

Study finds benefits and tradeoffs in feeding rice bran to pigs

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Stein investigated the effects of rice bran on growth performance of growing-finishing pigs. Credit: Jen Roth

Rice is the third most widely grown cereal grain worldwide, and the bran left over from milling white rice is available in large quantities for livestock feed. Rice bran is high in unsaturated fatty acids, but limited information is available about effects of rice bran on growth performance of growing-finishing pigs and impacts on meat and carcass

quality. A new study from the University of Illinois provides this information for the first time.

Hans H. Stein, a professor in the Department of Animal Sciences at U of I, explains how dietary fat intake affects the quality of fat in the pig.

"Pigs deposit fatty acids in approximately the same proportions as they consume them from the diet. Also, if pigs consume a diet containing a large amount of fat, they will synthesize less fat on their own, which can change the fatty acid composition because the fat synthesized by the pig tends to be more saturated."

More unsaturated fat can lead to softer bellies, which have a shorter shelf life, increased susceptibility to becoming rancid, and reduced sliceability.

Stein and a team of researchers conducted an experiment using 224 barrows and gilts over a period of 97 days. A three-phase feeding program was used: grower, early finisher, and late finisher diets. In each phase, diets containing 10, 20, or 30 percent full-fat or defatted [rice bran](#) were fed, as well as a basal corn-soybean meal diet.

"We observed no effect of feeding [rice](#) bran on carcass characteristics," Stein says. "But there were some differences in meat quality, especially protein and fat percentage and marbling."

The protein content of the loin muscle was 7 and 8.7 percent greater, respectively, for pigs fed the greatest amount of full-fat or defatted rice bran than for pigs fed the basal diet. The fat content was reduced in pigs fed the maximal amount of full-fat rice bran, by 26 and 31 percent for pigs fed full-fat and defatted rice bran, respectively. The marbling score was 1.88 in meat from pigs fed the basal diet but decreased to 1.00 and 1.25 for the 30 percent full-fat and defatted rice bran diets, respectively.

Belly fat was softer if rice bran was included in the diets. The iodine value of belly fat—a measure of unsaturation—increased as more full-fat rice bran was included in the diet; however, feeding up to 30 percent defatted rice bran did not affect iodine value.

"The iodine value of fat from the pigs fed diets with full-fat rice bran is probably greater because those diets contained up to twice as much fat as the basal or defatted rice bran diets," Stein says. "So the pigs synthesized less fat."

Over the 97-day experimental period, average daily gain was not affected by diet. However, average daily feed intake increased as the inclusion rate of defatted rice bran increased, whereas the opposite was true when full-fat rice bran was included in the diets. As a consequence, the gain-to-feed ratio was greater in pigs fed diets containing full-fat rice bran than defatted rice bran or the basal [diet](#).

Stein says the results demonstrate that rice bran can be used in pig diets, but there are trade-offs. "Including 30 percent full-fat rice bran in diets for growing-finishing pigs may improve gain-to-feed without affecting carcass characteristics or meat quality, although polyunsaturated [fatty acids](#) in adipose tissues will increase. However, including up to 30 percent defatted rice bran will reduce gain-to-feed ratio without affecting the loin muscle quality or composition of adipose tissues. Thus, it is a matter of ingredient costs to determine if it is economical to include full-fat rice bran or defatted rice bran in diets for growing-finishing [pigs](#)."

"We hope that this information will help producers and feed companies make more informed choices about the use of rice [bran](#) in swine diets."

More information: Gloria A Casas et al, Effects of full fat rice bran and defatted rice bran on growth performance and carcass characteristics

of growing-finishing pigs1, *Journal of Animal Science* (2018). DOI: [10.1093/jas/sky145](https://doi.org/10.1093/jas/sky145)

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