EFFECTS OF THE SILAGE ADDITIVE SIL ALL FIREGUARD™ IN GRASS SILAGE

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INTRODUCTION

Besides poor fermentation, aerobic instability is the most common challenge in wilted grass silages.
One possibility to avoid aerobic instability is the use of an additive.

OBJECTIVE

Determine the efficacy of the silage additive SIL-ALL FIREGUARD™ in wilted grass

MATERIAL & METHODS




Forage : grass mixture of *Lolium perenne* (34% DM – 5.9% WSC on FM)
Silo type : 1.5L laboratory scale –silos (3 silos/treatment/opening time)
Airstress : applied to silos opened after 49d (at 28 and 42 days aeration for 24 hours (Honig 1990))
Opening Times : 49 & 90 days after ensiling
Measurements : ■ Fermentation characteristics;
■ Dry matter losses and Aerobic stability
Treatments : **Control (C)**: no inoculant
Treatment (T) : Sil-All Fireguard ™*

SIL-ALL FIREGUARD™
Lactobacillus plantarum CNCM I-3235 > 4.00 x 10^8 cfu*
Pediococcus pentosaceus NCIMB 12455 > 6.67 x 10^7 cfu*
Pediococcus acidilactici CNCM I-3237 > 2.00 x 10^8 cfu*
Alpha-amylase (EC 3.2.1.1) from *Bacillus amyloliquefaciens* SD 80> 12 BAU**
Cellulase (EC 3.2.1.4) from *Trichoderma reesei* ATCC SD 6331 > 0.39 CMC***
Sodium Benzoate , Potassium Sorbate , Dextrose up to 7.5 kg

RESULTS & DISCUSSION

A. FERMENTATION CHARACTERISTICS (Table 1)

■ At day 90 the **fermentation quality** was **significantly improved** by the parameters pH, butyric acid, NH_3 -N, the proportion of lactic and acetic acid (LA/AA) and ethanol

Table 1. Fermentation characteristics of grass silage in the treated and control silos

Fermentation characteristics		days of storage	C		T		p-value
			$\bar{x}$	SD	$\bar{x}$	SD	
DM	[%]	90	**36.07**	1.43	**34.57**	0.47	0.127
pH		90	**4.60**	0.00	**4.20**	0.00	0.025
Lactic acid	[% FM]	90	**2.47**	0.86	**3.51**	0.49	0.127
Acetic acid	[% FM]	90	**0.79**	0.12	**0.70**	0.06	0.184
Butyric acid	[% FM]	90	**0.32**	0.13	**0.03**	0.01	0.046
Propionic acid	[% FM]	90	**0.02**	0.03	**0.00**	0.00	0.317
LA/AA		90	**3.07**	0.70	**5.00**	0.70	0.050
Ethanol	[% FM]	90	**0.42**	0.05	**0.12**	0.00	0.037
NH_3-N / total-N	[%]	90	**12.00**	1.00	**8.00**	0.00	0.037

P-values ≤ 0.05 stand for significant differences. (FM: fresh matter. DM: dry matter).

B. AEROBIC STABILITY

Aerobic stability of the treated silages:
■ Enhanced at day 49 by nearly 9 days
■ pH-out was also significantly lower for treated silage

Table 2. Results of aerobic stability test after 49 days (with 2x airstress) or 90 days storage

		days of storage	C		T		p-value
			$\bar{x}$	SD	$\bar{x}$	SD	
Aerobic Stability	[d]	49	**2.43**	0.93	**11.83**	0.29	0.046
Aerobic Stability	[d]	90	**7.93**	0.51	**8.90**	0.00	0.037
pHout		90	**5.37**	0.46	**4.50**	0.00	0.034

P-values ≤ 0.05 stand for significant differences. (DM: dry matter).

CONCLUSION

To ensure fermentation quality and if aerobic instability is expected, it is recommended to apply SIL-ALL FIREGUARD™ to wilted grass silage.