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Interaction between housing system and genotype in relation to internal and external egg quality parameters

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The effect of three housing systems (conventional cages, enriched cages and litter) on egg quality parameters was evaluated in two experiments with four brown laying strains ISA Brown, Hisex Brown, Bovans Brown and Moravia BSL. During 40 weeks of lay the total number of 7200 eggs was produced and analysed for egg weight, egg component weight and eggshell quality indicators. In 60 eggs, pore density in the small-end, large-end and equatorial areas was determined. Significant interactions between genotype and housing were found out in egg weight ($P \leq 0.001$), yolk and albumen weight ($P \leq 0.001$) and yolk colour ($P \leq 0.001$). Haugh units were the highest in eggs laid in cages and the lowest in the ISA Brown strain. Eggshell quality indicators were affected more by genotype than by housing. The interaction between genotype and housing was not significant for eggshell thickness but it was significant for eggshell weight and strength. Although eggshell thickness was lower in eggs produced in cages, eggshell strength was higher. A significant negative correlation was found out between pore density and housing system. Results of the study suggest that the ability of a strain to produce eggs of high quality in a particular housing system should be considered, even within brown strains.

Keywords:

laying hen; conventional cage; enriched cage; litter; genotype; egg physical measurements; pore density

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