



# The effect of LED light flicker on the welfare, health, and production of Lohmann pullets reared to 16 weeks

*Research Summary*  
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## PURPOSE OF STUDY

In Saskatchewan, 69% of pullet and laying hen producers responding to our survey have observed light flicker in their barns. But the impact of light flicker on pullets is unknown. Several studies have examined the effect of fluorescent light flicker on European starlings with conflicting results, but few studies have been conducted on domestic poultry species.

The research objective was to determine the impact of light flicker on Lohmann pullet behaviour, location within the pen, fear, stress, aggression, body weight and uniformity, feed disappearance, and mortality.



## WHAT WE DID

White LED lights were set to flicker at 3 frequencies within light tight rooms. The flicker frequencies were 30 Hz (visible to humans and birds), 90 Hz (visible to birds but not humans) or 250 Hz (not visible to birds or humans). Lohmann LSL-Lite (LW) and Lohmann Brown-Lite (LB) pullets (2,688 of each) were reared in floor pens within light-tight rooms from 0-16 weeks of age. Each pen was bedded with wood shavings and furnished with a wooden perching system with four parallel bars. Data collection included behavior, location within the pen, fear response, stress response (acute and chronic), aggressive damage, body weight and uniformity, feed disappearance, and mortality.

## WHAT WE FOUND

### Behaviour

At 4 weeks, pullets reared under 30 Hz spent less % time environmental pecking and perching, and spent more time on the floor. At 12 weeks, pullets reared under 30 Hz spent less %time perching. Overall, pullets reared under 30 Hz spent a higher %time at the feeder. Pullets reared under 250 Hz spent a higher % time object pecking.

Indicators of aggression including comb and plumage score and treated pecking damage showed no difference between treatments.

### Fear and stress

At 1 wk, pullets reared under 30 Hz moved away from the observer less than other treatments, suggesting less fear or a lower activity level. At 7 weeks, pullets reared under 90 Hz had a higher corticosterone concentration (indicator of acute stress) than those reared under 250 Hz. Additionally, LW pullets reared under 90 Hz took longer to peck at a novel object, suggesting a higher fear response. Other measures of fear and stress showed no difference.

### Body weight and feed disappearance

Body weight and flock uniformity were not impacted by flicker. LB pullets reared under 30 Hz had the highest feed disappearance. Mortality was very low overall, but pullets reared under 30 Hz had more “other” causes of mortality (unrelated causes) compared to 250 Hz.



## FUNDERS



## CONCLUSIONS

The results indicate that pullet behaviour, fear, and stress are minimally affected by visible light flicker (30 and 90 Hz) when they are younger, but effects were not noted later in life. The two strains reacted differently to light flicker. Overall, there were minimal effects of visible light flicker on LB and LW pullet's welfare, health, and production. However, it should be noted that humans are known to find visible light flicker aversive. While light flicker may not be a concern for birds, it may be a concern for people working in the barn, and may negatively influence ability to identify sick birds. .

## ABOUT US



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