

### What is a germplasm collection? Why is it important ?

A germplasm collection, or seed bank as it is more commonly known, is a collection of seeds or other propagative material (bulbs, potato eyes, etc.) of differing types. Such a stockpile serves as a guard against present and future threats to plant species by retaining many different genes and forms thereof for:

- Disease and stress resistance
- Consumer tastes (white versus yellow corn, for example)
- Other properties (unique chemical compounds, etc.)
- The sake of biodiversity.

**Variety, Race**—division of a species

**Cultivar**—variety of plant found only under cultivation

**Landrace**—local cultivar that has been improved by traditional agricultural methods but has not been influenced by modern ag practices

**Orthodox seed**—seeds which will survive drying and/or freezing during storage. Examples are maize and wheat.

**Recalcitrant (unorthodox) seed** —seeds that do not survive drying and/or freezing during storage; they must be regenerated often. Examples are avocado and cocoa.



### What goes on at a seed bank?

- Propagative material is stored.
- Said materials are evaluated for and cleaned of disease.
- Regeneration of materials (especially in the case of recalcitrant seeds).
- Genes may be classified and put into a database.
- Materials are sent out to breeders, scientists, and farmers.

## MAIZE & WHEAT GERmplasm COLLECTIONS AT CIMMYT BANKS OF THE FUTURE

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### How are seeds stored at the bank?

Most seed banks consist of a vault with very thick concrete walls and an extensive refrigeration system. Seeds are typically kept at 0-3°C, although some may be kept in tanks of liquid nitrogen at lower temperatures. At CIMMYT, active halves of collections are kept at -3° C and 25-30 % relative humidity (to maintain germination for 30 to 50 years), while base halves are stored at -18°C (to maintain germination for more than 50 years). The seeds may be kept in jars or aluminum foil packets.

CIMMYT's current seed bank, the Wellhausen-Anderson Plant Genetic Resources Center, was dedicated in 1996 with a capacity of 450,000 seed samples. It currently houses about 28,000 maize and teosinte samples and 140,000 Triticeae samples, along with samples of other seeds. Most of the seeds are held free of any intellectual property restrictions.

The seed bank operates under the International Treaty on Plant Genetic Resources for Food and Agriculture and several other world-wide agreements.



### Useful Links

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Photos courtesy of:  
(corners) Archana Gadwe;  
(center) Laura Masor

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