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Research conducted the past several years on the nutritional needs of gilts and sows during gestation has resulted in a change from free-choice to limited feeding of brood sows. Limiting feed intake also reduces the total intake of other nutrients. Recent research conducted at Cornell, Illinois and Minnesota using corn as the only source of protein for gestating gilts has shown little effect on litter size or pig weights, but pigs from sows receiving all of their protein from corn gained less from birth to 21 days.

Oats is higher in protein content than corn and often available to South Dakota swine producers. The results of the trials using corn as the only protein source in gestation rations suggested that oat rations should also be investigated. The trial reported here was designed with the objective to evaluate an oat ration supplemented with minerals for gestating gilts and sows.

Experimental Procedure

Fifteen gilts and 17 sows that had been bred for an average of 25 days were randomly assigned from groups of similar age, breeding and servicing sire to two treatments of 16 animals. There were 7 gilts and 9 sows in treatment 1 and 8 gilts and 8 sows in treatment 2. Sows and gilts were kept in separate dirt lots with access to a portable house with a wooden floor.

Diets were fed in individual feeding stalls. The composition of the diets is shown in table 1. The basal diet was composed of corn, alfalfa meal, soybean meal and minerals and was fed at a level of 4.5 lb. per head daily. The oat-mineral diet was fed at 5.25 lb. daily. When fed at these levels, the diets supplied approximately equal daily amounts of protein (280 grams) and metabolizable energy (6030 Kcal). Neither diet was supplemented with vitamins.

On the 110th day of gestation animals were brought into the farrowing house. The same lactation diet was fed to all animals. Pigs were weighed at birth, 7, 14 and 21 days.

Results

A summary of the data obtained in this experiment is shown in table 2. One gilt and one sow on each treatment failed to conceive. Therefore, the results are based on 14 animals fed each diet. Although the oat diet was fed at a higher level to equalize energy intake, both gilts and sows gained less during gestation when fed the oat diet. The sows actually lost an average of 7 lb. the first 57 days they were fed the oat diet and had only a 9 lb. gain for the gestation period from 25 to 110 days.

Production performance was satisfactory and was not affected by the diets fed. Live pigs farrowed per litter were higher for sows fed the basal diet and for gilts fed the oat diet. However, these differences were not significant.

Birth and weaning weights varied with litter size. Both birth and weaning weights decreased as litter size increased.

Sows farrowed more live pigs and heavier pigs than gilts. They also weaned slightly more pigs with heavier weaning weights. However, gilts weaned about 88% of their pigs compared to only 78% for sows.

The results of this experiment would indicate that both gilts and sows could be fed an oat-mineral diet from approximately the 25th day of gestation without affecting production performance. The oat diet would be deficient in certain amino acids, especially lysine. Other research has indicated that the protein level is critical during the first 3 weeks of gestation and also during the last month of gestation. It is also possible that feeding this diet during successive gestation periods could affect production performance. Additional research will be necessary to obtain the information necessary to answer these questions.

Summary

Thirty-one crossbred gilts and sows were assigned to two dietary treatments at approximately the 25th day of gestation. Gilts and sows gained more weight during gestation when fed 4.5 lb. daily of a corn-soybean meal-alfalfa meal-mineral diet than when fed 5.25 lb. of an oat-mineral diet. The diets supplied approximately equal amounts of protein and energy when fed at these levels. Live pigs farrowed, pig birth weight, weaning weight and livability of pigs were not affected by dietary treatment.

Table 1. Percentage Composition of Diets

	Basal	Oats
Ground yellow corn	73.6	--
Ground oats	10.0	97.0
Dehydrated alfalfa meal (17%)	13.5	--
Soybean meal (44%)	--	--
Dicalcium phosphate	2.0	1.8
Limestone	0.4	0.7
Trace mineral salt	0.5	0.5

Table 2. Performance of Sows Fed Oats During Gestation

	Sows		Gilts		Combined	
	Oats	Basal	Oats	Basal	Oats	Basal
Initial wt., lb.	429	428	313	317	371	381
Gestation wt. gain, lb.						
25 to 82 days	-7.3	27.3	41.3	49.0	17.0	36.5
25 to 110 days	9.4	46.1	55.1	70.0	32.3	56.2
Wt. loss farrowing, lb.	57.6	66.0	30.1	21.0	43.9	45.2
Lactation wt. gain, lb.	33.4	27.0	7.6	3.3	18.3	14.1
No. pigs born alive	10.7	11.8	9.6	9.2	10.1	10.6
No. stillborn	0.3	0.4	0	0	0.1	0.2
Avg. birth wt., lb.	3.1	2.9	2.6	2.7	2.9	2.8
No. pigs weaned (21 days)	8.4	9.2	8.6	8.0	8.5	8.5
Percent weaned	78.5	78.0	89.6	87.0	84.2	80.2
Weaning wt., lb.	11.3	9.8	9.9	10.1	10.5	10.0