



Genetic diversity of root anatomy in wild and cultivated *Manihot* species

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Genet. Mol. Res. 10 (2): 544-551 (2011)

Received October 5, 2010

Accepted October 15, 2010

Published April 5, 2011

DOI 10.4238/vol10-2gmr1093

ABSTRACT. An anatomical study of roots was conducted on two wild *Manihot* species, namely *M. glaziovii* and *M. fortalezensis*, and two cassava varieties, *M. esculenta* Crantz variety UnB 201 and *M. esculenta* variety UnB 122, to identify taxonomic differences in primary growth. Anatomical characters of cassava roots have been rarely investigated. Their study may help cassava breeders to identify varieties with economically important characters, such as tolerance to drought. We investigated tap and lateral adventitious roots of two specimens of each clone or species. Free-hand cross-sections of roots were drawn; these had been clarified with 20% sodium hypochlorite solution, stained with 1% safranin-alcian blue ethanolic solution, dehydrated in ethanol series and butyl acetate and mounted in synthetic resin. Anatomical differences among *Manihot* species and varieties were found in the epidermal and exodermal cell shape and wall thickness, content of cortical parenchyma, and number of xylem poles. Wall thickness of the epidermis and exodermis of tap root were similar in all species, while in the lateral root there were differences in cell shape and wall thickness. Epidermal cells with thick walls were found in the tap root of all species and in lateral

roots of cassava varieties. This character is apparently associated with tolerance to drought and disease. The variation in the number of xylem poles of cassava varieties was larger (4-8) than in wild species (4-6), and appears to support the hybrid origin of cassava.

Key word: Primary growth; *Manihot glaziovii*; *Manihot esculenta*; *Manihot fortalezensis*; Xylem poles