

II. — CARCASSES AND MEAT QUALITY

Estimation of the anatomical composition of pig carcasses and different cuts. General principles and classification difficulties

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One hundred and forty five pigs of different breeds and sexual types were slaughtered between 90 and 110 kg live weight in order to estimate carcass qualities by measurements on hot carcasses (conformation, backfat thickness) and then cold carcasses (cutting, specific gravity, muscle or fat thickness and area on the dorso-lumbar 13th rib section). Primarily, we searched for the most simple or associative value of the measurements to be used to estimate the anatomical compartments independently. Thereafter, we attempted to determine the representative criteria of the variables : muscle/fat or muscle/bone, excluding *a priori* the methods proceeding by difference. The progressive multiple regression analyses were followed by carcass sorting programmes based on increasing weights or muscle percentage.

The main results were the following :

Weight and percentage of total muscle were explained — for 95 p. 100 of the variation — by 4 parameters : weight of loin only, specific gravity of loin + backfat, specific gravity of ham, eye muscle area.

Weight and percentage of total fat were explained — for 94 to 95 p. 100 of the variation — by 4 parameters : weight of backfat and leaf fat, weight and specific gravity of belly only.

Weight and percentage of bone were only explained — for 65-69 p. 100 of the variation — by 2 parameters : weight of trotters and specific gravity of legs only. The muscle/bone ratio ($R = 0.912$) was estimated by weight of trotters, specific gravity of ham and eye muscle area.

The most simple utilization of the results of the Paris standard cutting method is the following :

$$\frac{\text{muscle}}{\text{fat}} = 0.18 + 0.82 \frac{\text{loin}}{\text{backfat}} \quad R = 0.97$$

The diversity of commercial techniques depends on the cutting methods.

Total specific gravity of the reconstituted carcass may provide an independent estimation of muscle/fat ratio ($r = 0.88$), i.e. a quantitative support for scoring of lean percentage (conformation).

According to the grades defined by the E.E.C., + 5 p. 100 increase of the muscle percentage corresponds, after our results, to + 4 kg rise of the muscle weight and to 7.10^{-3} increase

of the specific gravity of the carcass. Within the range of slaughter weights used in France (90 to 110 kg live weight) and for this sample of 145 dissected carcasses, it was rather the degree of muscle development than that of fatness which seemed to be related to carcass weight ($r = + 0.55$ and $+ 0.09$, respectively). This result is important for correction grades of fatness according to classes of carcass weight (HAMELIN and DESMOULIN, 1975). Further investigations are undertaken at the present time to compare the values of the different fatness indexes.

Performances and carcass traits in restricted pigs fed with maize and slaughtered between 90 and 115 kg live weight

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This study was made in order to determine the evolution of performances in pigs restricted from 60 kg live weight (2.3 kg/day/animal) for castrated males and from 80 kg (2.8 kg/day/animal) for females. The pigs were slaughtered between 90 and 115 kg live weight.

The main result concerns the almost linear increase of feed conversion in connection with a reduction of growth rate. These effects tended to increase the production costs for heavy pigs.

On the other hand, the carcass weight produced per pig increased as a consequence of the gain in live weight and, accessorially, in yield. Furthermore, it was noted that within the weight classes studied, the commercial grading of the carcasses exhibited constant values.

Thus, on account of the prevailing economic conditions during this trial (early 1975) the best margin per pig produced was obtained with the heaviest carcasses.

These findings confirm the trends observed in a previous trial (BOUARD and LEUILLET, 1975) and will be confirmed under conditions of restricted group feeding with a greater number of animals.
