SETTER ROOM

Check hatch debris regularly to identify egg turning problems

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 vessels.

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. 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.

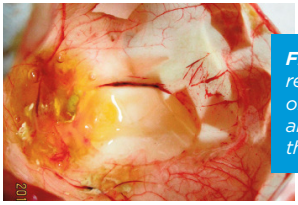

Figure 1 *The CAM did not reach the pointed end of the egg, leaving some albumen unavailable to the developing embryo.*

Figure 2 *A chick with residual albumen on the down.*