

## **Abstract:**

Biodiversity or biological diversity is the variability among living organisms and the ecological complexes they compose. Conservation strategies may be either *ex-situ* or *in-situ*. *Ex-situ* strategies conserve diversity outside of natural habitats, while *in-situ* strategies conserve diversity in the setting where it developed. *Ex situ* conservation continues to represent the most significant and widespread means of conserving Plant Genetic Resources for Food and Agriculture (PGRFA), and other international institutions for wild species such as International Plant Genetic Resource Institute (IPGRI), Botanic Gardens Conservation International (BGCI), and Italian National Institute for Environmental Protection and Research (ISPRA). Most conserved accessions are kept in specialized facilities known as genebanks, maintained by public or private institutions, and acting either alone or networked with other institutions. Generally, *ex-situ* conservation actions for plant genetic resources involves the collection, classification, evaluation, and utilization of plant biodiversity. The conservation in a genebank procedure ensures maximum longevity and minimum frequency of regeneration, with suitable monitoring and safeguards, and effective strategies for allocating samples and storing them into active and base collections. Such techniques show limitation in conservation of pollen, recalcitrant seeds, and tissues. Thus, cryopreservation was one of the solutions used later by genebanks and cryobanks. Cryopreservation is becoming more widely used for long-term storage of seeds and *in vitro* cultures and is the method of choice for ensuring cost-effective and safe, long-term storage of genetic resources of species which have recalcitrant seeds or are vegetatively propagated.

The aim of this study is to establish the first seed bank for *ex situ* conservation of wild flora biodiversity in Emilia Romagna region, to establish a cryo-bank for *ex situ* conservation of recalcitrant seeds and other samples of plant species: orchid seeds, pollen, buds, embryos, etc. and to prepare a database for storing information on collected samples. In addition for establishing a new standard or traditional seed bank in Emilia Romagna Region. These aims are achieved by sampling seeds and other plant samples in different Italian Regions, from natural areas and preparing samples in agreement with the international standard of the Seed Banks, checking the viability and germination of the collected samples before and after conserving it, establishing the conditions to their long-term conservation. Acquiring any information regarding taxonomy,

ecology, life cycle, the degree of threat, etc. of any accession. Eventually, to involve citizens and local experts of flora to identify wild plant population and collect any useful information.

Key words: Genebank, Cryobank, Ex-situ Conservation, Germination, Viability