Improvement of prolificacy in sows by creation of a « hyperprolific » line and use of artificial insemination : principle and preliminary experimental results

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The possibilities of genetic improvement of prolificacy in a pig population by creation of a line open to exceptionally prolific *Large White* and *Landrace* sows were investigated. Application of the method requires utilization of the boars of the « hyperprolific », line also selected on fattening and carcass traits, in artificial insemination.

The expected theoretical progress was not linear and tended asymptotically towards a maximum, ranging between 5 to 6 p. 100 in purebreeding and 12 to 14 p. 100 in crossbreeding.

The experimental verification of this theory was made by comparing the reproductive ability of the female progeny of 4 *Large White* boars, sons of hyperprolific dams and that of 10 control boars of the same breed. The young females of the experimental line exhibited a significantly higher ovulation rate ($P < 0.01$) than the control line (16.53 vs 13.96 corporea lutea). The mortality of embryos was significantly higher in the hyperprolific line and therefore the number of embryos or piglets alive per litter did not significantly differ between the groups.

Although the hypothesis of a superposing of additive effects (selection) and non additive effects (heterosis) of the genes on prolificacy has not yet been examined experimentally in the pig, the method suggested seems to be better adapted to production of crossbred females than to improvement of purebred females.

Accuracy of « on farm » testing of young gilts

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Heritabilities of performances measured for on-farm testing of young gilts were estimated. This « on farm » test was done when animals from the same test group averaged 85 kg of live weight. Each animal was weighed and probed for backfat thickness in six locations with ultrasonics. Then three criteria calculated :