

## Development and evaluation of *Pennisetum purpureum* mutants through irradiation with $^{60}\text{Co}$

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**Introduction** The development of plant mutants is a commonly used procedure nowadays. One way of obtaining mutant plants has been seed irradiation with gamma rays. As these studies are not common in tropical pasture species (Micke *et al.*, 1993, Herrera, 2001), the objective of this study was the development and evaluation of *Pennisetum purpureum* mutants through irradiation with  $^{60}\text{Co}$ .

**Materials and methods** Agamic seeds of *Pennisetum purpureum* cv. King grass were irradiated in a source of  $^{60}\text{Co}$  (MPX-gamma-25M) with a potency of 0.21 Gy/s and an acute dosage of 0-100 Gy. The methodology of Herrera *et al.* (1996) was used for the identification and the initial evaluation of the mutants. The promising mutants were evaluated for five years in a field experiment under dry conditions (without irrigation in the dry season and with fertilisation of 180 kg N/ha in the rainy season).

**Results** The highest ( $P < 0.01$ ) yield was obtained in the mutants (Table 1), specially in the dry season, when tropical pastures have considerably reduced yields. This was an advantage for the mutants because larger amounts of forage for the animals are produced with the same inputs and reduced production costs. At the same time, this could indicate drought tolerance. Besides, the lowest plant loss (10-16 %) at the end of the experimental period was recorded in the mutants and they had the highest ( $P < 0.01$ ) content of leaves (52-55 %) in the dry season. There were no differences for crude protein and the highest ( $P < 0.01$ ) in vitro organic matter digestibility was obtained in the stems of one of the mutants (57 and 63 % for the rainy and dry season, respectively). There was no incidence of pest and diseases during the five years of the exploitation.

**Table 1** Yield (t DM/ha) accumulated during five years

Varieties	Rainy season	Dry season	Total	Difference
King grass	58.09 <sup>b</sup>	39.44 <sup>b</sup>	97.53 <sup>b</sup>	
CUBA MF-1	61.28 <sup>ab</sup>	46.22 <sup>a</sup>	107.50 <sup>a</sup>	+ 9.97
CUBA MF-2	63.16 <sup>a</sup>	44.99 <sup>a</sup>	108.15 <sup>a</sup>	+ 10.62
SE ±	1.21 <sup>**</sup>	1.53 <sup>**</sup>	2.60 <sup>**</sup>	

<sup>ab</sup> Values with different superscripts within each column differ at  $P < 0.05$  (Duncan, 1955)

<sup>\*\*</sup>  $P < 0.01$

**Conclusions** The mutants were superior to King grass and they indicate possible drought tolerance.

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