



## Isolation and partial characterization of a root-specific promoter for stacking multiple traits into cassava (*Manihot esculenta* CRANTZ)

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**ABSTRACT.** Cassava can be cultivated on impoverished soils with minimum inputs, and its storage roots are a staple food for millions in Africa. However, these roots are low in bioavailable nutrients and in protein content, contain cyanogenic glycosides, and suffer from a very short post-harvest shelf-life, and the plant is susceptible to viral and bacterial diseases prevalent in Africa. The demand for improvement of cassava with respect to these traits comes from both farmers and national agricultural institutions. Genetic improvement of cassava cultivars by molecular biology techniques requires the availability of appropriate genes, a system to introduce these genes into cassava, and the use of suitable gene promoters. Cassava root-specific promoter for auxin-repressed protein was isolated using the gene walking approach, starting with a cDNA sequence. *In silico* analysis of promoter sequences revealed putative *cis*-acting regulatory elements, including root-specific elements, which may be required for gene expression in vascular tissues. Research on

the activities of this promoter is continuing, with the development of plant expression cassettes for transformation into major African elite lines and farmers' preferred cassava cultivars to enable testing of tissue-specific expression patterns in the field.

**Key words:** Cassava; Promoters; Gene walking; Gene expression