

Effects of Bio-Mos for laying hens 20-52 weeks under commercial conditions

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Abstract

Two hundred and fifty-two Hy-Line laying hens were used in an experiment to investigate the benefits of a Bio-Mos supplementation on early egg production and hen performance. Hens were housed three per cage, with 6 cage replicates arranged in 7 blocks per treatment. A control diet with no supplement and a experimental diet containing 1 kg/t Bio-Mos (Alltech Inc, USA) were used in the experiment. Hens fed Bio-Mos had 2% higher laying index than control (83% vs. 82%) and 1.5% better FCR (1.40 vs. 1.42). In addition the number of dirty eggs was reduced by 30% (1.7% vs. 2.5%) and mortality was reduced by 50% to 1.6% in the experimental group.

Introduction

At the end of 2005 the European Union takes the final step and in banning the use of all remaining antibiotic growth promoters for farm animals. A key concern of nutritionists and veterinarian regards the availability of effective alternatives to antimicrobial growth promoters.

Mannan oligosaccharides (Bio-Mos, Alltech inc.), derived from the outer cell wall of a specific strain of *Saccharomyces cerevisiae*, have been shown to inhibit pathogen colonisation by blocking type-1 fimbriae, filaments that allow pathogens to attach to the intestinal lining, to serve as an immunomodulator, reducing intestinal microbial populations, and to improve the integrity and morphology of the intestinal mucosa. Advantages in broiler and turkey productive performance have been recently reviewed by Hooge (2004a, 2004b).

In the past, one of the dominant problems in the laying industry was the contamination of eggs with Salmonella, which was predominantly controlled by adding antibiotics to layer feed. Improvement in hygiene management, the introduction of effective salmonella vaccination and heat treatment of feed has greatly reduced the reliance on antibiotics in layer diets. Today more pressing concerns for the egg industry are egg quality and egg production.

The benefits of dietary Bio-Mos for laying hens has been shown in two trials conducted between 2003 and 2004 in Greece and Spain (Garcia *et. al.* 2004, Dimovelis *et.al.* 2004). These trials demonstrated that Bio-Mos can increase egg production by 2% and reduce feed conversion (g/feed/g egg) by 6pts. Furthermore , egg yolk colour (measured by the Roche fan scale) was significantly better (P<0.05), possibly due to the improved absorptive capacity of the intestine in the presence of Bio-Mos.

This paper reports the results of a semi-commercial trial run in Spain to examine the benefits of Bio-Mos on laying hens from 20-52 weeks of age, and to confirm advantages in early laying performance.

Material and Methods

Two hundred and fifty-two Hy-Line laying hens were used to investigate the benefits of mannan oligosaccharide (Bio-Mos®, Alltech inc. US) supplementation on early egg production and hen performance. Hens were housed three per cage, with 6 cage replicates

arranged in 7 blocks per treatment. Two diets were used, based on 30% barley/30% wheat formulation containing a commercial enzyme, with one control diet and the other supplemented with 1 kg/t Bio-Mos (Alltech Inc, USA). Laying performance and egg quality parameters were measured at two-weekly intervals. The trial lasted from 20-52 weeks of age. Due to the commercial nature of the trial, statistical analysis was not appropriate.

Results and Discussion

The effects of adding MOS (Bio-Mos) to commercial layer diets are shown in Table 1.

Table 1. Laying and egg production performance from hens fed Bio-Mos

Parameter	Control	Bio-Mos 1 kg/t
Laying Index (%)	81.2	83.2
FCR feed/dozen aggs	1.42	1.40
Total eggs laid	22,929	23,470
Egg weight (g)	61.9	61.5
Dirty eggs (%)	2.5	1.7
Mortality (%)	3.2	1.6

Hens receiving Bio-Mos had 2% higher laying index than control (83% vs. 82%), 1.5% lower FCR (1.40 vs. 1.42) and, as a flock, laid 541 more eggs during the trial period. The number of dirty eggs was reduced by 30% (1.7% vs. 2.5%) and mortality, which was already low at 3.2%, reduced further to 1.6% in the experimental group. When comparing laying index on a bi-weekly basis, the hens fed Bio-Mos had higher performance at, and immediately after, point of lay, reaching maximum production faster than the control group.

The trial data agrees with previous findings, demonstrating that hens fed Bio-Mos have better early lay performance, incurring economic savings through fewer downgraded dirty eggs and lower mortality as well as improved FCR and production.

References

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