

EcoCare® Feed Improves Clean Up in Swine Barns

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A commercial study has shown that the microbial load can be reduced by 75% in barns where pigs are fed an EcoCare® feed component.

Ensuring that a house is properly cleaned and disinfected between groups is essential for maintaining optimal health and performance of growing swine. Just looking clean is not enough. It is important that the microbial load be reduced so that the residual microbiological challenge on the pigs is as low as possible. Most diseases are dose dependent, so the more pathogens pigs are exposed to, the sicker they get. While the pigs may not exhibit clinic signs of disease, at lower levels the pathogens can reduce performance. So the goal of cleaning should be to reduce the pathogen load as much as possible.

An EcoCare® feed component breaks down the proteins and complex carbohydrates in manure responsible for making it adhere tightly to surfaces. So, when the facility is washed it is easier to remove the organic matter from the surfaces; this reduces the amount of organic matter remaining to protect the pathogens from the disinfectants. The disinfectants then can do a better job of decreasing the pathogen load. This results in better performance of the next group of pigs.

Study

The commercial nursery production facility chosen for the study consisted of four identical 2,000 pig barns each with two rooms and 40 pens per room with steel tri-bar flooring. A commercial nursery feeding program consisting of five separate phases, formulated to meet the needs for growth was utilized. Treatments were either the control diet (called control) for all five phases (d 0 to 42) or the control diet with the EcoCare® feed component added (called test) to the final three phases (d 12 to 42). Each treatment was applied to four of the rooms.

Two methods were used to determine the prevalence of bacteria on the flooring after normal washing and disinfecting was completed. Samples were taken prior to beginning the trial to establish baseline values and after each turn of two groups of pigs on trial thereafter.

- A single sterile culture swab with modified Stuart's media (Fisher Healthcare, Houston, TX) was used to collect residue from a 34.4 cm² area in three separate pens for a total area of 103.2 cm² for each sample. Four samples per room were evaluated for total facultative bacterial counts (cfu/cm²) using tryptic soy agar (BD Diagnostic Systems, Sparks, MD).

Table 1

Pig Group	Control	Test	P<
	Total (CFU per cm ²)		
Baseline	10,441	3,992	0.44
Turn 1	2,635	40	0.30
Turn 2	574,442	138,719	0.01

Bacterial populations were not different between the barns at the start of the trial as indicated by the analysis of baseline samples (Table 1). After one turn, there was a numerical decrease in the total facultative bacterial populations CFU (colony forming units). This was from 2,635 CFU per cm² in the control, to 40 CFU per cm² in the test. However, after the second turn the total facultative bacterial populations were significantly (P<0.01) less in test versus the control.

- A second swab (Charm Sciences, Inc. Lawrence, MA) was used to measure the total amount of residual ATP found in 103.2 cm² areas adjacent to the areas sampled with the first method. Residual ATP is an economical alternative indicator of bacterial concentration and

cleanliness commonly used in the food industry. Twelve samples were collected per room with this method.

Table 2

Pig Group	Control	Test	P<
	RLU per cm2		
Baseline	1,210	2,468	0.19
Turn 1	2,110	1,512	0.46
Turn 2	4,575	2,298	0.04

The residual ATP levels were not different between the barns at the start of the trial as indicated by the analysis of baseline samples (Table 2). After one turn, there was a numerical decrease in the presence of ATP bioluminescence as measured by relative light units per cm2 (RLU per cm2) from 2,110 RLU per cm2 in the control barns to 1,512 RLU per cm2 in the test. However, after the second turn, the ATP bioluminescence value was significantly ($P < 0.04$) less in the test versus the control barns.

Conclusion

Following normal cleaning and disinfecting, total facultative bacterial populations in commercial nursery barns were reduced from 574,442 CFU per cm2 in the control barns to 138,719 CFU per cm2 in the treatment barns after two turns. This was a 75% reduction and was significant ($P < 0.01$). This represents a significant reduction in the bacterial challenge that will be placed on the pigs when they are housed in this facility, resulting in optimized performance.

Overall, this study suggests the technology in EcoCare[®] feed can improve the effectiveness of a standard cleaning and disinfection program and has the potential to reduce the bacterial challenge placed on pigs in a growing environment.

EcoCare[®] Feeds –

The best feeding choice for grower/finisher pigs, the right choice for our environment.



For further information on EcoCare[®] Feed, please see your local feed sales representative at a Land O'Lakes Feed Co-op or Purina Mills Dealer. Visit us on-line at www.LOLFeed.com, www.PurinaMills.com,

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