



Research summary

Benchmarking the prevalence of keel fractures in conventional and floor-housed laying hens

About the study

Understanding the benefits and trade-offs of housing systems is an important component of improving animal welfare, and providing information as farmers re-tool their operations and install new housing systems. For example, raising hens in floor-housed systems results in stronger bones, but, at the same time, it increases the risk of injury. As such, this study aimed to benchmark and compare some animal-based welfare indicators in flocks housed in conventional systems and non-cage single-tier floor systems, focusing primarily on keel bone fractures.

Keel fractures, a fracturing of the breastbone, can cause chronic pain in laying hens. Understanding both the time and prevalence of keel fractures is important to identify risk factors and ultimately decrease the incidence of such injuries.

Methods

Based in Ontario, the researchers studied flocks of beak-trimmed brown hens housed in conventional systems on

nine farms and in floor barns on eight farms from May 2012 to April 2013. Each flock was visited at 20, 35, 50 and 65 weeks of age, with 50 hens weighed, palpated for healed keel fractures, and feather scored at each visit. Data on cumulative mortality was also collected from farm records.

Findings

The researchers found that irrespective of housing systems, keel fractures increased steeply from the age of 20 up to and including 50 weeks, indicating that the factors leading to fractures are present from a young age. Between 20 and 35 weeks, keel fracture prevalence increased from an average of 8.2% to 36.0%, reaching 46.3% by 50 weeks. The researchers also observed a significantly higher prevalence of keel fractures in floor barn systems compared to conventional systems.

While cumulative mortality tended to be lower in conventional systems (mortality rate of 2.86% at 65 weeks) compared to floor barn systems (rate of 3.78%), the lack of a significant effect of housing

system on mortality was somewhat unexpected. The cumulative mortality rate for floor barn systems was lower in this study compared to other studies, a result the researchers attributed to possible effective beak trimming, or the fact that the study did not follow hens to the end of lay cycle.

Additionally, hens housed in floor barns had lower, but more uniform, body weight than hens in conventional systems. Feather condition was not affected by the housing system, although it did decrease with age.

Conclusions

Understanding existing conditions and risks is central to improving the welfare of laying hens. By benchmarking existing welfare indicators, this study provides essential information toward making continuous improvements in hen housing systems to increase animal welfare.

Based on this research, it is clear that many of the keel fractures occur between 20 and 50 weeks of age; as such, further studies of younger hens could be valuable in identifying the risk factors associated with—and welfare solutions to—high keel fracture rates.

About the researchers

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Citation

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