HatchTech
INCUBATION TECHNOLOGY

Technical Information

Floor eggs are not hatching eggs

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Floor eggs

Floor eggs are eggs that were laid outside of the breeder flock's next boxes in loose housing systems. The eggs are often laid on dirty litter or other contaminated surfaces. When an egg is freshly laid, it still has a temperature equal to the hen's body temperature. It will cool down as it comes into contact with the cooler air and surfaces surrounding it in the breeder house. This causes the egg contents to shrink, pulling in air from the surroundings through the egg pores.

The cuticle at this point is still soft and can be penetrated by more harmful material than outside air. Therefore, when a warm, fresh egg is laid on a dirty surface, contaminated material may be drawn into the egg as it cools down. As a result, floor eggs have a higher bacterial load than nest eggs. They constitute a hygiene problem both within the hatchery and in the broiler house and would best be discarded. This may seem to be an economic loss, but discarding floor eggs is beneficial to a hatchery's quality standards and profitability. This article aims to explain why we believe that floor eggs are not hatching eggs.

Cross contamination

Van den Brand et al. (2016) demonstrated that hatchability was lower for floor eggs compared to clean nest eggs. This was due to lower fertility, higher embryonic mortality in the first and second week of incubation, and a higher percentage of rotten eggs. Not only floor eggs themselves are affected

by the higher microbial load, but they can also cross contaminate other eggs and hatchlings, especially those present in the same incubator. The most visual example of this are the so called 'bangers' or 'exploders'. These are eggs in which the rotting process has caused hydrogen sulphide to build up, but it is contained by the eggshell and inner eggshell membranes. The egg contents may leak through the pores and at a small provocation, the eggshell and membranes may burst like a balloon, directly contaminating neighbouring eggs with a spray of rotten egg contents and indirectly contaminating all other eggs inside (and sometimes outside) the incubator with airborne pathogens.

Yolk sac infection

Those chicks that do hatch from floor eggs have on average a lower body weight than chicks from clean eggs (Van den Brand et al., 2016). Furthermore, they may contribute to post-hatch contamination of other chicks. Deeming et al. (2002) found that microbial yolk sac contamination in embryos that had died during incubation was three times as high for floor eggs as it was for nest eggs. Since they used eggs with intact eggshells, this suggests that microbial penetration of pathogens through the eggshell into the egg contents does take place and embryos can already be affected during incubation. Since yolk sac infections are a major cause of early life mortality in broiler chickens, it can safely be assumed that a higher contamination in the egg can also result in higher mortality in the broiler house. Especially when the navels of contaminated chicks are not closed optimally, they may spread the pathogens originating from their eggs to otherwise clean chickens in the broiler house.

Risks of floor egg disinfection

Hatcheries take several measures in an attempt to lower the contamination risk of floor eggs. For example, dirty eggs are sometimes washed before incubation. However, washing can damage the cuticle, making the egg more vulnerable to pathogenic penetration. Washing water itself can become a source of infection when procedures are not closely followed. In terms of fertility, hatchability, and percentage of rotten eggs, washed eggs do not perform better than floor eggs (Van den Brand et al., 2016).

Another method that is often used is wet disinfection by fogging sterilizing substances around the eggs. These wet disinfection procedures result in wet eggshells, which may create the optimal micro climate for bacterial growth when the eggs are placed in a warm incubation environment. This is a risk especially for eggs with a high bacterial contamination from the parent flock. Research by HatchTech has shown that wet disinfection can increase early embryonic mortality by up to 3.1% compared to not disinfecting the eggs at all. Additionally, the number of unhatched eggs with pathogenic contamination was not lower for wet disinfected eggs than for eggs without any disinfection. The eggshell may be clean at the start of incubation after wet disinfection but the egg contents are not sanitized and hygiene is still a big issue for embryos and hatched chicks from floor eggs.

Floor Eggs are not Hatching Eggs

The best way to deal with floor eggs is to not consider them to be hatching eggs. Even when floor eggs are incubated in a separate machine, the hatched chicks may spread pathogenic contamination from their residual yolk sac during handling and storage or in the broiler house. Floor eggs are a problem that should be tackled at the breeder level, with good breeder management and suitable housing equipment. It is best to take our losses with any floor eggs that may still occur if we want to guarantee highest biosecurity and chick quality, not set them in our incubators.

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