

Aspergillus on the breeder farm

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This is the first of three articles on aspergillus within the poultry operation. Further issues will concentrate on the hatchery and the broiler farm.

Aspergillus is a ubiquitous mould found in all poultry farms and hatcheries throughout the world. The spores are responsible for the disease 'aspergillosis' with mortality of up to 30% in worst cases in young chicks.

The spores require warmth and humidity for growth into a mould and a warm dry environment for the mould to sporulate (produce spores of its own). The mould will grow on most organic substances, for example damp litter, feed, straw, egg contents, damp paper or cardboard and dusty surfaces.

These conditions are prevalent in most poultry farms and hatcheries. A wet/dry cycle is ideal. The spores will be carried on air currents and in dust. The entire growth cycle spore –mould-produce more spores can be 3-5 days depending on conditions. Spores can be carried on the wind across continents.

No farm or hatchery will be free of aspergillus and it can never be totally eradicated but the problem can be controlled by efficient management of hygiene and treatment with a specific product formulated to control moulds and spores.

The first link in the chain?

The breeder farm is the main cause of infection of the hatchery by aspergillus which may then continue onto the broiler farm unless strict hygiene, correct egg handling, grading, litter management and feed rotation is maintained at this point.

Where does the contamination come from?

- Aspergillus spores can enter the farm with the chicks from the breeder hatchery.
- They can arrive in the litter, especially if it is allowed to become damp.

- The ventilation on the farm can draw in spores from the surrounding area.

- Stale or damp feed can also carry spores onto the farm.

● Ventilation.

Ideally there would be a system of filtered air coming into the breeder house, in most buildings this is unlikely, so control of the spores after arrival on the farm is the only compromise. Fogging the building with a safe anti-fungal solution with birds in situ can be recommended if infection is suspected.

● Litter.

This should be kept as dry as possible, leaking waterers should be repaired immediately. Any areas of wet compacted litter around these should be dug over to enable the area to dry.

● Feed.

Any feed in bags should be rotated so that older feed is used first and not allowed to become damp. Bulk feeders should be cleaned and washed thoroughly between flocks. Always ensure when a new feed delivery arrives, old feed is not lodged in any areas of the bulk bin that may be bypassed by the new delivery. Bulk bins can suffer from condensation – they get hot during the day and cool at night, causing dampness which may cause feed to stick to the bin surface and grow moulds. Often chick starter crumbs

Nestbox hygiene.



Litter management.

may be left over on the change to a grower ration and these may be stored on the farm to be used for the next batch of birds. If this feed becomes damp, mould growth will occur with the production of aflatoxins.

● Nest boxes

These should be cleaned regularly and nest material replaced with clean material. If straw is used it must be clean and dry. Ideally spray the interiors of the boxes with an anti-mould treatment regularly. Eggs laid in a nestbox cool rapidly and

during cooling will contract and draw in mould spores and any bacteria in the nestbox. Auto nests are much easier to keep clean and are rarely the cause of infection. So, the cleaner the nestbox, the less mould and bacterial contamination of the egg.

● Floor/dirty eggs.

In an ideal world these would not be sent to the hatchery. Often economic considerations mean that these have to be used. Always separate these so that the hatchery can treat them differently to the clean eggs. They will never hatch as well as clean eggs and can increase the contamination of adjacent good eggs.

● Egg grading.

Eggs sent to the hatchery should be properly graded. Haircracks, porous shells, chalky shells, must be discarded. An aspergillus spore can easily penetrate the shells on these eggs which will inevitably mean the growth of aspergillus mould in the air cells, which will then contaminate the chicks in the hatchery incubators.

● Storage on the farm.

Farm egg stores are not normally as efficient as those in hatcheries. On the farm try to ensure dust is kept to a minimum in the egg store.

Ensure humidifiers and chillers, if fit-

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ted, do not leak on the eggs or spray water directly onto eggs. A wet egg is more easily penetrated by aspergillus spores and bacteria. Eggs in the store may be treated with an anti-fungal using a fogging machine. Often you will see an increase in pseudomonas at the same time as an increase in aspergillus in the hatchery. This will often be associated with wetting eggs during cooling.

● **Egg washing.**

This should only be done when necessary and only using proper machines at correct temperatures and detergent/disinfectant mixes. Strictly follow the manufacturer's recommendations. Always remember the washing solution must be a higher temperature than the egg, normally 43-48°C. Never wash eggs using a wet cloth!

● **Fumigation.**

Potassium/formaldehyde may be used as a gas to reduce bacterial contamination. Unfortunately formaldehyde has little effect on aspergillus spores. An anti-fungal smoke canister may be used at this time to reduce the numbers of spores on the egg and spores which have managed to enter the pores of the egg shell.

● **Egg handling and loading onto collection vehicles.**

Eggs should always be handled gen-



Feed storage.

tly, causing as little vibration and shaking as possible. When loading trucks ensure that the eggs on their trolleys or in boxes are not handled roughly, as haircracks can result, which may not be noticed in the hatchery.

Egg truck drivers should also be very careful driving on bad roads and should drive slowly, avoiding potholes. The collection truck may be used as a fumigation chamber to treat eggs with anti-fungal smoke containing Enilconazole on leaving

the farm, prior to delivery to the hatchery.

● **Disinfection at end of flock.**

After depletion of the flock and the litter has been removed the poultry shed should be thoroughly washed and disinfected including all equipment, feeders and waterers.

The house should then be thoroughly fogged using an anti-fungal product. Ensure that the product coats all surfaces. Treat bulk bins with anti-fungal smoke canisters after thorough washing. Nest boxes

in particular should be heavily disinfected after washing with anti-fungal in a coarse spray.

Remember the breeder flock is the first link in a chain leading to the hatchery then the broiler farm. Breaking the aspergillus cycle here can have a major effect on profitability throughout the company.

An outbreak of aspergillosis on the breeder farm itself, will cause huge losses to the farm but these losses may continue through the egg chain via the hatchery and broiler farms.

Summary

Hatcheries should have a procedure to randomly check the quality of eggs coming from the breeder farms. Most hatcheries these days receive eggs on setter trays directly from the breeder farm. Whilst this is a major saving on handling it means that all egg quality control is on the farm and targets for hatching egg production normally do not take into consideration hatchability and chick quality.

Many of the broad spectrum disinfectants used on farms are not effective against aspergillus so always use a specific product targeted at mould reduction containing Enilconazole to ensure that your breeder farm is not the catalyst for a major cross company infection. ■