

Phenotypic and genotypic variation of *Brachiaria decumbens* after exposure to gamma radiation.

ABSTRACT

An experiment was conducted to evaluate the phenotypic and genotypic variations of pasture grass *Brachiaria decumbens* Stapf after irradiation with gamma rays. About 1 kg *B. decumbens* seeds were subjected to gamma irradiation at 900 Gy. The irradiated and untreated seeds were sown in a potting media mixture. After one week, the seedlings were thinned to leave only one seedling in each hole. Cutting back method was applied to eliminate chimeric sector in the plant. Subsequent cutting back of stolons was carried out up to M1V6 (6th cutting back). A distinctly different phenotype of *B. decumbens* was discovered amongst the irradiated seedling. This individual phenotype was multiplied and observations were recorded and compared with the control. The phenotype presumed as mutant had an erect growth habit, short internodes and profuse tillers. The leaves were darker green and they had finer hairs as compared to the control plants. The mutant leaves were also wider and shorter than the control plants. The leaf to stem ratio was also greater in the mutant. The nutritive characteristics between the mutant and control plants were similar, with the exception that the mutant had a significantly greater crude protein concentration (20.07%) as compared to control (18.86%). Random Amplified Polymorphic DNA (RAPD) assay using single arbitrary primer CS1786 and CS1787 showed that the primer CS1786 generated more than four strongly amplified bands of DNA with sizes ranging from 500 bp to 1500 bp. The assay showed that there was no difference between the DNA profiles of mutant *Brachiaria decumbens* and its mother plant. This work shows that the technique of gamma irradiation can be used to increase phenotypic diversity of *B. decumbens* that could be applied in breeding programs.

Keyword: *Brachiaria decumbens*; Gamma irradiation; Mutant; Phenotypic and genotypic characters.