

## Biosecurity inside the chicken –

a new view of maintaining health in chicken flocks with little use of antibiotics.

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### Introduction

One of the classic tools to maintain or restore the health of livestock was and still is biosecurity. If antibiotic reduction has to be achieved, it is logical to look at the defences already available to the bird as well, biosecurity at gut level. Previous studies have shown *Bacillus subtilis* (*B.s.*) PB6 to have a beneficial effect intestinal health making hens potentially more resistant to pathobionts. The present studies aimed to compare a research trial setting with a trial run in a commercial farm using a similar setup. The two trials were aimed at comparing results to show scientific proof of improved health and in parallel prove the economic viability of the solution.

### Layer research trial design

80 old laying hens (64 – 73 weeks )  
3 random groups  
Fed 0 / 0.5 / 1kg of the *Bacillus subtilis* PB6 additive ( $2 \times 10^8$  CFU/g)  
Parameters: egg production, weight, mass, eggshell weight and thickness, bone mineralisation, gut microbiota, gut morphology

### Selected Results

( <i>B.s.</i> PB6 )	0 kg (control)	0.5 kg	1 kg
Tibia ash (%)	54.4 <sup>a</sup>	55.8 <sup>b</sup>	56.1 <sup>b</sup>
FCR	3.0 <sup>a</sup>	2.8 <sup>b</sup>	2.6 <sup>c</sup>
Lactobacillus	7.26 <sup>a</sup>	8.86 <sup>b</sup>	9.31 <sup>c</sup>
Bifidobacteria	8.08 <sup>a</sup>	9.16 <sup>b</sup>	9.74 <sup>c</sup>
Clostridium	9.25 <sup>a</sup>	8.80 <sup>b</sup>	8.20 <sup>c</sup>
Coliforms	9.03 <sup>a</sup>	8.43 <sup>b</sup>	8.12 <sup>c</sup>

a, b, c Means in the same row with different letters are significantly different



### Layer commercial trial design

144 Lohmann brown laying hens  
52 – 72 weeks  
Two random groups (9 replicates)  
Fed 0 / 1kg of a *Bacillus subtilis* PB6 additive ( $2 \times 10^8$  CFU/g)

Parameters: egg production & quality, FCR, body weights (at start and finish)

### Selected Results

( <i>B.s.</i> PB6 )	0 kg (control)	1 kg
Egg production %	82.51	86.41
Egg mass (g/hen/day)	53.57	56.19
FCR (g feed/g egg)	2.154	2.040
Number egg/hen	93.24	97.65
Shell strength	32.12	34.40
Total protein production (g)	680	715

### Discussion

The probiotic *B. subtilis* PB6 strain (CLOSTAT®) significantly improved the microflora composition and production parameters in the research trial, however performance was on a different level compared to commercial conditions. In the commercial trial production parameters improved as well as egg quantity and quality, proving thereby the findings from the scientific study.

### Conclusions

The probiotic *B. subtilis* PB6 strain (CLOSTAT®) is used for economical reasons. However due to its effect on the microflora, which in turn can help to explain the performance improvements, it has also potential for use in programs to improve the internal biosecurity of poultry.

Read more about  
*B. Subtilis* PB6 here

