Yield and quality parameters of an interspecific hybrid *Pennisetum purpureum* Schum. (elephant-grass) *x Pennisetum glaucum* (L.) R. Br. Stuntz (pearl millet)

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Introduction Elephant-grass is a tropical forage grass used either as a supplement fodder or for direct grazing. It usually shows regular nutritive value (6-13% crude protein, CP, and 55-60% forage digestibility) (Alcantara *et al*., 1981). Most of the available cultivars produce no viable seeds. On the other hand, pearl millet has high seed yielding potential along with high quality forage (>15% CP and 70% forage digestibility). However, it shows poor forage production, low field persistence under grazing and low regrowth potential after cutting or grazing. During the 90's, an interspecific hybrid between the two species was developed, trying to combine the elephant-grass adaaptability and forage yielding potential with the pearl millet forage quality and seed yielding potential (Schank *et al*., 1993; Schank, 1996). The new genetic material was able to produce viable seeds in variable amounts (Diz *et al*., 1995). The main aim of this research was to produce selected populations with high phenotypic uniformities, showing high average forage production and quality.

Materials and methods Cutting and grazing types populations (CT and GT) were established, through the selection of 250 individual plants within the original F_2 population. The CT was made up of tall plants with low-tillering potential, long and broad leaves, thick stems with long internodes and erect growth habit while GT presented small and high-tillered plants, short and narrow leaves, thin stems with short internodes and prostrated growth habit. During two consecutive selection cycles, both were allowed free intercrossing in isolated fields. Plant height, tiller number, leaf length and width, stem diameter, internode length, inflorescence axis length, inflorescence length and leaf/stem ratios were scored, as well as dry matter (DM) production; leaf and stem CP contents; leaf+stem CP production and leaf and stem digestibility.

Results The CT and GT populations showed marked gains in phenotypic uniformities, while maintaining their original differential traits. Similar results were showed for internode length, inflorescence axis length and inflorescence length (data not shown here). However, there were differences among them for leaf/stem ratios (Table 1). Both selected populations showed DM production higher than the control with GT outstanding. The highest leaf and stem CP contents were also in GT, but there were no significant differences in leaf and stem digestibility. Therefore, GT and CT gave higher overall CP production than the original F_2 population .

Table 1 Mean results for selected morpho-agronomic, yield and quality traits in two selected populations compared with original F_2 population for 2004 selection cycle

Population	Plant height	Tiller number	Stem diameter	Leaf stem ratio	DM yield (t/ha)	Leaf CP (%)	Stem CP (%)	Leaf digestibility (%)	Stem digestibility (%)	CP yield (kg/ha)
Cutting type	3.41a	18.0b	1.80a	32.3b	15.2a	8.1b	4.3b	71.9a	56.3a	779b
Grazing type	3.01b	34.4a	1.21b	38.2a	14.1a	9.4a	5.8a	70.9a	59.0a	965a
Original F_2	3.32a	19.5b	1.73a	26.5a	11.8b	7.8b	4.6b	69.0a	57.4a	620c
Mean	3.25	24.0	1.58	32.3	13.6	8.4	4.9	70.6	57.6	788
C.V (%)	7.09	10.4	14.1	15.2	17.2	12.0	12.8	10.1	10.3	15.4

C.V. (%) = coefficient of variation; b) Means followed by different small letters, in the same column, are statistically different according to the Duncan test *at p<0.05*

Conclusions The phenotypic uniformities of both selected populations were improved; forage yielding and quality parameters were enhanced, making feasible the use of those populations in cultivated pastures.

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