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ENERGY NEEDS OF GILTS AND SOWS DURING GESTATION

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During the past few years several experiments have demonstrated that gilts and sows do not need to be fed as liberally during the gestation period as was previously recommended. Overfeeding of the pregnant sow is not only an uneconomical practice but also can lead to difficulties at farrowing time and more pigs overlaid if sows are excessively fat.

Most experiments with feeding methods for pregnant gilts have limited the intake of all nutrients. The purpose of this study reported here was to determine the effect of restricting only the energy intake.

Experimental Procedure

The rations fed are shown in table 1. The intake of all nutrients, except energy, was the same for both groups of gilts. Protein, minerals and vitamins were adjusted so that the same amount of these nutrients was present in 3 lb. of feed fed to lot 1 as was present in 5 lb. of feed fed to lot 2. The added energy for lot 2 was obtained by adding corn starch to the ration. These same rations were fed during lactation at a level of 8 lb. per day during the first lactation and 9.5 lb. per day during the second lactation period.

Table 1. Ration Composition

Ingredient	Lot 1 3 lb./day	Lot 2 5 lb./day
Gr. yellow corn	69.80	41.88
Corn starch	---	40.00
Solv. soybean meal (48% protein)	25.00	15.00
Calcium carbonate	0.35	0.21
Dicalcium phosphate (26% Ca, 18.5% P)	3.75	2.25
Trace mineralized salt (0.8% zinc)	1.00	0.60
Vitamin premix[a]	0.10	0.06

[a] Supplied the following per ton of ration: 30 million I.U. of vitamin A, 2 million I.U. of vitamin D_2, 30 grams of riboflavin, 120 grams of pantothenic acid, 160 grams of niacin and 100 milligrams of vitamin B_{12}.

In trial 1 five Duroc gilts were randomly allotted to each treatment. All were paired littermates. The gilts that settled and farrowed were rebred for a second farrowing.

For trial 2 eight crossbred gilts were randomly allotted to each treatment. Most of these were also paired littermates. Only data from the first litter of these sows are available in this report since these sows did not farrow in time for the second farrowing data to be included.

The gilts were kept on plowed lots so no nutrients could be obtained from pasture. They were fed once daily in individual feeding stalls. Water was supplied in automatic fountains.

The gilts were weighed on the first day of breeding, at 110 days gestation, 1 to 2 days after farrowing and after 3 weeks of lactation. The pigs were weighed at birth and at 3 weeks. At birth the pigs were given a strength score ranging from 1 to 5, weak to strong, respectively. They were given 1 cc. (100 mg.) of iron dextran intramuscularly at 3 days of age.

Results and Discussion

In the first farrowing of trial 1 one sow in the lot fed 5 lb. of feed per day failed to settle; she was never detected in estrus. In the second farrowing only 4 sows in the lot fed 3 lb. and 3 sows in the lot fed 5 lb. provided complete data.

In trial 2 three sows failed to farrow the first time. In the lot fed 3 lb. one sow did not conceive, while in the lot fed 5 lb. one sow aborted two months after breeding and one sow died of an internal hemorrhage. Neither condition was attributed to the feeding treatment.

No significant differences were found between treatments for any of the data collected on the baby pigs. However, in trial 1 sows fed 5 lb. of feed per day farrowed and weaned slightly more pigs per litter in both farrowings than did those sows fed 3 lb. of feed per day. Birth weights also averaged heavier in litters from sows fed 5 lb. per day. In the second trial these differences were smaller but still favored the sows fed 5 lb. per day in litter size at birth and birth weight but at weaning time litter size was slightly higher in those sows fed 3 lb. of feed per day.

The sows receiving 5 lb. of feed per day gained significantly more weight during gestation than the sows receiving 3 lb. of feed per day. Also, the sows fed 5 lb. of feed daily gained more weight from breeding to weaning than did those sows fed 3 lb. of feed per day.

It is interesting to note that the gilts in trial 1 fed 3 lb. of feed daily gained 80 lb. during their first gestation period and 89 lb. during the second period while gilts in trial 2 gained 76 lb. This does indicate that this small amount of feed will support a relatively good gain in bred sows. Five pounds of feed daily produced gains of 148, 124 and 135 lb., respectively, for the corresponding groups. Slightly more weight was lost during lactation by those sows that had been fed 5 lb. per day during gestation than by those fed 3 lb. daily.

Although more sows need to be fed on these treatments before definite conclusions can be drawn, the data to date indicates that 3 lb. of feed daily may be sufficient for brood sows during gestation if adequate protein, minerals and vitamins are provided in the feed.

Table 2. Results of Limited Energy Intake to Gravid Sows, Trial 1

	3 lb./day		5 lb./day	
	First farrowing	Second farrowing	First farrowing	Second farrowing
No. of sows	5	4	5	3
Av. initial wt. at breeding	280	414	289	430
Av. farrowing wt.	360	503	437	554
Av. 1 day post-farrowing wt.	315	457	405	526
Av. 3 week lactation wt.	277	445	346	516
No. sows farrowing	5	4	4	3
Av. litter size, farrowed alive	9.8	10.5	11.3	10.7
Av. birth wt., lb.	2.3	2.6	2.4	2.9
Av. strength score at birth[a]	4.6	4.4	4.2	4.6
Av. litter size, 3 weeks	8.6	7.8	9.0	8.7
Av. 3 wk. weaning wt., lb.	13.2	10.4	11.4	10.5
Stillborn pigs	2	2	--	--

[a] The strength score is based on the vigor and activity of the pig; it is not related to birth weight.

Table 3. Results of Limited Energy Intake to Gravid Sows, Trial 2

	3 lb./day	5 lb./day
No. of sows	8	8
Av. initial wt. at breeding	326	307
Av. farrowing wt.	392	441
Av. 1 day post-farrowing wt.	360	406
Av. 3 week lactation wt.	348	386
No. of sows farrowing	7[a]	6[b]
Av. litter size, farrowed alive	8.8	9.2
Av. birth wt., lb.	2.8	2.9
Av. strength score	5.0	4.9
Av. litter size, 3 wk. weaning	7.4	7.2
Av. weaning weight, lb.	12.0	13.1
Stillborn pigs	7[c]	0

[a] One sow did not settle.
[b] One sow died of an internal hemorrhage in the ileum. One sow did not settle.
[c] All from one sow; she also had 12 live pigs.