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EFFECT OF RESTRICTED FEEDING ON GRAVID SOWS

C. S. German, R. W. Seerley and R. C. Wahlstrom

In recent years the restriction of the feed intake of pregnant gilts and sows has become an accepted management practice. However, no one has yet determined the proper feeding levels for given phases of the gestation period.

This report is a continuation of a study to compare two feeding plans using the same ration for both plans. The total feed consumed was the same for both groups of sows.

Experimental Procedure

For trial 1, eight Hampshire and eight Yorkshire gilts were randomly allotted into two groups. Four of each breed were in each group and most were paired littermates.

In the second trial, twelve Hampshire and ten Duroc sows were randomly allotted to two equal groups. Six Hampshire and five Duroc sows were assigned to each treatment. Most of the sows were paired littermates.

The sows were housed on brome pasture lots and fed in individual stalls to control feed intake. Both lots were fed the ration shown in table 1. The feeding plan for the two lots is given in table 2. Each sow in each group consumed approximately 505 pounds of feed. The sows were fed once daily and water was supplied in automatic fountains.

Table 1. Composition of Ration

Ingredient	Percent
Gr. yellow shelled corn	65.5
Gr. oats	10.0
Dehydrated alfalfa meal (17%)	10.0
Soybean meal (44%)	12.0
Dicalcium phosphate	1.8
Trace mineralized salt	0.5
Vitamin-antibiotic premix ^a	0.2

^a Added 2270 U.S.P. units of vitamin A, 224 I.C. units of vitamin D, 4 mg. of riboflavin, 8 mg. of pantothenic acid, 18 mg. of niacin, 20 mg. of choline chloride, 6.6 mcg. of vitamin B₁₂ and 5 mg. of chlortetracycline per pound of ration.

The sows were weighed at the start of breeding, on the 110th day of pregnancy, 1 to 2 days after farrowing and after 3 weeks lactation. The 70 day weight taken in trial 1 was dropped in trial 2.

The pigs were weighed at birth and at 3 weeks of age at weaning. At birth the pigs were given a strength score based on the vigor and activity of the pig. Birth weight was not related to the strength score. The value ranged from 1 to 5, weak to strong, respectively. The pigs were given 1 cc. of iron dextran intramuscularly at 3 days of age.

Table 2. Levels of Feeding Prior To, During, and After Gestation

Feeding scheme	Lot 1 Lb./day	Lot 2 Lb./day
Prebreeding	4.0	4.0
2 weeks before to 1 week after breeding (3 weeks)	5.0	5.0
To 70 days pregnancy	4.0	3.0
To 93 days pregnancy	5.0	4.0
To term	5.0	9.0
Lactation	Full-fed	Full-fed

Results and Discussion

In trial 1 three sows in each group failed to provide complete data. They either aborted or farrowed very weak pigs. Four of these six sows were littermates and were bred to a related boar. None of the other Hampshire sows in the herd aborted or farrowed weak pigs. Therefore, a genetic relationship was suspected.

In the second farrowing two sows in lot 1 and one sow in lot 2 did not conceive. The other losses were due to death and injury on ice.

The sows in lot 1 were heavier at the start of breeding but the weight gains during gestation were similar for both groups during the first gestation. However, during the second gestation period the sows in lot 1 gained more than sows in lot 2.

There were no significant differences found in the data collected on the pigs. However, during the first farrowing the sows in lot 2 farrowed slightly heavier pigs and the pigs were stronger at birth. At weaning the sows in lot 2 had slightly heavier pigs, but the sows in lot 1 had more pigs at 3 weeks.

During the second farrowing the birth weights and strength scores were similar. The trends in pigs weights and litter size were the same as the first farrowing.

Table 3. Results of the Two Pregnancy-Lactation Periods, Trial 1

	First pregnancy		Second pregnancy	
	Lot 1	Lot 2	Lot 1	Lot 2
No. of sows	8	8	7	8
No. of sows farrowing	5	5	4	6
Wt. at start of breeding, lb.	323	290	418	418
Wt., 70 days later, lb.	374	344	471	452
Wt., 109 day gestation, lb.	405	376	534	500
Wt., 2nd day post farrowing, lb.	356	329	482	455
Wt., 3 weeks post farrowing, lb.	346	316	435	411
Av. no. live pigs per litter	10.60	10.80	10.20	10.66
Av. birth wt., lb.	2.25	2.68	2.94	2.72
Av. strength score	4.05	4.96	4.85	4.93
Av. litter size, 3 weeks	9.20	8.40	9.25	8.66
Av. 3 week wt., lb.	12.1	12.7	14.2	16.0
Av. stillborn and mummified pigs at birth	0	0	0.25	0.83

In the second trial four sows in each group failed to farrow at the first farrowing. Three sows in lot 1 and 1 sow in lot 2 failed to conceive. One sow in lot 1 aborted about 2 months after breeding and three sows in lot 2 died. One dislocated her pelvis, another died of an internal hemorrhage and the third died in the farrowing crate.

The sows in lot 2 gained slightly more weight during gestation, farrowed an average of 1.5 more pigs that were heavier at birth than those from sows in lot 1. This difference in litter size and pig weight was still in evidence at 3 weeks of age.

During the second gestation period the sows in lot 1 gained more than those in lot 2. This was similar to the trend noted in trial 1. Differences in litter size farrowed and pig birth weights were not as great as those noted in the first farrowing. Actually the lot 1 sows farrowed larger litters but the pigs were not quite as heavy as those from sows in lot 2.

Combining data from all sows that farrowed in both trials indicates that sows that were restricted in feed intake to a greater degree during the first three months of gestation and fed more liberally the last three weeks farrowed about 0.5 more pig per litter, pigs were slightly heavier and stronger at birth and also slightly heavier at 3 weeks of age. The differences observed are admittedly small but would suggest that the feeding plan followed for lot 2 sows should be considered.

Table 4. Results of the Two Pregnancy-Lactation Periods, Trial 2

	First pregnancy		Second pregnancy	
	Lot 1	Lot 2	Lot 1	Lot 2
No. of sows	11	11	7	6
No. of sows farrowing	7	7	4	5
Wt. at start of breeding, lb.	301	291	439	460
Wt., 110 day gestation, lb.	437	432	551	540
Wt., 1 day post farrowing, lb.	394	405	488	462
Wt., 3 week post farrowing, lb.	351	361	*	*
Av. no. live pigs per litter	7.9	9.4	11.3	10.4
Av. birth wt., lb.	2.7	3.1	3.0	3.2
Av. strength score	4.8	4.8	4.9	4.9
Av. litter size, 3 wk.	7.1	8.0	*	*
Av. 3 week wt., lb.	11.5	12.1	*	*

* 3 week data not available.