

pronounced in foetuses : its weight was increased by 2.2 in the Jet Neuf group ($P < 0.001$) and by 1.4 (NS) in the Tandem group. This criterion was not affected by the lactation diet, whereas the effects of the pregnancy diet persisted in piglets at weaning. It was concluded that foetal thyroids are particularly sensitive to goitrogenic compounds of normal rapeseed meal.

Feeding pregnant gilts with normal or low glucosinolate rapeseed meal increased early embryonic mortality ($P < 0.001$; 47.3, 40.1 and 29.1 % in the Jet Neuf, Tandem and control groups, respectively). Likewise, total embryonic mortality was higher (19.4, 44.1 and 31.4 %, respectively), but mortality after 40 days of gestation was not affected. Prolificacy of gilts fed rapeseed meal was therefore lower ($P < 0.01$; 10.7, 8.5 and 9.1 total piglets born in the control, Jet Neuf and Tandem groups, respectively). Increased embryonic mortality mainly concerned some gilts and did not seem to be related to the goitrogenic properties of rapeseed meal. Postnatal piglet mortality tended to be higher in litters from dams fed normal rapeseed meal during pregnancy (30.2 % in the Jet Neuf vs, 18.3 % in the Tandem and 19.8 % in the control groups).

In our experimental conditions, feeding diets containing 20 % rapeseed meal to lactating gilts had no effect on reproductive performance. Using low glucosinolate rapeseed meal minimized the goitrogenic effects of normal rapeseed meal. Reasons for increased embryonic mortality due to rapeseed meal intake should be investigated.

Comparison of three levels of dietary lysine in the bacon pig Influence of the genotype

F. GATEL, F. GROSJEAN

I.T.C.F., 8, avenue du Président-Wilson, 75116 Paris

A trial was made in 48 Large White and 48 Pen ar Lan females kept and fed individually between 30 and 100 kg live-weight to compare three dietary treatments exhibiting a different lysine content (2.6, 2.8 and 3.2 g/1 000 kcal DE). The diets consisted of 58.3 % wheat, 20.0 % barley, 18.2 % soyabean meal and 0, 0.12 or 0.24 % lysine HCL and were offered according to the same feeding pattern.

Whatever the period, feed intake was similar with the three treatments and in the two breeds. Between 40 and 60 kg live-weight, feed conversion ratio was improved when the level of dietary lysine was higher (2.67, 2.62, 2.57 in Large White and 2.75, 2.60, 2.61 in Pen ar Lan females). During the finishing period (60-101 kg), feed conversion ratios were not significantly different (3.16, 3.19, 3.20, 3.12, 3.08, 3.14). When considering the whole fattening period (40-101 kg), the differences observed in feed conversion ratios were no more significant (3.00, 3.00, 2.99 in Large White and 3.00, 2.93 and 2.94 in Pen ar Lan females). Carcass yield was neither affected by the diet nor by the breed. Muscle percentage was influenced by the breed but not by the level of lysine (50.0, 51.5, 51.8 ; 54.0, 53.9 and 54.4 %). Likewise, the technological quality of hams was dependent of the genotype but was not affected by the diet. It was concluded that the level of 2.6 g of lysine/1 000 kcal DE is recommended in growing-finishing pigs whatever the breed.

Influence of sex and castration on the response of growing pigs to dietary lysine concentration

J. LOUGNON, T. KIENER

A.E.C., Service Développement Alimentation Animale, 03600 Commentry

The responses of entire male, castrated male and female growing pigs to dietary lysine concentration was investigated in an experiment involving 144 animals.

Three diets with a lysine concentration of 6.8, 7.8 and 8.8 g/kg diet were offered ad libitum to the pigs individually penned from 25 to 95 kg live weight.

Daily feed intake of entire males and females was similar and lower (by 5-7 %) than that of castrated males.

Daily gain of entire males and castrated males was similar and lower (by 6-10 %) than that of females.

Feed efficiency measured by the feed conversion ratio was similar in females and castrated males (slightly better in the former). It was 8 % higher in entire males than in the other animals.

Muscle percentage was similar in carcasses of females and entire males and 6 % higher than that of castrated males. Carcasses of entire males exhibited the lowest fat content.

The maximum response to dietary lysine differed according to the sex, the parameter measured and the growth period (25-60 or 60-95 kg live weight). In entire males and females the better feed efficiency was obtained with 8.8 g lysine/kg diet, whereas in castrated males no further response was achieved above 7.8 g lysine/kg diet.

Higher levels of dietary lysine may be required to detect possible response differences between entire males and females.

Effect of protein and lysine level in the diet on growth performance and energy utilization in the growing pig

J. NOBLET, Y. HENRY, S. DUBOIS

INRA, Station de Recherches Porcines, Saint-Gilles, 35590 L'Hermitage

Three diets containing 15.3 and 0.67 % (diet pl), 15.3 and 0.80 % (diet pL) and 17.8 and 0.80 % (diet PL) crude protein and lysine, respectively, were fed to female pigs with an initial live weight of 20 kg. Eight replicates of four littermates were used. In each replicate, one female was slaughtered at the start of the experiment and the three others were given the experimental diets and were slaughtered seven weeks later. Carcasses were dissected, minced and analysed to determine the nature (muscle, adipose tissue...) and chemical composition (protein, lipid...) of the gain and to measure energy and nitrogen balance over the experimental period. Average daily gain and gain in carcass and muscle or protein deposition were lower with the pl diet whereas fat deposition was higher. The decrease in the supply of non essential nitrogen (pL vs PL) did not change average daily gain or gain in carcass or muscle but tended to increase fat deposition. At similar ME intakes, heat production and excretion of nitrogen and energy in urine were higher in PL-fed pigs. Our results suggest that in order to keep constant the amount of retained energy a 1 % increase in the protein level of the diet (at similar limiting amino acid levels) requires 1.0 and 0.75 % additional supply of DE and ME, respectively.

Reduction in the protein content of diets for weaned piglets: contribution to the study of threonine requirement

F. GATEL, J. FEKETE

I.T.C.F., 8, avenue du Président-Wilson, 75116 Paris

A trial was made in 384 piglets between 10.6 and 25 kg live weight housed in pens of 7 animals each and fed an experimental diet for 28 days from the 14th day after weaning. Four diets