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Influence of Feeding Frequency on Performance and Nitrogen Metabolism in Gestating Swine

Gary L. Allee

Summary

The influence of feeding frequency on performance and nitrogen metabolism in gestating swine was studied by feeding 4 pounds daily, 8 pounds every other day, or 12 pounds every third day. All animals were maintained in dry lots with portable housing and were fed a 12%-protein, corn-soybean meal diet in individual feeding stalls. Three successive 6 day collection studies were conducted with 6 gilts. Nitrogen digestibility was not influenced by feeding frequency. However, nitrogen retention decreased as intervals between feeding increased. Gilts fed 4 pounds daily retained more nitrogen than those fed 8 pounds every other day, while those fed 8 pounds every other day retained more than those fed 12 pounds every third day. Although nitrogen retention was significantly influenced by feeding frequency, sow performance as measured by number of pigs born, birth weight, number of pigs weaned, and weight of pigs at 28 days was not.

Introduction

Some form of limit feeding must be practiced during gestation of swine to control weight gain and to avoid costly over-feeding. This study examined the effects of feeding frequency on performance and nitrogen metabolism in gestating swine.

Procedures

Thirty-nine sows and gilts were randomly allotted by breed and age to one of these feeding schedules: (1) 4 pounds daily; (2) 8 pounds every other day; (3) 12 pounds every third day. All animals were fed a 16%-protein, milo-soybean diet during breeding and lactation. The experimental treatments were started approximately 30 days after breeding and continued until the animals entered the farrowing house 5 to 7 days before farrowing. During gestation the animals were fed a 12%-protein, corn-soybean diet.

Six gilts, (two from each treatment) were placed in metabolism crates at approximately 65 days post breeding. An adjustment period of 10 days preceded three successive six-day collection periods.

Results and Discussion

The effect of feeding frequency on nitrogen retention and nitrogen digestibility is shown in Table 10.1. Nitrogen digestibility was not influenced by feeding frequency. Nitrogen retention decreased as intervals between feeding increased. Gilts fed 4 pounds daily retained significantly ($P < .05$) more nitrogen than those fed 8 pounds of feed every other day. Similarly, gilts fed 8 pounds every other day retained significantly ($P < .05$) more nitrogen than gilts fed 12 pounds of feed every third day.

Table 10.1. Effect of Feeding Frequency on Nitrogen Digestibility and Nitrogen Retention^a

Feeding frequency	Nitrogen Digestibility, %	Nitrogen Retention g/day
Every day	86.37 ^b	15.46 ^b
Every other day	87.98 ^b	13.86 ^c
Every third day	88.23 ^b	11.11 ^d

^aEach value is the mean of two gilts per treatment. Each gilt mean is the average of three observations.

^{bcd}Means in the same column with different superscripts differ significantly ($P < .05$).

Influences of feeding frequencies on performance of gestating sows and gilts are shown in table 10.2. Sows and gilts fed 4 pounds of feed daily and those fed 8 pounds of feed every other day tended to gain more weight during gestation than sows and gilts fed 12 pounds every third day. Number of pigs farrowed, birth weight, and weight of the pigs at 28 days were not altered by feeding frequency.

Although nitrogen retention was influenced by feeding frequency, reproductive performance of sows and gilts was not effected. This suggests that 11 grams of nitrogen retained per day (that retained by gilts fed 12 pounds of feed every third day) is sufficient for growth and maintenance of the pregnant gilts and the developing fetuses.

Table 10.2. Effects of Feeding Frequency on Sow Performance

Indicated item	Every day	Every other day	Every third day
Amount fed, lbs./feeding	4	8	12
No. of animals started	13	13	13
No. farrowed	11	12	10
Sow weight gain, lbs./day	0.44	0.51	0.33
No. pigs farrowed/litter	8.73	9.25	8.50
No. live pigs farrowed/litter	7.64	8.58	7.40
Birth weight, lbs./pig	3.08	3.08	3.06
28 day weight, lbs./pig	15.77	14.04	14.54