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RESEARCH PAPER

Studies on mutagenic effectiveness and efficiency of finger millet [*Eleucina coracana* (L.) Gaertn] in M_1 generation and effect of gamma rays on its quantitative traits during M_2 generation

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Abstract : Dry seeds (12 % moisture) of two finger millet cultivar *viz*., Dapoli-1 and Dapoli Safed were irradiated with four doses of gamma-rays *viz*., 400 Gy, 500 Gy, 600 Gy and 700 Gy at BARC, Mumbai. In laboratory test, root and shoot lengths of seedlings were decreased with increase in dose of gamma rays. Similarly, germination percentage and survival rate of seedlings were decreased with increase in dose of gamma irradiation during field study. In M_1 generation, three types of chlorophyll mutations *viz., albino, xantha* and *viridis* were observed. *Albino* and *xantha* were observed in all treatments, whereas, *viridis* observed only in lower doses *viz.*, 400 Gy and 500 Gy. Based on the chlorophyll mutation frequency on M_1 plants, mutagenic effectiveness and efficiency were computed. In Dapoli-1 variety, two early maturing mutants and three high yielding mutants were isolated from 500 Gy dose and 600 Gy dose, respectively. In M_2 generation, the mutagenic treatments were effective in inducing various types of chlorophyll and morphological macro mutants, few of those showed significant change in flowering, maturity and plant height characters and few of them have good breeding value.

Key Words : Finger millet, Chlorophyll mutations, Macro mutants, Gamma rays

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