Development of complementary strategies for plant genetic resources conservation

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It is now well recognized that, for any given genepool, a number of different and complementary approaches and methods are necessary for efficient and cost-effective conservation. Two basic conservation strategies, each composed of various techniques, are employed to conserve genetic diversity, *i.e.*, *in situ* and *ex situ* conservation. *Ex situ* conservation means the conservation of components of biological diversity outside their natural habitat. The *ex situ* conservation methods include storage in seed genebanks, field genebanks, *in vitro* genebanks (including slow growth storage and cryopreservation), and DNA banks. *In situ* conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties. *In situ* conservation methods include nature reserves, managed areas and farmers' fields. The following key parameters should be considered when planning complementary conservation strategies. The extent of the genepool coverage and the distribution of genetic diversity should be assessed, both within the genepool and geographically. The reproductive biology of a species is critically important to decide which methods are applicable. The extent of genetic erosion and other threats need to be taken into consideration. The nature of the plant material to be stored, together with the importance of a continued evolution for the germplasm, are also important considerations. Furthermore, the socio-economic feasibility, the availability of human and financial resources, of conservation facilities and institutions, are other aspects to consider when deciding on the combination of available conservation methods.

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