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Wheat in Growing-Finishing Rations

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Summary

Varying percentages of wheat replaced sorghum grain in rations for growing pigs in two trials. There were no significant differences in performance of pigs in trial one. In trial two significant differences unrelated to wheat in the diet occurred. Average feed efficiency for all groups receiving no wheat (100% sorghum) was 3.13 pounds. Average feed efficiency for all groups receiving no sorghum grain (100% wheat) was 3.31 pounds. Barrows gained 9% faster than gilts. Pelleting the ration saved an average of 49 pounds of feed for every 100 pounds of gain (17%).

Procedure

Seventy pigs (Hamps, Durocs, and Yorks) averaging 81 pounds each were divided into groups of ten on the basis of breed, sex, and weight and randomly assigned to treatments as indicated in table 3. Four weeks later, another 80 pigs averaging 127 pounds each were grouped by the same method and assigned to treatments as indicated in table 3. The second group was heavier than desired so the trial was shorter than usual. Also, it was necessary to withdraw pigs for classwork before pen average weights were as heavy as desired. Pigs were housed in the K.S.U. finishing barn (complete confinement, slotted floors, self-feeders and automatic waterers). Trial one was initiated June 26; trial two, July 22. Ration premixes were prepared in the Department of Grain Science and Industry. Mixing and pelleting was done at a local, commercial mill.

Results and Discussion

Ration analyses are summarized in table 2. Samples for analyses were taken from the feeders once each week. Pig performance is summarized in table 3. Overall average daily gains are not as high as expected (1.46 lbs. per day in trial 1 and 1.53 lbs. in trial 2). Low gains may have resulted from two environmental factors (1) a summer trial without the present ventilation system (2) the oxidation pit was not functioning properly so ammonia odors from under the floor were strong at times. If those factors affected performance, they should have affected all treatment lots the same so comparisons should be valid.

Notice the performance of one lot (rotation pellet, table 3); pigs in it gained 1.45 lbs. per day with feed efficiency much better than that of those in any other lot (approximately 20% better than the overall average). That group was changed from 100% wheat to 0% wheat and back again every time they consumed 200 pounds of feed. Two hundred pounds of 100% wheat ration was put in the feeder, then 200 lbs. of 0% wheat, and so on through the feeding period. It is not yet a recommended way of feeding but it will certainly be checked further.

Wheat certainly can be used to replace other grains in pig rations successfully. Results of this trial suggest that the percentage of wheat used does not make too much difference. It was not possible to measure waste with pigs on slotted floors but feed efficiency suggests that the 100% wheat ration was most acceptable when pelleted.

Table 1. Ration Fed in Wheat Study.¹

<u>Ingredient</u>	<u>Lbs. per ton of ration</u>
Ground sorghum grain or wheat	1522 ²
Soybean meal (44%)	400
Ground limestone	20
Dicalcium phosphate	28
Salt	10
Premix ³	20

¹Fed as pellet or meal as indicated.

²Sorghum grain and wheat replaced each other pound-for-pound as indicated.

³Twenty pounds of premix contained: 3,200,00 I.U. vitamin A; 300,00 I.U. vitamin D; 40,000 mgs. choline chloride; 12,000 mgs. niacin; 4,000 mgs. riboflavin; 8,000 mgs. calcium pantothenate; 10,000 mgs. vitamin B₁₂; 91 gms. manganese; 91 gms. iron; 45 gms. zinc (50 ppm); 9 gms. copper; 0.9 gm. cobalt; 2.7 gms. iodine; 100 gms. Aureomycin; 100 gms. sulfmethazine and 50 gms. of penicillin.

Table 2. Proximate Analyses (Percentages) of Wheat Rations as Fed.¹

Wheat as % of ration	Crude Protein	Ether extract	Crude fiber	Total ash	Calcium	Phosphorus
Percentages						
0	16.4	2.31	2.43	5.16	0.90	0.58
25	16.0	1.76	2.88	4.91	0.74	0.60
50	17.4	1.76	2.97	5.26	0.93	0.64
75	17.1	1.58	3.30	5.02	0.74	0.64
100	16.7	2.13	3.44	4.48	0.82	0.61

¹Analyses by Department of Animal Science and Industry laboratory.

Table 3. Performance of Pigs Receiving Indicated Percentages of Wheat.

Wheat as % of ration	Diet Form	Avg. d. gain lbs.	Avg. feed eff. lbs.	Avg. d. gain lbs.	Avg. feed eff. lbs.
0	Pellet	1.43	2.78	1.65	3.08
0	Meal	1.42	3.16	1.36	3.51
25	Pellet	-----	-----	1.64	2.99
25	Meal	-----	-----	1.57	3.40
50	Pellet	1.55	2.70	-----	-----
50	Meal	1.50	3.36	-----	-----
75	Pellet	-----	-----	1.54	3.06
75	Meal	-----	-----	1.36	3.31
100	Pellet	1.56	2.82	1.47	3.15
100	Meal	1.43	3.24	1.50	4.03
Rotation	Pellet ³	1.45	2.51	-----	-----

¹Average starting weight in trial I was 81 lbs.; average finishing weight was 171 lbs. (fed for 61 days).

²Average starting weight in trial II was 127 lbs.; average finishing weight was 181 lbs. (fed 35 days).

³Group fed 200 lbs. of 100% sorghum grain ration then the next 200 lbs. was 100% wheat ration and etc.