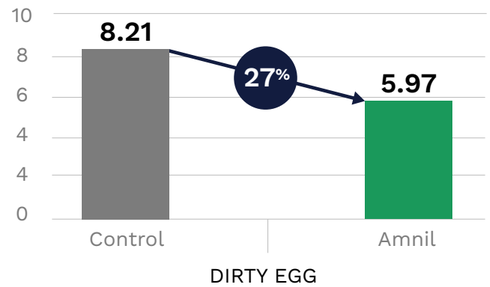
Impact on Layer Egg Cleanliness



Impact on Layer Mortality (%)

- University of Costa Rica lasting for 40 wks *(25 to 65 wks. of age).* Corn/SBM based diets.*
- University of Illinois trial lasting for 20 wks *(28 to 48 wks. of age).* Corn/SBM based diets.**

	University of Costa Rica*	U of I (10 wks.)**	U of I (20 wks.)**
Control	**7.2**	**1.19**	**2.38**
Amnil	**4.4**	**0.0**	**0.59**
Change	**-39%**	**-100%**	**-75%**

References

1. Gay and Knowlton, 2005. Publ. No. 442-110. Virginia Polytechnic Institute and State University.
2. Shen, S., Leyva-Jimenez H., McCormick K., Martin M., Liu P. (2021). Protocol development for monitoring hydrogen sulfide emitted from poultry excreta- a case study. Poult. Sci. Vol. 100 (E-Suppl. 1): Abs 87 (P 45).
3. United Animal Health Protocols. Independent and 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.

UNITED ANIMAL HEALTH

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UNITED ANIMAL HEALTH

Amnil®

WE ARE ALL A PRODUCT OF OUR ENVIRONMENT.
THE ANIMAL IS NO DIFFERENT.

Manage environmental challenges to improve production outcomes with Amnil.

UnitedAnH.com

Amnil

Environmental challenges don't just impact animal health and performance.

These issues create costly, inefficient and often high-risk challenges for producers.

Amnil is a blend of *Bacillus* strains sourced from, and found to be unique to, healthy, high-performing animals. When including Amnil in the diet, the animal serves as a convenient vector for continuous inoculation of the environment with strains selected for targeted benefits.

WHAT TO EXPECT USING AMNIL

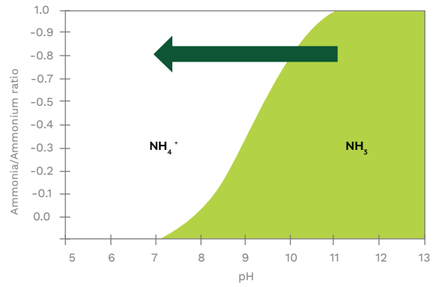
- Improved air quality
- More hygienic production environment
- Improved egg cleanliness
- Improved performance outcomes

HOW DOES AMNIL WORK?

- **Course corrects environmental production challenges**
  Regulates breakdown of organic matter and manure composition
  Lowers pH of excreta
- **Improves production environment**
  Reduces microbial bioburden
  Reduces noxious odors
- **Enables optimal, efficient, and responsible production**
  Improves air quality for animals
  Improves animal performance

Reduction of Ammonia & Odors

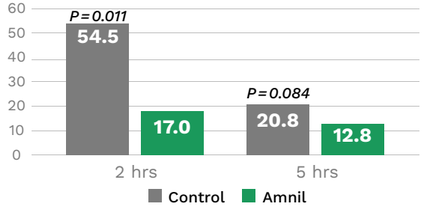
- Amnil helps lower the pH in manure and litter and a lower pH holds nitrogen in manure instead of it being released into the air. Objectionable odors, including NH_3, are therefore reduced due to these processes.



[1]Gay and Knowlton, 2005.

Reduction of Ammonia (NH_3) with Broilers

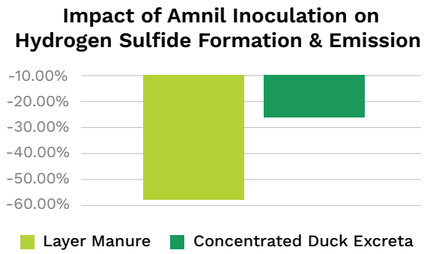
- Excreta collection over 48 hours and stored in sealed containers
  to measure NH3 levels in airspace at various times.



Impact of Inoculation on Hydrogen Sulfide (H_2S) Formation and Emission

In vitro inoculation[2] with Amnil lead to:

- 58.7% less H_2S in layers manure
- 46% less H_2S in concentrated duck excreta



Effect on Laying Hen and Broiler Excreta Properties.

Laying Hen Excreta*

	Control	Amnil
pH	7.9	5.9
N-NH4+ (mg/kg)	3,220	5,380

*Excreta from University of Costa Rica trial. Laying hens were fed Corn/SBM diets for 40 wks (25 to 65 wks. of age)

Broiler Chicken Excreta**

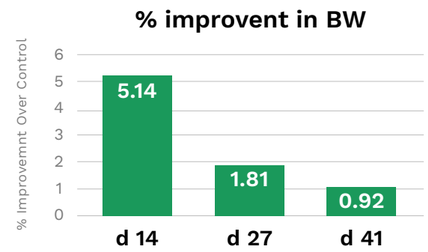
	Control	Amnil
pH	8.1	7.8
N-NH4+ (mg/kg)	3,900	4,100

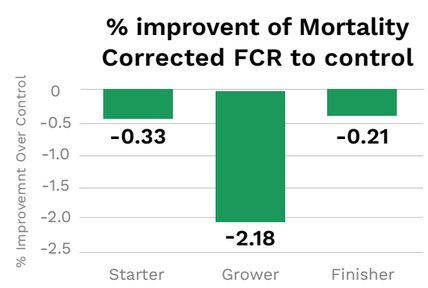
N-NH4+ (Ammonium nitrogen)

** Excreta from United Animal Health poultry research farm. Broiler chickens were fed Corn/SBM diets for 35 days.

Impact on Broiler Performance

- Texas A&M University Trial. 630 males. 35 birds/pen. Corn/SBM/DDGS based diets fed for 42 days.





Impact of Amnil on Mortality (%) in Broiler Chickens

	Commercial***
Control	4.64
Amnil	2.14
Change	-54%

*** United Animal Health trial conducted at Poultry Research Partners, GA, USA. Broiler chickens were fed Corn/SBM diets for 42 days, 40 male broilers/pen and 7 pen replicates per treatment.