

Robust and healthy chick production starts with the breeder hen

Producing robust and healthy chicks is largely dependent on ensuring optimal health and performance of the parent stock. Whilst there is some evidence to suggest the caeca of the embryonic chick can be colonised by bacteria from the breeder hen, the gastrointestinal tract of a newly-hatched chick is generally considered sterile. Therefore, ensuring that this seeding microbiome is both balanced and contains beneficial bacteria is important for the chick, and this largely depends on the gut health of the breeder hen.

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Managing gut health

The gut is the largest immune organ in the body, with approximately 70% of immune cells residing in the gut. Gut health is crucial in supporting the performance and development of the chick, with intestinal bacteria playing an important role in nutrient digestion and absorption, pathogen control and vitamin production.

Early life performance in broilers, especially in the first four days, is one of the biggest deciding factors on crop efficiency and profitability.

In order to support the development of a diverse and well-balanced gut microbiome in a newly-hatched chick, it is important that the breeder hen has optimal gut health, defined as a state of eubiosis.

The most common infections in breeder hens can usually be mitigated through the implementation of strict biosecurity programmes and good hygiene practices. However, salmonella, particularly *S. enteritidis* (SE), remains a serious problem in poultry flocks and for all breeding stock, as well as concerns regarding human safety associated with contaminated poultry products.

The main benefits of achieving gut eubiosis in the breeder hen is that it supports gut health and can help lower the risk of unnecessary inflammation. The proliferation of beneficial bacteria, such as lactobacillus, also assists in efficiency of natural digestive processes and helps to support endogenous

enzyme activity through maintenance of the pH gradient. A system which favours the development of beneficial bacteria can help manage potentially harmful bacteria within the bird, such as salmonella, and consequently helps reduce faecal shedding into the environment.

This can help to minimise risk to the developing chick due to bacterial penetration through the egg shell and egg membranes. SE is also unique in that if it passes through the gut barrier of the breeder hen, it can result in infection of the ovaries and subsequent infection of the developing embryo. Therefore, managing gut health of the breeder hen is essential in the production of quality, healthy chicks.

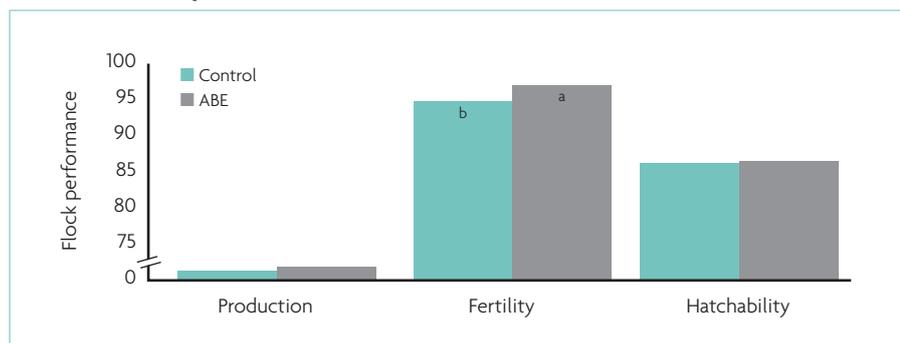
Acid Based Eubiotics (ABEs) can offer extensive benefits to the breeder flock and gut health, which in turn benefits their progeny. ABEs formulated from a synergistic blend of acids are some of the most effective.

Formic acid is the only organic acid to have been classified as a feed bacterial decontaminating agent in the EU, including but not limited to salmonella spp. When blended with propionic acid, it demonstrates a synergistic action, whereby the benefits seen on breeder hen gut health when using formic acid alone are further enhanced.

A study was undertaken at the University of São Paulo in Brazil to determine the effect of supplementing broiler breeder diets with an ABE (Salkil, Anpario). Heavy

Continued on page 13

Fig. 1. Performance of 45 week old broiler breeders fed either a control or ABE supplemented diet. Differing letters denote significant difference at $p < 0.05$ (University of São Paulo, 2014).



Continued from page 11

Cobb 500 broiler breeders were randomly allocated to one of two treatments at 25 weeks of age; control diet (control); and control diet with ABE (Salkil, Anpario) at 2kg/t of feed.

Results

The diets were fed from 25-45 weeks of age. At 45 weeks birds were inseminated and eggs were collected and incubated to evaluate egg quality, fertility and hatchability. A further study was then run to investigate any benefits on the progeny in which 120 chicks from each treatment group were reared as commercial broilers from 1 day old until 42 days of age and fed the same corn-soy ration with no ABE included. Feed intake, weight gain and feed conversion ratio (FCR) were measured.

The inclusion of the ABE in breeder hen diets significantly increased fertility which led to a higher number of chicks per hen (Fig. 1). When considering the performance of the broilers, the progeny had optimised performance with a higher weight gain (Fig. 2) and a 6-point improvement in average FCR (Fig. 3) compared to chicks from breeders fed the control diet.

The use of an ABE in broiler breeder diets can support biosecurity programmes as well as helping to support breeding performance

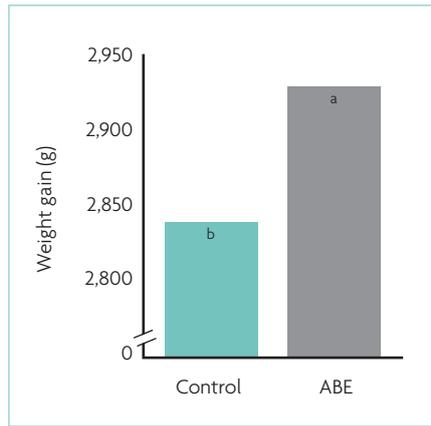


Fig. 2. Average weight gain of progeny from parent stock fed either a control or ABE supplemented diet. Differing letters denote significant difference at $p < 0.05$ (University of São Paulo, 2014).

and chick quality by reducing the pathogen challenge. Salkil, which is manufactured by Anpario, has demonstrated benefits on parent stock and progeny performance, which improved the number of chicks hatched and the profitability of the broiler crop. Salkil is a market leading ABE, developed over 30 years ago to help improve feed biosecurity programmes and is trusted by producers worldwide. It has been designed to help control the levels of

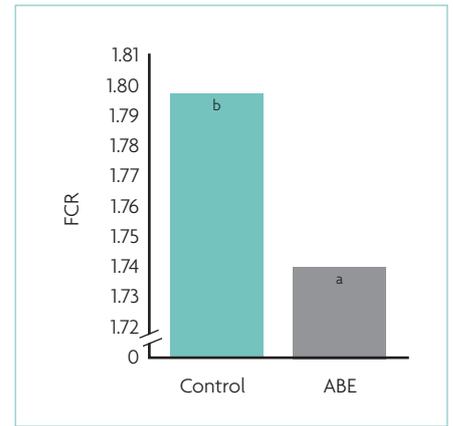


Fig. 3. Average FCR of progeny from parent stock fed either a control or ABE supplemented diet. Differing letters denote significant difference at $p < 0.05$ (University of São Paulo, 2014).

potentially harmful bacteria that may be present in feed or raw materials.

This reduces the risk of infection to the breeder hen from the environment and therefore ultimately reduces the risk of salmonella contamination in the egg, helping to improve overall chick quality and lifetime performance. ■

References are available from the author on request