

Layer diseases (more) related to alternative housing systems.

DR. BART STOKVIS
Hendrix Genetics

Introduction

Around 1960, the poultry industry developed a new housing system for laying hens, called cage system. Farmers were able to manage larger number of birds, collect more table eggs and earn more money.



The advantages of this system were obvious. More birds per square meter, clean eggs, easy to collect, the birds had no contact with their own manure and had easy access to feed and water.

A very efficient housing system! And a sustainable system as well.

Today, sustainability is a hot item, but animal welfare seems to be more important, even more important than the wellbeing of the farmer.

In the European Union (EU), 50% of the laying hens still is housed on enriched cages, 28% on floor system, 16% in free range and 5% as organic birds. Traditional cages are banned in the EU.

In Spain, 82% is housed on enriched cages, if I am informed well.

In The Netherlands, only 16% is housed on enriched cages and the pressure is high to implement a total ban on cages, including the enriched ones and the colony/ family cages.

The Dutch farmers were early in the transition from cage to alternative, driven by market circumstances (price). Only the early adaptors made good money with this change and had a good return on investment.

The Dutch paid some learning money as well. The first aviary systems were far from perfect, resulting in poor technical results.

Is it wise to change from cage to alternative housing systems?

Do we have a choice?

Can we manage? Yes we can!

Every time again, I am surprised by the resourcefulness and flexibility of our farmers. It took them about 5 years, but nowadays, technical results on Aviary systems are comparable with the results on cages.

Our next challenge is the ban on beak treatment, resulting in more injurious pecking, selective eating, spoiling of feed and problems with drinking from nipples drinkers.

Layer diseases more related to alternative housing systems? What does this mean?

Non cage = floor. Floor = litter and litter means bacteria's, worms, coccidiosis, dust and ammonia.

Diseases and outdoor farming (free range)? What does this mean?

Increased risk for Avian influenza infections (low pathogenic), *Salmonella* contaminations, Botulism and Dioxin residues.

Also in the broiler business, animal welfare becomes an issue. Concept farming/ animal welfare (longer life) farming of broilers, indoors, faces the farmers with new challenges.

Because of the fact that broilers are slaughtered at older age and are kept in lower flock densities, known diseases, like Marek's disease, Gumboro disease, coccidiosis and Infectious bronchitis show different dynamics.

In this paper, I will concentrate on layer management and layer related diseases in alternative housing systems.

What is disease?

Disease is production below standard. Disease is, in my opinion, 90% management and feed related.

Disease is

- Mortality
- Diarrhea
- Leg weakness
- Pecking/ Cannibalism

Disease is

- Drop in feed intake
- Drop in egg production
- Drop in egg weight
- Drop in bodyweight

Disease is

- Losing feather cover
- Gaining bodyweight (fat)
- Egg quality problems
- Dirty eggs
- Floor eggs
- Weak egg shells
- Misshapened/ misformed eggs

Talking about alternative housing systems, the goals are clear; birds must eat and drink to be able to produce eggs and farmers want to collect the eggs from the nests, not from the floor.

To achieve this, the system must have:

- Water in front of the nests
- No water on top of the system, only feed
- The possibility to (partly) close the system underneath
- Light under the system, at feed and water level and above the aisles
- Go to sleep lights
- Supply of alpha and stones
- Weighing equipment

Most important in management of birds in aviary systems is to take time to watch the birds behavior and adjust your management according to what you see.

Poultry Diseases?

NDV, IBV, IBDV, ILT, TRT

HPAI, LPAI

AE, PD, CAV, REO, EDS

Marek's disease

E coli, Coryza, Fowl cholera, Botulism, Erysipelas, *Salmonella*

Red mites

Dysbacteriosis, Brachyspira

Worms, coccidiosis, blackhead

Cage free poultry diseases:

Avian influenza!

E coli/ egg peritonitis

Dysbacteriosis/ Brachyspira

Parasites (worms, coccidia, red mites, histomonas)

Botulism, Erysipelas, Pasteurella

Avian influenza is the first and most important disease to think about when you change from cage to floor.

Why? Because AI is spread via contaminated manure. One gram of faeces can infect a whole house, because the birds are in direct contact with their manure.

Floor housing systems, per definition, require changing of boots when you enter a house.

Avian influenza is spread by wild birds. When you bring the droppings of these wild birds into the poultry house, attached to your boots, the damage is done. Think also about free in and out walking dogs and cats.

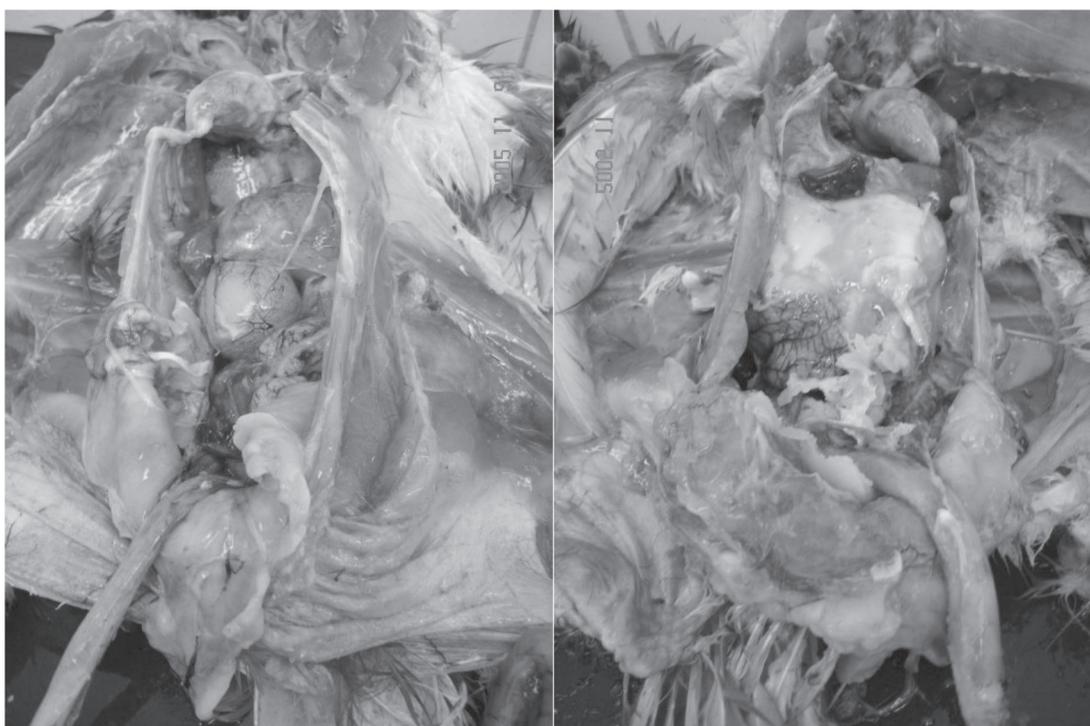


With cage systems, birds do not have contact with the floor, so changing of boots is less critical.

Some years ago, wild birds were infected with low pathogenic avian influenza (LPAI), this LPAI was brought into a commercial poultry house and disaster happened when this LPAI mutated to high pathogenic avian influenza (HPAI).

Nowadays, wild birds are infected with HPAI themselves. Thus, commercial poultry can be infected with HPAI directly by outside-contaminated boots.

E coli mortality in layers. Or egg yolk peritonitis?



In layers we see two main types of mortality which involve peritonitis with deposits of fibrin, namely egg yolk peritonitis and e coli peritonitis.

With both types you find dead birds with a pale comb with bleu points. When you culture from these dead birds from liver and spleen, you always find e coli. That is the reason why often these two different types are both diagnosed as E coli mortality. You should not take samples from liver or spleen. You should culture from bone marrow to find out whether the reason of the mortality is E coli or not.

There are more differences. Birds with egg yolk peritonitis most times are not dying acute. The peritonitis is sterile and not complicated by bacterial infection. The birds die because they stop eating and drinking. These birds can be recognized in the flock. They look sick. On post mortem, these birds are dehydrated and you find pericarditis, peri-hepatitis and peritonitis with a lot of debris, which can be recognized as solid egg yolk.

E coli peritonitis is (per)acute mortality. The flock looks healthy and is performing well. You don't see any sick birds. The only problem is increased mortality. When you open these birds, it can be quite difficult to see the pathological signs.

The follicles are always hyperemic; sometimes this is the only visible pathological sign. Sometimes only traces of fibrin are seen between the follicles, sometimes fibrin is present all over the abdomen, but the birds seem to die before pericarditis and peri-hepatitis is formed.

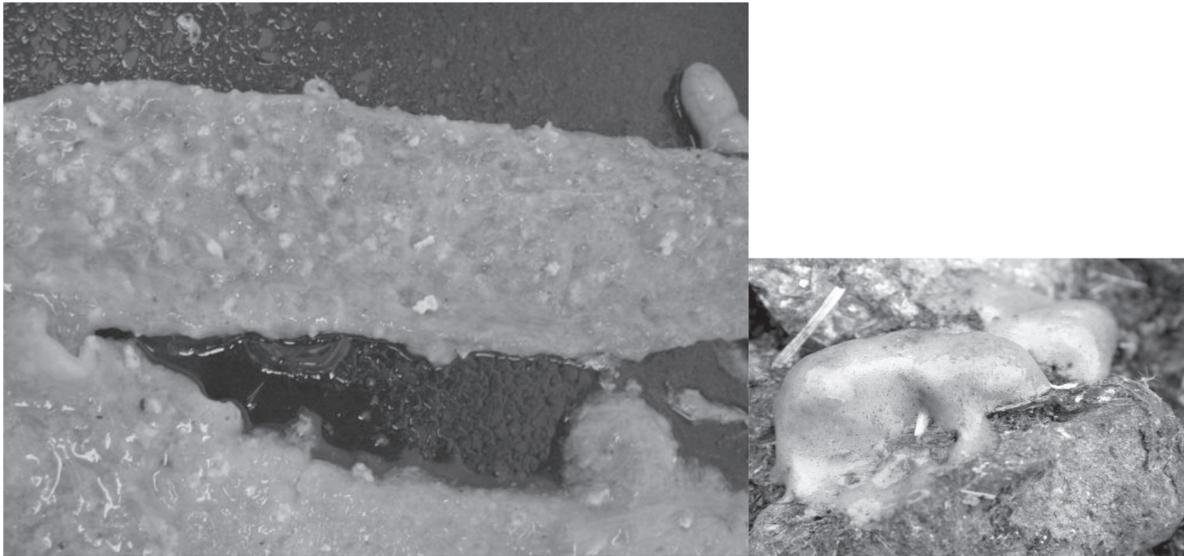
An important difference between egg yolk peritonitis and e coli peritonitis is the smell when opening the fresh dead bird. Egg yolk peritonitis birds smell like boiled egg. E coli peritonitis birds have a very bad, rotten smell.

Dysbacteriosis/ Brachyspira

Dysbacteriosis/ acute enteritis can be a problem in layers after transfer to the layer house, around start of production.

Clinical symptoms are decreased feed intake, wet droppings, delayed start of lay/ decreased egg production and losing of feathers (neck molting).

Diagnose can be made "a vue" (clinically) or by post mortem on 5 randomly selected live birds. On post mortem, the wall of the duodenum is thickened with areas of necrosis, there is watery content in the small intestines and light brown, yellowish, sometimes foamy content in the blind gut.



If this acute enteritis is not corrected, it can change to chronic enteritis, which results in an increased feed intake and too low egg (mass) production.

Brachyspira infections can cause similar clinical signs, at all ages. Diagnose is easy in fresh dead birds, using a microscope to find the fast moving spirochetes in a native abklatsch preparat.

Parasites

Coccidiosis prevention is necessary for layers on alternative systems. This can be done by vaccination, controlled exposure during rearing or by the use of anti-coccidial drugs during rearing.

Worms must be treated if present. Regular monitoring is advised.

Red mites are more harmful than recognized and not only a problem in alternative systems, although these systems offer them more places to hide during the day.



Histomoniasis in layers is often missed. The disease is well known in turkeys, but can also effect broiler breeder and layer (breeder) flocks. Clinical signs start around the start of production and last until 30-35 weeks of age, sometimes longer.

Typical typhlitis is seen on post mortem, sometimes combined with typical liver lesions (small islands).

The route of infection is not clear. Is it Heterakis? Snails or earth worms? There seems to be a relation with a surplus of water around the poultry barn. Can you prevent snails entering the barn with salt? Can you remove histomonas from an infected house? What's the reason why histomonas (sometimes/ often?) gives problems on farms with good biosecurity? A lot is still unknown.



Botulism is caused by toxin producing clostridium botulinum bacteria's. Clinical symptoms are mortality, lameness and weight loss. Source is often not found, but wet litter and dead birds must be removed as often as possible.

Very typical, lameness of the neck; the neck is hanging down, when you place (live!) birds on a shelf.



Erysipelas (red disease) is caused by *Erysipelas rhusiopathiae*. Clinical signs are mortality, lethargic birds and diarrhea. I have seen a couple of cases with unilateral swollen heads. Post mortem is typical for a (bacterial) sepsis; swollen liver, swollen spleen and bleedings in fat tissue. Sources of infection can be Soil/water, dead animals, rodents/wild birds, red mites? and pigs.

Antibiotic treatment only has a temporary effect.

Preventive measure is the vaccination of the next 3-5 replacement flocks.
Erysipelas is a zoonosis!

Pasteurella multocida (fowl cholera) most times occur in less optimal management/ housing/ biosecurity situations.

Bart Stokvis DVM
Hendrix Genetics Layers