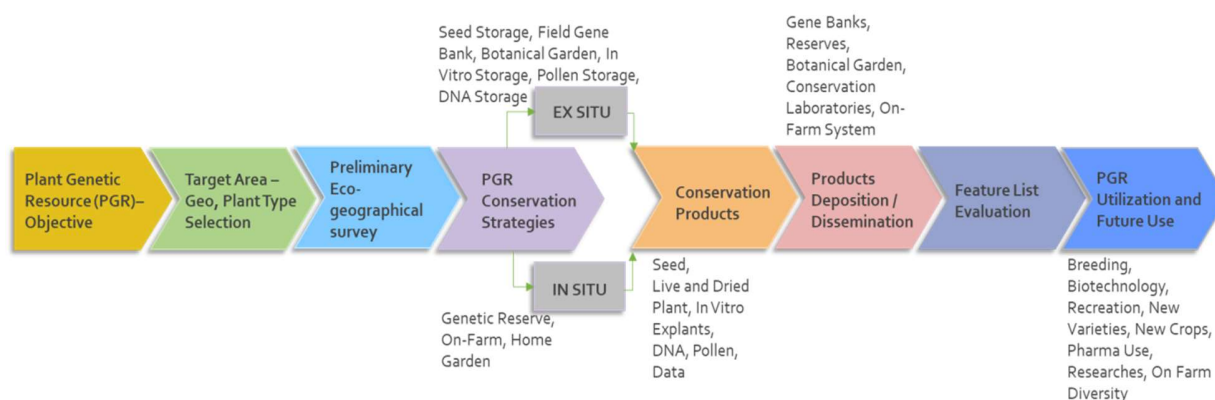


CONSERVATION OF BIODIVERSITY AND PLANT GENETIC RESOURCES

Biodiversity plays an important role in economic sectors that drive development, including agriculture, forestry, fisheries and tourism. More than three billion people rely on marine and coastal biodiversity, and 1.6 billion people rely on forests and non-timber forest products (e.g. the fruits from trees) for their livelihoods. Many people depend directly on the availability of usable land, water, plants and animals to support their families. In fact, ecosystems are the base of all economies.

All species provide some kind of function to an ecosystem. They can capture and store energy, produce organic material, decompose organic material, help to recycle water and nutrients throughout the ecosystem, control erosion or pests, fix atmospheric gases, and help regulate climate. These physiologically processes are important for ecosystem function and human survival. Diverse is the ecosystem better able to withstand environmental stress and consequently is more productive. The loss of a species is thus likely to decrease the ability of the system to maintain itself or to recover from damage or disturbance. Just like a species with high genetic diversity, an ecosystem with high biodiversity may have a greater chance of adapting to environmental change. In other words, the more species comprising an ecosystem, the more stable the ecosystem is likely to be.

Plant genetic diversity, critical for feeding humanity – is being lost at an alarming rate. By 1999, only twelve crops and five animal species made up 75% of the world’s food demand (FAO, 1999). The recent ratification of an international treaty (FAO, 2009) and the development of technologies to preserve crop diversity have raised expectations that must now be fulfilled. The Plant genetic resources (PGR) conservation acts as a link between the genetic diversity plants and its utilization or exploitation by humans. Plant genetic resources (PGR) conservation needs a well-defined approach aimed at assessing current level of diversity, scientific preservation of the diversity in accordance with global standards and a well-defined cycle of production and dissemination of genetic resources for commercial use and future researches.



Plant genetic resources for food and agriculture consist of diversity of seeds and planting materials of traditional varieties and modern cultivars, crop wild relatives, and other wild plant species.

New standards are being set up highlighting the need to protect plant varieties and also to encourage breeding of new varieties by protecting rights of breeders. The International Union for the Protection of New Varieties of Plants (UPOV) is an intergovernmental organization based in Geneva, Switzerland. UPOV works to protect breeder's right by creating standardization in the way descriptors should be used while collecting and preserving the PGR. There are Participating countries are encouraged to protect breeders right. About 75 countries are members of UPOV while 16 countries (including India) have initiated accession to UPOV. Saudi Arabia is party to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

In the hyper-arid moisture regime there is almost no perennial vegetation, with the exception of some bushes in riverbeds. In good years, annual plants can grow, but agriculture and grazing are generally very difficult. In the arid moisture regime, scattered vegetation does grow, which might include bushes, and small woody, succulent, thorny, or leafless shrubs. Very light pastoral use is possible. Rained agriculture is only feasible with some form of water harvesting and irrigation, and only where terrain conditions are favorable or where there are local water resources. As a result, agriculture, if any, is patchy. In the semi-arid moisture regime, vegetation is denser and might include bushes, scrubs and even trees. Good grazing areas might be found, and rain fed agriculture is possible, albeit with great yield fluctuations due to rainfall variability.

Effective PGR strategy shall address the key issues relating to having a robust PGR system with internal and external linkages, a strong supporting physical and IT infrastructure (including geospatial) to sustain and progress the PGR system, a well thought capacity development plan with key elements of in-house development and bilateral and multilateral collaborations and, finally the crucial aspect of enabling collaboration of stakeholders (farmers, traders, businesses, academics and policy makers. The image below indicated high level details of the related aspects.