Feeding for performance with the use of sustainable technologies

The digitalisation of agriculture has exploded in the past 20 years, offering new perspectives to what is called 'precision agriculture'. It is now possible to monitor an incredible number of parameters, most of the time in real-time, either on the inputs (raw materials), the animals, the atmosphere, the effluents, and of course, the performance.

by The Technical Team, Olmix.
www.olmix.com

These innovations come along with different constraints that producers face. This includes the increasing pressure to reduce the environmental impact of animal farming, combined with a huge volatility in raw material prices and availability.

This situation is a serious threat to the industry, since feed is the main cost contributor in animal production.

The tight market generates problems of availability, quality and pricing of raw materials.

Feed producers then struggle to maintain a good quality production with a minimal impact on feed cost and farmers must further cope with the unavoidable increase in feed price.

Different strategies can be implemented to limit the consequences of the volatility on feed cost and quality while keeping a good performance.

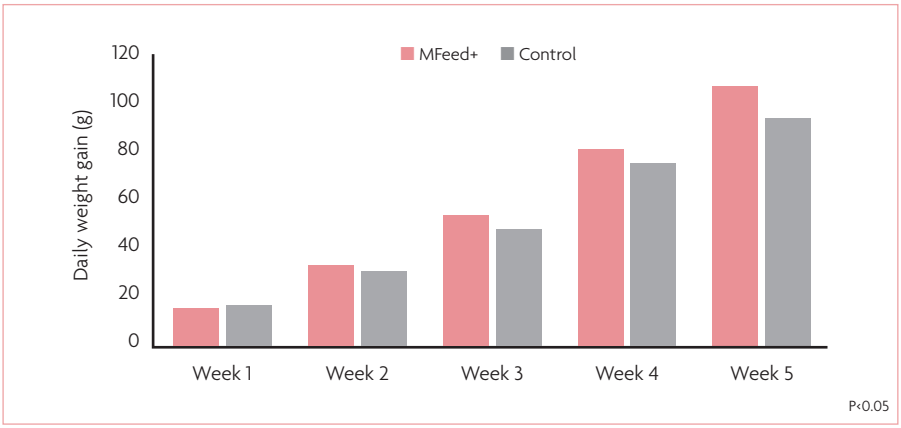
The use of alternative ingredients is common. Local by-products, human or pet food waste products are often more affordable and therefore more attractive. Meanwhile, when the surge in price lasts, such by-products also suffer from a sudden high market demand and are subjected to high volatility.

The use of older grain may also be an option, with special care needed on the quality, both from the nutritional point of view and the mycotoxin risk.

Formulating for optimum performance, adjusting the energy and amino acids levels to work on the cost to performance ratio rather than targeting maximum growth is also possible.

In the end, whether it comes from the use of feedstuffs with lower digestibility, reduced levels of energy or amino acids in the feed, or bias in the evaluation of the nutritional value of new feedstuffs, alternative strategies all have downsides that challenge feed efficiency.

Fig. 1. Average daily gain by group, with the increase in this gain becoming more evident from three weeks of age.



Maintaining animal performance

Maintaining animal performance and farm productivity in this context is difficult. The use of in-feed solutions that improve feed efficiency is pivotal. One of them, MFeed+ (Olmix, France) consists in boosting the activity of digestive enzymes in the intestine to optimise the yield of digestion of the animals and make the most of the feed.

The innovative technology behind MFeed+ combines montmorillonite clay and seaweeds in a way that is favourable for the stabilisation and activation of digestive enzymes, as well as increased contact between enzymes and nutrients in the intestine. It is thus able to support the use of all nutrients and ingredients, making it a master key for digestion and providing a

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high flexibility to nutritionists for formulating diets.

A series of studies were conducted by Dr Rostagno and Dr Albino at the University of Viçosa (Brazil) to evaluate the capacity of MFeed+ to improve the feed efficiency of broilers.

Results showed that the use of MFeed+ increased the AMEn by 56 kcal/kg (+2% compared to the control ($p<0.05$)) and the nitrogen retention by 6% (reflecting an improved use of proteins).

When testing MFeed+ in diets differing by their supplementation in exogenous enzymes, the results were consistent, showing a lower feed conversion ratio in the test group compared with the control group (2-3% decrease), as well as a higher growth rate in groups supplemented with MFeed+ compared to the control (2-4% higher ADG ($p<0.05$)), independently of the use of exogenous enzymes.

Interestingly, the highest effect of MFeed+ on performance was observed in the grower and finisher phases (21-42 days), when the highest savings need to be made since the feed efficiency of the birds decreases while the feed intake is the highest (>75% of the feed intake of broilers is made after 21 days).

This technology is also showing great results when applied in commercial conditions. For example in Mexico, where the responsibility of the nutritionist is to evaluate alternatives that help reduce manufacturing costs without affecting the quality of the ration, two different strategies have been carried out focused on solving specific objectives in different species such as pets, aquaculture, pigs and poultry.

The first of them is focused on commercial complete feed producers and integrating companies where formulation cost and feed quality are decisive for the success of the business. In this situation, it is well known that the highest costs of the diet are energy and amino acids, and therefore making the use of these nutrients more efficient is essential.

When the addition of MFeed+ is made with a matrix value for amino acids (which would correspond to 2% of the value of digestible lysine additional to that of the contribution of ingredients) and energy (between 50-75 kcal), based on the values obtained from the previously mentioned digestibility tests in poultry, the matrix strategy then offers a benefit in saving the cost of the formulation.

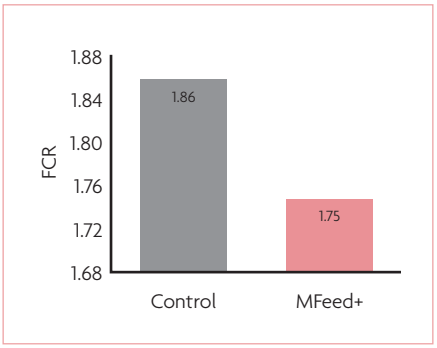

Fig. 2. Feed conversion ratio.

In practical terms, applied on the field, it can represents $US5-8 per ton of reconstituted feed, without altering the contribution of digestible nutrients and therefore not depressing the productivity of animals.

Range of improvement

In the case of on top use, improvements in the productive parameters of the animals can be observed, due to better valorisation of the nutrients that are already in the diet.

For broilers, productive results have been evaluated.

Derived from field monitoring MFeed+ programs in 320 broilers in two treatments with 12 repetitions per treatment, the increase in daily weight gain obtained ranged from 3-4g more per day on average (Fig. 1), which has an upward influence on a better market weight in the same period.

This range of improvement in weight gain depends on nutritional strategy, availability and quality of raw materials of each company.

In addition to these results in weight gain, another parameter positively impacted is feed conversion. In a field study carried out in western Mexico, flock closures were analysed for two years in a company using MFeed+ for over 200,000 broilers. A decrease of 0.11 was observed in feed conversion with respect to the control groups, which presented an FCR of 1.86 compared to 1.75 for the group MFeed+ (Fig. 2).

The main benefit of using MFeed+ is a better use of nutrients in the diet, allowing savings in the cost of formulation while maintaining efficient production parameters, or the strategy of achieving better production performance to obtain more pounds of meat. Both strategies have a direct impact on a better profitability of the company. ■

References are available from the author on request