

EFFECTS OF DIFFERENT COATING MATERIALS AND STORAGE CONDITIONS ON EGG QUALITY PARAMETERS OF COMMERCIAL LAYERS

Senavirathna H.P.N.L¹, Mutucumarana R.K^{1*} and Andrew M.S²

¹Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, Sri Lanka

²Maxies and Company (Pvt.) Ltd., Sri Lanka

*ruvinim@agri.sab.ac.lk

The study reported herein investigated the effects of different coating materials, storage temperatures and storage periods (STP) on egg quality parameters of commercial layers. Two hundred and ten shell eggs (62.5 ± 1 g) obtained from 53-weeks old Hy-line white layers were tested. The experimental design was 6×5 factorial arrangements of treatments with six egg preservation techniques and five STP. Six treatments were consisted of Uncoated eggs stored at room temperature (RMT: $27^\circ\text{C} \pm 1$) (T1), Uncoated eggs stored at refrigerator temperature, (RFT: 4°C) (T2), Coconut oil coated eggs stored at RMT (T3), Coconut oil coated eggs stored at RFT (T4), Beeswax coated eggs stored at RMT (T5) and beeswax coated eggs stored RFT (T6). The treatments were assessed for five STP (0, 7, 14, 21 and 28 days) in a total of 30 treatments, with seven eggs ($n = 7$) each. Interactions were observed for all criteria tested except shape index and yolk colour. Storing eggs at RMT for 28-d resulted the maximum weight loss ($p < 0.05$). Eggs coated with beeswax and stored at 4°C increased weights. Coating with beeswax increased ($p < 0.05$) the egg shell thickness and the shell ratio. Haugh Unit was maximal and was not affected ($p > 0.05$) at d-0. pH changes were minimally affected ($p < 0.05$) in coated eggs. Coating and refrigeration preserved albumen index ($p < 0.05$) than uncoated eggs and eggs coated-and stored at RMT over the STP. T4 resulted maximal albumen ratio ($p < 0.05$) at d-0, 14 and 28. Increasing STP from days 0 to 28 reduced yolk index of eggs in T1. External evaluation of treatments suggested that T3 resulted ($p < 0.05$) the highest attributes for shell color, shell texture, and overall acceptability. Sensory evaluation results demonstrated that T3 and T4 ranked the best for taste and albumen texture. Based on the results, the present study concluded that, egg coating when combine with refrigeration preserves egg quality for 28 days. Among two coating materials used, beeswax coated-refrigerated eggs are the best in preserving egg quality. In contrast, coconut oil coated eggs stored at RMT attract panelists the most.

Keywords: *Beeswax, Coating, Coconut oil, Egg quality, Shelf life*