

Dietary manipulation using AUSPIG to optimise pig production

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With a constant drive for improved efficiency, pig producers are being forced to consider the many factors such as genotype, piggery environment, nutrition and market requirements that account for the variation seen in their herds (Patience *et al.* 1996; Willis, 1998). Because of these complex interactions, effective management in industry can only be achieved using simulation models such as AUSPIG (DSL Systems Centre, CSIRO Animal Production, Blacktown NSW 2148) which bring together a depth of knowledge about the factors determining animal performance and enterprise profitability (Black *et al.* 1993).

In an experiment conducted to investigate the optimal dietary formulation to meet herd requirements, AUSPIG was used to design three diets to supply 100, 115 and 130% of the requirements of the 'average' male in the herd. AUSPIG 100 satisfies the mean animal in the herd, while AUSPIG 115 and 130 support a higher than average rate of protein deposition allowing for a greater number of animals in the herd to express their genetic potential. Results are shown in Table 1.

A difference is clearly shown in the way each sex responded to each treatment; significant effects ($P < 0.05$) of sex and treatment on weight gain and backfat support this observation. These results suggest that split-sex feeding might be considered as a method of improving productivity within this piggery. AUSPIG has the capacity to interpret 'what-if' scenarios and assist producers in developing strategies for improving efficiency and profitability.

Black, J.L., Davies, G.T. and Fleming, J.F. (1993). Role of computer simulation in the application of knowledge to animal industries. *Australian Journal of Agricultural Research* **44**, 541-55.

Patience, J.F. and de Lange, D.F.M. (1996). Swine nutrition in the 21st century. *Animal Feed Science and Technology* **19-27**.

Willis, S. (1998). AUSPIG In action — a Queensland experience. In: *Pan Pacific Pork Expo Seminar Day Proceedings*, pp. 41-47 (eds. S. Kratzmann and P. Fearon). Department of Primary Industries, Toowoomba, Qld.

Table 1 Results of dietary experiment with male and female pigs.

	AUSPIG 100		AUSPIG 115		AUSPIG 130	
	Male	Female	Male	Female	Male	Female
Starting Age (days)	69	71	68	67	70	71
Liveweight (kg)	27.4	32.7	32.0	30.4	33.4	30.6
P2 (mm)	8	9	9	8	8	9
End Grower Phase Age (d)	90	92	89	88	91	92
Liveweight (kg)	44.0	49.6	49.8	47.6	51.5	47.3
Feed Offered (kg/d)	1.74	1.73	1.71	1.65	1.66	1.77
Feed Efficiency	2.20	2.15	2.02	2.02	1.92	2.23
End Finisher Phase Age (d)	131	133	130	129	132	134
Liveweight (kg)	87.2	91.0	92.1	87.2	95.6	86.3
ADG (g/d)	1054	1010	1032	966	1076	951
Feed Offered (kg/d)	3.15	2.99	3.11	3.06	2.95	2.96
Feed Efficiency	2.99	2.96	3.02	3.16	2.75	3.11
P2 farm	13	15	14	14	13	14
Overall ADG (g/d)	965	940	969	916	1003	898
Feed Efficiency	2.77	2.72	2.72	2.82	2.51	2.84
Profitability (\$/pig) Net return	141.20	144.00	142.50	141.60	148.75	140.20
Feed Cost	31.50	30.25	33.35	32.65	34.05	34.65
Margin over feed	109.70	113.75	109.15	108.95	114.70	105.55