

M. anomala Pohl



NASSAR, N. M. A. . Genetic Variation Of Wild Manihot Species Native To Brazil And Its Potential For Cassava Improvement.. FIELD CROPS RESEARCH, v. 13, n. 1, p. 177-184, 1986.

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M. oligantha Pax



NASSAR, N.M.A 1978f. Wild *Manihot* species of central Brazil for cassava breeding. Can. J. Plant., Sci, 58: 257-61.

<http://www.geneconserve.pro.br/reprints14.htm>

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M. reptans Pax



NASSAR, N.M.A. 1982. Collecting wild cassava in Brazil. *Ind. J. Genet.*, 42:405-411.

NASSAR, N.M.A. 1984. Natural hybrids between *Manihot reptans* Pax and *M. alutacea* Rogers & Appan. *Can. J. Plant Sci.*, 64: 423-425.

<http://www.geneconserve.pro.br/reprints16.htm>

Natural hybrid (right) of *M. alutacea* (left) with *M. reptans* (medium)



NASSAR, N.M.A. 1984. Natural hybrids between *Manihot reptans* Pax and *M. alutacea* Rogers & Appan. **Can. J. Plant Sci**, 64: 423-425.

<http://www.geneconserve.pro.br/reprints16.htm>

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M. stipularis Pax



NASSAR, N.M. A . 1986. Genetic variation of wild *Manihot* species native to Brazil and its potential for cassava improvement. **Field Crops Research**, 13:177-84.

<http://www.geneconserve.pro.br/reprints4.htm>

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Manihotoides pauciflora Rogers & Appan



NASSAR, N. M. A. . Has *Manihotoides pauciflora*, a Cassava Relative, become extinct?.
Diversity, USA, v. 15, n. 2, p. 20-20, 1999.

http://www.geneconserve.pro.br/artigo_7.htm

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Useful characters

Average protein and fibre percentages
in the roots of cassava species on a
dry matter basis

Species	Crude protein %	Crude fibre %
<u>M. oligantha</u> subsp. <u>nesteli</u>	7.10 ± 0.58	26.67 ± 4.86
<u>M. tripartita</u>	6.88 ± 1.48	33.48 ± 6.36
<u>M. anomala</u>	3.74 ± 0.63	23.44 ± 4.82
<u>M. zehntneri</u>	3.06 ± 0.82	21.52 ± 4.84

NASSAR, N.M.A. and Costa C.P. Tuber formation and protein content in some wild cassava (mandioca) species native to Central Brazil. **Experientia**, 33: 1304-1306.

<http://www.geneconserve.pro.br/reprints2.htm>

Table 1. Quantification ($\mu\text{g/g}$ of tissue) of lutein, *trans*- β -carotene and *cis*- β -carotene of some manihot cultivars organs.

	Lutein	<i>trans</i> - β -carotene	<i>cis</i> - β -carotene
Roots			
Pohli	-	0.16	0.09
UnB-400	236.83	1.24	0.96
ICB-300	-	0.19	0.12
Leaves			
Poli	782.15	13.85	2.37
UnB-400	3081.69	24.12	3.28
ICB-300	9108.98	18.02	1.88

NASSAR, N. M. A. , C. S. Vizzotto, H. L. da Silva, C. A. Schwartz, O. R. P. Junior (2005).
Potentiality of cassava cultivars as a source of carotinoids. **JFAE 3:33-35.**

http://www.geneconserve.pro.br/artigo_26.htm

Hydrocyanic acid content of unpeeled
wild Manihot species root

Species	HCN content in fresh tuber(mg/kg)	HCN content on dry matter basis (mg/kg)
<u>M. tripartita</u> Mueller	238.1a	657.2b
<u>M. anomala</u> Pohl	199.2a	1026.3a
<u>M. zehntneri</u> Ule	125.8b	504.2b
<u>M. gracilis</u> Pohl	97.2c	291.2c
<u>M. oligantha</u> Pax emend. Nassar subsp. <u>nesteli</u>	62.3d	183.2d

a-d Means within a column followed by the same letter are not significantly different by Duncan's multiple range test (P=0.5).

NASSAR, N.M.A. 1978 Hydrocyanic acid content in some wild *Manihot* (cassava) species. **Can.J. Plant Sci**, 58: 577-8.

<http://www.geneconserve.pro.br/reprints12.htm>

3. Gene transference by interespecific hybridization

3.1 Breaking barriers to interespecific hybridazation

The use of mentor effect



NASSAR, N.M.A.; CARVALHO C.G.; VIEIRA,C. 1996. Overcoming barriers between cassava *Manihot esculenta* Crantz and wild relative. *M. pohlii* Warwa. **Braz. J. Genet.** 19:617-620.

<http://www.geneconserve.pro.br/reprints10.htm>

Morphological gene markers

Fruit shape



NASSAR, N. M. A. . Cassava, *Manihot esculenta* Crantz and wild relatives: Their relationships and evolution. *Genetic Resources and Crop Evolution*, Holanda, v. 48, p. 429-436, 2001.

http://www.geneconserve.pro.br/artigo_38.htm

Morphological gene markers

Color variegation

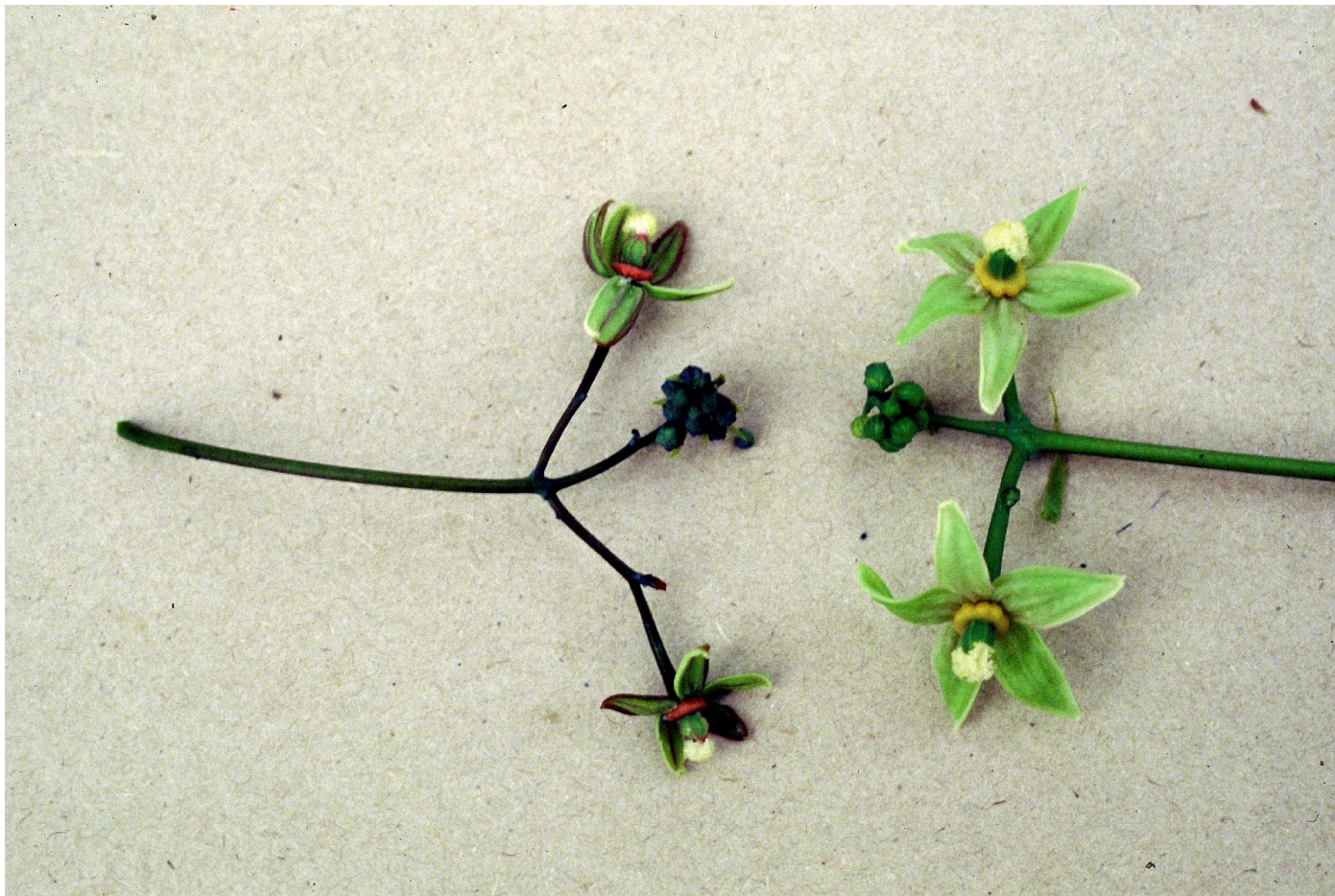


NASSAR, N. M. A. . Cytogenetic Behaviour of the Interspecific hybrid of *Manihot neuzansana* Nassar and *Cassava M.esculenta* Crantz, and its backcross progeny. *Canadian Journal of Plant Science*, Canada, v. 75, p. 675-678, 1995. <http://www.geneconserve.pro.br/reprints18.htm>

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Morphological gene markers

Color of flower disk



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Contin... Morphological gene markers

Petiole attachment to lamina



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Stem surface



NASSAR, N. M. A. . Broadening The Genetic Base Of Cassava, *Manihot Esculenta* Crantz By Interspecific Hybridization.. CANADIAN JOURNAL OF PLANT SCIENCE, v. 69, n. 2, p. 1071-1073, 1989.

<http://www.geneconserve.pro.br/reprints5.htm>

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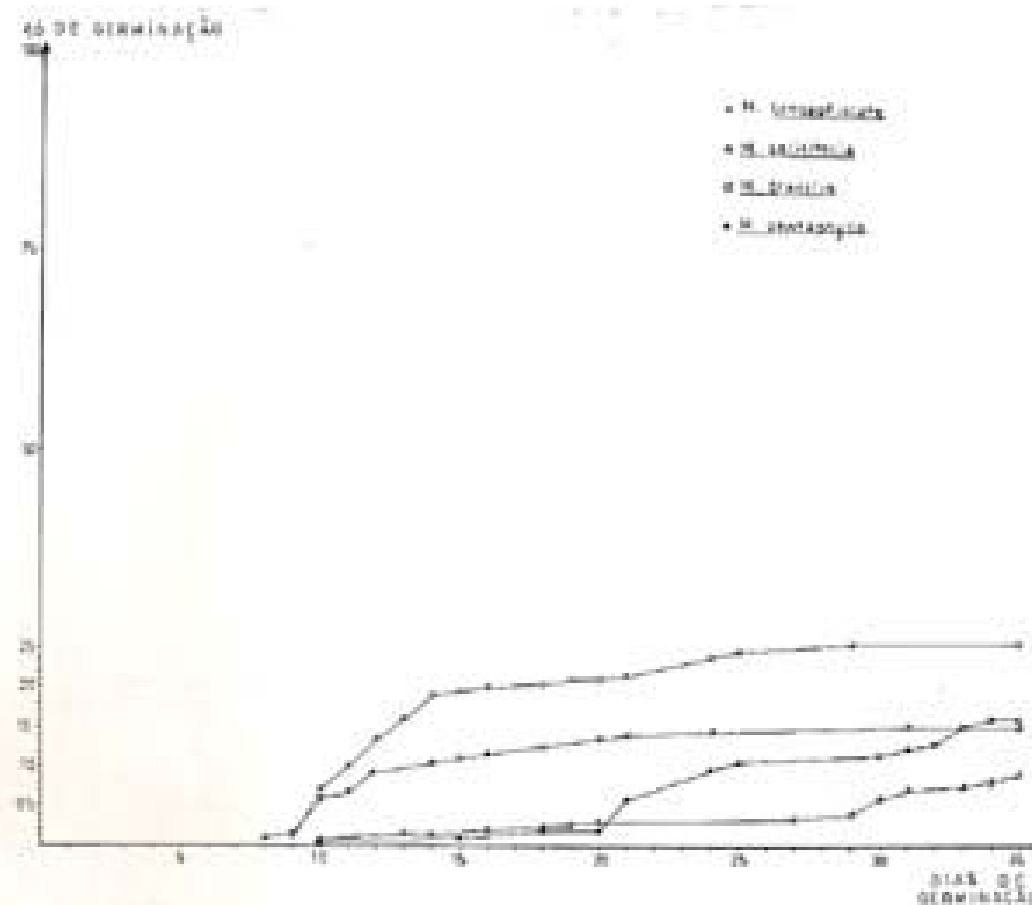
NASSAR, N. M. A. ; VIEIRA, C. ; NASSAR, H. N. ; CARVALHO, C. G. . Overcoming crossing barriers between cassava *Manihot esculenta* Crantz and wild relative *M.pohlii*. Brazilian Journal of Genetics, Ribeirao Preto, v. 19, p. 617-620, 1996.

<http://www.geneconserve.pro.br/reprints10.htm>

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I 4. Development of interspecific hybrids

Breaking dormancy of wild cassava seed



Nassar N. M. A. and R. Teixeira 1983. Breaking dormancy of wild cassava seed. *Ciência e Cultura*, 35:630-632.

First generation of *M. cearulescens* x cassava



NASSAR, N. M. A. . Wild cassava, *Manihot* spp: Biology and potentialities for genetic improvement. *Genetics and Molecular Biology*, Ribeirao Preto, v. 23, p. 201-212, 2000.

NASSAR, N. M. A. . Cassava: Some Ecological and Physiological Aspects Related to plant Breeding. *Geneconserve* p. 229-245, 2004.

http://www.geneconserve.pro.br/artigo_24.htm

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