

the following: 2.23; 2.25; 2.39 and 2.46 kg/day, the first two treatments differing significantly from the two others.

The growth rates obtained were related to the feed intake. Accordingly, the feed conversion ratios were similar for the 4 treatments (from 2.97 to 3.04), the highest value being obtained with *ad libitum* feeding.

It was observed that in most cases, the daily feed intakes were lower with pellets. This difference was statistically significant according to the results of the 4 treatments.

Growth performances and feed conversion ratios were always improved with pellets and this was all the more marked as the restriction was severe.

No significant difference was noticed between groups with respect to cutting criteria. The loin/backfat ratio was in favour of carcasses from animals having been restricted after *ad libitum* feeding and evolved parallel to the intensity of feed restriction. This was also the case for average backfat thickness. For these two criteria, the results obtained with progressive feed restriction (treatment 1) were located between those obtained with the more liberal treatments.

Consequently, fattening length of pigs, total feed intake and commercial grading of carcasses cannot be optimized simultaneously.

Utilization of different varieties of fodder wheat by growing finishing pigs

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Two experiments were carried out with the aim of defining more accurately the feeding value of diets based on new varieties of wheat unfitted for bread-making as compared with various varieties fitted for bread-making. In the first experiment the animals were fed *ad libitum* during the growing-finishing period and in the second one, they were restricted during the finishing period.

The results obtained with the variety "Maris-Huntsman" in the two experiments were similar to those recorded with the classical varieties. Accordingly, data available about wheat can also be applied to the former variety.

The variety "Clement" exhibited the same feed efficiency in females and castrated males as the other varieties. However, a slight lowering in the intake level was noticed in castrated males leading to growth rate reduction.

Further assays should be performed to confirm the feeding value of the variety "Clement".

Reduction of the protein level in wheat based diets offered to growing-finishing pigs

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Six wheat based diets differing by the protein supply (quantitative or qualitative) and protein source (soya-bean meal alone or combined with lucerne meal) were compared in this study using growing-finishing pigs.

The best growth performances were obtained with the highest crude protein level (18 %) and then regularly decreased with the levels of 16.5 and 15 per cent. The differences were

small when considering the overall experimental period: those observed during early growth were compensated for during the finishing period.

No effect was obtained by adding lysine to a wheat based diet containing 15 per cent crude protein, the results recorded with the non supplemented diet being similar.

Use of lucerne meal (12 %) as a partial protein supplementation led to good growth performances during the whole period studied as compared with those obtained at a protein level of 16.5 per cent, with a diet without lucerne meal. In the case of diets containing 15 per cent protein and supplemented with lysine, the results were equivalent to those obtained with the former protein level when taking into account the overall experimental period because of a relative compensation of the growth rate during the finishing period.

There was a negative effect on feed conversion ratio and carcass yield in direct correlation with the energy concentration of the diet.

Effect of the protein level on growth performance of finishing pigs

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The present study was conducted in order to evaluate the possibilities of reducing the protein level in the diet of finishing pigs under an optimal balance between essential amino acids. Two experiments were performed, with individually and group-fed Large white pigs, between 50 and 100 kg final body weight. Both castrated males and females were given diets containing 17, 15, 13 and 11 per cent crude protein, with or without supplementary lysine and tryptophan, under a liberal feeding schedule. The reduction of the protein content in this type of diet to a level compatible with optimal growth performance was obtained with a rather low supplementation in lysine and without any addition of tryptophan, due to the satisfactory balance between the dietary essential aminoacids. The minimal level of undifferentiated protein, after the requirements of essential aminoacids had been met, without unfavourable effects on growth performance and carcass grading, was 12 per cent in castrated males and 13-14 per cent in females, corresponding to 36 and 40-42 g crude protein per Mcal digestible energy, respectively.

Energy and protein value of different varieties of peas (*Pisum sativum L.*) for the pig

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Five digestibility trials were conducted in order to estimate the nutritive value of various types of peas (*Pisum sativum L.*) for the growing pig. Two wrinkled varieties (LINCOLN and FROGEL) and three smooth ones (STARCOVERT, FRIMAS and A 86), were tested. The energy value of the pea averaged that of maize, i.e. 3,940 Kcal digestible energy (or 3,760 Kcal metabolisable energy) per kg dry matter and the apparent digestibility coefficient of the energy represented 88.8 per cent. The apparent digestibility of crude protein (84.2 %) was slightly lower than that of soya-bean meal protein (89 %). The amino-acid composition of the seeds determined in this study indicates that the protein balance of peas is good, especially with respect to lysine (7.4 g for 16 g nitrogen).
