

## Gene Bank

These are institutes that maintain stocks of viable seeds (**seed banks**), live growing plants (**Orchards**), tissue cultures and frozen germplasm with the whole range of genetic variability.

**(i) Seed banks:** Seeds are of two types- **orthodox and recalcitrant**.

**Orthodox seeds** are those which can tolerate reduction in moisture content (up to 5%), anaerobic conditions and low temperature of  $-10^{\circ}\text{C}$  to  $-20^{\circ}\text{C}$  or even lower for prolonged periods e.g. cereals, legumes.

Seeds are allowed to germinate at intervals from plants and thus fresh seeds are developed for storage.

**Recalcitrant seeds** are those seeds which get killed on reduction of moisture and exposure to lower temperature e.g. Tea, cocoa, jackfruit, coconut.

They can be stored for shorter duration after treatment with fungicides in room having air and normal oxygen.

**(ii) Orchards:** Plants with recalcitrant seeds are grown in orchards where all possible strains and varieties are maintained e.g. Litchi, oil palm, rubber tree etc.

**(iii) Tissue culture:** It is carried out through callus formation, embryoids, pollen grain culture and shoot tip culture for those plants which are either seedless, have recalcitrant seed, variable seed progeny or where clone is to be maintained.

The method is useful in maintaining a large number of genotypes in a small area, rapid multiplication of endangered species and for hybrid rescue.

Shoot tip culture can be used to maintain virus free plants. It is used for international exchange of germplasm in cultures multiplied by vegetative methods.e.g. Banana, Potato.

**(iv) Cryopreservation:** Preservation at  $-196^{\circ}\text{C}$  (liquid nitrogen) can maintain tissue culture, embryos, animal cell/tissue, and spermatozoa indefinitely.

The cryopreserved material is revived through special technique when required.

## BIODIVERSITY ACT (2002)

For protection of India's rich biodiversity and associated knowledge against their use by foreign individuals and organizations without sharing the benefits arising out of such use and to check biopiracy.

### Convention on Biodiversity

- **"The earth Summit"** held in **Rio de Janeiro in 1992** called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilization of its benefits.
- **World Summit** on Sustainable development **held in 2002 in Johannesburg, South Africa** and 190 countries pledged their commitment to achieve by 2010 a significant reduction in the current rate of biodiversity loss at global, regional and local level.