

# Litter size and well-being of piglets can be improved by specific nutrients

## Background

Productivity in a pig enterprise depends on the number of pigs finished per sow per year. Changing the diet fed to the sow (and boar) could provide a straightforward means to improve litter size and uniformity and the ability of an individual piglet to grow and thrive and thus improve productivity.

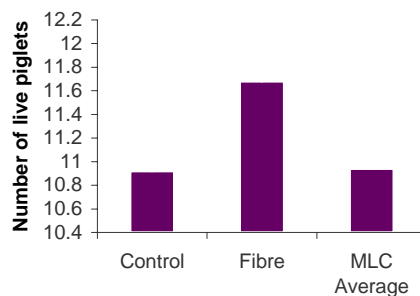
Several recently completed research projects have shown how different nutrients fed at specific windows of the reproductive cycle of the pig can improve aspects of productivity.

## Boar Sperm

Sperm, in common with brain and the retina, contains the highest concentration of the long chain polyunsaturated fatty acid, docosahexaenoic acid (DHA) of all pig organs. However, the diet of the boar (and sow) normally contains no DHA and only small amounts of its precursor fatty acid, linolenic acid. Research at SAC has shown that feeding fish oil (a good source of DHA) to the boar improves the DHA content and viability and motility of sperm.

## Ovulation in the sow

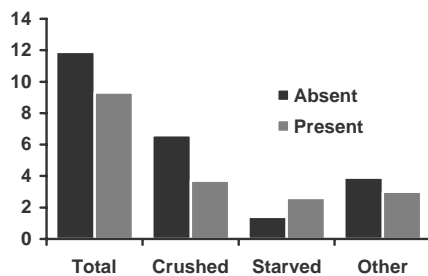
The numbers of oocytes ovulated and their quality is critical in determining litter size. Detailed experiments showed that increasing the fibre content of the diet improved oocyte quality and a subsequent commercial evaluation that this improvement resulted in increased litter size.



The inclusion of fibre in the diet of lactating sows increased the size of the subsequent litter to above the UK average

## Pre-weaning deaths

At around 10%, piglet mortality between birth and weaning is a drain on profitability. Feeding the sow fish oil during pregnancy reduced pre-weaning mortality probably because piglets were more active and able to suckle the sow in the critical first day of life when passive immune protection is acquired.



The presence of fish oil in the diet of the pregnant sow reduced pre-weaning mortality primarily by reducing piglet deaths caused by crushing by the sow.

## Passive immune protection

The piglet acquires passive immune protection from immunoglobulins in the sow's colostrum during the first 24h of life. In two projects we have shown on the one hand that a deficiency of vitamin A depresses immunoglobulin concentration in the piglet's blood whereas supplementation with vitamins A and E increases immunoglobulin concentration.

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