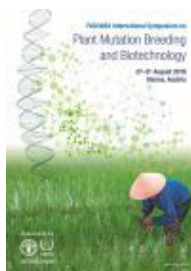


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COMPARATIVE EFFICACY OF ELECTRON BEAM OVER GAMMA RAYS TO INDUCE NOVEL MUTATIONS IN MUNGBEAN (*VIGNA RADIATA* L. WILCZEK)

Induced mutation is very useful in mungbean as natural genetic variation is limited. The present study was conducted to induce variability through induced mutation, compare efficiency and effectiveness of gamma rays with electron beam based on frequency and spectrum of mutant and efficiency to detect novel mutations in the M2 generation. Seeds of mungbean variety TM 96-2 were irradiated with doses of 200, 300, 400 and 500 Gy gamma rays and electron beam. Observations in the M2 generation showed that electron beam treatments induced a greater frequency of chlorophyll mutations than gamma rays. The total mutation frequency in all doses of electron beam (2.0 %) was found to be higher than gamma rays (1.3 %). The highest mutation spectrum was observed in the 200 Gy dose of electron beam, followed by 200 Gy gamma rays. Mutagenic efficiency of electron beam was higher in 200 and 400 Gy treatments as compared to gamma rays, while it was less than gamma rays in 300 and 500 Gy treatments. Mutagenic effectiveness was found to be highest in 200 Gy dose of electron beam. Four novel mutants: four primary leaves, lanceolate leaf, yellow pod and seed coat colour were identified in 200 Gy treatment of electron beam. Desirable mutants like early and synchronous maturity, large seed size and drought tolerant were identified. The drought tolerant mutant showed significantly greater root length (40 cm), leaf thickness (0.704 to 0.803 mm) and lower leaf canopy temperature (32.4°C) than control (20.5 cm root length, 0.573 mm leaf thickness and 40.9°C leaf canopy temperature). True breeding nature (inheritance) of these mutants was confirmed in M3 generation.

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