

Understanding cage layer fatigue and calcium deficiency in your birds

We all know the symptoms of cage layer fatigue, also known as leg weakness; however, preventive measures are not always taken into account. Unfortunately, it is difficult for the birds to recover without negative long term effects.

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In this article some common signs and symptoms of cage layer fatigue as well as strategies on prevention are shared.



A bird suffering from cage layer fatigue.

Causes

Hens are in their vulnerable period to develop cage layer fatigue problems during the peak in egg production and especially if housed in a cage system with a high stocking density.

Ensuring the hens have a sufficient amount of calcium in their diet is the most important factor in preventing cage layer fatigue.

A calcium deficiency can be due to insufficient calcium in the feed, the wrong type of calcium provided, issues with calcium absorption due to poor medullary bone matrix, or competition for calcium intake.

Symptoms

Symptoms of cage layer fatigue can be noted while monitoring flock performance, such as seeing thin egg shells and a drop in egg production. However, other symptoms are quite drastic and present serious animal welfare concerns: fragile bones, lameness, and death due to starvation or dehydration.

Prevention

How do you prevent cage layer fatigue? All stages in rearing and production are important in the prevention of cage layer fatigue.

● Prepare the pullet

It is important to respect the development phases during the rearing period, and feed phases in rearing should match the development phases.

Note: achieving the correct body weight at five weeks of age is essential. First, develop the birds' feed intake capacity by training them to eat. The gizzard and crop develops by consuming insoluble fibre of a coarse structure. The empty feeder technique must also be applied from at least the developer diet onwards (10-12 weeks of age).

By applying a pre-lay diet during the pre-lay period, this will respect

the need for increased calcium for medullary bone formation. Start with this special pre-lay diet at least 10 days before the first egg is expected. Continue with this diet up to a maximum of 2-5% laying percentage production.

Lastly, base your timing of light stimulation on the birds' accurate body weight, not only on age.

● Support start of lay

During the start of lay, egg producers should target a fast increase in daily feed intake level at the start. Use the concept of nutrient intake (grams of nutrients ingested on a daily basis) instead of just looking at the feed specifications.

Much like in the pullet preparation stage, the empty feeder technique should be used at the start of lay to prevent nutrient deficiencies in the crucial start of lay phase.

● Management during lay

Calcium needs are at their highest during lay. There is already an increase in requirement in the pre-lay period (2.2%). The start of lay requires a moderate calcium level (3.8%) and an increase in daily calcium intake when birds get older (towards 4.1%).

Be sure to provide powder and coarse particle size, not intermediate particle size. Pre-lay and start of lay period should have 50% coarse and 50% powder of calcium. The mid and end of the lay period should have 70% coarse and 30% powder calcium.

Liver health is another factor that can impact calcium absorption. If a bird has a fatty liver, there will be lower calcium absorption due to less activation of vitamin D3 by the liver, resulting in lower egg shell quality and higher risk for weak bones. Always use additional choline for layers in production to support liver health.

Finally, body weight management is key for a number of reasons, including monitoring health issues such as cage layer fatigue. Body weight should be monitored in the rearing period as well as during lay.

When body weight is above standard, there is a risk of

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Fig. 1. The diet phases in rearing should match pullet development stages (Hendrix Genetics Business Unit layers, 2016).

Starter	Grower	Developer	Pre-lay
<ul style="list-style-type: none"> • Organs • Body weight five weeks of age • Hatch – minimum three weeks • Low body weights up to 4-5 weeks • Crumble 	<ul style="list-style-type: none"> • Skeleton • Frame size and strength • Starter – 10 weeks • Mash or crumble 	<ul style="list-style-type: none"> • Feed intake capacity • Training to eat • 10-16 weeks • Fibre 4-7% • Coarse feed particles • Mash 	<ul style="list-style-type: none"> • Medullary bone • Increased calcium requirement • Minimum 10 days for first egg • 16-18 weeks • Calcium 2.2% • Ca 50% coarse • Ca 50% powder • Mash

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 overweight birds and fatty liver condition. When body weight is below standard, there is a risk of nutrient deficiency (Ca), weak birds, and prolapse issues.

Recovery

Recovery from cage layer fatigue is difficult with a negative impact on short and long-term production performance. Help birds recover by adjusting the feed composition in the following ways:

- Increase calcium level in the feed (minimum 4%).
- Provide coarse calcium particles (70% coarse and 30% powder).
- Increase vitamin D3 level and/or use 25-Hydroxy-Vitamin D3.

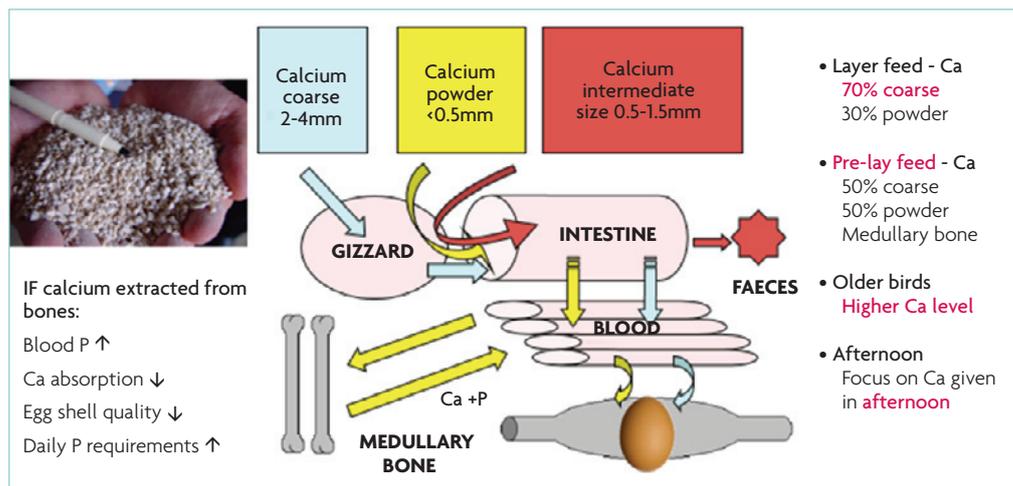


Fig. 2. Calcium level, particle size and mobilisation (Hendrix Genetics Business Unit Layers, 2016).

- Increase the phosphorus level in feed. Use a highly available form, such as Mono Calcium Phosphate (MCP). There are a number of different methods of increasing vitamin D3, calcium, and phosphorus besides adjusting feed composition. Some of the effective methods include drinking water additives, separating the weak birds and applying injections. If possible you can place the hens from the cage into a floor housing system.

Summary

Egg producers can prevent cage layer fatigue in their birds in the following ways:

- **Prepare the pullet.**
 - Diets must be in line with their development phases.
 - Train the birds to eat in order to get the required nutrients for building strong bones.
 - Provide a proper pre-lay diet in the target period.

- **Support the start of lay.**
 - Focus on a rapid feed intake increase.
 - Use the concept of nutrient intake instead of just looking at the feed specifications.
 - Apply the empty feeder technique.
- **Management during lay.**
 - Ensure there is a steady supply of calcium supply by providing coarse particles.
 - Manage liver health by monitoring body weight and adding choline in their diet.