



Food and Agriculture Organization
of the United Nations

Addressing Challenges to Conservation and Exchange of Plant Genetic Resources

**IOFS virtual workshop on national genebanks in OIC States
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Ex situ conservation of PGRFA in genebanks

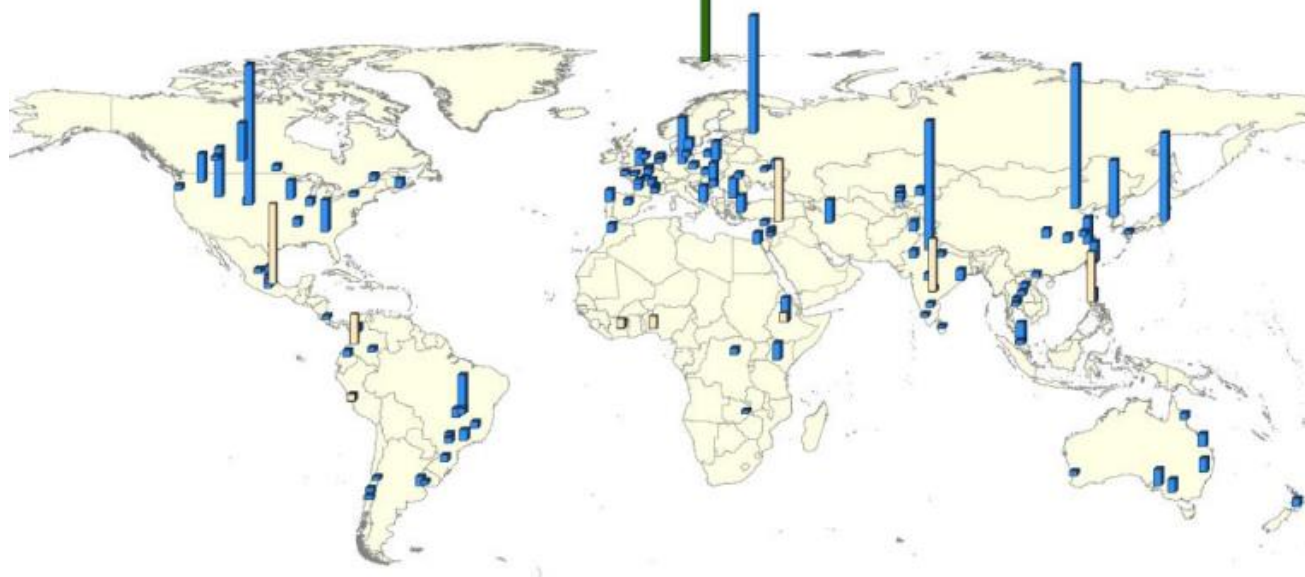
- The conservation of components of biological diversity outside their natural habitats
 - Genebanks
 - Seed banks
 - Field genebanks
 - *In vitro* conservation
 - Cryopreservation



Ex situ conservation of PGRFA



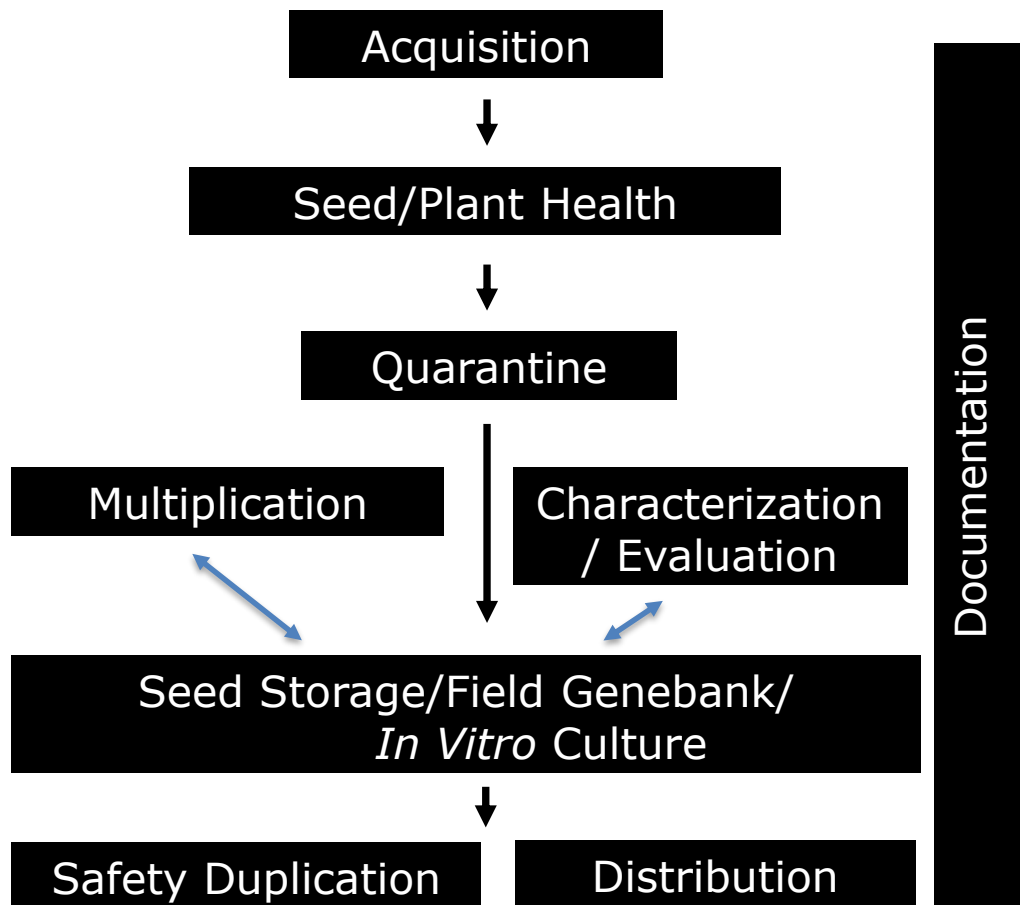
Svalbard Global Seed Vault, a last resort safety back-up repository of genetic resources to safeguard humanity



Geographic distribution of genebanks with holdings of >10,000 accessions

Source: WIEWS 2009; Country Reports; USDA-GRIN 2009, SOW2

Genebank Activities





Constraints to Conservation

- Poor staffing (number and technical capacity)
 - Inadequate budget
 - Inadequate and/or outdated infrastructure/equipment
 - Lack of institutional support
 - Man-made or natural calamities
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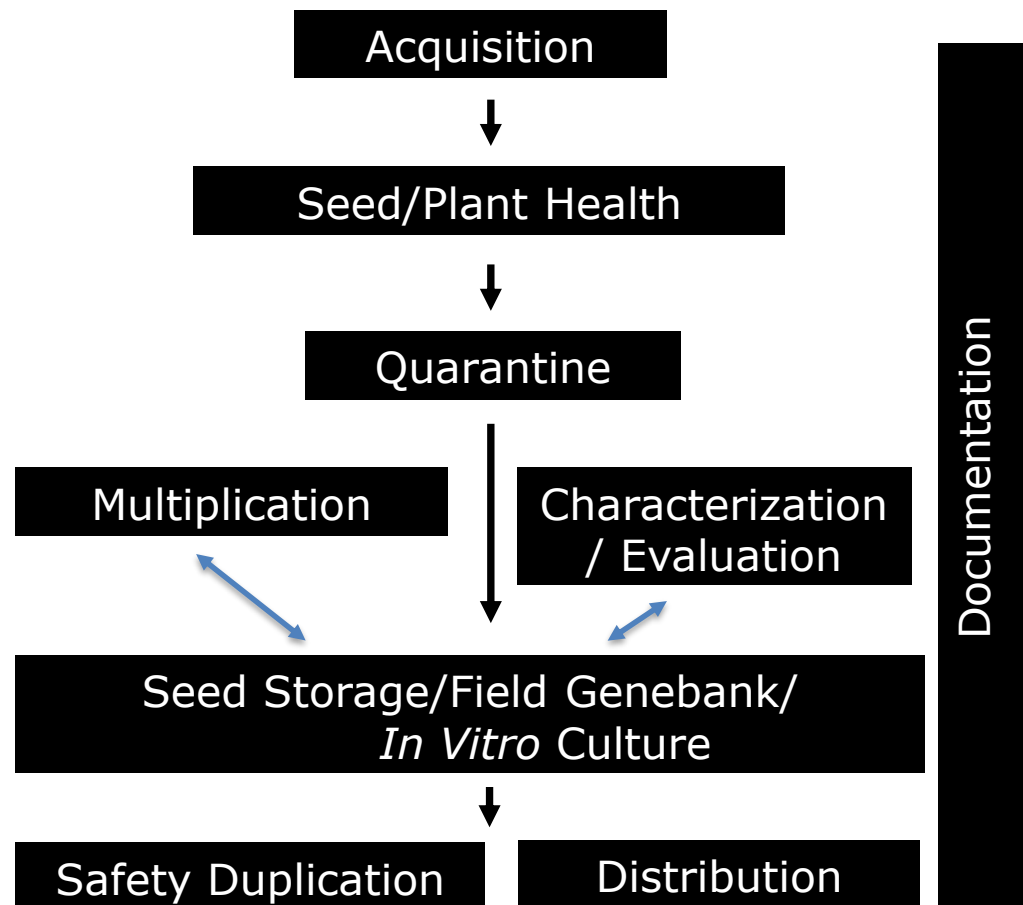
Constraints to Exchange and Utilization

- Number of accessions too large for efficient evaluation
 - Information not available to users
 - Insufficient seed/planting material for distribution
 - Low viability and/or poor health of seed/plants
 - Questionable genetic integrity
 - Low utility of landrace material and wild relatives for breeding
 - Policy constraints to germplasm exchange (ex. phytosanitary, etc.)
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Underlying Principles for Genebank Operations

- Identity of accessions
- Maintenance of viability and genetic integrity
- Maintenance of seed/ plant health
- Physical security of collections
- Availability and use of germplasm
- Availability of information
- Proactive management of genebanks using best practices



Genebank Standards

for Plant Genetic Resources
for Food and Agriculture



COMMISSION ON
GENETIC RESOURCES
FOR FOOD AND
AGRICULTURE



- Endorsed in 2013 by the Commission on Genetic Resources for Food and Agriculture (FAO 2014)
- Important tool for implementing both the International Treaty on PGRFA and the Second Global Plan of Action for PGRFA
 - Reporting obligations



Supporting the application of the Genebank Standards

- Development of *Practical Guides to the Application of the Genebank Standards* (FAO, 2021)
 - Conservation of Orthodox Seed in Seed Genebanks
 - Conservation in Field Genebanks
 - Conservation via *In Vitro* Culture
 - General guidance for the steps and decisions required when operating the respective genebanks for each of the key activities outlined in the Genebank Standards → SOPs/QMS
 - Overview of required staffing profiles and infrastructure/equipment
 - Risks and Associated Mitigation
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Recommendations

- Clearly define genebank mandate (crops/species) and operational modality (seed/field/*in vitro*/cryopreservation)
 - Ensure adequate resources based on mandate and operational modality
 - Strive to adhere to underlying principles and maintain genebank standards
 - Meet international reporting obligations on PGRFA
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International Reporting Obligations

- Indicator 2.5.1 of Sustainable Development Goals
 - Annual reporting
- Implementation of the Second Global Plan of Action
 - Cycle 1: Jan 2012 – June 2014
 - Cycle 2: July 2014 – Dec 2019 (submitted to FAO by 31 Dec 2020)
- Preparation of country reports for *The Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture*
 - Above cycles plus summative narratives

<http://www.fao.org/wiews/en/>



FAO Technical Support to OIS Plant Genebank Initiatives

- FAO is available to support the development of national genebanks
 - Technical oversight and backstopping
 - Development of Standard Operating Procedures
 - Capacity development
 - Partnering in proposal development for funding and/or activities
 - Assistance to National Focal Point for international reporting obligations



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Thank you for your attention

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