Incidence of virus diseases in the semi-arid cassava germplasm

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INTRODUCTION

Cassava is mainly propagated by stem cuttings and this practice leds to dissemination of viruses. At least 16 different viruses have been isolated from cassava. In Brazil has been found: *Cassava common mosaic virus* (CsCMV), prevalent in the southern region, *Cassava vein mosaic virus* (CsVMV), prevalent in the Northeast semi-arid environment and "Cassava frog skin disease" (CFSD) in the amazon region. The viruses responsible for cassava mosaic disease (CMD) complex have not been detected in Brazil.

Objective:

This study aimed to determine the incidence and distribution of CsCMV, CsVMV, CFSD, and the possible presence of CMD complex viruses in the cassava germplasm bank at Embrapa Semi-Arid (CPATSA).

METHODOLOGY

Location:

The cassava germplasm bank (GB) is located at the "Bebedouro" Experimental Station of ***Embrapa Semi-Arid***, in Petrolina, Pernambuco, Brazil.

Plant material:

In general the accessions exhibited symptoms that includes chlorosis along of the veins that sometimes coalesce to form a severe mosaic and leaf curling, typical of CsVMV infection (Fig. 1); while others showed just yellow spots in the lower leaves, similar to CsCMV. Leaf samples of all accessions present in the GB were collected, representing a total of 375 samples.

Diagnostic tests

- CsVMV: PCR test using specific primers (Calvert et al., J. Gen Virol., 76: 1271-1276 (1995).
- CsCMV: DAS-ELISA using polyclonal anti-body.
- CFSD: Visual analysis of the roots, searching for typical symptoms.
- CMD: PCR test using degenerated primers (Rojas et al., Plant Dis., 77: 340-347 (1993).

Figure 1: Symptoms of CsVMV observed in accessions of germplasm bank.

RESULTS

Table 1: Incidence of viruses in the cassava germplasm bank.

Virus species	N° of infected accessions /total	%
CsVMV	92/375	24.5 (97.9)[a]
CsCMV	2/375	0.73 (2.1)
CsVMV + CsCMV	1/375	0.26 (1.1)
CFSD	0	0
ACMV	0	0
Total	93*/375	24.8

(*) n° of different infected accessions.
([a]) the value in the parenthesis indicate the percentage of infected accessions related to the total of infected.

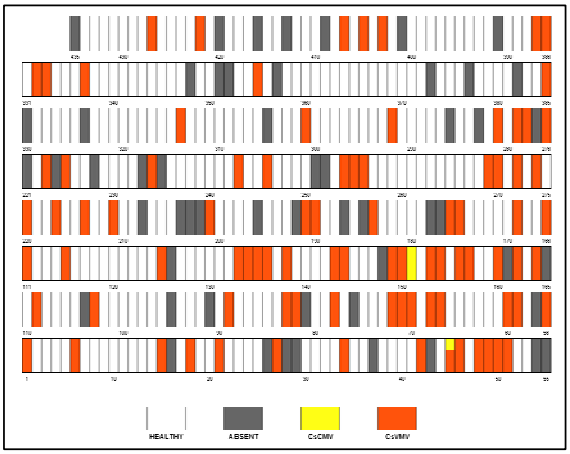

Figure 2: Map of the cassava germplasm bank showing the distribution of the infected accessions in the field.

CONCLUSIONS

- The most prevalent virus was CsVMV, presents in 98% of the infected accessions.
- Based on the distribution of the infected plants in the germplasm bank and field observations, we suggest a mechanical transmission as responsible for dissemination of CsVMV.
- Plant with symptoms of CFSD was not found and PCR diagnosis was not able to detect any species involved in CMD complex.

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