Electrophoretic Detection of Frog Skin-Infected Manihot esculenta

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ABSTRACT

Frog skin (FS), a cassava (Manihot esculenta Crantz) disease of unknown etiology, can cause yield losses of up to 100% in susceptible cultivars. The symptoms of the disease are restricted only to the below-ground parts of infected plants. The initial symptom of the disease is the formation of small longitudinal fissures along the root epidermis, followed by excessive development of the bark. The excessive corky tissue around the fissure later gives rise to "lip-shaped" lesions. The affected roots are usually fibrous, thin, and without any stored starch.

Analyses of partially-purified preparations, obtained from FS-affected 'M Col 33' cassava plants, by polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulfate (SDS-PAGE) revealed a marked increase in the concentration of a normal host protein (MW 45.000 d) in infected tissue, as compared to FS-free controls. This phenomenon has been consistent in SDS-PAGE analyses of leaf and root extracts of FS-affected 'M Col 33', 'Secundina', and 'Quilcace-PR' cassava plants, and of leaf extracts of 30 other different cassava genotypes.

The electrophoretic method is suitable for the detection of FS-affected cassava plants grown under glasshouse and field conditions.

Investigations of Mononychellus tanajoa (Bondar) and the Cyanogenic Glucosides of Cassava Manihot esculenta Crantz

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ABSTRACT

The leaves of 23 varieties of cassava (Manihot esculenta Crantz) were analyzed for cyanogenic glucoside content using the method of Ikediobi, Onyia, and Eluwah (1980). Population densities of the cassava mite Mononychellus tanajoa on each variety were simultaneously determined. Surprisingly, regression analysis indicated a positive correlation between the mite population density and the cyanogenic glucoside levels.