Losses in silage of *Brachiaria brizantha* cv. Piata treated with different inoculants and doses

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Introduction In most animal production systems, food spending represent most of cost of the production, being necessary the use of appropriate technologies in food production, mainly for the use of unconventional forage as silage, such as grass Piata. Therefore, the uses of microbial and enzyme-microbial inoculants are important for obtaining satisfactory fermentation, ensuring high nutritive value with minimal losses during ensilage these forages. However, there are few accounts in the literature of the use of grass Piata as silage and the use of different inoculants on ensiling unconventional forage. Considering the above, the objective was to evaluate the different inoculants and doses about silage losses in *Brachiaria brizantha* cv. Piata.

Materials and Methods The experiment was conducted at the Animal Nutrition and Forage Laboratory - ICAA / UFMT / Sinop, Mato Grosso. The grass Piata was harvested at Embrapa Agrosylvopastoral with equipment suitable for the production of silage, which were prepared using 24 PVC mini silos, with 0.1 m diameter and 0.35m of length, with volume of 2.75 x 10^{-3} m^3 containing "Bunsen" valves. We evaluated two microbial inoculants with different doses of inoculation, which resulted in treatments: T1 - control (without inoculation), T2: inoculant Silomax Centurium Matsuda at the recommended dose of $5x10^4$ CFU/g; T3: inoculant Sil All C4 (Alltech Brazil) the adjusted dose $5x10^4$ CFU/g (similar to T2), T4: inoculant Sil All C4 (Alltech Brazil) on minimum recommended dose of 9.45 $x10^4$ CFU/g; T5: inoculant Sil All C4 (Alltech Brazil) on average recommended dose of 1.42 $x10^5$ CFU/g and T6: inoculant Sil All C4 (Alltech Brazil) on maximum recommended dose of 1.89 $x10^5$ CFU/g. The composition of enzyme-microbial inoculant Sill All C4 (Alltech Brazil) consists of the *Lactobacillus plantarum, Pediococcus acidilactici, Lactobacillus salivarius* and *Enterococcus faecium* bacteria and the amylase, cellulase, xylanase e hemicellulolytic enzymes. The microbial inoculant SiloMax Centurium Matsuda was composed of *Lactobacillus plantarum, Pediococcus pentosaceus* and sucrose. Adopted was specific mass average for all treatments 637.74 ± 4.90 kg MN/m³. Compaction occurred with the aid of a wooden bat. The mini silos were sealed with plastic tape and stored the shade for a total period of 365 days. For quantitative evaluation of the effluent produced was placed in the bottom of the silos previously dried sand, stored in little bag made of non-woven fabric (TNT). The measurement of the effluent production was performed by means of the difference weight of the whole silo and TNT little bag with sand, before and after fermentation, relative to the amount of green mass of silage sample. The loss of the MS due to the gas production was determined by the difference between the gross weight of DM silage and opening in relation to the amount of dry silage, discounting the total weight of the whole ensiled the total weight of the silage on opening. The loss of total DM was determined by the difference between the gross weight of DM silage and opening in relation to the amount of dry silage.
The experiment was conducted according to a completely randomized design with four replications for each treatment, which were: control (without inoculation), treatment with the

recommended dose of the microbial inoculant and treatments with adjusted, minimum, average and maximum dose enzyme-microbial inoculant. Performed was the analysis of variance (PROC GLM - SAS), and treatment comparisons performed through the partition sum of the square treatments of the orthogonal contrasts: 5 -1 -1 -1 -1 -1, 1 0 -1 0 0 0, 0 1 0 -1 0 0, 0 1 0 0 -1 0, 0 1 0 0 0 -1. For all statistical evaluations was considering 5% probability of type I error.

Results and Discussion In Table 1 are presents the mean values for losses effluent (LEFF), loss of gases (LGAS) and loss of total dry matter (LTDM). The LEFF silages were not influenced (P>0.05) for inoculant doses, being similar to the values observed for the control treatment. This was expected, because the inoculation did not affect the dry matter (DM) of silage to levels that would influence the LEFF, as shown in Table 1. Already the LGAS and LTDM were lower (P<0.01) for inoculant treatments compared to the control treatment. Higher yields of gases are associated with undesirable fermentation promoted by bacteria, such as enterobacteria and bacteria of the genus *Clostridium* sp., and occur more frequently in materials with low moisture and soluble carbohydrates, such as grasses unconventional. Treatment with microbial and enzyme-microbial inoculant tends to increase the desirable bacteria population during the fermentation process, increasing competition with undesirable bacteria, which allows to reduce the production of CO_2. Penteado et al. (2006) also observed a decrease in losses by gas silage Mombasa at different regrowth ages with added enzyme-microbial inoculant, resulting in 1.30% loss for gas in MS. In relation to LTDM, it was observed highest values for silage without inoculant regarding the other silages treated, due to the greater amount of gas loss observed for this treatment.

Table 1 Mean values of LEFF (% DM), LGAS (% DM) and LTDM (%) of grass silage Piata (*B. brizantha*) with different doses of inoculants

Item	C[1]	RD[2]	AD[3]	MD[4]	ARD[5]	MRD[6]	CV (%)	Contrast *P*-value				
								1	2	3	4	5
DM[7]	22.78	23.35	22.74	22.46	22.36	22.98	2.79	0.9955	0.1919	0.0641	0.0420	0.4216
LEFF	4.14	3.93	4.36	4.86	5.22	3.54	11.80	0.6214	0.5140	0.1624	0.0589	0.5642
LGAS	14.99	8.73	5.37	6.21	6.64	4.84	20.91	<0.0001	0.1066	0.2194	0.3042	0.0649
LTDM	18.53	12.37	9.54	10.84	11.57	8.26	13.66	0.0002	0.2184	0.5003	0.7216	0.0799

[1]Control (without inoculation), [2] Recommended dose (Silomax Matsuda), [3]Adjusted dose (Sill All C4), [4]Minimum recommended dose (Sill All C4), [5]Average recommended dose (Sill All C4), [6]Maximum recommended dose (Sill All C4), [7]percent (%). Comparisons considering 5% probability of type I erro.

Conclusion The addition of enzyme-microbial and microbial inoculant at different inoculation doses reduces losses gases and loss of total dry matter grass silage Piata.