SETTER ROOM

How to calculate water loss correctly

Correct egg water loss during incubation is important for hatchability and chick quality.

Water loss is controlled by incubator humidity and critical to correct measurement of egg water loss is the correct calculation.

Water loss is the average weight of the eggs at transfer expressed as a percentage of the average egg weight at set. It is usually measured on 3 sample incubator trays from each breeder flock in each set. Trays should be placed in the incubator so that one is positioned near the top, one near the middle and one near the bottom of the incubator rack. The full procedure is described in ***Hatchery How To Measure Egg Water Loss***, which is available on the Aviagen website.

Based on the procedure, water loss can be calculated as;

$$\%\ \text{Water} = \frac{\text{Full tray weight at set} - \text{Full tray weight at transfer}}{\text{Full tray weight at set} - \text{Empty tray weight}} \times 100$$

If incubated correctly, eggs lose on average 10.5-12.5% of their weight by transfer at 18 days.

Figure 1

Although the calculation by itself is simple, there are some important points to be aware of for the accuracy of calculations;

- **Do not use a standardized weight for the empty trays. Setter tray weight can differentiate depending on tray production lots, quality of materials, degradation over time etc. To have an accurate result, empty trays must be weighed for every tray of eggs.**
- **Do not include dirty eggs with abnormal shells and broken or hairline-cracked eggs. These eggs will lose more water and consequently show higher water loss than normal.**
- **If egg transfer is not done at 18 days, the calculated water loss needs to be corrected to 18 days for accuracy and appropriate quality control.**

Example: Eggs are transferred at 19 days and water loss is 12.5%. Water loss corrected to 18 days can be calculated as;

$$\left(\frac{12.5}{19}\right) \times 18 = 11.8\%$$

- **During storage hatching eggs will lose about 0.5% per week and this number should be included in the total loss at transfer. For example: If the eggs lose 11.8% between setting and transfer (18 days) but are stored for one week before setting, the total moisture loss between laying and transfer will be 11.8 + 0.5 = 12.3%.**

Egg water loss measurement has been implemented in most commercial hatcheries as a powerful tool of quality control for the incubation process. In order to have good information, correct calculation is critical to obtain accurate results.