

Student learns firsthand

Learning does not just involve a classroom and the library. The opportunity to be part of a research study gives a student the ability to have the hands-on learning that most strive for on the collegiate level.

Animal science graduate students at Oklahoma State University are able to organize and conduct research studies that will affect the equine industry.

Donna Patterson came to OSU knowing she wanted more than a bachelor's of science in animal science. Her choices for advanced education were veterinary medicine or equine nutrition. She said she decided on equine nutrition because of her interest in the equine industry and the wide variety of employment opportunities.

As part of her graduate research for her thesis, the 23-year-old is studying Phytase supplementation.

Manufactured by BASF, Phytase is a phosphorus enzyme that aids in the digestibility of calcium and phosphorus. The enzyme also has a positive effect on crude protein digestibility, according to BASF.

"I called BASF, because we knew that they produced Phytase, and one of the members on the research committee had a contact within the company," Patterson said. "The result was the donation of Phytase in the amounts I needed to conduct my research."

The next step in setting up the study was deciding what to research about Phytase.

"I decided to collect research for the purpose of finding the results of calcium to phosphorus digestibility in horses," she said. "This is because these are the two major minerals that are responsible for normal bone growth and development of young horses."

Steven Cooper, OSU assistant professor, is the lead adviser on Patterson's graduate research committee.

"I have been conducting studies on the calcium and phosphorus subject myself, and this is just another possibility that needs to be studied," Cooper said.

Cooper, along with Patterson, decided what to collect and how to collect it. They also decided the number and kind of horses that should be used in the study. They then developed a feed ration that met the National Research Council requirements for the specific type of horses used.

Four Quarter Horse geldings between five and seven years of age were used in the study.

Patterson monitored the horses on four different treatments of Phytase: zero (the control group), 300, 600 and 900 FTU/kg.

The reason for the different amounts of Phytase is to see what level is most beneficial, Patterson said.

Each gelding received a different treatment during each of the four rotations. As each rotation changed, so did the amount of Phytase in each horse's diet. At the end of each rotation, urine and feces were collected from the horses for the next 72 hours.

During each of the four separate rotations, Patterson spent three consecutive days at the OSU horse barn scooping up feces and collecting urine in her own homemade urine collection harness.

It didn't matter if it was freezing or 100 degrees outside, Patterson had to be there to collect data and record the times that each gelding urinated. She studied in the barn, slept in the barn, ate in the barn, played cards in the barn and, when she got really bored, she swept the barn.

"This is not the most glamorous job," Patterson said. "But I want the education and experience. This is what I have to do to get it."

After every 24 hours of collecting data, Patterson gathered each horse's manure, took samples out of the each individual's collective pile, and placed the smaller sample in a plastic bag in the freezer.

The urine collected was combined for all three days in smaller duplicate samples and frozen for testing at a later date.

"The research done on these mature Quarter Horse geldings will give us the chance to look at the enzyme itself, once the findings are known," Cooper said. "From here we can go on to studies in growing horses to see if there are any significant outcomes."

Cooper said he plans to have additional equine nutrition students continue Patterson's research.

"This one study isn't going to change the industry," Patterson said. "Hopefully, from this point, more research will be done on Phytase supplementation to determine whether or not it is beneficial to the equine industry."Cj

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Animal science graduate student Donna Patterson measures equine urine output during her research. (Photo by Allison McKinster)