Episode Title: Got Ticks? How and Why to Take Action

Topic: Prevalence of Tick-Borne Disease in the US and Prevention Measures

Episode Summary: Mandy Roome, PhD, is a researcher at the Northeast Center for Occupational Health and Safety. Her current project is on tick-borne diseases on Vermont farms. She shares about the tick-borne diseases common to each region and how farmers can protect themselves, since avoiding outdoor work is not likely for a farmer.

Expert: Mandy Roome, Researcher at the Northeast Center for Occupational Health and Safety

---

Episode Quote:

"The University of Rhode Island had done a study with Permethrin, and even if you just spray your shoes and your socks, you're 74 times less likely to be bitten by a tick."

– Mandy Roome, Northeast Center for Occupational Health and Safety

---

Transcript

00:10 E Presnall

Welcome to the FarmSafe Podcast brought to you by the Great Plains Center for Agricultural Health. In the blink of an eye, an injury can change your life and your farm forever. During each episode, we share first-hand stories and real-life tips for making safer and healthier decisions while on the farm.

00:32 E Presnall

The United States has seen a 10-fold increase in the number of tick-borne diseases since 2006, which is concerning for our agricultural communities since farm workers spend a lot of time outdoors, placing them at increased risk of coming into contact with ticks. Certain tick agents also pose a serious threat to livestock including risk of disease that can have a large economic impact. Various tick species and the diseases they carry could harm livestock in industrialized countries more and more, resulting in large production losses.

In this episode, we will discuss some of the current approaches to reducing tick populations and how outdoor workers can minimize their risk of tick-borne disease.

01:18 E Presnall

Today, we are joined by Mandy Roome from the Northeast Center for Occupational Health and Safety. Mandy is the principal investigator of a study on tick reduction strategies on Vermont farms.

01:32 M Roome

I'm Mandy Roome. I am a research scientist out of the Northeast Center for Occupational Health and Safety, and I work primarily on tick borne disease research with farmers and loggers.

01:42 E Presnall

Can you talk a little bit about the Tick project that you are currently involved in?

01:48 M Roome

Yeah. So right now, we have a project going on in southern Vermont. Vermont has the highest incidence rate of both Lyme disease and anaplasmosis in the country. So, we wanted to start where it's most needed for sure. Although, Lyme disease and anaplasmosis are a big problem in a lot of states. Farmers are some of our most vulnerable workers, as most outdoor workers, they don't have the option

of avoiding tick habitat, which is kind of that big public health push. Avoid the tick habitat, but you can't tell that to an outdoor worker. We're trying to identify something that is simple enough to do to try and decrease the number of ticks on farms.

What we are working on right now is with thermacell tick control tubes. There are these small little tubes. They they're about the size of a toilet paper roll. Honestly, they're they kind of look like them. They're made to look like a like a log. They look like wood. Inside is cotton that is soaked in Permethrin. Permethrin is a pesticide. And it kills ticks on contact, so it's actually that's the active ingredient in our flea and tick collars for our pets. The thought behind these tubes is you place them in areas where you expect rodents to be, rodents will go, they'll take the cotton for nesting material. And in essence, putting a flea and tick collar on themselves. And small rodents, typically the white-footed mice, are most responsible for infecting ticks with the pathogens that affect us. If we can kill the ticks at the get go when they're feeding on these small rodents, then hopefully we can make a difference in tick populations. These tubes were designed for residential use, and they work really well there. What we're seeing is can we kind of recreate this effect on agricultural properties? Because it's not feasible to bait an entire farm. No matter what you have, you're never going to be able to do that with that much land. So, we're focusing on areas where we expect to see high rodent traffic, so around barns or around houses and just seeing if we can decrease the number of ticks. Every time we go up to Vermont, we collect ticks to see what's there. And we also follow up with the farmers. We have a great group in our study right now. We call them every two weeks. Luckily, they haven't gotten sick of me yet, but we ask them, have they had a tick in the last two weeks? Has anybody else, any other humans on the farm or have any animals?

That kind of tells us, one, tick encounters. Encounters meaning tick bites, but also just ticks crawling on you, not necessarily ones that have attached. And then also that quantitative measure of tick density that we see on the farms.

04:16 E Presnall

And what are the most common areas that farmers typically come into contact with ticks and how can they reduce that contact?

04:25 M Roome

The thing is about 75% of people that were diagnosed with Lyme disease don't ever remember having a tick bite. A lot of people don't necessarily know, you know, where they pick up their tick. But we do ask just in case the farmers know. Interestingly enough, what we have found through these follow-ups that we've been doing, a lot of the interactions are happening sort of on that edge habitat, which makes sense. Generally, in the spring, this is when the ticks kind of reemerge. These are when the adult ticks that didn't mate and complete their life cycle in the fall kind of wake up, and they're hungry and they're trying to complete their life cycle. They survived the whole winter, without food. So, they come out. They're a little aggressive for a short period of time in the spring, but also usually fence repair is happening in the spring and the fences are generally kind of on that edge habitat where you know your pasture stops and your woods, your overgrowth starts. For folks that remember where they had gotten their tick, a lot of them were saying on that fence line.

05:23 E Presnall

We hear a lot about Lyme disease compared to the other tick-borne diseases. But Lyme disease isn't the only tick-borne disease on the rise. As I understand it. Can you talk a little bit more about the trends of some of the other tick-borne diseases?

05:36 M Roome

Yeah. So, our three big ones in the Northeast are our deer tick ones. So, Lyme disease, anaplasmosis and babesiosis are kind of our three big ones. There are some others that are a little more rare, but they're still around. So anaplasmosis is really similar to Lyme disease. Symptom wise you kind of have that extreme fatigue, fever, chills, joint aches, muscle aches, things like that. This one, you're not going to not know you're sick with anaplasmosis. It does hit you pretty hard, and very treatable, but if it isn't treated, anaplasmosis can actually kill you. Generally, people aren't going to get to that point because they know something is wrong. They're very, very ill. But that has been on the rise across the whole northeast for the last several years. Lyme, we kind of watched move like North and West across the northeast. Anaplasmosis is just a little bit behind it, but it's doing the same thing. Vermont never used to have this big problem with anaplasmosis. Same where we-- we're in Cooperstown, NY. So, we're upstate New York.

We really didn't have many anaplasmosis cases, and our center is affiliated with the hospital. I think it was about two years ago the hospital was saying, these lab tests that we're doing, we can't even believe the number of cases of anaplasmosis that are coming through. And we're seeing the same thing in Vermont as well. They're just skyrocketing, unfortunately.

06:59 E Presnall

Which tick-borne diseases do the different regions of the US need to pay close attention to?

07:05 M Roome

So, the Northeast would be Lyme anaplasmosis and babesiosis, same for the upper Midwest. We kind of have those two pockets that are the most prominent, I suppose, in the US. And then we've got Lone Star ticks further South. So, like Virginia area and South, although we do have some Lone Star ticks around here, they're just not as well established as they are further South. They can carry the Alpha Gal allergy. If the tick is carrying this and a person is infected, they can develop an allergy to red meat. They become allergic to a sugar molecule found in red meat, so that one is never fun for somebody that likes red meat.

We have Oregon and California. It's a different species. We have the deer tick. Exodia scapularis on the East Coast, the West Coast as Exodus pacificus. They also have Lyme disease. Not quite like, you know, we do in the upper Midwest and Northeast. But Lyme disease is still a concern for them. Rocky Mountain spotted fever is all over the place. We have it in New York. Upstate, it's not quite as prominent. Downstate, it is. Long Island area has a lot of it. And then kind of out through the West has a lot of Rocky Mountains, but a fever as well.

08:19 E Presnall

If our listeners want to visit a website that shows what types of ticks are prevalent in their area, we will provide a link on where ticks live in our resources. Here in Iowa, where we are recording this episode, we have learned that the Lone Stare tick, which causes allergic reactions to meats and dairy products, has moved in. This Lone Star tick is distinguished by a white dot. So take a look at the resources to help identify different ticks in your area and understand symptoms associated with being bitten.

08:50 E Presnall

Since you have special insight into tick borne disease and farmers specifically, is there anything unique to the farm environment regarding prevention efforts, recommendations, or any other information related to tick borne disease that we have not touched on that you think is important to share?

09:08 M Roome

Yeah, so the active ingredient that's in these tick tubes, Permethrin, this is commercially available itself, too. You can spray that on your clothes. I use it because I collect ticks for a living. I treat my clothes with it, so, the thought is if a tick gets on you, it will die before it bites you. It works really well. I've collected over 7000 ticks through my studies, and I've only been bitten one time. Knock on wood before I jinx myself.

But that does work really well. We had talked about kind of doing a study with that, but kind of methods wise that was a hard one to sort out. Some people don't love the idea. You don't spray your clothes while they're on, you spray them before you put them on. But some people don't love the thought of chemicals on their clothes, which is completely fair. The University of Rhode Island had done a study with Permethrin, and even if you just spray your shoes and your socks, you're 74 times less likely to be bitten by a tick. I swear by Permethrin, I think, knock on wood again, it's kept me safe while I'm picking up ticks and everything. It's super useful and especially if you're kind of outside and the deer ticks almost always start low like they're not going to climb a tree or anything like that. Perhaps if they're on a bird and a bird's in a tree, yes, it could wind up in a tree, but generally they're very low. Generally, what they're going to do is start at the bottom and they're going to climb up, pant legs, and then bite you. Even just treating those shoes and socks is super helpful in in mitigating that risk.

10:38 E Presnall

Are there other efforts currently underway to either control tick populations or stop the spread of tick-borne disease?

10:46 M Roome

Yes. Pfizer is in phase three clinical trials of a Lyme vaccine right now. Hopefully that is going to be something positive that would be really great, especially for, I mean for everybody in general, but especially for outside workers that really have no choice. Having a vaccine for someone like that that is exposed to ticks on that level over and over and over would be so, so meaningful. Hopefully this continues to go well, and we'll have a vaccine for people.

11:18 E Presnall

Outdoor workers can help protect themselves from tick-borne disease by understanding how tick-borne diseases are spread, risks of exposure and infection, and how to protect yourself from tick bites. Wearing light-colored long-sleeve shirts, long pants, socks, and a hat reduces skin exposure to ticks and also helps you spot a tick on your clothing.

Treating gear and clothing with products containing 0.5% Permethrin can provide greater protection but should only be sprayed on clothes and not on skin. Landscape modifications can also help reduce tick populations on your land, including removing leaf litter, removing, mowing, or cutting back tall grass and brush, and methods for discouraging deer and rodent activity.

12:08 E Presnall

Make it a habit to check your skin and clothes for ticks after being outdoors. Immature forms of ticks are very small and may be difficult to see, so once you are in for the day, it is a good idea to shower to try and wash off any ticks that you may not be able to see. If you do find a tick on your skin, remove it using fine-tipped tweezers. Grasp the tick firmly and as close to your skin as possible and pulling the tick's body away from your skin without twisting or turning it. Then, clean the area with soap and water, and dispose of the tick by soaking it in rubbing alcohol or thoroughly crushing it with a tool, such as pliers, before flushing it.

Take some time to review the resources for this episode to learn more about tick-borne disease in your region and strategies for reducing tick exposure.

12:57 E Presnall

Listen in on the FarmSafe podcast to join in on the conversation about keeping safe on the farm. We want to hear from you. Share your stories about health and safety issues on the farm, about injuries that made you change the way you work, or about the ways you keep yourself and others safe on your farm. Also let us know if there's questions you have or topics that you want to hear about on the air. You can visit our website, gpcah.org, or email us.

Original music for the FarmSafe podcast was written and performed by Ben Schmidt.
This work was funded by the Centers for Disease Control and Prevention as part of the National Institute for Occupational Safety and Health's Great Plains Center for Agricultural Health.

Episode Resources

- **CDC, Tick Bite Data Tracker:** https://www.cdc.gov/ticks/data-research/facts-stats/tick-bite-data-tracker.html?CDC_AAref_Val=https://www.cdc.gov/ticks/tickedvisits/index.html
- **NIOSH, Tick-Borne Diseases:** https://www.cdc.gov/niosh/topics/tick-borne/default.html
- **CDC,** Check what the common ticks are in your state at https://www.cdc.gov/ticks/about/where-ticks-live.html

Photo