

GENETIC IMPROVEMENT OF THE EFFICIENCY OF LEAN GROWTH IN A PIG HERD

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McPhee (1981 a) studied response to selection for efficient lean growth (lean gain/food eaten) in a pig herd in which pigs were performance tested on a regimen which permitted expression of their individual appetites. Although considerable improvement was made over 5 generations in efficiency, there was a decline in voluntary food intake and no change in the rate of liveweight gain. The present study tests the hypothesis of Fowler et al. (1976) that selection for efficient lean growth on a performance testing regimen in which variation between pigs in food intake is minimised, will yield response in efficiency without change in voluntary food intake.

Two pig herds are involved, one the Control and the other the Selection herd, both of 36 sows, and both genetically similar at their foundation. The Control herd is maintained genetically stable using the pedigree technique (McPhee 1981 a). In the Selection herd, boars are replaced after 6 months work and sows after 2 farrowings. In selecting breeding animals, candidates are performance tested for 12 weeks after reaching a body-weight of 25 kg. During the test period, each pig consumes 162 kg of food. At the end, 2 out of 24 tested males and 6 out of 24 females are selected on weight of lean predicted from echo soundings and live weight measurements (McPhee 1981).

Response after 3 generations of selection is being assessed by comparing pigs from both herds under (i) the performance test feeding regimen and (ii) ad lib. feeding. Under the former, the realised heritability of the selection criterion has been estimated at 0.4. Performance measurements made on ad lib. feeding are given in Table 1.

TABLE 1 Comparison of selection and control pigs grown on ad lib. feeding from 20 kg to 80 kg liveweight

Herd	Performance traits			
	Daily gain (kg)	Food Conv. ratio	Daily intake (kg)	P ₂ fat depth (mm)
Selection	0.83 ± .01*	2.70 ± 0.03	2.22 ± .03	16.0 ± 0.3
Control	0.75	2.92	2.20	18.1
* standard error of line means				

In all traits except intake, the Selection line is superior to the Control line ($P < .05$). The performance testing technique has permitted an increase in the efficiency of lean growth without change in appetite. As a consequence, the rate of liveweight gain has increased also.

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