Environmental impact on poultry growth and mortality

Georgia Tech Research Institute
Problem. Solved.

R. Wallace (1), C. Kwon (1), J. Brown (2), & W. Berry (3)
(1)Georgia Tech Research Institute, Georgia Institute of Technology, Atlanta, Georgia, US
(2) Civil & Environmental Engineering, Georgia Institute of Technology, Atlanta, Georgia, US
(3) Department of Poultry Science, Auburn University, Auburn, Alabama, US

Problem

Food-producing animals account for 80% of antibiotic use in the US

Not all of these are shared class, but good on-farm practices may reduce the need for prophylactic, nontherapeutic antibiotics

Study

Effects of water chlorination, litter quality and antibiotic use were examined in relation to poultry growth and mortality

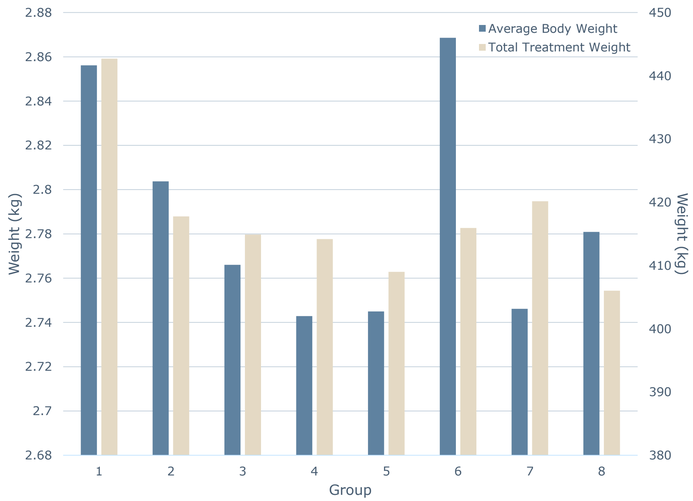
1280 chicks were examined across 8 treatment groups, 8 replicates per treatment, with 20 chicks per replicate group

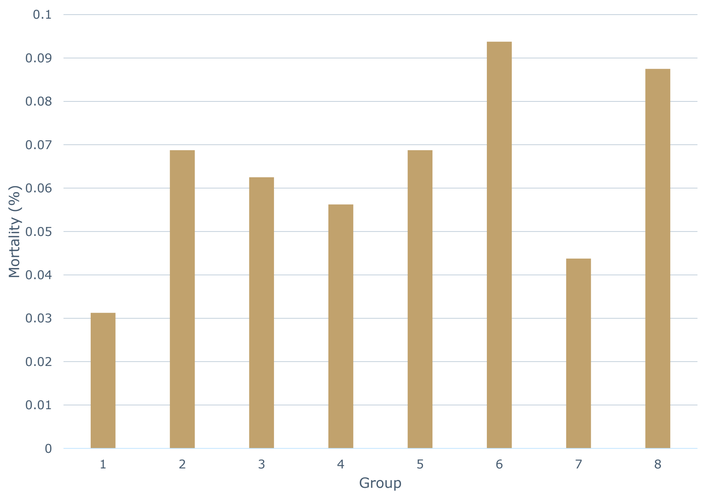
Group	Litter	Chlorine	Antibiotic
1	New	No	No
2	New	No	Yes
3	New	Yes	No
4	New	Yes	Yes
5	Used	No	No
6	Used	No	Yes
7	Used	Yes	No
8	Used	Yes	Yes

Results

Antibiotics had a negative effect (-2%) on growth in chickens raised on new, clean litter but a positive effect (+4%) in those raised on used litter.

The highest weights were observed in birds raised with antibiotic treatment on used litter (2.87 kg/bird) closely followed by birds raised without antibiotic treatment on new litter (2.86 kg/bird).





Higher mortality rates were observed in groups receiving antibiotics. Water chlorination did not appear to produce a significant difference in results.

After considering group mortality rates, birds raised without antibiotics and on new litter yielded a greater net weight of poultry (+6.5%).

Conclusion

While a 6.5% increase in product yield might not offset the cost of changing litter, consumer preference and retailer demand for an "antibiotic free" product will likely impact the decision to change the grow-out environment.

In addition to economics, we are currently investigating antibiotic resistance in both the litter and animal gut flora.

Georgia Tech College of Engineering

AUBURN UNIVERSITY

www.gtri.gatech.edu
www.cee.gatech.edu
www.poul.auburn.edu

Contact Name: Robert Wallace
Phone: +1 (404) 407-8840
Email: robert.wallace@gtri.gatech.edu