

Improving Sow Productivity through Lactation Feed Management

Two of the most challenging aspects of sow productivity are proper diet formulation and feeding management. Three major factors can be affected by these challenges: litter weaning weights, sow body condition and subsequent reproductive performance. The following is a summary of a presentation given by Dr. Robert Goodband from Kansas State University at the 1999 AI Leman Conference.

The Role of Nutrition in Piglet and Milk Production

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Data collected from many farms has typically shown that a drop in average sow feed intake occurs during the time period of late April through September. This period happens to coincide with the “summer slump” typically observed in the breeding herd. Other factors such as elevated ambient temperature and photoperiod can effect reproductive performance as well. However, low feed intake caused by misguided management can be easily corrected, according to Goodband.

Research has revealed that any time during the lactation period, when protein and/or energy intake is restricted, milk production and subsequent reproductive performance suffers. This can have a dramatic effect on efforts to maximize litter-weaning weights and farrowing rate. Research has also shown a strong relationship between both amino acid and energy requirements. The greatest improvement in milk yield was seen when both lysine and energy were increased in the diet (Figure 1). Increasing dietary lysine has minimal effect on milk yield unless energy is simultaneously increased.

Figure 1. Influence of lysine and energy intakes on sow milk yield

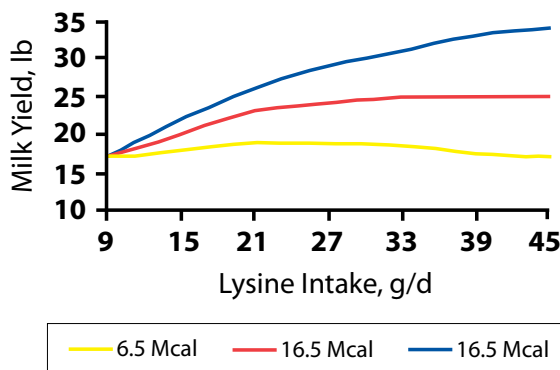
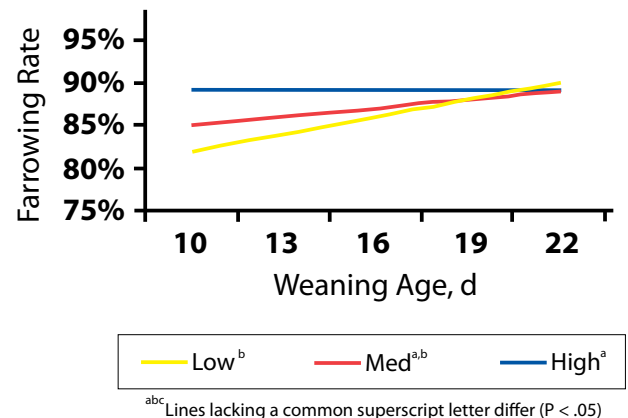


Figure 2. Influence of lactation feed intake on subsequent farrowing rate.



Koketsu et al., 1997, reported that subsequent farrowing rates improve as lactation feed intake is increased (Figure 2). This effect was greatest with earlier age weaning. Increasing the energy intake by incorporating high fat levels (greater than 5%) is not advisable. Dr. Goodband noted that, fat is preferentially used by the mammary gland and results in the production of high fat milk rather than a source of energy for the sow. With all of these factors in mind, effort must be made to increase the physical amount of feed the sow consumes.



Kansas State University has developed a feeding plan to help maximize the feed intake of the lactating sow (Table 1). The simplest method KSU advocates is, “If the feeder is empty put feed in it.” From day 0 to 2 post farrowing sows are fed two times per day. Then the sows are fed three times per day until weaning. Sows are fed zero, one, or two scoops at each of the feeding intervals during the day. These amounts are based on the amount of feed left in the feeder from the previous feeding; empty, less than 2 lb, or greater than 2 lb. If the feed has not been touched since the previous feeding, the sow needs to be investigated for reasons of poor appetite. Communication between employees is crucial in identifying those sows that have displayed poor appetite. Placement of clothes pins on the feeder or moving the farrowing card to different positions are just two methods that help to identify low appetite sows.

Table 1. KSU Feeding Protocol for Sows During Lactation

Number of 4 lb scoops to feed at each feeding from day 0 to day 2.

| Feed in Feeder | Feeding | |
|----------------|---------|-----|
| | AM | PM |
| Empty | 1 | 1 |
| <2 lb | 0 | 0.5 |
| >2 lb | 0 | 0 |

Number of 4 lb scoops to feed at each feeding from day 2 to weaning.

| Feed in Feeder | Feeding | | |
|----------------|---------|------|----|
| | AM | NOON | PM |
| Empty | 2 | 2 | 2 |
| <2 lb | 1 | 1 | 2 |
| >2 lb | 0 | 0 | 1 |

The authors make reference to the fact that with feeding sows three times per day, an increase in labor may occur. A recent article, Three Meals a Day¹, supports the Kansas State feeding recommendation. The article points to three main reasons to feed three times versus two times per day.

1. It keeps the sows stirred up and interested in feed.
2. The producers should be in the farrowing house doing a good job of managing, so why not feed the sows again to improve performance.
3. Some feeder types can not physically hold enough feed with out wastage to reach ad libitum feed intake in only two feedings.

Goodband explains that the additional labor for extra feedings would probably be a wash if individual recordings of actual scoops fed to each sow were discontinued. The authors claim that individual recording is very time consuming and often depicts inaccurate feed intake when compared to the actual feed delivered. More time should be spent observing the sow and increasing the number of the feedings. Therefore, to determine average lactation feed intake (ALFI) the authors have proposed averaging the following two equations.

1. Total Feed Delivered / (No. of Crates x Days in the feed delivery period)
2. Total Feed Delivered / (No. of Crates x Lactation Length)

Equation 1 underestimates the feed intake because of the assumption made that all of the farrowing crates are occupied by lactating sows every day. The second equations tends to over-estimate intake because feed provided to prefarrowing sows is counted as feed fed to lactating sows. Taking the average of the two equations will give a fair representation of average lactation feed intake.

In summary, maximizing lactation feed intake results in improvement in both milk production and subsequent reproductive performance. Increasing lysine alone will not give the improved performance unless energy is also increased.

¹Just Pigs. Boehringer Ingelheim, March 1999. p 19.

