

Effect of Eggshell Temperature and Drilling a Hole in the Air Cell on Survival and Development in Layer Hatchlings

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In broilers, high eggshell temperatures negatively affect hatchability, chick quality and subsequent performance. In practice, a higher embryo mortality is found in layer than broiler embryos at the end of incubation and this may be related to gas exchange. Therefore, this study evaluated effects of eggshell temperature (EST) and improving gas exchange by drilling a hole in the air cell on survival and development in layer hatchlings.

Layer embryos were incubated at an EST of 37.8°C until day 14 of incubation. Thereafter, eggs were incubated at an EST of either 37.8°C (normal) or 38.9°C (high) and half of the eggs received a hole in the air cell. Measurements were performed at 12 hours after hatching. Results showed that embryo mortality did not differ among treatments. Yolk free body mass (YFBM) was 0.7 g lower and residual yolk weight was 0.7 g higher in the high EST treatment. YFBM did not differ between eggs with or without a hole, but residual yolk

weight was 0.3 g lower in eggs with a hole. Navel quality did not differ among treatments. Relative heart, lung, stomach, liver, spleen and intestinal weights were lower in the high than in the normal EST. Relative bursa of Fabricius weight was higher in hatchlings incubated at normal EST and with a hole compared with all other treatments. A hole in the eggshell only increased relative lung weight. In conclusion, high EST negatively affected development in layers, but not survival. The effect of drilling a hole was limited.