



Examining **SOW MILK PRODUCTION**

A professor with a background in dairy hopes to improve sows' milk production by searching for ketosis

BY GEOFF DALE

Is ketosis an issue with pregnant sows? That's one of the questions Professor Paul Luimes, a Ridgetown Campus swine specialist, is trying to answer. Data from an ongoing study focusing on sow ketosis should be available this spring and be analyzed as early as this June.

Ketosis is a natural process that occurs when fats are broken down when an animal is in negative energy balance. Ketones, such as beta-hydroxybutyrate (BHBA), are produced in this process, and under normal conditions can be further broken down as an energy source. If, however, the fat breakdown occurs too quickly, ketones may build up in the animal's blood. The result is the animal feels sick and stops eating.

Luimes, a swine specialist who also has experience in dairy studies, started the sow research back in September 2009 with the first group of test animals bred and farrowed. The last group was farrowed November of last year with blood samples subsequently sent for testing in December.

"The fact is we don't know if ketosis is really an issue with sows," he says. "Basically I'm a professor with a dairy background that got interested in the situation when I saw sows going off their feed in early lactation. That started to look like ketoacidosis, more commonly referred to as ketosis."

Initially, Luimes focused on the overload of ketones in sows and found very little research had been done. Some reports had been published of sows in late gestation showing signs of ketosis. There has also been some research showing increased incidences of sows going off feed around days eight to 12 of lactation, though these studies did not look at ketosis as a possible cause of this.

"What happens when the animal gets the high ketones in her blood is that the blood becomes slightly acidic, she feels sick and has no appetite," explains Luimes. "She is in the process of ramping up her milk production but if she doesn't eat, then she can't produce enough milk."

The drop in milk production, he says, results in higher piglet mortality and more variation in the size of the piglets. In preliminary trials, he found the ketone levels were somewhat lower than expected,



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but for the sows that had gone off their feed, the levels were higher.

Making a presentation last year on Metabolic Status of Sows in Late Gestation and Early Lactation at the 29th Centralia Research Update, he said even a slight decrease in feed intake may be enough to tip the sow over the edge and for the animal to become ketotic.

He also said, "in most species, the liver and small


intestine combine to consume around 50 per cent of the energy consumed in the body. In negative energy balance, the liver cannot completely break down the fat and if the rest of the body cannot use products of fat breakdown, they accumulate, causing the blood to become acidic.

"I'm interested in determining if we can move sows toward higher milk production and if that improves pre-weaned piglet performance and reproductive performance," he says.

While some trends have already been noted, Luimes says it is too early to determine what they mean, adding he will wait for the full data set to be completely analyzed and reviewed.

"Just analyzing the levels of the BHBA can be done quite quickly," he says. "But then I

have the feed intake of the sows to analyze as well and that will take some time. Considering the number crunching and complete analysis, I anticipate the timeline for completion of this phase to be around June."

Ontario Pork and the Ontario Ministry of Agriculture, Food and Rural Affairs are funding the research project. Luimes has a team consisting of both students and barn specialists. 

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