

Season 5, Episode 2: Swine Bone Mineralization

Dr. Jordan Gebhardt, Assistant Professor, Kansas State University, discusses diagnostic insights into investigating bone mineralization in nursery, growing, and finishing pigs.



Background

Lameness is a recurring challenge that the swine industry currently faces. During Covid-19, there were many diagnostic investigations happening to understand what causes lameness in growing and finishing pigs. Nutritionists, veterinarians, diagnosticians, and production systems came together and began to discuss lameness. These conversations led to evaluating a universal way to collect bone mineralization samples.

Diagnostics

There are two different techniques that can be used to measure bone mineralization. The non-defatted bone technique is where the fat is not removed from the bone, dried, and ashed. Where the defatted bone technique is where the fat is extracted from the bone, dried, and ashed. When the defat bone technique is used, there is an increase in bone ash percentage ranging from 6-12% relative to the defatted bone-ash technique. However, both techniques are measuring the same thing.

When the diagnostic lab sends back these results, there needs to be numbers to compare it to, eluding if the measurement is normal or abnormal. Dr. Gebhardt explains that the reference intervals that we have been using need to be updated as they are a few decades old.

Bone Mineralization

Bone mineralization has been measured in a few different techniques. To create a universal diagnostic bone mineralization test, pigs were fed a variety of different diets to create a range of bone mineralization responses. Different diagnostic techniques using different bones, urine, and blood samples to evaluate how all these measurements would all fit together to better understand bone mineralization and what the normal ranges are for our modern swine production systems.

Sampling

More research was conducted by gathering samples of bone mineralization from several production sites. The samples consisted of healthy, unhealthy, lame, not lame, feed outages, type of ventilation systems, and several other factors that could have an impact on bone mineralization. These samples gave insight into what to look for in all aspects of bone mineralization and what the normal and abnormal ranges are.

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