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## INCREASING THE GENETIC VARIABILITY FOR THE IMPROVEMENT OF MAIZE FOR ENHANCED TOLERANCE TO DROUGHT AND NITROGEN STRESSES

In Democratic Republic of the Congo (DRC), maize (*Zea mays* L.) production encounters constraints such as low soil fertility, low adaptability of genotypes to climate, rains variability, diseases and soils acidity. In order to explore genetic variability maize seed irradiated using a Cobalt 60 gamma source. With doses ranging between 75, 150, 300, 450 and 600 Gy. A control maize seeds batch was not irradiated. The optimum dose was calculated precisely from GR50 i. e., the doses leading to a 50% growth reduction. Bulk irradiation of a larger number of seeds was done using the doses of 350 and 348 Gy respectively for both accessions. M1 seeds were planted in the fields at Luvuvamu Locality in the Province of central Kongo in DRC. M2 seeds were planted in the field, the agro-morphological parameters of plants M3 were evaluated according to maize descriptors while being based on the selected variables. The descriptive analysis showed significant phenotypic variability for 24 agro-morphological characters. 12 Katanga M3 lines presented male flowering between 53 and 57 days whereas the minimum number of days for such flowering are 58 days at M0 plants (non-irradiated plants). 1 line had 3 ears with a single stalk. For 3 Bukidibukidi M3 lines male flowering established between 53 and 55 days whereas the minimum was 56 at M0. 4 ears presented the number of M4 grains varying between 457 and 610 g. The maximum number of grains obtained on ears was 456 at M0. In this study, gamma radiation caused morphological changes and also increased variability in quantitative traits of maize lines.

### Country or International Organization

Democratic Republic of the Congo

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