# Acid based eubiotics can improve breeder and progeny performance

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 production for all breeding stock.

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Salmonella colonisation of the gastrointestinal tract of breeder hens, particularly with SE, can have a detrimental impact on egg production and quality. SE can also result in internal contamination from the gut to the reproductive tract of the breeder hen. This bacterial transfer to the hens' reproductive tract can in turn lead to contamination of the yolk and albumen within the oviduct, resulting in the presence of SE within the developing egg.

In addition to yolk contamination within the reproductive tract, the gastrointestinal tract of a newly-hatched chick may also be colonised by bacteria from the breeder hen. Therefore, ensuring that this seeding microbiome is both balanced and contains beneficial bacteria is of vital importance, as this can have an impact on lifetime performance of the progeny. 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 main benefits of achieving gut eubiosis is that it promotes gut health and can help lower the risk of unnecessary inflammation. The gut is residence to around 70% of the bird's immune cells and so has a profound impact on general health and energy use.

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 helps to reduce the risk of transfer to the yolk or egg shell, and possible transfer to the developing egg and newly-hatched chick. Eubiosis also promotes optimum absorption of nutrients, leading to improved breeder hen performance.

Acid based eubiotics (ABEs) can offer extensive benefits to breeder flock health and performance. 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 conducted by Anpario, in conjunction with the University of São Paulo in Brazil, to determine the effect of supplementing broiler breeder diets with an ABE on egg quality, fertility and hatchability of fertile eggs. Heavy 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. 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 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 an improved average FCR by six points (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 and chick quality through 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 30 years ago to help improve feed biosecurity programmes and is trusted by producers worldwide. Salkil is designed to help control the levels of 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

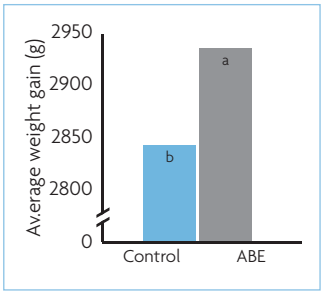


**Fig. 2. Average weight gain of progeny from parent stock fed either a control or ABE supplemented diet. Differing letters denote significant difference at p<0.05 (University of São Paulo, 2014).**

**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).**

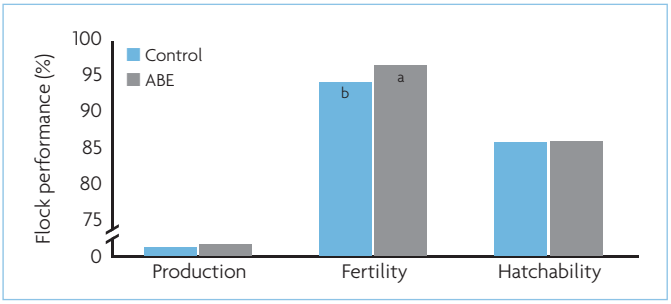


**Fig. 3. Average FCR of progeny from parent stock fed either a control or ABE supplemented diet. Differing letters denote significant difference at p<0.05 (University of São Paulo, 2014).**