Comparison of the crossbred progeny of *belgian landrace* and *pietrain* boars

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Both *Belgian Landrace* and *Pietrain* boars were randomly used by A.I. on French *Landrace* × *Large White* sows of commercial farms. Females and castrates from resultant litters were sent to an experimental station where they were fed *ad libitum* (test starting at 30 kg) and slaughtered at about 100 kg. Data were recorded on 164 pigs from 21 litters sired by 12 *Belgian Landrace* boars (XLB) and on 152 pigs from 22 litters sired by 5 *Pietrain* boars (XPP). Daily feed consumption was 10 p. 100 ($P < 0.001$) higher in XLB pigs which excel XPP pigs in average daily gain on test ; however an interaction sex × breeding group ($P < 0.01$) was evidenced for the latter trait : the advantage of XLB was larger in barrows (111 g) than in gilts (57 g). The same interaction tends to exist for food conversion ($P < 0.15$) : 3.16 vs 3.37 in barrows, 3.23 vs 3.27 in gilts for XLB and XPP groups, respectively. No significant difference between breeding groups was found in dressing out percentage, average backfat thickness, weight of backfat and weight of ham ; however XPP pigs had a shorter carcass ($P < 0.001$), a higher weight of loin ($P < 0.001$) and a lower weight of leaf fat ($P < 0.05$). A slight superiority of XLB pigs as compared to XPP pigs was found with respect to meat quality, assessed 24 hours *post mortem*. The 3-way cross with *Belgian Landrace* boars showed a mean advantage of about 11.5 F per pig on the 3-way cross with *Pietrain* boars in overall economic merit but due to the interaction sex × breeding group for fattening cost, the difference was larger in barrows (17.5 F) than in gilts (5.5 F).

Study of the malignant hyperthermia syndrome in *pietrain* breed : first results

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A sample of 138 *Pietrain* females and castrates was subjected to a 5-minute anaesthesia with halothane, at an age of about 80 days. Thirty-nine of them, denoted (+), exhibited the malignant hyperthermia syndrome after an average 2 1/2 minute anaesthesia while the others

denoted (—), normally supported anaesthesia. At about 90 kg live weight, the same pigs were subjected to a 2-hour test intended to simulate transportation to slaughter house. A significant interaction sex × type of reaction to anaesthesia was evidenced for most traits measuring the reaction of the animal, (+) gilts being definitely more stress-susceptible than other animals, as indicated by a marked rise in body temperature during both tests. The cases of stress-associated sudden death observed in our experiment only concerned (+) pigs, thus indicating that a strong relationship, if not a strict identity, exists between malignant hyperthermia syndrome and stress syndrome. No difference between (+) and (—) pigs was found in growth rate but (+) pigs had a shorter carcass, a higher dressing-out percentage and a much better carcass composition, especially with respect to muscularity. A disadvantage of (+) was found for some meat quality traits measured 24 hours *post mortem* (chiefly for water holding capacity of muscle) but the technological yield of the transformation into « Paris ham » was the same in the two groups; the relationship between malignant hyperthermia syndrome and meat quality requires further investigation.

VI. — PATHOLOGY

Learning of a conditioned avoidance response by the pig

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Non specific resistance to stress in pigs is investigated by use of defensive instrumental conditioning techniques in which the animal has to learn to avoid an electric shock preceded by a warning signal (discriminated avoidance schedule) or a scheduled electric shock (continuous avoidance schedule) by a running response in a shuttle box. 8 weeks old pigs learn more or less easily to perform the conditioned avoidance response, depending on the difficulty of the task.

Some applied examples of the use of these techniques are given : the influence of the variation of the shock-shock and response-shock intervals in the continuous avoidance schedule are studied on the rate of learning and the plasma level of corticoids ; by use of yoked control animals, the adaptiveness of the conditioned response can be measured ; drugs can also be tested either on the performance of the conditioned avoidance response or on the fear evoked by a signal preceding an unavoidable shock.

The study of behavioural and metabolic changes in such procedures enables a better understanding of the capacity of the organism to adapt to stress and the way to improve it by use of drugs.