

ABSTRACT

Appropriate methods of mutation induction are of high importance in pastures for increased genetic variability and improved performance. The objective of this research was to improve the agronomic and nutritive performance of mutant lines (M7) through induced mutagenesis to seeds of a local landrace *Brachiaria ruziziensis*. The seeds were irradiated with 0, 10, 20, 30 and 40Gy doses of gamma radiation from Cobalt 60 (^{60}Co). Treatments were; KE 0Gy, KE 10Gy, KE 20Gy, KE 30Gy and KE 40Gy resulting into M1 seeds. The M1 seeds were planted in the greenhouse in germination pots for one month and the seedlings transplanted to the field. Seeds of M6 plants (M7 seeds) were used to establish field experiment in a completely randomized block design, with three replications. Parameters measured included; tillering, leaf-stem ratio, dry matter weight, and seed weight. Data collected was analyzed using the SAS package. Mutant lines exhibited better agronomic performance compared to the wild type. Performance increased with increased gamma-ray exposure with 40Gy treatment outperforming all other treatments whereas the control performed dismally. There was a significant difference ($P < 0.005$) in the dry matter with 40Gy treatment having the highest values of dry matter yields, whereas control had the lowest values. Application of nuclear technology to other grasses would lead to increased biomass and improved nutrition for increased animal productivity leading to food and nutrition security.

Keywords:

- **Agroforestry**
- **market participation and marketing factors**