really high mite levels. So it's sort of a tough question to answer on how many mites is too many. I like to see it as more of another tool is to looking at your overall hive health and inform yourself on what's happening in your hives. But still planning on on treating regardless.

C

Christa Hartsook 18:36

Yep, that makes sense. So Randall we've got our hive treated now we've harvested we've treated. We are good to go. We do need to kind of be thinking in terms of the fall that winter comes next in Iowa. And I hear a lot of different recommendations it seems on winterizing hives in Iowa, what would you recommend for our beekeepers?

R

Randall Cass 19:00

I'm not sure that I'm the best person to give personal recommendations on overwintering. I had never overwintered a hive before moving to Iowa. And on top of that, most of our research hives, we didn't winterize because we wanted to monitor the survivability of each hive after those two different treatments. That said, talking to beekeepers around Iowa and seeing a few talks about overwintering. I can say what a lot of people do, a lot of people choose to wrap their hives so they can get black roofing material, a lot of them use of black roofing material. Some beekeepers even order specially made boxes that are out of that corrugated plastic material that you use to that you see like on campaign signs that people put their front yards. They'll get those made in the color black, and then those kind of fit like a sleeve over the top of their hive. Okay, and so the idea is that rapid hive will protect all the cracks in the hive from wind and that cold air, but then also the black color will attract sunlight and give the hive a little bit of warmth during the day. So that's one thing that they do to fight the cold. Another thing that folks do to fight the cold is they will put a quilt box on top, which is just a really thin, I've heard of also called rings or chives that they put on the top of the hive. And then in that queen box that sometimes they'll put material like wood chips, something that will absorb moisture. I've also seen people put a thick piece of foam insulation in there on top as well to help protect them and keep them warm. And then in terms of other things you want to worry about at winter, a lot of people want to protect the entrance Because mice will want to move in there in the wintertime as well. So you can use an entrance reducer and flip it up. So you really have just a very small opening that's left for bees to come and go and do their cleansing flights. You can also screw on metal entrance reducers that have just cut holes, kind of like Swiss cheese

cut in them and attach those to the entrance of the hive. So a lot of people think that they want to protect the hive from that cold air going through. But you do need some airflow in the hive. Otherwise, it just kind of gets sort of an igloo cooler effect and that the moisture that the bees create that humidity will rise and then freeze on the hive cover. And then that just becomes ice that then can melt down during the day get the beeswax. So you definitely need some airflow to get that wet air out of there. And so drilling holes in the backs of your deeps to allow air to flow through the entrance and then out the back air hole is something else you want to consider doing too.

C Christa Hartsook 21:48

Okay. Randall. Is there anything else we should talk about today as we're going into kind of our fall and then eventually winter season? Yeah. So when we talk about overwintering, you as a beekeeper need to start thinking about overwintering in September. So although we will, we won't be wrapping our hives or putting insulation on there until maybe November, we need to be thinking about how much food and resources the bees have. If there's one thing that our research so far has showed us in Iowa, it's that since we have such a agricultural landscape, there's not a lot for Iowa bees to forage on in September and October. And so a lot oftentimes, hives will eat up all the honey and all the pollen that they have stored throughout the year. They'll get that all eaten in early fall, and then going into winter, there's almost nothing left for them to feed on. So this is the time of year after you've harvested your honey after you've treated for mites. You need to think about supplementary feeding. Notice that for your hive size, they could use a lot more sugar syrup or pollen patties. Now's the time to feed. And you'll be glad you did when when November and December rolls around because your hives will be a lot stronger going in our cold harsh winters. Yeah, that's a great point. good reminder for folks. Anything else Randall

R Randall Cass 23:13

I guess just keep an eye out for Iowa State University branded honey. Hopefully we will be able to sell it on one of the ISU online stores maybe maybe in the bookstore.

C Christa Hartsook 23:13

That'd be awesome.

R Randall Cass 23:17

Yeah. Hopefully we'll be getting that out this fall.

C Christa Hartsook 23:24

Well, very exciting. Thanks so much for being on today. We appreciate it.



Randall Cass 23:30

Yeah, I'm happy to be here.



23:32

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