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High-Protein (Spear) Oats for Sows During Reproduction

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The National Research Council suggests that gilts and sows require .42% lysine in the gestation diet and .60% lysine in lactation diets. Spear oats has been shown to contain about .65% lysine which is considerably higher than the amount of lysine found in corn (.25%) or other cereal grains.

The objective of this experiment was to determine the effect of Spear oats as the only source of protein to sows during gestation and as the only grain source in lactation diets on sow reproductive performance and pig performance to weaning.

Experimental Procedure

Forty-eight gilts were allotted on the basis of weight and ancestry to two groups approximately 30 days prior to the initiation of breeding. One group was fed 4 lb. per gilt per day of the control diet and the other group was fed 4.8 lb. per gilt daily of the oat diet. Ten days prior to breeding and to 7 days after breeding the daily feed was increased to 6.00 and 7.25 lb. for control and oat diets, respectively, and then reduced to the previous levels. Approximately 30 days after breeding the daily feeding level was increased to 6 lb. per day for gilts receiving the oat diet as they were not gaining weight comparable to those animals fed 4 lb. daily of the control diet.

At 110 days of gestation the animals were moved to the farrowing house and placed in individual farrowing crates. The lactation diets were fed at 6 lb. per day to farrowing and *ad libitum* from farrowing to weaning at 35 days. After weaning the sows were returned to the gestation treatments and fed 6.00 or 7.25 lb. daily to breeding and 4 and 6 lb. daily of the control and oat diets, respectively, during the second gestation period. Management during the second lactation was similar to that for the first period.

The composition of the diets is shown in table 1. The gestation diets were calculated to contain .63% lysine and the lactation diets .77% lysine.

Results

Table 2 summarizes the data obtained in this experiment. Conception was not affected by the dietary treatment as 11 gilts in the control group and 12 of the gilts fed oats farrowed. Although the oat diet was fed at a higher level, gain was 28% less for gilts fed the oat diets. During the second gestation period, gains were approximately 18% less for sows fed the oat diets. It would appear that the oat diet contained considerably less available energy than the control diet.

There were no significant differences in number of pigs born and weaned or in average litter or pig weights at birth and weaning. Litter size farrowed and weaned was below expectations for second litter sows. However, the problems encountered were similar in both groups and not due to dietary treatment.

Self-feeding the lactation diets resulted in first litter sows maintaining their weight during a 5-week lactation period while consuming 11.1 and 12.2 lb. of control or oat diets, respectively. Second litter sows consumed more feed daily and gained more weight during lactation than first litter sows. Those second litter sows fed the oat diet consumed more feed daily (18.1 vs 15.5 lb.) and gained more during lactation (58.5 vs 42.9 lb.) than sows fed the control diet.

Summary

A limited number of sows were fed a gestation diet of Spear oats supplemented with minerals and vitamins and a lactation diet of Spear oats and soybean meal with mineral-vitamin supplementation through two reproductive periods. Reproductive performance was equal to that of sows fed corn-soybean meal type diets of equal lysine content. Gestation gain was less for animals fed the oat diet, even when daily feed was increased to 6 lb. per day compared to those fed 4 lb. daily of the control diets.

Table 1. Composition of Diets (Percent)

	Gestation		Lactation	
	Control	Spear oats	Control	Spear oats
Ground corn	73.5	--	68.5	--
Ground Spear oats	--	97.0	--	79.6
Soybean meal, 44%	13.5	--	--	--
Soybean meal, 48%	--	--	18.0	7.0
Alfalfa meal, 17%	10.0	--	--	--
Beet pulp	--	--	10.0	10.0
Dicalcium phosphate	2.0	1.4	2.0	2.0
Ground limestone	.4	1.0	.8	.8
Trace mineral salt	.5	.5	.5	.5
Vitamin premix[a]	.1	.1	.1	.1

[a] Provided per lb. of diet: vitamin A, 2000 IU; vitamin D, 200 IU; vitamin E, 2.5 mg; riboflavin, 1.25 mg; pantothenic acid, 5 mg; niacin, 8 mg; choline, 25 mg and vitamin B_{12}, 5 micrograms.

Table 2. Effect of High-Protein Oats (Spear) in Gestation and Lactation Diets on Sow and Pig Performance in Two Successive Reproductive Periods

	First litter		Second litter	
	Control	Spear oats	Control	Spear oats
Number farrowed	11	12	8	7
Avg. breeding wt., lb.	280	277	343	300
Avg. gestation gain (0-110 days), lb.	114	81	106	87
Avg. lactation gain (35 days), lb.	2.0	1.8	42.9	58.5
Avg. lactation feed cons./day, lb.	11.1	12.2	15.5	18.1
Avg. number live pigs born	9.9	9.1	7.4	8.1
Avg. number stillborn pigs	.5	.3	.5	2.0
Avg. number pigs, 35 days	7.5	6.8	5.0	5.0
Avg. litter birth wt., lb.	27.1	26.6	20.2	22.0
Avg. pig birth wt., lb.	2.6	2.9	2.8	2.9
Avg. litter wt. (35 days), lb.	115.5	106.3	82.1	79.6
Avg. pig wt. (35 days), lb.	15.4	15.6	16.4	15.9