

## FINISHING

### Reducing phosphorus (P) levels in grower and finisher diets



#### Partners

This project is sponsored by Defra and is in collaboration between Newcastle University and the Industry: BQP (Dalehead Foods) and BPEX.

#### Background

The aim of the project was to demonstrate that dietary phosphorus can be reduced below the current commercial standards without negative effects on pig health and performance, whilst at the same time reducing diffuse phosphorus levels in the manure and effluent, and consequently reducing phosphorus load to the environment.

#### Benefits

- Reduced pollution of P to the environment.
- Reduced need to add additional, costly P to the diet.

#### The trial

Three diets, all including phytase enzymes, with differing levels of P, were fed to grower and finisher pigs in two different farms. The trial was repeated over two batches. All pigs were housed in indoor straw pens distributed over three buildings on each farm with each building supplying one of the diets.

The levels of total P in the different diets for the growers were:

- Low diet: 3.76 g P/kg feed
- Medium diet: 4.03 g P/kg feed
- High diet: 4.29 g P/kg feed

The levels of total P for the finishers were:

- Low diet: 3.34 g P/kg feed
- Medium diet: 3.84 g P/kg feed
- High diet: 4.09 g P/kg feed

The High diets represented the current industry standard. The animals were weighed upon entry and again at slaughter. Other performance measures taken were lean meat % per individual and feed intake per building. Muck and faecal samples were taken every 2 weeks for analysis of P levels, indicative of the pressure on the environment through excreta. Furthermore health records were kept on disease and deaths occurring throughout the trial.

#### Results

##### Performance

As expected, average daily gain, lean meat % and feed conversion of pigs differed on different farms and between batches, but these differences did not relate to the amount of phosphorus in the pig's diet ( $P > 0.1$ ). The differences between farms and batches caused a variation that was larger than any potential dietary effect. Overall the farm trials showed that pig performance was not compromised when the phosphorus content of growing and finishing diets was reduced by around 3 and 5% below normal commercial levels (The treatment effects are depicted in Figures 1–3).

##### Environment

Reducing the input of P through the diets is expected to affect the level of output through excreta, thereby reducing the environmental pollution. The data on this are currently being analysed and will be presented in the future.

##### Conclusion

There were no adverse effects on the performance of the grower and finisher pigs that were fed the lower levels of Phosphorus. This reduces the need of adding additional P into the diet, which can reduce costs as well as decrease the expected pressure of P pollution onto the environment.

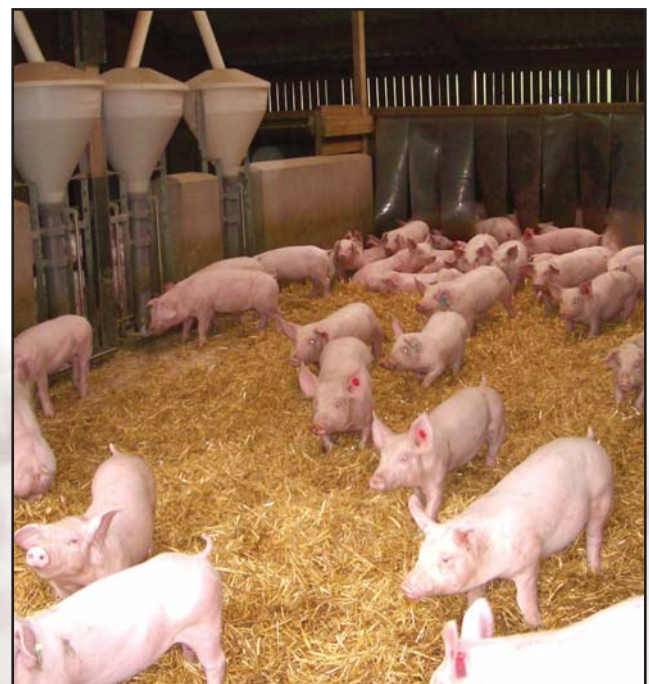


Figure 1 Average daily weight gain in kg across batches and farms for the three diets differing in P levels differentiated by treatment with the standard error of the difference (SED)

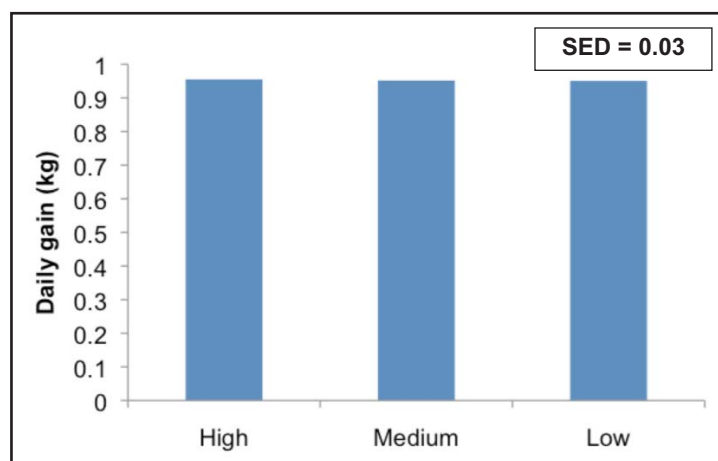


Figure 2 Average lean meat % across batches and farms for the three diets differing in P levels differentiated by treatment with the standard error of the difference (SED)

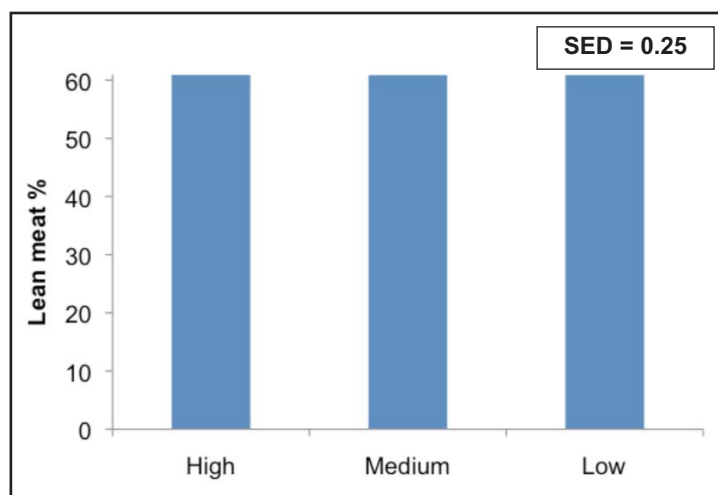
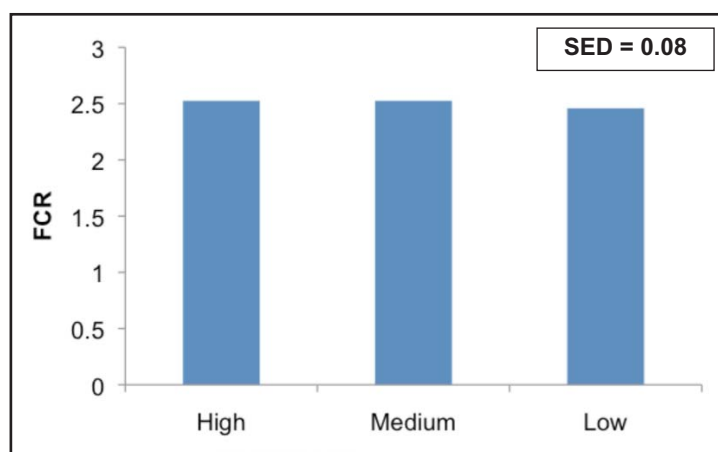


Figure 3 The FCR (feed conversion ratio) across batches and farms for the three diets differing in P levels differentiated by treatment with the standard error of the difference (SED)



While the Agriculture and Horticulture Development Board, operating through its BPEX division, seeks to ensure that the information contained within this document is accurate at the time of printing, no warranty is given in respect thereof and, to the maximum extent permitted by law, the Agriculture and Horticulture Development Board accepts no liability for loss, damage or injury howsoever caused (including that caused by negligence) or suffered directly or indirectly in relation to information and opinions contained in or omitted from this document. © Agriculture and Horticulture Development Board (AHDB) 2012. All rights reserved.

BPEX is a division of the Agriculture and Horticulture Development Board.