

## VOLUNTARY FOOD INTAKE OF PIGS OF HIGH GENETIC POTENTIAL FED PELLETS TO APPETITE: EFFECTS OF SEX AND DIETARY PROTEIN CONTENT

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### INTRODUCTION

The accurate assessment of voluntary food intake is an important factor in the use of computer models to predict pig growth and carcass composition. The relationship = digestible energy (DE) intake (MJ/day) =  $2.62 M^{0.63}$  was suggested by ARC (1981) but the Working Party on 'Nutrient Allowances for Growing Pigs' (Stranks, Cooke, Fairbairn, Fowler, Kirby, McCracken, Morgan, Palmer and Peers, 1988) drew attention to the fact that intakes under commercial conditions are frequently lower than this. The results shown below summarize the variations in food intake observed at the Northern Ireland Pig Testing Station, Antrim, during the period 1984 to 1988.

### MATERIAL AND METHODS

For performance testing normally two boars and two gilts per litter were obtained at approximately 25 kg.

TABLE 1

*Composition (g/kg) and analysis (per kg dry matter) of diet 1 used from 1984 to February 1986 and of diet 2 used from February 1986 to date*

	Diet 1	Diet 2
Barley meal	503	300
Wheat	250	400
Fish meal	60	60
Soya 50	125	180
Molasses	49.5	49.5
Dicalcium phosphate	10	8
Trace minerals/vitamins	2.5	2.5
Crude protein (g/kg)	210	240
Lysine (g/kg)	10.0	12.0
Digestible energy (MJ/kg)	15.4	15.3

The boars were housed singly and the gilts as a pair in solid floored pens bedded with shavings. Room temperature was 18°C and relative humidity 0.70. Pigs were offered a pelleted diet once daily to appetite, i.e. so that food refusals were minimal, with food offered being increased by 100 g every 3 or 4 days for singly penned animals and more often for pairs. From 1984 to February 1986, diet 1 (Table 1) was used and subsequent to this, diet 2. Pigs were started on test at 33 kg and initially offered 1.6 kg/day. Gilts were slaughtered at 88 kg and boars were taken off test at 90 kg.

### RESULTS

The mean daily intake of 427 boars (kg/day) during 1985 was 2.44 and during 1986/88 the value for 872 boars was 2.20. Figure 1 shows that there was a similar distribution of intakes during the two periods with the decreased intake being uniform over the total population. A comparison of the two periods based on boars from the same sire lines yielded similar results and the difference between the mean values (2.42 and 2.22 respectively) was highly significant. In terms of DE the intakes were approximately 32.6 and 29.1 MJ/day which correspond to 2.43 and 2.17 MJ/kg  $M^{0.63}$ . During the corresponding periods the mean daily intakes of the gilts were 2.40 and 2.20 respectively.

### DISCUSSION

The DE intakes per kg  $M^{0.63}$  recorded during 1985 (diet 1) are similar to those reported by Patterson (1985) with individually housed commercial-quality pigs fed *ad libitum* on pelleted diets of similar nutrient content. So far as can be determined there was no change in feeding

management associated with the diet change in 1986. However, there was a dramatic drop in intake, which, taken in conjunction with the information for the smaller sample of same sire lines suggests that the reduction in intake was directly attributable to the higher protein content of the diet. The net effect was for total crude protein intake to remain similar to that which had occurred with diet 1. The similarity of intake of boars and gilts is in agreement with Patterson (1985) and many previous observations (ARC, 1981).

The wide individual variation in intake is worthy of comment. During 1985, the average daily intakes of boars ranged from 1.79 to 3.13 kg with 74% lying between 2.2 and 2.6 kg. During 1986/88 the range was 1.56 to 2.76 with a similar proportion lying between 2.0 and 2.4 kg.

### CONCLUSIONS

It is concluded that the DE intake of fattening pigs is likely to be considerably lower than the value recom-

mended by ARC (1981). It would appear that increasing the dietary protein content may reduce voluntary food intake. This could be an effective management tool to obtain satisfactory grading under conditions of *ad libitum* feeding.

### REFERENCES

- AGRICULTURAL RESEARCH COUNCIL. 1981 *The Nutrient Requirements of Pigs*. Commonwealth Agricultural Bureaux, Slough.
- PATTERSON, D. C. 1985. The effect of nutrient density of the diet and of a change in nutrient density on the performance of pigs fed *ad libitum* for bacon. *Animal Production* 40: 169-174.
- STRANKS, M. H., COOKE, B. C., FAIRBAIRN, C. B., FOWLER, N. G., KIRBY, P. S., MCCrackEN, K. J., MORGAN, C. A., PALMER, F. G. and PEERS, D. G. 1988. Nutrient allowances for growing pigs. *Research and Development in Agriculture* 5:

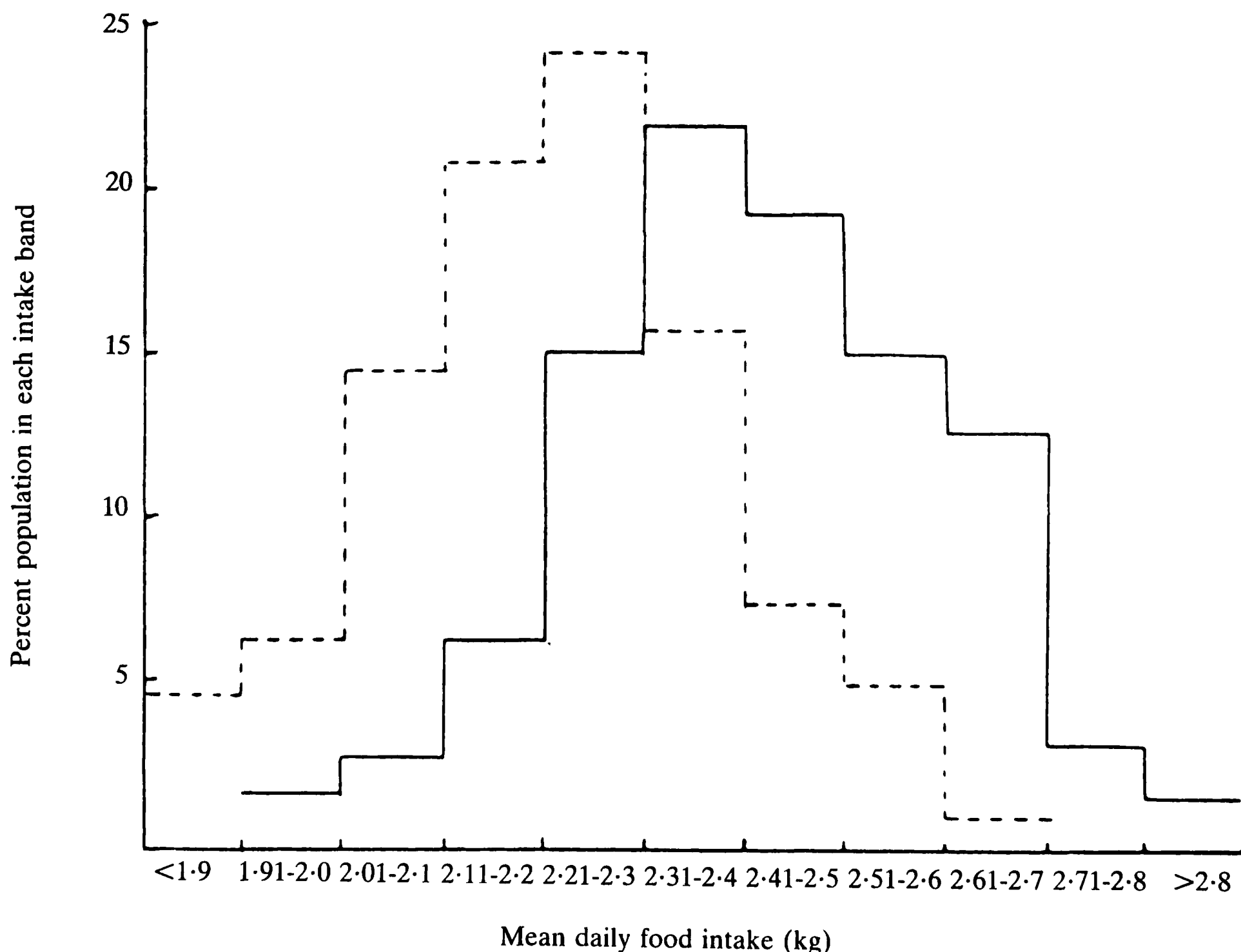


FIG. 1. Distribution of food intake (kg/day) for pigs given diet 1 (—) or diet 2 (- - -).