

Photo: José Almeida Pereira



**Figure 18.** Morphoagronomic characterization of red rice traditional cultivars/landraces from Embrapa Mid-North in 2004.

Photos: José Almeida Pereira



**Figure 19.** Use of genetic variability of red rice aiming at high grain productivity: PB 13, cultivar obtained at Embrapa Mid-North for individual selection of plants with progeny tests in 2005 (A); F1 lines (B) and F7 lines (C) obtained by artificial hybridization in years 2005 and 2007, respectively.

This initiative is highly important for both conservation and use of rice genetic variability, consistent with the strategy advocated by the FAO Global Plan of Action for Food Security.

### Case 7. Preservation and use of wild *Manihot* species

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The genus *Manihot* includes about 98 documented species of which only *M. esculenta* is cultivated, and it is considered as one of the most important staples in the tropical human diet. Embrapa's breeding program is working exclusively with genetic diversity of this cultivated species. Despite its rusticity, cassava undergoes great losses



due to biotic and abiotic factors. Wild species, which contain resistance genes to main stresses affecting this crop, are very seldom studied and many of them are endangered.

Brazil, considered the main center of origin of cassava, holds the largest global genetic diversity of *Manihot*, disseminated all over the country. One of the main objectives of Embrapa Cassava and Tropical Fruits has been the establishment and broadening of one collection of this valuable germplasm so as to make the utilization of useful genes from wild species possible. Over the last 4 years, one collection was established with accessions obtained from different sources, including harvesting carried out in the Semi-Arid (Caatinga) and Cerrado (Federal District and environs) regions. Currently, this collection holds about 920 accessions (with at least 18 wild species), displays broad vegetative polymorphism and has a potential for utilization in cassava genetic breeding programs (Figure 20). One sexual seed bank is also being preserved that holds approximately 60,000 seeds (open pollination).

Research being carried out on this wild germplasm encompasses the following projects: (1) evaluation of wild species and interspecific hybrids for drought, pest and disease resistance; (2) crossing compatibility between wild species and *M. esculenta*; and (3) cytogenetic analysis, production and pollen grain viability. The drought resistance project is supported by CGIAR, through its "Challenge Generation" program, and will benefit developing countries in which cassava forms the base of food security.

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**Figure 20.** Collection of wild cassava species of Embrapa Cassava and Tropical Fruits, in Cruz das Almas, Bahia state, with 920 accessions of 18 species. In detail, the aspect of the species: 1) *M. glaziovii*; 2) *M. dichotoma*; 3) *M. tomentosa*; 4) *M. irwinii*; and 5) *M. anomala*.