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Research Paper

Effect of closure of test tubes on the survival of rose explants

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ABSTRACT

An experiment was carried out in order to find out the effect of closure of test tubes on the survival of rose explants. Four different types of closures (cotton plug alone, aluminium foil, steristop, and cotton plug with aluminium foil) were used for the test tubes containing equal volume of MS medium. The results revealed that cotton plug + aluminium foil was found to be most suitable as it resulted in the maximum culture survival and also reduced the contamination per cent.

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Key words : Rose, Explants, Cotton plug, Steristop, Aluminium foil

Rose is a member of Rosaceae family and is called as "Queen of Flowers". Rose is a versatile plant adapted to varying climatic conditions. In India, it is cultivated mainly for cut flowers, both for traditional flower markets and contemporary florist crops. Roses prior to sale are used in the industrial production of oils, essence and other products for the pharmaceutical and cosmetic trade. In the last few years, *in-vitro* propagation has revolutionized commercial nursery business. Significant features of *in vitro* propagation procedures are its enormous multiplicative capacity in a relatively short span of time, production of healthy and disease free plants and its ability to generate propagules around the year (Pati *et al.*, 2006). The utilization of tightly closed vessels that reduce the gas exchange may affect negatively the normal growth and development of plants in *in vitro* cultures (Campostrini and Otoni, 1996). Several studies have shown the advantages of using closures with filters or vented vessels which allow gas exchange, increase the photosynthetic capacity, multiplication rate and the survival of plants after transfer to natural conditions (Benzioni *et al*., 2003; Lucchesini and Mensuali-Sodi, 2004; Park *et al*., 2004). With this background in view, the present investigation was undertaken in order to study the effect of closure of test tubes on the survival of explants of rose (*Rosa damascena*).

MATERIALS AND METHODS

This experiment was carried out at the Department of Horticulture, Annamalai University during 2008-2009. Nodal segments of 0.5 to 1.0cm length were collected from stock plants. The excised nodal segments were thoroughly washed in running tap water and in detergent solution followed by washing with sterile distilled water thrice and then surface sterilized with 70 per cent ethanol for 30-40 seconds. They were then washed with sterilized distilled water thrice to completely wash off the alcohol. The explants were transferred into the test tubes containing MS medium. The test tubes were closed using four different types of closures (cotton plug alone, aluminium foil, steristop, and cotton plug with aluminium foil). In each treatment, 15 culture tubes were maintained in the culture room and observations in respect of survival and contamination percentages were recorded and analysed statistically.

RESULTS AND DISCUSSION

It can be inferred from the data presented in Table 1 that closing the test tubes with cotton plug + aluminium foil was found to be less contaminable when compared to the other closures used. The contamination per cent was the least (38.13) in T_3 in which cotton plug + aluminium foil was used to close the test tubes and this also registered the maximum survival percentage of 61.87. The next best treatment in reducing the contamination (72.93 %) was the use of cotton plug alone (T_1) for closing the test tubes. The use of aluminium foil alone for closing the test tubes