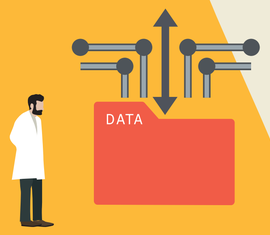
THE JOURNEY OF A SEED IN A GENEBANK

Genebanks conserve and make available the crop diversity needed to adapt our agriculture to present and future challenges. To prevent invaluable diversity from being lost forever, genebanks follow well established standards and best practices.



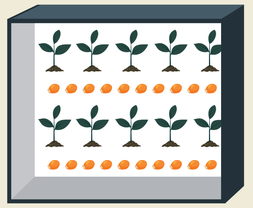
DATA MANAGEMENT

DATA MANAGEMENT refers to the activities related to the custodianship, documentation, protection and accessibility of the genebank's body of knowledge. This may include documents, databases, images, videos, websites, metadata, software, manuals, reports, policies, procedures and records. Accurate and updated genebank data ensures consistency and quality in management and provides evidence of compliance with standards. Most genebanks have a dedicated data management system.

1. COLLECTING

COLLECTING is one of-the ways through which genebanks obtain new diversity for their collections. Genebanks periodically review the need for new, unique diversity and identify geographic regions and sites where they can obtain it. Collecting expeditions are planned to acquire new material for their collections.

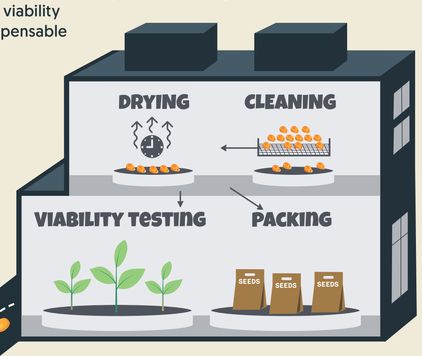
2. POST-ENTRY QUARANTINE



IN THIS STEP, new material (either acquired via donation or collecting) is held in an isolated facility to assess its phytosanitary status, i.e., whether it is infected with a pest or disease.
It is observed, tested and, if necessary, treated before entering the genebank collection. This important process prevents the spread of pests and diseases, and ultimately, safeguards the health of the genebank's collection.

3. ACQUISITION

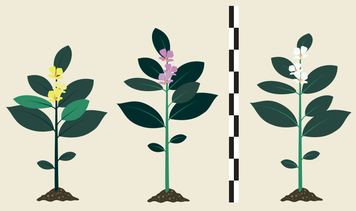
AT THIS STAGE, the material is cleaned, dried, packed and entered into the collection. Initial seed viability is tested to assess the quality of the seed. Healthy seeds harvested at optimum maturity and with high viability rates are indispensable for long-term conservation.



4. REGENERATION

THIS IS A CRITICAL STEP in genebank management in which seed accessions with low seed numbers or low viability rates (<85% for cultivated species) are sown in the field to produce fresh seeds, which are then stored in turn. Understanding the mating and pollination systems of each species is necessary to implement proper regenerations, ensuring that the genetic identity and integrity of the accessions are maintained.

5. CHARACTERIZATION



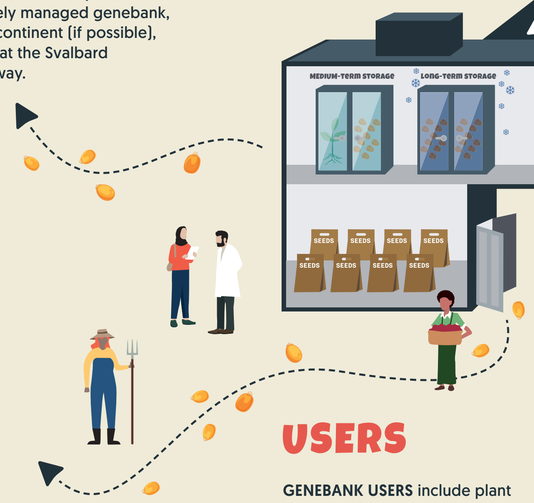
THIS STEP often occurs during regeneration. As newly sown seeds develop into plants, they display various characteristics that make accessions different from each other. Genebank staff record plant height, the shape of leaves, the color of the flowers and other plant characteristics following agreed descriptor lists. The importance of this step lies in the added value to the collections, e.g., in helping users decide which samples to request. These plant descriptions are also helpful in genebank management to detect possible hybridizations between samples or duplicates, as well as accidental mixing.

6. CONSERVATION

GENEBANKS CONSERVE seeds in two types of conditions: the most original samples are part of the base collection, which is maintained in long-term storage (LTS) at –18±3°C, 15±3% relative humidity. Samples in the active collection are maintained under medium-term storage (MTS) at 5-10°C, 15±3% relative humidity. These temperature and relative humidity regimes are achieved using specialized freezers, cabinets or tailored cold rooms. During this stage, genebank staff monitor seed quality and quantity at specific intervals to identify samples in need of regeneration.

7. DISTRIBUTION

GENEBANKS RECEIVE germplasm requests via mail, email, phone calls, in person and through their websites. Genebank staff fulfill requests by selecting samples, packing them in an envelope or box, and including the required documentation about the samples (country of origin, plant characteristics, conditions of use and distribution etc.). The consignment is sent to the recipient via the fastest way possible, usually by courier.



USERS

GENEBANK USERS include plant breeders, farmers, researchers and students.

8. SAFETY DUPLICATION

TO MITIGATE RISK, genebanks safety duplicate their collections at two levels: one duplicate is placed in another actively managed genebank, preferably on a different continent (if possible), and another is deposited at the Svalbard Global Seed Vault in Norway.

CROP TRUST

german cooperation
DEUTSCHE ZUSAMMENARBEIT
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Seeds4Resilience, a five-year, **EUR 20 million project** led by the **Crop Trust** and funded by the *German government, provides financial and technical support for the national genebanks of Nigeria, Zambia, Kenya, Ethiopia and Ghana* to reach international standards of operation, ensuring collections are safe – and available for use – over the long term.

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