

Effects of Xylanase and Monensin Sodium on Growth in Broilers

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Introduction

- Antibiotics are widely used in animal feeds to increase growth performance.
- There is increasing concern among consumers over the use of antibiotics due to the development of antibiotic resistance in humans.
- In the United States, it is estimated that 20% of cases involving antibiotic resistance are a result from animal agriculture.
- Further research is needed to identify effective and practical alternatives to antibiotics in livestock feed.

Objective

This study was performed to test exogenous xylanase as a potential replacement for antibiotics and its effects on growth performance compared to monensin sodium.

Experimental Procedures

- 216 1-day-old Cobb broiler chicks were given 1 of 6 diets based with corn or wheat. Some of these diets were supplemented with 0.10 g/kg monensin sodium (Coban 90; Elanco Animal Health, Greenfield, IN) or 16,000 betaxylanase units/kg beta 1-4, endo-xylanase enzyme (Econase XT; AB Vista, Marlborough, UK).
- Birds were randomly distributed into battery cages for 21 days fed ad libitum. A total of 36 cages were used with 6 birds in each cage.
- The treatments were as follows:
 - 1) Corn-based without xylanase or monensin sodium
 - 2) Wheat-based without xylanase or monensin sodium
 - 3) Corn-based with xylanase but no monensin sodium
 - 4) Wheat-based with xylanase but no monensin sodium
 - 5) Corn-based with monensin sodium but no xylanase
 - 6) Wheat-based with monensin sodium but no xylanase
- Cage weights and feed intake were recorded weekly to determine body weight, total feed intake, and feed conversion rate (FCR).

Experimental Results

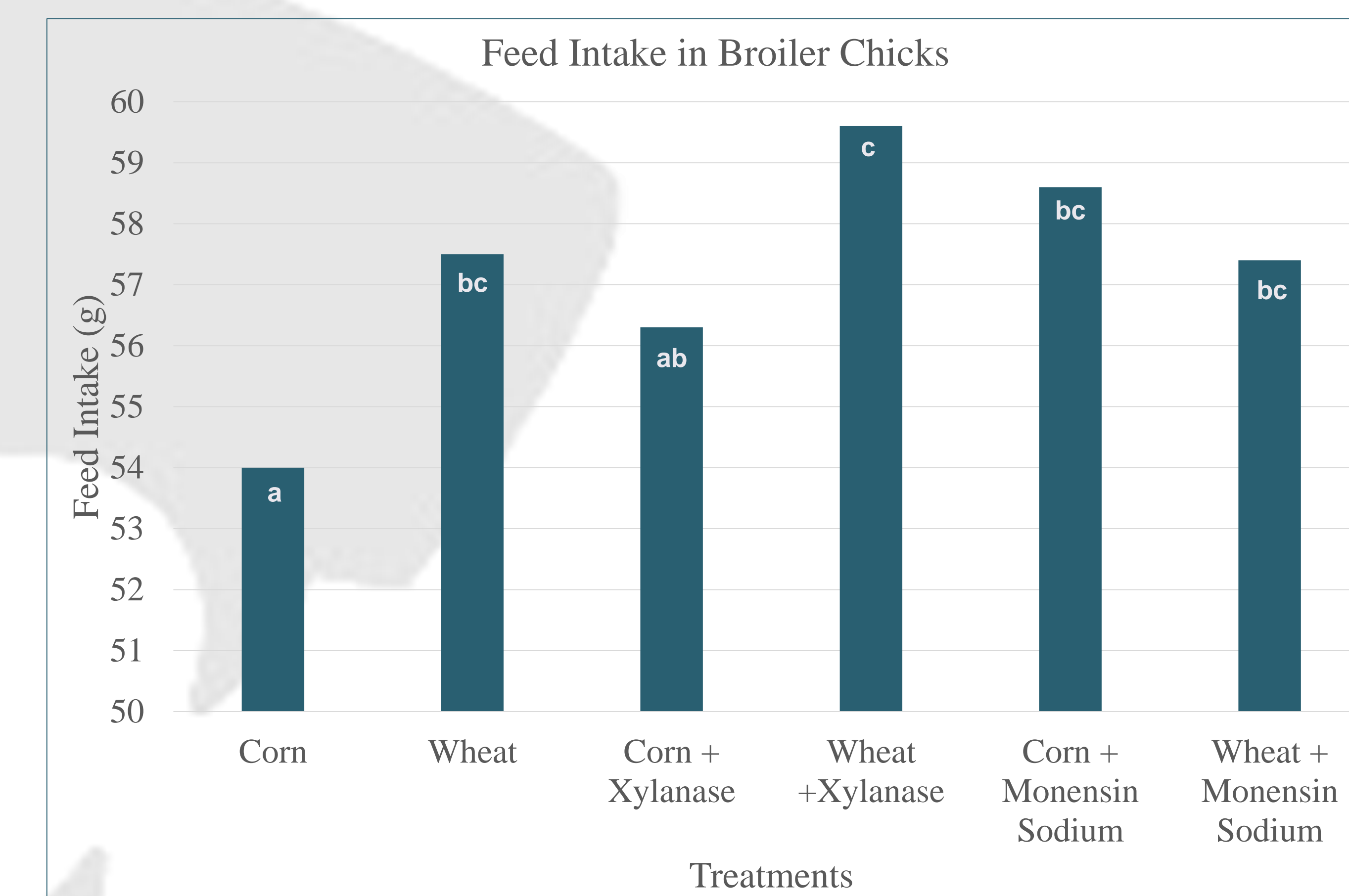
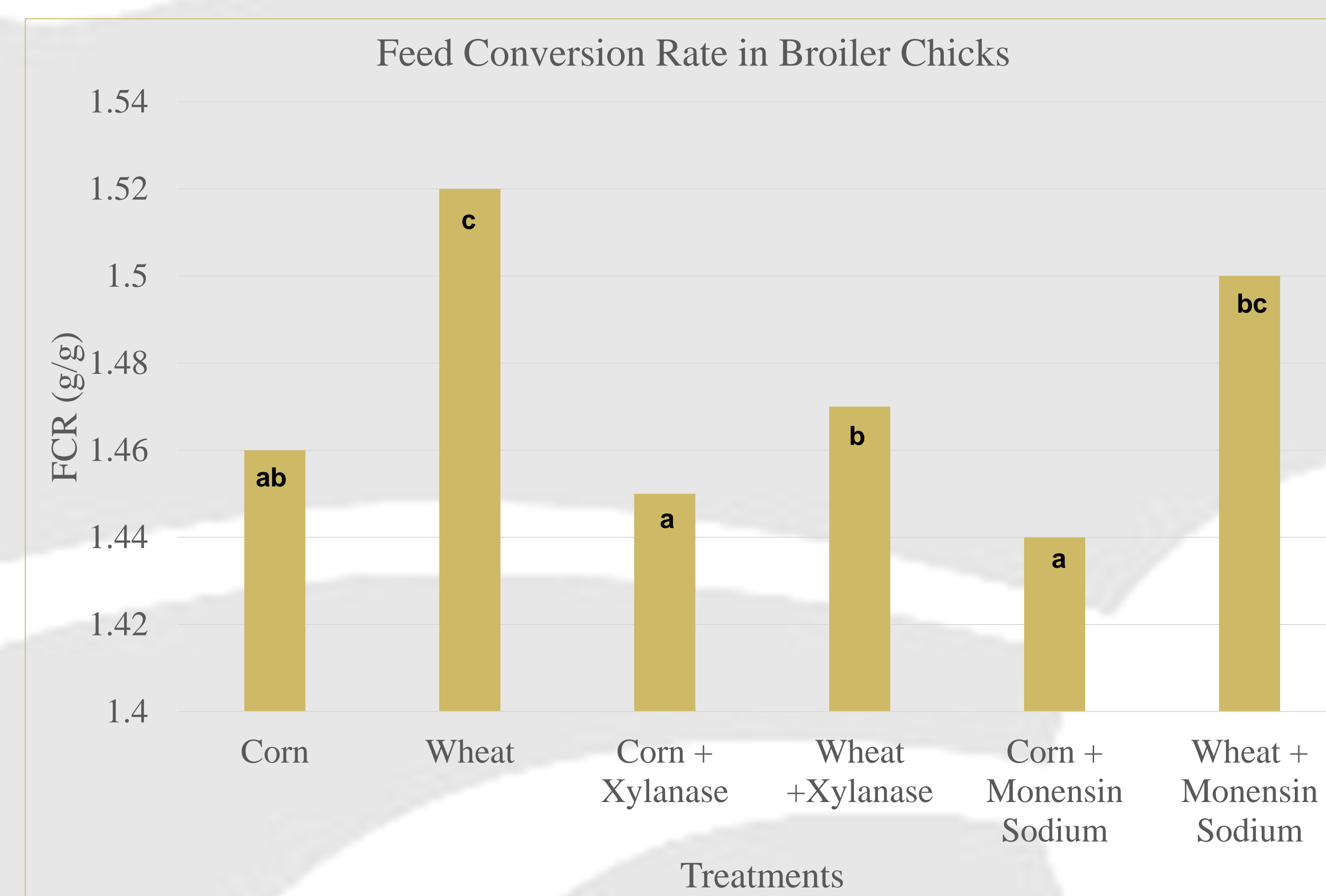
Figure 1: Battery cages used during experiment.



Figure 2: Chicks inside battery cage.



Figure 3: Chicks near feeding trough.



Conclusions

- The corn-based control diet ($P < 0.05$) had an improved effect on the FCR when compared to the wheat-based control diet. Corn-based diets altered with xylanase or monensin sodium did not improve ($P > 0.05$) FCR beyond that of the corn-based control diet.
- The wheat-based diet with monensin sodium did not improve ($P > 0.05$) FCR beyond that of the wheat-based control, but the wheat diet with xylanase did improve ($P < 0.05$) FCR to levels similar to the corn-based diets.
- Data suggests that xylanase improves digestibility and thus, FCR, in wheat-based diets to levels found in corn-based diets while in a battery cage setting. Antibiotics seemed to have a limited effect on growth performance possibly due to lack of fecal material exposure.



Support

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