

## 2017 Reciprocal Meat Conference – Animal Welfare

## Meat and Muscle Biology™



## The Effects of Stocking Density on Antibiotic Free Broiler Flock Performance and Yield

K. Tarrant, M. Loper, and A. G. Mckeith\*

Animal Sciences and Agricultural Education, California State University, Fresno, Fresno, CA. USA

**Keywords:** antibiotic free, broilers, stocking density  
Meat and Muscle Biology 1(3):2

doi:10.221751/rmc2017.002

### Objectives

Maintaining optimal litter conditions is essential to minimizing disease in broiler houses. Ultimately, flux in welfare standards will alter management practices. Antibiotic-free (AF) broilers raise concerns regarding flock health, because of the limitations regarding disease treatment. In the study, we evaluated flock performance parameters and yield of AF broilers as it relates to stocking density.

### Materials and Methods

Commercially available rapidly growing broilers were raised at a high stocking density (697 cm<sup>2</sup> per bird) and a low stocking density (836 cm<sup>2</sup> per bird). Four flocks, each with 19,740 straight run broilers, were housed in an industry standard facility located at California State University, Fresno. The broiler production barn was subdivided into 4 equal-sized pens, which run the length of the barn. These pens served as alternating stocking density treatments during each flock. Body weight, litter moisture, percent mortality, and coccidiosis in litter were measured every week for 6 wk, while feed conversion was measured at the end of the flock. Body weight, litter moisture, percent mortality, and coccidiosis

counts in litter were analyzed using Student's *t* tests. At the processing facility carcass weights were obtained and yield was calculated. Yield data was analyzed using the ANOVA procedure of SAS (SAS Inst. Inc., Cary, NC).

### Results

No significant differences were detected in body weight between stocking densities or in weekly percent mortality. As expected, litter moisture was greatest in high-stocking densities in wk 1, 2, 3, 4, and 6. Yet, there were no statistical differences in coccidiosis counts in the litter. Feed conversion efficiency was less ( $p < 0.05$ ) in birds reared at the high- than low-stocking density ( $1.66 \pm 0.06$  vs.  $1.81 \pm 0.04$ ), but birds reared at the low-stocking density tended to have greater ( $p = 0.07$ ) carcass yields than those reared at the high-stocking density (68 vs. 66%).

### Conclusion

The results confirm that lower stocking densities equate to a lower litter moisture, which reduces the potential of disease spread. However, no differences in coccidiosis counts in the litter. Interestingly, the increase in feed conversion present in low stocking densities represents an increase in feed costs.