

## ***In-vitro* screening of ethyl methanesulfonate (EMS) treated shoot tips of banana for fusarium wilt using fungal co-cultivation**

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Induced mutation in conjunction with *in-vitro* culture increases the effectiveness of mutation induction through handling large populations. It facilitates *in-vitro* screening conditions against targeted disease and rapid multiplication of selected variants. Koilkuttu (silk banana (AAB) which demands high price in the local market is highly susceptible to fusarium wilt caused by soil borne pathogen *Fusarium oxysporum* f.sp. *cubense* (*Foc*). In the present study, *in-vitro* proliferated shoot tips of Kolikuttu banana variety 'Agra' were treated with ethyl methanesulfonate (EMS) aiming to develop plants resistance/less susceptible to fusarium wilt. The EMS treated shoot tips were multiplied for subsequent 3 subculture cycles and rooted *in-vitro*. A total of 320 numbers of plantlets cultured in ½ strength Murashige and Skoog (1962) medium were used for the co-cultivation technique. Each culture with a rooted plantlet was inoculated with a piece of filter paper soaked in a  $1 \times 10^6$  spores/ml suspension of the pathogen and incubated at  $25 \pm 2^\circ\text{C}$  temperature, 12/12 day/night photoperiod with  $50 \mu\text{molm}^{-2}\text{s}^{-1}$  light intensity for 4 weeks. The survived plantlets (2%) were potted in sterilized coir dust:sand (3:1 ratio) medium and were hardened inside a propagator. After 3 weeks, plantlets were shifted to a polytunnel. The remaining plants were then subjected to further screening on a pathogen inoculated soil mixture. From the *in-vitro* survived plants, 5 nos. of plants were infected with *Foc* at later screening stages. Randomly Amplified Polymorphic DNA (RAPD) was performed for the two plants survived along with a positive control. According to the dendrogram the similarity of these 2 plants with the control (untreated Agra) was above 66.67%. Results of the present study confirmed the necessity of further screening of survived plants *in-vitro*.

**Keywords:** banana, *Fusarium oxysporum*, *in-vitro* screening, mutation and pathogen

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