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Genetic relationships between station performance-testing and ” on-farm ” testing in pigs

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Estimates of the annual genetic trends for average daily gain (g) and food conversion ratio (kg feed/kg gain) in the LW breed $+ 2.9 \pm 0.8$ g and $- 0.011 \pm 0.002$ kg/kg were respectively in I stations, $- 4.7 \pm 2.1$ g and $- 0.003 \pm 0.007$ kg/kg in P stations. The corresponding estimated for the FL breed were $+ 1.0 \pm 0.9$ g and $- 0.008 \pm 0.003$ kg/kg respectively in I stations, $+ 3.2 \pm 2.7$ g and $- 0.022 \pm 0.008$ kg/kg in P stations. For the BL breed, they were $- 2.5 \pm 1.4$ g and $+ 0.003 \pm 0.004$ kg/kg respectively in I stations, $- 0.8 \pm 2.8$ g and $- 0.018 \pm 0.009$ kg/kg in P stations. Annual genetic trends in muscle content of the carcass (P stations) and average backfat thickness (I stations) were $+ 0.42 \pm 0.07$ p. 100 and $- 0.26 \pm 0.02$ mm respectively for the LW breed, $+ 0.15 \pm 0.10$ p. 100 and 0.16 ± 0.02 mm for the FL breed, $+ 0.33 \pm 0.09$ p. 100 and $- 0.19 \pm 0.03$ mm for the BL breed.

As compared to the expected responses from the boar selection index of I stations, estimated genetic gains were relatively greater for body composition than for growth traits.

Genetic relationships between station performance-testing and « on-farm » testing in pigs

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Pig breeding for growth and carcass traits in France is based on performance recording both in central testing stations (S) and in breeding farms (F). Data collected in boar performance-test stations (1979-1983) and in the « on-farm » programme (1981-1983), on *Large White* and *French Landrace* pigs, were analysed in order to estimate genetic correlations between traits measured in the S and F environments. The S traits are average daily gain (ADG_s) and food conversion ratio (FCR_s) from 35 to 90 kg, and ultrasonic backfat thickness at 90 kg (BFT_s). The F traits are age at 100 kg (AGE_F) and ultrasonic backfat thickness at 100 kg (BFT_F). Data sets used for estimating genetic variances included 25298 boars from 4656 sires for S traits, and 96711 boars (1/3) or gilts (2/3) from 2292 sires for F traits (104 herds). Genetic covariances between S and F traits were derived from sire-offspring covariance on one hand (18325 F offspring from 302 S sires), and from paternal half-sib covariances on the other hand (1117 sires with 55697 F offspring and 5743 S sons). The pooled estimates of genetic correlation (r_A) between S and F traits are as follows : $- 0.41 \pm 0.07$ for ADG_s and AGE_F , $- 0.10 \pm 0.05$ for ADG_s and BFT_F , 0.39 ± 0.05 for FCR_s and AGE_F , 0.23 ± 0.05 for FCR_s and BFT_F , 0.05 ± 0.05 for BFT_s and AGE_F , and 0.53 ± 0.05 for BFT_s and BFT_F . Separate analyses by sex of « on-farm » pigs suggest a genotype x sex interaction for growth traits, the r_A 's being higher for the boar-boar than for the boar-gilt relationship ($- 0.57 \pm 0.09$ vs $- 0.35 \pm 0.06$ for ADG_s and AGE_F , and 0.61 ± 0.09 vs 0.31 ± 0.06 for FCR_s and AGE_F , respectively). The genotype x environment interaction effects explaining that the observed r_A 's between similar S and F traits deviate from the « expected » value of 1 (or $- 1$) are briefly discussed in relation to the feeding system, test period, sex and housing differences between the two breeding environments.