**Mycotoxin Matters Podcast ep 9 V1**

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Announcer: Welcome to the Mycotoxin Matters Podcast from Alltech Mycotoxin Management. As mycotoxins present an ever-increasing threat to livestock production, join us as we discuss these impacts and potential solutions, sustainable farming, and our vision for a planet of plenty.

Nick: Hi. My name is Nick Adams, Global Director for Alltech's Mycotoxin Management Team. A very warm welcome to this episode of Mycotoxin Matters where today, we're joined by Dr. Luke Miller. Luke has been a practicing veterinarian within the dairy industry in California for over 20 years, spending time within a large animal practice. Also spending around ten years running a Californian dairy before joining Alltech to provide more on-farm technical support for the dairymen in the state. Luke, a very warm welcome to you.

Luke: Thank you. Thanks for having me on today. I hope we can spread the light of mycotoxins and mold and yeast management today.

Nick: Well, that's certainly what we are aiming for, Luke. By way of starting out, maybe you could just talk through a little bit around your general experience as a large herd veterinarian regarding some molds, mycotoxins, and the awareness of them in the industry over these past 10 to 15 years.

Luke: Yeah, that's not an issue at all. I left school and graduated and came into the workforce 20 plus years ago. There was talk of mold and yeast active and we would see that on the silage piles and the damage that feeding rot silage or moldy silage could do. But a lot of that had to do with we didn't have oxygen-limiting plastic at that point. The plastic itself was not very good. We just didn't have the technology and the techniques of making better silage that we're into now and we're using a lot more of. So as I got more and more involved in feeding on the dairy, I became more and more involved about the damage that we could get from mycotoxins and from active molds and yeast.

 I do think that the veterinarians are becoming more aware of it and I do think that they hold a very unique view of the cow at this point because they're seeing them from behind and can really be in help when the red flag needs to be raised because mycotoxins might be present. But overall, in my experience, when we're talking about feed ingredients, veterinarians have usually deferred to the nutritionists about mycotoxins and the dangers. I think that's what we've been working on in California and across the Western US, is attempting to change that attitude a little bit and make sure that veterinarians know that they can have an active role in mycotoxin awareness as well.

Nick: Picking up on that, Luke, how much do you see mycotoxin analysis, the evolution of analysis, how much has that been of importance or of assistance in helping to define the issue for groups?

Luke: Well, for the veterinarians, the 37+, for example, that platform has been invaluable. They're very data-driven. We like science. We like to have things explained. And even better yet, we really love to have an expert in the field give us their assessment of what the results mean. When we get blood results, when we get pathology results, a lot of times, the assessment and the analysis are left to us to do on our own. They just give you the results. In this case, that's been something great in showing veterinarians and in doing myself as the ability to use a consistent, very third party-certified type of service like 37+ to show them that they do exist. And maybe it is part of our differential diagnosis that we should be using it on a more regular basis for herd digestive issues.

Nick: Yeah. In your experience then, are there typical feed ingredients or forages that pose a greater risk from the mold and mycotoxin side of things?

Luke: Yeah, certainly. When I started, I thought it was going to be what everybody else in the rest of the United States and a lot of the world thinks that is, and that would be corn silages, sorghum silages, and wet, ensiled feeds 100% of the time. But as we've gotten more experience and as we've run more and more testing out here in California, we find that that's simply not always true.

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 I think it's very regionally dependent. Corn silage in the Western United States is an irrigated, babied, beautiful crop, and we just don't see the stress on that corn that would cause it in the Midwest. Ensiling, surely. If it's poorly ensiled, that's something we're after. I would use an almond hull as a perfect example out here in the Western United States of something that you should think about a little bit about moving mycotoxin into your cows.

 Just by looking at byproducts, it's on a tree for six months and then it's dropped on the ground where it's rolled and rolled again, and then picked up and covered in dust. Then somebody picks it up and processes it and stacks it in a pile of their own. At which time, maybe it's delivered to you in a month, maybe it's delivered to you in nine months, but we have no control over that little beast and it's outside. I think you need to look at regionally a little more than just saying automatically that a wet silage is going to be my problem. That being said, if it's wet, that's where we go first. Molds love that warm, wet kind of environment to grow and then die and produce mycotoxins.

Nick: Yeah. I think that's absolutely key, that concept of if it's got moisture and it's got a substrate and it's got oxygen then that's the environment that a mold will thrive in. And clearly silage, moist feeds, that moisture elements bring that into the party. What might be some of the concepts? When you think about that example of almond hulls in California, what do you think are some of the concepts that a global audience might think about when they think about risk as it relates to feedstuffs in their regions?

Luke: What I've tried to put in front of people to think about and extend it beyond just staring at what's in the bin -- I think we all get really narrow-focused and look at the one load. We look at the one item. We look at the one silage pile that we think is a problem. The blinders get on and things get very tight. I encourage them to go a little more global. Let's expand our look at all of these projects. I think a good way to do that is how I treat quite a few other things on the dairy. We do the life cycle. We put ourselves in the shoes or the hooves of the animal and we take a look at what we're going to be eating or walking on or whatever across the day or month or yearly life cycle.

 If we go to the bin and we look about how this byproduct or how this corn or single products may have been stressed over its lifetime and chase that out, go out into the field with it and bring it in, then store it and then bring it out of the field, I think that we have to understand that there's different daily, there's different monthly, and there's different yearly cycles for all of these feedstuffs and byproducts we put in. Understanding that dealing with animal feeds are very variable. We're always at the bottom of the list for the feed products. The humans get them first, the monogastrics get them second, and the ruminants get them third. I think that's very important to understand that we're getting the most variable amount.

 So every load, every source, every storage facility, every delivery facility may be different. I think this is that little side piece where we can use the 37+ or we can use some analytics and some data-driven stuff to actually show that variability and show that one does not actually equal to two. A does not equal B. We can't just assume that this year looks like last year. We need to make sure that our cows aren't being stressed from a heavy mycotoxin load or a light mycotoxin load in the background every year.

Nick: Yeah, good points, Luke. I like the concept of thinking through it in that lifecycle concept. You actually just bring an open mind to it and just start from scratch and think about where some of those problems may be coming from. If you take it on and then you think about the symptoms in the cow, what typically would you expect to see?

Luke: I think anytime -- this is the education of Alltech, right? This is also the education of being a dairy manager. The digestive upset becomes a huge issue in cows. I think it's an underwhelming problem, but it's a very important problem that I think we need to be aware of. Other things cause digestive issues than just your salmonella floating through the dairy and that digestive issues can be a beacon of other issues going on in the dairy. I think that's number one.

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 I think we look at signs of digestive upset. I think you have to be careful looking at it as the whole herd has to be loose for the feed to be a problem. When we feed, feeders feed from different areas of the bunk. Cows eat different parts of the bunk themselves and try different pieces of feed. One little ball can have a disgusting amount of mycotoxins in it, and one animal might just get that in our own feed in the morning, so I think loose cows obviously. I think the diarrhea issue is there.

 Then we also look at abdominal pain. We look at going off of feed. I would say that HBS, hemorrhagic bowel system, is something that needs to be looked at very closely in its correlations to mycotoxins and feed ingredients anytime we see it. That's a big problem. I think there's also lameness. It's become more on the forefront for me as we've looked at more and more mycotoxin issues. We know that we can get breakdown and damage in some of those little capillaries. The corium of the foot is filled with little capillaries. So I think we can have a lot of other areas affected by vessel damage, but that's one of the harbingers of doom, is just subclinical lameness.

 Obviously, there are some estrogenic effects that we can see, some subclinical reproductive issues. Zearalenones are famous for this, just poor conception and poor heats and just odd things in reproduction. We're running behind the radar in seemingly unknown fluctuations in somatic cell count. It just goes up and goes down and we haven't changed anything. It's a good time to take a look at the feed maybe being an issue where you wouldn't think feed would be in mastitis, in reproduction, and in lameness.

Nick: So from that, there's nothing that is so specific that really makes it easy. It seems from what you're saying, it's really quite variable and it's inconsistent, and it's been on the lookout for some of those things.

Luke: Yeah. I think that's part of the kicker of why it's not super pushed in the veterinary community. It's hard to chase some of this stuff down especially when you begin to look into somebody else's backyard of the nutritionist. So being aware that you can do that, that you can look into these things and understanding just the other shoe to drop. The noise in the background can definitely be a mycotoxin issue.

Nick: Yeah. Now, having gone through the experience that you have and working out providing the support that you are these days, what's the advice that you give to producers that you're working with regarding how they can try and manage that mycotoxin threat on a more regular basis?

Luke: You mentioned it before and I agree wholeheartedly. I think surveillance and data analysis and data collection is really the key to your control program. Having some historical relevance year over year or month over month can also be super helpful. Cows are different around the world and even from door to door. I think that what may be an insignificant amount of toxins on your neighbor's farm could be a causative agent on yours. This is just a veterinary education angle of it.

 Using that 37+ platform to help diagnose what feeds are high risk on a year over year basis. Asking your Alltech on forum support person -- I'll plug myself here -- what feed regionally have been known to be problematic this year or in previous years. I think our cows are under different stressors and big stressors all the time, the least of which is production. Mycotoxins are one of those continuous daily fed stressors that we can control or at least have some aid in through feed additives very effectively. I think that having control of your mycotoxin load is very important and is a great way to remove a significant stressor on those cows on a daily basis.

Nick: Luke, many thanks for all of your time and information today.

Luke: I appreciate it, Nick, anytime you need me.

Nick: I hope you've enjoyed this episode of Mycotoxin Matters. We've been with Dr. Luke Miller talking about the role of mycotoxins in cows and how we can better manage those. For more information on the Alltech Mycotoxin Management Program and on assessment tools such as 37+, please don't hesitate to visit www.knowmycotoxins.com. That's knowmycotoxins.com and we look forward to speaking with you next time.

Announcer: We hope you enjoyed listening today and we look forward to you joining us next time on the Mycotoxin Matters Podcast. For more information on the topics discussed, please visit knowmycotoxins.com. That's knowmycotoxins.com.

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