Research Notes

Arm & Hammer Animal and Food Production

CERTILLUS Microbial Terroir™ Manages Pathogenic *E. coli* Populations after Antibiotic Administration

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

STUDY OVERVIEW

- A customer field evaluation was conducted to demonstrate the effect of a customized CERTILLUS™ Microbial Terroir™ product to manage pathogenic *E. coli* populations after antibiotic treatment.
- The producer was experiencing *E. coli* diarrhea in neonatal pigs and was treating sows with chlortetracycline (CTC) through the water lines as a mitigation strategy. The antibiotic treatment proved successful for a short duration, but the *E. coli* scours would return soon after the water treatment was discontinued.
- To assess the pathogenic *E. coli* population in the sow herd and formulate a customized CERTILLUS product for administration in the feed, rectal swabs from 15 sows each from farrowing, breeding and gilt isolation barns were obtained one month prior to CTC administration (baseline), one month post-CTC treatment, and one month after the administration of CERTILLUS in the feed (two months post-CTC treatment).
- The proportion of enterotoxigenic *E. coli* (ETEC) relative to the non-pathogenic *E. coli* population was determined from the rectal swabs obtained at each sampling point.

RESULTS

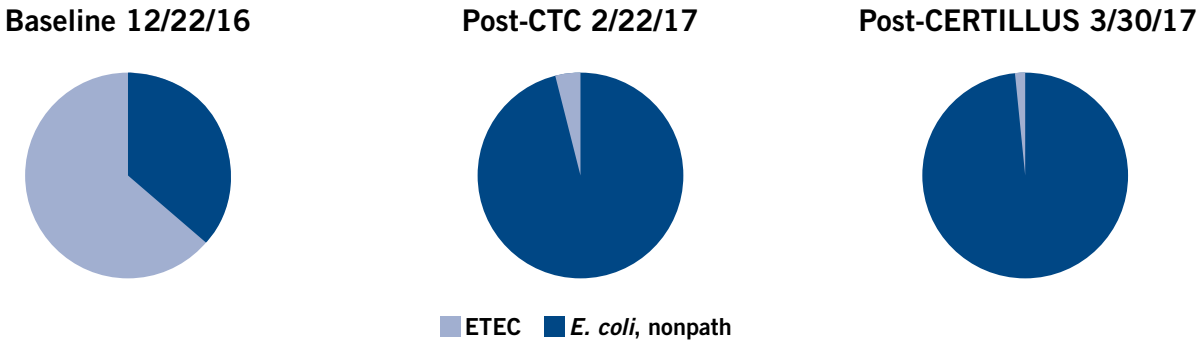
- The total number of *E. coli* isolates was similar at Baseline and after the administration of CTC and CERTILLUS and ranged from 319 to 374 isolates (Table 1).
- The total number of ETEC at Baseline was 211, and this number was reduced to 10 ETEC isolates after CTC administration, and was further reduced to 4 ETEC isolates after CERTILLUS implementation (Table 1).

TABLE 1. THE TOTAL NUMBER OF *E. COLI* AND ENTEROTOXIGENIC *E. COLI* (ETEC) COLLECTED.

	TOTAL *E. COLI*	ETEC	%ETEC
Baseline (12/22/16)	330	211	64
Post-CTC (02/22/17)	319	10	3
Post-CERTILLUS (03/30/17)	374	4	1

- ETEC comprised 64% of total *E. coli* population on this farm site at the time of Baseline sampling, prior to administering CTC or CERTILLUS™ for mitigation (Figure 1).
- The proportion of ETEC was reduced to 3% of the total *E. coli* population one month following treatment of the sows with CTC (Figure 1).
- Administration of CERTILLUS after chlortetracycline treatment maintained the reduction in ETEC proportion of the total *E. coli* population, and further reduced the ETEC proportion to 1% (Figure 1).

FIGURE 1: Proportion of non-pathogenic *E. coli* and ETEC prior to administration of CTC and CERTILLUS Swine (Baseline), after administration of CTC (Post-CTC), and after implementation of CERTILLUS (Post-CERTILLUS).



CONCLUSIONS

- CERTILLUS prolonged the efficacy of antibiotic treatment of sows to prevent *E. coli* diarrhea in neonatal pigs by maintaining the control of ETEC populations as a result of antibiotic administration.
- The further reduction in the proportion of ETEC after CERTILLUS implementation indicates it affects pathogenic *E. coli* populations not controlled by antibiotics and complements herd health antibiotic strategies.

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