

Effects of halothane sensitivity on growth and body composition traits in pigs

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A 5-minute halothane test was carried out at about 80 days of age in 1 178 females entering the progeny-testing station at Le Transloy in 1979-1981 and issued from breeding farms of four breeds : *Large White* (LW), *French Landrace* (FL), *Belgian Landrace* (BL), and *Pietrain* (PP). Among 412 LW, 264 FL, 450 BL and 52 PP pigs, incidence of positive halothane reaction was 0, 19.3, 83.8 and 82.7 p. 100, respectively. Mortality due to stress syndrome (excluding mortality immediately following positive reaction at halothane testing but including transport losses) was significantly higher in halothane positive (HP) than in halothane negative (HN) pigs : 4.76 vs 0.14 p. 100. No within-breed difference between HP and HN pigs was found in average daily gain from 35 to 100 kg liveweight (on *ad libitum* feeding). In both FL and BL, HP pigs had shorter carcass length (CL) than HN pigs from the same breed, and showed significant advantage in killing out percentage (KOP), backfat thickness (BT) and estimated carcass lean content (ECLC). However, a significant interaction between *Landrace* strain and type of halothane reaction was found in KOP, CL and ECLC, with the difference between HP and HN pigs being larger in FL than in BL (3.3 vs 1.9 kg in estimated lean tissue weight per pig). The latter results are interpreted as indicating that the gene effects at the halothane sensitivity locus are approximately additive with respect to be main body composition traits : the proportion of heterozygotes among HN pigs is indeed expected to be higher in BL than in FL.

Comparison of the genetic levels of breeding and commercial farms in the *Large White* pig breed

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Purebred *Large White* pigs from either 54 breeding farms (selection : LWS) or 54 commercial farms (production : LWP) were compared in central progeny-testing stations with respect to growth and carcass traits. A significant superiority of LWS pigs (n = 193) as compared to LWP pigs (n = 230) was found in most growth and body composition traits : 844 vs 826 g in average daily gain from 35 to 100 kg (P < 0.10), 2.98 vs 3.06 feed/kg gain in food conversion ratio in the same period of time (P < 0.01), 73.8 vs 73.5 p. 100 in killing out percentage (P < 0.05), 21.1 vs 21.9 mm in average backfat thickness (P < 0.10), 52.3 vs 51.2 and 26.3 vs 27.6 in estimated carcass lean meat and fat percentages (P < 0.01), respectively. However, a disadvantage of LWS relative to LWP pigs (P < 0.05) was found in a subjective score of meat quality and a meat quality index combining ultimate pH, colour and water holding capacity measurements. An attempt was made to evaluate the expected difference in genetic level between the LWS and LWP populations, i.e. the improvement lag. The expected genetic lag of LWP relative to LWS was approximately 1.68 generation or 2.77 years of selection. Annual genetic trends in the *Large White* breeding herds were determined in comparing observed and expected genetic lags of LWP as compared to LWS : annual genetic gain in overall economic value per pig fattened from 25 to 100 kg was around 7 francs on the short period considered. However, this figure does not take account of the unfavourable genetic trends observed in meat quality traits.