

THE IMPORTANCE OF WITHIN LITTER VARIATION IN PIGLET BIRTHWEIGHT IN RELATION TO PIGLET SURVIVAL AND THE INFLUENCE OF CROSSFOSTERING SIMULTANEOUSLY FARROWED LITTERS SO AS TO ACHIEVE MORE UNIFORM BIRTHWEIGHTS WITHIN LITTERS.

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Piglets of low birthweight suffer from the inherent disadvantages of lower energy reserves at birth and greater liability to lose heat to their surroundings because of greater surface area to weight ratio relative to larger litter mates. While these inherent disadvantages of low birthweight piglets are important, they tend to be less serious than the problem of low birthweight relative to litter mates.

The newly-born piglet is born into a very competitive situation. Soon after birth piglets instinctively find their way to the udder where they strive to attain a teat and obtain a suckle in competition with litter-mates. Soon after the completion of parturition, colostrum and later, milk, is made available to piglets only at the once hourly 'let-down' period when milk is available for only 20 to 30 seconds each time. Smaller piglets within a litter are at a distinct physical disadvantage relative to larger litter mates in the struggle to obtain an adequate and regular suckle.

A sample of 64 litters were subdivided into two groups on the basis of variation in birthweight within litters but with the two subgroups equivalent in mean litter size and birthweight; considerably higher mortality was experienced in the group with the higher variation in within litter birthweight. For the groups with the lower and higher variation in birthweight within litters, mean number of livebirths was 11.3 and 11.4 respectively, mean birthweight was 1.2 kg for both groups while percentage mortality was 17.7 and 27.2 per cent respectively. The higher level of pre-weaning mortality among litters having more variable birthweights was significant ( $P < 0.01$ ), chi Square = 8.78).

The great efforts which have been, and are being made, to improve mean piglet birthweight by manipulations of nutrition during pregnancy, in the hope of effecting marked improvements in piglet survival are unlikely to yield useful dividends. The reasons for the likely comparative lack of response to such nutritional manipulation is the fact that any improvement effected in mean piglet birthweight is likely to have no influence whatsoever in reducing the variation in birthweight within each litter.

While more uniform birthweights within litters result from crossbreeding relative to purebreeding and from younger relative to older sows, the most effective way to achieve greater uniformity in birthweight within litters is to crossfoster between simultaneously farrowed litters. Such an approach was adopted in a controlled experiment involving a total of 36 litters. While 18 control litters were left intact, 9 pairs of crossfostered litters which farrowed within six hours of each other had piglets exchanged so as to artificially create within each pair one litter of higher birthweight pigs and one litter of lower birthweight pigs. For control and cross-fostered litters respectively, number born alive was 10.9 and 11.0, number weaned was 9.5 and 10.2, percentage pre-weaning mortality was 12.8 and 7.1, mean piglet birthweight was 1.3 and 1.4 kg and mean piglet weight at 6 weeks was 10.5 and 10.8 kg respectively. Thus, cross-fostered litters were associated with a 40 per cent improvement in piglet survival to weaning and this difference was statistically significant at  $P < 0.10$  (chi Square = 2.96).

#### Conclusions

1. Variation in birthweight within litters is likely to be more important in relation to piglet survival than birthweight *per se* in most situations.
2. More uniform birthweights within litters are associated with litters from younger sows and with crossbreeding.
3. The most effective way to achieve uniform birthweights within litters is to arrange for batch farrowing and thereafter to crossfoster between simultaneously farrowed litters within a few hours of birth to create artificially uniform birthweights within litters.
4. Undue delay in attending to such crossfostering will have an adverse effect on the smaller piglets within litters.
5. If crossfostering is carried out within a few hours of birth, fostered piglets will thrive and grow as well as non-fostered pigs.

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