



Research Summary

The effects of different wavelengths of in-ovo lighting on pullet behaviour

About the study

Lighting, particularly daylength and intensity, plays an important role in poultry management and can influence bird performance. More recently, studies have included the effects of lighting on the welfare of poultry species. In addition, with the commercial availability of light emitting diode (LED) lights, the effects of light colour on poultry have been of interest.

While the effects of lighting colour have been studied during the brooding and rearing phase, the effects of light colour on embryo development are less studied. As such, this project aims to evaluate the impact of in-ovo lighting on early pullet behaviour.

Methods

For the study, 1,280 eggs from two layer strains (Lohman LSL Lite and Lohman Brown) were set in 8 incubators. Two of the incubators were dark, while the other 6 were fitted with either blue, red, or white LED lights with a lighting program of 12 hours of light and 12 hours of dark.

Once hatched, chicks were moved into a cage housing system for the pullet rearing phase. For the rearing phase, pullets were exposed to two photoperiods either a near constant photoperiod (23L:1D from days 0-3, then reduced to 20L:4D on day 4) or an intermittent lighting program (18L:6D from days 0-3, then

17L:2D:0.5L:2D:0.5L:2D on day 4). The behaviour of the pullets was evaluated at 0, 2, and 4 days of age.

Findings

The use of lighting colour in-ovo had very little impact on chick behaviour.

Lighting program in the brooding phase affected chick behaviour. Chicks exposed to a near constant lighting program were more lethargic, showing less activity and less feeding and drinking behaviours in the first 4 days compared to chicks that were given a longer dark period in the intermittent lighting program.

Finally, strain also demonstrated behaviour differences. White feathered birds spent more time at the feeder compared to brown feathered birds during the first 4 days.

Conclusions

Pullet well-being in early life is not affected by in-ovo lighting spectrums. However, implementing a longer dark period in the brooding lighting program may reduce lethargy in young chicks, resulting in improved ability to find feed and water systems.



About the researchers

Celma E. F. Santos is a MSc. candidate in the Department of Animal and Poultry Science at the University of Saskatchewan.

Dr. Bruce Rathgeber is an Associate Professor in the Department of Animal Science and Aquaculture at Dalhousie University.

Dr. Karen Schwean-Lardner is an Assistant Professor in the Department of Animal and Poultry Science at the University of Saskatchewan.