

Induction of disease resistance in regionally important banana cultivars through *in vitro* mutagenesis

Prabhuling Guranna, Rashmi H, Kulapathi H, Babu AG and Satish D
 University of Horticulture Sciences, India

Bananas and plantains (*Musa spp.*) represent one of the most important tropical fruit crops in the world. It is widely grown in India with great socio-economic significance. Conventional breeding methods have been of limited success due to parthenocarpy, polyploidy and limited available information on genetics and genomics. Therefore, mutation breeding combined with *in vitro* culture is regarded as a new technology for induction of disease resistance in banana. The prime objective of the present study was to induce disease resistance in regionally important banana cultivars viz., Rajapuri Bale (AAB), Ney Poovan (AB), Nanjanagudu Rasabale (AAB) and Red Banana (AAA) through *in vitro* mutagenesis and screen the putative mutants against panama wilt and yellow sigatoka diseases. The multiple shoot bud aseptic cultures were treated with gamma irradiation (25, 30, 35, 40 and 45), EMS (0.30, 0.60 and 0.90 %), Sodium azide (0.01, 0.02 and 0.03 %) and BAP (10, 15 and 20 mg/l). After treatments, cultures were immediately transferred to multiplication medium. The proliferated cultures were sub cultured for five times onto fresh multiplication medium with each subculture involving 25-30 days to disassociate chimeras. The *in vitro* regenerated putative mutants of Ney Poovan, Nanjanagudu Rasabale and Rajapuri Bale, Red Banana were screened for their reaction to panama wilt and yellow sigatoka disease, respectively in nursery. These putative mutants were further characterized by using morphological and SSR

markers. Six and five putative mutants derived through gamma irradiation were found tolerant to panama wilt in Nanjanagudu Rasabale and Ney Poovan, respectively, whereas, six and eight putative mutants obtained through chemical mutagenesis were reported tolerant to panama wilt in Nanjanagudu Rasabale and Ney Poovan, respectively. About resistance to yellow sigatoka, six and five gamma irradiated mutants were found tolerant in Rajapuri Bale and Red banana, while, seven putative mutants each derived through chemical mutagenesis were reported tolerant in Rajapuri bale and Red banana. Morphological and molecular characterization of putative mutants showed remarkable differences in variations within four banana cultivars.

Speaker Biography

Prabhuling Guranna has completed his PhD in Horticulture with specialization in banana plant tissue culture in 2011 from University of Agricultural Sciences, Bangalore, India. He participated in post graduate course on "Adapting to Climate Change: Biotechnology in Agriculture in a World of Global Environmental Changes" from 2.05.2011 to 30.06.2011 at Rehovot, Israel. Presently he is working as Associate Professor of plant biotechnology at University of Horticultural Sciences, Bagalkot, India. He has over 35 research publications that have been cited over 12 times, his RG score is 9.11 and H-index is 2 and has been serving as an editorial board member of reputed Journals viz., Research Journal of Biotechnology and European Journal of Medicinal Plants. He is MASHAV alumni, life member of International Society of Biotechnology, Karnataka Horticultural Society and Association for the Improvement in Production and Utilization of Banana. He received first best oral presentation award at National Conference on Production of Quality Seeds and Planting Material – Health Management in Horticultural Crops in 2010.

e: gprabhuling@gmail.com

 Notes: