Analysis of" -Kenyan isolates' of Fusarium "safani f. sp. phaseoli from common bean using colony characteristics, pathogenicity and microsatellite DNA

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Abstract

Fusarium solani (Mart) f.sp. phaseoli (Burk) Synd. and Hans., is a plant pathogeniC fungus that causes root rot in garden bean (Phaseo/us vulgaris L.). To evaluate methods used in classifying strains of this pathogen, 52 Fusarium solani f.sp. phaseoli isolates from infected bean plants grown on different farms in Taita hills of Coast province, Kenya, were cultured and characterized using morphology, pathogenicity and microsatellite DNA. All the isolates showed high variability in aerial mycelial growth, mycelia texture, pigmentation (mycelia colour) when cultured on potato dextrose agar medium, and conidial measurements on Spezieller Nahrstoffarmer agar medium. Colonies were grouped into luxuriant, moderately luxuriant and scanty on aerial mycelial growth; fluffy and fibrous based on mycelial texture; purple, pink and white based on mycelia colour; and long, medium and short macroconidiallength. All the isolates were pathogenic on GLP-2 (Rosecoco), a susceptible bean variety commonly grown in Kenya. DNA analysis showed that the isolates carried a high genetic diversity (gene diversity = 0.686; mean number of alleles = 9). Neighbour-Joining phylogenetic clusters reconstructed using microsatellite variation showed three major clusters. However, the microsatellite groupings were independent of the altitude, colony characteristics and virulence of the isolates.