

Collection expeditions of cassava wild relatives in Brazil

Alves, Alfredo¹; Mendes, Rui²; Vieira, José²; Rodrigues, Andresa³; de Carvalho, Paulo Cezar⁴

¹Embrapa Cassava & Tropical Fruits (CNPMPF), Cruz das Almas, Brazil (aalves@cnpmpf.embrapa.br); ²Embrapa Genetic Resources & Biotechnology (CENARGEN), Brasília, Brazil; ³Universidade de Brasília (UnB), Brasília, Brazil; ⁴Universidade Federal do Recôncavo da Bahia, Cruz das Almas, Brazil.

INTRODUCTION

Brazil is the biggest diversity center of the *Manihot* genus. Around 80% of the *Manihot* species occurs in the country, having a wide vegetative polymorphism and large potential for utilization in breeding programs. Cassava wild species are important sources of genes for resistance to biotic and abiotic constraints that can be used for genetic improvement of the cultivated species (*M. esculenta*). The highest concentration of *Manihot* species is found in the biomes "Caatinga" (Thorny Forest), in semi-arid of northeast Brazil, and "Cerrado" (Savannah), central-west Brazil (Fig. 1), with the epicenter located in the Federal District of Brasília and neighborhood of Goiás State. Thus, the area where exist most of the cassava diversity, known as "square of the *Manihot* genus" spread between 15 and 35° of latitude South and 35 and 55° of longitude West.



Fig. 1 – Areas of *Manihot* diversity

OBJECTIVE

This work reports the results of three collection expeditions of cassava wild relatives accomplished to enlarge the wild species collection established at Embrapa/CNPMPF

METHODOLOGY

Based on previous collection expeditions carried out in the last twenty years by researchers from Embrapa and other Brazilian institutions, three travel itineraries were established for the expeditions.

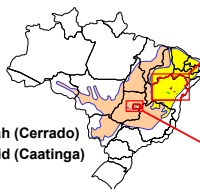
The expeditions were carried out in two Brazilian environments: **1)** Semi-arid region, know as "caatinga" (thorny forest), northeast Brazil and **2)** Savannah or "cerrado" region, central-west Brazil.

In the "caatinga" expeditions, two collections were performed (21-22/Dec/2005 and 15-16/Feb/2006) in the central-western of Bahia state, traveling around 1500 km.

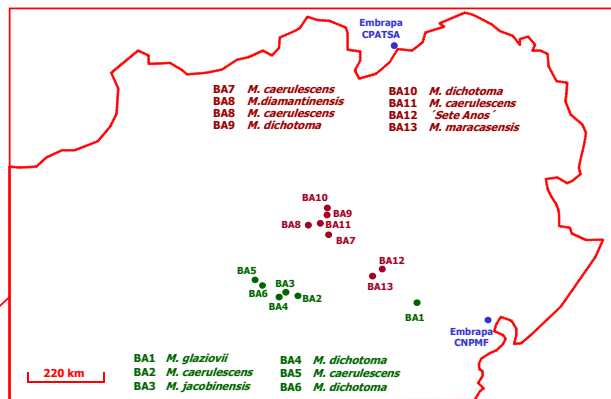
In the savannah's expedition, one collection was accomplished (17-20/Apr/2006) in the plateau of Brasília Federal District and neighborhood of Goiás state, traveling around 1100 km.

The details of the covered locations are in Fig. 2.

| Point | Latitude | Longitude |
|-------|-----------------|-----------------|
| BA1 | 12° 29' 34,4" S | 39° 49' 06,2" W |
| BA2 | 12° 29' 18,6" S | 41° 20' 28,0" W |
| BA3 | 12° 26' 33,7" S | 41° 29' 06,0" W |
| BA4 | 12° 30' 12,6" S | 41° 34' 27,1" W |
| BA5 | 12° 20' 41,3" S | 41° 47' 36,2" W |
| BA6 | 12° 18' 01,1" S | 41° 53' 18,6" W |
| BA7 | 11° 38' 15,0" S | 40° 58' 22,1" W |
| BA8 | 11° 31' 22,4" S | 41° 14' 49,6" W |
| BA9 | 11° 21' 26,3" S | 41° 00' 40,3" W |
| BA10 | 11° 17' 13,2" S | 41° 00' 44,3" W |
| BA11 | 11° 29' 15,0" S | 41° 05' 53,9" W |
| BA12 | 12° 04' 36,5" S | 40° 16' 39,0" W |
| BA13 | 12° 10' 13,1" S | 40° 24' 00,0" W |



| Point | Latitude | Longitude |
|-------|-----------------|-----------------|
| DF1 | 15° 34' 30,8" S | 47° 56' 16,9" W |
| DF2 | 15° 33' 35,8" S | 47° 56' 29,7" W |
| DF3 | 15° 34' 32,8" S | 47° 44' 56,5" W |
| DF4 | 15° 34' 27,5" S | 47° 44' 56,2" W |
| DF5 | 15° 41' 06,9" S | 47° 40' 44,7" W |
| DF6 | 15° 34' 50,8" S | 47° 27' 25,8" W |
| DF7 | 15° 34' 52,4" S | 47° 27' 23,5" W |
| DF8 | 15° 13' 24,0" S | 47° 10' 00,9" W |
| DF9 | 15° 13' 22,9" S | 47° 09' 59,4" W |
| DF10 | 15° 53' 53,2" S | 48° 13' 03,2" W |
| DF11 | 15° 54' 28,0" S | 48° 11' 34,8" W |
| DF12 | 16° 00' 57,4" S | 48° 08' 23,6" W |
| DF13 | 16° 00' 59,6" S | 48° 08' 17,4" W |
| DF14 | 16° 11' 01,5" S | 48° 38' 22,4" W |
| DF15 | 15° 57' 09,1" S | 48° 44' 53,2" W |
| DF16 | 15° 54' 54,8" S | 48° 46' 24,5" W |
| DF17 | 15° 50' 20,5" S | 48° 54' 49,4" W |
| DF18 | 15° 49' 52,5" S | 48° 54' 37,0" W |



| | | | | | |
|-----|------------------------|-----|---------------------|-----|------------------------|
| BA1 | <i>M. glaziovii</i> | BA4 | <i>M. dichotoma</i> | BA5 | <i>M. caerulescens</i> |
| BA2 | <i>M. caerulescens</i> | BA6 | <i>M. dichotoma</i> | | |
| BA3 | <i>M. jacobinensis</i> | | | | |

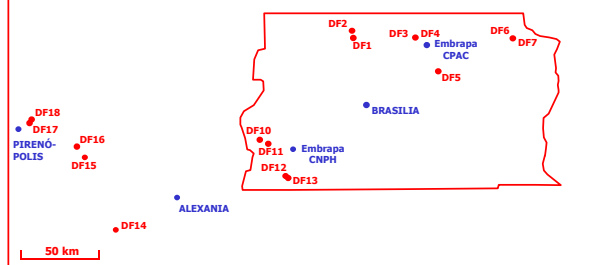


Fig. 2 – Regions, points of collection and coordinates covered by the expeditions and species found

RESULTS

In the "Caatinga" expeditions, 13 points of collections were recorded and 18 accessions of 7 species found: 1) *M. caerulescens* (5 accessions); 2) *M. diamantinensis* (1); 3) *M. dichotoma* (6); 4) *M. glaziovii* (1); 5) *M. jacobinensis* (1); 6) *M. maracasensis* (3); and 7) *Cassava "Sete Anos"* (1).

In the Savannah expedition, 18 points were recorded, with 28 accessions of 17 species found: 1) *M. anomala* (2 accessions); 2) *M. cecropiaefolia* (1); 3) *M. falcata* (1); 4) *M. fruticulosa* (2); 5) *M. gracilis* (1); 6) *M. irwinii* (1); 7) *M. mossamedensis* (1); 8) *M. nana* (1); 9) *M. pentaphylla* (1); 10) *M. salicifolia* (1); 11) *M. sparsifolia* (1); 12) *M. stipularis* (1); 13) *M. tomentosa* (2); 14) *M. tripartita* (2); 15) *M. triphylla* (1); 16) *M. tristis* (1); and 17) *M. violacea* (8).

Depending on the plant architecture and vegetative stage, cuttings, mature fruits or seedlings were collected. The handling for propagation and field establishment of the collected material are underway.

The vegetative polymorphism observed in some wild species found in the expeditions are showed in Fig. 3.

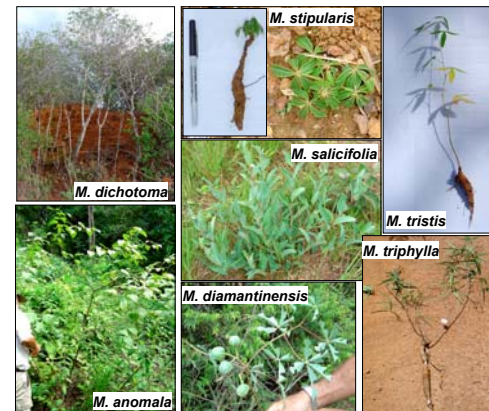


Fig. 3 – Vegetative polymorphism observed in the collection expeditions