

COMPARISON OF GROWTH PERFORMANCE OF TWO COMMERCIAL BROILER STRAINS UNDER DIFFERENT HOUSING SYSTEMS IN ALLEVIATING HEAT STRESS

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Heat build-up in naturally ventilated (open) poultry houses is a common problem leading to heat stress in broilers. Type of roofing material used has a direct impact on the heat build-up in open poultry houses. In this study, three types of open poultry houses with different roofing materials namely cadjan, galvanized corrugated metal (GCM) sheets, and the combination of two (a layer of GCM sheet with a layer of cadjan underneath), and a tunnel ventilated closed house were used to determine the effect of house type on performance of Cobb 500 and Hubbard F-15 broiler strains. This study was conducted in *Udubaddawa* area in North Western province, Sri Lanka. A set of 2220 unsexed day old broiler chicks of Cobb 500 and Hubbard F-15 strains (1110 chicks/strain) were brooded for 7 days and assigned to 3 types of open houses on the 8th day. Four experimental units (185 birds/unit) were used for each house type (6 replicates/strain). Chicks were reared for 38 days under the same stocking density. Body weights of randomly selected 15 chicks from each replicate were measured regularly. Daily feed intake was measured as total intake of all birds in an experimental unit. Sixty birds of each strain maintained under same stocking density were randomly selected from a closed house nearby and body weights were measured. Temperature and relative humidity inside and outside each house including closed house were measured three times a day. Litter moisture of each open house type was measured throughout the production period. Growth performance was analyzed using ANOVA procedure was performed treating strain and house type as fixed factors and means were compared with Duncan's multiple range test. A cost-benefit analysis was carried out to determine the profitability of each house type and strain considering all input costs.

Among the open houses, house type with cadjan resulted in significantly superior performance in all traits compared with those in GCM houses ($p < 0.05$). Closed house had significantly higher ($p < 0.05$) mean body weight, lower inside temperature and higher relative humidity compared to open houses. Cobb 500 showed better growth performances than F-15 under all house types. Litter moisture of cadjan houses was significantly ($p < 0.05$) higher compared to open house with GCM. Cost-benefit analysis showed closed house, even with a high initial investment, is the most profitable while cadjan house being the second best. Cobb 500 was more profitable under GCM and closed house, however F-15 was better for the other two house types due to differences in feed intake. Improved ventilation is recommended in cadjan houses with measures to alleviate high litter moisture.