

## **4B-111: *Improving the utilisation of cereals and pulses by pigs: the effect of grain type, milling conditions and processing technology***

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### **Aim**

Inefficiencies in the conversion of feed grains to live weight gain represent a major inefficiency for a pig industry where profit margins are dictated largely by the cost of feeding. The cost of processing of grain will depend on the number of steps required to normalise particle size and hardness to minimise the flow of particles through to faeces. The techniques discussed herein are designed to meet this goal.

### **Benefit to Industry**

Improving the efficiency with which starch stores in grain is converted to energy substrate to promote growth will lead to improvements in feed conversion efficiency. The need to control the heterogeneity of the size of grain particles without grinding too finely is important for efficient ration formulation to promote growth. The opportunities for the industry emanating from this review to improve grain processing and feeding use current technology but in novel ways.

The capital costs involve investments of up to \$2million, which depending on throughput will involve depreciation costs of \$0.63 ( roller mill-opportunity 1) to \$2.52 (extrusion equipment-opportunity 3) per tonne over 20 years while whole grain expansion capability ( opportunity 4) may cost more than \$1million.

Grain soaking may cost \$40/tonne ( opportunity 6). The design of multiple outlet interval or meal feeders will require innovative design for both the feeder and pen to maximise feed access around the clock at the time of day when pigs are most active metabolically (opportunity 6).

The goal is to synchronise the supply of amino acids and peptides with the supply of energy substrate at the time of day when they are most efficiently utilised for protein synthesis.

### **Key Outcome**

The identification of cost effective techniques to equalise particle size in processed grains without decreasing it to the point that ulceration of the gastrointestinal tract occurs.

### **Potential Users of Information**

Feed mills and larger pig production companies with control of their own feed mills and feed formulation will derive the most benefit from this project. It is likely that they will be able to raise the finance for the infrastructure needed to achieve the efficiencies outlined in this review. Smaller producers sourcing feeds from these mills will also benefit.