Micronutrition
& Health Solutions
Article

Optimize Hen Laying Production with Cargill Animal Nutrition and Health

Authors:
Lieske van Eck, PhD - *Senior Research Scientist – Poultry*
Ines Carvalhido *– Technology Lead - Poultry*

Cargill Animal Nutrition

The growing global demand for poultry products requires innovative and scientifically backed solutions to enhance egg production. Cargill Animal Nutrition and Health is at the forefront of this effort, leveraging advanced research insights to provide precision support to both large-scale and smaller operations.

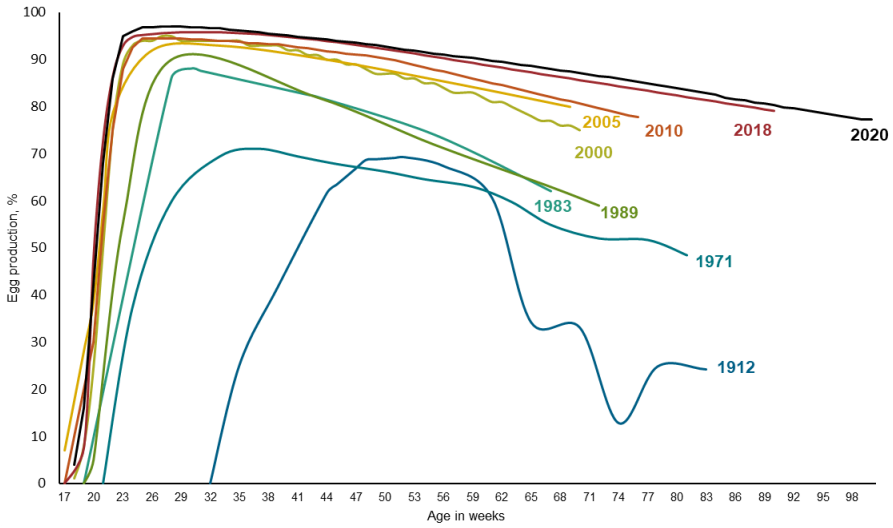
This article explores some exciting results from the Cargill team's latest studies and how these findings provide actionable insights to poultry producers to optimize diets and support improved egg production outcomes.

Global challenge, global solution

The global demand for animal protein is ever-rising, with poultry meat and egg consumption projected to grow by 15% by 2032 – accounting for 41% of all protein consumed from meat sources worldwide. This surge in demand is driven by, amongst others, population growth, higher incomes, and the efficiency of poultry to convert feed into food.

Eggs, a cheap and nutrient-rich protein source, are essential to meeting this demand. By 2050, worldwide egg production is expected to grow by 18%. This necessitates advancements in hen laying production, i.e., the number of eggs a laying hen can produce in its lifetime.

The lifetime egg production capacity of hens has increased tremendously in the last 50 years. In the 1960s it was around 220 eggs – and by 2019 it was at 500 eggs (Martin Citation1960; Anderson Citation2019; Figure 1).



This goal of five hundred eggs in one hundred weeks requires specialized knowledge and nutritional expertise to support the hens. Cargill is committed to the scientific understanding and development of support, to provide evidenced-based solutions for operations to optimize their production.

Driving innovation with scientific excellence

Cargill's solutions are science-driven and backed by strong research and development.

In this context, Cargill's scientists are continuously conducting research - as part of a holistic approach to achieving laying persistency goals - in pullet development, laying hen nutrition, and hen health and welfare.

Among the essential factors in long-term laying (as reviewed here) are overall hen welfare and health, especially the need to focus on supporting liver health and the development of proper body composition. Healthy liver function is vital for efficient nutrient metabolism and overall vitality, which in turn supports sustained egg production. Additionally, maintaining an optimal body composition helps prevent fattening issues that can negatively impact the hens' laying performance and general well-being.

Building on this, Cargill scientist Lieske van Eck and poultry technology lead Ines Carvalhido have – in collaboration with Wageningen University – recently conducted a 55-week study that evaluated the **impact of nutrition** on laying persistency and the body composition of laying hens. The findings of the study underscore the importance of precision nutrition when it comes to egg-producing hens.

This study has been published in the acclaimed *Poultry Science* journal.

Key findings

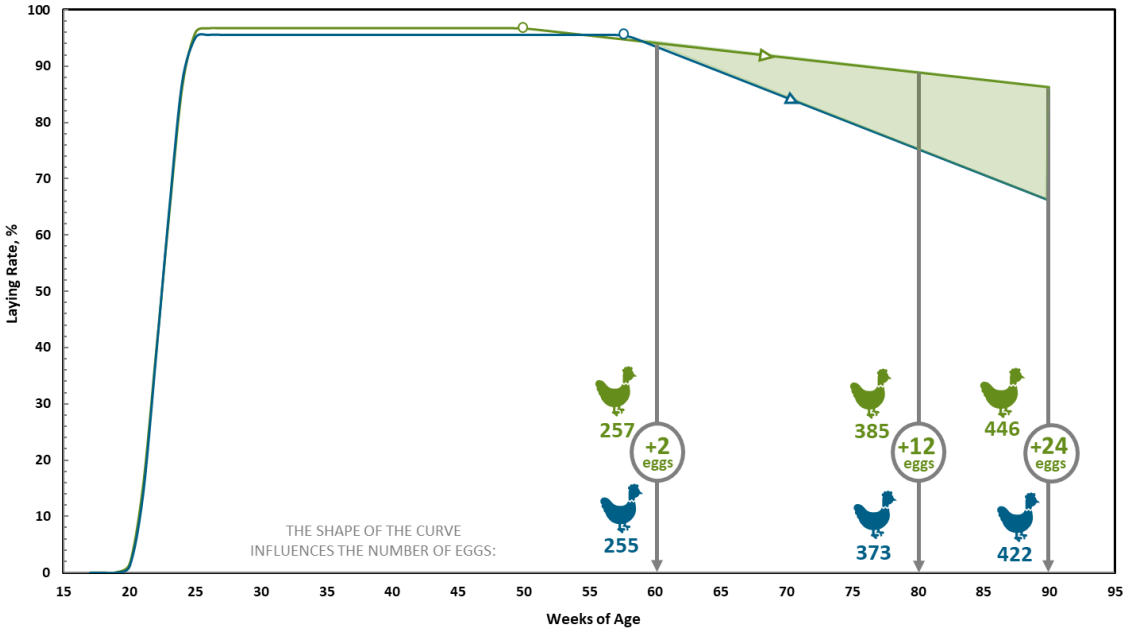
- **Nutrition's impact**: Precise nutrition affects laying persistency and body composition.

  The study highlights that precise and tailored nutrition plays a crucial role in influencing both the laying persistency and the body composition of laying hens. By carefully adjusting the diet to meet the specific needs of the hens at different stages of their life

cycle, it is possible to enhance their overall productivity and health. This includes ensuring that the hens receive the right balance of proteins, vitamins, and minerals, which supports their ability to maintain consistent egg production over a longer period.

- **Production trade-offs**: There is a balance between peak production phase length and total egg output.

  The research indicates that there is a delicate balance between the length of the peak production phase and the total egg output over the hens' laying period. Extending the peak production phase can lead to higher immediate egg yields, but it may also result in a quicker decline in laying persistency. Conversely, a more moderate approach to peak production can help sustain egg-laying capabilities over a longer duration, ultimately leading to a higher total egg output. This trade-off requires careful management to optimize both short-term and long-term production goals.



Practical implications

The practical implications of this research are profound, offering poultry producers actionable insights to optimize diets and support improved egg production outcomes.

For instance, it shows that reducing dietary energy while balancing protein intake over time can support long-term egg production, both in white and brown hens.

Moreover, the insights into body composition changes over time, as well as ongoing research and field data, have enhanced our understanding of optimal body composition. Notably, during early production, hens with an overdeveloped abdominal fat deposition (belly fat) will be less fit and produce fewer eggs at the end of the production cycle.

We are currently expanding our knowledge by studying the interaction effect of rearing and laying diets on body composition, liver function, and long-term lay. Stay tuned for further exciting developments.

Real-time insights for practical applications

Experts in the field have already emphasized the importance of body composition on long-term lay for a long time, but scientific evidence was scarce. A complicating factor was the inability to non-invasively assess the body condition of hens in the field. We therefore developed a non-invasive tool to measure laying hen body composition easily and quickly in the field.

Cargill's REVEAL™ Layers is a pioneering non-invasive NIR technology that monitors poultry body condition. It aids in real-time diet composition decisions, supports long-term egg production, and combined with our nutritional knowledge reduces feed costs.

As a result of our collective efforts, we are also proud to announce that Cargill's REVEAL™ Layers tool has been honoured with a three-star distinction at Innov'Space 2024, recognizing its significant advancements in monitoring and optimizing egg production in poultry farming.

REVEAL™ technology is now used in more than thirteen countries and has helped customers thrive by helping to increase their egg production and persistency results.

Empowering poultry producers with precision

Providing the right nutrition at the right time is crucial for long-term egg production and peak performance. Real-world insights from Cargill's research and tools can help design effective feeding programs.

Driven by our goal of nourishing the world, Cargill collaborates with world-leading experts to find the best, most innovative solutions. Keep an eye on this space to see how Cargill Animal Nutrition and Health takes poultry performance to the next level.

Find out more about Micronutrition & Health Solutions

Cargill