

# Why Eggs from Older Hens Result in Higher Chick Mortality During Incubation

## Overview

Chicks from older hens die more frequently in the shell primarily due to a decline in **egg quality** (both internal composition and shell integrity), **nutritional deficiencies** in the egg, and a higher incidence of **late embryonic mortality**.

In essence, the aging process in hens impacts their reproductive systems and the quality of the eggs they produce, creating a less supportive environment for the developing embryo and increasing the likelihood of death in the shell.

## Key Factors

- **Egg Composition and Nutrition:** Older hens produce eggs with different internal compositions, notably a lower albumen (egg white) to yolk ratio. The eggs may also be deficient in essential nutrients and vitamins (like Vitamin E and B12) and minerals, which are crucial for embryonic development.
- **Egg Shell Quality:** As hens age, the quality of their eggshells tends to decline. Shells may become thinner or more porous, which can lead to excessive moisture loss or an increased risk of bacterial or fungal contamination, causing infection and death of the developing embryo.
- **Embryonic Development Issues:** Eggs from older flocks are more prone to issues during the later stages of incubation (late embryonic mortality). This may be linked to the altered egg composition affecting the embryo's metabolism and oxygen availability as it grows.
- **Genetic Factors/Chromosomal Abnormalities:** Advanced maternal age can increase the incidence of genetic mutations and chromosomal aberrations in the oocytes, which often result in non-viable embryos that die during development.
- **Hormonal Changes:** Changes in hormone levels in older hens, such as decreased yolk testosterone concentration, can also impact offspring development and survival.
- **Pre-incubation Conditions:** Eggs from older hens can be more sensitive to prolonged storage before incubation. Longer storage periods negatively affect albumen quality and the acid-base balance of the embryo, increasing mortality rates.