University of Saskatchewan
Poultry Management & Welfare

Research Summary

The impact of infrared beak treatment on the production, behaviour, and welfare of layer pullets and hens

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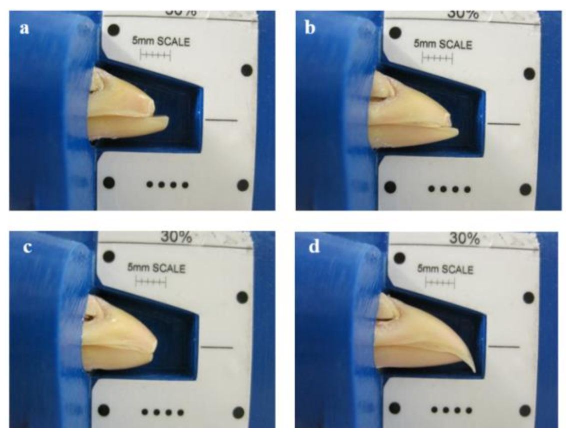
Purpose of the study

Beak treatment of commercial laying hens is an important management practice as it is one of the most effective methods of controlling or eliminating cannibalism within egg production flocks. Methods of beak treatment are continually improving and the most recent method, infrared beak treatment (IRBT) is reported to be more welfare-friendly compared to more traditional methods.

The objective of this project was to develop a detailed understanding of how IRBT and differences in post-treatment beak shape affect the productivity and welfare of egg-production pullets and hens. The project used 2 strains of birds to determine if strains react differently to IRBT. It is unclear what the "perfect" beak shape for beak treated birds is, and it has been suggested that anything other than a flush beak (top and bottom beak lengths equal) is a "severe abnormality". However, no research to this point has quantified how these shapes actually impact the bird.

What we did

Four beak shapes were studied in this project. Three of these beak shapes were created by adjusting the treatment settings on the IRBT equipment and focused on the differences in the length of the bottom vs. top beak. The shapes included a shovel beak (bottom beak approx. 1.65 mm longer than top), step beak (bottom beak approx. 0.69 mm longer than top), and a flush/standard beak (bottom and top beak equal). The fourth group of birds were sham-treated (exposed to the equipment but the infrared light was turned off) to create an untreated beak control group.



(a) Shovel beak, (b) Step beak, (c) Flush/standard beak, (d) Untreated beak (control)

This project consisted of 2 experiments. Experiment 1 used 160 Lohmann LSL-Lite and 160 Lohmann Brown pullets. Pullets were housed in cages from 1 to 29 d of age and body weight, feed intake, water disappearance (rather than intake to account for spillage), pecking force, beak length, and behaviour were measured. Experiment 2 used 320 Lohmann LSL-Lite and 320 Lohmann Brown pullets. Pullets were housed in floor pens from 1 d to 18 wk and then conventional cages from 18 to 60 wk of age. Data collected included body weight, feed, intake, egg production and quality, behaviour, feather cover, and mortality.

What we found

During early life, the various beak shapes resulting from different IRBT settings had no effect on pullet body weight, feed intake, or feed efficiency, suggesting that these shapes did not hinder the birds' ability to feed. Beak treated pullets had lower water disappearance compared to control pullets when given access to water through 360-degree nipple drinkers; however, the reduction was not significant enough to result in reduced growth in the treated pullets. The IRBT treatments did not affect pecking force, suggesting that IRBT did not result in pain in the beak. There were also minimal impacts of IRBT on behaviour during early life.

Throughout the laying period, there was no effect of IRBT, in particular beak shape, on production parameters such as body weight, feed intake, and egg production. IRBT, regardless of beak shape, resulted in improved feather cover, which is important for protection from scratches and in thermoregulation. In addition, IRBT resulted in reduced damage to the comb (indicative of aggressive damage), and mortality due to cannibalism compared to hens that had untreated beaks. This is important with regard to welfare, as it suggests that treated hens were subjected to less feather pecking, aggression, and pain.

Conclusions

Overall, our results indicate that egg-production pullets and hens can cope with the change in beak shape that occurs with IRBT and that welfare and productivity are not negatively impacted if some variation in beak shape occurs.

Who we are

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