



Efficient Acetic Acid Production

Optimal silage quality with the right fermentation profile

Corn silage season is upon us and growers are doing all they can to make sure their corn silage is at optimal quality. As growers check for quality, there are a few areas they should pay special attention to. One quality check should be the fermentation process. To make sure the fermentation process went well for silage, growers can look at fermentation profiles and pH.

FERMENTATION PROCESS

One of our main focuses with corn silage is what takes place during feed out and how aerobically stable the feed is. Spoilage microorganisms like yeasts and molds can be responsible for aerobic instability and losses of valuable nutrients and dry matter. A strong inhibitor of yeasts and molds is acetic acid. The dilemma is it can be tricky to determine where acetic acid is coming from and the efficiency of that production. So how do we know when acetic acid production is desirable?

We know that acetic acid can provide better aerobic stability and protect against DM and energy losses during feed-out. The efficiency of acetic acid production is determined by the types of microorganisms that dominate the fermentation. Inefficient acetic acid production comes from “wild” fermentations that are driven by microorganisms like Enterobacteria. Along with degrading the quality of the silage by using up valuable nutrients, these microorganisms can produce other metabolites that can be toxic and affect intake.

The solution to obtaining acetic acid levels efficiently is to use an inoculant containing a microorganism like *Lactobacillus buchneri*. These heterofermentative microorganisms can dominate the fermentation and efficiently produce acetic acid with minimal DM and nutrient losses. Controlling the fermentation with a research-proven inoculant can help us dominate the wild population of microorganisms and produce high-quality silage.



BONSILAGE CORN+ AND PRO

During a batch fermentation trial, we evaluated the fermentation profile of corn silage samples treated with BONSILAGE CORN+ (BS CORN+) and BONSILAGE PRO (BS PRO) compared to corn silage not treated with an inoculant (Figure 1). The average DM of samples tested was 32.7% ± 0.55. The fermentation profile is characterized by pH, lactic acid, acetic acid, ethanol, and 1,2-propanediol.

When comparing BS PRO that contains a combination of *Lb. brevis*, *Lb. plantarum*, and *Lb. buchneri* at an application rate of 150,000 cfu/g of fresh forage the BS PRO was able to successfully dominate the fermentation and produce more of both lactic and acetic acid (6.8% and 2.2% DM). Higher levels of efficiently produced acetic acid not only provide better protection against re-heating but allows for the delivery of high-quality silage to the cow.

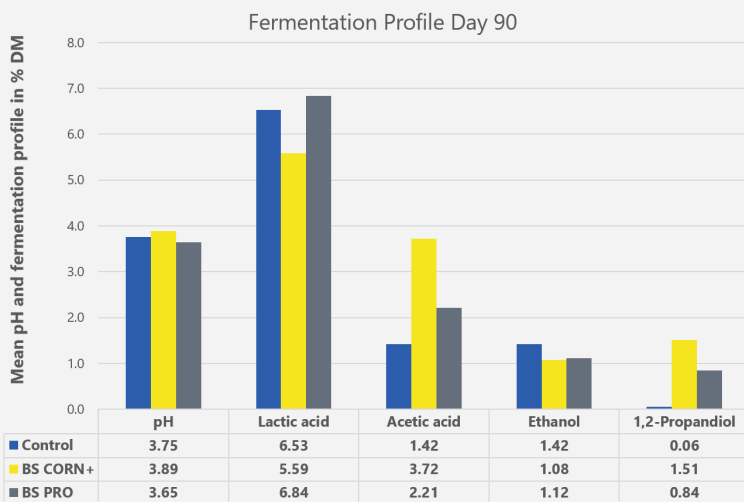


Figure 1. The pH and fermentation profile of corn silage ensiled for 90 days to determine the effects of inoculation with BS CORN+ and BS PRO against silage that was not inoculated (Control).

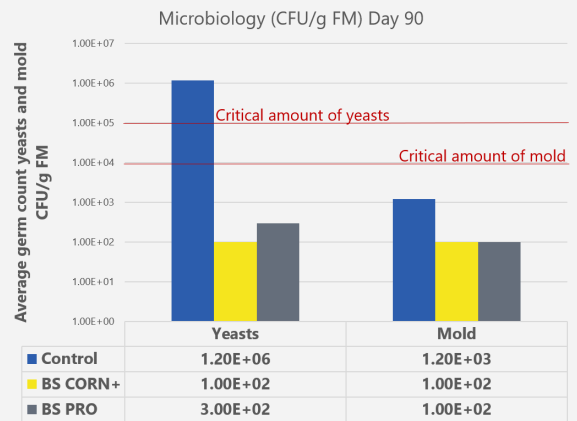


Figure 2. The efficiency of BS CORN+ and BS PRO on inhibiting yeast and mold growth compared to a control treatment was determined by analyzing counts after 90 days of ensiling.

BS CORN+, our premium treatment for corn silage, contains a combination of *Lb. plantarum* and *Lb. buchneri* at an application rate of 500,000 cfu/g of fresh forage. Due to this high concentration of *Lb. buchneri*, there is a slightly lower amount of lactic acid compared to control. The *Lb. buchneri* efficiently converted lactic acid to acetic acid to obtain higher levels of acetic acid than the control (3.7% DM vs. 1.4% DM). This provides better aerobic stability and protection against dry matter losses during feed-out. Within the BS CORN+ formulation, the *Lb. buchneri* strain present can produce significant amounts of 1,2-propanediol or more commonly known as propylene glycol (PG).

BS CORN+ and BS PRO efficiently produce significant amounts of acetic acid to inhibit yeasts and molds and protect against reheating. Using a research-proven inoculant like BS CORN+ or BS PRO will take your silage to the next level by dominating the fermentation and creating a high-quality end-product.



BONSILAGE USA: We're here to help your farm

Our expertise in silage management goes well beyond our products, and we're happy to share our knowledge to improve the quality of the silage you produce. Talk to your BONSILAGE USA specialist to learn more about how we can support the profitability of your operation and the wellness of your animals.

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