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The Effectiveness Of Cooling Broiler House Floors To Reduce Heat Stress

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Abstract

OBJECTIVE: This study aimed to evaluate the effectiveness of a floor cooling system in reducing heat stress in broiler chickens by assessing behavioral responses, heat transfer dynamics, and changes in rectal temperature. METHODS: Ten broiler chickens were randomly selected and placed in a climate-controlled glass house. The temperature inside was raised to 36°C before cooling the flooring. Body surface temperature, rectal temperature, floor temperature, and ambient temperature were recorded. Measurements were taken before and after cooling, and behavioral changes, particularly time spent lying down, were observed. Heat transfer from the chickens to the floor was also quantified. RESULTS: Chickens housed on cooled floors exhibited a significant increase ($p < 0.05$) in lying behavior, indicating an active thermoregulatory response. Heat transfer from the chickens' bodies to the floor was significantly higher ($p < 0.05$) in the cooled flooring group compared to the non-cooled group. Additionally, rectal temperature showed a significant reduction ($p < 0.05$) in chickens with floor cooling. CONCLUSION: Floor cooling effectively reduces body temperature and enhances thermal comfort in heat-stressed broilers. These findings highlight the potential of integrating cooling floors into poultry housing as a practical and cost-effective strategy to mitigate heat stress and improve bird welfare and productivity.

Author keywords

Behavior; Broiler; Floor-Cooling; Heat-Stress

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