



SUCCESSFUL FEEDING STRATEGIES TO SUPPORT COW FITNESS

There is an old saying that "an ounce of prevention is worth a pound of cure" and with any disease, especially in the animal agriculture industry, it always makes the most sense to prevent rather than treat.

Being proactive in mitigating ketosis on farms helps to save money in the long run because both subclinical and clinical cases cut into the bottom dollar. Propylene glycol (PG) is used as a tool in both the treatment and prevention of ketosis in cattle.

One approach is to add PG to the TMR directly before feeding. It has become a common practice because it is less labor-intensive than trying to drench. The current recommendation for supplying PG to dairy cows to support the prevention of ketosis is at least 250 grams per cow and day. Using PG as a preventive measure against ketosis is already saving a producer from the costs of having a cow with either subclinical or clinical ketosis. Cost savings can be taken even further by providing silage in the TMR that already contains PG that was produced during ensiling.

BONSILAGE (BS) CORN+ can produce significant amounts of 1,2-propanediol, more commonly known as PG. This production of PG has been studied extensively in the laboratory and samples are continually analyzed from farms in Europe (EU) and the United States (USA). Table 1 shows average PG levels from farms in USA and EU. Samples were collected and analyzed for DM and PG levels.

 Table 1. The average DM and Propylene glycol levels of samples taken from silage treated with the PG-producing BONSILAGE inoculant on farms in Europe and the USA.

	Year(s) sampled	No. of samples	Average DM (%)	Average Propylene glycol (% DM)
Europe	2017-2022	2634	34.8	1.14
USA	2019-2021	243	36.8	1.25

Assuming the average PG amounts are representating the amount which is averagely fed when feeding BS CORN+ treated corn silage, the following PG amounts can be calculated:

Table 2. The average PG from USA samples and the calculated PG intake from an example ration where 10 kg (app. 22 lbs) of corn silage treated with BS CORN+ is included in the TMR.

	DMI (kg)	PG (% DM)	PG Intake (g)
USA	10	1.25	125

In this example BS CORN+ treated silage included in the TMR would provide about half of the dose recommended for the prevention of ketosis (250 g/day).

The University of Göttingen tested, within the framework of PhD-Thesis, the PG-producing BONSILAGE inoculant on our research farm. One group of cows was fed a diet containing silage treated with a homolactic inoculant (Control-Homo), and another group of cows was fed a diet containing silage treated with our PG-producing BONSILAGE inoculant (BS-PG). 120 cows were fed their specific diets and feed intake and milk yield were monitored. Cows in the BS PG-treated group showed a significant (p<0.05) higher DMI, PG intake, and milk yield (see Table 3). 23 out of 120 cows calved and their betahydroxybutyrate (BHB) levels were monitored for 6 weeks postpartum. The BS-PG treated group showed significantly (p<0.05) lower BHB in the blood (see Figure 1). Despite the research farm being very well managed and

Table 3. DMI, PG intake, and milk yield data from a feeding trial comparing a diet feeding silage treated with BS-PG versus silage treated with a homolactic inoculant.

	BS-PG	Control-Homo
DMI (kg/d)	23.6 ^a ± 1.03	22.7 ^b ± 0.58
PG intake (g/d)	401 ^a ± 41.9	96 ^b ±13.9
Milk yield (kg)	41.5 ^a ± 1.30	40.7 ^b ± 1.36

problems with clinical ketosis occurring seldomly, the BHB curve and standard deviation of the control group indicate the beginning of subclinical ketosis for some of the cows (1.0-1.4 mmol/L according to Oetzel, 2004).

The results of this PhD-study confirm what thousands of farmers all over the world are also observing with their cows: The positive contribution to ketosis prevention with feeding BONSILAGE treated silages.

Figure 1. Betahydroxybutyrate (BHB) levels in the blood of cows either fed a diet containing BS-PG treated silage or a control diet with homolactic inoculant treated silage.



-- homo- and heterofermentative inoculant (BS-PG)

* indicates significant differences (p<0.05)

With the use of BONSILAGE CORN+, we can see significant levels of PG being produced, which is fully available for energy metabolism and prevention of ketosis in cattle. In addition, BS CORN+ improves aerobic stability in corn and sorghum si-



lages making it a useful tool for many farmers in the United States, Europe, and around the world.



SUPPLEMENTS

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