

Broiler Breeder Management to Minimize Floor Egg Production

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Introduction

Nesting systems have been designed to maximize the production of clean settable eggs that are free of contamination and exposure to moisture. Unfortunately, a producer will occasionally experience a flock that will reject the nest and consistently lay eggs on the floor and slats.

In extreme cases this can lead to reduced production, lower hatch performance and ultimately reduced chick quality leading to poor broiler performance. In addition to the challenges in the hatchery, the collection of floor eggs requires extra labor. Once the floor egg habit begins, it is very difficult to change this behavior. So the occurrence of floor eggs should be addressed before it leads to bigger problems.

It is important to know that there is no such thing as “a clean floor egg”. A visually clean egg collected from the litter surface may be contaminated by up to 30 times more than a clean nest egg, see table 1.

Table 1 : Egg dirtiness and bacterial load relation

| Situation of the egg | Total Bacterias | Total Coliform Bacterias | 14 Days Mortality % |
|----------------------|-----------------|--------------------------|---------------------|
| Clean nest egg | 600 | 123 | 0.9 |
| Slightly Dirty | 20,000 | 904 | 2.3 |
| Dirty | 80,000 | 1,307 | 4.1 |

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Rearing Period: Though floor eggs are a problem during the production period, there are management practices during rearing that may lead to floor egg production. For example, the use of electric deterrents on the drinkers and the feeder systems create an early fear to jump for the birds. Instead of choosing electrical systems use double wires or rolling parts so the breeder is unable to grab and balance on the drinker and feeder system. Both of these alternatives are good preventative measures to stop the birds from perching on the equipment without making the breeder fearful of jumping.

Enrichments in rearing are a viable option to teach the bird how to climb and jump at an early age. Choosing the right type of perch is also very important. If the birds are going to be transferred to an mechanical nest box system, instead of using A-type perches, choose flat ones preferably manufactured with the same slats (perches) as those found in production. This will encourage the birds to jump up directly and get accustomed quickly to the new layout in production.

Photo 1: Slats under the nipple lines



Positioning slat type perches under one nipple line will also encourage jumping by providing positive reinforcement for birds that jump up on the slats to drink, see photo 1. The height of the slats must be no higher than 45 cm. Don't forget that heavy breeders are often unwilling to jump. Pan feeders in rearing can influence the bird's need to jump. The bird travels underneath the pan feeder instead of jumping or climbing over. Chain feeders in rearing allow for more mobility. Chain feeders can be set lower which encourages the bird to jump over the track. When pan feeders are used in rearing, it's encouraged to incorporate enrichments. Enrichments can be implemented at placement with ramps for access. Females trained from an early age (5 weeks) in rearing require no ramps in production with a 45 cm high slat.

Light intensity may also lead to future floor egg problems. Very low light intensity such as <1 lux during rearing can cause the birds to have reduced activity. Therefore, light intensity should be maintained at a level that allows workers to see for normal duties and light levels are high enough for bird activity. Increasing lux >5 can start to negatively affect photo-stimulation of the female, so consider this when adjusting light levels.

Production Period: Although broiler breeder producers tend to have their own targets, typically a floor egg ratio of higher than 2% suggests there is a problem or at the very least means improvements need to be made. The first step in tackling a floor egg problem is to collect them regularly so that the birds have minimal opportunity to see the eggs on the litter. A minimum of 4 floor egg collections per day (more is better) should be done by the workers until the flock is at least 27 weeks of age. Walking patterns are also useful to deter females from laying in corners or on the floor. Encouraging the female to lay her first egg in the nest is critical.

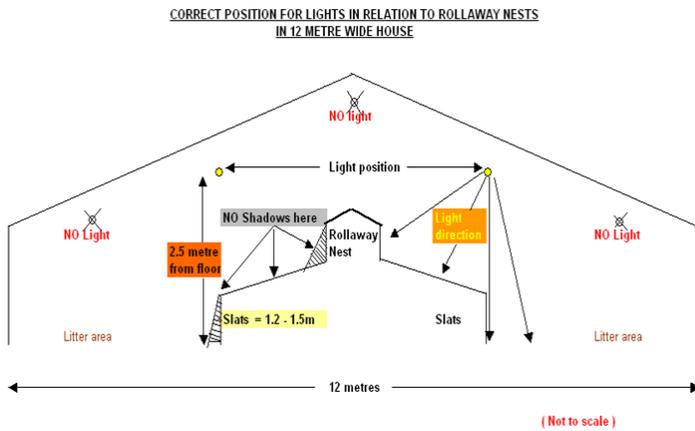
Photo 2: Ramps make it easier to climb onto the slats, especially for heavy birds



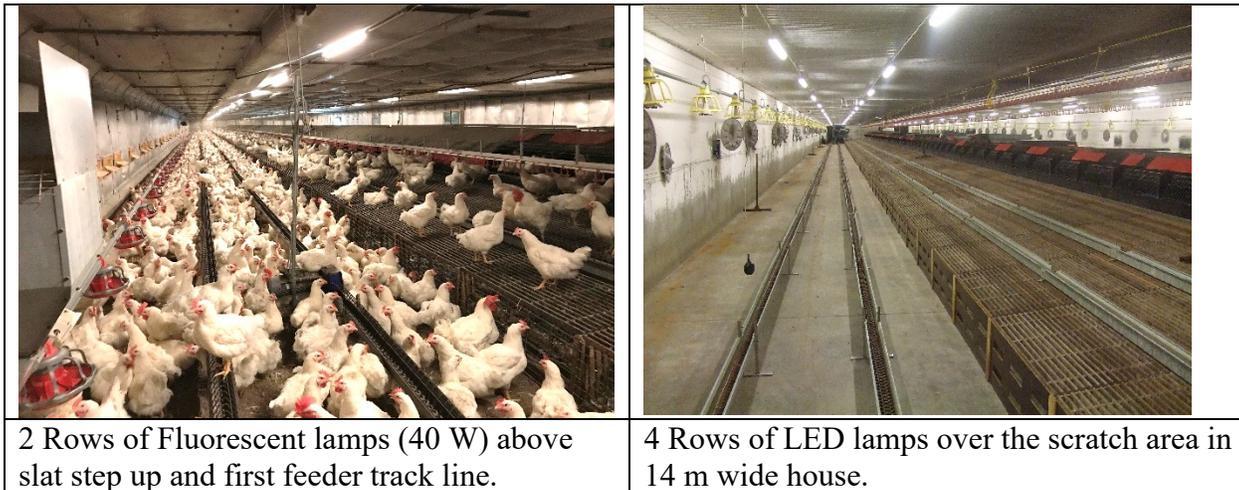
To minimize floor eggs and achieve good flock performance it is essential to follow the breed standards. However, if you do face a problem with floor eggs due to some of the birds having difficulty jumping onto the slats, ramps can be implemented as a quick solution, see photo 2. To decide how many ramps are needed, you will need to observe your flock to determine how big of a problem it is. Placing less litter (i.e. 2-3 cm) can also help to lower the floor egg ratios, especially in warmer and lower humidity areas. Fresh bedding can be added post peak to help reduce pododermatitis and leg issues, especially in males. This will help maintain life of flock hatchability.

One topic of particular interest is the transfer time. Flocks should be transferred at least 2 weeks before the first egg. The birds need time to get used to the new equipment in the production houses. Automatic nest boxes should stay closed prior to the first egg. Birds need to know that this equipment is to provide a place to lay eggs but not to sleep. Expel systems should be opened 15 minutes before lights on and should be closed 30 minutes before lights out. After the first few egg are laid, (or even if there is no egg inside the nest box), collection belts should be operated for few minutes in the afternoons so that the hens become familiar to belt related sound and vibration.

Figure 1: ideal lighting system in 12m house with rollway nest



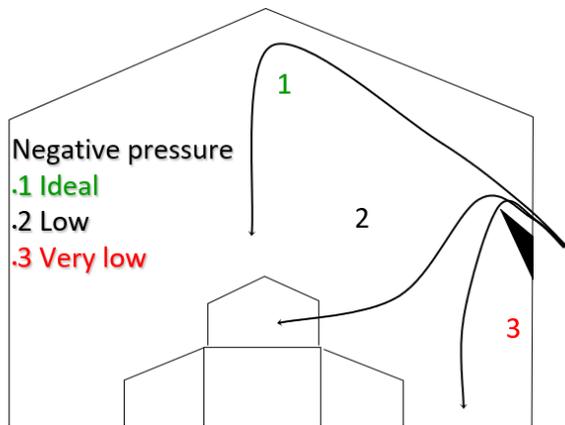
As in the natural environment, our birds need to feel safe when they are most vulnerable at the point of lay. The hen will search for relatively dark, areas to lay. If they find such spots in the houses, they are likely to lay there instead of going in to the nest boxes further away. Therefore, avoid creating shadowed areas. The lighting system should be uniform and ensure there are no shadows next to the slat ends. Also, direct light should not enter the nest boxes, see figure 1.



80% of the birds will lay between 2 and 6 hours after lights on. This means that any disruptive activity during this 4 hour period can result in floor eggs. For example, feed and water is a very strong distractor for feed restricted birds. Therefore, if the majority of feed and water intake is during this 4 hour period, birds will choose feed and/or water instead of going to the nest boxes to lay. Feeders and drinkers should never become obstacles in front of the nest boxes. Feeder heights should allow the birds to freely pass under them if they are hanging, in the case of a trough feeder, or go over them when the trough is placed directly in the slats. If the breeders are crowding drinkers, it is time to reconsider the drinker numbers, drinker heights or the water pressure which can extend the time taken during the water intake. Growers should always obey the manufacturers' technical suggestions and not exceed the suggested bird numbers or use less product than is needed.

In minimum ventilation, if the air draft directs to the nest box opening instead of the roof, it can disturb the birds and can cause them to get out of the nests. Similarly, if the entrance of the nest box at the corridor sides are not sealed well, powerful tunnel fans can pull air from the corridor when belts are not running and cause a draft in the community nests which can double the amount of slat or floor eggs. Often the hens will lay the eggs just outside the nests, and with a plastic slats, they will roll down to the scratch area.

Figure 2: Negative pressure must be close to ideal to avoid floor egg problem



Males need to be 1 week ahead of females in their sexual development, which means the males will be actively pushing the females onto the slats. This procedure is important to reduce floor eggs, but if the males are too far ahead it can induce aggressive behavior resulting in hen mortality and reduce fertility. More slat eggs can also be produced, the amount being based on the type of slats being used. Caretaker action in this case is to decrease the male ratio until you see a uniform male and female mix, all along the scratching area and in particular in the early afternoon (1400-1600 hr).

Interiors of the nest boxes should be clean and free from parasites like red mites which can disturb the birds and can cause the females to avoid the nests. It is recommended to have 20% more pads than needed so soiled pads can be easily replaced and washed without leaving nests without pads.

It is important to take a proactive approach to managing floor egg production. Do not forget that the location and time period of the floor egg production provide a clue as to the reason why the hen chose to lay on the floor rather than the provided nest. As with other problems faced while managing our flock, good observation is the key and take action at first sign of floor egg production. As said before, it is nearly impossible to break a habit. However, taking precautions and working hard up to weeks 27-28 will pay off by setting the flock up for production of clean settable eggs for the life of the flock.