

The cost saving reformulation tool for laying hen nutrition

Formulation of more efficient and economical feeds relies on the better use by the animal of nutrients from the raw materials as well as on the safe choices to lower feed costs. Animal performance indicators shall not be compromised, rather improved, and health status should not be negatively affected.

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This apparently simple statement has a significant weight in the decision process of the nutritionist, under constant pressure to find the most cost effective solutions for his business.

A significant amount of research has been done to show efficacy of different feed additives in improving animal performance, alongside reducing feed costs. Amongst the researched products exogenous enzymes have had the spotlight.

Exogenous enzymes, namely Non Starch Polysaccharides degrading enzymes (NSPase), play a key role on the health status and nutrition of high performing birds, which due to the wide range of feedstuffs used to formulate feeds are frequently under nutritional stress.

Evaluating the added value of such nutritional tools can be an exhausting endeavour as multiple factors, such as animal age, diet composition, fibre, particle size, chosen phytase, microbiome in the gastro-intestinal tract, etc, will directly impact animal responses to a particular product.

Moreover, all possible interactions and synergies are far from being fully understood, which makes the drawing of conclusions a complex subject.

Table 1. Trial feed formulation.

| Ingredients | Control feed | Reformulated test feed |
|-------------------------------|--------------|------------------------|
| Wheat | 33.0 | 37.1 |
| Maize | 27.3 | 16.0 |
| Soybean meal (CP 46%) | 3.5 | -- |
| Heat treated full fat soybean | 6.2 | 0.7 |
| Sunflower meal | 6.0 | 8.2 |
| Rapeseed meal | 7.0 | 15 |
| Wheat bran | 6.0 | 9.5 |
| Animal fat | 1.6 | 3.3 |
| Soya oil | -- | 1.0 |
| Other* | 9.4 | 9.2 |
| Nutrients | | |
| Crude protein | 15.0 | 15.0 |
| Crude fat | 5.0 | 6.6 |
| Crude fibre | 4.2 | 5.1 |
| Starch | 37.7 | 33.9 |
| Digestible lysine | 0.57 | 0.57 |
| ME (MJ/kg) | 11.5 | 11.5 |
| ME (kcal/kg) | 2750 | 2750 |

* includes vitamins and minerals premix, amino acids, limestone, phytase

NSPase in laying hens' nutrition

Huvepharma's research has already demonstrated and showcased the efficacy of its NSPase complex, Hostazym X, in increasing egg production, increasing egg mass and improving feed efficiency, across different diets and production systems.

The laying hens response to the NSPase is related to the combination of different actions of the enzymatic complex that together result in better animal performance and better intestinal health.

The hydrolysis of arabinoxylan (both soluble and insoluble fractions) contributes to the release of additional nutrients that are used by the animal, alongside the formation of arabinoxylan oligosaccharides

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and xylan oligosaccharides (molecules that are recognised for their prebiotic properties) enhances caeca fermentation increasing the production of SCFA.

Having its mode of action validated gives the opportunity to look to Hostazym X as a powerful tool for large feed reformulation, aiming for feed cost reduction without compromising animal performance.

Allowing higher incorporation of alternative protein sources like sunflower meal, rapeseed meal and wheat bran, and using a higher limit to total crude fibre, can generate important flexibility in feed formulation.

The raw materials price volatility and the increased cost of energy and protein sources when formulating laying hen diets stresses the need to look for formulation alternatives that support overall business profitability.

Reserach trial results

The research trial results summarised in Tables 1 and 2 build evidence for the added value of the feed reformulation approach.

The trial was set to demonstrate that the replacement of soybean as a protein source by alternative sources can be done without compromising performance and with significant economic advantage when

| Treatment | Laying rate (%) | Egg weight (g) | Daily egg mass (g) | Daily feed intake (g) | Feed conversion |
|---------------------------------|-----------------|----------------|--------------------|-----------------------|-----------------|
| Control feed | 95.0 | 59.3 | 56.3a | 115.6 | 2.05 |
| Reformulation feed | 94.0 | 58.9 | 55.3b | 114.6 | 2.07 |
| Reformulation feed + Hostazym X | 95.5 | 59.0 | 56.3a | 115.1 | 2.04 |
| p-value | >0.1 | >0.1 | <0.05 | >0.1 | 0.05<p<0.1 |

Table 2. Effect of different dietary treatments on laying hens' technical performance.

Hostazym X is used as a reformulation tool.

The trial ran for five months using 432 Lohman Brown hens (18 weeks age at start) and three treatments were compared:

- Control (feed formulated to nutritional specifications of the breed).
- Reformulation (control feed reformulated to the same nutritional specifications but replacing soybean by sunflower meal, rapeseed meal and wheat bran).
- Reformulation + NSPase (Reformulation feed with Hostazym X at 1500 EPU/kg).

Trial feeds are described in Table 1 showing the details of soybean replacement and the reformulated feed.

Results (Table 2) clearly show that when control feed is reformulated the technical performance drops; laying rate drops by 1.5%,

egg mass by 1.3g and FCR increases by four points. However, when reformulation feed is supplemented with Hostazym X performance parameters are brought back to the level of the control feed.

These results point out the benefits of the NSPase to support feed cost reduction strategies, by reformulation of feed with alternative raw materials.

Conclusion

Hostazym X is a proven nutritional tool to ensure optimal technical and economic performance of laying hens. It is a tool for better nutrition, better health and a reliable support for alternative formulation strategies. ■