

Brazil

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Updating Bank Passport Information

In 1975 the National Research Center for Maize and Sorghum (EMBRPA) in Sete Lagoas, Minas Gerais (MG), established an active maize germplasm bank, holding 283 accessions from the college of agriculture Luiz de Queiróz (ESALQ/USP), Piracicaba, Sao Paulo (SP). In 1978-81 Brazilian genetic resources and biotechnology (CENARGEN) made 10 collection missions with IBPGR's financial support and collected 1,207 accessions. One duplicate sample of new collections was sent to CIMMYT and another to the active collection at Sete Lagoas. We received 593 Brazilian accessions of NAS-NRC collection from CIMMYT in 1987 and CIMMYT also sent an additional 1,396 accessions to CENARGEN in 1998. Current total accessions held in the active bank are 2,404, of which 1,743 are landraces. Other accessions include 222 improved varieties, 288 exotic materials, 143 racial composites, and 7 maize wild relatives. Passport data is compiled in the accession editor (CIMMYT-IBPGR).

Regeneration of Bank Accessions

Bank accessions are regenerated at three locations in Brazil. Collections from the South, Southeast, and West Central maize growing regions (except the northern region of Mato Grosso) can be regenerated at Sete Lagoas. Those of North and Northeast regions can be regenerated at Janaúba, Minas Gerais. Janaúba is located 500 km north of Sete Lagoas. And collections from northern part of Mato Grosso and Amazonian regions are regenerated in the same regions, since they are not adapted elsewhere. Janaúba is dry and irrigated. Sete Lagoas has supplemental irrigation. We have a cooperative project with the Amazonian forest station of EMBRAPA (CPATU) in the state of Pará since 1995 to regenerate about 50 accessions collected from northern Mato Grosso and the Amazonian region of Pará.

We regenerate accessions when there is less than 2 kg of seed available or germination falls below 80%. In regeneration, at least 500 plants are sib-pollinated via chain crosses. Up to 20 kg per accession is stored in the bank. For some accessions an isolation plot of 300 m² is planted for regeneration, when they have poor nicking. More than 100 ears of good quality and true type are dried in the shade or sun, obtaining a seed moisture content of about 13%. Characterization data is taken as recommended for each accession. For long-term storage, two balanced bulk samples of 45-50 seeds from each ear are sent to CENARGEN and CIMMYT (Table 1). Currently some 93 of our accessions are tagged for regeneration. We regenerated 307 accessions received from CIMMYT and will continue to regenerate the rest. We plan to regenerate 240 accessions each year.

During 1992-1997, 1,312 accessions were planted for regeneration, from which 599 accessions were regenerated and duplicated at CIMMYT. About 50% of these accessions were planted twice to harvest more than 100 ears.

Seed Preservation

We have three cold rooms (total capacity 235 m³) at 10 °C and 30% RH. Two large rooms of 84 m³ and 124 m³ are equipped with mobile shelves, increasing available space 40%. Seed moisture content is maintained around 6% in the seed storage rooms. Initial seed viability (% germination) is maintained during 10 years in the cold rooms with a minimum of change (maximum 2%). Seed is stored in cotton bags and seed moisture is balanced to cold room conditions. We monitor seed viability every three years. As of 1997, CENARGEN in Brasilia, DF, preserves 1,800 seeds per maize accession in aluminum foil bags for long-term storage at -18 °C.

In-situ Conservation

In-situ conservation initiatives have been conducted by non-governmental organizations to conserve local landraces. However, we do not have a plan to conduct in-situ conservation of local landraces at the moment.

Characterization and Evaluation of Ex-situ Accessions (LAMP II)

Under LAMP (1986-1996), 1,633 bank accessions were evaluated in Brazil. We evaluated an additional 286 accessions in Janaúba station, Minas Gerais. As part of LAMP II, 1,233 accessions will be evaluated, dividing them into 4 groups by region of adaptation (Central, Northwest, South, and North). A work plan has been developed. Some of the trial sites are far from Sete Lagoas, so that extra travelling costs are expected.

Table 1. Bank accessions and accessions distributed to CIMMYT, CENARGEN, and other institutions from the active bank of EMBRAPA, 1992-1997.

Year	No. of bank accessions	No. accessions shipped to CIMMYT	CENARGEN	Others
1992	2280	-	-	442
1993	2280	99	71	661
1994	2280	185	112	2098
1995	2280	63	85	582
1996	2287	43	70	1026
1997	2287	209	117	458
TOTAL	2287	599	455	6267