

**EFFECT OF STOCKING DENSITY AT BROODING STAGE ON
PERFORMANCE AND STRESS RESPONSE OF BROILER CHICKENS**

S.W.G.M. Nawarathne, M.A.A.P. Kumari and W.A.D. Nayananjalie

*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata
University of Sri Lanka, Anuradhapura, Sri Lanka.*

The objective of this study was to assess the performance and the stress response of broilers reared at different stocking densities (SD) during the brooding period. One hundred and forty-four (144), Cobb 500, day-old broiler chicks were randomly stocked at three SDs ($T_1 = 40$, $T_2 = 80$, and $T_3 = 120$ chicks per m^2) with three replicates in a Completely Randomized Design for 1-10 days and were managed following the standard broiler management practices. During the brooding period, daily body weight gain (BWG), feed intake (FI), and feed conversion ratio (FCR) were measured. The stress response was assessed by measuring lymphoid organ weights, tonic immobility duration (TI), and blood glucose level (BGL). During the growing period, daily FI and weekly BWG were measured. On the 42nd day, birds were slaughtered and the carcass and meat quality were assessed. TI duration and BGL were significantly higher ($p < 0.05$) in T_3 (257.40 ± 17.87 s and 280.55 ± 8.66 $mgdm^{-3}$) compared to T_2 (126.80 ± 0.53 s and 262.80 ± 5.67 $mgdm^{-3}$) and T_1 was the lowest (40.86 ± 2.39 s and 232.44 ± 8.66 $mgdm^{-3}$) at the end of the brooding period. Significantly higher ($p < 0.05$) average BWG and significantly lower ($p < 0.05$) FCR were observed in T_1 (2.73 ± 0.05 kg and 1.35 ± 0.08) compared to T_2 (2.50 ± 0.09 kg and 1.55 ± 0.04) and T_3 (2.41 ± 0.07 kg and 1.50 ± 0.00) for total rearing period of 42 days. T_1 recorded a higher profit per bird (462.95 ± 24.39 LKR) compared to T_2 (374.80 ± 26.61 LKR) and T_3 (372.62 ± 21.38 LKR). Further, stocking densities resulted in similar carcass and meat quality characteristics. A lower stocking density (40 birds m^{-2}) during the brooding period, lower the stress response, enhance the growth performance, and profit of broiler production.

Keywords: Growth performance, Feed conversion ratio, Lymphoid organ weight, Tonic immobility