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In vitro regeneration of grape (*Vitis vinifera* L.) cv. PERLETTE

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Factors like slow and seasonal multiplication and infection with pathogens have constrained the use of conventional plant propagation methods, thus lead to development of new and novel methods of propagation like *in vitro* multiplication which ensures the production of virus and disease free elite planting material in large numbers. In the present work, *in vitro* regeneration protocol has been standardized for grape cv. Perlette which is conventionally propagated through hardwood cuttings. The highest explant establishment (86.66%) and lowest days (12.00) for explants establishment were obtained in MS medium supplemented with 1.0 mg/l BAP and 1.0 mg/l kinetin. Best shoot proliferation (3.33 shoots/culture) was obtained in MS medium fortified with 1.0 mg/l BAP and 0.5 mg/l kinetin. The media constituting MS + 1.0 mg/l NAA was best for rooting of *in vitro* raised shoots, yielding 73.33 per cent rooting with an average root length of 4.43 cm. The most suitable potting media for *in vitro* raised plantlet hardening of grape cv. Perlette constituted sand (1part) soil (1part) FYM (1part) vermiculture (1part) which resulted in 73.33 per cent plantlet survival.

Key words : Grape, *In vitro* regeneration, Tissue culture, *Vitis vinifera* L., Perlette

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INTRODUCTION

The cultivated grape (*Vitis vinifera* L.) is a member of family Vitaceae and a hybrid of two American species *Vitis vulpine* and *Vitis labrusca*. It is well known for its delicacy and is a good source of minerals like calcium, phosphorus, iron and vitamins like B_1 and B_2. Grape is cultivated on an area of 7,197 thousand hectares worldwide with an annual production of about 68 million tones, Spain, France, Italy and USA being the leading grape producing countries in the world however, the average productivity is highest (25.80 t/ha) in India producing 2.26 million tones fresh grapes from an area of 87.7 thousand hectare (Anonymous, 2010).

Maharashtra, Tamil Nadu, Karnataka, Punjab and Andhra Pradesh are the major grape growing states of India (Anonymous, 2010). During the last two decades, grape cultivation has gained popularity among fruit growers of north India, especially Punjab, Haryana, Himachal Pradesh and Jammu and Kashmir States. The Perlette grape has monoculture in north India with a more than 90 per cent of total acreage under this variety (Bindra and Brar, 1996). In recent past, it has been observed that non-availability of adequate number of true to type, disease free planting material has been the major constraint for establishment of ideal vineyards. Grape has been vegetatively propagated through hardwood stem cuttings and may carry plant pathogens along with the plant material causing finally reduced vigour of plants. While preparing the cuttings, special care has to be taken to see that the vines are perfect and free from pests. Moreover, the rate of multiplication by conventional methods is rather slow and they do not ensure the production of virus and disease free elite plant material. However, rapid multiplication of newly introduced improved cultivars, exchange of virus-free plant materials, maintenance and conservation of genetic resources, the testing of *in vitro* shoots for resistance to diseases, insects and abiotic stresses are some of the advantages of *in vitro* propagation. *In vitro* plant regeneration of grapes in different parts of the world has shown encouraging results to produce large number of elite virus free plants round the year. Therefore, attempt has been made to standardize the *in vitro* regeneration protocol for leading north Indian grape (*Vitis vinifera* L.) cv. Perlette.