LALLEMAND ANIMAL NUTRITION
North America
6120 West Douglas Avenue, Milwaukee, WI 53218 USA
(414) 464-6440 • Fax (414) 464-6420
www.lallemand.com • IAN NA@lallemand.com

For Immediate Release
July 7, 2009

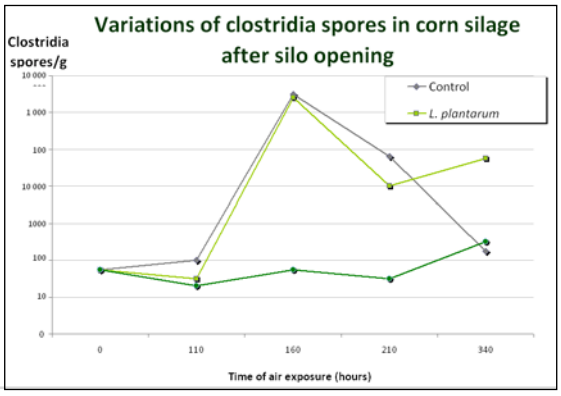
CONTACT: Kerri Ast
414-393-4022

EVEN GOOD QUALITY SILAGE CAN DEVELOP CLOSTRIDIA AT FEEDOUT

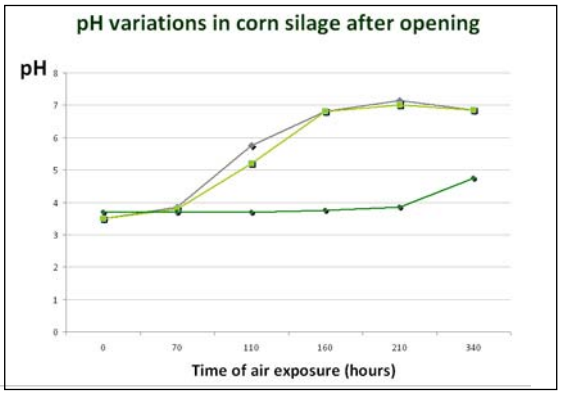
Clostridia, or butyric bacteria, contamination in silage is always a source of financial loss either due to dry matter loss or health issues of the cows. A recently published study (*Borreani et al., Journal of Applied Microbiol., 2009*) shows that, even when the analysis of fresh silage shows low clostridia count, the silage can become heavily contaminated at feedout, due to aerobic instability, a phenomenon that can easily go unnoticed as long as analysis are performed on fresh silage.

Professor Giorgio Borreani, an expert in silage for many years, has looked into aerobic spoilage and clostridia spore formation in more detail and demonstrated that even a very clean and easily ensiled silage such as corn or sorghum (high cut and rapid acidification typically prevent contamination), could show clostridia contamination. In his study, corn silage analysis shows only a few hundred clostridia spores per gram of fresh silage. But after air exposure, this count skyrockets, with up to **5 million spores/g** after a hundred hours in lab conditions.

Graph 1



Graph 2



(From Borreani et al., 2009)

In an attempt to prevent aerobic spoilage and clostridia development, the scientists tested two different microbial additives: a homofermentative lactic bacteria (*L. plantarum*) and the anti-fungal bacteria *Lactobacillus buchneri* 40788*. While *L. plantarum* has no effect on aerobic spoilage (the development of yeast, mold and clostridia after silo opening is similar to untreated silage), the silos that were treated with *L. buchneri* 40788 were stable up to 300 hours after air exposure: clostridia spores did not develop (see Graph 1).

Summary…

Clostridia, responsible for butyric acid production in silage and milk, are spore-forming bacteria : when the environment is unfavorable to their development, they become inactive, resistant spores, waiting for more favorable conditions to multiply. In the case of corn silage, the bacteria already present on the forage rapidly enter an inactive phase due to the rapid acidification of the silage and do not have time to multiply in the silo, hence a very low level of contamination and the absence of butyric acid. At the time of feedout, the fermentation process is reactivated by the presence of oxygen: first yeast, and then mold thrive and grow in the presence of oxygen and the silo temperature rises up to 45°C. As a result, the pH rises (aerobic microorganisms consume lactic acid). In a non acidic environment, clostridia start to develop. The anti-fungal activity of *L. buchneri* NCIMB 40788 prevents these fermentations and stabilizes the pH under 5 units for more than 300 hours (see Graph 2). In this case, clostridia remain inactive in the silage at feed out. **Consequently, forage dry matter and nutritional quality are preserved and the risk of clostridia contamination in milk is prevented.**

* *L. buchneri* 40788 is present in Biotal® Buchneri 500 and Biotal® Bucnheri 40788 Forage Inoculants in the US, Canada and Mexico. The product is distributed under the brand names Lalsil® Fresh and Lalsil® Dry in other parts of the world.

Lallemand, Inc. is a privately held Canadian company specialized in yeast, bacteria and yeast derivatives, for animal nutrition, baking, winemaking and pharmaceutical industries. Lallemand is the only major supplier of yeast and bacteria that is a primary producer of both, and is a recognized leader in screening for optimized microbial strains for feed, food and ethanol applications.

For additional information please visit www.biotal.com or call Customer Service at 1800 692 4700.