

Effect of Low Protein Diets on Performance and Energy Metabolism of Sows

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Feeding sows with amino acids in excess of their requirement leads to a loss of nitrogen in manure, which may be detrimental to the environment. Replacing some of the complete proteins in commercial diets with free amino acids will reduce excess protein intake and nitrogen excretion by 15 to 20%, while still fulfilling all the animals' requirements. However, there is little evidence whether such low protein diets are economically feasible, or affect sow performance and energy metabolism.

Eighty 2nd parity sows were selected for this study beginning in October 2000. Forty sows are being fed conventional diets containing 14.8% crude protein (CP) for gestation, and 19.3% CP for lactation. Forty sows are fed reduced protein, amino acid supplemented diets providing 12.0% CP for gestation, and 16.3% CP for lactation, at energy concentrations equal to the control diets. All diets meet or exceed the current recommendations for amino acid concentration (NRC, 1998). Feed intake, reproductive performance (litter size, pig weight at birth and weaning, rebreeding interval) and body composition (backfat, body weight) are being measured during two consecutive pregnancies. In addition, 10 sows from each diet treatment are subjected to intensive metabolic measurements: nitrogen excretion, energy expenditure by indirect calorimetry, body composition by the D₂O dilution method, milk yield and composition. The economic feasibility of the low protein regimen will be assessed by the feed costs in comparison to the conventional feeding regimen.

Implications

We predict that feeding sows low protein, amino acid supplemented diets is not detrimental to their performance, and will be economically feasible compared to conventional feeding practices.

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