HATCHER ROOM

Humidity changes in the hatcher indicate hatch time and spread

A critical aspect of managing the hatch process is determining the hatch window.

The hatch window is the time between the first and the last chick emerging. A hatch window of twenty-four hours is seen as optimal (and achievable) in single stage hatcheries, although multi-stage systems will take longer. It is important to know your hatch time, and to manage the hatch window to optimize hatchability and chick quality.

In the past, hatch window has been determined by opening the hatcher at intervals and counting the chicks in sample trays. Unfortunately, opening the hatcher doors for repeated counts risks disturbing the hatcher environment and altering the hatch window in the process.

A less intrusive approach is to monitor humidity and carbon dioxide (CO_2) trends through the hatch, using parameters already reported by the hatchers.

Carbon dioxide production by the embryo increases steadily through incubation. However, towards the end of incubation, the shell is not porous enough to allow complete gas exchange, and surplus CO_2 is stored (buffered) in the egg contents. Once the chick pips the egg shell, there is a marked increase in CO_2 output as the stored gas is released.

When a chick breaks through the shell it will still be coated in fluid, which causes a rapid rise in humidity as the bulk of the eggs pip and hatch out. Once all the eggs are hatched and the chicks dry off, humidity starts to fall again. The process is summarized in **Fig. 1**.

By checking the time elapsed between Point 1 and Point 3 we can estimate the natural hatch window, comparing outcomes by flock and egg age, as well as by machine. This method offers several advantages over the traditional open doors and count system. By avoiding disturbances in the hatcher environment, the humidity curve method provides an accurate representation of the true hatch window, enabling hatchery workers to plan subsequent procedures effectively.

Having historical data describing humidity curves available allows the incubationist to make informed decisions based on trends and patterns, leading to improved hatching outcomes over time. Monitoring the humidity curve during the incubation period provides a non-intrusive and data-driven approach to determining the hatch window.

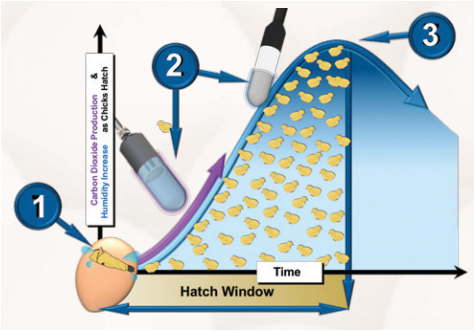

Figure 1 *The build up in humidity as a hatch progresses in a commercial hatcher.*