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Effects of Gamma Irradiation on Germination and Physiological Aspects of HQPM-1 Maize Genotype

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Abstract This study was performed to determine the effect of gamma irradiation on the germination percent, plant height, leaf area index, photosynthesis and productivity of maize genotype HQPM-1. 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. Germination percent, nutrient levels in the plant leaves, plant height, leaf area index, photosynthesis rate, hundred seeds weight and finally productivity per square meter were determined by using the standard procedures and protocols. Data attained revealed that germination percent showed significant change and it was reduced after 0.3 kGy dose and completely stopped after 0.5 kGy dose. Plant height increased in lower gamma irradiation doses and reduced beyond 0.3kGy dose. Similarly leaf area index as well as photosynthesis was better for the lower doses of gamma irradiation and they reduced beyond 0.3 kGy dose. The hundred gram seeds weight did not change significantly. Grain productivity was significantly higher in the lower doses of gamma irradiation and it reduced drastically beyond 0.3 kGy dose. The micro as well as macro nutrients determination is being carried out.