Validated Results In-Vivo: Improved Sanitation

Manure buildup on pen surfaces can cause challenges without proper sanitation, leading to a higher bioburden in the pen environment and negative impact on pig health and performance. Results show, feeding Amnil reduces manure buildup on pen surfaces, improves ease of sanitation, and lowers the microbial bioburden in the pen environment.



32.6% Surface Manure Buildup, **Reducing Water Usage for Cleaning.**

Amnil Improves Pen Hygiene



- In-vivo grow-finish trials (UAH 20-F034 & 20-F075) were conducted at United Animal Health research facilities (92-Days).
- Manure buildup was measured from slat scrapings obtained from identical locations and surface area from each of the 48 treatment and control pens.
- Total E. coli gene quantities were measured from surface swabs taken from identical locations in treatment and control pens. Time points included prior to filling barn (baseline), after pigs were marketed and pens emptied (pre-wash), and after washing (post-wash).

Amnil Enables Improved Performance

Validated Results In-Vivo

Feeding Amnil in modern grow-finish diets has proven to lower gas emissions and create a more hygienic environment. Results suggest these improvements to production environment enable pigs to achieve greater outcomes at marketing, with most pronounced improvements seen in lower performing barn populations.

Amnil Improves Finishing Weight Distribution





- Indianapolis, IN, U.S.A.
- 2. United Animal Health Protocols. Independent & university conjunction trials

All statements are based on independent trials conducted by or in conjunction with United Animal Health. Some statements may not be applicable in all regions.





We are all a product of our environment, and the animal is no different.

Body Weight and ADG Bottom 25% Pigs at Marketing with or without Amnil*

*Bottom 25% of end weights d92 per individual trial.

References

1. Lee, J. et al. 2022. DFM Pak, a novel combination of *Bacillus* strains reduces environmental *E. coli* bioburden, manure buildup, and odor compounds in the swine housing environment. AASV,



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Manage environmental challenges to improve production outcomes with Amnil.



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A healthy production environment is required to optimize pig health and performance and minimize negative impacts from noxious odors and gases beyond the barn.

Amnil is a multi-strain, Bacillus-based probiotic that addresses challenges associated with production environment.

ABOUT AMNIL

- Consists of novel *Bacillus* isolated from only high performing animals.
- Contains multiple strains of *Bacillus subtilis* and Bacillus licheniformis.
- Strains selected to survive in gastrointestinal environment and thrive in anaerobic and aerobic conditions.
- Strains screened for superior capabilities through benchtop testing & validated in-vivo.
- Heat stable and works well in premixes or vitamin trace mineral mixes.

BENEFITS WITH AMNIL

- Reduces emissions of disagreeable odors, including ammonia.
- Improves biosecurity by reducing pathogen load and decreasing manure buildup on surfaces.
- Improves environment for the animal and caretakers.
- Enables greater outcomes at marketing.





Amnil Reduces Noxious Gases and Odors Including Ammonia and Hydrogen Sulfide

The inclusion of alternative feed ingredients can lead to high levels of undigested fibers and fats in swine manure. This results in elevated manure pH and higher levels of long chain fatty acids and volatile fatty acids that are commonly associated with harmful gases and noxious odors.

Proven In-Vitro Efficacy

Amnil was developed with multiple Bacillus strains selected for the ability to reduce factors associated with gas and odor production.

Ammonia Reduction Benchmarking



Amnil Reduces Manure pH



Lowering manure pH reduces ammonia flashing as gas.

Validated Results In-Vivo

Results show, feeding Amnil in grow-finish diets can reduce gas emissions.¹



15.4% Hydrogen Sulfide



- In-vivo grow-finish trial (20-F075) was conducted at United Animal Health research facilities (92-Days).
- were detected during drainage of manure pits from pigs fed Amnil.

18.3% Ammonia

• Gas emissions were measured using a Drager X-am 5600 meter. Each individual manure pit (8 control, 8 Amnil treatment) was drained separately, and gas measurements were taken during the initial 35 minutes of drainage time.

• Reductions in concentrations of NH3 and CO2 (P<0.05), a trend for reduced H₂S, and a numerical reductiton in CH₄

Amnil Breaks Down Manure Solids

Higher levels of undigested fibers and fats in swine manure can lead to higher volumes of manure solids that create challenges with manure storage, handling, and pen sanitation.

Proven In-Vitro Efficacy

Novel Bacillus strains in Amnil were screened for ability to address factors contributing to manure buildup and microbial bioburden in the environment.

- Superior enzymatic activity
- Ability to utilize corn fiber for growth
- Ability to breakdown long chain fatty acids
- · Ability to digest organic materials for removal of pathogen harboring biofilms

Validated Results In-Vivo

Results show, feeding Amnil can reduce manure solids in deep pits while further breaking down undigested fibers in manure.



• In-vivo grow-finish trials (UAH 20-F034 & 20-F075) were conducted at United Animal Health research facilities (92-Days).

* *(UAH 20-F034) Acid Detergent Fiber reduction observed in manure sludge, measured as % dry weight (DW).

