

Table 1. THR:LYS ratios at which maximum ADG and DFI or minimum FCR are predicted for entire male and female pigs

	Entire males				Females			
	THR:LYS	Max/Min	R ²	sig	THR:LYS	Max/Min	R ²	sig
ADG, g	0.70	787	0.99	***	0.65	676	0.99	**
DFI, g	0.66	1760	0.27	0.73	0.65	1862	0.99	**
FCR	0.72	2.26	0.98	*	0.60	2.65	0.78	0.22

*P<0.05, **P<0.01, ***P<0.001

Key Words: threonine, lysine, growing pigs

212 Response of pigs in the weight range 80 to 100 kg to threonine:lysine ratio in the diet. M. K. O'Connell¹, P. B. Lynch¹, and M. Overend², ¹*Pig Production Development Unit, Teagasc Moorepark, Fermoy, Co. Cork, Ireland*, ²*Forum Products Ltd., Redhill Surrey, England*.

The objective of this study was to determine the optimum total threonine:lysine ratio (THR:LYS) for pigs in the weight range 80 to 100 kg. Sixty-six pairs of pigs (31 pairs entire male, 35 pairs female) were assigned to one of five THR:LYS ratios: A-0.55, B-0.60, C-0.65, D-0.70 and E-0.75 in a randomised block design. Pairs were allocated to blocks based on gender and weight. Diets were composed of barley, wheat and soybean, with added oil, amino acids, and vitamins and minerals. Crude protein and total lysine concentrations were 155 and 10.0 g/kg for entire males and 127 and 8.0 g/kg for female pigs. Amino acids (except threonine) were kept at constant ratios of 0.35:0.66:0.20:1 for methionine:methionine+cysteine:tryptophan:lysine. THR:LYS ratio was increased by addition of L-threonine in 0.5 kg and 0.4 kg increments for males and female, respectively, at the expense of wheat. Digestible energy was 13.5 MJ/kg for all diets. Trial period was 28±7.9 days. Pigs were slaughtered at 100 kg. Entire male pigs had higher ADG (865 v 712 g/d; P<0.01; sem 30.9) and better FCR (2.63 v 3.67 kg/kg; P<0.001; sem 0.144) than female pigs, resulting in higher finishing weights (102.7 v 98.0 kg; P<0.05; sem 1.23). Male pigs had higher carcass ADG (661 v 584 g/d; P<0.05; sem 21.2) and better carcass FCR (3.59 v 4.25 kg/kg; P<0.01; sem 0.159) than female pigs. Using PROC REG in SAS 9.1 (SAS Institute Inc., Cary, NC), quadratic regression equations were applied to the data. Derivation from first principles was used to predict the THR:LYS ratio that would result in the maximum live and carcass ADG or the minimum live FCR for entire male and female pigs. Those values are presented in Table 1. The optimum THR:LYS ratio for entire males was between 0.61 and 0.68, and was higher for females at between 0.72 to 0.78, depending on the criteria of interest.

Table 1. THR:LYS ratios at which maximum live and carcass ADG or minimum FCR are predicted for entire male and female pigs¹

	Entire males				Females			
	THR:LYS	Max/Min	R ²	sig	THR:LYS	Max/Min	R ²	sig
ADG, g	0.63	835	0.92	0.08	0.72	772	0.98	*
FCR	0.68	2.51	0.98	*	0.73	3.39	0.97	*
CADG, g	0.61	639	0.98	*	0.78	646	0.91	0.09

¹All models were non-significant for carcass FCR, *P<0.05

Key Words: threonine, lysine, finisher pigs

213 Effects of increasing amounts of true ileal digestible lysine on the growth performance of growing-finishing pigs reared in a commercial facility. R. O. Gottlob, J. M. Benz*, S. S. Dritz, M. D. Tokach, R. D. Goodband, J. M. DeRouchey, and J. L. Nelssen, *Kansas State University, Manhattan*.

Two 28-d experiments using 2,259 gilts (PIC 1050 x 337) were conducted to determine the growth and economic effects of increasing dietary true ileal digestible (TID) lysine in commercially-reared growing-finishing pigs. Both experiments included six dietary treatments of incrementally increasing TID lysine in diets containing 6% added fat. The dietary TID lysine ranged from below to above current requirement estimates from previous trials to determine if there were any changes in lysine requirements during the past five years. In Exp. 1, pigs were initially 60 kg and averaged 87.3 kg at the end of the trial. The TID lysine levels were 0.65, 0.75, 0.85, 0.95, 1.05, and 1.15%, which corresponded to lysine:calorie ratios of 1.80, 2.08, 2.35, 2.63, 2.91, and 3.19 g/Mcal, respectively. Increasing TID lysine increased ADG (linear, P<0.01) and improved F/G (quadratic, P<0.06), with optimal performance at 1.05% TID lysine (TID lysine:ME ratio of 2.91 g/Mcal). Pigs fed this diet consumed approximately 22 g of TID lysine per day, and used 21.6 g of TID lysine/kg of gain. In Exp. 2, pigs were initially 80.5 kg and averaged 109.5 kg at the end of the trial. The TID lysine levels were 0.52, 0.62, 0.72, 0.82, 0.92, and 1.02% (TID lysine:calorie ratios of 1.44, 1.71, 1.99, 2.27, 2.55, and 2.83 g/Mcal, respectively). The optimal TID lysine level changed over the course of the experiment. From d 0 to 14, pigs fed 0.92% TID lysine had the greatest ADG and G/F, whereas pigs fed 0.72% TID lysine had the highest ADG and G/F from d 14 to 28. Pigs fed these diets required approximately 19.5 g of TID lysine/kg gain. In summary, results of the experiment suggest an increase in dietary TID lysine recommendations compared to our earlier studies. Even though the optimal lysine level may be changing over time for pigs in this production system, it appears that 20 g TID lysine per kg of gain provides a good estimate of the pig's lysine requirement.

Key Words: finishing pigs, energy, lysine

214 Effects of dietary supplementation of an enzyme blend on apparent and standardized ileal digestibility of nutrients for growing pigs. F. Ji¹, D. Casper², P. Brown², D. Spangler², K. D. Haydon³, and J. E. Pettigrew¹, ¹*University of Illinois, Urbana*, ²*Agri-King, Inc., Fulton, IL*, ³*Prince Agri Products, Quincy, IL*.

The objective of this experiment was to measure the impact of a beta glucanase/protease enzyme blend product (EBP) on apparent ileal (AID) and standardized ileal digestibility (SID) of nutrients. Twelve ileal-cannulated growing barrows (38.2 ± 0.5 kg) were blocked on previous feed intake and randomly assigned to 1 of 4 treatments using a 4 x 4 Latin square design replicated 3 times. Treatments were hydrolyzed casein for measurement of endogenous amino acids, Basal (B), B + 0.05% EBP, and B + 0.10% EBP. The diets contained 3.36 Mcal ME/kg and 1.2% total lysine. Pigs were housed in individual metabolism crates and the experimental periods were 11 d for dietary adaptation and fecal digestibility (reported elsewhere) followed by 2 d of ileal collection when ileal effluent was collected continuously for 12 hr each d. The EBP increased (P < 0.05) the AID of neutral detergent fiber, hemicellulose, and acid-hydrolyzed oil, but not of energy or dry matter (Table 1). The AID of 3 nonessential amino acids, methionine and ash were reduced by EBP. The SID of amino acids were unchanged except for a reduction in the case of methionine (P < 0.05). In summary,