The overall evaluation of the use of crossbred Chinese dams resulted in negative economic balance : the increase in sow productivity was not large enough to compensate for the poorer carcass merit of progeny. These results were discussed considering the present evolution in the system of carcass payment in France due to the use of grading machines.

Genetic relationships between fat androstenone level in males and development of male and female genital tract in the pig

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A one-generation selection experiment was performed in order to assess the extent to which it is possible to select for reduced fat androstenone level (A) in boars while maintaining normal sexual maturity in boars and gilts. In Large White boars of around 114 kg liveweight. A was determined on a biopsy of fat, and testes size (TS) was estimated from live measurements of testes width and scrotal area. Three groups of sires (4 per group) were kept for breeding by A.I. : 1) group S showing low A (intensity of selection i = − 1.50 unit of phenotypic standard deviation) and small TS (i = − 2.74), 2) group L with low A (i = − 1.32) and large TS (i = + .50), and 3) group C (« control »). Records for A and TS at 104 kg and for A and genital tract development at slaughter (124 kg) were collected on 236 male offspring from these boars. Percentage of puberal gilts and genital tract development at slaughter (124 kg) were recorded on 187 female offspring. A highly significant response to selection « against » A was observed in both group S and L. A result of particular interest is that a normal development of testes and Cowper's glands was preserved in the sons from L sires, at least at 124 kg, though they exhibited a large decrease in A at the usual slaughter weight (104 kg). However, a highly significant delay in puberty was found in gilts from both groups S and L : only 35-37 % of those gilts reached puberty at 124 kg, as compared to 79 % in the « control » group. Estimates of realized genetic parameters for A and TS were derived from the coefficients of 2-trait indexes in retrospect and selection responses in the groups S and L. Realized heritability estimates are .89 ± .39 and .48 ± .24 for A and TS, respectively. The genetic correlation between A and TS was found to be positive (around .55) showing that decreasing androstenone content in fat and increasing testes size are genetically antagonistic.

Note on the age and replacement policy of boars in the French breeding herds

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An analysis is presented of 37,339 matings declared by the French pedigree breeders (breeding companies excluded) over the period July 1st 1985-June 30th 1986. In those matings, 11,5 percent of which are artificial (A.I.), 62 % are by boars selected on performance-test, either on-farm (CF) or in station (CI). The results show that the French breeders are now aware of the need for a quick renewal of their boars. The age at mating of these boars is indeed 15.6 months on average, which is 7 months below the figure of 15 years ago, and 5.4 months below the present situation for commercial boars. Replacement is particularly fast for CF boars, 13 month-old on average. The favourable consequences of this policy, in terms of genetic gain and dissemination of genetic

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 2nd 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 whithin-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 corporea 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