

Keeping Options Alive and Threat of Extinction: A Survey of Wild Cassava Survival in its Natural Habitat

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Abstract

Wild cassava, *Manihot* spp. are sources of many useful characters. Their occurrence in natural habitats is diminishing day after day and a number of them almost have come to extinction. It is suggested that in situ conservation should be followed. It is appealed to concerned authorities to make an effort for their salvation.

Key words: *Manihot* spp. Conservation, genetic resources, extinction, in situ

Cassava is an important food crop for more than 900 million people in the tropics and subtropics. Its wild relatives are sources of many useful characters such as high protein content (Nassar, 1977, Nassar and Dorea, 1982), tolerance to drought (Nassar, 1978, 1991, 1996) and apomixis (Nassar, 1995, Nassar et al. 1997, 1998, 2000). Every year from 1977-2001 wild species were collected, propagated, maintained in a living collection, evaluated and fertilized with cassava. This process both transferred useful traits and broadened this crop genetic base (Nassar, 1986, 1997, 2000). Results of this program were published in a series of publications, most recently in a chapter of advances in Agronomy (Nassar, 1999).

To determine localities of wild *Manihot* species Rogers and Appan monograph (1973) was consulted. The herbarium of Universidades of Brasília and Goiás too. Trips were made to localities two times per year. Replications of trips to localities were made to assure finding the species because majority of wild *Manihot* species native to Central Brazil are shrubby and have their vegetative parts die back to the ground surface in dry season. Therefore it is necessary to look for the species in both of the rainfall and dry seasons.

Results of occurrence survey of these species in their natural habitats is shown in table 1.

Table 1
The occurrence of wild *Manihot* species in their Natural habitats

Species	Reported Localities	Occurrence in 1977	Occurrence in 2001
<i>M. falcata</i> Rogers & Appan (Fig. 1)	Campo near Aparecida de Goiás Ca 50 km W of Brasília (1968)	+	-
<i>M. pentaphylla</i> Pohl (Fig. 2)	20 km NW Corumba near road to Niquelandia (1968)	+	-
	Cerrado, circa 30 km SE of Goiás Velho (1966)	+	-
<i>M. gracilis</i> Pohl (Fig. 3)	Circa 14 km S Corumba (1965)	+	-
	Cerrado circa 5 km E of Goiás Velho (1965)	+	-
	Aeroporto, Anápolis (1956)	+	-
	Circa 3km South Sobradinho (1966)	+	-
	Cerrado circa 12 km W of Taguatinga On road to Braslândia (1965)	+	-
	Circa 20 km S. of Brasília on road to Goiânia near Rio Melchoir (1965)	+	+
<i>M. paviaefolia</i> Pohl (Fig. 4 and Fig. 4b)	Circa 20 km N. Corumba on road to Niquelandia (1968)	-	-
	Circa 20 km NW of Corumba de Goiás, near road to Niquelandia (1968)	+	-
	Summit of Serra Dourada, 20 km SE of Goiás Velho (1966)	+	-
	Serra dos Pyreneos, Municip. Corumba (1966)	+	-

<i>M. oligantha</i> Pax (Fig. 5)	Campo and Cerrado, cerca 3 km N. of Cristalina (1966)	-	-
	Cerrado circa 2 km N of Cristalina (1966)	+	-
<i>M. tomentosa</i> Pohl (Fig. 6)	Cerrado circa 35 N. of Formosa on road to S. Gabriel (1966)	+	-
	Corrego Itiquera, cerca 30 km N of Formosa (1966)	+	-
<i>M. attenuata</i> Muell. (Fig. 7)	Chapada dos veadeiros, cerca 15 km W. of Veadeiros (1966)	-	-
	circa 12 km NW of Veadeiros on road to Cavalcanti (1965)	-	-
	circa 17 km NW of Veadeiros on road to Cavalcanti (1977)	+	-
<i>M. peltata</i> Pax (Fig. 8)	Cerrado circa 9 km S of Corumba de Goias (1965)	+	-
<i>M. alutacea</i> Rogers & Appan (Fig. 9)	Cerrado ca 22 km N Alto Paraiso (1971)	+	-
	On road ca 31 km east Goias Velho (1971)	+	-
<i>M. pruinosa</i> Pohl (Fig. 10)	Vic. Of Xavantina (1964)	+	-
	On road ca 15 km east of Goia Velho (1975)	+	-
<i>M. fruticulosa</i> Rogers & Appan (Fig. 11)	75 km N of Cristalina on road to Brasilia (1965)	+	-
	Cerrado ca 9km S Corumba de Goias (1965)	+	-
	Cerrado adjacent to Parque de Gama (1965)	+	-
	Cerca 7 km E. of cabeceiras	+	-
<i>M. procumbens</i> Muell. Arg. (Fig. 12 and Fig. 12b)	5 Km on road N. Corumbá de Goiás to Niquelandia (1975)	+	-
	6 Km N. Corumbá de Goiás near waterfall (1975).	+	-
<i>M. purpurea costata</i> Pohl (Fig. 13)	16 Km N. Alto Paraiso on road to Cavalcanti (1975)	+	-
	25 Km N. Alto Paraiso on road to Cavalcanti (1975).	+	-
<i>M. salicifolia</i> Pohl (Fig. 14)	circa 75 Km N. of Xavantina (1964)	+	-
	Circa 41 Km N. of Xavantina (1964).	+	-
	Circa 4 Km South Alto Paraiso (1975).	+	-
<i>M. stipularis</i> Pax & Hoffman (Fig. 15)	circa 75 Km N. of Cristalina on road to Brasília (1965).	+	-
	Campo near Rio Descoberto (1965)	+	-
	Cerrado along road to Rio Curumba, 30 Km from Gama (1963).	+	-
<i>M. longepetiolata</i> Pohl (Fig. 16)	Campo circa 15 Km W. of Cristalina (1966).	+	-
	Campo and Cerrado circa 15 Km E. Cristalina (1966)	+	-
	Cerrado 5 Km W. of Cristalina (1950).	+	-
<i>M. nana</i> Muell. Arg. (Fig. 17)	Fazenda Tavares 45 Km W. of Cristalina (1975)	+	-
	Near Corrigo ,Fazenda Tavares, 44 km W Cristalina (1975).	+	-
<i>M. neusana</i> Nassar (Fig. 18)	circa 2km W. Curitiba on road to Londrina (1975)	+	-

As seen above, majority of these species almost have disappeared in their natural habitats.

Nassar (1978f) defined in Central Brazil three microcenters of diversity where a concentration of 6-8 species do occur within a diameter of 200 km maximum. These microcenters are Chapada de Veadeiros, Corumba de Goias-Pirenopolis and Goias Velho. These regions of the microcenters are transforming toutistic poles and suffers contineously devastation of their vegetation. Conservation in situ must have been carried to preserve their flora and fauna.

All of the above mentioned species have been collected by the author in 1977. They were evaluated and reproduced in a living collection (Nassar 1978-1982). Moreover, they were hybridized by this author and their hybrids with cassava were reproduced (Nassar 1983-1989). A large number of these hybrids showed extreme important economic value (Nassar 1990-2000). For example hybrid of cassava with *M. oligantha* showed high protein content reached 4 % coimpared to 1.5% in the cultivated clones (Nassar and Dorea, 1982). The high protein content was combined by low HCN content and high production of root. Another example is the hybrid of cassava with *M. neusana* which ehibited for the first time of the crop apomixis and led production of apomictic clones (Nassar, 1995-2000).

The hybrids of cassava with *M. glaziovii* and *pseudoglaziovii* were very tolerant to drought and exhibited high productivity of roots (Nassar, 1996).



The living collection of wild *Manihot* species at the University of Brasilia - UnB

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