

The Effect of Increased Feed Intake During Late Gestation on the Reproductive Performance of Sows

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Story in Brief

The effect which increased feed intake during late gestation has on the reproductive performance of sows was studied in a trial utilizing 77 Yorkshire sows and 45 Yorkshire gilts. Treatments were a normal level of feed intake (4 lb per head per day in summer and 5 lb per head per day in winter) throughout gestation and a high level of feed intake (7 lb per head per day in summer and 8 lb per head per day in winter) from 90 days of gestation to farrowing. Sows on the high intake treatment were fed a normal intake from breeding to 90 days of gestation followed by the higher feed intake to farrowing.

No significant treatment differences were observed for litter size, sow weight, sow feed consumption, creep feed consumption, or pig survival.

A three-way interaction between treatment, parity and season of birth was significant.

The pigs from sows and gilts on the higher late gestation feed intake were consistently heavier at birth, 21 and 42 days and had higher survival rates, resulting in increased litter size and larger pigs at weaning. Sow feed consumption during the first 21 days of lactation and creep feed consumption by pigs during the last 21 days of lactation were also higher for sows and gilts on the high intake treatment.

Introduction

A low survival rate of baby pigs from birth to weaning is a major problem in the swine industry. Estimates of survivability range from 70 to 80 percent. One of the major factors that has been shown to influence survival in baby pigs is birth weight. Past research indicates that heavier birth weight in pigs results in increased survival to weaning. Early studies demonstrate that most of the weight, protein, calcium and phosphorus is deposited in the fetuses during the last 21 days of pregnancy. Since birth weight may be related to energy intake of the sow during gestation, the level of nutrient intake during the last trimester of pregnancy should have an influence on the weight and composition of the newborn pig, thus having a major effect on the pig's chances for survival.

This study was conducted to determine what effect total feed intake level of the sow during late gestation has on litter size, birth weight, pig survival and subsequent pig performance.

Materials and Methods

A feeding study was conducted with 77 Yorkshire sows and 45 Yorkshire gilts to determine the effect on subsequent productivity of increasing the level of nutrition during late gestation. Prior to breeding, gilts and sows were fed a standard 14-percent crude protein corn-soybean meal ration. The specific feeding regime for each treatment through the entire gestation period is explained in Table 1. After farrowing, all sows were allowed to consume the 14-percent protein diet on an ad libitum basis throughout lactation. Creep feed was provided to pigs at 3 weeks of age and continued until weaning at 6 weeks of age. After weaning, all sows were returned to the prebreeding level of feed intake (4.0 lb per head per day) and rebred, when possible, on the first estrus.

Table 1. Feed intake for each treatment (lb)

	Treatment ^a			
	Normal Intake		High Intake	
	Gilts	Sows	Gilts	Sows
Prior to breeding	5	4	5	4
After breeding (day 1-90)	4	4	4	4
90 days (gestation to farrowing)	4	4	7	7

^aFeed increased 1 additional pound during the months of December to February.

Gilts and sows were kept in dirt lots throughout the breeding and early gestation period. Pens were equipped with individual feeding stalls and nipple waterers. Gilts and sows were fed once daily in the morning. Shelter was provided in each lot with foggers for cooling during periods of high temperature and straw for bedding during periods of cold temperature. At approximately 110 days of gestation, gilts and sows were moved to a farrowing unit and kept in farrowing crates until 21 days after farrowing. Heat lamps were provided to supply supplemental heat to pigs. At 21 days postfarrowing, sows and litters were moved to nursery pens where pigs were allowed access to creep feed and water on an ad libitum basis. Nursery pens were on concrete floors with shelter provided for both sow and pigs. A hover area was provided with heat lamps to supply supplemental heat during the winter months. At 42 days postfarrowing pigs were weaned and sows returned to dirt lots. Measurements made included: 1) gilt and sow weight at breeding, 90 days and 110 days of gestation as well as within 24 hours of farrowing, on day 21 of lactation and at weaning; 2) individual pig weight at birth (live and dead pigs), 21 days and at weaning; 3) total and live pigs at birth, 21 days and at weaning; 4) feed consumption of sows from parturition to day 21; 5) consumption of creep feed by the baby pigs from 3 weeks until weaning.

Results and Discussion

No significant treatment differences were observed for sow weight at breeding, 90 or 110 days of gestation, farrowing and 21 or 42 days postfarrowing (Table 2). Sows and gilts on the high intake treatment showed a

Table 2. Least square means for sow weight, sow feed consumption and creep feed consumption for each treatment

	Treatment	
	Normal Intake (lb)	High Intake (lb)
Sow weight		
Breeding	388.9	375.9
90 Days gestation	434.4	441.0
110 Days gestation	454.3	465.5
Farrowing	426.4	437.5
21 Days lactation	408.2	405.5
42 Days (weaning)	418.3	416.3
Sow feed intake (farrow to 21 days postfarrowing)	338.2	349.8
Creep feed consumption (21 days postfarrowing to weaning)	27.8	32.3

tendency to gain more weight from 90 days of gestation to farrowing and lose more weight during lactation than sows and gilts on the normal intake treatment. In addition, sow feed consumption from farrowing to 21 days postfarrowing was higher in sows fed the high intake level during gestation (349.8 lb vs 338.2 lb for the high vs normal intake, respectively). Likewise, pig creep consumption from 21 days postfarrowing to weaning at 42 days postfarrowing was higher in litters from sows fed the high intake during late gestation (32.3 lb vs 27.8 lb for the high vs normal intake, respectively). These differences in sow feed consumption and creep feed consumption were not significant.

Differences in individual pig weight at birth, 21 and 42 days postfarrowing were significant, but interpretation is difficult due to a significant three-way interaction between treatment, parity and season of birth (Table 3). However, averaged by treatment, pigs from sows and gilts on the high intake treatment were consistently heavier than pigs from sows and gilts on the normal intake at each weight period.

The number of live pigs and the pig survival rate at birth, 21 and 42 days postfarrowing were not significantly affected by the level of feed intake of the sow (Table 4). It should be noted, however, that the trend for larger pigs at birth from sows and gilts on the high intake treatment resulted in higher survival rates for pigs at birth, 21 and 42 days postfarrowing, which in turn led to more live pigs at weaning (7.39 vs 6.86 for the high vs normal intake, respectively). The survival rate was improved by 9.4 percent at 42 days, and survival rate from 21 to 42 days was improved by 10.7 percent.

These data suggest that no significant benefits are derived from increasing the feed intake of sows during the last trimester of gestation. However, performance was consistently higher for sows and gilts on the high level of feed intake. With the high degree of variation associated with the reproductive traits, a study with more animals may be necessary to accurately determine the real effect which nutritional treatment during gestation has on subsequent reproductive performance.

Table 3. Least square means of individual pig weight for each treatment parity and farrowing season

Treatment	Parity	Season of birth	Birth weight (lb)	21 Days post-farrowing (lb)	42 Days post-farrowing (lb)
Normal intake	Gilt	Jan-Mar	2.5	11.2	21.0
Normal intake	Gilt	Apr-Jun	3.3	11.4	19.0
Normal intake	Gilt	Jul-Sept	2.9	10.5	21.9
Normal intake	Gilt	Oct-Dec	2.7	11.3	23.2
Normal intake	Sow	Jan-Mar	3.0	11.9	21.5
Normal intake	Sow	Apr-Jun	3.0	12.1	24.2
Normal intake	Sow	Jul-Sept	2.4	9.4	21.9
Normal intake	Sow	Oct-Dec	2.8	12.5	23.7
Average for normal intake treatment			2.8	11.3	22.1
High intake	Gilt	Jan-Mar	3.1	10.5	18.3
High intake	Gilt	Apr-Jun	3.1	12.3	24.2
High intake	Gilt	Jul-Sept	2.9	12.1	22.6
High intake	Gilt	Oct-Dec	2.5	12.5	22.1
High intake	Sow	Jan-Mar	3.1	12.6	22.6
High Intake	Sow	Apr-Jun	3.3	12.3	23.9
High intake	Sow	Jul-Sept	2.5	8.7	19.4
High intake	Sow	Oct-Dec	3.3	13.4	26.5
Average for high intake treatment			3.0	11.8	22.5

Table 4. Average litter size and survival rate

	Number of live pigs			Survival rate (%)			
	Birth	21 days lactation	42 days (weaning)	Birth ¹	21 days ² lactation	42 days ³ (weaning)	21-42 ⁴ days
Normal intake	9.14	8.02	6.86	87.7	88.1	75.6	83.8
High intake	8.14	7.81	7.39	89.0	89.9	85.0	94.5

¹Number of pigs born alive ÷ total pigs born.

²Number of pigs alive at 21 days ÷ number of pigs born alive.

³Number of pigs alive at 42 days ÷ number of pigs born alive.

⁴Number of pigs alive at 42 days ÷ number of pigs alive at 21 days.

Direct Comparisons of Antibiotics for Growing-Finishing Swine

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Story in Brief

Two trials were conducted to make direct comparisons among antibiotics commonly used by Oklahoma swine producers. In the first trial, gain, feed efficiency and daily feed intake were similar for pigs receiving the non-medicated control diet and pigs receiving chlortetracycline, tylosin or bambarmycins. Pigs fed bambarmycins tended to grow more slowly than pigs fed the other treatments during the growing period. In the second trial, pigs fed virginiamycin grew 9 percent faster and were 5 percent more efficient than pigs fed chlortetracycline. The pigs fed virginiamycin also grew 6 percent faster and were 4 percent more efficient than pigs fed the non-medicated control diet during the growing period. During the finishing period, average daily gain was similar among all treatments. Chlor-tetracycline in the diet during the finishing period improved feed efficiency by 4 percent when compared with virginiamycin-fed pigs. Backfat thickness was greater in antibiotic-fed pigs. Results of these trials suggest that substantial differences in antibiotic responses are likely to occur. More direct comparisons are needed to formulate specific antibiotic recommendations over the wide variety of environmental and management conditions found among swine producers.

Introduction

Antibiotics have been used extensively in growing-finishing swine rations for three decades. Such wide acceptance is attributed to their established benefits of