Cooling eggs after short periods of incubation during egg storage (SPIDES)

Short periods of incubation during egg storage (SPIDES) has been implemented in many hatcheries, and has proved to be a very effective way to restore the hatch loss usually seen after prolonged egg storage.

When using SPIDES, it is critical that the eggs are allowed to cool down from peak temperature quickly and evenly before they are returned to the egg store. If the eggs are above egg store temperature, they will warm the eggs around them, damaging hatchability.

When using a machine which has been designed to perform SPIDES treatments, both heating and cooling capacity are increased, and the eggs will cool properly as long as the full cycle is followed. However, many hatcheries use a standard setter to treat the eggs, and so alternative arrangements should be made to cool them after treatment.

Fig. 1 shows a thermal image of an egg store containing SPIDES treated eggs in the center of the picture, and the warming of the adjacent eggs to the side. Although the eggs were only 24 C when replaced in the egg store, they were still able to warm eggs in adjacent trolleys to a level where embryo development will continue at a level likely to harm hatchability.

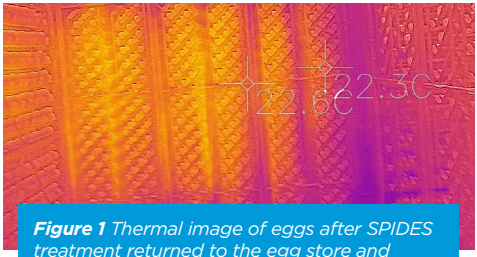

Figure 1 *Thermal image of eggs after SPIDES treatment returned to the egg store and warming the surrounding (cool) eggs.*

When transferring eggs that are still warm post-SPIDES treatment to the egg store, place them as far as possible away from any cooled eggs. A temperature logger placed on the trolley closest to the warmer eggs can record any rise in air temperature.

Fig. 2 shows a hatchery egg store where the cooling capacity was insufficient to cool the eggs after warm eggs were added. They cooled by only 1.5 C before a second batch of treated eggs was added, at which point the temperature of the adjacent eggs increased as well.

If SPIDES is used on a routine basis, the egg store can be partitioned so that there is space dedicated to cooling eggs after treatment without damaging the other eggs. The area will need additional cooling capacity and enhanced air circulation to maximize the effectiveness of the cooling process.

By using SPIDES treatments while maintaining a stable egg store temperature by implementing good management of the post-treatment cooling procedure, much better hatchability can be expected from stored eggs, even into their fourth week.

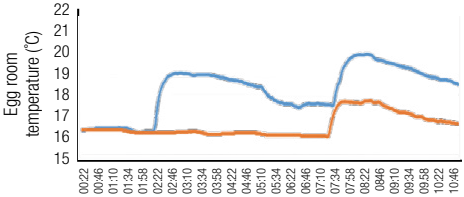

Figure 2 *Air temperature close to SPIDES treated eggs (blue) and untreated eggs (orange) as eggs are restored to the egg store. The cooling system should be upgraded to manage regular additions of warm eggs.*