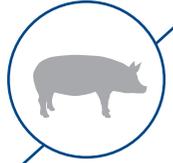


# Research Notes

Arm & Hammer Animal and Food Production



## CERTILLUS Microbial Terroir™ Controls *E. coli* Populations in Pigs

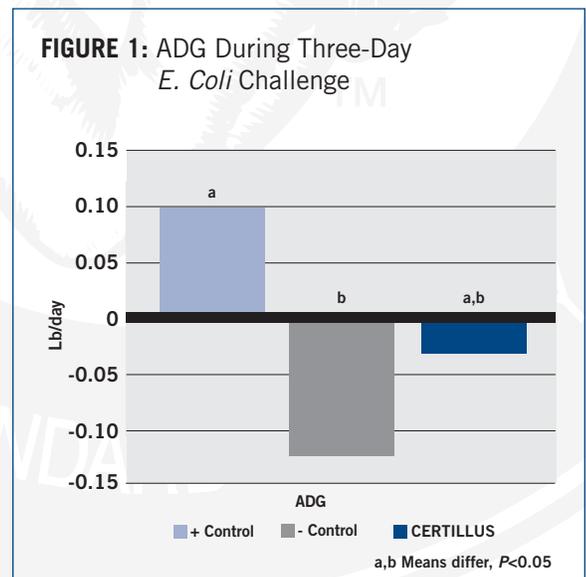
CERTILLUS™ Targeted Microbial Solutions™ use proprietary strains of *Bacillus* selected to combat specific pathogenic challenges.

### STUDY OVERVIEW<sup>1</sup>

- A total of 60 weanling pigs with an average weaning age of 19 days were transported to an offsite nursery facility in Minnesota to evaluate the efficacy of CERTILLUS for mitigating the effects of an oral *E. coli* F18 challenge.
- Upon arrival (Day 0), pigs were divided into 30 pens (2 pigs/pen) and allocated to one of three treatments:
  - 1) Positive Control—fed a control basal diet with no *E. coli* challenge
  - 2) Negative Control—fed the basal diet with oral *E. coli* challenge
  - 3) CERTILLUS—fed the basal diet supplemented with CERTILLUS ( $3.75 \times 10^5$  CFU/g feed) with an oral *E. coli* challenge.
- Five days after arrival, all challenged pigs were orally inoculated with 5 mL of liquid drench containing a total of  $10^9$  CFU of *E. coli* F18 and were given a second dose the following day.
- Pigs were weighed just prior to the *E. coli* challenge (Baseline) and three days after the first *E. coli* inoculation, and Average Daily Gain (ADG) was calculated for the three-day challenge period.
- Each pig was assessed for diarrhea severity using a fecal consistency scoring system<sup>2</sup> (0 = normal; 1 = soft feces; 2 = mild diarrhea; 3 = severe diarrhea) on days 1, 2 and 3 post-challenge and averaged for an overall fecal score for the three-day challenge period.

### RESULTS

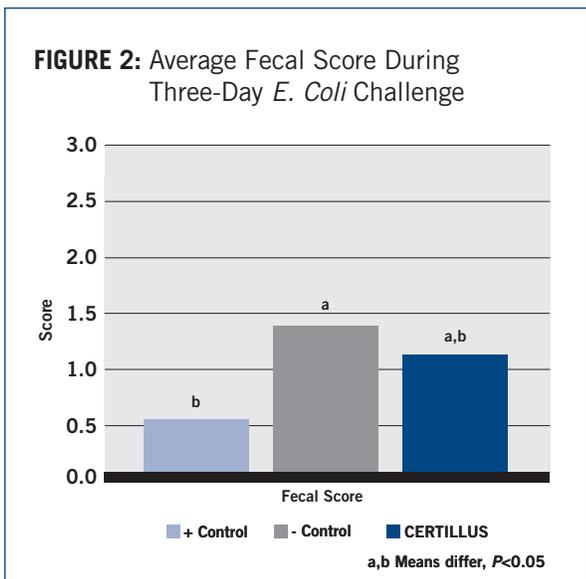
- ADG of pigs challenged with *E. coli* F18 differed ( $P < 0.05$ ) from unchallenged pigs, such that challenged pigs lost 0.12 lb/day during the three-day challenge period, whereas unchallenged pigs gained 0.10 lb/day. Challenged pigs fed CERTILLUS exhibited intermediate ADG, losing very little weight and not differing from the ADG of unchallenged pigs (Figure 1).



- Average fecal consistency scores increased ( $P<0.05$ ) in pigs challenged with *E. coli* F18 compared to unchallenged control pigs. Challenged pigs fed CERTILLUS™ had fecal scores intermediate between challenged and unchallenged controls (Figure 2).

## CONCLUSIONS

- Pigs fed CERTILLUS five days prior to an *E. coli* F18 challenge lost less weight and had less diarrhea than challenged pigs fed an unsupplemented control basal diet.
- Although CERTILLUS did not completely eliminate the negative effects of an *E. coli* challenge, this study documents the ability of CERTILLUS to mitigate early weight loss from enteric challenges faced by newly weaned pigs.



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<sup>1</sup> Sinn S, Beckler D. Evaluation of feeding Product AMP compared to other feed additive technologies on growth performance and health status of weanling pigs artificially challenged with *Escherichia coli* F18. 2016. NutriQuest Modeling Center.  
<sup>2</sup> Marquardt, et al, 1999.

