EGG STORE

What happens to hatchability when egg stores go through a period of extreme cold?

Unless eggs are always set very fresh, it is probably safer to store them at 15°C, the temperature at which embryo development stops completely.

A related question, discussed by Elibol et al at the 2022 Incubation and Fertility Research Group (IFRG) meeting, is whether very low temperatures (between 0°C and 8°C) can be detrimental. This situation arises by accident, occasionally, when environmental control fails in farm egg stores or egg trucks during cold winter conditions. It is known that embryo development will stop, and that albumen quality (associated with better hatchability) will improve at low temperatures. But, can very cold conditions do any damage?

The Ankara University team (Ankara, Turkey) transported Ross 308 eggs directly from the breeder farm, and stored them for two days at 16, 8, 4 or 0°C. The eggs were then stored for a further two or 12 days at 16°C before being set. A small number of eggs from each treatment were opened to evaluate albumen quality and embryo development. The remainder were incubated. A total of 1500 eggs were set per treatment.

Albumen height after two days was highest in the 0°C treatment, and lowest in the 16°C treatment. Low storage temperatures did not affect hatchability when the eggs were set fresh (4 days), but two days storage at 0°C at the start of a two-week egg save did cause a small (3% point) drop in hatchability.

Investigating an incident of accidental damage, Salahi et al carried out a similar experiment in Iran, using Ross 308 eggs which had been unavoidably held in the egg truck for 40 hours in an outside temperature of -15°C.

None of the eggs froze, but they were able to isolate batches where the internal temperatures were -1.2°C, 1-2°C, 2.5-3.9°C, 4-6°C, and compared them to a control group which had not experienced the period of cold. The eggs were set fresh, and the pre-warming and set times adjusted. Storage temperatures falling from 5°C were associated with declining hatchability (**Fig. 1)**, but the absolute impact was relatively small; the -1.2°C group hatched 5% points less than the controls.

To conclude, if there is a logistical problem that causes hatching eggs to be exposed to a temperature around 0°C for up to two days, the bulk of the eggs should hatch normally, provided they are allowed to warm to a more normal temperature before set, and set times adjusted slightly. Any hatch losses will be small.

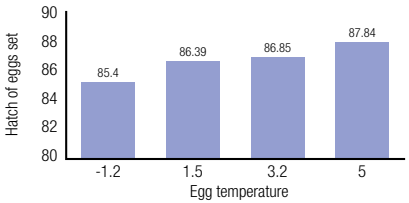

Figure 1 *Effects of Cold Stress during Incubation on Hatchability and chick quality of broiler breeder eggs. Salahi et al 2012, Turk. J. Vet. Anim. Sci. 36 pp 159-167.*