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## Effect of adding fat to diets during late gestation and lactation

### Abstract

Recent research at the University of Nebraska suggest that feeding sows high level of fat (15-20%) during late gestation and lactation may increase energy stores in the newborn pig and increase their survival. Adding fat to sows diets increases the fat content of the milk and therefore increases its energy content. The present studies were conducted to evaluate the effect of feeding 6% fat to sows and gilts during late gestation and lactation on pig survival and performance from birth to weaning (14 or 21 days).; Swine Day, Manhattan, KS, November 9, 1978

### Keywords

Swine day, 1978; Kansas Agricultural Experiment Station contribution; no. 79-105-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 342; Swine; Fat; Gestation; Lactation; Performance; Survival

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Introduction

Recent research at the University of Nebraska suggest that feeding sows high level of fat (15-20%) during late gestation and lactation may increase energy stores in the newborn pig and increase their survival. Adding fat to sows diets increases the fat content of the milk and therefore increases its energy content. The present studies were conducted to evaluate the effect of feeding 6% fat to sows and gilts during late gestation and lactation on pig survival and performance from birth to weaning (14 or 21 days).

Summary

Five trials involving 111 litters (1042 pigs) were used to evaluate the effects of feeding 6% fat to sows and gilts during late gestation and lactation. Pig survival was not increased by feeding 6% fat to sows during late gestation and lactation. Pig weights at weaning (21 days) or daily gains from birth to weaning were not increased by feeding 6% fat in the lactation diets.

Procedures

Trial I. Crossbred gilts were moved to the farrowing house 10 to 14 days prior to expected farrowing date and randomly assigned to either the

control diet or the control diet + 6% added fat (tallow). The control diet contained 77.2% sorghum, 18% soybean meal, 2.0% dicalcium phosphate, 1.3% limestone, 0.5% salt, 0.5% vitamin premix, 0.1% trace mineral premix, and 0.4% antibiotic premix. Gilts were kept in totally slatted farrowing crates, each equipped with an automatic waterer and a self-feeder. Gilts were fed 5 lb. per day from the time they came in the farrowing house until farrowing. After farrowing, gilts were fed ad libitum. Newborn pigs were weighed individually within 24 hr., given 150 mg of iron, ear notched, tails docked, needle teeth cut, and iodine applied to the umbilical cord. No creep feed was offered to the pigs during the 14-day lactation study. Trial I was conducted during September and October of 1977.

Trial II. Yorkshire sows (second to fourth litter) and gilts were assigned at farrowing to either the control diets or the control diet + 6% added fat. The fat source was a dry product, produced by spray drying white grease and whey. Sows were fed ad libitum during lactation. No creep feed was offered to pigs during the 21-day lactation study. Management of newborn pigs was identical to that in Trial I. Trial II was conducted during January and February of 1978.

Trial II . Second litter crossbred sows were assigned at farrowing to either the control diet or the control diet + 6% added fat (tallow). The diet was identical to that in Trial I. Sows were

fed ad libitum during lactation. Trial III was conducted during March and April of 1978.

Trial IV. Yorkshire gilts were assigned at farrowing to either the control diet or the control diet + 6% added fat (tallow). Gilts were fed ad libitum during lactation. Trial IV was conducted during May and June of 1978.

Trial V. Yorkshire sows (second to fifth litter) were assigned at farrowing to either the control diet or the control diet + 6% added fat (tallow). Sows were fed ad libitum. Trial V was conducted during July and August of 1978.

### Results and Discussion

The results of Trial I are shown in Table 26. Adding 6% fat (tallow) to gilts' diets during late gestation and during a 14-day lactation did not affect survival rate or weight gain of pigs from birth to 14 days. There were no differences in survival rate among lightweight pigs (those with birth weights of 2.0 lb. or less) due to fat addition to the diet.

Results of Trials II, III, IV and V are shown in tables 27, 28, 29 and 30.

There were no differences in survival rate of pigs due to increasing the energy density of the diet of sows or gilts by adding 6% fat. Similarly, no significant differences were observed in 21-day weights, weight gain from birth to 21 days or average daily gain from birth to 21 days due to adding 6% fat to the lactation diets. Sows and gilts fed lactation diets containing 6% fat con-

sumed slightly less feed per day than those fed the control (milo-soybean meal) diet. This reduction in feed intake was consistent in all trials.

It is well accepted that adding fat to the sows' diets will increase the fat content of the milk. In our studies the increased energy content of the milk did not improve pig weight gains. Milk production may have been less in sows receiving fat, and therefore total energy intake of the pigs may have been similar.

Nebraska workers demonstrated that a diet with added fat (15-20%) and choline (660 g/ton) fed during late gestation and lactation improved pig survival compared to a corn-soybean meal diet. The major differences between our studies and the Nebraska studies are in fat and supplemental choline levels. Our diets contained 400 g/ton of supplemental choline and 6% added fat. These differences may account for the lack of agreement between experiment stations.

Table 26. Effect of adding fat to diets of gilts during late gestation and lactation (Trial I, Sept. - Oct. 1977).

Criteria	Diets	
	Control	Control + 6% added fat
No. of litters	11	12
Pigs born alive	100	105
Pigs born alive/litter	9.09	8.75
Pigs alive at 14 days	93	99
Pigs weaned/litter (14 days)	8.45	8.25
Survival, % (birth - 14 days)	93.0	94.3
Survival by birth weights, %		
3.0 lbs +	(37/39) 94.9	(20/20) 100.0
2.5 - 2.9 lbs	(24/25) 96.0	(38/41) 92.7
2.0 - 2.4 lbs	(22/23) 95.7	(25/25) 100.0
below 2.0 lbs	(10/13) 76.9	(16/19) 84.2
Avg. birth wt. of live pigs, lb	2.73	2.49
Avg. 14-day wt. of pigs, lb	7.63	7.32
Avg. gain/pig (birth - 14 days), lb	4.85	4.81

Table 27. Effect of adding fat to lactation diets of sows and gilts (Trial II, Jan. - Feb. 1978).

Criteria	Diets	
	Control	Control + 6% added fat
No. of litters	15	16
Pigs born alive	125	175
Pigs born alive/litter	8.33	10.94
Pigs alive at 21 days	115	157
Pigs weaned/litter (21 days)	7.66	9.81
Survival, % (birth - 21 days)	92.0	89.7
Avg. birth wt. of live pigs, lb	2.66	2.66
Avg. 21-day wt. of pigs, lb	11.15	11.21
Avg. gain/pig (birth - 21 day), lb	8.42	8.51
Avg. daily gain of pigs, lb	.40	.41
Avg. daily sow feed consumption, lb	11.96	10.90

Table 28. Effect of adding fat to lactation diets of sows  
(Trial III, March - April 1978).

Criteria	Diets	
	Control	Control + 6% added fat
No. of litters	7	7
Pigs born alive	54	67
Pigs born alive/litter	7.71	9.57
Pigs alive at 21 days	49	57
Pigs weaned/litter (21 days)	7.00	8.14
Survival, % (birth - 21 days)	89.1	86.4
Avg. birth wt. of live pigs, lb	2.64	2.68
Avg. 21-day wt. of pigs, lb	11.24	12.31
Avg. gain/pig (birth - 21 days), lb	8.60	9.63
Avg. daily gain of pigs, lb	.41	.46

Table 29. Effect of adding fat to lactation diets of gilts  
(Trial IV, May - June 1978)

Criteria	Diets	
	Control	Control + 6% added fat
No. of litters	10	10
Pigs born alive	93	97
Pigs born alive/litter	9.3	9.7
Pigs alive at 21 days	80	88
Pigs weaned/litter (21 days)	8.0	8.8
Survival, % (birth - 21 days)	86.0	90.7
Avg. birth wt. of live pigs, lb	3.03	3.16
Avg. 21-day wt. of pigs, lb	12.84	12.92
Avg. gain/pig (birth - 21 days), lb	8.85	9.72
Avg. daily gain of pigs, lb	.42	.46
Avg. daily gilt feed consumption, lb	9.38	8.83

Table 30. Effect of adding fat to lactation diet of sows  
(Trial V, July - Aug. 1978).

Criteria	Diets	
	Control	Control + 6% added fat
No. of litters	12	11
Pigs born alive	127	99
Pigs born alive/litter	10.58	9.00
Pigs alive at 21 days	108	92
Pigs weaned/litter (21 days)	9.00	8.36
Survival, % (birth - 21 days)	85.0	92.9
Avg. birth wt. of live pigs, lb	3.01	2.96
Avg. 21-day wt. of pigs, lb	11.64	11.07
Avg. gain/pig (birth - 21 days) lb	8.44	8.22
Avg. daily gain of pigs, lb	.40	.39
Avg. daily sow feed consumption, lb	11.13	10.47