



**Change your
manure microbiota
to help reduce odors
with CERTILLUS Eco.**



#ScienceHearted

At ARM & HAMMER™ we think big on a microscopic level to deliver safe feed and food solutions that drive business forward. We're your #ScienceHearted, local-and-global, animal and food production team.

Odors can be costly.

\$473.5 MILLION

That's the number a federal jury awarded to neighbors in a nuisance lawsuit over "obnoxious, recurrent odors" from a hog farm.¹

Nuisance lawsuits can be extremely damaging to your business. Protect yourself with a value-added solution.

What if you could control what comes out by changing what goes in?



REDUCE ODOR AND IMPROVE FERTILIZER VALUE.

What if you could retain more nitrogen in your manure to help reduce odor and increase its value?



IMPROVE FEED EFFICIENCY.

What if you could improve feed efficiency by 3-5%?



REDUCE CLEANING RESOURCES.

What if you could reduce manure solids to ease cleaning time and resources?

Only CERTILLUS™ Eco can:

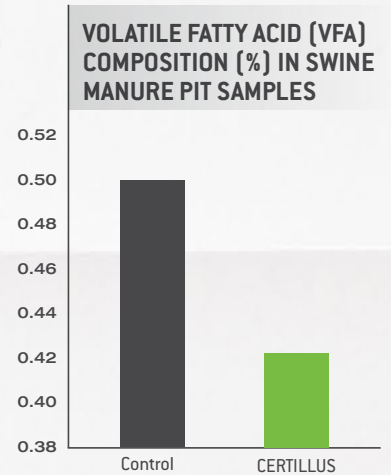
Change the manure's microbiology in order to:

- ✓ Improve nitrogen utilization to help reduce odors and improve fertilizer value.
- ✓ Improve ease of application—the pigs do it for you.
- ✓ Reduce manure viscosity for easier removal and pumping.



Reduced odor-causing VFAs.

A field study² in the Midwest showed fat content and odor-causing volatile fatty acids were numerically reduced in swine manure pit samples from barns housing pigs fed CERTILLUS Eco.



Changing manure nutrients.

Fewer solids. Greater nitrogen.

The same study² showed CERTILLUS Eco reduced dry matter content, neutral detergent fiber (NDF), acid detergent fiber (ADF) and viscosity of swine manure pit samples, while the nitrogen content was greater than in control samples.

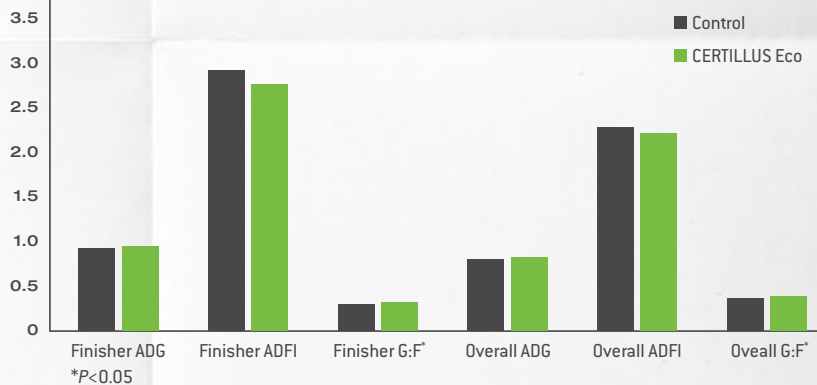
SOLIDS, NITROGEN AND FIBER COMPOSITION IN SWINE MANURE PIT SAMPLES			
	Control	CERTILLUS Eco	P=
Dry Matter, %	8.55	6.57	0.001
Viscosity, cps	400.0	213.7	<0.001
Nitrogen [%]			
Total N	7.64	8.80	0.430
Ammonia N	5.81	8.19	<0.001
ADF N	0.56	0.75	0.106
Fiber, %			
NDF	39.70	33.64	0.001
ADF	17.94	15.81	<0.001

The proof is in the research.

Improved feed efficiency.

CERTILLUS Eco was also shown to increase G:F, resulting in a 5% improvement in feed efficiency in the finisher phase and 3% improvement overall.³

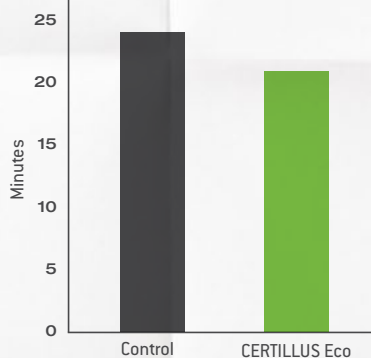
GROWTH PERFORMANCE (KG/DAY) DURING THE GROW/FINISH PHASE



Reduced pen cleaning resources.

Manure mat samples from floors of pens housing pigs fed CERTILLUS Eco broke apart more quickly ($P < 0.05$) than manure mats from control pens, resulting in a 33% reduction in dispersal time—saving water usage and employee cleaning time.³

PEN CLEANING TIME



Recommended feeding rates.*

	CERTILLUS ECO		
	Sow	Nursery	Grow/Finish
Inclusion rate (lb/ton)	0.5	0.5	0.5
Inclusion rate (kg/mt)	0.25	0.25	0.25
Dose (CFU/g of feed)	7.5×10^4	7.5×10^4	7.5×10^4

* Consult your nutritionist for your optimum feeding rates.

More products to help you get the job done.

ACID-A-PRO™

A-MAX™

BG-MAX™

CELMANAX™

KULACTIC™



We're #ScienceHearted and we're here for you.

We're ever-curious farm kids turned nutritional innovators, microbial pioneers and food safety game changers. We use scientific research to unlock the power of nature to create products that focus on you, your animals and worldwide food security. To learn more about CERTILLUS™ ask your nutritionist, veterinarian or ARM & HAMMER™ representative or visit AHfoodchain.com

1 <https://www.cbsnews.com/news/smithfield-foods-ordered-to-pay-473-5m-for-pig-stench/>

2 Research Notes – CERTILLUS™ Eco Alters Nutrient Composition Related to Odors in Swine Manure Storage Systems

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