Trial Summary: Biotal Plus; Corn Silage; London

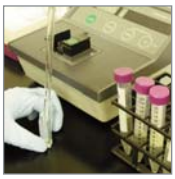
BIOTAL

Site	University of London
Lead Researchers	Professor John Leaver
Objective	To determine the effect of Biotal Plus (tested as UK brand "Goldstore") on losses, aerobic stability of corn silage and milk production by dairy cows.
Protocol	Whole-plant corn silage at approximately 30% dry matter (DM) was harvested by a self-propelled precision cut harvester. The untreated control and the Biotal Plus II treated materials were produced from the same field on the same day and stored in 8m x 4.5m x 1.8m bunker silos, ensiled for 120 days. Silages were weighed in and out, to determine storage losses. During feedout, samples were removed for aerobic stability tests conducted at room temperature (~24°C): temperatures were recorded daily and material was weighed to determine DM losses due to aerobic exposure. The silages were also used in a 12 week feeding study involving two paired groups of Holstein-Friesian dairy cows. The cows were four months post-partum at the start of the feeding trial, with mean initial milk yield of 29.3 kg/ day, liveweight 603 kg and condition score 2.4. During the trial the cows received 2 kg soybean meal and 2 kg canola meal plus a mineral mix, fed in two equal feeds daily. The corn silages were mixed 70:30 (dry matter basis) with an untreated grass silage; the forage mixture was offered ad lib. Cows were fed individually through Calan gates and individual intakes measured daily.
Results	1. Ensiling Study:

Parameter	Control	Treated
Lactic Acid Bacteria, Day 7 (CFU/g)	7.9×10^5	3.8×10^7
Fungi, Day 120 (CFU/g)	6.8×10^8	4.2×10^7
In-Silo DM Losses (%)	9.7	8.5

2. Aerobic Stability Tests:

Parameter	Control	Treated
Temperature in aerobic stability tests, Day 3 (°C)	50.6	32.8
5 Day Aerobic Stability DM Losses (%)	32.7	24.6





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Trial Summary: Biotal Plus; Corn Silage; London ...continued

Results

3. Milk Production Study:

Parameter	Control	Treated
Milk Yield (kg/day)	26.7	27.4
Milk Fat (%)	4.26	4.37
Milk Protein (% DM)	3.27	3.31
Fat Yield (kg/day)	1.14[b]	1.19[a]
Protein Yield (kg/day)	0.87[b]	0.90[a]
Fat + Protein Yield (kg/day)	2.01[b]	2.09[a]
Fat Corrected Milk Yield (kg/day)	27.7[b]	28.8[a]

[a,b]: Values in different columns with different superscripts are significantly different ($P<0.05$)

Conclusions

Although there were no differences in the fermentation profiles in the finished silages the lactic bacteria population developed more rapidly in the Biotal Plus treated silage. The treated material also had lower levels of fungi at opening and achieved a 12% reduction in DM loss during storage compared to the untreated control.

In aerobic stability tests, the Biotal Plus treated silage heated less and had less DM loss on exposure to air.

In the milk production trial, the production of fat and protein and fat plus protein were all significantly higher for the cows fed the Biotal Plus treated silage. Fat corrected milk yield was also significantly higher (+1.1 kg).