

Feed Waste

Poor feeder design and presentation of feed can lead to the wasting of animal feed. Gonyou and Lou (1998) reported that feed wastage was typically 5% to 6% but much larger ranges have been reported for field conditions (2% to 20%). Although little research has been performed to evaluate the effect of feed wastage on environmental pollution, it cannot be ignored.

Feed waste is strongly influenced by the presentation of the feed. Mash feed tends to cling to the animal's chin and nose, ultimately leading to waste. Gonyou and Lou (1998) determined that each time the pig leaves a feeder it takes 1.5 grams of feed with it. Given that the pig typically accesses the feeder 60 times per day, this theoretically could amount to wasting 90 grams (0.2 lb) of feed. Pigs also tend to root through the feed, which in poorly designed feeders leads to the waste of 3.4% of the feed (Gonyou and Lou 1998). Pelleting feeds reduces both forms of feed waste. Based on data from Vanschoubroeck et al. (1971), it may be estimated that pelleting reduced feed waste by approximately 5%.

Traditional recommendations are that feeders should be designed such that it is more difficult to push feed out of the feeder, and even more importantly, the feeder should be managed such that only a small amount of feed is present in the feeder. This does require that feeders are easy and accurate to adjust. A general guideline is that feeders should be managed such that only 50% of the bottom of the feeder is covered, not only preventing feed waste but also reducing the spoilage of feed.

Taylor (1990), upon studying the eating behavior of pigs, came to a different conclusion about feeder design. He observed that pigs like to eat with their head straight. This is not possible in conventional feeders except if the pig backs up. This backing up of the animal leads to feed falling from the animal's mouth to end up in the pit. A better design, according to Taylor, would be to provide enough space above the feeder such that the pig can eat with its head straight above the feeder such that feed waste falls back into the feeder. The actual feed level in the feeder appeared to be of little importance in determining feed waste.

Since wasted feed generally falls into the manure storage areas, its contribution to waste can be estimated by making some assumptions. For example, if feed wastage is 5% on average during the grow-finish phase (which is a low estimate), and the animal utilizes approximately 30% of the N fed, then feed wastage contributes 7.5% of the N in manure. For minerals such as copper, zinc, and P, the contribution of feed waste to manure is similar.

For carbohydrates, however, the picture is much different. The animal digests approximately 85% of the carbohydrates in a typical diet, and feed wastage at 5% would then contribute 35% of the carbohydrates in the manure. Although carbohydrates are not considered pollutants, they are a substrate for fermentation, which leads to the production of malodorous compound, such as volatile fatty acids.

To minimize feed waste,

- Install feeders/feed systems that are designed to minimize feed waste.
- Adjust and clean feeders frequently.
- Use pelleted feeds.

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