

# THE IMPACT OF POSITIVE MICROBES IN YOUR HEN HOUSE

By Alison Leary - Lallemand Animal Nutrition

For Egg Farmers of Australia



LALLEMAND ANIMAL NUTRITION

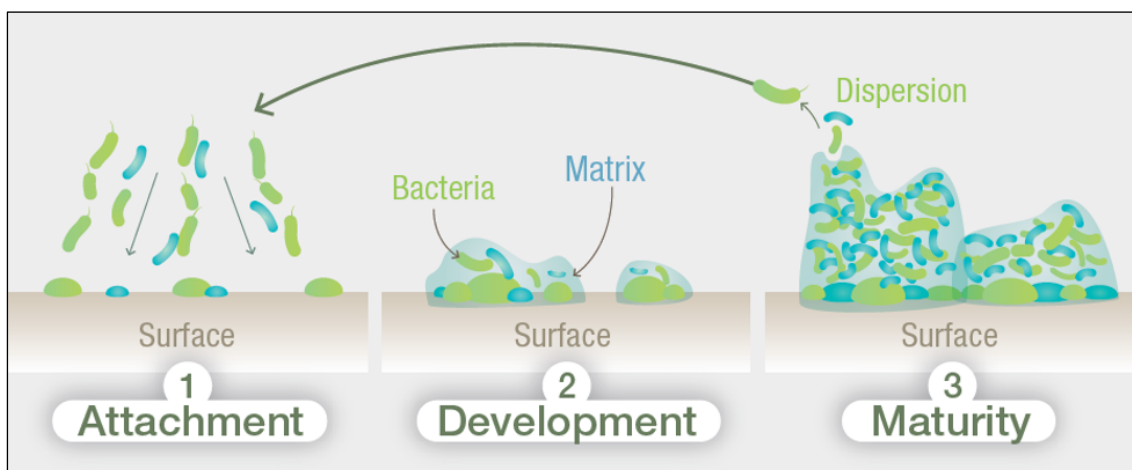
*Most of us might think microbes are nasty bugs. But have you heard of positive 'biofilms'? Alison Leary from Lallemand Animal Nutrition looks at how some biofilms can have a positive impact in poultry housing.*

## Microbes are everywhere!

A great deal of work has been done in the past decade on the microbes living within the digestive system of birds and how they affect gut health, but there are also microbes in the environment the birds live in and we know they interact and affect the gut microbes and birds health.

In farm buildings, all surfaces — floors, walls, ceilings and equipment — are colonized by microbes mainly in the form of biofilms. Biofilms are a community of microbes that produce their own protective matrix (**see figure 1**).

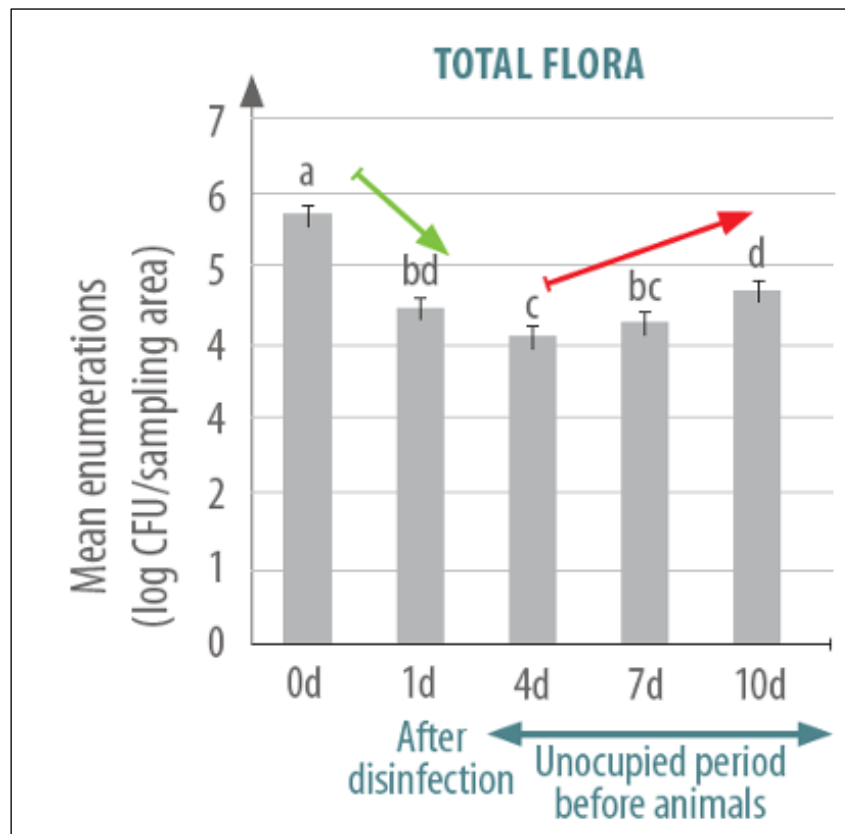
This matrix protects the microbes from hazards in their environment, including disinfectants and antibiotics. Biofilms can be harmless, positive or even negative for the animals, if they contain pathogens.



**Figure 1:** Development of biofilms.

Before a new batch of animals enters the building, cleaning and disinfection are necessary. However, the surfaces do not remain sterile (**figure 2**).

Microorganisms carried over from the animal environment (air, dust, litter, housing equipment, etc.), and from the new animals themselves, quickly start recolonizing the surfaces, forming new biofilms. These microorganisms can be undesirable bacteria or potential pathogens.



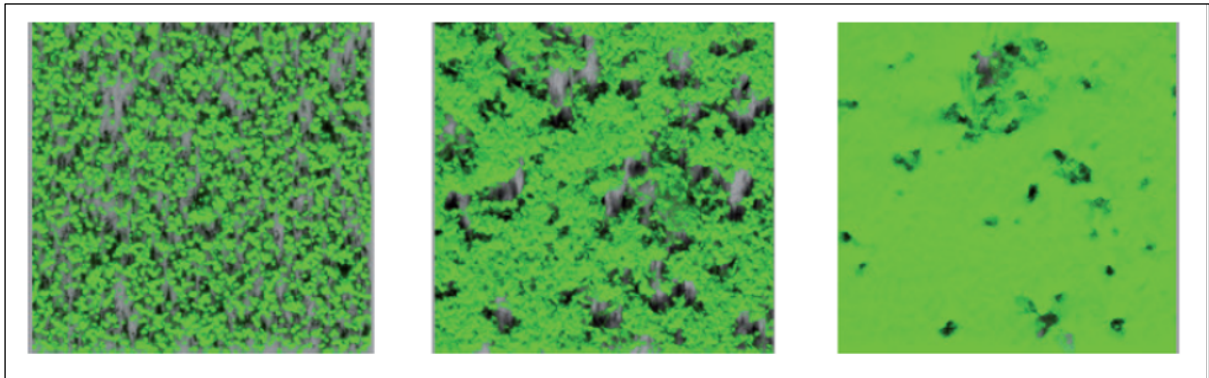
**Figure 2:** Mean number of aerobic bacteria in the animal environment (floors, walls, feeders and drinkers) following disinfection.

**The idea:** To apply beneficial bacteria onto the building surfaces and equipment immediately after cleaning and disinfection and allow them to grow into a positive bacteria biofilm inside the building - this will leave less room for the development of negative biofilm or colonisation of pathogenic bacteria.

To be effective the bacteria in a positive biofilm have to be:

- Able to form a biofilm
- Rapidly occupy the environment it is applied to

The positive biofilm formed by the selected bacteria rapidly takes up the empty space on farm surfaces: *in vitro* testing shows 90% of surface coverage within 12 hours (Figure 3), leaving less room for undesirable bacteria.



**Figure 3:** Colonisation by a positive biofilm after 0 hours, 6 hours and 24 hours.

**Conclusion:** Farm biosecurity measures — include cleaning, disinfection and application of sanitary breaks — impacts the level of infection pressure before new animals enter the shed. Integrating a positive biofilm approach can be an effective tool to complement these measures.

It helps install a positive microbial environment after the disinfection step and during the batch.

This has been shown in commercial farm settings to improve the animal's microbial environment with positive impact on animal health. As a result, production performance is improved.

In addition, *in vitro* data show that the positive biofilm approach can help to avoid the re-colonization of undesirable bacteria commonly found in farm environment.

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