ISSN: 1391-8796
Proceedings of
5th Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
February 15, 2018

In-vitro screening of ethyl methanesulfonate (EMS) treated shoot tips of banana for Fusarium wilt using crude culture filtrates of different *Fusarium oxysporum* isolates

Shirani D.A.[1], Niroshani K.A.C.[1], Abeysinghe P.D.[2] and Abeysinghe S.[2]
[1]*Agriculture Research Station, Telijjawila, Sri Lanka*
[2]*Department of Botany, University of Ruhuna, Matara, Sri Lanka*

Fusarium wilt is the most serious threat to commercial cultivation of many banana varieties including Kolikuttu; a variety with high consumer demand in Sri Lanka. The improvement of banana through conventional methods is hampered by the sterility and polyploidy of the plant. Therefore, mutagenesis could be used as a viable option to induce genetic variations. In the present study, *in-vitro* mutagenesis using the chemical mutagen; ethyl methanesulfonate (EMS) was undertaken to develop *Fusarium oxysporum* f.sp. *cubense* (foc) resistant or tolerant Kolikuttu banana. In order to facilitate screening of large number of plants, *in-vitro* screening technique was adopted, and crude culture filtrates of the pathogen were prepared using PCR confirmed race 1of foc. Culture filtrate was added separately to the prior sterilized Murashige and Skoog (MS) medium at 15% as the selection factor along with control. The differences of explant survival and *in-vitro* growth and multiplication of shoot bud clusters were observed with 3 different isolates of the pathogen collected from different areas. The results showed that survival and multiplication rate of shoot tip explants were reduced by different isolates. *In-vitro* growth performances were also retarded by the crude culture filtrate. However, no significant differences were observed in the parameters (gain of fresh weight, gain of buds and the shoot height) measured among the culture filtrates of three different isolates. The plants recovered after 2 selection cycles of *in-vitro* screening were weaker than control plants and had poor survival during hardening period. The hardened plants need to be further tested and validated for the disease resistance or tolerance.

Keywords: banana, crude culture filtrate, *Fusarium oxysporum* and *in-vitro* mutagenesis

**Corresponding Author: shirani_da@yahoo.com*