

# Influence of egg storage duration and preincubation warming profile on embryonic development, hatchability, and chick quality

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**When eggs are stored beyond 7 days, hatchability and chick quality decrease. The cause of the negative effects of prolonged egg storage is unclear. The negative effects may be caused by a decrease in embryo viability due to an increase in cell death. The optimal time and curve of preincubation warming (the preincubation warming profile) may be different for eggs stored over short and long periods of time because embryo viability depends on egg storage duration. The aim of the current study was to investigate whether preincubation warming profiles affect embryonic development, hatchability, and chick quality when eggs are stored for a short or prolonged time.**

Two experiments were conducted. In both experiments, a 2 x 2 completely randomized design was used with: two storage durations (4 and 14 days at 17°C in experiment I and 4 and 13 days at 19°C in experiment II) and 2 preincubation warming profiles (within 4 or 24 hours from storage temperature to 37.8°C).

In experiment I, results suggested that the effect of preincubation warming profile on hatchability depended on storage duration. However, because a low number of eggs were used in this experiment, these differences were not significant. In experiment II, the interaction between storage duration and preincubation warming

profile was observed for embryonic mortality during the first 2 days of incubation and hatchability ( $P = 0.006$ ;  $P = 0.01$ , respectively). When storage duration was 13 days, embryonic mortality during the first 2 days of incubation decreased by 4.4% and hatchability increased by 5.7% when the 24-h preincubation warming profile was used instead of the 4-h preincubation warming profile. However, no effect of preincubation warming profile was observed when storage

duration was 4 days. In both experiments, chick quality decreased when storage duration increased but was not affected by preincubation warming profile. In conclusion, a slow preincubation warming profile is beneficial for hatchability when storage duration is prolonged, but does not affect chick quality.

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