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THE INSIDE CHIRP

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CHECK HATCH DEBRIS REGULARLY TO IDENTIFY EGG TURNING PROBLEMS

AVIAGEN MANAGEMENT ESSENTIALS

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EGG TURNING IS A KEY INPUT FOR NORMAL EMBRYO DEVELOPMENT

Brooding hens roll the eggs in their nests; in hatcheries, trays of eggs must be tilted to either side of horizontal. For the best hatchability, eggs should be tilted once an hour to achieve a 38-45° angle to each side. Hatchability will be depressed if turning angles are too shallow, or turning is not frequent enough, especially in the first 7 days.

During the early stages of embryonic growth, the chorio-allantoic membrane (CAM) forms to enclose the albumen. This is the source of the network of blood vessels seen on the inside of the egg shell in hatch debris. If turning is inadequate for any reason, the CAM will not form properly, and short-circuits the small end of the egg, leaving a circular patch with no covering of blood

Failure of egg turning or inadequate egg turning (frequency or angle) will cause raised levels of early dead (membrane and blood ring) and late dead embryos. The late deads will show characteristic signs of turning failure due to poor growth of the CAM, leaving residual albumen in the bottom of the egg.

There will also be more undersized embryos, and the incidence of two specific malpositions, malposition-II (head in small end of the egg) and malposition-III (head to left) will be raised. This specific combination of embryo mortality categories is a typical indicator of egg turning issues in the hatchery.

Turning problems are one of the more common issues seen by Aviagen hatchery specialists when visiting commercial hatcheries. There are two main reasons for this. In older hatcheries, multi-stage incubators are getting older. Their turning systems have become worn.

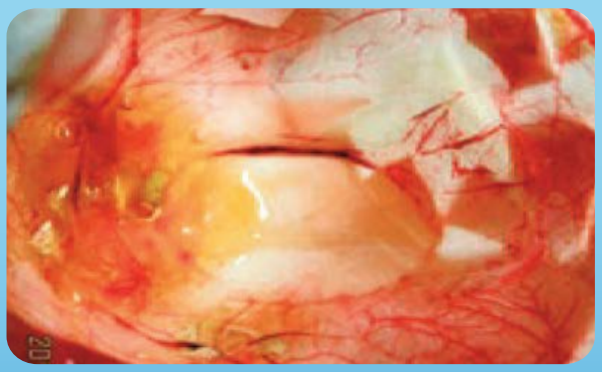

Fig 1:
The CAM did not reach the pointed end of the egg, leaving some albumen unavailable to the developing embryo

Fig 2:
A chick with residual albumen on the down.

Occasionally they fail completely, or more often do not manage to achieve adequate turning angles. In newer hatcheries, with single-stage incubators, it can be tricky to spot problems because the focus is on keeping the machines sealed for the first few days and this can make people very reluctant to open the setter doors to check the turning. The very big modern setters put a big load on the turning mechanism and this can cause turning angles to drop below the optimum. Unfortunately, the critical sealed period is also the most critical period for egg turning.

In order to identify and resolve egg turning issues, especially mild chronic ones, a routine hatch debris breakout program should be implemented in every hatchery. A rise in both early and late deads with poor CAM growth, malposition II or III or residual albumen on the hatched chick is a strong indication of a turning issue. Check the turning angle in both directions, and make sure that eggs are turned once an hour with regular inspection, opening the setter door to do so.

KEEP SETTER FLOORS DRY

WET SETTER FLOORS ARE OFTEN SEEN IN HATCHERIES. STAFF DO NOT USUALLY PAY MUCH ATTENTION, AND OFTEN THINK THEY ARE UNAVOIDABLE.

Wet floors can have several negative effects on incubation conditions and chick quality. Firstly, water will evaporate off the open water surface, causing localised cooling of the surface. The rising water vapour will then hit the eggs placed on the lower egg trays. This has a cooling effect on these eggs slowing down their embryo development compared to eggs in other positions in the setter.

In addition, with machine temperatures around 37.8°C the wet warmth provides an ideal environment for promoting the growth of mould and bacteria – especially on wet surfaces. The water vapour can also carry bacteria and mould spores which can settle on the egg shell or penetrate through micro fissures in the shell into the egg. In other words eggs on the bottom of a machine with a wet floor will be cooler and in danger of becoming contaminated.

With some single stage setters, especially if they are sealed for most of the first half of incubation, it is very difficult to avoid wet floors and walls. The eggs release moisture through the egg shell, and in a well sealed incubator humidity builds up to very high levels. At these very high humidity levels and at incubation temperature, condensation on the walls and pipework is almost unavoidable, and the water soon drips down to the floor.

The best way to prevent the humidity building to such a high level is to open the dampers slightly once the setter is up to temperature, leaving it very slightly open for the first 24 hours of incubation. Once the dampers are closed, the humidity will build again, so it is usually best to start ventilating the setter after day seven of incubation at the latest.

Once single stage setters are being ventilated, or in a hatchery which uses multi stage setters, then the floors should always be dry. If water is seen on the floors, then action needs to be taken to stop it.

Wet floors in incubators can be caused by:

- Leaking connections to the cooling pipes, the humidity spray nozzles or solenoids.
- Pinholes in the copper cooling pipes.
- Condensation from the cooling pipes or solenoids – especially if the water chiller is set colder than necessary.
- Catching troughs or gutters not in place, blocked or leaking.
- Spray nozzles not functioning properly.

Most of the above causes have to do with maintenance and can be avoided by having an effective preventative maintenance plan in place.

Fig 1:
Standing water on the floor of a single stage setter at the end of the sealed period.

T: +27 (0) 16 366 0249
www.rosspoultrybreeders.co.za

ROSS
An Aviagen Brand

Block D, Techno Link Office Park,
63 Regency Drive, Route 21 Business Park, Irene.
Republic of South Africa

P.O.Box 297
Meyerton 1960
Republic of South Africa