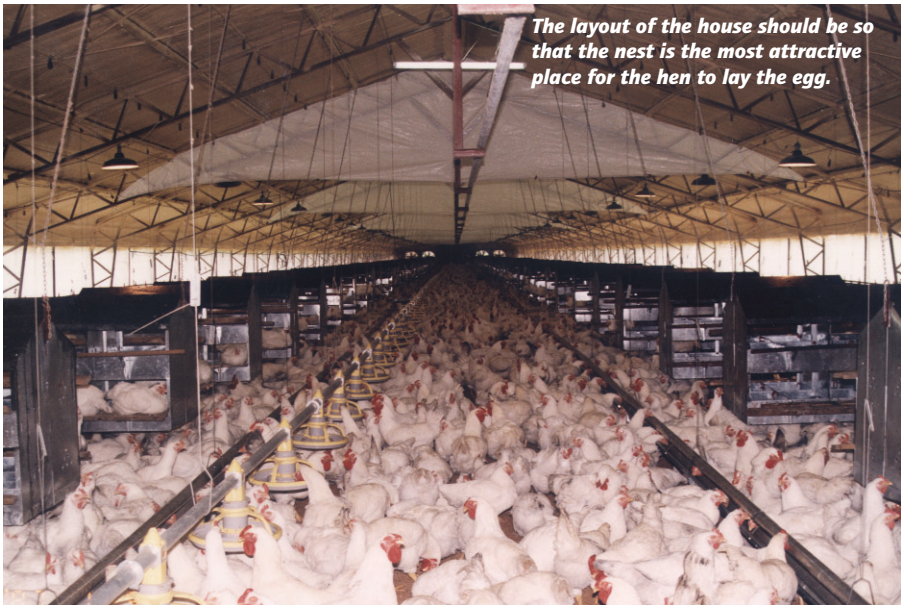
How to reduce the number of floor eggs

Floor eggs are a problem that can be found on many broiler breeder farms. By just collecting the eggs the problem cannot be solved. It requires a change in management. Under optimal circumstances it is possible to have less than 1% floor eggs.

By Jan Hulzebosch, *International Poultry Training Centre (PTC+) Barneveld, The Netherlands*



The layout of the house should be so that the nest is the most attractive place for the hen to lay the egg.

A floor egg is an egg that is not laid in the nest. This means that eggs laid in the litter but also on the slatted floor area are considered floor eggs. In a field test in the Netherlands with 62 broiler breeder parent stock (BPS) farms it was found that the farm with the lowest percentage of floor eggs had 0.1% of floor eggs and the farm with the highest percentage had 18%. This indicates that large variations are possible but it also shows that it is possible to have almost 0% floor eggs.

The disadvantages of floor eggs are obvious. Firstly, you have extra work with the collection of the eggs. Secondly, a floor egg, from the point of view of hatcheries is a second-class egg, therefore not a hatchable egg. Lets just take a look at the prices of hatching eggs in the Netherlands at this time (September 2005): a first-class egg goes for 0.17 Euro and a second-class egg just 0.02 Euro. On a farm with 10,000 broiler breeders and a laying percentage of 75%, if 10% of these are floor eggs, this will create a loss of 10,000 x 75% x 10% x 0.15 euro = *112.50 euro per day*. Anyone can calculate how much this will be during a whole production period.

Missing eggs

There is another aspect of floor eggs that not all producers realise: if there is one floor egg it is highly possible there are two. So the losses are even bigger. I invite every reader to do a simple test on his/her farm: you take two eggs and place them on the ground somewhere in the house in the litter area. Leave the house and come back after two hours and check the eggs. When you come back two hours later it is quite possible that the eggs have disappeared. This means that these floor eggs where eaten by the birds.

Floor eggs

Floor eggs are a combination problem. This means that there is not just one thing you have do to solve the problem, but there is a whole list of factors that influence the number of floor eggs.

The factors that can influence the number of floor eggs are:

- administration
- rearing
- house layout
- lighting
- management
- nests
- climate
- bird health.

Administration

Although administration will not reduce the number floor eggs, it can help you to solve the problem.

One of the first things you have to do when floor eggs are a problem is record daily the number of floor eggs and make a graph so that you can easily see if the number of floor eggs goes up or down. Then you can see if the measures that you take have effect.

If floor eggs are a really serious problem ,you can make a top view drawing of the house and register the time and place and number of floor eggs that are found, thereby trying to find the cause. Try to find the cause as quickly as possible because it is increasingly difficult to change bird behaviour as they grow older.

It is normal that in the beginning of the laying period the number of floor eggs is relatively high. A simple guide line is as follows: at the start of production, floor eggs should be less than 20%, as soon as 50% production is reached floor eggs should be less than 5%, after peak production floor eggs should be less than 2% and remain on this level. (Under optimal circumstances less than 1% is possible)

Rearing

Prevention of floor eggs begins in the rearing period. Preferably the rearing house should be comparable with the laying house, this means that if the laying house has a partly slatted floor, preferably the rearing house should also have a partly slatted floor or platforms. If birds are kept in a full litter house, the rearing house can also be full litter. In general it is advisable to place perches (A-frames) in full litter rearing houses so the birds can learn to jump and to perch, lowering the chance of floor eggs during production. The perches can be used from the fourth week until the end of the rearing period. Normally 3cm of perch space per pullet is enough. Instead of perches you can also use platforms, about 1 m^2 for 500 birds. Preferably transfer from the rearing house to the laying house should be as 'smooth' as possible. This means, if possible, the same type of feeding system, drinking system, time light on, time feeding, time light off, and so forth. Of course later you can gradually match the lighting and feeding programmes to the laying period.

Figure 1 - Incorrect layout: hens from slats don't dare to go to nests because males are blocking the way

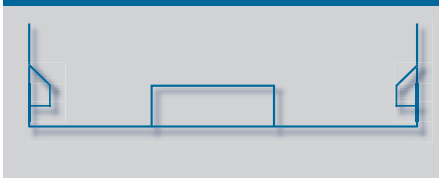
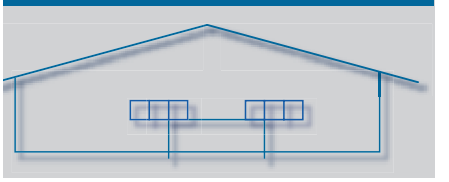


Figure 2 - Correct layout: birds can reach nests from litter area and from slatted area



House layout

Reducing floor eggs starts with the design of the house. For producers who want to build a new house or renovate an existing one, it is a good idea to ask for help from an expert. Breeding and equipment companies often have good experts available to offer advice.

The layout of the house should be so that the nest is the most attractive place for the hen to lay the egg - this means that there are no other places where the bird can lay her egg. Preferably, there should be no supports of the roof in the litter area and the house should not be divided into partitions, because each partition provides extra corners and these are places where floor eggs are often found. Also dark spots and shaded areas should be avoided as much as possible.

Layout with automatic nests

For the layout it makes a big difference if you have an automatic laying nest or a manual one. Lets start with the *automatic (rollaway) nests*.

First of all the number of nests should be sufficient - follow the manufacturers recommendations. (A guideline is 100 birds/m^2 real nest area, not including egg belts, etc.) The best location for automatic nests is in the middle of the house in lengthwise direction. (In houses wider than 16 m. it is better to have two rows of nests.) On both sides of the nest there should be a slatted floor at least 1.15cm wide. More is also allowed, but the percentage of slats should never be more than 50% of the total house area. (Too many slats reduces the number of matings.) The maximum height for the birds to jump onto the slats is 40cm; if they have to jump higher it is better to make two steps. The slats can have a slope of 5–8° up towards the nest.

The birds need the slatted floor to inspect the nest before they are going to lay. The watering system should also be placed on the slats. The distance should be 60cm from the edge of the nest. It is important that the number of drinkers and the watering capacity is sufficient. If not, then birds spend too much time drinking and will block the nest entrance for other birds. As for nipples, eight birds per nipple is good and the capacity of the nipple should be 80ml/min. But in BPS houses, certainly in hot climates, perhaps bell drinkers are more advisable, since it easier for the birds to drink water from a bell drinker than from a nipple. For bell drinkers, one for 75 birds is enough

The feeding system can be placed totally in the litter or partly on the slats and partly in the litter. The cock feeding system should be placed as far away from the nests as possible. This means 80cm from the outside walls and it should always be placed in the litter area.

Layout with manual nests

For *manual nests* the story is different. Often these nests are individual litter nests. Many house layouts are possible depending on the situation and the ventilation system but the basic principle is always the same: the nest should be the most acceptable place for the bird to lay her egg.

A few general rules should always be followed in the placement of the nests:

- The nests should be equally spread throughout the house. The distance to a nest should never be more than 10m.
- There should be enough nests (for individual nests five breeders/nest, and for communal nests 1m^2 nest surface for every 50 birds).
- No direct light, draughts or cold winds on the nest, which means that in many *open* houses in general it is not advisable to place the nests in a long row in length direction in the middle of the house. It is preferable to place them in blocks in the cross direction of the house. In tunnel ventilated houses the nests should be placed in the length direction of the house.
- Maximum height to jump is 40cm.
- If there is a slatted area in the house the birds should be able to enter the nests directly from the slatted area and preferably also directly from the litter area *(Figures 1 and 2)*.
- The space between the slatted area and the first feeding line above the litter should be at least 80cm, to provide enough space to jump on the slats.

Other field test findings in the Netherlands were:

- A full litter floor causes more floor eggs compared to partly litter/ partly slats.
- Drinkers in the litter area cause more floor eggs compared to drinkers placed on the slats near the nest.
- Nests with manual collection cause more floor eggs compared to automatic nests.

Lighting

In general, tube lights are preferred and the light intensity should be 70–100 lux. The lamps should be placed in such way that the light intensity in the house is equal throughout. Dark spots and shadows from feeders and of the step side of the slats should be prevented. Immediately replace non-operational lamps *(Figures 3 and 4)*.

Management

- Management is definitely one of the most important factors in reducing the number of floor eggs.
- First of all, the birds should be in the laying house *at least* one week before the first eggs are expected, so that they have time to acclimatise. You never know exactly when the birds will start laying it is better to be one week early than a few days too late.
- When placing the pullets in houses with partly slatted floors, spread the birds equally over the total slat area. This will motivate them to jump.
- As long as the birds are not in production the nests should be closed, to avoid the birds from using the nest as a resting place. Automatic nests often have an expel system that automatically closes the nest. With manual nests you can close the nest with laths.
- As soon as the first egg is found, the nests should be open during day and, if possible, closed at night. If nests remain open during the night, the birds will sleep in the nests and contaminate them. Open the nests approx 1/2 hour before the lights are switched on and close them 1/2 an hour before the lights are switched off.
- In the first 2-3 weeks you can use dummy eggs in manual nests to attract the hens to the nests.
- Avoid too much litter in the scratching area - a layer of 2cm is normally enough for the start of the laying period, if necessary you can add some litter later.

Figure 3 - Incorrect placement of lamps: shadow areas on right and left side of slatted area

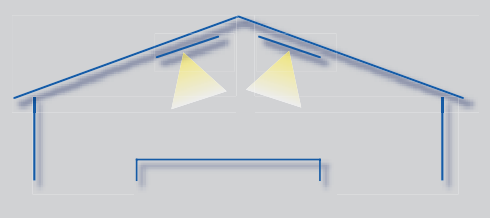
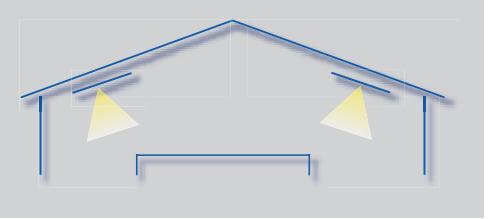


Figure 4 - Correct placement: no shadow areas



Eggs laid in the litter but also on the slatted floor area are considered floor eggs.

- Make sure that in litter nests there is enough good quality litter, a layer of at least 7cm.
- Feeding time: The majority of the eggs are laid 1-8 hours after lights have been switched on**.** *During this period the birds should not be fed.* Feed them just after lights have been switched on, or eight hours after switching on the lights. Feeding when the birds are on the nest will greatly increase floor eggs.
- Ratio males/females: if there are too many males in the house, this will often increase the number of floor eggs, because the males are too aggressive and scare the hens so that they don't dare go to the nest.
- Collect floor eggs at least every hour, starting one hour after the lights are switched on, especially in the first weeks of the laying period. This is very important - extra time spent on collecting floor eggs in the beginning of the laying period will be paid back later by fewer floor eggs. As soon as the percentage of floor eggs is below 2% you can reduce the number of collections.
- Ensure equal distribution of birds in the house. In tunnel-ventilated houses for example, the birds may go towards the air inlet side. In that case you should take necessary action to distribute the birds evenly.
- **R**est **R**outine **H**ygiene - maybe everyone is aware of this principle, but I want to emphasise it again here. These issues are very important in good management of BPS. To reduce floor eggs, the routine is especially important. This means nests open at the same time every day, lights on at the same time, water supply open at the same time, feeding at the same time, egg collection at the same time, and so forth. If there is no routine the birds will get stressed, which will have a negative effect on production and will also increase the number of floor eggs.

Nest characteristics

The nest itself is also an important factor in the prevention of floor eggs. The principle is very simple - the nest should be the most comfortable, the safest and the most easy to reach place for the hen to lay her egg.

Comfort

- All the manual nests (not just half) should have enough dry, clean litter – at least 7cm.
- There should be no draughts in the nest. In moderate climates we sometimes see that cold incoming air directly hits the nest, causing draughts. But also in the tropics in open houses early in the morning when the birds are in the nest outside temperatures can be below 15°C, causing draughts.
- Not too warm - certainly in tropical areas there must be ventilation openings in the nest, allowing hot air to escape. Understand that if it is hot in the house, the temperature in a laying nest with a bird in it is even higher.
- A nest should give the hen an easy sitting position, this means chest support.
- A nest must be big enough for a BPS hen, for an individual nest this means around a height of 35cm, width of 30cm and length of 35cm.

Safe and secure

- The bird should have the possibility of inspecting the nest before she enters, so there should be a perch or a slatted floor in front of the nest.
- When the bird is in the nest she should feel safe, this means that the nest should be rather deep (manual nests) or should have plastic flaps where she can hide. There should not be too much light in the nest, but if she wants, the bird should have the option to look outside
- A good nest should have a sloped roof and/or a device (roller bar) to avoid other birds from sitting on top of the nest. This prevents contamination but as well, birds sitting on top of a nest frighten other birds and they avoid entering the nest.

Easy to reach

- This means that nests should be equally distributed over the house area, so that the distance to a nest is never more than 10m.
- The height for the birds to jump into the nest or on the slats should not be more than 40cm. If it is higher, make two steps.
- There should not be obstacles to the nest, like drinker lines, feeder lines, cocks or other hens that block the way. If possible winch up the feeding system after feeding time. Also electric anti-roost wires on feeders and drinkers can increase the number of floor eggs.
- If there is a slatted area it should be possible to reach the nest directly from there.

Climate

Both too high temperatures (heat stress) and too low temperatures can increase the number of floor eggs. The ideal temperature is 18-22°C. If temperatures are too high (above 28°C) birds do not like to go into the nest where it is even warmer. If temperatures are too low (below 15°C) birds huddling together in groups, making it difficult or impossible for birds that are in the middle of the group to go to the nest. It is also important that the temperature throughout the house is even. If there are temperature variations in the house, the birds will move to the most preferred area. This increases the density in that area of the house. Thus the number of nests in that area is not enough for the number of birds in that area, resulting in floor eggs.

Try to prevent sunlight from entering the house since this can make the birds move to that side. Perhaps install, for example, wire mesh to separate the length. Birds evenly distributed over the whole house area is ideal.

Draughts in the nest should be prevented, especially in moderate climates. In winter there is a big risk for draughts, but even in tropical areas sometimes in the morning temperatures can be low (below 15°C) and then there is risk of draughts. In every BPS house there should at least be a maximum/minimum thermometer and the temperatures should be recorded daily. Draughts can be made visible with smoke powder or a smoke generator.

Bird health

It is obvious that diseases that make the birds feel weak, like IB, will increase the number of floor eggs. Birds are too weak to jump onto the slats or into the nest Also if there are many hens with leg problems, the number of floor eggs will increase. A manager should be extra alert if there is a drop in production together with an increase in floor eggs - often a sign of a disease in the flock.

Conclusion

There are many things you can do to reduce floor eggs. As long as your floor eggs are not below 2% you should should try to find the reasons and take necessary actions. Under optimal circumstances it is possible to have less than 1% floor eggs. Normally it is not enough to change just one thing in the poultry house to solve the problem. The more suggestions you apply, the lower your number of floor eggs. Try it, it will pay off. ■

If there are readers who have other information that could help to reduce the number of floor eggs, please email me. I will collect all the tips and send them to everyone who responded. Also with questions or remarks you can email the author at: J.Hulzebosch@ptcplus.com