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Utilization of Wheat Bran in Finishing Swine Diets

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Summary

Two trials with finishing pigs were conducted to evaluate wheat bran added to a basal milo-soybean meal diet to provide more crude fiber. Pigs fed added wheat bran (5-10-15-20%) and those fed the basal diet gained similarly, but 40% wheat bran (5.8% crude fiber) significantly reduced rate of gain. Feed per pound of gain was improved approximately 4 to 5% with the addition of 10 or 15% wheat bran; however, cost per pound of gain was the same. Wheat bran usually costing more than milo would not merit its use in swine finishing diets.

Introduction

Corn or milo-soybean meal fortified diets have approximately 2.5% crude fiber. Research with rats has suggested that slightly increasing fiber content of the diet will improve the weight gain and efficiency. Previous research at this station with dehydrated alfalfa meal in finishing diets indicated that pigs can use up to 20% alfalfa meal (6% crude fiber) without significantly affecting rate of gain. This study evaluated wheat bran as a source of fiber and energy for finishing pigs.

Procedure

In trial 1, 100 Yorkshire barrows and gilts were allotted to five replicated treatments based on litter, sex, and initial weight. Pigs were housed in the modified, open-front finishing unit that has a total slatted floor. Each pen is 6 x 16' with two-hole self feeder and an automatic waterer. In addition, each pen was covered with a 6' x 8' hover, 40" above the floor. No supplemental heat was provided during the trial. The treatments used in trial 1 were: (A) milo-soybean meal fortified basal ration; (B) basal + 10% wheat bran (3.4% CF); (C) basal + 20% wheat bran (4.2% CF); (D) basal + 30% wheat bran (5.0% CF); (E) basal + 40% wheat bran (5.8% CF) with wheat bran substituted for milo. The basal finishing diet contained 13.9% crude protein, .67% calcium and .52% phosphorus. Wheat bran contains 20% crude protein; therefore, each ration increased in crude protein as more wheat bran was substituted for milo; 40% wheat bran diet contained 16.1% crude protein. To reduce dustiness of the experimental rations, we added 2% soy oil to all the diets. Pigs in this trial averaged 132 lb initially and 215 lb (off-trial weight) after 51 days.

In trial 2, 80 Yorkshire barrows and gilts were randomly assigned to ten pens (two replications) of five dietary treatments. Pigs started on test averaged 110 lb; 220 lb after 68 days on test. Pigs were reared in the same pens used in trial 1. Treatments used in trial 2 were: (A) milo-soybean meal basal diet; (B) basal diet + 5% wheat bran (3.0% CF); (C) basal + 10% wheat bran (3.4% CF); (D) basal plus 15% wheat bran (3.8% CF); and (E) basal + 20% wheat bran (4.2% CF). Each diet contained 2% soy oil to reduce dustiness of the diet.

Results and Discussion

Results of feeding trial 1 are presented in Table 18. Pigs fed the finishing diet containing 40% added wheat bran gained significantly slower than those fed the basal milo-soybean meal diet. The 40% wheat bran diet contained 5.8% crude fiber, which in previous studies with alfalfa meal reduced rate of gain and required more feed per pound of gain. Pigs fed the diets with 10 or 20% added wheat bran were most efficient---4% more with 10% wheat bran.

Table 19 presents the results of trial 2. No significant difference was noted in average daily gain when pigs were fed the basal diet or 5, 10, 15, or 20% added wheat bran. As in trial 1, pigs fed the 10 or 15% added wheat bran were 4 to 5% more efficient than pigs fed the basal diet. Feed ingredient costs per pound of gain were as follows: basal diet 33.8¢; 10% bran 33.6¢; and 15% bran 33.9¢.

Table 18. Performance of Finishing Pigs Fed Wheat Bran (Trial 1)

Wheat bran, %	0	10	20	30	40
No. pigs/treatment ¹	20	20	20	20	20
Avg. daily gain, lbs	1.62 ^a	1.54 ^{ab}	1.56 ^{ab}	1.58 ^{ab}	1.41 ^b
Avg. daily feed int., lbs	5.73	5.24	5.43	5.78	5.36
Feed/gain	3.54	3.40	3.48	3.66	3.80

¹Average initial weight, 132 lbs.; final weight, \approx 215 lb.

²Means on the same line with different superscripts differ significantly (P<.05).

Table 19. Performance of Finishing Pigs Fed Wheat Bran (Trial 2)

Wheat bran, %	0	5	10	15	20
No. pigs/treatment ¹	16	16	16	16	16
Avg. daily gain, lbs.	1.58	1.60	1.60	1.62	1.60
Avg. daily feed int., lbs.	6.26	6.42	6.08	6.12	6.62
Feed/gain	3.96	4.01	3.80	3.78	4.14

¹Average initial weight, 115 lb.; final weight, \approx 220 lb.