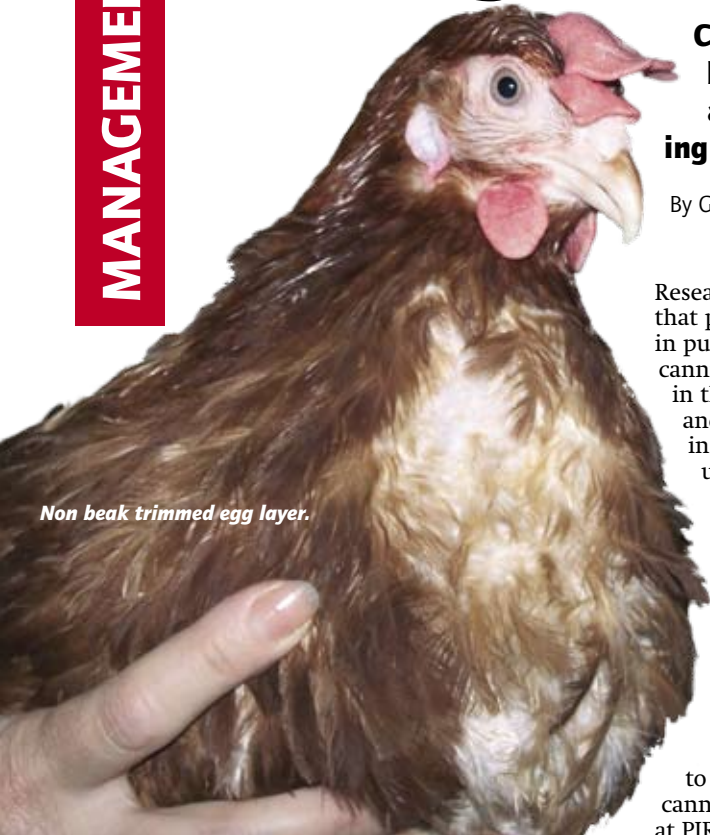


Light intensity helps to manage cannibalism

Cannibalism is a stern problem in layer farming and becomes even more serious when birds are being kept in aviary and free-range systems. Light intensity during rearing seems to be an important factor in managing the problem.

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Non beak trimmed egg layer.

Research Victoria (PIRVic) indicate that pecking and cannibalism behaviour in pullets is strongly correlated with cannibalism and pecking behaviours in the laying phase. Once pecking and cannibalism behaviours develop in pullets, it appears irreversible using current management practices. Beak trimming and low light intensities are only able to achieve some moderation of the severity of the problem. Effective control of aggressive pecking behaviours in young pullets is believed to result in significantly improved control of cannibalism for the flock's life, irrespective of beak trimming practice.

A number of factors are believed to be associated with reduced cannibalism in the pullets. Researchers at PIRVic believe that the major controlling factors are the light intensity during the rearing period and the management of body weight and body weight uniformity during the rearing phase. Several farms in Australia have adopted low light intensity housing during rearing as a managerial approach to eliminate routine beak trimming, and

have maintained mortality within the normal range despite mild seasonal variation in shed temperature and humidity. As a more conservative approach, significant numbers of egg producers in Australia have combined the use of low light intensity rearing with more moderate approaches to beak trimming (such as a first week trim or a single mild trim) to provide additional security against cannibalism.

The threshold of light intensity

In a recent experiment conducted by PIRVic, complete control of cannibalism and feather pecking has been achieved in White Leghorn pullets by rearing birds from 1-16 weeks of age in light intensities of approximately 5 lux. Birds were not beak trimmed. The precise threshold of light intensity required to achieve this control of picking and cannibalism is unclear at this stage, but is believed to be approximately 5-10 lux. The effective control of feather pecking and cannibalism in these young pullets produced persistent long-term control of cannibalism behaviours and supports the experience of many egg producers.

The imprinting of feather pecking

For many years, a clear association between light intensity and cannibalism has been recognised in poultry production. The effect of low light intensity in reducing cannibalism has been primarily attributed to the inability of birds to visualise the cloacal tissue or tissue haemorrhage. The other possibility is that the high light intensity may effect behavioural interactions and trigger aggressive pecking behaviour in birds irrespective of haemorrhage and injury.

The adoption of controlled environment shedding in the cage egg industry has significantly reduced the variation in some of the major environmental stresses (light intensity, temperature and humidity) that have been thought to impact the induction of cannibalism. This reduction in environmental variation has improved the ability of the cage egg industry to control cannibalism. Similar principles will apply in alternative systems, particularly those with effective control of light intensity.

Imprinting of picking behaviour

Anecdotal evidence from the egg industry and observational research conducted at Primary Industries



Cannibalised laying hen.

and cannibalistic behaviour in pullets may remain a subtle unrecognised feature of some rearing systems that are likely to be responsive to uniform distribution of light intensity, stocking densities and perhaps some elements of competition if food and/or water access is at all limiting. Given that feather pecking and cannibalism behaviours can be completely eliminated from birds in experimental circumstances, the challenge remains to identify the trigger factors that are responsible for the induction of these negative behaviours in many commercial environments.

The tier effect

Higher mortalities through cannibalism are frequently recorded in the top tiers of cages or where light intensities are higher within the shed. Evidence from several commercial egg farms in Australia indicated up to 3 fold differences in mortality between the top and bottom tiers of cages in 3-4 tier cage systems. The increased mortality in the top tier is believed to be predominantly caused by the variation in light intensity with readings of 5 lux in the bottom tier in comparison to 35 lux in the top tier. These differences in mortality have responded to reductions of light intensity at the top tier of cages. More uniform distribution of light intensity in poultry housing can contribute to lower overall losses through cannibalism.

Summary

These studies show the acute effects of light intensity on the onset of picking behaviours, as well as the likely long-term effects of the development of picking behaviours on cannibalism and mortality through the laying phase. Strains susceptible to cannibalism need precise management from very early ages, but it appears possible to have even complete control of cannibalism by behavioural imprinting and the use of low light intensities during egg production. With flocks in which feather picking and cannibalism behaviours have been imprinted, even short-term exposure to high light intensities can trigger reversion to cannibalism.

The use of light intensities to modify behaviour provides a powerful tool to improve control of cannibalism, but may not yet be sufficient to justify the complete elimination of beak trimming as a husbandry practice. In the future, a combination of genetic resistance to these behaviours, combined with imprinting of positive behaviours and consistent control of environmental stress, may enable the poultry industry to move away from routine beak trimming. ■