



**Research findings from a BPEX-funded PhD project carried out at Newcastle University investigating management and nutritional strategies to improve the postnatal performance of lightweight pigs.**

## What is a light pig?

Light pigs can be defined as pigs that, at a certain age, have a body weight (BW) which is significantly below the average of the group and which grow markedly slower than their counterparts.

## Problems associated with light pigs

- Increased weight and size variation within groups
- Inefficient pen utilisation
- Financial penalties at the abattoir for poor grading specification
- Management difficulties
- Increased labour and/or sorting equipment requirements.

## The research

This project addressed a number of research objectives to provide understanding of risk factors associated with the occurrence of lightweight pigs and to develop nutritional and management treatments that might enable these pigs to decrease the deficit in their BW. The specific objectives were:

- Identification of risk factors associated with poor life time growth performance in pigs
- The effect of a post-weaning starter regime specifically formulated for low birthweight pigs
- The effect of a high nutrient specification diet introduced at nine weeks on subsequent growth of low birthweight pigs
- The effect of the pre-weaning environment and management strategies on performance to slaughter.

## Research findings: Management of low birthweight pigs on farm

### Pre-weaning management

- A non-competitive environment is important to low birthweight pigs in early life, this can be achieved, for example, by cross fostering
- Provision of supplementary milk can reduce BW variation to slaughter weight, although does not always benefit overall performance
- The combination of these two management techniques will ensure costs are kept low rather than providing supplementary milk to an unnecessary large number of litters.

### Post-weaning nutrition

- Correct choice of starter feed regime is critical to minimise the post-weaning growth check as pigs transition from liquid to solid feed
- Feeding a high specification starter diet, with extra feed (corresponding to the last diet of the starter regime), may not only improve low birthweight pig performance to 10 weeks of age, but results in a similar nursery exit weight of low birthweight and normal birthweight pigs.



Postweaning nutrition (cont'd)

- Feeding a high specification diet was, however, not effective when offered from nine weeks of age, suggesting a critical window for intervention
- The results also suggest that not only can low birthweight pigs at weaning benefit from an improved dietary regime, but that it is cost-effective for producers with an increased return per pig and should be preferred to a standard commercial regime which has a poorer margin over feed cost
- For normal birthweight pigs, the standard commercial regime was the least expensive and had the greatest margin over feed cost
- Separation of pigs with low BW at weaning will allow selective feeding of an improved regime, as heavier pigs are best suited to a standard commercial diet.

Economic implications of low birthweight pigs

One assumption is that low birthweight pigs will not perform well and should, therefore, be culled. However, results from this research confirm that these pigs can perform very well if managed/fed appropriately. In addition to improved growth rates, it was also demonstrated that low pre-weaning mortality rates can be achieved with extra care of low birthweight pigs.

The economic impact of rearing low birthweight pigs will depend on their ability to convert feed efficiently, financial penalties at the abattoir, costs associated with managing variation during production as well as current pig and feed prices.

Conclusions

- Birthweight can have a significant effect on future growth, with initial differences in body weight continuing with age
- Environmental factors at different stages of production may limit the growth of low birthweight pigs
- Early intervention is critical; nutritional treatments at different stages of production (lactation, weaner, grower) can affect the outcomes
- Selective cross-fostering of low birthweight pigs can improve pre-weaning performance
- Any additional weight that is gained as a result of treatment is likely to be retained at slaughter
- The overall findings from this research demonstrate that low birthweight pigs do have the capacity to grow at the same rate as normal birthweight pigs under the right conditions and if provided with optimal dietary regime and that this can be exploited to reduce the deficit in their relative weight.



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