Relative importance of the numerical productivity components of sows in French herds during 1977

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The average values of the components of the number of piglets reared per sow, per year of reproductive life (P_n) and per year of presence on the farm (P'_n) observed in 1977 in 3 464 French pig herds were analysed taking into account the size of the herd. First of all it should be pointed out that although P_n is an easy criterion to derive, it is of minor importance as compared to P'_n which is closer to the economic reality. Four classes of herds were set up on the basis of the number (N) of litters weaned during the course of the reference period:

— 931 herds with $20 \leqslant N \leqslant 50$,
— 1 426 herds with $51 \leqslant N < 100$,
— 762 herds with $101 \leqslant N < 180$,
— 345 herds with $N > 180$.

A significant improvement of P_n and P'_n was observed as the herd size increased. Thus, as the number of litters weaned during the year was less than 50 or greater than 180, P_n and P'_n increased respectively from 18.3 to 20.0 and from 15.9 to 17.6 piglets weaned /sow. This improvement was due essentially to an acceleration in the rhythm of reproduction as a result of a reduction of the milking period by 9 days, the age at first farrowing by 12 days, the weaning-fertilization period by 7 days and of the last weaning-culling period by 8 days. On the other hand, litter size was slightly smaller in the biggest herds (10.0 vs 10.2) whereas the mortality rate was 1 per cent lower in these herds.

Multiple linear regression equations showed that whatever the herd size P'_n was determined by 4 significant variables in the following order: litter size at birth, mortality rate from birth to weaning, the last weaning-culling interval and, in 3 cases out of 4, the length of the milking period. The age at first farrowing was ranked in the fifth place except in the second class where it was in the fourth place. The first two variables accounted for 36 to 56 per cent of the variance of P'_n whereas the four significant variables together accounted for 53 per cent of the variance in the smallest herds and 76 per cent in the largest.

Taking into account the tendency for herds to become larger and more specialized, this study shows that from now our efforts should be directed towards an increase of the litter size at birth and a lowering of the mortality rate of the piglets.

Results of an inquiry about the causes of sow culling

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Several inquiries show that a relative constant percentage of sows (40 to 50 p. 100) are culled for causes related to reproduction. But it is impossible to verify the reason given by the farmer. We decided therefore, to compare in each sow the cause of culling given by the farmer with the

status of the genital tract of the animals.   Owing to this method, it was possible to determine objectively whether the decision of the farmer was justified by a real unproductivness of the sow.

For the realization of such an inquiry in practice it was necessary to collect before slaughtering a great number of data about the farms where the sows were coming from (for each sow: registration of the cause of culling and of the former reproductive performance, herd management). Each genital tract, correctly identified, was examined after slaughtering.

Forty-three percent of the sows had been culled for reasons independent of reproduction and 13.8 p. 100 because of their age (total: 593 observations).   When the culling was related to reproduction we observed a large difference between the reason given by the farmer and the status of the genital tract in two cases: barren sow without return to heat before culling and no onset of heat after drying off.   The state of the ovaries corresponded to the cause of culling only in 36-37 p. 100 of the examinations.

In the first case (non pregnant sow, no return to heat before culling) 40 sows out of 77 controlled were cyclic and 6 were pregnant.   In the second case (no heat after drying off) 7 sows out of 27 were really in anoestrus.   These contradictions can be explained in different ways: some sows might have had silent heats (but it seems to be rare) or might have been in heat between the decision of culling and the moment of slaughtering, or the method by the farmer for the detection of heat was not satisfactory.   This last hypothesis is being verified.

Very early gestation diagnosis in the sow: determination of the F_α prostaglandin level on days 14 and 15 after artificial insemination

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As early as the 14th day after insemination it is possible to determine by means of a radio-immuno assay of « P.G.F. » (13,14 dihydro 15 ceto $F_{2\alpha}$ prostaglandin) in the peripheral blood whether the sow is pregnant or not.   The « PGF » levels are high in cyclic sows, change little in pregnant sows and remain low during pregnancy.   The variations of this metabolite are parallel to those of $F_{2\alpha}$ prostaglandin in the uterine venous blood and can therefore be used as a basis for a gestation diagnosis.

Blood samplings were made on days 14 and 15 in sows expected to be pregnant (104) in three herds. In pregnant sows the accuracy of the diagnosis varied between 81 and 95 p. 100 depending on herds.   On the contrary in non pregnant females the accuracy was low in one herd (45 p. 100 as compared to the two other herds (75 and 91 p. 100, respectively).

The efficiency of this diagnosis, defined in days gained over non pregnant sows, is close to that obtained after the passage of the boar twice a day in the herd and corresponds to a fertility of 60 p. 100.   Moreover, taking into account the time necessary for carrying out the assay, the result of the blood sampling at G_{14} could be given to the breeder from the 18th day, i.e., before the passage of the boar.