

The Problem of Floor Eggs

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Floor eggs are a serious issue in modern broiler breeder production for a number of reasons. These eggs are more likely to be contaminated, resulting in a number of associated problems. Contaminated eggs have a reduced hatchability and increase the likelihood of omphalitis in chicks that do hatch. The egg is an ideal culture medium for eggs and, when incubated, the contaminating bacteria can grow prolifically, resulting in an egg that will not only not hatch but may actually explode, contaminating other eggs in the incubator. On the farm, a high prevalence of floor eggs means significantly more labour to collect them and, of course, lost income due to those that are discarded or do not hatch. It is in the best interest of hatching egg producers to minimize floor eggs and, if a problem is identified, to do everything possible to correct the situation.

Nesting Behaviour in Hens

Before exploring the causes of floor eggs, it is interesting to review the normal nesting behaviour of chickens. There is a series of behavioural actions that ancestral chickens and other related birds follow when nesting and brooding eggs. Modern commercial birds retain many of these traits, but to variable degrees.

Hens will naturally seek a secluded area to nest. Ideally, it will be in a hidden location, protected from the view of potential predators. They will approach the nest indirectly and cautiously, always on the lookout for predators. The construction of the nest is generally not complicated, particularly if the location is favourable. When the hen is ready for nesting, a male may lead her to the nest area. This behaviour may be manifested as the gathering into corners that is often observed in modern breeder males.

Once on the nest, hens remain motionless to minimize any attraction by predators.

Variations in the nesting behaviour of modern hens that laid floor eggs compared with those that laid eggs in nest boxes have been observed experimentally. In a study done by Cooper and Appleby (1996), a group of 20 hens was housed individually and observed for nesting behaviour and site selection for egg laying. Six of the 20 birds were found to be persistent floor egg layers. Those that were floor-layers performed more nest seeking behaviour, less nest building behaviour, and less sitting prior to laying eggs. Floor-layers appeared to find the nest boxes unattractive, either because they had lower nesting motivation or they perceived the nest box as an inappropriate site for nesting. Floor eggs declined with age.

Causes of Floor Eggs in Modern Broiler Breeder Flocks

In modern broiler breeder birds there are a number of factors, ranging from genetics through environment to early rearing, that can contribute to an increase in floor eggs. It has been suggested that the behavioural characteristics for nesting are retained by modern chickens but, because of genetic intervention over time, certain aspects of that behaviour are modified. Such modifications are different among various strains. Thus, in the Ross bird, for example, there are differences in the expected number of floor eggs among the various strains. The Ross 308 can be expected to produce 3 to 6% floor eggs, the 508, 5-7%, and the 708, 1-2%.

An appropriate number of nest boxes must be available. The maximum ratio is 5.5 hens per nest box. Soiled nest boxes will also discourage occupation by the hens, effectively reducing the number of sites available. Too few nest boxes will cause some hens to seek out less appropriate locations. It is not unusual, for example, for some hens to find the slight shade under water lines or feed lines as a favourable location.

Aggressive cockerel activity can contribute to nest box refusal. Separate male feed lines provided in the scratch area will encourage the cockerels to spend more time away from the slats. Hens will then be more likely to find the nest boxes as a favourable location to lay their eggs. A higher than optimum cockerel to hen ratio can also cause some aggressive behaviour.

A number of environmental conditions may encourage hens to lay eggs on the floor. As described previously, hens will look for a spot that is apparently secure and hidden in which to lay their eggs. So, if there are areas of cover or distinct shadows, some birds may find that area preferable to the nest box. For example, hens will often use the shaded area under ramps that have been provided for access to the slats as a nesting area. Irregular lighting or bulbs that are burned out can cause distinct shadows being cast by equipment, and the birds can perceive such areas as a suitable nesting location.

Irregular airflow may also contribute to inappropriate nesting behaviour. If air movement results in drafts in the nest boxes, the hens may choose areas in the scratch that are more comfortable. This may be seen as specific locations in which eggs chronically accumulate.

Training pullets to access perches during the rearing period is also an important contributor to success in appropriate nesting behaviour. Research has shown that, when birds are not allowed access to perches before 6 weeks of age, they will not gain the ability or inclination to use the perches during the lay period. It is generally recommended that the flock be allowed access to training perches by 4 weeks of age.

Correcting Inappropriate Nesting Behaviour

Once birds in a flock have started to lay floor eggs, it can be difficult to correct the problem. Generally the number of floor eggs will go down with age, although the numbers may still be higher than desired. Any action taken will be directed at making the nest boxes more attractive to the hens and making the inappropriate areas less attractive.

The design of the modern boxes is generally good and quite acceptable to the hens. Nest boxes must be clean and dry, however, and have comfortable substrate on the floor. Make sure they are cleaned of manure regularly. They should have a perch area at the front to allow the hens to check out the box before entering. The environment in and around the box must also be suitable. Make sure that the interior of the boxes is shaded or protected from bright light. They should also be sheltered from drafts. Such conditions will encourage hens to use the nest boxes as nest areas.

Temperature should be maintained between 68° F and 72° F consistently. It is perhaps even more important that the temperature be consistent throughout the house. This will prevent pockets of comfortable airspaces that hens may find in which to nest. Similarly, air quality should be maintained with good ventilation so air is fresh throughout the barn.

If floor eggs are a problem, it is important that the barn be walked several times daily. Floor eggs should be picked up frequently and any floor nests – that is depressions in the litter that have been made by hens attempting to nest – should be filled in. Any hens attempting to nest in the scratch should be disturbed and encouraged up to the slat area. To minimize any effect of aggressive male behaviour, make sure the cockerel to

hen ratio is correct. Remove any sub optimal males – those with bad legs, those that are small, or those that are not mature.

Conclusion

A high incidence of floor eggs can be a serious problem for the hatchery as well as the hatching egg producer. Steps taken early in the life of a flock, including proper care and feeding, assuring good uniformity, and training to perches can go a long way in minimizing floor eggs. Other important factors to be addressed include good nest design and location, good environmental conditions, including light, and proper male to female ratio. Once a floor egg problem has been identified, it can be difficult to correct, but attending to management basics may help to reduce the impact.