# INTRODUCTION

# 1-INTRODUCTION

*Ceratonia siliqua* is the most important non - traditional fruit crop in Egypt.It has multipruposes. The fruit may be used for production of fresh syrup or medicinal purposes while the tree may be utilized as a source of excellent wood quality, soil improvement, shelterbelts or for windbreak. Also, *Acacia salicina* trees have the same uses of the above trees .However, *Rosa polyantha* is short, hardy plant produced large cluster of small blooms and it may be used as flowering low hedge.

Conventional propagation methods for *Ceratonia siliqua, Acacia salicina* and, *Rosa polyantha* produced limited numbers compared with in vitro propagation .The rapidity and high quantity of plants produced by tissue culture in a short time represent a great problem in the tissue culture laboratories. Germplasm preservation is the only alternative for these plants to keep it a live when needed at any time. Different germplasm preservation methods are available either in the form of conventional or *in vitro* methods. The conventional methods have many problems specially that preservation as seeds. These problems can be figured out as follows: (a) Some plants do not produce fertile seeds, (b) Some seeds remain viable only for a limited duration, (c) Some seeds are very heterozygous and therefore, not suitable for maintaining true - to - type genotypes and (d) seeds of certain species deteriorate rapidly due to seeds-borne pathogens. *In vitro* germplasm is the most popular and preferred preservation method; survival of germplasm can be improved and risk of certain pests reduced by using tissue culture techniques (**Langhans *et al*, 1977 and Kahan, 1979**).*In*

*vitro* germplasm preservation has a great profitability as it permits the users to have access to botanical and horticultural information about specific accessions and there by encourage more effective use of plant germplasm. Also, it allows personnel and organizations within and between countries to coordinate activities related to germplasm collection, exchange and maintenance.

Different *in vitro* conservation methods are employed, depending on plant species, types of materials and storage duration required. *In vitro* Conservation may be done under low temperature and darkness, desiccation, encapsulation. Also, chemical storage techniques, the *in vitro* cultures, are conserved on media supplemented with one or more of osmotic active compounds as (different types of sugars, or PEG, Glyserol, *etc*..), growth retardant (ABA, PP333, Cycocyl, Cumarine, *etc*...), liquid paraffin wax with soaking or overlaying under normal condition of temperature and light. In addition, emmerison in liquid nitrogen may be used for germplasm preservation for long term.

The ultimate goal of this investigation is to evaluate different *in vitro* germplasm preservation treatments and cryopreservation to find out their effect on longevity rate, duration of germplasm preservation, growth characters, chemical composition and viability of these explants after preservation periods of *Ceratonia siliqua, Acacia salicina* and, *Rosa polyantha* plants.