

Phase feeding sows could save up to \$5 per gestation

University of Alberta research suggests sow diets customized for each pregnancy stage can save on feed bills and that adding amino acids during late gestation and lactation can increase sow productivity and longevity

Sow nutrition has been given a boost by University of Alberta research, and the results could save producers money.

Ron Ball and his research team are studying sow nutritional requirements during the different stages of pregnancy and are finding clear distinctions between required nutrients in early, mid- and late pregnancy. "I am very excited about this research because it has opened up a new area with significant potential for reducing the cost of production," says Ball.

Ball believes producers could save up to \$5 per sow per gestation through using sow diets customized for each pregnancy stage. If producers only have equipment to feed one gestation diet, up to \$3 per sow could be saved by changing the amount fed based on pregnancy stage.

Current nutrient requirements for sows are based on research from 25 years of studies published in 1998. Ball felt sow nutrition had been undervalued and there had been little research on amino acids for sows. He is not surprised to find old recommendations are out of date, but he is surprised at the size of differences.

Another finding is that, by simply adding amino acids during late gestation and lactation, producers can increase productivity and longevity of sows, lowering their overall feed cost. Similar studies from Missouri show the same trends.

Nutrient requirements used today show one value regardless of gestational stage, leading to an energy imbalance. Sows are given an excess of nutrients in early stages of gestation, which they store as fat and protein. During late stages of gestation sows require extra energy and amino acids, and mobilize stored tissues.

Storing and later mobilizing fat and protein is an inefficient use of these nutrients, since not all of the


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stored nutrients are converted. Some are lost during the conversion processes, when they are stored as fat, and again lost when the fat stores are mobilized for use as energy. Money loss occurs during the early stages of gestation when nutrients are stored, and condition loss occurs in later stages of gestation when fat and proteins are mobilized.

Amino acid research also shows discrepancies between current amino acid digestibility values used for feeds and Ball's proposed levels. Ball's team has found evidence suggesting sows digest more amino acids in feeds than grower-finisher pigs. Current recommendations are based on grower-finisher digestibility, and adjusting amino acid levels to account for digestibility differences could lower feed costs by \$1 per tonne.

Based on these results, Ball and his research partners have developed a new feeding strategy for sows. Sows in days one through 84 of gestation should be fed a lower energy and lower protein diet than is currently used, while sows in days 85 to 112 of gestation require a higher energy and higher protein diet.

More research is required before exact levels can be recommended, however. Ball has looked at recommended levels for lysine, threonine and energy in current recommendations, the Missouri trials and his own trials — and all suggest different amounts. Ball's trial began five years ago, and will continue for another three years.

"More attention to sow nutrition is required because sows have changed and we are expecting more performance from them. Better nutrition will keep the sow in the herd longer," says Ball. 

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RESEARCH PROFILE

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Ron Ball

Raised on a dairy, beef and cash crop farm in Alberta, Ron Ball left the farm for an education and career. After graduating from the University of Alberta in 1974 with his BSc, Ball sold feed.

Realizing his interest in the subject, he returned for his MSc in Swine Nutrition (1979). From there, Ball became a regional swine specialist with Alberta Agriculture, but found he did not have the answers to farmers' questions. Ball returned to school for his PhD in nutritional biochemistry from the University of Guelph (1984). Ball was a professor at Guelph for 12 years before returning to Alberta as Research Chair in Swine Nutrition. Ball's research on amino acids is mainly in pigs, but also includes humans, chickens and dogs. Program chair of the Banff Pork Seminar became another title for Ball in 1998, where he does everything from arranging speakers to editing proceedings. Ball has received awards from the Canadian Society of Animal Science, the Canadian Society of Nutritional Sciences and the University of Guelph Distinguished Alumni Award. Ball was the first Canadian awarded the American Society for Nutritional Sciences Osborne and Mendel Award, and won Alberta Pork's Spectra Award for Friend of the Industry.