

## GROWTH RESPONSE OF WEANER PIGLETS GIVEN SOYABEAN-SUGAR DIETS TO DIETARY LYSINE

D.I. OFFICER

Previous studies with growing pigs have demonstrated the value of sugar-based diets to compare protein sources at the same dietary lysine level (Batterham et al. 1990). However, the suitability of this type of diet and experimental approach has yet to be determined for weaner piglets. This study was designed to measure the growth response of weaner piglets to dietary lysine using isoenergetic diets based on raw sugar and soyabean meal.

Eight diets were formulated to contain 8 to 22g lysine (in 2g increments) and 15.8 MJ/kg of digestible energy (DE) per kg (air-dry basis). Free essential amino acids were added to the soyabean meal to match Chung and Bakers (1992) recommended ratio. Because the arginine:lysine ratio in the soyabean meal was 2.1 times that recommended by Chung and Baker (1992), excess arginine was counted as non essential nitrogen. The essential:non essential amino acid ratio was set to 50:50, through the addition of glutamic acid. The eight diets were given ad libitum to 48 male Large White piglets in a randomised block design. At 9kg liveweight (LW) the piglets were moved from group to individual pens (0.9x0.48x0.5m) in a room with the temperature maintained at 26°C. In each pen water was provided ad libitum via a nipple drinker. Piglets were transferred to the experimental diets (over three days) at 10kg. Thereafter weekly LW and feed intakes were measured up to 20kg.

Lysine	8	10	12	14	16	18	20	22	SEM <sup>1</sup>
DFI (g)	972 <sup>ab</sup>	900 <sup>bc</sup>	1040 <sup>a</sup>	989 <sup>ab</sup>	893 <sup>bc</sup>	866 <sup>bc</sup>	880 <sup>bc</sup>	825 <sup>c</sup>	41.9
DG (g)	485 <sup>d</sup>	564 <sup>d</sup>	681 <sup>bc</sup>	743 <sup>abc</sup>	666 <sup>c</sup>	746 <sup>abc</sup>	767 <sup>a</sup>	761 <sup>ab</sup>	27.7
FCR	2.0 <sup>d</sup>	1.6 <sup>c</sup>	1.5 <sup>c</sup>	1.3 <sup>b</sup>	1.3 <sup>b</sup>	1.2 <sup>a</sup>	1.15 <sup>a</sup>	1.1 <sup>a</sup>	0.04

1. a,b,c row means with different letter significantly different ( $P < 0.05$ ).

Daily feed intakes (DFI) were similar for all treatments with the exception of those given 12g/kg compared with 22g/kg lysine. Maximum daily rate of gain (DG) was recorded for piglets consuming protein concentrations above 14g/kg lysine. The food conversion ratio improved as lysine concentration increased upto 18g/kg lysine. The results indicate the piglets had a lysine requirement of 14g/kg, which is similar to that determined by Campbell et al. (1988) for piglets consuming a conventional wheat based diet. This experiment also shows a soyabean meal-sugar diet is capable of producing excellent piglet growth between 10-20kg LW.

BATTERHAM, E.S., ANDERSEN, L.M., BAIGENT, D.R. and WHITE, E. (1990). *Brit. J. Nutr.* 64: 81.

CHUNG, T.K., and BAKER, D.H. (1992). *J. Anim. Sci.* 70: 3102.

CAMPBELL, R.G., TAVERNER, M.R. and RAYNER, C.J. (1988). *Anim. Prod.* 46: 283.