

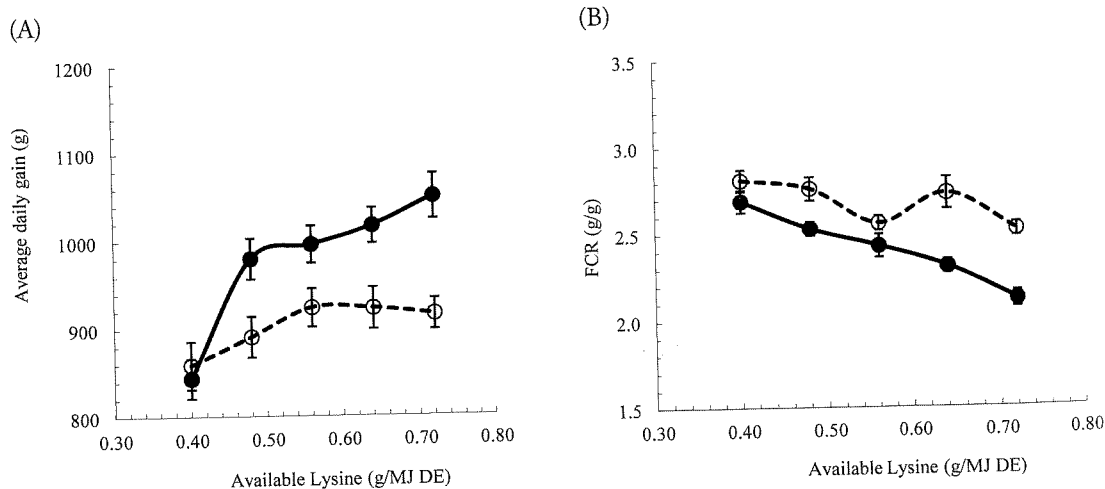
## Improved Response to Ractopamine in Finisher Gilts as Dietary Lysine is Increased

B. P. Mullan<sup>1</sup>, M. Capozzalo<sup>1</sup>, H.G. Payne<sup>1</sup>, R. Hagan<sup>1</sup>, F.R. Dunshea<sup>2</sup> and J.C. Kim<sup>1</sup>

<sup>1</sup>Department of Agriculture and Food Western Australia, South Perth, WA 6151. <sup>2</sup>University of Melbourne, Parkville, VIC 3052.

Ractopamine (RAC; Paylean, Elanco Animal Health, West Ryde, NSW) is a  $\beta$ -agonist that, when included in the diet for the last four weeks pre-slaughter, increases protein deposition and average daily gain (ADG), and improves feed conversion ratio (FCR; Dunshea *et al.*, 2005). Since a major effect of RAC is to increase protein deposition, it is important that the supply of essential amino acids in the diet is sufficient to meet this additional requirement. The accepted commercial recommendation for diets containing RAC in Australia is 0.56 g available lysine (Av Lys)/MJ digestible energy (DE). The hypothesis for this experiment was that the inclusion of RAC in the diet of finisher gilts will enhance performance and the level of lysine required to support maximum performance.

A total of 420 [Large White  $\times$  (Landrace  $\times$  Duroc)] gilts (PIC Australia Pty Ltd, Grong Grong, NSW) were used in a 2  $\times$  5 factorial design (7 pigs/pen and 6 replicate pens/treatment) with the main treatments being ractopamine dose (control (C; 0 ppm RAC) and 7.5ppm RAC) and five levels of available lysine per MJ DE (0.40, 0.48, 0.56, 0.64 and 0.72 g). All pigs were fed a standard commercial diet (14.0 MJ DE/kg and 0.75 g available lysine per MJ DE) for three weeks, followed by the experimental diets formulated to contain 13.5 MJ DE/kg and based on an ideal pattern of amino acids. The experimental diets were offered *ad libitum* for four weeks commencing at 73.4 kg  $\pm$  0.39 kg live weight. The pigs were weighed and voluntary feed intake was recorded weekly. Two-way analysis of variance (ANOVA) was used for statistical analysis.



**Figure 1.** Mean ( $\pm$ standard error) average daily gain (ADG; A) and feed conversion ratio (FCR; B) of gilts fed either a control diet (O) or a diet containing 7.5ppm Ractopamine (●) in response to increasing levels of dietary lysine per MJ digestible energy (DE).

Inclusion of RAC increased ADG ( $P < 0.001$ ) compared to gilts fed the C diet at all levels of lysine except the lowest. The ADG for gilts fed the C diet plateaued at 0.56 g Av Lys/MJ DE, whereas the RAC diet continued to respond to the highest level of dietary lysine investigated. FCR declined as the level of lysine in the diet increased, with the response greater ( $P < 0.001$ ) when the diet contained RAC. These results indicate that the current recommendation for lysine may not provide the optimal response to RAC in finisher gilts.

DUNSHEA, F.R., RIKARD-BELL, C., CURTIS, M.A., EDWARDS, A.C., GANNON, N.J., HENMAN, D.J. MULLAN, B.P., and VAN BARNEVELD, R.J. (2005). In "Manipulating Pig Production X" p. 152. ed J.A. Paterson. (Australasian Pig Science Association: Werribee).