

# Phytogenics – mitigating the fears of low productivity in layers

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There is no doubt that modern laying hens have reached a high level of productivity (>300 eggs/year) through continuous and advanced genetic selection and also by implementing novel managerial approaches. Such higher productivity needs special attention as the hens become very susceptible to different factors (nutrition, management, diseases).

Maximising profits is the main goal for all producers especially in the hard times, where feed price is going up and egg value falls in a zigzag trend. Moreover, another pressing issue, the ban of laying hens cages (implemented since 1st January, 2012 in Europe) means fewer birds per m<sup>2</sup>, thus less egg production per unit space.

## Growing trend

Speaking globally, the growing trend in livestock production is intensification rather than extensification, meaning that producers must focus on improving productivity per unit (bird) as the resources become limited.

Therefore, egg weight and egg mass are very important inputs in the profitability equation. Egg weight is considered a sensitive parameter that can be altered by altering weight of pullet at sexual maturity, using specific light programs and/or delaying sexual maturity.

Focusing on feed, any alteration or deficiency in amino acids levels will result in a decrease in laying performance.

Furthermore, the pre and post-maturity energy levels appears to be crucial for higher laying peaks and also laying persistency.

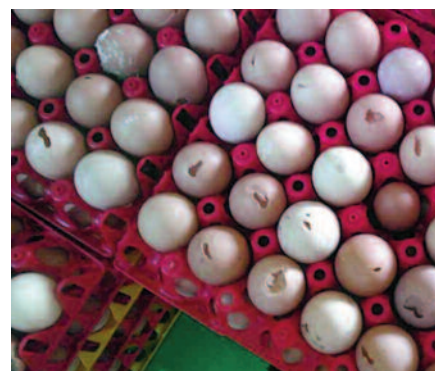
It is true that nutrition is the key to improve laying performance where feed must be balanced in all nutrients needed to meet the nutritional requirements of the laying hens. In some cases even under adequate nutrient supplementation, layers may not perform as expected.

This can be attributed to improper digestibility or, in other words, birds are not fully utilising all nutrients in the feed. This is considered a waste of expensive feed ingredients as well as lower productivity.

From this point, it appears that digestibility is a main key for productivity and hence profitability. Therefore, there was a need to develop special digestibility enhancers that are capable of helping birds to achieve the expected performance.

Many studies have proven that phytogenic feed additives have positive impacts on different health parameters. Feeding birds such compounds has led to lower microbial content in the digestive tract, lower levels of toxins and ammonia production, improved immunity and lower mortality.

Due to their unique structure and composition (mainly natural essential oils), phytogenic feed additives were reported to work on intestinal morphology where they can improve nutrient absorption and digestion.



Several findings showed that layer diet supplementation with phytogenics resulted in an increased digestibility of protein, energy, amino acids and minerals which are very important inputs for proper egg production and egg quality.

## Remarkable difference

In a recent trial, a phytogenic feed additive based on a blend of essential oils (oregano, anise and citrus peel) was evaluated for its efficacy on egg weight, egg mass and feed conversion ratio in laying hens (Hyline brown).

A total of 78,854 laying hens were distributed into two groups: the negative control group (basal diet) and a phytogenic group (basal diet + Digestaron PEP MGE 100g/t).

The trial lasted for 38 weeks (week 23 until week 61).

Both groups showed no difference in laying rate through the entire experiment. Data on egg weight were collected at weeks 25, 30, 35, 40, 46 and 52.

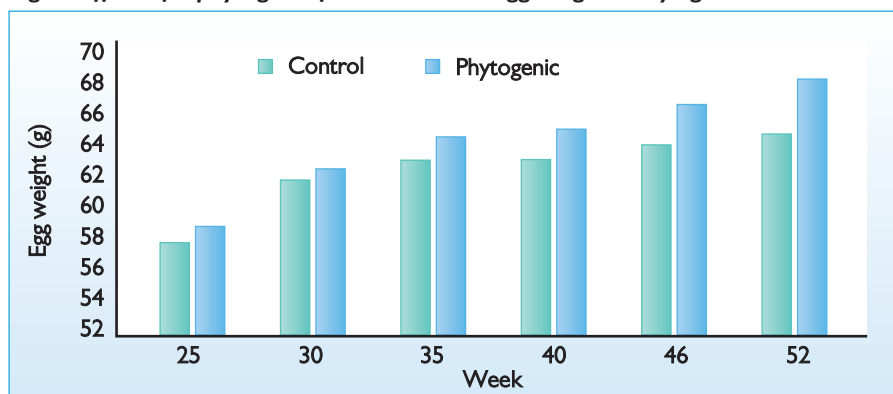
Fig. 1 shows that the phytogenic feed additive increased egg weight in weeks 25, 35, 40, 46 and 52.

Egg mass is considered a very important parameter as it reflects egg weight and egg production and it is calculated by multiplying the two traits.

Fig. 2 shows that hens fed with the phytogenics produced more than 4 % higher egg mass than the control group. It is worth mentioning that in modern layer production, the amount of nutrients offered to the hens is crucial for proper egg size and egg mass.

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**Fig. 1. Effect of a phytogenic feed additive on egg weight in laying hens.**

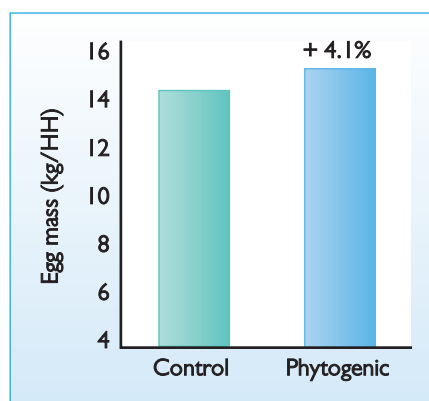


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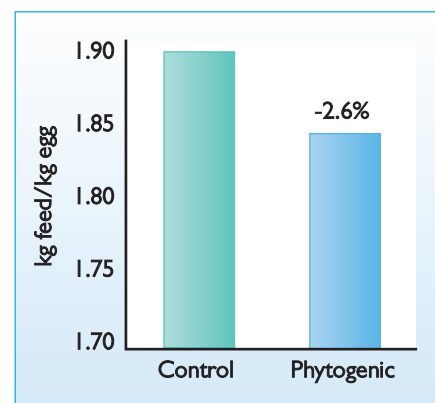
A very important point that should be considered is that the different layer flocks are evaluated through their capability on producing higher egg mass for a longer time.

Diet supplementation with phytogenics showed a slight improvement in feed intake. A pronounced effect was observed in feed conversion ratio where the phytogenic group had five points (2.6%) lower FCR than the control group (Fig. 3).

This indicates that the phytogenic group had higher digestibility or better nutrient utilisation (similar amount of feed consumed expressed by higher egg mass production). This finding confirms the digestibility enhancing effects of phytogenics.



**Fig. 2. Effect of a phytogenic feed additive on total egg mass in laying hens.**



**Fig. 3. Effect of a phytogenic feed additive on feed conversion ratio in laying hens (23-61 weeks).**

A remarkable percentage of eggs are lost due to poor egg shell quality. Most of these eggs are either cracked or broken. Such loss represents a major factor that affects the whole economics of the egg production process.

Egg shell strength is a parameter that can be affected by several factors including breed, age, moulting, nutrition, environment and stocking capacity. Bigger eggs are more susceptible to egg shell deformities and breakage, however, increased digestibility will also result in higher calcium precipitation on eggs in the uterus.

Although diet supplementation with phytogenics increased egg weight, there was no adverse effect on the breaking strength, indicating higher calcium digestibility.

Such finding can also be expected in breeders where producers seek for higher early egg weight which means higher day old chicks weight without egg loss due to egg shell quality (Fig. 4).

## Conclusion

Although advanced selection programs have resulted in a tremendous improvement in laying hen performance, which is needed due to the increased demand on egg consumption, there is still more space to improve laying performance by enhancing feed digestibility, thus decreasing feed cost and/or increasing profitability. ■

**Fig. 4. Effect of a phytogenic feed additive on breaking strength in laying hens.**

