FORAGE

CERTILLUS™

Improve fermentation, minimize feed spoilage.

#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.

Why your Microbial Terroir matters.

Your Microbial Terroir™ is the microbial makeup of your environment, your herd and the soil. On-farm sampling and testing can reveal your farm's Microbial Terroir and what is needed to combat harmful pathogens.

They're everywhere.

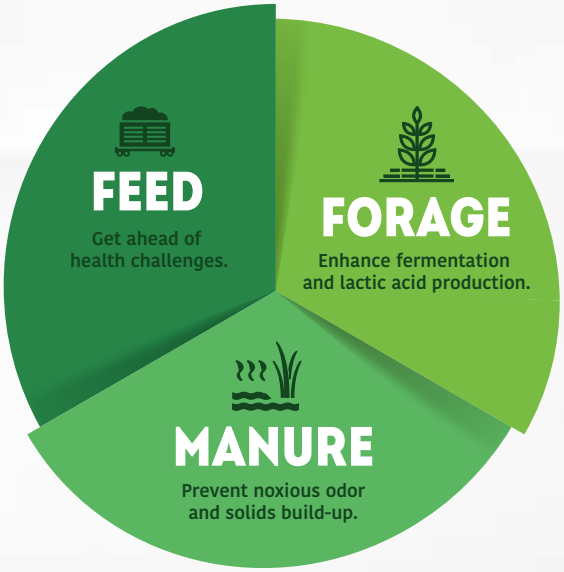
Pathogenic and non-pathogenic clostridia are present in your feed, forage and manure, causing trouble at every turn.

- In your silage, high pH levels can cause your silage and haylage to ferment improperly, leading to high levels of spoilage.
- In feed, clostridia reduce the productivity of your herd.
- Your manure storage can emit noxious odors and when solids build up it becomes nearly impossible to pump.

Solutions for corn silage and haylage.

What if you could improve fermentation and nutrient quality of your forages?

Powered By Microbial Terroir™



1 RETAIN NUTRIENTS.

Lactic acid bacteria decrease the pH of silage to help retain nutrient value in forages.

2 AVOID SPOILAGE.

Inhibit the bacteria known to cause feed spoilage.

3 PROTECT YOUR INVESTMENT.

Improved nutrient retention and fewer feed losses translate into serious savings.

The beauty of certainty.

CERTILLUS™ uses strains of *Bacillus* to make the uncertain certain. CERTILLUS for forage contains proven *Lactobacillus* to quickly convert carbohydrates to lactic acid, lowering silage pH to maximize fermentation and reducing clostridia counts to lock in nutrients.

Avoid spoilage.

Air is the enemy because it fuels yeast and mold spoilage organisms, robbing the forage of valuable nutrients.

Good forages.

Characteristics of forages that fermented normally:

- Low pH
- Lactic acid between 2 – 6% of DM
- Low yeast and molds
- Acetic acid between 1 – 3% of DM
- Ratio of bound protein (ADIN)/crude protein of <12%
- Low ethanol and no butyric acid

Management plays an important role.

Ensure that you are adequately managing every aspect of your forages. All have serious impacts on forage quality.

- ☐ Maturity at harvest
- ☐ Crop moisture
- ☐ Length of chop
- ☐ Filling rate
- ☐ Packing density
- ☐ Cover
- ☐ Feed out rate
- ☐ CERTILLUS for forage

Applicator Calibration Recommendation

SILAGE LOAD VOLUME / **TIME TO FILL LOAD** = **FILLING RATE PER MINUTE**

FILLING RATE x **INOCULANT SOLUTION CONCENTRATION** = **APPLICATOR OUTPUT PER MINUTE**

Example:
1) 12 ton load of 65% moisture corn silage / 3 minute fill time = 4 ton filling rate per minute
2) 4 ton filling rate x 1.28 oz./ton concentration = 5.12 oz. applicator output per minute*

Tip: Keep your application rate consistent, even if moisture changes, so you can ensure every ton of dry matter is treated the same.

**1.28 oz./ton based on enough product dissolving in 10-gallon applicator to treat 1,000 tons of forage.*

CERTILLUS delivers Targeted Microbial Solutions.

Targeted Microbial Solutions™ are proprietary strains of *Bacillus* selected to combat the specific challenges in your Microbial Terroir™—which includes the environment, soil and animals on a specific farm location. The good strains of bacteria help combat harmful pathogens that are impacting animals' performance.

CERTILLUS inoculants are available in a wide range of formulations to best fit your needs:

- Haylage: 50T Dry Granular (DG), 250T Water Soluble (WS), 500T WS
- Corn Silage: 50T DG, 250T WS, 500T WS
- *Buchneri*: 200T WS
- Prime: 250T WS, 500T WS
- Prime *Buchneri*: 200T WS

Contact your ARM & HAMMER™ representative to learn more about the beauty of certainty.

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 AHanimalnutrition.com