Research Notes

Arm & Hammer Animal and Food Production

CERTILLUS Fed to Sows Helps Improve Subsequent Growth Performance and Health of Their Offspring

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

STUDY OVERVIEW

- This study[1,2] was conducted on a commercial swine facility in Minnesota and included 500 sows to evaluate the immune effects of CERTILLUS fed during gestation and lactation, as well as 1100 pigs weaned from these sows to determine any carryover response to sow treatment in the nursery period.
- Diets were fed from three days after breeding through gestation and lactation. CERTILLUS was dosed at 3.75×10^5 CFU/g feed.
- Measures of sow and litter productivity were determined during the lactation period, including sow body weight (BW) change and feed intake, wean-to-estrus interval, pigs born alive, litter birth and weaning weights, and pre-weaning mortality.
- To document the effects of CERTILLUS on the microbiology of the lactation environment and microbial colonization of the pigs, sow fecal samples were collected just prior to farrowing and at weaning and pig fecal samples were collected three days post-weaning to determine *E. coli*, *Clostridium* and lactic acid bacteria (LAB) counts.
- Growth performance of pigs weaned from sows on each respective treatment was measured throughout the nursery period to document any benefits of CERTILLUS to their offspring.

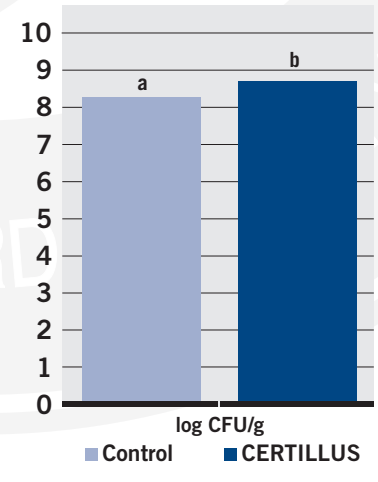
TABLE 1 Fecal microbial counts (log CFU/g) of *E. coli*, *Clostridium* and lactic acid bacteria (LAB).

	CONTROL	CERTILLUS	SE	P=
Sow-Farrowing				
E. coli	7.2	6.8	0.2	0.05
Clostridium	6.5	6.5	0.2	0.75
LAB	7.9	7.8	0.2	0.45
Sow-Weaning				
E. coli	6.9	6.5	0.4	0.32
Clostridium	5.3	5.3	0.3	0.85
LAB	8.0	8.0	0.2	0.43

RESULTS

- CERTILLUS fed to sows during gestation and lactation did not affect any of the measures of sow and litter productivity during lactation in this trial.
- Administration of CERTILLUS to sows resulted (P=0.05) in about a 0.5 log reduction (~60% decrease) in *E. coli* in sow fecal samples at farrowing compared to controls. (Table 1)
- Fecal LAB counts were greater (P<0.01) three days post-weaning in pigs weaned from sows fed CERTILLUS compared to those from control sows. (Figure 1)

FIGURE 1: Fecal LAB counts 3 days post-wean.



[ab] Means differ; P=0.05

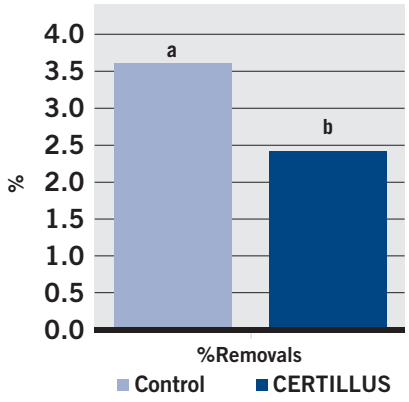
RESULTS

- Pigs from sows fed CERTILLUS™ had greater (*P*<0.01) ADG and feed efficiency (G:F) during Phase 1 (d 0 to 11) of the nursery period compared to pigs from control sows, and were 0.4 lb heavier (*P*<0.01) on day 11 at the end of Phase 1. (Table 2)
- Growth performance continued to improve throughout the nursery phase when pigs were weaned from sows fed CERTILLUS compared to pigs from control sows, evidenced by greater (*P*<0.05) ADG and ADFI in the overall nursery period (d 0 to 51 post-weaning). (Table 2)
- Pigs weaned from sows fed CERTILLUS gained (*P*<0.01) an additional 2.3 lbs in the overall 51-day nursery period over pigs weaned from control sows. (Table 2)
- Fewer pigs from sows fed CERTILLUS were removed (*P*=0.05) from the trial to the invalid pen compared to pigs from control sows during the overall nursery period. (Figure 2)

TABLE 2 Nursery growth performance of pigs weaned from sows fed CERTILLUS compared to pigs weaned from control sows.

	CONTROL	CERTILLUS	%DIFF	SE	*P*=
Phase 1, day 0-11					
ADG, lb	0.15	0.20	+33%	0.01	<0.01
ADFI, lb	0.46	0.47		0.01	0.45
G:F	0.33	0.41	+24%	0.02	<0.01
BW, lb (d11)	14.0	14.4	+3%	0.10	<0.01
Phase 1-4, day 0-51					
ADG, lb	0.90	0.93	+3%	0.01	0.02
ADFI, lb	1.37	1.42	+4%	0.02	0.03
G:F	0.66	0.66		0.01	0.70
BW Gain, lb	45.8	48.1	+5%	0.59	<0.01
BW, lb (d51)	58.3	60.2	+3%	0.70	<0.01

FIGURE 2: Percent of pigs removed from trial.



[ab] Means differ; *P*=0.05

CONCLUSIONS

- As evidenced by the reduction in *E. coli* in sow fecal samples and increased lactic acid bacteria in post-weaning pigs, CERTILLUS fed to sows reduces the potential pathogen load in the farrowing environment and enhances colonization of beneficial lactic acid bacteria in their offspring.
- The improved microbial environment during lactation and enhanced microbial colonization of beneficial bacteria in pigs resulted in enhanced growth performance and health of nursery pigs weaned from sows fed CERTILLUS during lactation.

To learn more about CERTILLUS contact your nutritionist, veterinarian or ARM & HAMMER™ representative or visit AHfoodchain.com.

1 Sinn S, Beckler D. Evaluation of feeding Evosure with and without DFM on sow and litter performance. 2016. NutriQuest Modeling Center.
2 Sinn S, Beckler D. Evaluation of feeding Evosure, DFM, and their combination to sows during gestation and lactation on growth performance of their offspring during the post-weaning phases. 2016. NutriQuest Modeling Center.

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