INTRODUCTION

For a healthy and balanced development of a nation, no doubt wealth in the form of material goods is necessary, but a beautiful environment is equally essential. Plants apart from fulfilling the primary need of man lend beauty to the nature by their diverse qualities such as habit, attractive foliage and colorful showy and fragrant flowers/blossoms. Hence they play an important role in making the environment beautiful and in refreshing the minds of inhabitants with cheer, joy and harmony.

Woody ornamentals have the advantage of being perennial and become popular choice for landscaping. Among ornamentals, climbers in particular with showy, colorful, fragrant flowers and also with attractive foliage play an important role in bio-aesthetic planning of gardens, parks and such other amenity areas. Apart from their sensory appeal planting of ornamental climbers would help in adsorbing heat radiation in urban areas. Thus in addition to aesthetic properties, ornamental flowering climbers contribute towards establishing a harmonious relationship between man and nature by combining beauty and utility.

Climbers in India have been known and valued for ages. There are numerous references regarding pleasure gardens of great Emperors and Kings. The climbers like Madhavi (*Hiptage madablotra*) and Jasmine (*Jasminum sp.*) have been mentioned in Ramayana and Mahabharata. The famous play Wright
Kaalidasa perhaps the best naturalist of olden days mentioned several climbing plants in his classics Kumarsambhav, Abhigyan Shakunthalam and Meghadoot. The early poet Bhanabhatta in Harshacharitha presented a description of several climbers.

Climbers are important components and popular subjects of gardens, parks and such other amenity areas of public interest. Principally, they are used to provide shelter or shade by enclosing the structures such as arches, pergolas, balustrades and trellises. They can also be used to cover summer houses, unsightly places or to overlay bare walls. Most of the climbers do not require much attention and further these plants species require narrower places to express their beauty compared to other plant types such as shrubs and trees.

Conventionally, the ornamental flowering climbers are propagated by their vegetative parts. Vegetative propagation ensures uniformity of clones which are of at most importance in ornamentals however; many of these are hard to stabilize. Few climbers have seed set, but some of them have shown either viability for a short period or prolonged dormancy or are even sterile. Seed propagation results in variations among the progeny as they are products of fertilization. It is opined that at least ten percent increase in gain can be expected from selected clonal propagules rather than selected seed families (Kleinschmit 1974). Micropropagation is extremely useful when there is shortage of healthy seeds or planting material and for raising disease resistant clones (Conger 1981).
Propagation through tissue culture methods has multitude of advantages over conventional methods. The main application is the mass propagation of plants with selected qualities. The advantage of using cell and tissue culture as a tool in breeding programme and mass production has a potential for enormous or unlimited multiplication rates (Thorpe and Biondi 1984). In vitro culture techniques have been useful for the propagation of novel and elite plants on a large scale and in a relatively short period of time and plants derived tend to maintain the same characters of the mother plant (clones). Apart from clonal mass propagation, in vitro culture techniques have other advantages like 1. Minimum requirement of plant material for propagation 2. Availability of large number of plantlets irrespective of seasons 3. Higher health status of aseptically maintained plants and 4. Higher output per unit area over conventional propagation.

Over the years there has been an increasing interest in the application of tissue culture techniques for the regeneration and rapid multiplication of a wide variety of horticulturally important ornamental plants. In vitro techniques have been applied to utilize the commercial benefits of ornamentals. An increasing demand for high quality plant material for export and marketing competition in ornamentals have necessitated the mass production of disease free plants through tissue culture.

In ornamental climbers, the characters like blossom, flower hue and the nature of foliage are qualities to be retained and perpetuated from parent plants. As
stated by Murashige (1990), clonal propagation is the most extensive and visible application of tissue culture. Even though many of the woody ornamental climbers are quite useful and are under cultivation, \textit{in vitro} propagation protocols in these woody ornamental climbing and twining species are very much limited. Employing tissue culture methodology propagation and conservation of existing germplasms has been achieved in only a few taxa.

Micropropagation methodology provides a highly efficient way to clonally propagate a large number of elite genotypes in a relatively short period with no seasonal restrictions. Further the tissue culture methodology (synthetic seeds and preservation) also facilitates conservation, maintenance and exchange of existing germplasms in a much easier way. Keeping these in mind the present work on the “\textit{In vitro} propagation and germplasm preservation of some important exotic climbers” was carried out.

The climbers \textit{Tristellateia australis} A. Rich, \textit{Quisqualis indica} L. and \textit{Adenocalymma allicea} Miser., considered for the present study are being cultivated for their ornamental value and for providing shade or shelter by enclosing arches, pergolas, etc. they are also used to cover or overlay bare walls, unsightly places and summer houses.

According to literature all the three climbers are commonly propagated using stem cuttings (Pal 1960, Swarup 1997) conventionally. The traditional
means of propagation do not often result in rapid rate of multiplication; hence *in vitro* culture technique can be employed as an alternative method. The perusal of literature reveals that micropropagation studies have not been attempted on the three ornamental climbers selected for the present study. Hence the present investigation was undertaken.