Hatching egg breakout

A breakout analysis of hatching eggs must be done to evaluate the breeder flock's progress with respect to fertility and hatchability. It is an absolutely essential diagnostic tool for identifying the cause(s) of problems in hatchability. Three types of breakout are advantageous in evaluation and problem analysis. These are: (1) breakout of fresh, nonincubated hatching eggs; (2) candling of eggs incubated for 5 to 12 days, breakout of nonviable eggs, and recording of eggs set small end up; and (3) breakout of eggs that did not hatch (hatch residue).

Breakout of fresh eggs is used to provide an immediate evaluation of flock fertility and to confirm fertility estimated from hatch residue breakout and candling between 5 and 12 days of incubation. The breakout following candling will include eggs determined to be infertile, eggs containing early dead, and cracked eggs. The hatch residue breakout includes all eggs that did not hatch. Candle breakout and residue breakout should be done weekly or at least every 3 weeks.

Regular, consistent analysis of these breakouts will result in flock histories that can be used to diagnose hatchability problems, minimize losses, and compare strains, flocks, farms, hatcheries, and many other variables.

Sample selection and size are important for obtaining valid results from the breakouts. Samples should be selected to include eggs from representative locations in setters and hatchers for each flock at each sampling time. Suggested minimums for sample size include: (1) 10 unhatched eggs from 5 hatcher trays; (2) all unhatched eggs from 4 hatcher trays per setter or hatcher; (3) all unhatched eggs from 1,000 set eggs; as well as many others.

Records should include, but not be limited to, the following variables: flock, strain, farm, date set, machine(s) used, location of eggs in machine, number of eggs set, number of fertile eggs, number of early dead (0 to 7 days), number of middle dead (8 to 14 days), number of late dead (embryos 15 days or older), age of each embryo, malpositions (in embryos 19 days or older), number pipping, malformations, number of eggs contaminated (rots), number of cracked eggs (transfer cracks and others), unusual egg traits (size, shape, shell quality, cleanliness), number of dead and culled chicks, and number of live chicks. Clear, accurate records are essential for useful egg breakout analysis.

Eggs should be removed from the hatcher tray, placed on egg flats, and identified as to flock, location, etc. The exterior of the egg is examined first for egg traits, pipping, and location of the air cell. The shell is cracked at the large end, over the air cell, and a hole opened in the shell and membranes to observe the interior of the egg. If the egg appears to be infertile or contains a very early dead embryo, the germinal disc must be located to make a definitive identification of fertility. If the embryo is relatively small, the egg can be broken into a dish for further examination. Eggs with late-stage embryos should be observed for pipping into the air cell, then opened with tweezers or scissors from large end to small end without disturbing the position of the embryo. The embryo's position (see earlier discussion on positions), the embryo's age (see section on development stages), malformations, contamination, and other factors should be observed and recorded. Comparisons with live embryos of various ages can be used to train those developing experience in the breakout technique.

References


Hodgetts, B. Solving hatchability problems. Information for flock farms and hatcheries. ADAS Ministry of Agriculture, Fisheries and Food. Wolverhampton, UK.