EFFECT OF BIO-AVAILABLE SILICIUM ON BROILER BREEDER EGG QUALITY

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INTRODUCTION

- Optimal egg quality is vital for broiler breeder performance, influencing hatchability and chick quality.
- Silicium participates in the initiation of calcium carbonate crystal growth during eggshell formation.
- Silicium helps in organizing the organic matrix of eggshell where calcium carbonate is deposited (biomineralization).
- Silicium (Type I, V and X) is involved in collagen and glycoproten synthesis in the eggshell membrane.

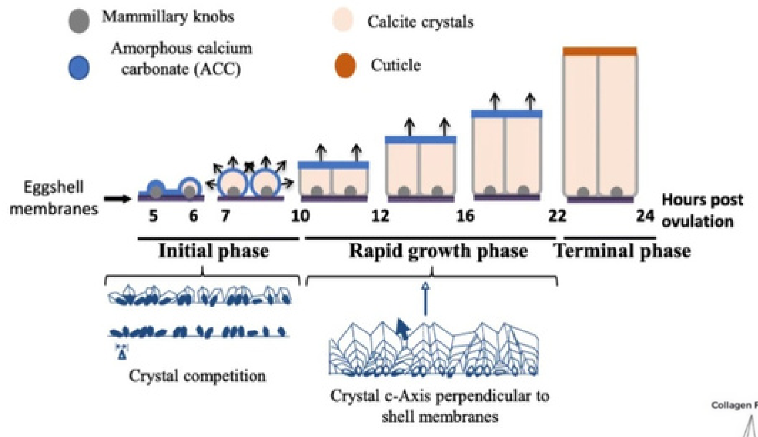

Figure 1: Schematic representation of different stages of eggshell mineralization

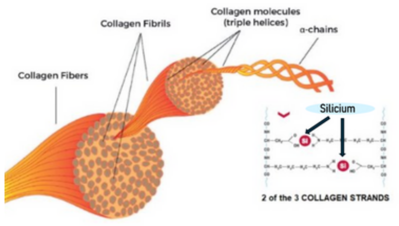

Figure 2: Collagen strands cross-linked by silicium

OBJECTIVES

- Evaluate bio-available silicium (Poulsil®) effects on broiler breeder egg quality.

METHODOLOGY

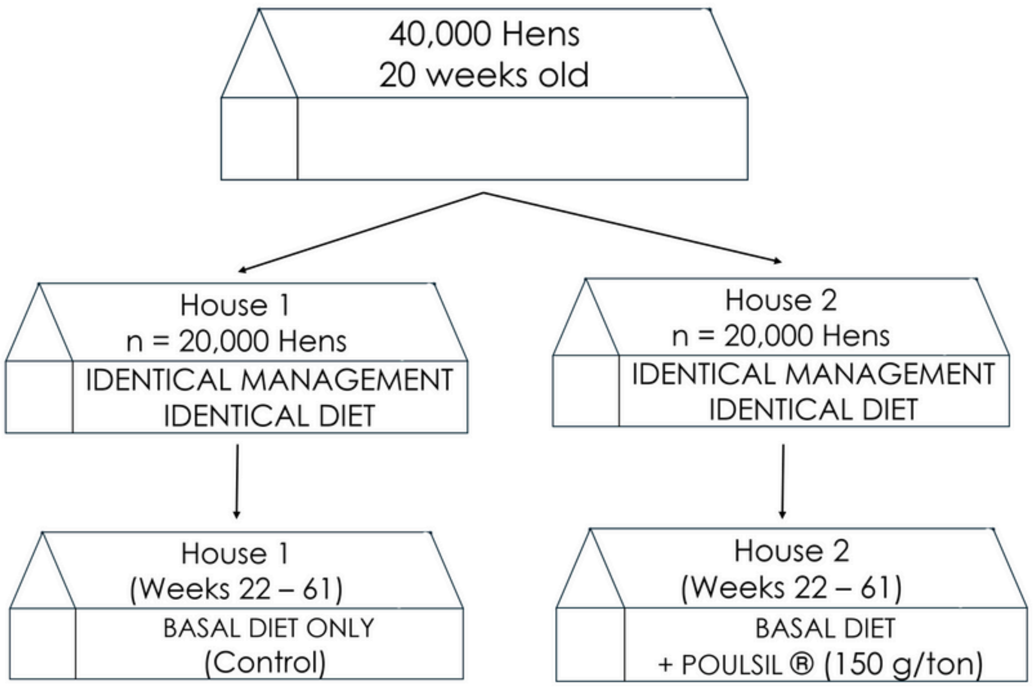

Figure 3: Flow diagram of methodology used for this study

DATA AND STATISTICS

- At Zootests: 500 eggs/house analyzed at Week 30, 40 and 50.
- At Hatchery: 450 eggs/house analyzed at Week 33, 39, 41 and 51.
- Both parametric (ANOVA and LSD) and non-parametric (Kruskal-Wallis) statistical tests performed.

RESULT

1. Thicker eggshell

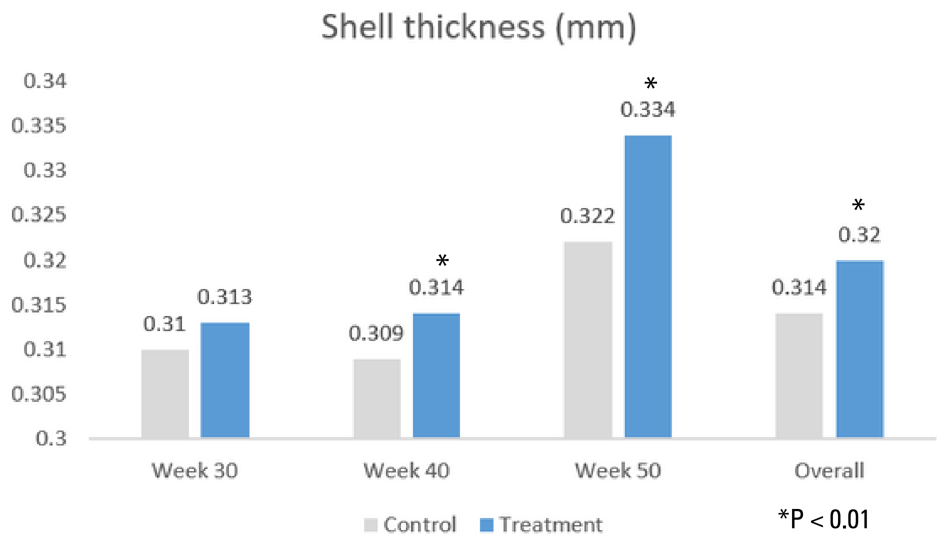

Figure 4: Bar diagram showing the effect of Poulsil® on eggshell thickness

2. Less cracked eggs

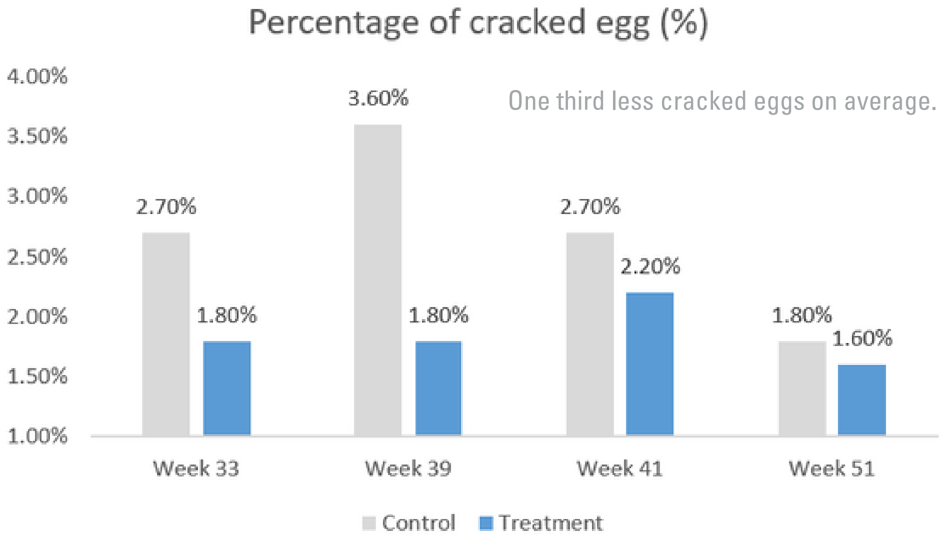

Figure 5: Bar diagram showing the effect of Poulsil® on eggshell cracks

3. Stronger eggs

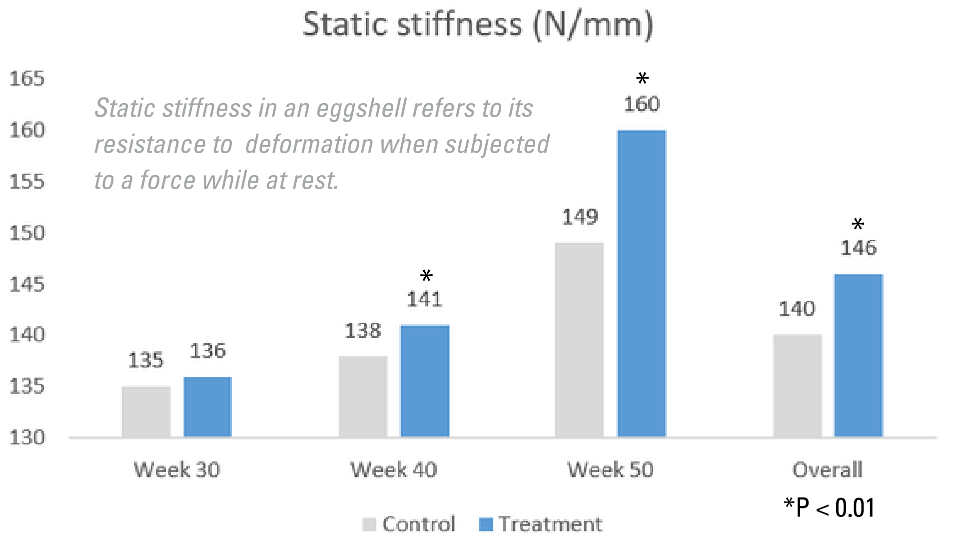

Figure 6: Bar diagram showing the effect of Poulsil® on static stiffness of eggshell

4. Poulsil® - ROI at Week 60

	Control	Poulsil	Difference
Number of broiler breeders*	20,425	20,379	
Poulsil® consumed at Week 60		136 Kg	136 Kg
Investment Poulsil®/breeder	-	0.17€	0.17€
Eggs produced at Week 60	3,920,804	4,008,610	87,806
DOC produced at Week 60	3,287,619	3,368,379	80,760
Value DOC at Week 60	€ 1,775,314	€ 1,818,925	€ 43,611
Extra DOC at Week 60/breeder			4.33
Value extra DOC at Week 60/breeder**			2.34€
ROI			13.0

*At Week 22, start supplementation Poulsil
**DOC price September '25, Belgium, 0.54 €/DOC
***When DOC price is € 0.2, ROI = 4.2
****When DOC price is € 0.35, ROI = 8.0

Benefits excluded from calculation:
200g less feed consumed in Poulsil group
1.1% lower mortality in Poulsil group
Extra DOC after W60

Table 1: Poulsil® return on investment at week 60

CONCLUSION

Supplementation with bio-available Silicium (Poulsil®) at 150 g/ton feed enhances broiler breeder egg quality, with potential benefits on hatchability and chick quality, and shows promising economic returns.

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