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# Effects of Gamma Irradiation on Physiological Characteristics of HQPM-1 Maize Genotype & Its Yield Attributes

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**ABSTRACT:** Nuclear techniques, in contrast to conventional breeding techniques, are widely applied in agriculture for improving genetic diversity. Unlike conventional breeding procedures which involve, the production of new genetic combinations from already existing parental genes, nuclear technology causes exclusively new gene combinations with high mutation frequency. Basic tool of nuclear technology for crop improvement is the use of ionizing radiation which causes induced mutations in plants. These mutations might be beneficial and have higher economical values. Gamma rays are the electromagnetic radiation, which ionize the materials and having the energy level from around 10 kilo electron volts (KeV) to several hundred kilo electron volts (KeV). Therefore, gamma rays having more penetrating power than alpha and beta particles. This study was performed to determine the effect of gamma irradiation on HQPM-1 maize genotype. Thirteen doses of gamma irradiation viz., 0.00 (control), 0.0025, 0.005, 0.01, 0.05, 0.1, 0.2, 0.3, 0.4 0.5, 0.75, 1.0 and 2.0 kGy, were given to seeds with the help of $^{60}$Co γ-radiation source facility. The physiological parameters of seeds and plants viz., germination (%), plant height and photosynthetic rate were determined. Physiological parameters such as plant height, and photosynthetic rate at 50 DAS increased significantly in lower doses of gamma irradiation. Grain yield attributes and yield per hectare were also determined. Data attained revealed that the plant biomass, grain per plant and yield per hectare increased significantly in lower doses of gamma irradiation (0.0025 – 0.2 kGY) and reduced on and beyond the 0.3kGy dose. 

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