

Swine Feed Efficiency: Influence of Pelleting

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Introduction

The technology for pelleting feeds has been around for many years. While numerous benefits are documented for feeding pigs pelleted feed, adoption has been mainly limited to large producers who own their own feed mill or those close to a large commercial pellet mill to justify the extra cost. However, with the increased cost of feed ingredients, the economics of pelleting are becoming much more favorable.

Advantages of Pelleted Feed

The overriding benefit for feeding nursery, growing and finishing pigs a pelleted diet is an improvement of 4 to 8% in both ADG and feed efficiency compared to the same diets in meal form. The improvements are due to enhanced palatability, reduced wastage, and the potential for improved nutrient utilization due to heat treatment of the ingredients. Also, since cereal grains can be ground finely ($< 500 \mu$) and included in a pelleted diet without flow ability concerns, feed efficiency can be further improved compared to a meal diet containing a larger particle size. In fact, one of the main reasons for pelleting swine diets is to utilize finely ground cereal grains and have it flow well through feeding systems. Also, pelleting the diet allows for the increased use of ingredients with higher fiber (thus lower bulk density); pelleted increases the bulk density of the final diet which saves transportation costs and minimizes feed storage issues.

Typically, starter diets in the early weaning phase are pelleted. These types of diets contain specialty protein and lactose sources with very small particle sizes that restrict the flow ability through feed systems. Thus, pelleting them allows for easier transport through the feeding system. However, care must be taken not to overheat these diets during pelleting.

Disadvantages of Pelleted Feed

With increased processing, diet cost also increases. For mills pelleting high volumes of feed, a typical cost can be \$4 to 6 per ton. However, for smaller mills that run small batches of feed through a pellet mill, the cost can be much higher. This difference in cost is the main reason many producers purchasing feed through toll mills do not purchase pellet feed, even if it is available. Also, there is a health and genetic interaction for pellet-fed pigs, as some genetic lines are more susceptible to ulcer and digestive tract problems when fed pelleted diets, especially in the presence of finely ground cereal grains.

Pellet Quality

High quality pellets is a broad term but most notably it refers to the milling of pellets that are dense and durable enough to withstand extensive mechanical handling without compromising the nutritional value of the diet. The quality of pellets is often determined by its actual strength (pellet durability index) and the amount of “fines” present in the feeder. As pellets break, fines are created. Data have clearly shown that as the level of fines increase, feed efficiency worsens. Screening fines from pellets and re-pelleting “fines” is useful to regain the full value of pellets. Also, an increase in fines can result in more difficult feeder management and adjustment on the farm. Pelleting and pellet quality effects on feed efficiency in growing pigs are illustrated in Table 1.

Table 1. Grow-finish

| Reference | Diet Form | ADG, lb | F/G |
|---------------------|-------------------|---------|------|
| Wondra et al., 1995 | Mash | 2.12 | 3.35 |
| | Pellet | 2.20 | 3.16 |
| Stark, 1994 | Mash | 2.05 | 2.78 |
| | Pellet- 0% fines | 2.11 | 2.65 |
| | Pellet- 20% fines | 2.11 | 2.78 |
| | Pellet- 40% fines | 2.12 | 2.77 |
| | Pellet- 60% fines | 2.07 | 2.82 |

Pellet Size

While pellet size has not been shown to influence preference or performance, typical pellet sizes are 1/8 to 3/16 inch diameter pellets for nursery pigs and 3/16 to 3/8 inch diameter pellets for grow-finish pigs.

Practical Applications

Each producer needs to answer some questions before utilizing pellets in their operation:

- Can I produce or be delivered high quality pellets?
- Are there low cost feed ingredients available whose value I can maximize through pelleting?
- Are the costs of pelleting overcome by greater net returns due to increased growth rate and improved feed efficiency?
- Are my genetics capable of consuming pellets without increased morbidity or death loss?

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