
Research Summary

The impact of graded levels of stocking density on turkey tom performance, health, and welfare to 16 weeks of age



Purpose of the Study

Stocking density can influence economic return for producers however, it can greatly impact bird performance and welfare. Much of the previous research is from the 1990's or earlier and there are few studies that take a comprehensive approach with the majority focusing on performance alone. In addition, many of these studies do not account for confounding factors such as poorer air quality and litter quality.

The goal of this study was to provide comprehensive data on the impact of increasing stocking density on turkey tom performance, health, and welfare to assist in the development of future industry guidelines.

Methods

This experiment took place in two smaller trials, each with 1434 Nicholas turkey toms. The stocking densities evaluated were 30, 40, 50, and 60 kg/m². The toms were housed in large open rooms (6.7 m x 10.0 m) with equal feeder and drinker space on a per bird basis. Air quality was monitored and adjusted for CO₂ and ammonia, ensuring that air quality was consistent across all stocking densities. Performance was evaluated at 4, 8, 12, and 16 weeks. Health and welfare parameters were evaluated at 12 and 16 weeks of age. These factors included footpad lesions, gait scoring, feather condition and cleanliness, incidence of aggressive damage, behaviour, and heterophil/lymphocyte ratio (H/L ratio; as a measure of chronic stress).

Findings

The results below are summarized from the final 16-week data.

Performance. Overall body weight gain and final body weight decreased with increasing levels of stocking density, with the lowest body weights at 60 kg/m². Feed efficiency was also poorer as stocking density increased, with the highest feed-to-gain ratio seen at 60 kg/m². Total mortality and flock uniformity were not affected by stocking density.

Health. Footpad lesion severity increased as stocking density increased with larger lesions seen at high densities. Gait score was also higher as stocking density increased, indicating there were more incidences of lameness. Both feather condition and feather cleanliness were poorer as stocking density was increased. The H/L ratio was not impacted by high levels of stocking density.

Behaviour. Toms housed at low densities (30 kg/m²) were overall more active (walking/running) and rested less than birds at higher densities however; they also demonstrated more aggressive behaviours. The toms housed at mid densities (40 and 50 kg/m²) were seen resting and preening more, showing less activity and less aggression.



Conclusions

High stocking density, although economically beneficial, negatively affects the performance and may negatively affect tom health and welfare. It is important to note that while toms performed the best under low densities (30 kg/m²), they were also more aggressive indicating that they may have more space to perform these negative behaviours.

About Us



Kailyn Beulac is a Research Assistant for Dr. Karen Schwean-Lardner. This research was for her MSc. Thesis, which she completed in April 2018.



Dr. Karen Schwean-Lardner is an Assistant Professor in the Department of Animal and Poultry Science at the University of Saskatchewan. Her research focuses primarily on the management and welfare of laying hens, broiler chickens, and turkeys.

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