

4B-121: Effects of Grind Size in Typical Grower/Finisher diets under commercial conditions

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Project Participants: Australian Pork Farms Pty Ltd

Aims and Objectives: To explore the effects on animal performance of reducing the average particle size from 1100 to 600 micron, in commercial pelleted diets.

A survey of commercial feed mills and home mixers in 2013 revealed a wide range in grain particle sizes. Many samples recorded average particle sizes well above the suggested optimum of 700 micron. This trial explored the effects on animal performance of reducing the average particle size from 1100 to 600 micron, in commercial pelleted diets.

This project involved 3 separate trials using the same protocol and employing 3168 pigs. The diets involved were based on wheat, barley, peas and canola meal and were fed as a grower diet (30 - 60 kg Live weight) 14.2 MJ DE and 0.70 gm Avail. Lysine/MJ DE) and as a Finisher diet (60 - 100 kg live weight, 14.0 MJ DE and 0.60 gm Avail. Lysine/MJ DE).

The treatments applied involved grinding common diets over a disc mill at different settings to create a “fine” product (500 - 600 micron) and a “coarse” product (1000 - 1100 micron). A third treatment was created by blending the fine and coarse versions in a 50:50 mix. The diets were fed ad libitum as pellets.

Key Findings

Reducing the grind size from 1100 to 600 micron had no effect on ADG but reduced feed intake resulting in a 2.6% improvement in FCR in the grower phase and 5.6% improvement in the finisher phase.

An interesting artefact of the series of experiments was that one batch of “fine” grower feed was in fact ground to an ultrafine state (440 micron) and this depressed performance.

One of the cautions of finer grinding is the increased risk of gastric lesions but the excellent performance of the pigs in this series of trials and the associated low loss rate (<1.5%) would suggest that this was not a major issue at the particle sizes tested, nor with the combination of grains used.

Application to Industry

Many producers in Australia are milling feeds to an average particle size of 1500+ micron which implies there is a huge potential to improve feed efficiency and lower the cost of production by simply adjusting the milling equipment to achieve closer to optimal particle size.