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## Bio-Mos Effects on Pig Performance: Synopsis of the Data

J.E. Pettigrew

Pettigrew Consulting International, LLC

Bio-Mos is a product designed to influence microbial ecology. It is derived from yeast cell walls, and consists primarily of phosphorylated gluco-mannans (mannan oligosaccharides). Two modes of action are now recognized:

1. It binds to the lectins on the cell walls of certain undesirable bacteria. These bacterial lectins normally bind to the intestinal epithelial cells and aid the bacteria in colonization of the gut. However, if the lectins are bound to Bio-Mos they cannot bind to the epithelial cells, and the undesirable bacteria are eliminated from the gut lumen.
2. It enhances certain actions of the immune system.

These modes of action enable Bio-Mos to help protect the animal from pathogens.

This review focuses on the empirical evidence concerning the effects of adding Bio-Mos to the diet of nursery pigs on their productive performance. A more complete presentation was published (Pettigrew, 2000).

The database consists of 17 comparisons in 13 experiments, conveyed in 10 reports from 8 research groups. The results are encouraging. Although few of the responses were statistically significant in the individual experiments, the overall picture is of a beneficial effect of Bio-Mos. Of the 17 comparisons, 13 showed a numerical advantage of Bio-Mos, although some of these advantages were quite small.

The overall mean percentage response was an increase in growth rate of 4.4%. For perspective, that is a somewhat smaller response than we generally expect from antibiotics, which appear to increase growth rate of starting pigs by about 16% on average (NRC, 1998). Bio-Mos also increases feed intake and improves feed

efficiency of starting pigs. Both of these responses are smaller than the growth rate response, which is the same pattern of response found with antibiotics (NRC, 1998).

The response to Bio-Mos appears slightly larger in pigs weaned at 17-21 days of age than in those weaned at 24-28 days. It probably is larger during the first two weeks after weaning than later in the nursery period.

There is evidence that performance is maximized at a dietary concentration of about 0.3% Bio-Mos when the concentration is held constant, but a step-down program (0.3% down to 0.2% and perhaps 0.1%) is probably the best choice.

There is some indication that pigs that grow more slowly (perhaps because of poorer health) respond more dramatically to Bio-Mos. This is the pattern seen with antibiotics. The responses to Bio-Mos and antibiotics are additive.

In summary

- A substantial body of data shows clearly that Bio-Mos increases the growth rate of nursery pigs;
- The response is probably bigger in commercial herds than in research farms.

Literature cited:

National Research Council. 1998. *Nutrient Requirements of Swine*. Tenth Edition. Washington, D.C.: National Academy Press. p 97.

Pettigrew, J.E. 2000. Bio-Mos effects on pig performance: a review. In: *Biotechnology in the Feed Industry* (T.P. Lyons and K.A. Jacques, eds.), Nottingham University Press, Nottingham, UK. pp 31-44.