

Episode Title: Herd Health and Alpha-Gal: Managing Ticks on Midwest Farms

Topic: Alpha-Gal Illness from Lone Star Ticks

Summary: Ticks are becoming a growing concern across the Midwest as species like the Lone Star tick and Asian Longhorned tick expand their range northward. In this episode, *FarmSafe* explores what that means for both livestock producers and rural communities, with expert insight from Grant Dewell of Iowa State University and Iowa State Public Health Veterinarian Andrew Hennenfent. The conversation highlights how tick can impact cattle health, the symptoms to watch for, and management strategies.

Expert: Grant Dewell and Andrew Hennenfent

Episode Quote:

“The best way to remove a tick for a person or an animal is to grab as close as you can with a pair of tweezers to the base of the skin and just pull straight out and not to do any sort of like abrupt jerks or twisting motions. Steady pressure pulling straight out with the base with the pair of tweezers is the best way to remove a tick to minimize them injecting any that bacteria they have into the body.”

– Andrew Hennenfent, Iowa State Public Health Veterinarian

Transcript

00:10 E Ritchie

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.

00:34 E Ritchie

The topic of ticks is becoming increasingly common as certain tick species—like Lone Star ticks and Asian Longhorned ticks—begin to increase their range and extend north into the Midwest. Though they are not carriers of Lyme disease, there are a few factors that make these lesser-known tick species dangerous to humans and livestock. Today, we’ll be talking about two concerns: the animal impact of ticks, specifically the Asian Longhorn tick, and the human impact of the Lone Star tick. Here with us today are Grant Dewell, Beef Extension Veterinarian at Iowa State University, and returning *FarmSafe* guest, Andrew Hennenfent, Iowa’s State Public Health Veterinarian.

01:17 E Ritchie

What tick species is concerning for livestock?

01:21 G Dewell

The main one, probably that we're worried about now is the Asian Longhorned tick that's relatively new to Iowa. It carries a protozoal pathogen that causes lysis of red blood cells and that's kind of new. There's not much immunity in the cattle to that *Theileria organism* -- that's the parasite that the tick can carry. But for a long-standing time, though, anaplasmosis is a bacterial disease another intracellular disease in the red blood cells that causes anemia, that's also carried by ticks, primarily the Deer tick and potentially the Brown dog tick. But those would kind of be the two that would top our list for livestock.

02:08 A Hennenfent

Regardless, diseases too, just any heavy tick infestations can cause anemia, so decreased blood levels, stress, weight loss could damage the hide, so might come up with some issues at slaughter and processing is parts of the carcass. And the same thing that will help prevent ticks in our environments like our backyards will help with pasture management as well, so ticks don't fly or jump.

They do what's called questing, so they'll get on usually low foliage like bushes or tall grass or something like that and kind of stand on the end of it and extend their legs and grab onto something that comes by, so there's ways we can kind of think about working with our herd veterinarian or ISU extension to as best we can tick proof our herds to prevent anything like that from happening.

03:00 E Ritchie

What are some signs that indicate cattle or other animals may be infected with a tick-borne disease?

03:07 G Dewell

Yeah. So I mean we we've got the lethargy from either the loss of red blood cells in some cases we can see massive infestations with ticks that cause anemia all by themselves, just because they are consuming so much blood, but then also the potential for some of our ticks to transmit these blood-borne diseases like anaplasmosis or *Theileria* that then cause destruction of red blood cells. So, we get lethargy, anemia, sometimes jaundice and then sudden death are kind of our hallmarks for tick-borne anemia related diseases of cattle.

03:41 A Hennenfent

And then with any of our animals, so whether it's a pet or livestock, good places to check for ticks are kind of areas of the body that are a little bit more protected or out of the elements compared to others and might have a little bit thinner skin or a richer blood supply. So, checking around the ears is a great place or kind of in the armpits or along the hocks, anything like that. Those are good places to do spot checks to see if you're having a tick issue with either your pets or with your livestock.

04:17 E Ritchie

Would you say that also applies to pets as well?

04:18 A Hennenfent

Yeah. Yeah, especially around the ears of dogs, that's very common. When I was growing up, my grandpa always had a Beagle, and they'd always, since they're out there chasing stuff constantly through the brush, they have ticks in their ears pretty frequently. And then whether you're removing a tick from a person or an animal it's not recommended to ever do some of the kind of old wives' tales that I think maybe some of us grew up with. It's not good to crush them with a pair of pliers or to try to get them to release by touching a match to them. Anything along those lines can actually make the tick vomit up what's inside of it into your pet or yourself or into your body, so if they have germs in their gut that they give you a disease that could pretty much make them inject it almost instantly.

05:04 A Hennenfent

The best way to remove a tick for a person or an animal is to grab as close as you can with a pair of tweezers to the base of the skin and just pull straight out and not to do any sort of like abrupt jerks or twisting motions. Steady pressure pulling straight out with the base with the pair of tweezers is the best way to remove a tick to minimize them injecting any that bacteria they have into the body.

05:29 E Ritchie

Now, we are going to switch our attention to Alpha-gal syndrome, carried by the Lone Star tick. Alpha-gal is a traditional food allergy, but it can be deadly. Alpha-gal allergies are responsible for 33% of anaphylaxis cases which is greater than all other food allergies combined (28% of cases). 60% of all people with Alpha-gal allergies will develop an anaphylactic response to Alpha-gal. Symptoms can take around 2-8 hours after exposure, which could mean an anaphylactic response beginning overnight.

06:05 E Ritchie

What is Alpha-gal? Can you describe the processes that would be disrupted if a farmer contracts Alpha-gal?

06:12 A Hennenfent

The most common way we think that people develop this allergy is from tick bites, particularly the Lone Star tick. There's the same type of sugar, because that's what Alpha-gal is, a sugar, that in some-- in Lone Star ticks in particular, their saliva, so when they bite a person, it kind of sensitizes them to it. The next time someone's exposed to the sugar, it can cause an allergic reaction. Alpha-gal is

part of the natural cell layer in a lot of our meat producing animals. It's not found in poultry or fish. So, those are foods that would still be OK for someone to eat if they had Alpha-gal syndrome.

06:52 A Hennenfent

But what happens is so then once someone's exposed by blood through tick bites and the more tick bites someone has, the higher the chances they're going to develop Alpha-gal syndrome. That they'll be sensitized to this and develop it. And then later on, if they eat meat, beef's one of the most common ones associated with it. And then pork and venison and lamb can also be associated with it too. It's all part of those animals' natural cells. When someone's exposed, they'll have a delayed reaction. So maybe a few hours after they consumed a hamburger, for example, they may start getting hives or develop gastrointestinal symptoms, so they can be kind of nondescript from GI upset and then in severe cases it can cause anaphylaxis, so severe allergic reaction that might require medical attention such as epinephrine or something like that.

07:45 G Dewell

Andrew, just to follow up on that, is it just the oral exposure through consuming food or—that's the way I've always seen it offered is that it's a food allergy—but is there potential for contact allergies?

07:59 A Hennenfent

No contact allergies that I'm aware of. The closest thing I've heard to that is if someone severely has it that if they're in the presence of someone cooking meat, that might be enough to make them start to have an allergic reaction, but I haven't heard anything from contacts so I wouldn't expect any exposure with a live animal to kick it off because it's part of their meat and tissue. So, you're not going to be encountering that if you're just a farmer out working with your herd or anything along those lines.

Most of what we do see reported is from the oral exposure and that can not only be from food, but sometimes certain medications that they have collagen or gelatin or something like that in them too. That can be enough to cause it. Some people can have exposures with dairy, but it's again, it's not one-size-fits-all, so some people might only have an issue with beef and still be OK with pork and lamb, and some people might not be able to tolerate any sort of Alpha-gal in their diet anymore, including dairy products.

09:01 E Ritchie

And will animals be affected by this syndrome?

09:05 A Hennenfent

Alpha-gal syndrome is not something that will affect animals. The reason that there's been more attention on the human health side to it is, unlike a lot of food allergies, which is what it boils down to. It's unique because it doesn't start to cause symptoms into people in several hours after they ate meat if they do have the allergy. It confuses the picture versus where most of your food allergies like peanuts or something like that. Someone will start having a reaction almost immediately. This time one of the hallmarks is for Alpha-gal is someone might wake up in the middle of the night with hives and it might be several hours after they ate meat, so it takes longer for themselves as well as their healthcare providers to necessarily connect A with B.

09:49 E Ritchie

How would you suggest farmers monitor themselves for Alpha-gal, considering symptoms appear hours after exposure?

09:56 A Hennenfent

Yeah. So just like anyone in the general public, our farmers, they, they'll have a tendency to be outside more. Might not be as in tick-inducive areas as much as if they were hunting or camping. But walking the pastures or doing anything out there at the cattle they'll be in tick environments a lot more than someone that lives in town, for example. Keep in mind that they are outside more than most and it might be a situation where if they are going to their healthcare provider, they may have to advocate for themselves of saying like, "Hey I, I know I'm in tick areas a lot. I don't remember getting bit."

Or if I know I've gotten bit bring that up with their healthcare provider and then just highlighting it's a few hours after I eat, I start to get real, real sick. Since it's a sugar that's associated with the fatty layer of those cells, then they have to be digested a bit, so that's

what causes a delayed reaction. If they're starting to not know what's making them feel really junky after they've eaten a few hours later, or waking up in the middle of the night, that's something to keep in mind and to talk with their healthcare provider about.

And there are some tests that can be done with that but there's no test alone that will confirm someone has Alpha-gal syndrome. It has to be a combination of the test result that looks for specific antibodies as well as the history of the person and the clinical signs that they're experiencing so that they would be having some signs that are conducive of an allergic reaction.

11:26 A Hennenfent

And with any hypersensitivity reaction, the more times you're exposed, the more severe the reactions can be, so that's why it kind of becomes mindful of working closely with the healthcare provider and watching closely what you eat, if you are afflicted with Alpha-gal syndrome and the people we see that are at highest risk just from natural exposure, it's not as much farmers, but hobbyists. And a hobby that a lot of our farmers like to do too, but hunters.

Hunting in Iowa and other states-- walking around in that tall grass, that tall brush-- those are things where people need to be mindful of, of ticks not just for Alpha-gal syndrome, but for other tick-borne diseases too. So, making sure they're using proper repellents if they are avid hunters or outdoorsmen or campers and doing checks. Any steps they can take to minimize their chances of being bitten by a tick will help.

12:25 E Ritchie

So, overall, what precautions can producers take to protect themselves and their livestock from ticks?

12:32 G Dewell

Yeah. I mean, as Andrew said earlier, you know the environmental control or to tick proof your areas are important. Getting rid of brush, mowing pastures, those types of things to prevent those ticks from having an ability to get up high. Ticks like a moist environment. Again, if we get rid of brush and tall grass that dries out faster and they desiccate. That's a big deal. We talk about sometimes some tick barriers. Ticks aren't going to cross a rock or dirt path. Or you talk about burning areas of your pasture.

If you want to protect your pasture, you can burn the perimeter so that you ticks aren't going to cross that for a little while. And then otherwise, it's the repellents in our livestock, particularly focused on pour-on insecticides primarily as our method to reduce those external parasites like ticks and other flies.

What else did I leave out to Andrew?

13:36 A Hennenfent

You have you have along those same lines for most diseases ticks transmit, they have to be attached for 24 hours or longer. The sooner the tick is removed, the less the chance that they can transmit something. It's, in some ways, it's a little bit easier to avoid tick bites in our animals than it is us. Since historically with cattle and food animals, it's caused lots of production losses. There's options in our pets and other animals that you treat maybe once a month or something like that. So, it offers extended tick protection, other things where not necessarily just for ticks, but like a lot of stuff, the ticks like to hitch rides on wildlife, so some good bio security practices of ways you can minimize wildlife contact with your herd.

Minimizing kind of wildlife habitat or areas or food that wildlife could easily access that might attract them. For people, it's more of a short-term preventative that you can apply to yourself, so there's EPA things, EPA repellents that you can spray when you're going to be out in wooded areas. There's repellent that you can apply specifically to your clothes and that is recommended, especially if you're hunting or camping, that will help repel ticks and prevent tick bites and then wearing long sleeves, long pants. Just any way you can minimize the surface area of your skin that's exposed and would give the ticks an area to attach. And then if when you get back from inside from hunting or camping or anything like that, doing a tick check, looking to see if you have any ticks removing those ticks as soon as you find them, and washing your clothes very quickly after you come inside and also taking a shower, just anything you can do to minimize ticks from having access to your skin and then removing them as quickly as possible if you do find one.

15:18 E Ritchie

Generally speaking, how big of a problem are ticks?

15:23 G Dewell

It's increasing. You know, I think for a long time we had pretty stable tick populations. We worried about the dog tick and the deer tick and the Ixodes tick that transmits Lyme disease. But otherwise, they were just kind of a nuisance, and we didn't really worry about them. These newer ticks that have been moving, I think are kind of disrupting our or traditional thing of "ticks aren't that big a deal". I mean. You know. Both the Lone Star tick in the Asian Longhorn tick.

We can see really high numbers on livestock. You know, generally we didn't see that many high numbers of ticks. We would see a few but not that many. But now we can see thousands and again, so, we're looking at a tick that reproduces fast and is fairly aggressive compared to some of our traditional ticks that we worried about. It's a bigger concern now than it was 10 years ago, for sure.

16:11 A Hennenfent

Yeah, I would. I would agree with that. And similar to some of the other insect vectors that we're seeing, their ranges have been slowly expanding in the United States. So, Lone Star tick, as you can imagine, the name comes from the Lone Star State. So, Texas and the southern U.S. It's been very prevalent there for a while. That's been slowly encroaching northward. It wasn't always something we found in Iowa. The Asian Longhorn tick has been introduced to the United States within the last 10 or 15 years and slowly started to spread across as well. So just like how we're seeing different mosquitoes spread as the habitats change and become conducive to them, it's the same thing with ticks.

16:51 G Dewell

Well, one other thing that add on to what Andrew just talked about as far as the potential risk from Texas and it's less of a concern here in Iowa, but with the threat of New World screwworm in the in the southern U.S. Tick bites are a potential avenue for infestations with the screwworm. So, it's one of those things that we need to control in multiple areas.

17:14 A Hennenfent

And anytime you have a new disease vector in an area where it hasn't historically been, you'll have a period of time where either the animals or people, whatever it can transmit diseases to, have not been exposed to that. So, there's going to be a lot more the animals and people that are susceptible to the disease and don't have an immunity from a previous exposure than you would with some of the ticks we've had here in Iowa or other diseases for many, many decades.

The only thing I'll add is the Alpha-gal syndrome definitely isn't something that needs to keep farmers or your typical Iowan up at night worrying about stuff. It's just something to be mindful of and the best way to prevent it is just to prevent tick bites and the benefit of preventing tick bites isn't just to prevent Alpha-gal. There's all kinds of bacteria and some viruses that ticks can carry. So, just something to be mindful, but nothing to completely stop going outside or hunting or doing anything like that. There's 100% precautions that people can take to mitigate their risk to almost 0.

18:21 A Hennenfent

Just like any allergen, not everyone's going to be allergic. So, there's I'm sure there's lots of us out there where if you did a blood test on it, we'd have antibodies to Alpha-gal but never went on to actually develop a full allergy to it.

And the best prevention for people is to avoid tick bites. Lone Star ticks aren't the most prevalent tick we have in Iowa, but we are seeing them more and more, and then not only can if someone's bitten by a Lone Star tick, could it potentially cause this allergy? But there's other diseases that ticks can carry. Anywhere where ticks are prevalent, there could be other types of ticks too. So, think about Lyme disease or other things that can be transmitted to people. But there's also diseases that ticks can give to cattle too.

You can kind of think of as a Canary in the coal mine. If there's one type of ticks, that means the environment is conducive to ticks, so that would be important for a producer to work with their vet to have a good parasite control program. External parasites cause at minimum if there's a high burden of ticks feeding on cattle, it can decrease production and especially with some of the ticks that are out there now could really decrease that production quite a bit. It's just good practice with just building that parasite prevention with their regular herd veterinarian.

19:37 E Ritchie

The risks ticks bring to farms, livestock, pets, and people are growing. As new species move into the Midwest, staying informed is one of the best tools producers have. Prevention of tick bites is the best defense we currently have, which includes measures like checking cattle for infestations, managing pasture habitat, and protecting yourself during chores, hunting, or recreation by wearing light-colored long sleeve shirts and pants, long socks, and closed-toe shoes and using repellents. Work with your veterinarian to build a prevention plan before ticks become a problem.

20:19 E Ritchie

The CDC has developed tools to help people better understand alpha-gal syndrome. You can check out these tools by visiting the links provided in this episode's resources. To learn more about prevention and detection of tick-borne disease in the Midwest, listen to our previous episode, "Ticks on the Rise, Part 2."

20:39 E Ritchie

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.

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Episode Resources

- [Ticks and Tick-borne Diseases in Iowa](#), ISU Extension
- [Alpha-gal Communication Resources](#), CDC
- [About Alpha-gal Syndrome](#), CDC

Photo

