

Results of a so-called « hyperprolific line » used in pure and cross-breeding

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Since 1973, a system of repeated backcrossing of *Large White* boars with sows of extreme prolificacy from the same breed has been applied at the I.N.R.A. experimental A.I. Centre of Rouillé (Vienne) in order to create a so-called « hyperprolific line » of boars (H).. These boars together with normal *Large White* (LW) or *French Landrace* (FL) sows, produced H × LW and H × FL females which were compared to LW × LW and LW × FL females, respectively, as concerned ovulation rate at first oestrus and embryo survival after one month of subsequent gestation (experiment 1). On another I.N.R.A. farm, at Avord (Cher), farrowing results for two consecutive litters (experiment 2) were obtained on daughters (sired by normal boars) from extremely prolific sows — average litter size 16.9 piglets born — and on their granddaughters (sired by H. boars). In experiment 1, ovulation rate was higher for H × LW than for LW × LW females (16.3 against 14.5, $p < 0.01$), but no significant difference was found for the number of embryos at one month of gestation. Conversely, H × FL showed no superiority over crossbred LW × FL in ovulation rate (15.4 against 15.2) but a higher number of embryos (11.2 against 10.4, $p < 0.10$). In experiment 2 the progeny of hyperprolific sows did not significantly differ from the controls in the first litter but showed an advantage of 2.4 piglets born ($p < 0.01$) in the second litter. Altogether the results suggest that there is an antagonism between ovulation rate and embryo survival in gilts but less in sows. Thus, by increasing the ovulation rate, a gain in litter size may only be obtained in sows.

Selection for prolificacy in the pig : results of a 10 generation selection experiment

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This article gives an account of a selection experiment initiated by I.N.R.A. in 1965, in order to examine the possibilities of mass selection for prolificacy in the pig, using a criterion which is the total number of piglets born in the first two litters of a sow. In theory, the selection scheme used allows the maximum annual response in litter size, i.e. 0.25 piglet. In fact, starting from a foundation stock of about 100 *Large White* females, a positive response was observed over the first five generations (0.15 piglet) but it has been annihilated during the following five generations. The only noteworthy response is for the number of corpora lutea, which is 0.20 ± 0.11 per generation. The reasons for the lack of response in litter size have been analysed. First, abnormal delays in puberty of gilts have restricted the size of the experiment, thus creating large random fluctuations, and those delays have also reduced selection intensities. Secondly, the daughter-dam regressions indicate that the first litter is more heritable than the second one and than the average of the two, so that the selection criterion used is not optimal. The experiment is being continued with a selection line which is now open to daughters from sows of extreme prolificacy.