Effects of gamma irradiation on the performances of *Acalypha hispida* (Cat's tail plant)

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ABSTRACT

Gamma radiation has been used to improve many genotypes of crop species with the primary goal of increasing genetic variation and using it in plant breeding. Hence considering this, an experiment was conducted in a CRD with four replicates at the University of Colombo Institute for Agro-technology and Rural Sciences, Hambantota, Sri Lanka, to evaluate the influence of gamma irradiation on the performances of *Acalypha hispida*. Rooted cuttings were subjected to various dosages of ^{60}Co gamma irradiation, including 0, 20, 25, 30, 35, and 40 Gy. Treated plants were observed for their morphological changes, and survival %, plant height; the number of leaves, and length of inflorescences were recorded. Collected data were statistically analyzed using ANOVA procedures by SAS 9.1.3 software package. Based on the present findings, no significant differences were observed in survival % and length of inflorescences. Further, early days of growth showed significance in plant height and number of leaves. The increase in dose decreased plant height and the number of leaves. No significance was observed in measured growth variables during the later days of plant growth. Changes in leaf shapes were noticed during the early stage of growth and later the pattern changed into normal. Plants treated with 30 Gy and above showed colour changes (pink and white) in inflorescences which persisted as their continuing general character. It can be stated that variation in vegetative parts (leaves) recovered and variations in inflorescences continued during its growth and development. Treating the *A. hispida* plants with gamma irradiation has the potential to create variation in plants and it can be suggested to apply more gamma irradiation stress (>40 Gy) on *A. hispida* to induce more variations.

Keywords: *Acalypha hispida*, Cat's tail plant, Gamma irradiation, Growth, Mutation