



HOT EGGS DAMAGE CHICK QUALITY

AVIAGEN MANAGEMENT ESSENTIALS



THERE IS AN OPTIMAL EMBRYO TEMPERATURE RANGE WHERE EMBRYOS WILL BE COMFORTABLE

When eggs get too hot, chick quality will suffer long before hatchability is affected.

Check the eggshell temperatures on days 16 to 18 of incubation, when the embryos are producing a lot of heat, to see if there are any dangerous hot-spots developing in the setters.

Use a Braun ThermoScan infra-red ear thermometer, or Tiny Tag temperature loggers to monitor the eggs in the centre of the egg trays in as many different locations as you can.

Chick quality will be affected wherever you find eggshell temperatures exceeding 38.9°C. Chicks from overheated eggs will hatch earlier, so are more prone to dehydration. They will also be paler, shorter and the yolk sac will be bigger. Unhealed navels will be more common.



Figure 1:
The pale coloured chick was overheated

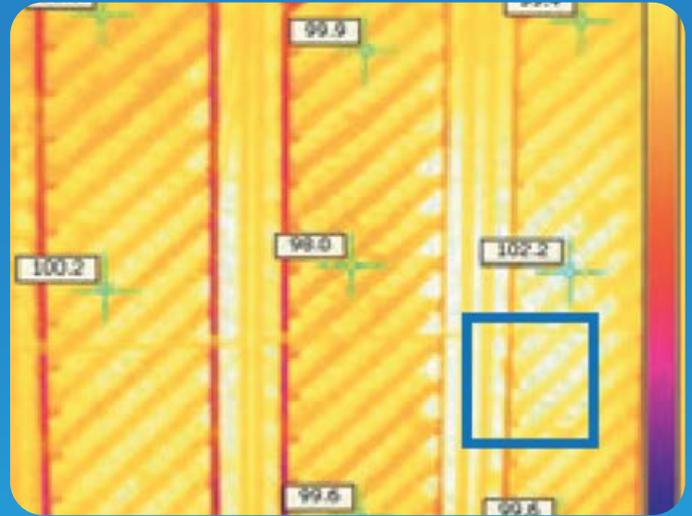


Figure 2:
Hot area in a single stage setter

Chicks from eggs which have been overheated will not grow as well and will tend to have higher mortality throughout the flock life. Feed conversion may also suffer.

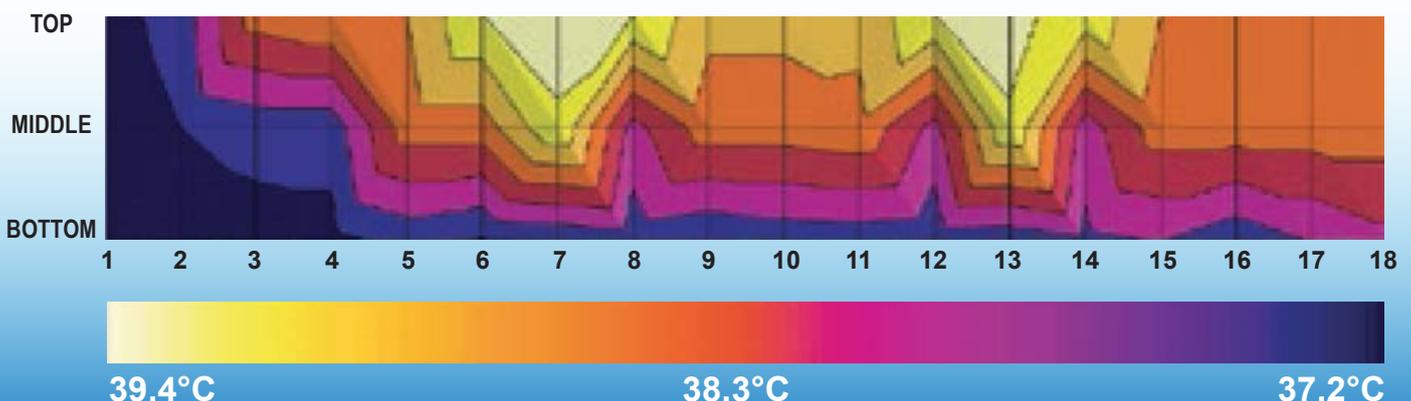
If ventilation is adequate, hatchability is not usually affected until higher eggshell temperatures are reached.

It is easy to visualise the variation in eggshell temperature in the setters by entering the temperatures into an Excel spreadsheet, and plotting a graph using the chart type 'surface' and the option 'contour'. In the example given below, taken from a fixed rack multistage setter and using a thermal image iron colour palette, the graph shows a cool spot near the door and two hot spots in stacks 7 and 13.

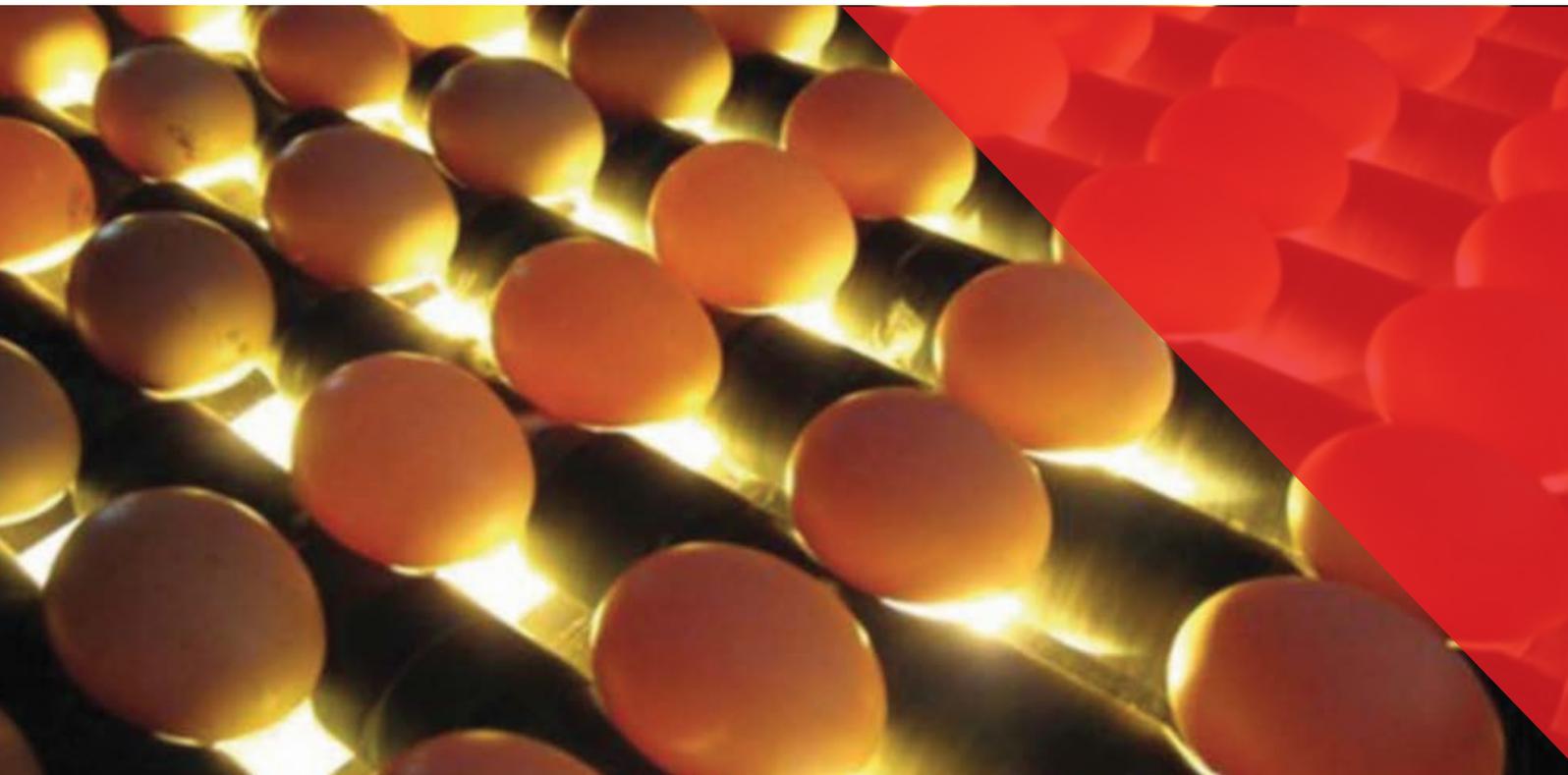
Places where eggshell temperatures show 38.9°C indicate that action is needed.

Check door seals, fan speeds, setting patterns (was the set balanced?), spray nozzles, cooling coils, solenoids, water flows, fan blades, turning angles and frequency and incoming air temperature and humidity.

IRON COLOUR PALETTE



HOW OFTEN DO YOU CHECK EGGS COMING INTO YOUR HATCHERY FOR HAIRLINE CRACKS?



IDENTIFYING ALL THE EGGS THAT HAVE CRACKED SHELLS ON ARRIVAL AT THE HATCHERY IS NOT EASY, BUT REMOVING AND DISCARDING THEM WILL INCREASE YOUR HATCHABILITY AND IMPROVE CHICK QUALITY.

As the use of automated egg handling on the farms increases, hairline cracks, in particular, are becoming much more common.

'Hairline' cracks can be difficult to spot. They occur when the force of an impact is just sufficient to crack the crystalline shell, but there is no obvious surface damage or disruption to the underlying shell membranes. Hairline cracks may only become obvious after a few days in the egg store when moisture from the egg contents has had time to penetrate into the crack and produce a faint grey line at the shell surface Figure 1.

A good way to detect hairline cracks is to candle the eggs because the moisture that has entered the crack becomes illuminated brightly Figure 2.

Eggs with hairline cracks can cause just as many problems as eggs with more severe shell damage.

Research has shown that the hatchability of eggs with hairline cracks can be reduced by almost 25%. In addition, there is an increased level of contamination in eggs with hairline cracks which seems to be carried over to the chicks. The mortality of chicks hatched from cracked eggs to two weeks of age was almost four times that in the control group.

When the effect of hairline crack length on hatchability, egg weight loss, embryo losses, chick quality and contamination rates have been studied it is clear that substantial detrimental effects still occur in eggs with only short hairline cracks, such as that in Figure 3.



Figure 1



Figure 2



Figure 3

So, the message is clear. Cracked eggs and those with hairline cracks are bad news for the hatchery. Not only do they reduce hatchability through increased water loss from the egg, but they are more likely to become contaminated. This contamination is carried over onto the farm by the chicks.



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