



## Hatchability problem analysis

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### Introduction

When a problem occurs in hatchability, usually it can be categorized as a hatchery, egg handling, or breeder flock problem. If the problem has originated within the breeder flock, it is probable that it happened at least 4 weeks earlier, assuming 3 weeks of incubation and 1 week of egg storage. This delay in identifying a problem is costly and may even make it impossible to determine the cause if the effect is of short duration. It is necessary to identify the problem as early as possible, using candling at 1 week of incubation and constantly monitoring unhatched eggs, to minimize the delay in taking corrective measures. Analysis of hatch debris does not yield definitive diagnoses; however, it is a useful tool for determining the most likely areas for further examination.

It is of utmost importance for hatchery, egg handling, and breeder farm personnel to work together as a team to produce top quality chicks and to identify problems when they occur. Very accurate and complete records of the breeder flock (including egg production, mortality, morbidity, egg weight, shell quality, hatchability, feed consumption, and antibody titers) and the egg history from the nest through the hatchery are essential in providing clues to most hatchability problems. Personnel should be trained in recognizing problems, identifying causes, and implementing appropriate corrective measures.

The objective of the following outline is to suggest possible causes, and corrective measures when appropriate, for some of the signs of trouble observed when decreased hatchability occurs.

### General comments

The magnitude of the effects of deviations from recommended incubation conditions (temperature,

humidity, turning frequency, ventilation, and egg orientation) is a function of the severity of the deviation, the length of time of the deviation, and the age of the embryo at the time of the deviation. The manifestation of abnormalities and the embryonic age at which mortality peaks occur due to nutritional factors usually depend upon the severity of the nutrient deficiency, how long the deficiency has existed, or how long an adequate diet has been fed to the breeders following a deficiency. Therefore, depletion rate, repletion rate, egg deposition efficiency, interference from inhibitors, and yolk formation time are factors that contribute to the effects manifested in embryonic abnormalities and mortality.

### Troubleshooting: General problems

1. **Sign: Eggs candle clear; broken out eggs show small white-dot germinal disc; no blood. Infertile.**

#### **Causes:**

- a. Immature males. Males may need to be photostimulated 2 weeks earlier than females.
- b. Males with abnormal sperm; females with abnormal egg (germinal disc). This occurs most often in very young or very old breeders.
- c. Too few males, resulting in infrequent mating; too many males, resulting in fighting or interference. Ratios of 1:12 to 1:15 for light breeds and 1:10 to 1:12 for heavy breeds are suggested.
- d. Extreme weather conditions.
- e. Old breeders. Spiking with young males may help if the problem is with the male.
- f. Breeder flock disease. This is often indicated by rough, misshaped, or thin-shelled eggs.

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