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## New Swine Nutrition Guide Available

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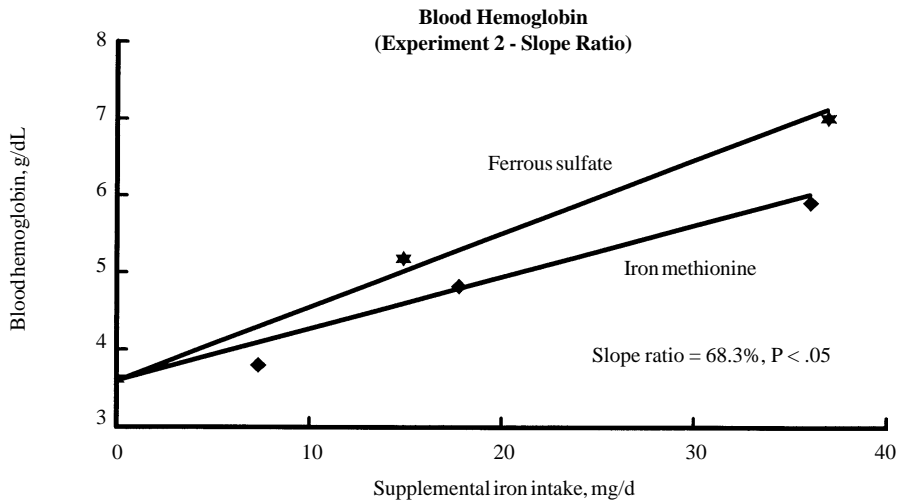


Figure 3. Slope ratio comparison of the effect of ferrous sulfate and iron methionine on blood hemoglobin concentration of weanling pigs.

centrations were measured (Figure 3). Based on hemoglobin concentration, the iron in iron methionine was 68% as bioavailable as the iron in ferrous sulfate.

Thus, using procedures described in these studies (hemoglobin repletion assays) we conclude that the iron in iron methionine is less bioavailable than the iron in ferrous sulfate. The reason for the difference between bioavailability estimates based on weight gain and hemoglobin are unknown, but similar findings have been reported in previous research.

<sup>1</sup>Austin J. Lewis is a Professor, Phillip S. Miller is an Assistant Professor, and Cynthia K. Wolverton is a Research Technologist in the Department of Animal Science.

## New Swine Nutrition Guide Available

Duane E. Reese<sup>1</sup>

### Summary and Implications

*A new swine nutrition guide from the University of Nebraska and South Dakota State University is available for pork producers, veterinarians, and others. The guide addresses many fundamentals of swine nutrition and modern feeding program design. Single copies are available for \$1 from a Cooperative Extension Office in Nebraska or by writing to Swine Nutrition, PO Box 830918, Lincoln, NE 68583-0918. Mail orders must include 55 cents shipping and appropriate sales tax. The guide should help readers develop better feeding strategies for pigs.*

Pork production is rapidly becoming a sophisticated, low-margin business. It is necessary that producers, veterinarians and others better understand certain principles of swine nutri-

tion so that better feeding programs for individual swine enterprises can be developed. Therefore, seven swine nutritionists from the University of Nebraska and South Dakota State University recently published a new nutrition guide. It replaces Swine Diet Suggestions. The new publication includes items such as:

- updated nutrient recommendations for all the traditional classes of swine, plus breeding boars and 2-week-old weaned pigs;
- amino acid recommendations for high, medium, and low lean gain growing-finishing pigs and for lactating sows producing heavy and light litters;
- amino acid, calcium, and phosphorus recommendations given as percent of the diet and amount/day and when it is appropriate to adjust nutrient density according to feed intake;
- acceptable ranges for vitamin

and trace mineral recommendations to allow feed manufacturers greater flexibility in preparing custom products;

- digestible lysine and available phosphorus recommendations for many common feedstuffs to allow diets containing non-traditional feedstuffs to be formulated more precisely;
- a review of the effect of many feed additives on pig performance;
- a comprehensive list of mineral and vitamin sources, which highlights the ones that are most frequently used, and the relative bioavailability of nutrients from each source;
- relative feeding value of several energy and amino acid (protein) sources;
- how to use the fat-free lean index from packer kill sheets to design diets for growing-finishing pigs;



- a discussion of the various methods of supplying nutrients to pigs (i.e., complete feed, concentrate or supplement, basemix, or premix) and how to make a choice;
- factors affecting feed intake of pigs; and
- advice about high levels of zinc in starting pig diets, betaine, phase feeding, separate sex

feeding, proteinated trace minerals, low protein corn, low test weight grains, feed processing, and more.

In Nebraska, the new publication is available at a Cooperative Extension Office for \$1. It also can be ordered by writing to Swine Nutrition, PO Box 830918, Lincoln, NE 68583-0918. Nebraska residents may order single copies at the above address for \$1, plus

appropriate sales tax, plus 55 cents shipping. Non-residents of Nebraska may order single copies from the above address for \$1 plus 55 cents shipping. Payment must be included with the order. Orders over \$10 will be invoiced with appropriate shipping and handling charges.

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# The Effects of Dietary Protein Concentration on Performance and Visceral Organ Mass in Finishing Barrows and Gilts

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## Summary and Implications

*The response of finishing barrows and gilts to five dietary protein concentrations was evaluated. Barrows and gilts have different requirements for protein and differ in their sensitivities to excessive intakes of protein. Gilts appeared to be affected by dietary protein concentrations to a greater extent than did barrows. Significant differences in weight gain did not occur but, the lowest average daily gain was for pigs fed the two highest protein levels. Increased dietary protein concentration resulted in increased liver, kidney, and pancreas weights. These data indirectly suggest that maintenance energy requirements of barrows and gilts may be increased as dietary protein concentration is increased, even though there was no significant reduc-*

*tion in growth rate or feed efficiency. Consumption of protein above the requirement (corn-soybean meal diets) results in protein (amino acids) wastage because the animal is unable to convert dietary amino acids to body protein.*

## Introduction

In the 1994 Nebraska Swine Report, we described an experiment where we found that feeding high-protein diets to growing-finishing gilts reduced growth performance and carcass protein accretion but increased carcass leanness. Because the response of pigs to dietary protein concentration varies with the genetic and physiological characteristics of the pig, we hypothesized that barrows and gilts might respond differently to protein intake. Therefore, the present experiment was conducted to evaluate the effect of dietary protein concentration on growth performance in barrows and gilts and to identify potential physiological mechanisms responsible for

the reduced performance of barrows and gilts that consume excessive protein.

## Procedures

Sixty crossbred pigs (30 barrows and 30 gilts) with an initial body weight of 112 lb were allotted to a randomized complete block experiment with a 2 x 5 factorial arrangement of treatments. There were two sexes (barrow and gilt) and five protein levels (13, 16, 19, 22, and 25% crude protein [CP]). Diets (Table 1) were corn-soybean meal-based and were fortified with vitamins and minerals to meet or exceed the National Research Council requirements for 110- to 240-lb pigs. The range of CP levels was obtained by changing the ratio of corn to soybean meal.

Pigs were housed individually in an environmentally regulated facility and had *ad libitum* access to feed and water throughout the experiment. Pigs were weighed and feed intakes were measured weekly to determine aver-

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