

# The deposition of the eggshells' cuticle is a moderately heritable trait

M.M. Bain, K. MCDade, M. Schmutz<sup>1</sup>, R. Preisinger<sup>1</sup>, D. Waddington<sup>2</sup>, I.C. Dunn<sup>2</sup>

*University of Glasgow, Faculty of Veterinary Medicine, Glasgow G61 1QH, Scotland*

<sup>1</sup>*Lohmann Tierzucht, P.O. Box 4602, 7454 Cuxhaven, Germany*

<sup>2</sup>*Roslin Institute and Royal (Dick) School of Veterinary Studies, Roslin, Midlothian EH25 9PS, Scotland.*

## Summary

In this study we describe a novel method of quantifying a classic staining method for assessing cuticle quality and examine if this trait might be used in the genetic selection of hens with improved eggshell characteristics. The study population comprised 38 sire and 144 dams and 878 female offspring. Cuticle assessment was carried out on 2 eggs from the offspring at 50-53 weeks of age. A spectrophotometer (integrated sphere system) was used to measure the % reflectance before and after staining the eggs with MST cuticle blue. Pre and post stain data obtained at 650 nm was chosen to estimate the heritability for cuticle quality and shell colour. The estimates of heritability for the cuticle based on the sire model were moderate (0.27) whilst that for shell colour was considerably higher (0.62) as would be expected. The phenotypic correlations between the cuticle measurement and shell colour were low (0.08) suggesting that these two characteristics are not related but there was evidence, albeit with high error, for a genetic correlation between these traits. We conclude that this measurement of cuticle quality shows considerable promise for use as an additional measurement in genetic selection programs aimed at improving egg safety and quality.

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