

Symposium 3: Nutrition and Growth

Modern pork production - Balancing efficient growth and feed conversion with product quality requirements and consumer demands

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Background - Profitable pork production in an environment of increasing global competitiveness, diverse markets and heightened consumer awareness is an ongoing challenge. The modern pork producer needs to balance the use of emerging technologies and intensive farming practices, which have the potential to significantly decrease the cost of production, with specific market requirements for a quality product. Manipulation of fat content and distribution, nutritional enrichment of pork products, use of "clean and green" feed ingredients, and hormone and antibiotic free production practices are high on the list of requirements of most markets as is the relative cost of Australian pork to imports and other meats. As some of these requirements are conflicting, modern pork producers must adopt some innovative nutritional and production strategies if they are to remain commercially viable.

Review - In a modern Australian pig production system, a sale liveweight of 96 kg for the domestic market can be achieved in approximately 160 days with a feed conversion ratio of 2.60:1.¹ This level of efficiency has been achieved through intense genetic selection for fast growing, lean animals over the past 30 years, an advanced knowledge of the nutritional value of feed ingredients and the nutritional requirements of pigs, and sophisticated production tools including advanced growth simulation models such as AUSPIG.² Consumer demands for reduced levels of fat in pork has contributed to this efficiency given the high energetic cost of fat deposition relative to lean meat deposition.

The development of export markets for Australian pork in 1996 coupled with a concurrent increase in consumer awareness of food production has prompted a renewed focus on factors influencing pork product quality traits in addition to the cost of production, particularly manipulation of fat quality, fat composition and fat distribution. For example, higher levels of intramuscular fat or marbling in pork, largely influenced by genetics, can positively affect the juiciness, tenderness and flavour of pork. In addition, a focus on dietary fat sources for growing pigs has been shown to influence fat quality and composition. Restricting the level of dietary unsaturated fats can reduce the incidence of soft fat, and restricting the use of dietary fish oils to 0.5% for at least two weeks prior to slaughter will maintain the processing and keeping qualities of the pork. In contrast, modified forms of fishmeal as a dietary source of long chain n-3 PUFA can effectively be used to produce n-3 enriched pork,³ a factor with potential to greatly increase the attractiveness of pork to some markets. As well as manipulation of the fat attributes of pork, other nutritional strategies that have potential to improve the quality of pork products include enrichment using dietary supplements of minerals such as selenium and a reduced reliance on antibiotics through improved nutrition and herd health status.

Conclusions - Modern pork production involves rapid responses to changing market demands. A major issue faced by Australian producers is the need balance product quality requirements with increased costs of production. This is further confounded by the fact that modern technologies such as immunocastration, and the use of porcine somatotropin and genetically modified feed ingredients, all of which could potentially further enhance product quality while offsetting some of the costs of production, are poorly accepted in the market place.

References

1. Aranda G, Cleary G. Pig Stats 2000 and 2001. Canberra: Australian Pork Limited, 2002.
2. Black JL, Campbell RG, Williams IH, James KJ, Davies GT. Simulation of energy and amino acid utilisation in the pig. *Res Dev Ag* 1986;3:121-145.
3. Howe PRC, Downing JA, Grenyer BFS, Grigonis-Deane EM, Bryden WL. Tuna fishmeal as a source of DHA for n-3 PUFA enrichment of pork, chicken and eggs. *Lipids* 2002;37:1067-1076.