Association between Egg Production and Body Morphology of Some Village Chicken Ecotypes in Sri Lanka

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Village chickens, which are more adapted to local environment and management conditions, contribute 15% of the national egg production. Although they are poor egg producers, their potential in contributing to the rural poultry industry is yet to be determined. A study was conducted to evaluate the association between egg production and body morphology of different village chicken types, and to estimate the general egg quality and nutritional quality of eggs from different village chicken types in five selected villages in the Anuradhapura and Puttlam districts. A total of 138 birds representing four village chicken ecotypes, namely normal village chicken, naked neck, long leg and crown, were evaluated for body weight, pelvis width and breast width, body circumference, back length, wing length, keel length, comb type, body type, head type and egg production. Sixty eggs representing all ecotypes were investigated for egg weight, size, length and width of the albumin and shell thickness. Three eggs of each ecotype were taken for egg quality measurements at days 3, 5 and 10. The height of the thick albumin and yolk and area of albumin and yolk, yolk color, Haugh index, Albumin index, Albumin area index and Yolk index were calculated to determine internal quality of eggs. The external quality parameter, Shape index, was also calculated. Dry matter, crude fat, crude protein, and ash content were determined for nutrient quality analysis using three representative eggs from each ecotype. All egg quality parameters were also carried out with eggs from a commercial strain (ISA White) for comparison.

Four ecotypes of chicken showed varying degree of relationships between body parameters and egg production. Pelvis width showed a positive relationship with egg production. Egg quality parameters were similar in eggs from all ecotypes and the commercial strain except for ash and fat contents. The ash contents of eggs from the four village chicken types were significantly high ($P<0.05$) compared to that of commercial strain, whereas fat content of egg yolk of normal village chicken was significantly higher ($P<0.05$) than that of commercial chicken egg yolk. Eggs from all village chicken ecotypes had a higher fat content than the commercial chicken egg. The internal egg quality declined with storage in both village and commercial egg while commercial egg showed a drastic decline during storage compared to village chicken eggs. The external egg quality remained unchanged in all egg types.

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