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ANIMAL NUTRITION

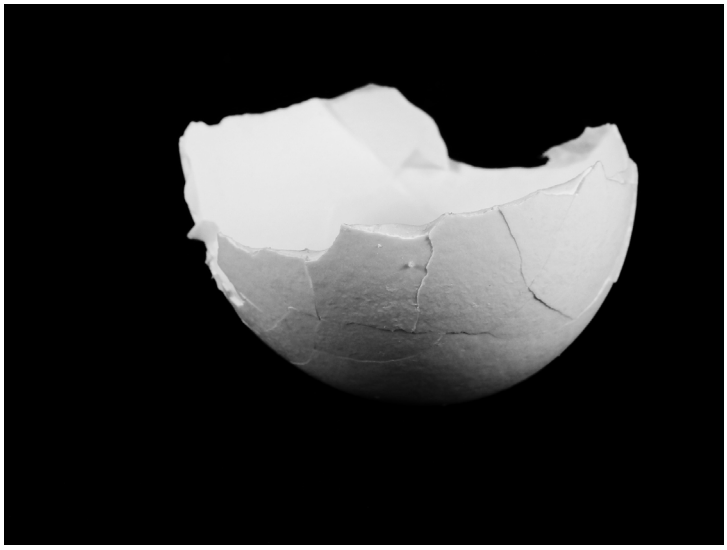
POULTRY NEWS & UPDATES

HEAT STRESS IN LAYERS

By: Jessica Kuiper, Poultry Specialist

Before we know it, we will be out of "mud season" and soaking up the beautiful summer weather. Although most of us can't wait, the summer temperatures and humidity pose some unique challenges for egg producers in Ontario. As the mercury rises, laying hens begin to act differently, and at a certain point we start to see the negative effects of heat on feed intake, egg production, and eggshell quality. There are many reasons as to why this happens, but this article will focus on the calcium component.

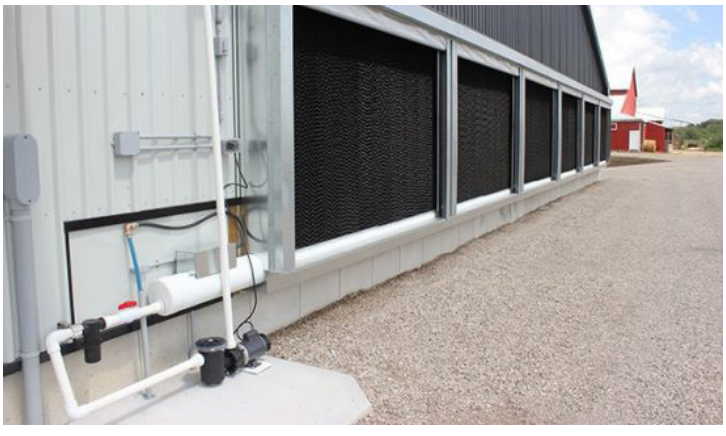
To begin, when birds (or any animal) become over heated, their drive to eat is lowered. In laying hens, this reduces dietary calcium intake, which leaves less overall calcium available to form the eggshell. This can cause shell quality issues for days after the initial heat stress is over. Prolonged lowered feed intakes will also reduce egg production and egg weight.



The other major source of calcium needed to form strong eggshells is carbonate. In red blood cells, the enzyme Carbonic Anhydrase uses water and carbon dioxide (CO_2) from respiration to form bicarbonate and free hydrogen ions (H^+). In the shell gland, bicarbonate is secreted from the blood as carbonate, which goes on to form the eggshell. H^+ diffuses back into the blood, lowering blood pH to be acidic. During periods of heat stress, the function of Carbonic Anhydrase is reduced, lowering the amount of bicarbonate available to be secreted in the shell gland. Additionally, this causes the blood to become more alkaline. Another factor is that when laying hens "pant" (a respiratory response to try and reduce body temperature), they rapidly remove CO_2 from the blood before it can be used to create bicarbonate. To summarize these two points, heat stress reduces bicarbonate levels which leads to less carbonate, which significantly reduces eggshell quality.

So, what is an egg producer to do? During the summer months it is important to check the weather forecast to get as much of a heads up on any potential heat waves. Although we can't avoid it, there are several management changes we can make to help the birds through it.

Increasing air flow through the barn is the first line of defence. This helps to remove the heat that is created by the birds and replenishes the oxygen available in the air.



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Also, it is important that the birds have fresh, cool water which will help intake and lower body temperature. If you can, flushing the water lines several times throughout the day will accomplish this. One tool to always have on hand in the summer is electrolytes; adding them to the water will encourage the birds to drink more. Although it is not possible for every operation, decreasing the number of birds per housing unit will decrease radiant heat from bird to bird and keep things cooler in the barn.

From a feed nutrition perspective, it often difficult to anticipate changes in temperature accurately enough to make adjustments. We often only get one to two days' notice (if any) that a heat wave is coming. If possible, adding additional vitamins to the feed (especially vitamins A, C and E), and increasing the calcium levels in the ration can help. Some studies have shown that providing additional vitamin D3 ahead of heat stress has been shown to reduce the effects on egg production and eggshell quality, but again, it can be impossible to predict in time when this will be needed. Laying hens experiencing heat stress will reduce their feed intake, which can result in lower egg production. If you notice changes in your flock's daily feed intake, contact us to determine if dietary changes are needed.

Hotter temperatures will be here before we know it, affecting laying hens and egg producers all over Ontario. Thankfully, we have tools in our toolbox to help alleviate some of the issues associated with heat stress. From making management changes, using water additives, and adjusting the feed, there are actions we can take to help maintain egg production and eggshell quality.