

Feeding factors affecting feed efficiency in weaner and grower pigs

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Feed expenses are the largest contributor to total variable cost of modern pig production units. Feed efficiency strongly influences financial returns due to its close association with feed costs. The aim must be to optimise feed efficiency and to obtain maximum value in the process.

Some feeding factors that influence feed efficiency include: feed quality (nutrient and ingredient composition), feed processing,

phase feeding and the use of feed additives.

Feed ingredients and processing
Nutrient dense ingredients (low fibre, high digestibility) are preferred to more fibrous, bulky ingredients due to higher energy and protein content. Improving the energy content of diets by means of nutrient dense ingredients will normally lead to an improvement in feed efficiency, permitted that all other nutrients meet the growing pigs' requirements. High quality ingredients will however not necessarily

earn maximum profit. It is important to have a good understanding of the nutritional value and maximum inclusion levels of ingredients in diets. The monetary value per nutrient rather than per unit mass needs to be considered. Raw materials that are consistent in quality should be sourced since quality changes usually cause declines in feed intake.

Processing, such as milling and cooking, improves feed efficiency and are extensively used in the industry. Grain ground to a smaller particle size increases surface area,



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thereby increasing its interaction with digestive enzymes in the gut.

This allows more nutrients to be extracted from the feed for absorption. The key is to mill grains not too fine, or too coarse, to avoid incidences of gastric ulcers or ineffective digestion, respectively. The particle size will also, to a certain extent, be determined by the type of grain used in the feed. Cooking leads to gelatinization of the starch fraction in grain and to an altered chemical structure thereof. The result is increased water absorption ability and improved enzymatic digestion of the grains.

Where bulky, more fibrous raw materials are used, pelleting feed might improve feed efficiency. This is achieved by the reduction in surface to volume ratio, enabling the pig to consume more nutrients per kg feed. Pelleting also improves digestion due to added heat (gelatinization) and reduce feed wastage where grains are finely milled. Pelleting might however increase the risk of gastric ulcers.

Scientific formulation of feeds

Feed formulation aims to supply diets with nutrients that meet the growing pig's daily nutritional requirements for growth and maintenance, while maintaining important nutrient balance to optimise feed efficiency. Nutrient ratios take into account nutrient interactions. Some important ratios are digestible energy:lysine and calcium:phosphorus ratios.

Diets should be altered on a frequent basis by means of phase feeding to address continuous

physiological and gut development changes. In theory there should be as many phases as possible to supply the nutritional requirements as closely as possible during the different growth stages and can be implemented on-farm as far as it is practically possible.

Role of feed additives

Feed additives are frequently added to modern pig diets to improve feed efficiency (some more than others). There are many classes of feed additives including anti-microbial growth promoters (antibiotics), acidic growth promoters (organic acids), beta-agonists (ractopamine), mycotoxin binders, enzymes, metallic substances (copper and zinc complexes), pre- and probiotics, essential oils and flavourants. Although the discussion regarding

feed additives fall outside the scope of this article, it is worth mentioning that adding flavourants to feeds, directly stimulate feed intake and mask less palatable ingredients, easing transition from one feed to another or when raw materials in the feed are substituted.

Cost efficiency can be improved when producers home mix their own feed, thereby utilising home-grown cereals or locally sourced ingredients.

The producer has the benefit of reduced transport cost and have complete control over ingredients, their processing and mixing procedures. The producer enjoys transparency on exactly what the animals are fed, as well as almost complete ingredient traceability.

When partnering with the Feedtek team, farmers have access to the expertise of a team of registered animal nutritionists and their associates.

Feeds are specifically formulated for each farmer according to his available raw materials, as well as specific circumstances.

Formulations can easily be adjusted when circumstances change, providing home mixers the flexibility to respond to production changes and to comply with their specific phase feeding strategy.

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