Chemical composition of elephant grass clones (*Pennisetum purpureum* Schum) silage

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Introduction It is recommended to cut the elephant grass around 50 to 60 days for silage, but at this age the dry matter content is about 15 to 20 %, which limits its use at silage process (Lavezzo, 1985). This problem has stimulated research activities aiming at the selection of news genotypes with higher DM content (Freitas et al., 2004). In this perspective, through the agreement between IPA/UFRPE surveys have been conducted to evaluate *Pennisetum* sp. with higher DM content. The purpose of this experiment was to evaluate the chemical composition of five elephant grass clones (*Pennisetum purpureum* Schum) silages.

Materials and Methods Three clones of short height (Mott, IPA/UFRPE Taiwan A-146 2.27 and IPA/UFRPE Taiwan A-146 2.37) and two of high height (Elephant B and IRI 381) from Experimental Station of IPA – Itambé (PE) were evaluated. The crops were harvest at 70 days of growing, samples were collected to analysis (Table 1), and ensiled in PVC silos with four replications, that remained closed for 120 days. The relation between WSC and buffer capacity, considering the DM content, was used to characterize the Fermentation Coefficient, as cited by Oude Elferink et al. (2000). At the silos opening, samples were collected for DM, CP, NDF, ADF, pH, NH_3-N and WSC analysis. Furthermore, total carbohydrate and non-fiber carbohydrates were estimated (Hall, 1999). A completely randomized design with four replicates was used and data were submitted to analysis of variance and means were compared by Tukey test at 5%.

Results and Discussion In general, looking at Tables 1 and 2, it can be seen that the ensiling process promoted small change in chemical composition. However, this statement is based only on numerical values, because it was not possible to perform statistical analysis between chemical compositions of the crops and the silages, since the crops were not distributed on the field in a way that permitted replications. Short height clones (Table 2), even mentioned as those with lower chance of success fermentation by applying FC equation, were those that resulted in silages with the highest ($P<0,05$) levels of residual WSC. It is pertinent to emphasize that the percentage of WSC consumption during the fermentation process for silages made with tall clones were higher than those obtained in short height clones silages (values of 97.9, 90.3, 90.3, 82.9 and 69.8% for Elephant B, IRI 381, Taiwan 2.37, Taiwan 2.27 and Mott, respectively). Furthermore, this result contributed to protein preservation that can be confirmed by the lower NH_3-H values (Table 2) of short height clones silages. These results enhance the idea that it is not necessary the use of additive or wilting to achieve success in the ensiling of the short height clones silages evaluated in this study.

Conclusions Mott, IPA/UFRPE Taiwan A-146 2.27 and IPA/UFRPE Taiwan A-146 2.37 silages, made at 70 days of growing, have higher CP and residual WSC fractions than Elephant B and IRI 381 silages.

References

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Table 1. Chemical composition of five clones from elephant grass, grown at Itambé (PE)

Iten	**Elephant B**	**IRI 381**	**Taiwan A-146 2.27**	**Taiwan A-146 2.37**	**Mott**
DM, %	30.48	34.61	25.74	23.82	23.95
CP, % DM	4.22	3.35	6.41	5.87	6.55
NDF, % DM	76.46	78.50	71.72	73.11	69.46
ADF, % DM	49.81	52.15	43.58	46.74	43.39
BF[1], eq mg NaOH/100g DM	13.07	10.88	18.00	20.41	23.29
WSC, % DM	18.90	15.86	19.60	15.08	10.26
FC[3]	42.08	46.27	34.45	29.73	27.47
TC[4]	89.67	84.56	84.67	84.56	87.26
NFC[5]	13.21	12.66	12.95	11.45	13.76
WSC: CP ratio	4.50	4.70	3.10	2.60	1.56

[1]Buffer capacity, [2] Water soluble carbohydrate, [3]Fermentation coefficient, [4]Total carbohydrate, [5] Non-fiber carbohydrates

Table 2. Chemical composition of elephant grass clones silage

Iten	**Elephant B**	**IRI 381**	**Taiwan A -2.27**	**Taiwan A - 2.37**	**Mott**	**CV (%)**
DM. %	31.92 b	35.82 a	26.59 c	27.35 c	24.09 d	2.59
CP. % DM	4.23 b	3.20 c	5.68 a	5.69 a	6.31 a	6.23
NDF. % DM	74.26 a	75.23 a	68.73 ab	68.66 ab	67.13 b	4.42
ADF. % DM	52.00 a	42.28 b	55.88 a	41.76 b	41.02 b	9.09
pH	4.10 ab	3.52 c	3.87 b	4.12 a	4.02 ab	2.86
NH_3-N[1]. % total N	2.58 b	4.08 b	7.00 a	6.33 a	3.73 b	17.09
WSC[2]. % DM	0.39 c	1.22 bc	1.89 ab	2.58 ab	3.10 a	35.83

[1]Ammonia nitrogen. [2] Water soluble carbohydrate