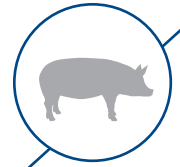


Research Notes

Arm & Hammer Animal and Food Production



CERTILLUS Eco Alters Microbial Populations in Swine Manure Storage Systems

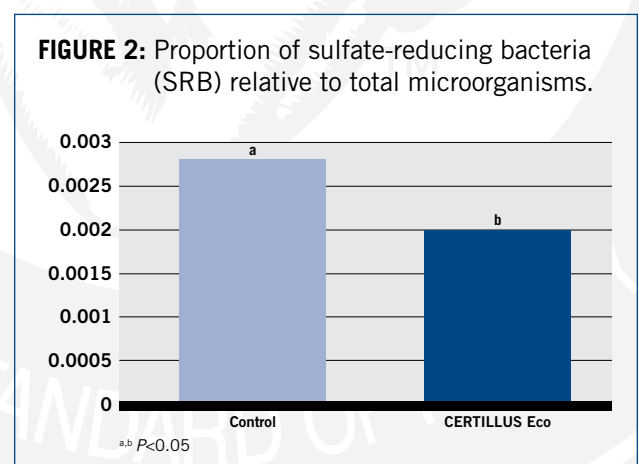
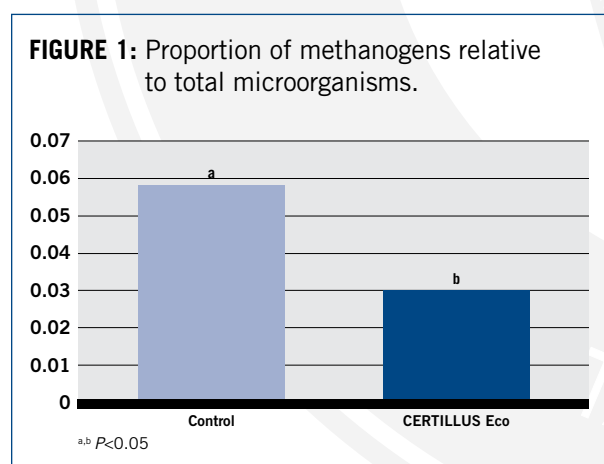
CERTILLUS™ Eco contains scientifically selected strains of *Bacillus subtilis* and *Bacillus licheniformis* for use in swine production to reduce ammonia emissions and increase nitrogen retention in manure.

STUDY OVERVIEW

- A field study¹ was conducted to determine the effect of CERTILLUS Eco on microbial populations in deep pit swine manure storage systems.
- Deep pit manure storage systems were sampled from 217 grow-finish swine barns in the Midwest—141 of the samples were from barns in which the pigs were fed CERTILLUS Eco and 76 of the barns sampled were from control barns housing pigs that were not fed CERTILLUS Eco.
- CERTILLUS Eco was administered in the feed of grow-finish pigs to provide 1×10^5 CFU/g feed, whereas pigs in control barns were fed corn/soybean meal-based diets typically formulated for commercial swine production with dried distillers grains with solubles (DDGS) inclusion ranging from 8% to 18% of the diet.
- Manure samples were obtained from each pit by sampling the entire depth of the manure storage pit with a 6'-long PVC sampling rod.
- Microbial counts of methanogens and sulfate-reducing bacteria (SRB) were determined by quantitative PCR as a ratio relative to total microorganisms in each sample.

RESULTS

- CERTILLUS Eco altered microbial populations in swine manure pits, evidenced by the reduction in methanogen (Figure 1) and sulfate-reducing bacteria (Figure 2) populations.



CONCLUSIONS

- Shifts in nutrients present from undigested feed altered the microbial ecology in swine manure pit storage systems by changing substrate availability for microbial growth.
- Fewer methanogens and sulfate-reducing bacteria in swine manure pits as a result of feeding grow-finish pigs CERTILLUS™ Eco reduced the likelihood that noxious gases like methane and hydrogen sulfide were produced in swine barns.



#ScienceHearted

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¹ Davis ME, et al. Effect of a *Bacillus*-based direct-fed microbial feed supplement on growth performance and pen cleaning characteristic of growing-finishing pigs. *J Anim Sci* 2008;86:1459-1467.

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