Losses in wilted Tifton 85 grass silage with different aditives[1]

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Introduction Because the seasonality in forage production it is necessary to preserve roughage in the summer in order to use it during the dry season. Silage of wilted Tifton 85 grass may be used for this purpose, but its conservation is difficult. Secondary fermentation, high effluent production and aerobic deterioration can increase the dry matter loss from 7 to 40% (McDonald et al., 1991). The use of additives in tropical grass silages can overcome part of these limitations caused by the high moisture content, low soluble carbohydrate and the great buffering capacity. According to Woolford (1984), these factors inhibit the occurrence of an adequate fermentative process and impair a better quality silage production. In order to decrease these losses, several practices have been used, but they have to be evaluated. The use of citrus pulp and bacterial inoculants increases the lactic acid production, accelerate the pH drop, improve preservation and reduce losses (Pitt, 1990). The objective of this work was to determine the losses in wilted Tifton 85 silage with the addition of enzymatic bacterial inoculants and of citrus pulp.

Material and Methods The experiment was carried out at the EMBRAPA Dairy Cattle, located in Coronel Pacheco, MG, Brazil. The four treatments of wilted Tifton 85 silage were: with inoculant, with inoculant and citrus pulp; with no inoculant or citrus pulp; with citrus pulp .The grass was harvested, chopped and exposed to sunlight during 6 hours. After this time a sample was collected for chemical analyses and the forage was submitted to the experimental treatments. The enzymatic bacterial inoculant containing *Streptococus faecium, Lactobacillus plantarum, Lactobacillus salivarus* and the enzymes cellulases and hemicellulases, was used following the manufacturer's recommendations. The citrus pulp was added as 8% of fresh basis. Experimental silos, 10 cm diameter and 50 cm length, were made from PVC tubes and had rubber caps in both ends, one of them fitted with a Bunsen valve to allow gas escape. There was a dry sand bag, of known weight, at the bottom of each silo in order to absorb the effluent produced. Silos were weighed before and after forage filling. After 60 days of fermentation silos were weighed and opened. The sand bag as well the forage were removed and also weighed. Differences between initial and final weights of silo, sand bag and forage were used to determine the gas, effluent and dry matter loss, respectively. A completely randomized experimental design was used, with a factorial arrangement 2 (with or without inoculant) x 2 (with or without citrus pulp). The results were analyzed using the ANOVA procedure. Data were compared by the SNK test at 5% probability.

Results and Discussion: The results are showed in Table 1. Gas loss decreased only when citrus pulp and microbial inoculants were used together ($P<0.05$). The treatments did not affect effluent loss ($P>0.05$), probably due to the dry matter content of ensiled material (30.95%). Following the gas loss pattern, total loss was reduced only when citrus pulp and bacterial inoculants were used together. It can be explained by the greater participation of gas loss in total losses.

Conclusions: The use of microbial inoculants was effective on reducing gas loss, as well as total losses of wilted Tifton 85 grass silage only when associated to citrus pulp.

Acknowledgement To FAPEMIG, for funding the Project and supporting the participation in the event. To CAPES for scholarships granted.

References

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Table 1. Gas, effluent and total losses of wilted Tifton 85 grass silage with citrus pulp and enzymatic bacterial inoculant.

	Gas losses (%)			Effluent losses (%)			Total losses (%)		
	Inoculant			Inoculant			Inoculant		
Citrus Pulp	Without	With	Mean	Without	With	Mean	Without	With	Mean
Without	2.0aA	1.38aA	1.69	0.29aA	0.21aA	0.25	2.28aA	1.59aA	1.94
With	2.25aA	1.42bA	1.83	0.13aA	0.16aA	0.14	2.37aA	1.58bA	1.98
Mean	2.12	1.4		0.22	0.17		2.33	1.59	
CV		27.72			65.74			22.67	

Means followed by the same letter, uppercase in the same column and lowercase in the same line, do not differ *(P>0.05).