CASSAVA WILD RELATIVES UTILIZATION AT EMBRAPA*

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INTRODUCTION

- Brazil is the biggest diversity center of the *Manihot* gender;
- Cassava wild relatives are important source of genes for resistance to biotic and abiotic constraints;
- Very few studies on crossing compatibility between wild and cultivated species has been reported;
- A collection of *Manihot* species has been field established at Embrapa/CNPMF with arounf 930 accessions of 18 cassava wild relatives (**Table 1**)

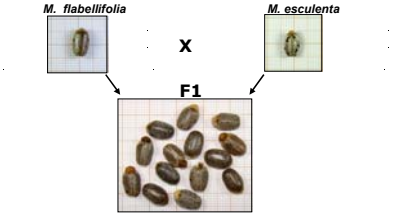
Table 1 - Number of accessions and plants per species in the *Manihot* collection at Embrapa/CNPMF

#	Species	TOTAL Acces.	TOTAL Plants
01	*anomala*	152	152
02	*caerulescens*	35	43
03	*cecropiaefolia*	10	10
04	*compositifolia*	1	4
05	*diamantinensis*	1	1
06	*dichotoma*	104	136
07	*flabellifolia*	215	294
08	*glaziovii*	24	24
09	*irwinii*	11	11
10	*jacobinensis*	1	4
11	*maracasensis*	1	1
12	*peruviana*	260	304
13	*tomentosa*	31	31
14	*tripartita*	1	1
15	*violacea*	2	2
16	'maniçoba'	67	69
17	'pornúncia'	3	13
18	'sete anos'	9	50
	TOTAL	928	1150

Objectives:

To evaluate the potential of wild species as source of useful genes that can be used for casava genetic improvement

To perform crossbreeding between wild and cultivated species and produce F_1 interespecific hybrids

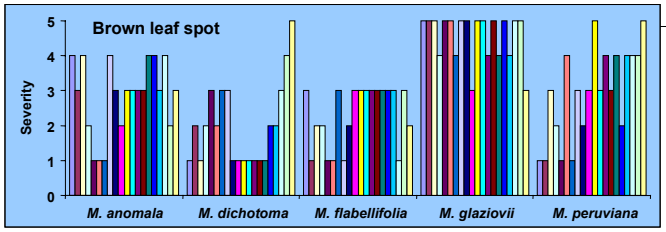


RESULTS

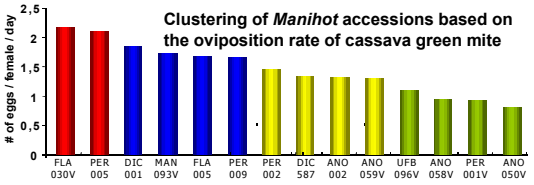
Evaluation of cassava interespecific hybrids and wild species for resistance to pests

Family	Brown leaf spot R	Brown leaf spot RI	Brown leaf spot S	Anthracnose R	Anthracnose RI	Anthracnose S	Rust R	Rust RI	Rust S	Wild species involved
CW 450 (20)	0	5	15	1	1	18	12	7	1	*M. flabellifolia*
CW 452 (8)	0	0	8	0	1	7	3	1	4	*M. flabellifolia*
CW 453 (15)	1	7	7	0	0	15	11	4	0	*M. flabellifolia*
CW 464 (6)	1	4	1	0	0	6	2	4	0	*M. flabellifolia*
CW 473 (4)	0	4	0	0	0	4	2	2	0	*M. peruviana*
CW 444 (10)	0	7	3	2	3	5	6	2	2	*M. tristis*
CW 445 (13)	0	13	2	4	5	5	11	2	0	*M. tristis*
CW 482 (4)	0	3	1	0	0	4	1	3	0	*M. tristis*
CW 485 (5)	2	3	0	1	1	3	5	0	0	*M. tristis*
CW 488 (4)	0	1	3	0	0	4	0	3	1	*M. tristis*
Total	4	47	40	8	11	71	53	28	8	

R = Resistant
RI = Resistance Intermediary
S = Susceptible



For all the evaluated diseases, accessions with high level of resistance were identified. These accessions are excellent candidates, not only to be used as resistance sources for cassava breeding, but also for studies addressed to understand genetic and molecular basis of disease resistance in cassava.



The wild genotypes presented lesser fecundity of *M. tanajoa* in relation to the cultivated species (*M.esculenta*), selected as resistant to semi-arid condition in the Northeast Brazil

Crossing compatibility between wild species and cultivated cassava and production of F_1 interespecific hybrids

MOTHER	X	FATHER	# Pollinated Flowers	% Fertilized Flowers	% Fruit Set	% Produced Seeds	Dehiscense (days)
Wild Species (13 sp.)	X	*M. esculenta* (25 var.)	846	35,58	9,69	5,75	69
M. esculenta (14 var.)	X	Wild Species (7 sp.)	147	59,18	18,37	6,80	67
TOTAL			993	39,07	10,98	5,91	68

MOTHER (wild)	X	FATHER (cultivated)	# Pollinated Flowers	% Fertilized Flowers	% Fruit Set	% Produced Seeds	Dehiscense (days)
M. anomala		*M. esculenta*	92	43,48	2,17	1,45	66
M. flabellifolia		*M. esculenta*	318	23,27	10,38	8,49	68
M. jacobinensis		*M. esculenta*	43	20,93	9,30	6,20	48
M. peruviana		*M. esculenta*	80	35,00	11,25	6,67	75
M. tomentosa		*M. esculenta*	70	70,00	2,86	2,38	81
Pornúncia		*M. esculenta*	16	18,75	6,25	0	82
TOTAL			619	31,52	7,10	5,39	70

MOTHER (cultivated)	X	FATHER (wild)	# Pollinated Flowers	% Fertilized Flowers	% Fruit Set	% Produced Seeds	Dehiscense (days)
M. esculenta		*M. anomala*	14	50,00	14,29	0	66
M. esculenta		*M. flabellifolia*	62	66,13	35,48	15,05	66
M. esculenta		*M. jacobinensis*	20	70,00	0	0	0
M. esculenta		*M. peruviana*	15	100	0	0	0
M. esculenta		*M. tomentosa*	23	30,43	13,04	2,90	77
M. esculenta		*Pornúncia*	13	23,08	0	0	0
TOTAL			147	59,18	18,37	6,80	70

The average rates of fertilized flowers, fruit set, and seed production were significantly different among species and dependent of both donor and receptor of the pollen grains. Only two wild species produced seeds in both ways (as male and female): *M. flabellifolia and M. tomentosa.* The period from pollination to fruit dehiscence varied from 48 to 97 days and a total of 176 hybrid seeds were produced from 993 pollinated flowers

F_1 interespecific hybrids

Generation — Cultivating Plant Diversity for the Resource-Poor

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