

Beginning With Beekeeping

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SPEAKERS

Christa Hartsook, Randall Cass

- C** Christa Hartsook 00:15
Hello, and welcome to the Small Farms Podcast, a prediction 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 interview Randall Cass, Iowa State University Extension and Outreach Entomologist, and we're talking about beginning beekeeping. I'm Christa Hartsook, Small Farms Program Coordinator, and we hope you enjoy the show. Randall, welcome to the show. Thanks for being on.
- R** Randall Cass 00:44
Hi. Happy to be here.
- C** Christa Hartsook 00:45
Great. So getting started with bees is a huge topic. How do we even know where to start?
- R** Randall Cass 00:48
Well, that's a good question. Well, if people are thinking about having bees now would be the time to definitely take action. January and February in Iowa are the times that people need to think about purchasing materials, enrolling in classes, maybe starting to take part in different regional beekeeping clubs in order to meet other beekeepers and maybe find a mentor someone to assist you along the way.
- C** Christa Hartsook 01:17
Okay.

R

Randall Cass 01:18

Something I can't stress enough is thinking about how big of a commitment you're willing to make. When I talk to people that are interested in beekeeping. I really like to stress the fact that it's not a simple thing to do, it takes a lot of work. There's a pretty steep learning curve. A lot of mistakes get made and actually, new beekeepers can be one of the biggest problems for bees. You know, if you really want to save the bees, sometimes just becoming a beekeeper and only doing a so so job of it could probably be worse than actually taking the time and putting in the work to make sure that your hive is healthy and successful.

C

Christa Hartsook 01:54

Absolutely.

R

Randall Cass 01:54

That said, if you're willing to put in the time and work and learn and fight up that steep learning curve, as I mentioned, now's the time to be thinking about classes, thinking about purchasing materials, maybe even guides or books, and talking to other people in bee clubs in your region to get to know the practices that they utilize and the things that they do.

C

Christa Hartsook 02:12

Absolutely! Randall, what kinds of things do we need to take into consideration if we're looking and evaluating our own acreage or small farm? Are there ways that we can make a spot better?

R

Randall Cass 02:24

Placement of the hive, it can be complicated. You want to consider a few different things. One is that bees don't thrive very well in the shade, so bees will come out when the sun is out, but if they're hidden in the shade it may not be as easy for them to get out of their hive, and that cool temperature could be bad in the wintertime when the hive is struggling enough to stay warm as it is. Another thing to consider is the availability of forage nearby. So bees need a good amount of flowering plants or flowering crops throughout the year. And so they can travel from their hive a couple of miles. And so you want to make sure that there's at least something blooming spring, summer, and fall within a radius of a few miles from the location of your hives.

C

Christa Hartsook 03:11

So if we are talking about the hive itself then ,Randall, I know there are different types. Is there a certain type or kind of high that is easier for beginning beekeepers to get started with?



R

Randall Cass 03:22

I only have experience mostly working with Langstroth Hive, which is the traditional hive that you think of. They're usually painted white, it's a square box, and they've got the frames inside of them, rectangular but not really long. Other hive examples that exists would be the Top Bar Hives. Instead of box being stacked on top of box, it's a long hive with really long frames. Those I don't have that much experience working with but I know that there are different pros and cons to using them. And then another hive that I get a lot of questions about is the Flow Hive. I don't know, have you seen these two videos where they make it look like you just turn a knob on the side of your hive and honey just flows out! And for the most part, from what I understand, using those types there's a few drawbacks. It's flashy and it looks cool if you want to show off having a backyard barbecue but the the maintenance can be difficult. I think that since, especially because you can't get into the honey frames very easily, that the bees are more likely to swarm. You can't really get into the hive as easily to inspect the hive. And from what I understand that when you have a Flow Hive half the battle is just trying to get your bees not to swarm is what I've heard. I haven't worked with them personally but I was skeptical from the beginning it was seeing the YouTube video.

C

Christa Hartsook 04:46

It doesn't seem quite like it would work quite like they show on those videos.

R

Randall Cass 04:50

And they're expensive. I think they're about \$1,000 a piece.

C

Christa Hartsook 04:54

Sure. So if we if we know we need the hive itself, and we need to order our bees what other kinds of equipment do we need to really get started in this type of an operation?

R

Randall Cass 05:04

Sure. So, I guess the best way to do this would be to kind of picture what you think of when you think of a beekeeper. So they're out in the field. They have their hive, right? So the bees live in a hive and it's made of, of different boxes that we call deeps, yep, or supers if they have honey on them. So you'll need the deeps and the Supers that you keep the honey frames in, and that's what makes up the whole hive itself. So you've got the boxes, you have the frames of comb inside the boxes. There are different types of frames that you can get, you can get frames that already have stamped wax in them for the bees to draw the comb out on. You have plastic ones that are stamped as well for the bees to draw comb out of. Some are just the wooden frames with wires across them and bees hang their own comb off of the frames. So there's a few different things to choose from there. So going back to the picture of a beekeeper out at their hive, what does the beekeeper look like? Alright, so he's usually got a veil on, he or she usually has a veil on. Some people like to wear beekeeping suits, the traditional white suits. I think it's okay to just wear a veil. If you're not... generally if you put long sleeves on and you have long pants on, in my experience, it's been okay. You get stung a little bit, but that's

part of the territory. In addition to the veil, you always want to go out with a smoker, which is the canister that you can smoke the bees with. The bees are averse to the smoke. So it's something that helps you open a hive, lets you kind of move some of the frames around, get a good look at how the hive is doing whenever you're inspecting the hive without having to worry about really upsetting the bees.

C Christa Hartsook 06:51
Sure.

R Randall Cass 06:52
I mean yeah, there's all sorts of things. You need a hive tool which will help you get into that hive and break apart the propolis that the bees produce and the wax in order to get frames out. You're going to want to be thinking about honey harvesting in the future. How you want or what containers you're going to need for that. Yeah, there's there's a few different things to think about. But probably the main things would be the the hive itself, the the deeps, and the frames, the beekeeping suit, smoker, and the hive tool.

C Christa Hartsook 07:21
Okay, Randall, usually when people are ordering bees, they're ordering those bees in packages. What is kind of the optimal size package for a hive? And then is it best to just start with one hive if you are beginning or do bees do better if there are multiple hives? How does that work?

R Randall Cass 07:39
Yeah, so I would say general rule of thumb, a package of bees is what you order from a bee supply company. And inside the package is a few 1000 Bees and a queen. So there's no frames, there's no comb, the Queen's not laying any eggs or anything at that point. And so general rule of thumb would be one package per hive. And then in addition to packages, you can also purchase three or five frame nucleuses, we just call them nucs, and a nuc is actually a box that comes with three or five frames of drawn out comb. Usually that comb will have a little bit of food for the bees, but also the queen will be actively laying in the cells in that column. And those can have up to 10,000 bees in them. And but they're a little bit more expensive. A package of bees, which is just the queen and the bees is, I think in Iowa, between \$75-100 whereas the nucleus would be somewhere between \$120 I believe, and so, it kind of depends on the type of thing you want. Our experience here at Iowa State University, ordering packages versus nucs, the nucs grow much faster in the springtime than the packages do. There's just more bees there, more bees ready to work. So the increase in size of the hive, the increase in hive weight is a lot more rapid than with packages. Overall, we did an unofficial meta analysis of looking back at all the data from our hives starting in the early season to the late season. And we were able to see the hives that that really put on the most weight in the season were the ones that came from nucs.

C

Christa Hartsook 09:20

Okay, that's good to know, good information. Are there certain places you know, you talked about bee suppliers. Are there certain places we should go to order these packages?

R

Randall Cass 09:31

Yeah, there's a lot of places you can go. You can order from.. you can get these shipped to you, packages shipped to you in the mail. I think that nucs generally don't come in the mail but packages do. And for packages, there are a lot of different places you can order from whether that's direct from California or from the different beekeeping suppliers here in Iowa. So in Iowa, some of the suppliers who could also probably provide you with nucs as well, if that's what you're interested in. Some names would be Spring Valley Farms, P&P Honey and Bee Supply, and then Foley's. Those are three different companies here out of Iowa that are pretty renowned, well known, a huge part of the local beekeeping community. And they're a huge part of the beekeeping community, and respond to feedback, and are very attentive to everybody's different needs.

C

Christa Hartsook 10:22

That's great. Great to hear. So in the spring, we may.. maybe we need to feed our bees. At first, you know, you mentioned some of the forage availability. We might be installing these bees before there's really forage readily available for them. What do we need to feed our bees and how does that look like?

R

Randall Cass 10:40

Yeah, well, there's a few different ways. Again, there's a lot of different things that you can do. Some people will purchase sugar syrup. It's usually corn syrup or a simple syrup made of sugar and water. And they can provide that for their bees in a couple of different ways. There are different mechanisms for using large jars of syrup that you place in a feeder that's inserted into the hive. There are also feeders that you can place inside the hive that are about the same size as a single frame. So you would remove a comb frame, place that theater inside and then fill it up with syrup. Probably the most common way, syrup is, the sugar is readily available for the bees. So it's a really good option. Now when it's colder out, it may not be the best option. There are also fondant, sugar fondant that you can place, which is sort of a hard candy sugar that you can place to feed babies as well. Then there's also things to consider whether it's the springtime or the winter. Going into winter there's there's winter patties. During the summer there's pollen patties. The sugar, of course, is one source for the bees, but they also need pollen to supplement that. My colleague Harmon Hendrickson jokes that it's like rice and beans combination. Yeah, the sugar and the pollen, you get your your starch and your protein. So that would be another thing to consider when feeding.

C

Christa Hartsook 12:05

Randall, before, you mentioned, really inspecting our highs during that first season and really at any time. What does that look like and then what other types of care will we need to provide

to our bees during that first year?

R

Randall Cass 12:17

Absolutely. So inspection is how we care for our hives. So it's sort of like, if you think of your hives as a family pet, doing an inspection would be like taking the dog for a walk. It's something that you have to do fairly regularly. In fact, with the rates of Varroa Mite and other diseases that we have in the region, we recommend every two weeks maybe visiting your hive just to do a health inspection. So when a beekeeper does an inspection, they open their hive and they look through a few of the frames to get a good idea of a few different health indicators. The first one would be taking a look at the the food that's available, making sure that the hive is collecting nectar, collecting pollen, and have enough to supply them, especially considering how large their population is at that time. So if you have a lot of bees and very little food, or if you have a lot of bees and very little room for them to grow, you could be looking at a swarming situation where the bees actually up and leave the hive, which is something that no beekeeper wants!

C

Christa Hartsook 13:18

No, not after you've done all this work!

R

Randall Cass 13:20

Yeah. So that would be one thing is to check on food, check on population, you can check on the Queen's activity, it's really important that you have a healthy queen in a way to make sure that a queen is healthy is to check and see if she's laying eggs. Especially in the spring and summertime when the populations are building up. A healthy Queen should be laying a good amount of eggs during that season. And you also want to look for eggs because you can't always find the queen during an inspection. But if you can find eggs, then you know the Queen was there in the past couple of days that she's actively laying and that your colony isn't queenless. A queenless colony would be a whole nother issue for beekeeper to deal with

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Christa Hartsook 13:57

A whole nother podcast!

R

Randall Cass 13:58

A whole nother podcast! Finally, it lets you know how much honey that your bees are putting on, which will be great for you to plan for when harvest season comes around, which is usually late summer, early fall. And it's a good opportunity when you're actively doing your inspections to see alright, am I gonna have honey to harvest this fall? Or do my bees really need it? Are they hurting for food? Was there just not enough floral resources available for them this summer?

C

Christa Hartsook 14:26

Sure. That was going to be my next question, Randall. So excellent segue there. Are we going to be able to harvest honey that very first year that we're keeping bees or how much do we need to leave for the bees themselves?

R

Randall Cass 14:38

Well, technically, a lot of people teach in order to maximize efficiency if your concern is producing honey, if that's your primary concern, a lot of beekeepers here in the Midwest, choose not to harvest honey until that hive is in its second year. That way you're maximizing the amount of production that you're having, you're maximizing that Queen's potential to populate the colony and have enough workers to really put on a whole lot of honey that you can harvest. Now if you're more interested in it from a hobby aspect, you can absolutely harvest in the first year assuming that there was enough forage available, that there is plenty of honey there that was put on by the bees, you can absolutely harvest the first year. Leave some for the bees but also so you can offer them supplemental feedings to to replace the honey that you've removed. Yeah, absolutely. It's definitely possible the first year.

C

Christa Hartsook 15:26

Okay. Randall, you mentioned the Varroa Mites. What do we need to look for or treat in terms of a Varroa Mite? And then are there other pests besides that, that we really need to worry about?

R

Randall Cass 15:37

Varroa Mite is a big problem. It's a parasite that lives on the bodies of the honeybees. And it sucks on their hemolymph, which is their blood, and their vitellogenin, which is their fat. So essentially, it's this parasitic vampire that's actually pretty ugly to look at. If you were to compare sizes it would be like humans walking around with a parasite the size of a small house cat on their back, just sucking out their fat and blood. So they contribute to the decline of a hive through the spread of disease, especially Varroa Mites can jump from bee to bee and they can spread viruses such as the deformed wing virus, which makes it so when new bees are emerging from the comb, their wings are deformed and they're unable to fly and they're really unable to be a contributing part of the hive, but also other viruses like Acute Israeli Paralysis Virus, and a few other ones there too. So Varroa Mite is probably one of the biggest, if not the biggest challenge, that beekeepers face today. And that's a major concern, especially whenever you speak in talking about how to deal with it. There's a couple of different camps. There's some people that believe that if as long as they keep track of their hives, and they maintain all the other healthy aspects in their hives, than that keeps them as being resilient and that they won't have to use any chemicals. So that would be the camp that's very focused on organic beekeeping, not wanting to add any chemicals to control the Varroa Mite or diseases in their hive. The other camp, which I tend to be more part of, really promotes the use of monitoring the Varroa Mite populations, which you can do through a few different ways. You can do an alcohol wash, you can do a sugar roll, which the alcohol wash kills a few bees in the

process, the sugar roll does not. There's a few other ways as well to monitor the population in your hive. Generally, for every half cup of bees that you would do to take a Varroa Mite sample, if there's even two or three mites in that sample, you probably would want to treat.

C

Christa Hartsook 17:38

Okay.

R

Randall Cass 17:38

And there's a few different options when it comes to treating hive. There's a few different Varroa Miticides that are on the market. So that can include you know, the more traditional chemical, there's Apiguard out there, but then there's also Hopguard that's made from hops, the main ingredient in beer. So it actually smells kind of like a really hoppy IPA when you use it! It makes hive smell like an IPA! And then there's also Oxalic Acid, which you can use it in vapor form, or in a drizzle. So there's a lot of different options out there. And we suggest that if you are monitoring your mites, you do find that you're you've met the mite threshold and you want to treat, that when you do treat multiple times throughout the year, that you try to rotate that as well. So it's not to build resistance in the mites. And then there's all sorts of other diseases you have to worry about as well. New beekeepers often have problems with wax moths, for example, which is a moth that will lay its eggs in the wax. And then as the larvae hatch, they chew on the wax, they leave this disgusting webbing. I actually just included on my Instagram, which is @IowaStateBees, a short video of pulling out a frame that has a sticky, cotton candy, wax moth webbing leftover, it's pretty disgusting. That's one thing to worry about. There's also small hive beetles, which was a big problem this past summer, especially in southern Iowa. I mean, if you have a really bad infestation, the hive just looks wet. It's just covered in slime. It's pretty disgusting as well. So there are a few other things to worry about. But especially for beginning beekeepers with hives that are starting out pretty strong, Varroa Mite would be the biggest concern.

C

Christa Hartsook 19:13

Okay, Randall, we talked a little bit about some of the challenges. What would you say, you know, this is not something to just jump into, obviously, but what are some of the challenges that the beginning beekeeper will commonly face in Iowa?

R

Randall Cass 19:26

I think that, as I mentioned before, the learning curve is pretty steep. So.. and that includes everything from, you know, doing your reading on how exactly to do a hive inspection, to taking the time to go out with experienced beekeepers and see how they do things, to just getting used to getting stung. I do know beekeepers that you know they always use gloves, and they always use suits, and they never get stung. My personal style, and every beekeeper style is different and they're all very opinionated about how to do things, but my personal style is to not use gloves. Because I feel more like I can get a better feel for the hive, I'm not squishing

bees on accident, I can feel them because I'm not being encumbered by gloves, I can feel the bees moving. Now that opens me up to getting stung more often. This past summer, I think I got stung 300 times?

C

Christa Hartsook 20:15

Oh my goodness!

R

Randall Cass 20:16

A little over 300 times. But that's because I was in the field multiple times a week, we had 40 eyes that we were inspecting, you know, I was inspecting over 20 hives every week. So that's my personal experience, but you get used to it. And even if you have allergic reactions at first and your fingers swell up, the more you get stung throughout that season, the swelling just completely goes away. It's more just kind of like pinching your finger a little bit on accident. And they say the venom is good for you good for arthritis, you know, maybe it has all these other good qualities to it. So in terms of challenges, get used to getting stung, doing your homework to make sure that you know what you're doing, I guess, and then also maybe the economic aspect of costs, because it's not exactly a cheap hobby. It's something that you can do on the cheap and I've worked with beekeepers in developing countries, I've worked in El Salvador and Guatemala with beekeepers. And we did everything from well, we don't have enough money to buy a bee brush to brush the bees off the comb, so we'll just kind of tie together some dried corn shocks or leaves and use that as a brush. You know, that you can always improvise, but yeah, the investment cost can be kind of high.

C

Christa Hartsook 21:20

Okay. Good to know. Randall, you are doing research here at Iowa State University. Talk to us a little bit about what your research entailed.

R

Randall Cass 21:29

Alright, so our research here at Iowa State University, it's funded by the USDA, and we're looking at different hive health indicators in different Iowa landscapes. So primarily we're looking at, okay, how are honeybees doing if we place them right in the middle of a soybean field, versus how our honeybees doing when we place them in the middle of a prairie? And if throughout the season, if we take those hives that are in soybean and we move half of them to Prairie, do we see the hive get a little bit of a boost? So the research started when we started taking Iowa landscape into consideration. How much forage is something like soybean and corn providing for honeybees? Especially when that's about 85% of the Iowa landscape is in corn or soybean. Is that good for honeybees? Is that bad for them? And what would be a better alternative? Proponents of honeybee health, try to remind beekeepers, and try to remind folks that a great way to save the bees is by creating more habitat for them. So for honeybees, that could include floral resources, plants and crops that bloom throughout the year, spring, summer and fall. So when we look at corn and soybeans, well corn, you don't have a flowering crop. And in soybean, you do have a flowering crop, but do honeybees use it as a resource?

And also, since it only flowers for that short window in the summertime, is that enough for the honeybee health. So in our research, we were able to take the hives that we left in the soybean field for the entire season and see that well, when the soybean crop was blooming, yeah the honeybees did use it as a nectar resource. They did put on a lot of hive mass, which is an indicator that they're collecting a lot of nectar, the hives getting heavier. But in that early August period, as soon as the soybean was done flowering, hives began to lose weight and lose weight dramatically. And that's because they were in an agricultural site. And within that agricultural system, there wasn't a lot of floral resources, once the soybean was done blooming. Now the hives that we started in soy also put on that weight, but then as soon as the soy was done blooming at that period, we moved half the hives to Prairie. And in the prairie sites, they were able to rebound a little bit or maintain that weight for a longer period because they there was more flowering crop resources available, more flowering plants, and that made the hive stronger going into winter because they had more food stores to help them survive the winter.


C Christa Hartsook 23:46
Sure.

R Randall Cass 23:46
So that's what our main research is looking at. We're also doing some small experiments looking at - Alright, so how does placing a hive in a soybean field affect the queen of the hive? If the hive is exposed to insecticides that are sprayed on the field, does that affect the queen? Does that affect the way she lays eggs? And we're finding that yeah, it can have a longer term effect on the queens, especially the queens that we had at a soybean site that was sprayed with insecticide and then moved to a prairie site. All the hives that were moved to Prairie, half of them were exposed to insecticide in a soybean field before they were removed and the other half wasn't. And for those that were exposed, the Queen's had a hard time recuperating and bouncing back and laying eggs as compared to the queens that were never exposed to insecticide that once they removed a prairie. They just increased their egg production significantly. Yeah, and there's all sorts of stuff we're looking at.


C Christa Hartsook 23:50
Interesting stuff. If we wanted to find out more information on that ,Randall, or anything else, are there good resources, websites, anything like that, that we should note?

R Randall Cass 24:45
Yeah. I don't know how much information we have about our current research up on the websites since nothing has been published yet. But there are a lot of good resources on the Pollinator Working Group Website with Iowa State University. I'm manage that website and I'm currently trying to make it a little bit better and get some more resources on there. And so, right now we're in January 2019, so hopefully a month from now, there'll be a lot more interesting handouts that people can download, looking at bees and cropping systems, or

conserving pollinators by planting plants in my backyard that will attract pollinators, a few other little handouts like that. I also worked with the Iowa Honey Producers Association to create a brochure that's youth focused that talks to youth about honeybees. I was surprised by how many people downloaded it this past year from the Iowa State University Extension Store online. And those are all free!

 Christa Hartsook 25:39

Great. Great to know. Randall, thanks for being on the show today. We appreciate it.

 Randall Cass 25:42

Yeah, thank you. I'm always happy to talk about bees!