Interaction of Feed with the Animal

Pigs have to make an effort to obtain the nutrients from their feed. While effort consists of the production of digestive enzymes and losses of cells of the intestinal tract (similar to losses of skin observable when scratching dry skin), it is also linked to the efficiency with which the pig can produce those enzymes and proteins. Together, these losses account for approximately 18% of the dietary N intake and 26% of the waste N produced.

To reduce these losses, feedstuffs should be selected that are easily digested. Currently, no large databases exist to identify those feedstuffs that are easily digestible, although several research groups are working on such databases. Research thus far has shown that fiber (acid and neutral detergent fiber or ADF and NDF) are of major importance in determining the ease of digestibility of feedstuffs, with high fiber content making digestion more difficult (van Kempen et al. 1997, Zijlstra et al. 1999). An example of a crop under development that builds on this principle is low-stachyose soybean (meal).

Anti-nutritional factors, such as trypsin inhibitors, reduce the efficacy of digestive enzymes, forcing the animal to produce more enzymes and thus increasing waste. Therefore, feedstuffs should be selected that are low in anti-nutritional factors such as trypsin inhibitors (most anti-nutritional factors are routinely analyzed by commercial laboratories).

The impact of reducing endogenous losses on odor emission has not been extensively studied. Based on the fact that most odors are the fermentation products of remnants of the digestive process, we can expect that reducing endogenous losses reduces odor emission.

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