



The impact of light intensity and strain on behavior, welfare, and health of layer pullets reared in perchery systems from 0 to 16 weeks of age

PURPOSE OF STUDY

Rearing pullets in aviaries or other complex rearing environments has been shown to significantly improve navigation skills, reduce fear, and enhance musculoskeletal characteristics required for good performance and welfare of laying hens housed in similar complex environments. Light intensity during rearing may play an important part in allowing for increased visual ability, and can affect the birds' locomotory activity, behaviour and musculoskeletal development. However, there is currently no scientific evidence to suggest appropriate lighting levels for pullets.

The purpose of this research was to determine the impact of light intensity on growth, behaviour, perching, jumping success, welfare, keel bone damage, bone strength, and mortality of layer chicks and pullets housed in a percheries during the pullet phase.



WHAT WE DID

Three light intensities (10, 30, or 50 lux, provided by white LED lights) were randomly assigned to light tight rooms. 1,800 Lohmann Brown-Lite and 1,800 Lohmann LSL-Lite pullets were floor reared in pens within the rooms from 0 to 16 weeks of age. Each pen contained a system of four parallel perches, ramp, drinker line, and two tube feeders. Data collection included body weight, behaviour, jumping frequency and success, fear, and stress response, breast muscle weight, keel bone damage (deviations and fractures), tibia bone strength, and mortality.



WHAT WE FOUND

Effect of light intensity

There was no difference in pullet body weight, breast muscle weight, keel bone health, tibia bone strength, fear response, stress response, or mortality between light intensity treatments.

Behaviour

At eight weeks of age, pullets reared at 50 lux walked (active behaviour) slightly more than those reared at 10 lux. At 13 and 16 weeks, pullets reared at 50 lux performed slightly more preening (comfort behaviour) than those reared at 10 lux. On the other hand, pullets reared at 10 lux pecked at walls (exploratory behaviour) slightly more than those reared at 50 lux.



Jumping frequency

At four weeks of age, pullets reared at 50 lux jumped upwards from the floor to the ramp slightly more than those reared at 10 lux. Pullets reared at 30 lux jumped between perches slightly more than those reared at 10 lux. Even though pullets reared at 10 lux did not perform as many jumps as pullets in the other treatments, there was no difference in landing success.

Strain differences

Lohmann Brown-Lite pullets spent more time litter pecking (exploratory behaviour) and due to genetic differences, scored higher on the fear and stress assessments. Lohmann LSL-Lite pullets spent more time on perches preening (comfort behaviour) and resting (inactive behaviour). Lohmann LSL-Lite pullets also performed more jumps between resources in their environment and had proportionally heavier breast muscle and higher tibia bone strength than Lohmann Brown-Lite pullets. No keel bone damage was observed in either strain.

CONCLUSIONS

The results indicate that pullets reared at all intensities navigated their environment successfully and safely. Increasing light intensity to 30 or 50 lux did not affect fear or stress levels. Rather, pullets utilized their environmental resources more and performed slightly more jumps directed upwards and across perches, especially during early pullet life at four weeks of age. Pullets reared at 50 lux performed slightly more comfort behaviours than those reared in dimmer light.

ABOUT US



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