Application of probiotics for high-producing laying hens

When probiotics are discussed in general literature, much of the work has focused on applications in broilers. This is not very surprising, as setting up trials in animals with a short production cycle can be done quite cost-efficiently.

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Simultaneously, it is straightforward to understand why supporting the gut health of rapidly growing animals is important, as their digestive system is running overtime and thus needs all the support it can get.

Coupled with specific uses of certain probiotics, such as Clostridium perfringens mitigation by certain strains of Bacillus licheniformis, the value proposition of probiotics in broilers is quite clear.

Unfortunately the focus on developing feed additives for broilers has also translated in a limited number of options for producers of other types of poultry. In Europe for example, there are only a handful of probiotics registered for use in laying hens during egg production.

However, the application of probiotics in layers should not be neglected: high-producing laying hens also need to be as efficient as possible, which includes utilising their diet to the fullest whilst withstanding health challenges.

The value of probiotic supplementation in laying hens

From that perspective the importance of a proper functioning gastrointestinal tract cannot be neglected, indicating the value a probiotic supplementation can bring in a layer operation.

One of the more recent additions to EU-registered layer probiotics is B-Act, a probiotic based on a single strain of spore-forming Bacillus licheniformis. The probiotic already has a long and extensive history in animal production, supporting high-performing animals during all stages of production. Recent research has now showed the unique B. licheniformis strain's benefits in layers, resulting in a zootechnical feed additive registration in the EU.

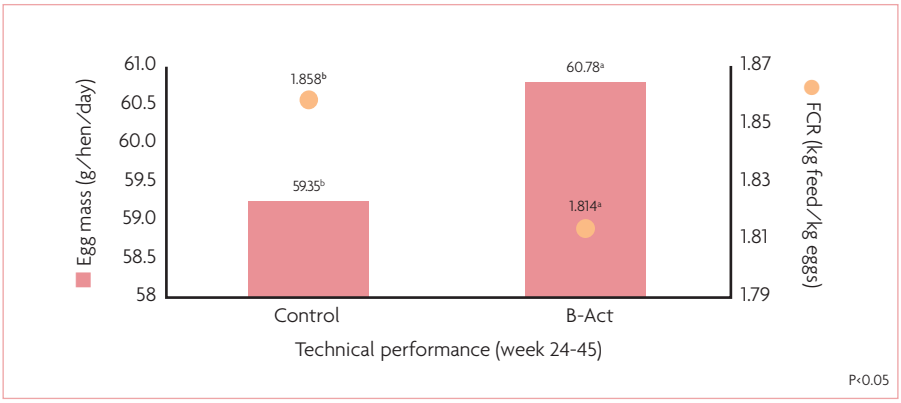

Fig. 1. Technical performance during week 25-45 of the control and B-Act group. Different superscripts indicate statistical significant differences (P<0.05).

The probiotic's mode of action is based on the principle of competitive exclusion, including outcompeting undesirable bacteria in terms of nutrients and space, as well as producing potent antimicrobial metabolites with a strong affinity for undesirable bacteria such as Clostridium perfringens.

As a result, the composition and balance of the gut microbiota is positively impacted, whilst gut integrity is maintained. By incorporating B-Act in the diet from start to finish, it is possible to mitigate gut health challenges during production.

As a result, the animals' gut health is supported which translates to an improved feed utilisation, thereby reducing secondary issues such as wet litter and dirty eggs.

The above has been confirmed in recent work by Ceylan et al. (2022). Lohmann Brown layers were supplemented with B-Act between 25 and 45 weeks of age and compared to a control fed a standard commercial diet. Per pen the body weights, feed conversion ratios, egg masses and the ratios of cracked and dirty eggs were recorded.

Additional egg quality parameters were evaluated in four-week intervals for each pen using four representative eggs, looking at shell weight, shell thickness and shell breaking strength.

Protein levels in the dry manure were recorded at the start and at the end of the experiment as well, as an indication of how well the animal was using the supplemented diets.

Adding B-Act to the diet of these high-performing layers significantly improved FCR and egg mass (Fig. 1. P<0.05) as well as shell percentages.

The improvements in the latter parameter could offer an explanation why almost all other eggshell qualities improved numerically as well for the probiotic group (lower percentage cracked/dirty eggs and higher shell breaking strength).

At the same time, significantly less protein was excreted in the dry manure by the B-Act group compared to the control. This can be interpreted as a better functioning of the gastrointestinal tract, thus utilising the provided nutrients from the diet as much as possible, in turn leading to the improved FCR and egg parameters.

Conclusion

From the peer-reviewed research it is clear that B-Act has a place in layer nutrition, as these high-performing animals should be supported from start to finish.

With an attractive return on investment and the supporting research about its benefits in layers, B-Act offers an interesting solution to do so – combining economics with health standards in the most rewarding way. ■