**OBJECTIVE**

To develop a genetic evaluation model to estimate the genetic merit of Piétrain boars for some carcass quality traits based on data recorded on live crossbred progeny and relatives at different ages.

To implement a tool that allows to select boars that produce carcass with a high meat percentage.

**RESULTS**

**MATERIAL AND METHODS**

**DATA**

- Recorded at the central test station and on-farm on live animals
- Two traits: backfat thickness (BF) and meat percentage (%meat)
- 60,546 records from 56,822 different pigs
- Recorded on females, entire and castrated males
- Breed types: Piétrain, Landrace and Piétrain X Landrace

**MODEL**

- Multitrait animal model with random regressions using linear splines with knots at 175, 200 and 250 days

\[ y = Xb + Q (Za + ZP) + e \]

- \( y \): vector of observations (BF and %meat)
- \( b \): vector of fixed effects (sex, contemporary group and heterosis)
- \( a \): vector of random additive genetic effect
- \( p \): vector of random permanent environment effect
- \( e \): vector of residuals
- \( Q \): matrix of linear spline coefficients
- \( X, Z \): incidence matrices

- Heterosis effect: modeled as fixed regression on heterozygosity coefficient

**METHODS**

- REML and Gibbs sampling algorithm for variance components estimation
- BLUP for breeding values estimation and residuals computation

**CONCLUSIONS**

- Genetic improvement of carcass quality of Piétrain boars is possible by genetic selection with backfat thickness and meat percentage because of their high heritability.

- Backfat thickness and meat percentage are highly genetically correlated, so selection could be based only on one of these two traits to select boars that produce progeny with a high meat percentage.

- To have accurate genetic selection, backfat thickness should be preferred to meat percentage because it is a trait directly measured while meat percentage is predicted from backfat thickness and loin muscle depth measurements.

- According to the study of residuals, the genetic evaluation model developed seems to fit well the data. Therefore the estimation of breeding values of boars could be accurate.

- According to solutions for heterosis effect, crossbred animals have better performances compared to the whole population.

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