SPIDES

If you are heat treating stored eggs to improve hatchability (SPIDES), how long should the eggs be kept warm?

Aviagen's early SPIDES trials were aimed at defining the safe limits for heat treating eggs during storage – how long, how often and how hot the treatments should be.

In these trials, we held eggs for 21 days, and gave up to 5 treatments during the storage period. We found that in this situation, individual treatments were best kept as short as possible.

If we pushed the length and number of treatments too far, hatchability got worse.

Chart 1 shows the percentage of lost hatch that was recovered after different treatment combinations, compared in terms of the cumulative time the egg shell temperature was held above 32°C (EST>32°C).

We showed that hatch recovery was achieved in any treatments where the cumulative time above 32°C was between 6 and 24 hours, but that the optimum effect was seen when the cumulative time was between 6 and 14 hours. There was a steady deterioration in the hatchability recovered for treatments above 15 hours, which dropped to no benefit when EST >32°C was over 26 hours and almost complete hatch failure when the cumulative treatment time was 39 hours.

The trial summarized in **Chart 1** does not show what impact, if any, there might be in further shortening the cumulative exposure time from 6 hours. However, some recent trials which were performed in collaboration with Prof Okan Elibol at the University of Ankara have shown that shorter treatment times can also be suboptimal. These trials were done using a Petersime® Restore cabinet, and a storage period of 14 days.

The eggs were treated once only, on the 5th day of storage, and were given either 3.5 or 5.5 hours above 32°C EST. There were three repetitions, using eggs from flock ages of 37, 54 and 55 weeks. There was no fresh egg control in these trials; so it was not possible to calculate how much hatch was lost due to storage, or the percentage recovery. However, in each of the three comparisons, a single exposure of 5-5.5 hours gave a higher hatchability than the shorter exposure of 3-3.5 hours.

When designing a SPIDES program, for optimal results the treatment should be set up so that the cumulative EST >32°C is between 5 and 14 hours.

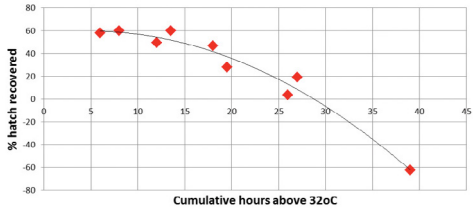

Chart 1 *Percentage of lost hatchability due to storage recovered after multiple SPIDES treatments.*

Figure 1