

considered as control (c). The low heritability estimate for the dam-daughter pathway ($h^2 = .02 \pm .03$) suggests that unfavourable maternal effects exist. In contrast, the realized heritability estimated for the paternal pathway is higher ($h_r = .14 \pm .05$). The latter parameter allows to assess the overall efficiency of the breeding scheme for $D = 12$ on average, an advantage of 0.84 piglets born and .60 piglets born alive per litter was established by the daughters of H boars. The overall economic gain resulting from this genetic progress in prolificacy is expected to be about 5 % in a herd using boars from the H line. However, a lower heritability was found for 1st parity litter size whereas genetic correlations between successive litter sizes were markedly less than unity. The possible causes for these differences and the consequences on the breeding policy are discussed.

II. — REPRODUCTION

Recent advances in boar semen storage technology

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This review makes a general survey of techniques used for the preservation of semen in the liquid or frozen state.

As regards storage in the liquid state several extenders have been developed to preserve the fertilizing capacity of semen for several days. In order to obtain the highest conception rate and prolificacy, it seems necessary in the present state of our knowledge to use the total fraction of ejaculate and to extend semen in B.T.S. to obtain 3×10^9 spz/100 ml. In such conditions, the fertilizing capacity is preserved up to 3 days after collection without reduction in conception rate and prolificacy.

As regards storage of deep-frozen semen, several methods have been developed. Semen quality after thawing varies according to the freezing-thawing extenders used and to the techniques of preparation and storage. Analysis by electronic microscopy, after cryosubstitution, of spermatozoa and their environment shows that their dehydration at freezing is an important factor for the preservation of semen quality after thawing, at least as regards the acrosome integrity. Results of artificial inseminations performed during the last 10 years do not show a difference between straws and pellets concerning the farrowing rate and prolificacy. However, other factors such as insemination period, inseminator and boar may affect fertility. In conclusion, frozen semen used for A.I. can be expected to result in a conception rate 20 to 30 % lower and in a litter size about 1 to 3 piglets smaller than does fresh semen.

Comparison of different techniques of storage of boar semen. Effect on fertilization mechanisms

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An experiment was made to compare the effect of using semen stored in the liquid or frozen state on fertilization mechanisms. Twenty four sows distributed into 4 groups were inseminated