

improvement, are stressed. In contrast, the replacement policy in the 9 French A.I. centers appears to be similar to that prevailing under commercial conditions, with average of 20 months of age for A.I. boars in service. This leads pedigree breeders to pick-up the youngest ones of those for insemination in their herds. Also, from a strictly commercial viewpoint, a fast replacement of A.I. boars should be recommended. Considering one year as a maximal length of use, it appears that about half of the French A.I. boars do not satisfy that requirement.

### **Selection for prolificacy in the pig : response to selection in an open line**

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After 10 generations of selection for litter size (on 1st) and 2<sup>nd</sup> litter in a closed line (as previously reported by OLLIVIER & BOLET, 1981, *Ann. Zootech.*, **30**, 382), the selection line (S) have been opened to the progeny of highly prolific sows and of the « hyperprolific » boars of Rouillé (see LEGAULT & GRUAND, 1976, *Ann. Zootech.*, **25**, 445). The rate of immigration into the S line has been about 1/8 per generation, and, simultaneously, selection has been carried on within S, on 1st litter size. The genetic level of the 16th generation (S 16) has been assessed through a comparison to a cross (CR) between S 14 females and control line boars (C), whose semen had been frozen 5 years before. This comparison, which includes the first 3 litters of 69 S16 and 72 CR gilts put to mating, has shown a significant advantage of S16 in prolificacy. The genetic gain, estimated under some given assumptions, is 1.7 piglets born/litter above the C line. As the genetic gain due to immigration can be estimated, given the immigration rate and an assumed genetic level of the immigrants, it appears that within-line selection should account for more than half of the total genetic gain. However, in spite of the proven superiority of the « hyperprolific » line for ovulation rate, the advantage of the S line over C (about 2 corpora lutea, as evaluated in the 4th gestation) does not seem to have increased since the 10th generation. On the other hand, S16 appears to be significantly leaner than C. This is a probable consequence of immigration, through which the S line has benefited from the genetic gain in leanness realized on the farms providing the hyperprolific sows. The haplotypes of the major histo-compatibility complex (SLA) identified in S16 as compared to CR show that selection has exerted a negative effect on SLA polymorphism.

### **Evaluation of the « hyperprolific » line of large white boars in herds of the Poitou area**

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This study deals with the results of a selection experiment on prolificacy conducted since 1973 at the Experimental Station for Artificial Insemination in Rouillé. The objective was to create a line of so-called « hyperprolific » Large White boars (H) by applying a very intense selection among sows of that area. The criterion of selection was  $D = nd/[1 + 0.15(n - 1)]$ , with d being the average phenotypic superiority for total number of piglets born in n litters. The response to selection was evaluated in commercial farms of the Poitou area through comparing sows sired by boars from the H line and contemporary sows sired by boars from an other Large White line