

Increasing pork production through improved sow health and performance

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In recent years the relationship between sow health, performance and the weight of pork produced per year from each litter has been more clearly defined. It is evident that healthy sows mean more piglets, which grow on to produce heavier and more uniform pigs at slaughter.

Proven feed ingredients, especially those that maintain gut function and interact with the immune system, have been shown in both research and commercial trials to impact on piglet health at various growth stages. The specialist mannan-rich fraction (MRF) product, Actigen (formerly Bio-Mos/MOS) is one such product with a great deal of history proving its efficacy. As a second generation MOS product, Actigen from Alltech provides all the benefits of using oligosaccharides in feed in a more efficient manner.

Immunoglobulin levels

Feeding MRF to sows during gestation is known to increase immunoglobulin (Ig) levels in colostrum.

Trials conducted in 1999 by Newman at the University of Kentucky and Le Dividich et al. (2009) demonstrated this effect from research trial work, whereby colostrum was analysed for its various Ig levels (Table 1).

When all trials were combined and analysed in 2010, Close and Pickard found that there was a 5.8, 8.1 and 15.1% increase in the concentration

of IgA, IgG and IgM, respectively in the colostrum within the first 24 hours post farrowing for sows fed MRF compared with control-fed sows. Higher Ig expression in colostrum results in larger absorption of these important immune factors within the suckling piglets, leading to improved immunity in the neonates.

This has a knock-on effect as the piglets grow and develop, as increased immunity leads to better disease resistance at their most vulnerable ages.

Colostrum production

Close and Pickard (2010) showed that colostrum production significantly increased ($P<0.05$) by 15% in the first 24 hours post partum, when MRF was included in the diet of the sows. This increase in colostrum resulted in a significant improvement in the growth rate, 24-hours post partum.

The improvement in growth rate may not solely be associated with the increased immunoglobulins, but may reflect the additional nutrient supply, as well as other metabolic stimulants due to the higher intake of better quality colostrum.

Piglets are highly susceptible to diseases of various kinds, especially gastro-intestinal challenges.

The increased levels of Igs as well as the activity of MRF at a gut level when included in creep and starter feeds help to limit such challenges, as not only the immune system is primed to fend off such problems, but the MRF also binds pathogens entering the gut itself, preventing colonisation to disease levels. Data collected during the growth of

Diet	Body weight (kg)	
	14 days	21 days
Piglets from control sows	4.79	6.33 ^a
Piglets from MRF-fed sows	5.73	7.66 ^b
P value	0.16	0.03

Table 2. Influence of feeding MRF to gestating sows on subsequent piglets growth rates.

piglets from sows receiving MRF during gestation and when included in piglet diets clearly show health, welfare and performance benefits. Such improvements in immunity and gut health lead to an average increase in weaning weight from 6.4kg to 6.8kg.

The importance of colostrum and milk quality from sows should not be underestimated.

Medel et al. (2004) showed that MRF had a greater effect on the performance of the piglets post weaning from sows fed MRF than when it was added to the weaner feed.

In the post-weaning period (28-60 days of age), piglet growth rate was 363g/day from the MRF group compared to 339g/day for those from control sows.

Trial comparison

When comparing various trials, MRF-fed sows weaned on average 10.11 piglets versus 9.67 and mortality of piglets was 9% versus 11.5% for non-MOS sows. This equates to an extra 0.77 piglets weaned per sow per year – nearly one whole pig.

Added to this, weaning weight of piglets from MRF-fed sows was, on average, 7.17kg versus 6.87kg for the control group. This means that litter weaning weight was, on average, 6kg (9%) more for piglets from MRF-fed sows. Commercial trials run in large (1000 sow) facilities confirmed these findings.

Weaning weight and uniformity is important to the future growth performance in pigs and can be linked to final slaughter production values.

From the combined analysis of 51

university trials, Dr Jim Pettigrew showed that piglets fed MRF post-weaning to 50-60 days after weaning had more than 4% increased average daily gain ($P=0.00003$) and 2% improved feed conversion rate.

Sows fed MRF also have better returns to oestrus, with 88% being breedable from the MRF-fed group versus 77% from the control.

This too adds to their productivity, as each animal is more reliable in terms of breeding following weaning.

Effect on pork production

So what does this mean in terms of pork production? From the data presented we can see that sows wean more piglets per year.

In addition, it is recognised that the additional 0.1kg weaning weight leads to one day less to reach slaughter weight, therefore the extra 0.3kg body weight seen in piglets from MRF-fed sows means three days less time to slaughter, equivalent to 3kg less feed.

Added together, these benefits represent a return on investment of 7.4:1 when supplementing sows with MRF in gestation diets, as well as extra pigs being produced from each litter and reaching slaughter weight.

Feeding MRF to pregnant sows has multiple benefits in terms of piglet health, weaning numbers and weights, subsequent growth performance of the litter and return to oestrus in the sow. ■

References are available from the author on request

Table 1. Impact of feeding MRF to sows on Ig expression in colostrum.

Diet	IgA	IgG	IgM
	(mg/dl)		
Control group	174 ^a	366	316
MRF-fed sows	219 ^b	4216	441
Difference (%)	+26	+18	+39