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Presenter Information

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Qualitative evaluation and character heritability of leaf blade and stem from *Pennisetum* sp. clones

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Key words: chemical composition, genetic parameter, *Pennisetum purpureum*

Introduction *Pennisetum purpureum* Schum. is a tropical grass known by its adaptability to a wide range of environments and its productivity potential and forage quality. Forage nutritive value has a direct influence on animal performance. Heritability is a very important parameter to predict characters that may influence genetically forage chemical composition. The objective of this research was to determine the nutritive value and heritability on five *Pennisetum* clones under cut in the dry forest zone of Pernambuco State, Brazil.

Materials and methods The experiment was carried out at the Agricultural Research Station of IPA, located in Itambé, PE (Lat. 07°25'00"S, Long. 35°06'00"W Gr.; 190 m above sea level). Five *Pennisetum* genotypes (IRI-381, Venezuela, Elefante B, HV-241, and Hexaplóide) were evaluated. A staging cut was performed at the beginning of the experimental period and evaluations were performed every 60 d during the raining season and every 120 d in the dry season, in the following dates: 10/17/05, 12/17/05, 04/17/06, and 06/17/06. Representative tillers were sampled along 1-m row and separated into leaf blade and stem. It was determined the dry matter (DM), crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF), in vitro dry matter digestibility (IVDMD), mineral matter (MM), ether extract (EE), total carbohydrates (TC), and non-fibrous carbohydrates (NFC) following the methods described by Silva and Queiroz (2002). In addition, the heritability was also determined according Shimoya (2002).

Results For most qualitative response variables determined in leaf blade and stem fractions, no significant (Tukey test, $P > 0.05$) differences among clones were observed. For leaf blade, only ADF concentration (0.84) and total carbohydrates (0.87) showed high heritability, indicating that these variables could be selected in a breeding program in order to improve forage nutritive value. The coefficient of variation of these variables was low, indicating that genetic variability was more important than environmental variability.

Table 1 Nutritive value, in percentage, of *Pennisetum* clones leaf blade.

	DM	CP	NDF	ADF	IVDMD	MM	EE	TC	NFC
IRI 381	20.0a	9.6a	72.4a	38.8 ^{ab}	58.2a	10.1a	1.9a	78.4 ^b	11.7a
Venezuela	23.1a	8.1a	73.1a	40.1 ^{ab}	56.1a	8.6a	1.9a	81.4a	11.9a
Hexaplóide	19.1a	9.4a	74.5a	42.1a	55.1a	9.5a	1.9a	79.2 ^{ab}	15.7a
HV 241	23.0 ^a	9.1 ^a	72.7 ^a	32.7 ^b	55.4 ^a	9.1 ^a	1.7 ^a	77.2 ^b	18.8 ^a
Elefante B	25.3 ^a	8.9 ^a	73.6 ^a	38.7 ^{ab}	58.7 ^a	9.7 ^a	1.8 ^a	79.6 ^{ab}	10.7 ^a
Mean	22.1	9.0	73.2	38.5	56.7	9.4	1.8	79.2	13.8
CV (%)	15.3	8.6	2.7	6.8	4.5	9.7	3.9	1.3	48.0
H ²	0.62	0.64	0.35	0.84	0.56	0.54	0.57	0.87	0.43

Means followed by the same letter in the same column do not differ by Tukey test ($P > 0.05$).

Table 2 Nutritive value, in percentage, of *Pennisetum* clones stem.

	DM	CP	NDF	ADF	IVDMD	MM	EE	TC	NFC
IRI 381	19.8a	4.8a	81.0a	50.9 ^a	54.7a	11.6a	0.6a	82.5 ^a	6.3a
Venezuela	14.2a	5.2a	76.9a	45.4 ^a	56.7a	10.3a	0.7a	83.7a	9.8a
Hexaplóide	15.5a	6.1a	77.2a	46.4 ^a	55.7a	11.2a	0.8a	82.1 ^a	6.5a
HV 241	13.7 ^a	5.1 ^a	77.7 ^a	46.4 ^a	53.9 ^a	13.5 ^a	0.7 ^a	80.9 ^a	9.2 ^a
Elefante B	14.5 ^a	4.8 ^a	77.2 ^a	47.7 ^a	56.9 ^a	11.8 ^a	0.8 ^a	82.5 ^a	7.7 ^a
Mean	15.5	5.2	78.0	47.4	55.6	11.7	0.7	82.3	7.9
CV (%)	21.1	10.2	3.7	4.1	6.9	11.2	19.5	1.5	19.8
H ²	0.63	0.76	0.51	0.79	0.25	0.70	0.54	0.68	0.75

Means followed by the same letter in the same column do not differ by Tukey test ($P > 0.05$).

Conclusions Under the prevailing conditions of the dry forest zone of Pernambuco State, Brazil, the evaluated clones showed similar nutritive value. Heritability results suggest that ADF and total carbohydrates concentration in the leaf blade should be used in a breeding program aiming to improve forage nutritive value.

References

- Shimoya, A.; Pereira, A.V.; Reinaldo, P.F.; Cruz, C.D.; Carneiro, P.C.S. 2002. Repetibilidade de características forrageiras do capim elefante. *Scientia Agrícola*, v. 59, n. 2, p. 227-234.
- Silva, D.J.; Queiroz, A.C. 2002. *Análise de Alimentos: métodos químicos e biológicos*. Viçosa: UFV, 235p.