

Abstract

Storage of eggs in water affects internal egg quality, embryonic development, and hatchling quality

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In a series of experiments, effects of storage of eggs in water on internal egg quality, embryonic development, and hatchling quality were investigated. In experiment 1, unfertilized eggs were stored for 4 to 14 d in water (W) or air (control; C). In experiment 2, fertilized eggs were stored for 3 to 14 d in water or air and thereafter incubated for 9 d. In experiment 3, eggs were stored for 16 d in water or air and incubated for 1 to 9 d thereafter. In experiment 4, eggs were stored for 14 d in water or air, incubated thereafter, and hatching time and hatchling quality were determined.

In all experiments, egg weight loss in the C treatment increased with duration of storage, whereas W eggs gained weight during storage. Albumen and yolk pH after storage and during incubation were greater in the C eggs compared with the W eggs. In experiment 3, embryonic development at d 4 and 9 was advanced in the W eggs compared with the C eggs. In experiment 4, the number of viable embryonic cells after

storage and after trypsinization was lower in the C treatment than in the W treatment (30,188 vs. 69,618; $P < 0.001$). Hatching time was postponed in the W treatment compared with the C treatment (501 vs. 495 h; $P < 0.05$). Hatchling length was greater in the C treatment (19.7 vs. 20.3 cm; $P = 0.01$), and residual yolk was less in the C treatment than in the W treatment (4.9 vs. 8.3 g; $P < 0.001$).

We concluded that storage of eggs in water for a prolonged period positively affects internal egg characteristics and early embryonic development, but negatively affects hatchling quality. The reason for the loss of the head start with progressing incubation needs further investigation.

Full text:

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