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Full Length Research Paper

Environmental stability of resistance to anthracnose and virus diseases of water yam (*Dioscorea alata*)

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Abstract

Yam anthracnose and virus diseases are the most important biotic constraints affecting yam production in the world. Six *Dioscorea alata* genotypes were evaluated for their reaction to these diseases in four distinct agro-ecological zones in Nigeria for two years. Data obtained were subjected to linear mixed modelling for ordinal data and site regression model. Environment (E), genotype (G) and G × E interactions contributed 26, 48 and 25.9% respectively to the total variation in severity of anthracnose disease symptoms indicating the confounding influence of the environment on evaluations in different locations. In the virus disease assessment, environment, genotype and their interaction contributed 5.67, 75.4 and 18.9% respectively indicating that host plant resistance is the ideal means of controlling the disease. Genotypes TDa 291, TDa 294 and TDa 297 showed stable resistance to both diseases across environments and would be valuable in breeding programs. Two sites, Ubiaja and Abuja were identified as very good for germplasm evaluation for reaction to the two diseases due to their high discriminatory abilities.

Key words: *Colletotrichum gloeosporioides*, genotype × environment (G × E) interaction, stable resistance, water yam, yam anthracnose, yam mosaic virus.

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