



REPUBLIC OF TURKEY
MINISTRY OF AGRICULTURE
AND FORESTRY



Islamic Organization for Food Security
l'Organisation Islamique pour la Sécurité Alimentaire
المنظمة الإسلامية للأمن الغذائي

WORKSHOP ON DEVELOPMENT OF NATIONAL GENE BANKS IN OIC MEMBER STATES

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Lerzan Aykas

Head of Biodiversity and Genetic Resources Department
National Gen Bank, Aegean Agricultural Research Institute - TURKEY

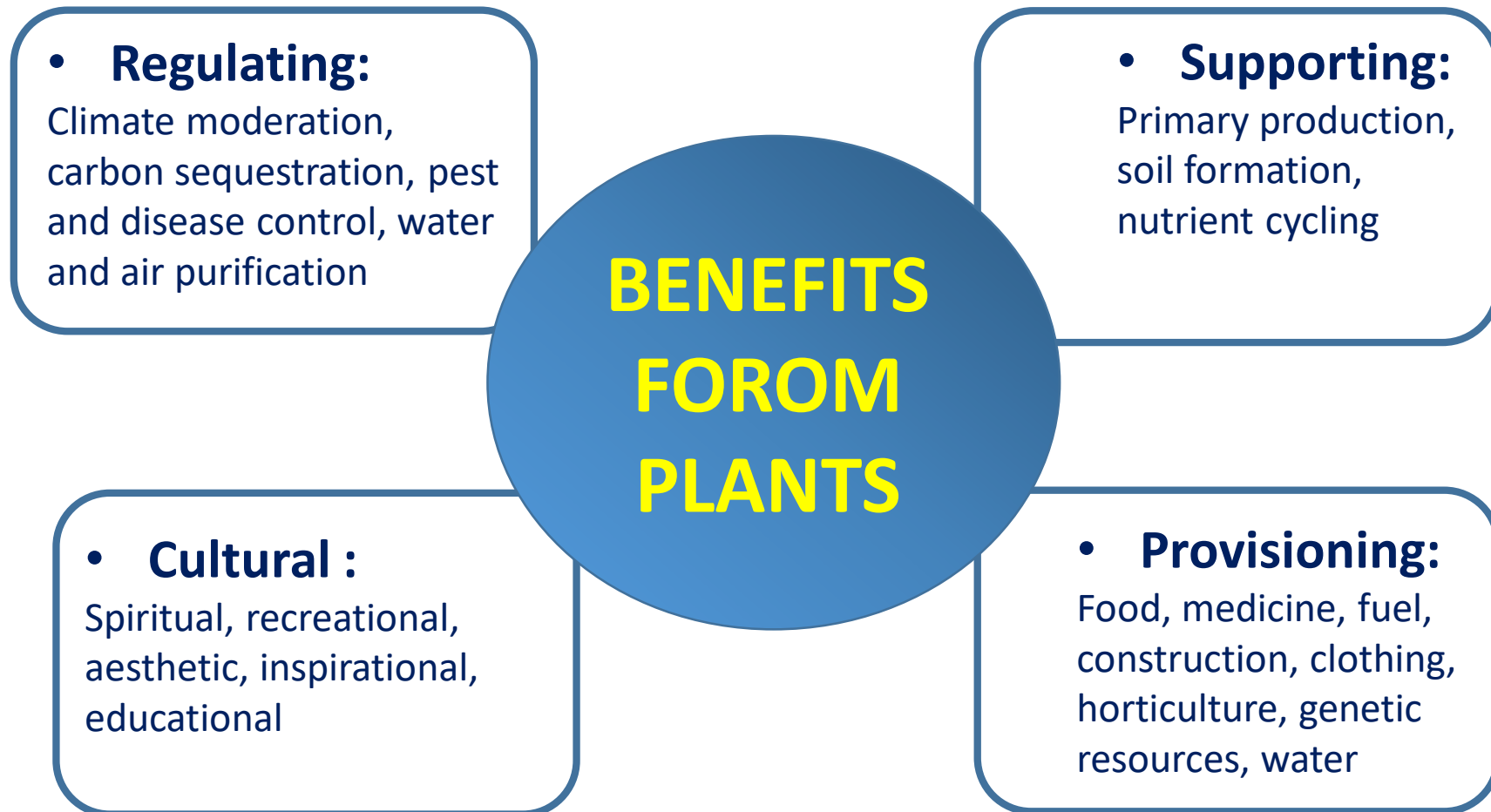
Role and Importance of Gene Banks for Conserving Genetic Resources for Food and Agriculture

Talk overview

- The importance of Plants in Human Life
- Components of Plant Genetic Resources
- Why do we conserve plant genetic resources?
- The importance of gene banks
- Overview of gene banks
- Conclusion

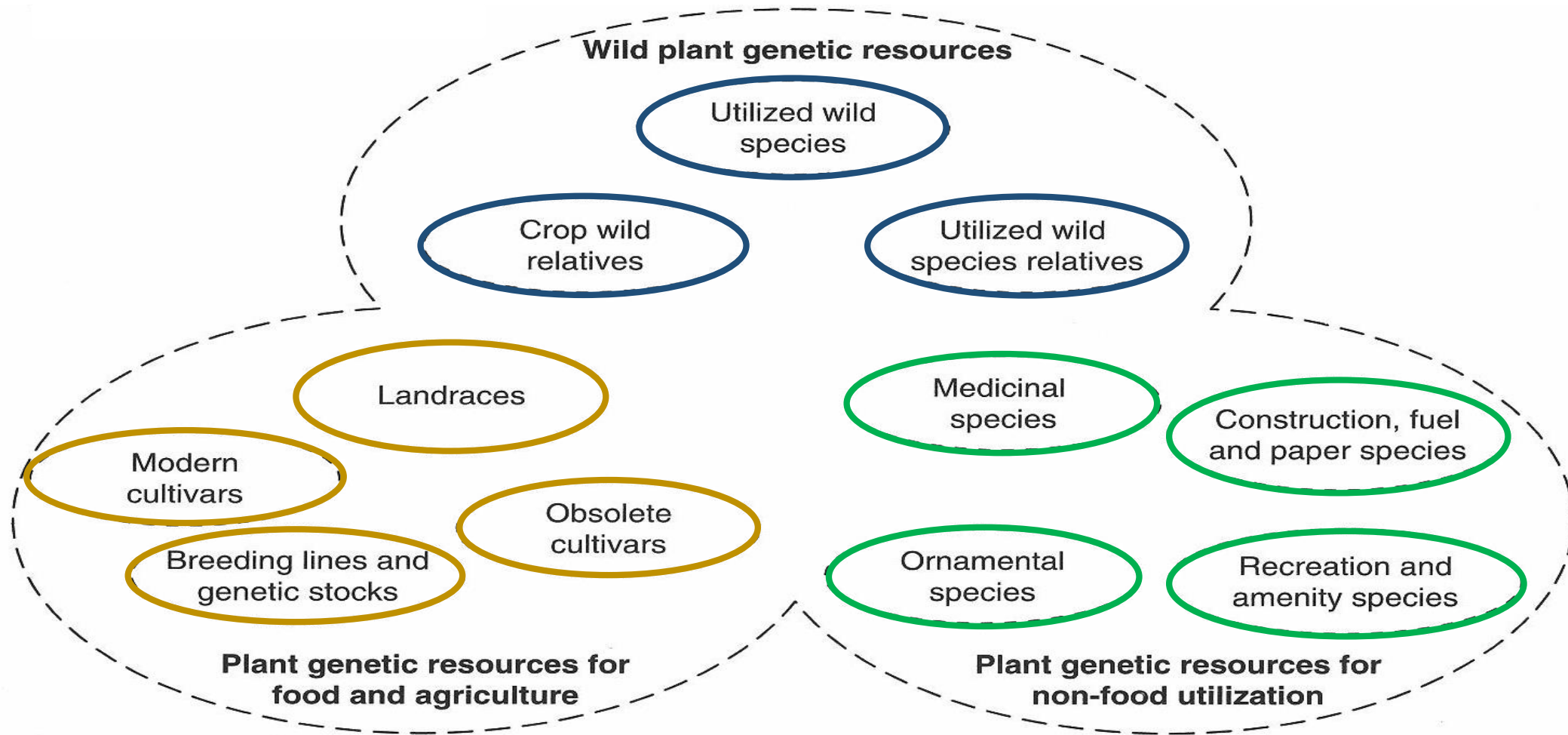
Role and Importance of Gene Banks for Conserving Genetic Resources for Food and Agriculture

• The importance of Plants in Human Life



What is understood by plant genetic resources?

Components of Plant Genetic Resources



Source: Maxted *et al.*, 2008a

Why do we conserve plant genetic resources?

PRIMARY DRIVERS

HABITAT LOSS

Thinning, fragmenting, or outright destruction of an ecosystem's plant, soil, hydrologic, and nutrient resources

INVASIVE SPECIES

Any nonnative species that significantly modifies or disrupts the ecosystems it colonizes

OVEREXPLOITATION

Process of harvesting too many aquatic or terrestrial animals, which depletes the stocks of some species while driving others to extinction

POLLUTION

Addition of any substance or any form of energy to the environment at a rate faster than it can be rendered harmless

CLIMATE CHANGE ASSOCIATED WITH GLOBAL WARMING

Modification of Earth's climate associated with rising levels of greenhouse gases in the atmosphere over the past one to two centuries

INFLUENCERS

- Human population growth
- Increasing consumption
- Reduced resource efficiency

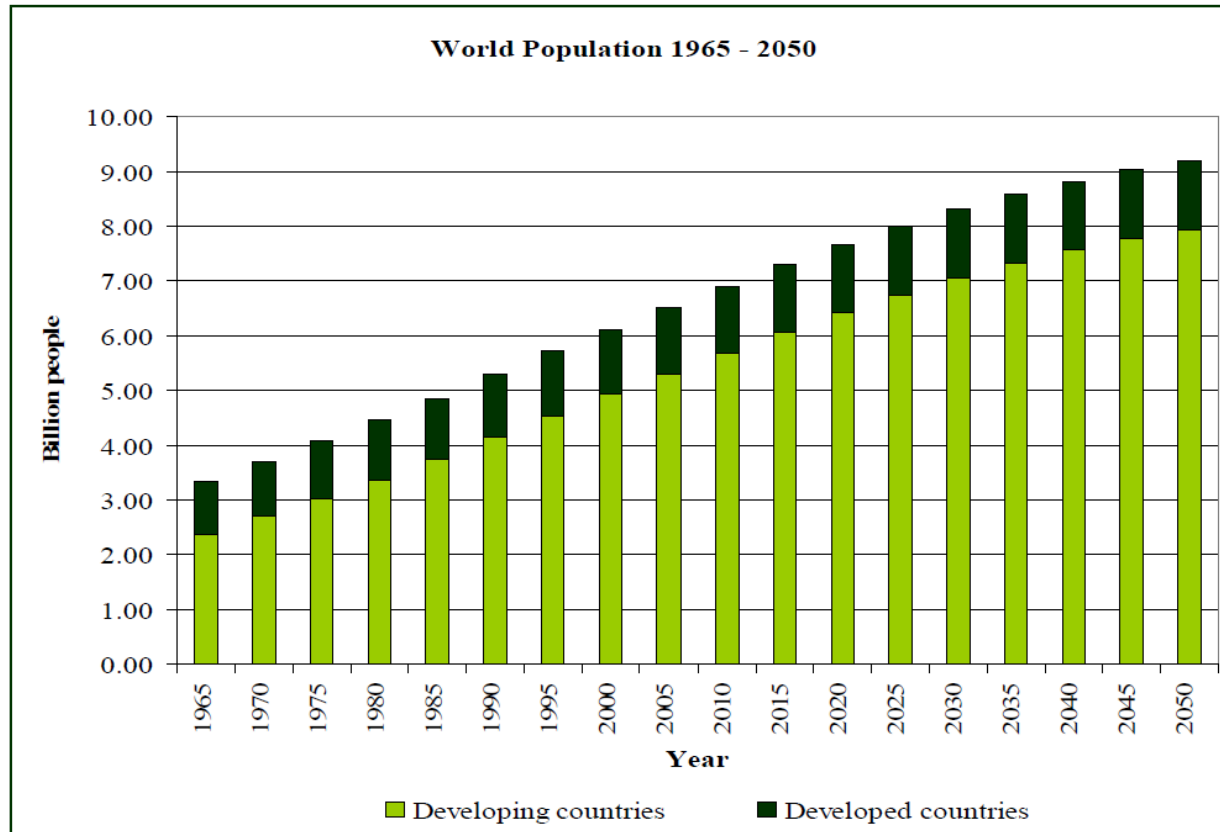
BIODIVERSITY LOSS

Reduction in the number of genes, individual organisms, species, and ecosystems in a given area



Why do we conserve plant genetic resources?

• World population 1965-2050



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2007)

**GLOBAL
POPULATION
GROWTH⁴**

7B  **9B**
2016 2050

**AGRICULTURAL
PRODUCTION
NEEDS TO
INCREASE⁴**

70%  **2050**

**TODAY'S CROP
PRODUCTION
ALLOCATION⁵**


62%
HUMAN
FOOD


35%
ANIMAL
FEED


3%
BIOENERGY CROPS,
SEED & OTHER
INDUSTRIAL PRODUCTS

³ www.croplnutrition.com

⁴ FAO Expert Meeting on How to Feed the World in 2050; 2009

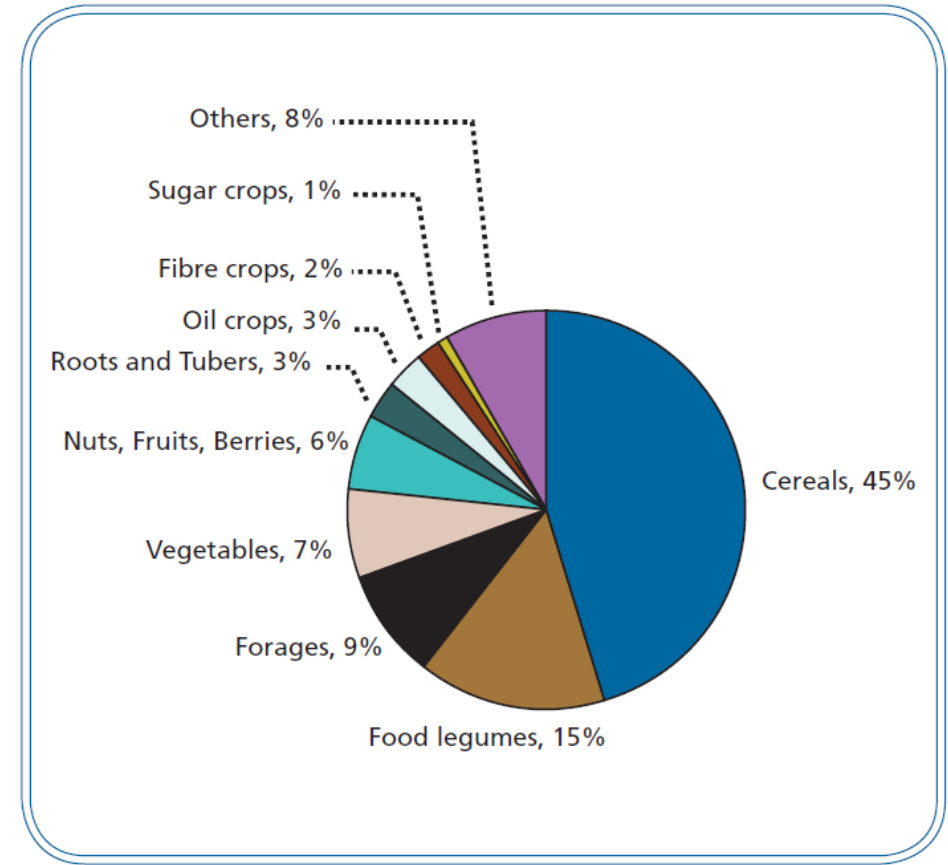
⁵ Institute on the Environment, University of Minnesota

The importance of gene banks

- Gene banks help bridge the past and the future by ensuring the continued availability of genetic resources for research, breeding and improved seed delivery for a sustainable and resilient agricultural system and agricultural biodiversity . **Gene banks play a critical role towards a two-goal:**
 - i) making the germplasm available for researchers, plant breeders and farmers in the short term and
 - ii) ensuring that the genetic material for future food supply are preserved in the long term.
- The goal of gene banks is not only to keep the accessions **safe and viable** but also **to genotype them so as to understand the genetic diversity among the collection.**
- Gene banks play a central role in the movement of germplasm within and among countries.

Overview of gene banks

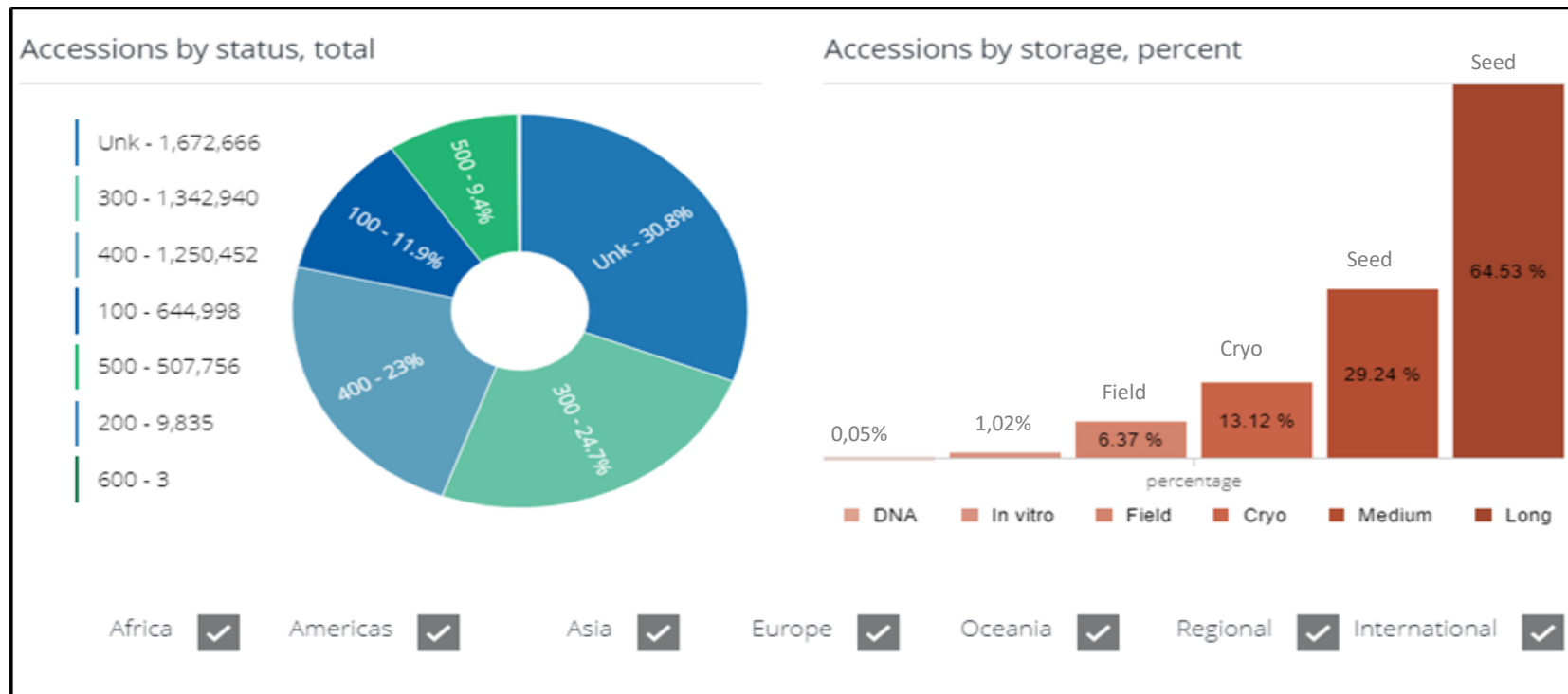
- Gene banks have increased in both size and the number. There are about more than 1,750 gene banks around the world, holding a total of around 7.4 million accessions of germplasm.
- Gene banks are located on all continents, but there are **relatively fewer in Africa compared** with the rest of the world.
- The large majority of gene banks conserve germplasm of the major crop species, on which **humans** and **livestock** rely most for food and feed.



Source :The Second Report on The State of The World's PGRF

Overview of gene banks

- There remains an enormous range in types and conditions of storage facilities worldwide. **Seeds gene banks play a very important role in *ex situ* conservation** of plant biodiversity. Many of the world's major food plants produce seeds. Store of orthodox seeds is the most widely practiced method of *ex situ* conservation of plant genetic resources, since **90% of the 7.4 million accessions** stored in gene bank are **maintained as seed**.



Source <http://www.fao.org/wIEWS/data/ex-situ-sdg-251/overview/en/>

Conclusion

- **The value of conserving crop genetic resources is realized only through their effective use.** This requires strong linkages along the chain from in situ resource conservation and collection, through storage in gene banks, through research and breeding, to farmers and their communities, and ultimately consumers.
- Conserving and increasing the sustainable use of plant genetic resources is a necessary for achieving food security and addressing nutritional requirements of present and future generations.

Therefore, it is vital that the conservation, sustainable use and fair and equitable sharing of benefits from the use of genetic resources.



Thanks