Pre-heating eggs

Preheating eggs before the onset of incubation has proven to be beneficial for uniform embryonic development, hatchability, and chick quality.

Single-stage setters are user friendly in regards to preheating eggs prior to set, as they usually come with a standard preheating program or can be programmed as needed. Multi-stage setters are still very common in many parts of the world, and in many cases cold eggs are set into the setter twice a week.

In normal circumstances, multi-stage setters are very stable and need little heating or cooling adjustments, as younger embryos rely on the heat produced by the older embryos. However, each time cold eggs are set, hatch and chick quality can be negatively affected.

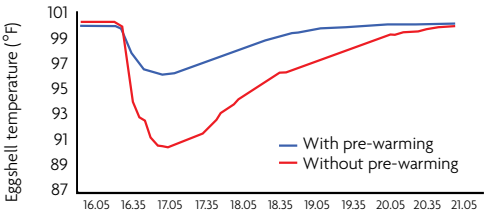

Figure 1 *Egg shell temperature changes in partially-incubated eggs immediately after more eggs are set, either from the cold store (red) or after pre-warming (blue).*

Periods where eggshell temperatures are low (< 99.0°F, 37.2oC) will delay the hatch and increase levels of early embryo mortality, as well as damage chick quality.

A further issue when eggs are set cold into a warm, humid incubator is that they may experience surface condensation (see **Figure 2**) increasing the likelihood of bacteria getting into the egg and causing contamination.

To minimize temperature shock and condensation, eggs should be pre-heated to warmer temperatures, ideally in a dedicated preheating room prior to set. General recommendations for correct preheating before loading eggs into multi-stage machines are as follows:

- **Build a room with good ventilation and proper heating capacity.**
- **Achieve the temperature set point within 6-8 hours, and ensure all eggs have a uniform temperature prior to loading into the multi-stage setter.**
- **The egg preheating temperature set point should be such that the machine temperature does not drop more than 2°F (1°C) after introducing fresh eggs into the incubator, and recovers to the set point within 40 minutes. Typically, a preheating temperature between 85 and 90°F (29.4 to 32.2°F) achieves this goal.**
- **Total preheating hours depend on the egg storage time, the egg storage temperature, and the room's heating capacity.**

Figure 2 *Condensation on eggs after setting.*

Figure 3 *Custom-built preheating room.*