**Mycotoxin Matters Podcast ep 7 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. This is Nick Adams, Global Director for Alltech's Mycotoxin Management Team. You're very welcome to this episode of Mycotoxin Matters. In this episode, we're joined once again by Dr. Radka Borutova and we'll be delving more into the topic around the impacts of mycotoxins on pigs and some of the common signs that we might see in the field.

Radka has worked in and around the field of mycotoxins now for a number of years since initially completing her DVM and then her PhD that was focused on the subject of mycotoxins and the immune status of chickens. Radka, great to have you back, very welcome.

Radka: Hello, Nick. Nice to hear you again.

Nick: Radka, you'd written recently around this topic of the impacts of mycotoxins on pigs and some of the common signs that we might see. One of the things that really came out in that blog was the concept of multiple mycotoxins. I wondered whether we might start there with just trying to understand why multiple mycotoxins are so important when we're thinking about some of these field signs.

Radka: Yeah. What we discussed also inside the article is that mycotoxins are produced by molds. You'd realize there are more than hundreds of thousands of different molds out there, and those molds can produce hundreds of different mycotoxins, so there's a probability that the feed or food ingredients will be contaminated with several molds. At the same time, there's an immediate connection to multiple mycotoxins because one mold can produce more mycotoxins at the same time or doesn't have to produce any mycotoxins.

Actually, what we are seeing right now, thanks to Alltech 37+ Program, is we are routinely analyzing different samples from the field. These are raw materials. These are finished feeds for swine and for the other species as well. What we can see is that these feedstuffs or finished feeds are regularly contaminated with more mycotoxins at the same time. For example, if you look at our summer harvest survey, which we performed last year, we could see that those corn samples which we have analyzed, they contained more than six mycotoxins on average. The one sample was contaminated with six mycotoxins on average, and this is just when we were able to analyze 54 mycotoxins at the same time.

I believe if we would be able to analyze 540 different mycotoxins at the same time, we would find much more mycotoxins in those feedstuffs. This is natural. It's natural that the food or the feed contains more mycotoxins at the same time. The problem is that one mycotoxin can cause typical clinical signs in swine, but if we mix those mycotoxins then the final outcome is very difficult. So we don't really see those signs which we see in the field. We cannot really say this is aflatoxin or this is fumonisin poisoning because usually the feed is contaminated with more mycotoxins at the same time which interact together. There are synergistic additive antagonistic interactions, so they modify the final impact on the animals.

Nick: Radka, picking up on that, if I think about reading your blog -- and if the listeners haven't read the blog, they can do so at knowmycotoxins.com. You talk about the ten common signs that we might see on the farm when we're thinking about mycotoxins and their impact on pigs. Those signs are very varied. Perhaps that comes back to that concept of multiple mycotoxins. We've got varied mycotoxins, and therefore, our symptoms are varied.

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If you say, "Well, I talked about ten common signs," what do you think are the three most common of those ten signs that pig producers should look out for on the farm?

Radka: That's a good question, Nick. It's very difficult to choose the three ones which would be the most dominant ones that we could see on the farm. But definitely, what I've heard from veterinarians and farmers is the general pig health status is somehow compromised. That, I would see, is one of those signs where you have to be careful especially when we talk, for example, about sows. There is increased culling rate. There is higher mortality. You have to pay attention. These might be connected to mycotoxins because usually these animals which have compromised health status, they are normally vaccinated, but they don't respond to vaccination programs. There are increased infection outbreaks due to the pathogens. And simply, there are the elevated medical costs. This is something where I would be already paying attention, something happening with the animals. They don't respond to vaccination. They are very often sick, have very high culling rate, or the animals are just dying from obviously an unknown reason. That would be the first one.

The second one would be the feed intake. Usually, many mycotoxins decrease the feed intake. That's what I think could be the second common sign where I would be already also suspecting that mycotoxins are involved. The third one, definitely the performance. So if you're able to measure your performance then look at your FCR, for example, the daily weight gains. That's pretty much connected to the feed intake as well. Of course, in the end, if there would be very high intoxication, also mortality rate. Health status, feed intake, and performance, that would be the top three, I would say.

Nick: In those scenarios, Radka, what you're saying is if you're seeing challenges in those areas and you cannot explain that easily by some other management occurrence on the farm then mycotoxin should be one of the things that are considered as a contributor to that.

Radka: Yeah, definitely. Of course, the mycotoxins, they have to be analyzed by specialized detection techniques. It's not something you can see. You can see mold sometimes. They are visible. The animals sometimes have a lower feed intake just because molds are having an impact on the palatability, but their feed intake can be compromised also directly by mycotoxins. So yes, definitely, that's what it is.

Nick: When we think about farmers who are making their own feed on the farm, what should they be doing to work with their suppliers and what should they be doing on their own farm to try and stay ahead of the mycotoxin challenge?

Radka: That's indeed a very good question because that's what everybody should ask if you want to manage mycotoxins successfully. First, I would make four steps. For me, the first step would be definitely to keep an eye on incoming raw materials. The best would be if they could do that before those raw materials are accepted on the farm. If you're talking about feed mills, of course keep an eye on mycotoxins. Analyze your raw materials by different analytical methods. There are rapid test kits, ELISA kits. There are specialized labs which can analyze for mycotoxins. That would be the first one.

The second one would be once you prepare the feed out of those raw materials then analyze the mycotoxins on a regular basis also in the finished feeds because finished feeds are already a cocktail of different raw materials. Every raw material can bring its own mycotoxins into that cocktail. The third one would be definitely also look at the storage or take care of the storage conditions. Use mold inhibitors. Do whatever to stop the existing molds, which are probably on the raw materials, from production of the other like storage mycotoxins so the concentration of mycotoxins which you purchased with your raw materials is not going to increase anymore and the concentration just stays stable as you receive that.

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The fourth step, really the fourth and the last intervention, what you can do is if something escapes those three steps then you apply the tactic effective mycotoxin binder or deactivator. It helps to deactivate or bind the mycotoxins inside the gastrointestinal tract of the animals. That would be my four steps, how I would define good mycotoxin management.

Nick: Maybe looking at it from the other side, if a farmer is purchasing feed from a commercial feed mill, how should that farmer work with that feed mill to understand the mycotoxin challenge or potential mycotoxin challenge that is coming from ingredients that are sourced in different regions and countries but coming through the feed mill and potentially then ending up on the farm?

Radka: If you are a farmer, as what you said, you don't have control over the raw materials, so the feed mill needs to do the mycotoxin management for you. The feed mill should test the raw materials for mycotoxins and then apply those raw materials into the finished feed. As a farmer, what you could do is to have very good relationship with your feed mill. Often have a discussion, and of course, request the testing results for the feed, if it is possible. That's what I would do.

Also have some internal threshold levels, which levels of mycotoxins, certain mycotoxins. You can pick up one or two or three different mycotoxins where you think might be the biggest problem for you. Just clearly request that those finished feeds which you purchased from the feed mill are not going to have higher concentrations than those in your threshold limit. For example, I don't want to have deoxynivalenol in my feed. I would accept only the feed which contains maybe up to 250 ppb of DON. ***[0:12:24] [Indiscernible]***, you just need to have a discussion with the feed mill and you need to do your own testing as well. That's what I would do because one thing is the discussion and one thing is understanding what is happening in the feed mill and how is their mycotoxin management control.

The second one is that as a farmer, you also have possibilities to analyze your finished feed in accredited labs. The last, again, I would also request the feed mill to apply mycotoxin binder in my finished feed. That's what I would do if I was a farmer. I don't have control over the raw materials, but I still have some power of influence and I can still do my testing. I can still request a specific mycotoxin binder or deactivator in my feeds. Of course, I would also add that you should also do good mycotoxin management in your own operation regarding the storage and so on, but that goes to the previous question which you have asked.

Nick: So really what you're saying, Radka, is whether I'm buying ingredients onto the farm or whether I'm buying finished feed onto the farm, it's really important to have a good relationship with the suppliers, understand the mycotoxin levels in the ingredients or feeds, and then work with those suppliers to try and obviously buy as high quality ingredients and feed as possible, but also then manage the inevitable levels of mycotoxins that will be in those ingredients and feeds depending on the challenge that has come from the growing season, et cetera.

Radka: Yeah, exactly because our assumption should be that the feed which we receive from the feed mill or the raw materials which we are buying are not going to be clean. So we always have to think the mycotoxins are going to be inside and what am I going to do with those levels which are in the feed.

Nick: Final question, Radka, we talked about obviously the importance of feed and the feed ingredients. What about other vectors for mycotoxins on the farm? What other things should people be looking out for as potential sources of mycotoxins?

Radka: This is an excellent question, Nick. We always say that most of the mycotoxins are getting inside the animal through the feed, which is true. But definitely, if you are on the farm, you also have to think what are the other routes of the exposure of the animal.

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I would say one of the important routes could be the bedding. For example, if you are using straw as the bedding, the animals are eventually going to eat that straw, so keep an eye on the straw. Again, keep an eye on your storage and keep an eye on the cleanliness of the feeding troughs. If you don't keep them clean, the rest of the feeds which stay in those troughs, they can get moldy. They can spoil eventually clean or low contaminated feeds, which are getting to those troughs. And those molds can further impact the palatability of the feed and feed intake of the animals.

Nick: Radka, thanks very much indeed. As always, it's great to have your thoughts and experience on Mycotoxin Matters. Certainly, it reinforces that concept that the mycotoxin management needs to be holistic. It can't just be one piece or another piece. It needs to really look at everything from incoming grains all the way through to the cleanliness of the feed lines and the troughs on the farm.

Many thanks for your time, Radka. We look forward to having you on Mycotoxin Matters again in the future.

Radka: Thank you very much. My pleasure. I'm looking forward to the next one.

Nick: I hope you enjoyed this episode of Mycotoxin Matters. If you did, please be sure to leave a review and sign up to future episodes of our podcast. Thank you.

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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