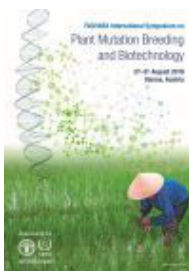


# FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



Contribution ID: 81

Type: Poster

## IMPROVEMENT OF POPULAR NEPALESE RICE VARIETIES THROUGH MUTATION BREEDING

Mutation breeding has been widely used to upgrade the well adapted crop varieties by altering one or two major important traits which limit their productivity or enhance their quality. In Nepal, rice mutation breeding works have been started since 2013 aiming to improve the agronomic and disease tolerant traits of four popular rice varieties namely Sabitri, Radha-4, Khumal-4 and Jumli Marshi. In this regard, seeds of these four commercial rice varieties were gamma irradiated at four different doses of 100, 200, 300 and 400 Gy at radiation facility of Batan, Indonesia, and the radio-sensitivity test revealed their LD50 to be 271, 300, 294 and 238 Gy, respectively. Bulk irradiation at their respective LD50 doses was done at FAO/IAEA Laboratories, Seibersdorf, Austria. Thereafter, the irradiated M1 seeds of Sabitri and Radha-4 were sown at the research block of National Rice Research Program, Hardinath, Dhanusha (Terai-plain areas) and that of Khumal-4 and Jumli Marshi at Agronomy Division, Khumaltar (mid-hill). Based on five selection criteria namely, maturity period, % filled grain, number of panicles per hill, panicle length and 1000-grains weight, 10, 11 and 12 promising mutant progeny lines of Radha-4, Sabitri and Khumal-4, respectively were pre-selected from M3 population and transplanted in June 2017 for generation advancement. Seed of M4 generation of these varieties are ready for initial evaluation in field in the rice growing season during May 2018. The preliminary results show that the present study would finally lead to rapid enhancement of rice varieties with improved grain yield and increased biotic and abiotic stresses.

### Country or International Organization

Nepal Agricultural Research Council/Nepal

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**Track Classification:** Mutation breeding for adaptation to climate change in seed propagated crops