Phenotypic and Molecular Characterization of Released Sweetpotato varieties and Pathogen-tested putative ramets in Ghana

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Abstract

Officially released varieties in Ghana are all selections from exotic introductions. Following release, no effort was made to maintain pathogen-tested foundation seed stocks. Pathogen-tested plants of 4 released varieties were introduced to Ghana and compared with released varieties to confirm a) that they were the same varieties and b) to evaluate whether pathogen-tested planting material of these varieties could be used to increase yield and quality. Planting material of cultivars and introduced pathogen-tested materials of the same genotypes were field multiplied at Fumesua, Ghana, before planting in replicated trials at 2 locations during the 2011 growing season. Standard morphological descriptors and molecular markers were used to assess equality of genotypes, while yield and virus symptoms during growth were used to determine benefits of using pathogen-tested planting material. Morphologically, Otoo and Sauti were more similar to their putative ramets than Faara and Okumkom. Mogamba, the putative ramet of Otoo, recorded the highest yield among the pathogen-tested clones at the two locations, while also expressing low virus symptoms. Otoo also had the highest yield and lowest virus ratings among the released varieties. Tanzania a pathogen tested ramet of Sauti had the worst virus score across locations. TIS 3017 (CIP 440064), the pathogen-tested putative ramet of Faara did not yield well though it did not express severe virus symptoms.

Key words: Sweetpotato virus disease, DNA fingerprinting, morphological characterization