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EFFECT OF GAMMA RAYS, EMS AND SODIUM AZIDE ON QUANTITATIVE CHARACTERS IN KALA JIRGA NON-BASMATI AROMATIC RICE (ORYZA SATIVA L.) CULTIVAR FROM KOLHAPUR INDIA

Kala Jirga, a local non-basmati aromatic rice cultivar (landrace) grown in Kolhapur district, Maharashtra, India possesses a good aroma quality, it has low yield potential and a very good potential for domestic market. 500 seeds bulks of Kala Jirga cultivar were subjected separately to mutagenic treatments with gamma rays (100, 200 and 300Gy), Ethyl methanesulphonate (EMS) 0.8, 1.0 and 1.2% and Sodium Azide (SA) 0.002, 0.004 and 0.006% to induce genetic variability. Seeds from M1 plants were planted in a plant to row basis as M2 generation. Various mutants were identified with respect to plant height, maturity and yield. Dwarf mutants were identified among plants irradiated with 0.002% and 0.004% SA and those irradiated with 100 and 200Gy Gamma-rays showed notable reduction in height. Early maturing mutants with 155-157 days to maturity compared with 167 days in control were detected among plants treated with EMS at 0.8 and 1.0%. Plants with higher tiller number were identified in all mutagenic treatments: EMS (1.0 and 1.2%), SA (0.002 and 0.004%) and 100Gy treatments with the number of tillers ranging from 24 to 32 tillers/ plant as compared with 9 tillers/ control plant. Mutants with increased panicle length ranging from 22.08 to 25.96 cm from EMS (0.8, 1.0 and 1.2%), SA (0.004%) and 100Gy treatments as compared to control (19.69 cm) were also identified. Mutants with higher yield/plant were detected in treatments with EMS (1.0 and 1.2%), SA (0.002 and 0.004%). Plants derived from 100Gy treatments showed higher yield/plant (29.02-38.84 g/plant) as compared to controls (11g/plant). Among the mutagenic treatments, 0.8% and 1.0% treatments of EMS, 0.002 and 0.004% SA and 100Gy treatments were found to be the most effective treatments for induction of desirable mutants.

Country or International Organization

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