

Effect of thermal environment on body temperature of early-stage laying hens

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Abstract. The thermal comfort condition of early-stage laying hens can be verified by means of physiological variations. The mean surface temperature and cloacal temperature are important parameters to demonstrate the effect of the thermal environment on the birds. The objective of the present study was to correlate homeostasis and stress with physiological responses (mean surface temperature and cloacal temperature) of lightweight laying hens of the Lohmann LSL Lite line aged from one to forty-two days when submitted to different thermal environments. A total of 864 birds with the same age, origin and uniform body weight were randomly distributed in four climatic chambers. The characterization of the different environments was as follows: thermal comfort temperature (33.0–19.0 °C), two cold stress levels (28.0–17.0 °C and 25.0–17.0 °C) and one level of heat stress (38.0 °C – 22.0 °C). The experiment was performed in a completely randomized design in the subdivided plots scheme, with four treatments in the plots and the evaluations (days) in the subplots. The means were compared using the Tukey test, adopting the 5% probability level. The birds maintained the physiological responses, based on cloacal and surface temperatures, within the normal range for all evaluated treatments during the period between 01 and 42 days of life. The surface temperature of the birds varied as a function of the air temperature of each breeding environment, with lower surface temperatures for mild cold and moderate cold treatments.

Key words: environmental conditions, poultry, surface temperature, layer chicks.

INTRODUCTION

In poultry farming, maximum productivity is achieved when birds are introduced in an environment that provides minimal energy exchanges and meets the welfare needs of the animal. Birds are classified as homeothermic because they retain (to a certain extent of adversity) body temperature constant or within a tolerable range, even if considerable variations occur in the external environment.