

**Duration of weaning-oestrus interval and prolificacy of sows :  
statistical study of the influence  
of various reproductive parameters**

M. ÉTIENNE et P. H. DUÉE

*Station de Recherches sur l'Élevage des Porcs, I. N. R. A., C. N. R. Z.,  
78350 Jouy en Josas*

Existence of statistical relationships between some criteria of productivity in sows (weaning-conception interval, prolificacy) and various parameters measured during the previous reproductive cycle (weight variation and feed intake of dams and piglets) was investigated in 183 *Large White* sows. These relationships were estimated from the calculation of linear correlation coefficients and by establishment of multiple linear correlations. The female population studied was characterized by a high proportion of primiparous animals (43 p. 100) and small weight gains during the reproductive cycle (+ 16.7 kg).

The duration of the weaning-oestrus interval and weaning-conception interval were negatively correlated with the litter order (— 0.211 and — 0.188, respectively for the two intervals) and the weight of the sows at weaning (— 0.178 and — 0.165). However, the share of the variance explained by these two parameters was restricted ( $R^2 = 0.05$ ). This was also the case for prolificacy which was only significantly correlated with the duration of weaning-oestrus or weaning-conception intervals ( $r = 0.164$ ) and the variation in the weight of the sows between weaning and mating ( $r = 0.188$ ). This weight variation was related to the weight of the sows at weaning ( $r = -0.455$ ) and to the duration of the weaning-oestrus interval ( $r = -0.594$ ), these two factors accounting for 48 p. 100 of the variation. Although this study has been made on animals exhibiting a low productivity, it demonstrates the existence of relationships between changes in the weight of the sows and their further performances.

**Application of weaning at 12 days in pig herds.  
Comparative results of the productivity  
of sows over a period of three years**

A. AUMAITRE et J. LE PAN

*Station de Recherches sur l'Élevage des Porcs, I. N. R. A., C. N. R. Z.,  
78350 Jouy en Josas*

One thousand three hundred and seventy seven litters from 5 herds controlled in the western part of France between January 1972 and October 1974 were weaned by pairs, on an average after either 13.3 days of suckling (700 litters) or after 38.3 days (677 litters). The reproductive

performances (weaning-oestrus, weaning-conception and farrowing-conception intervals) as well as the size and weight of the litter, were recorded at different ages (10, 35 and 63 days).

Early weaning (12 days) did not change either the mean interval between weaning and oestrus (13.4 days versus 12.5 after classical weaning) or the weaning conception interval (22.7 versus 21.6 days). However, these intervals involving all available data showed a very strong intra-treatment variability (100 to 150 p. 100). Only the percentage of sows exhibiting oestrus within 8 days following weaning varied significantly (54.6 versus 64.5 p. 100 in favour of the latest weaning). In addition, weaning at 12 days did not affect the age at puberty of the females : age at 1st farrowing was 363 and 374 days, respectively after early and classical weaning.

Weaning at 12 days led, on an average, to a significant decrease of litter size in our experiment although the great variability of this criterion (standard deviation :  $\pm 2$  piglets per litter) did not allow to observe such a difference in all successive litters. The reduction represented about 0.4 per litter at birth and 0.3 at weaning, but no linear relationships was observed between farrowing-conception length and size of the following litter. Likewise, a lowering of the mean weight of the piglets was observed at 63 days after early weaning and rearing in batteries but this was probably due to the fact that the farmers were not sufficiently accustomed to the weaning technique. However, the overall feed efficiency was improved by 15 p. 100 consecutively to weaning at 12 days.

In practise, weaning at 12 days leads to :

- an increase of 0.32 litter/sow and per year ;
- an increase of 1.4 piglet/sow and per year, the variation being + 0.2 to 3.1 piglet according to herds.

This experiment shows that in the light of present knowledge the minimum age for weaning of piglets is located around 12 days ; below that age both reproductive performances of the sow and growth of the young animals might be disturbed.

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### **Nitrogen balance as affected by introduction of protein from unicellular organisms into diets of piglets weaned at 3 weeks**

B. SÈVE

*Station de Recherches sur l'Élevage des Porcs, I. N. R. A., C. N. R. Z.,  
78350 Jouy en Josas*

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In this trial conducted on 30 piglets maintained in metabolism crates between 21 and 63 days of age, we compared the effects of incorporating alkane yeasts (GFP)<sup>1</sup> or bacterial proteins (ICI)<sup>2</sup> into weaning diets on growth and nitrogen metabolism. The protein supply of the control diet included barley (30 p. 100) and a mixture of skim-milk (15 p. 100), Norwegian herring meal (9.3 p. 100) and soyabean meal (13.4 p. 100). Two types of alkane yeast prepared with (B) or wi-

<sup>(1)</sup> Groupement Français des Protéines.

<sup>(2)</sup> Imperial Chemical Industry Ltd.