Genetic Diversity of Fusarium Oxysporum Races Associated with Cowpea Fields in Kakamega County

Abstract.

Fusarium oxysporum is the most abundant and most damaging species of the genus Fusarium responsible forcrop wilt diseases in cultivated fields. It possess risk to production of banana, tomato, onions, beans, peas, palm,wheat, sorghum, maize, potatoes, garlic and cowpea among others. Fusarium involves several species that producemycotoxins associated with serious animal diseases. Fusarium is a potential threat to global food security.Furthermore, disease incidence of pathogenic Fusarium species could increase due to the effects of the predictedglobal changes. Limitation of occurrence records and diversity of the races of F. oxysporum in Kakamega Countynecessitated this study. This study aimed to characterize strains of Fusarium pathogens in cowpea fields ofKakamega County. The colonies had sparse to abundant mycelia with colour ranging from white to pale violet. Theisolates gave rise to elliptical microchonidia without septa, smooth walled terminal and intercalary chlamydosporesat times singly and paired in some cases on microscopy. Further, PCR amplification of ITS gene region in the tenisolates of F. oxysporum was performed using universal ITS primers. Fusarium the genus was amplified as afragment of about 500 bp corresponding to the region between the 18S-28S rRNA intervening sequence forFusarium spp. The selected isolates of Fusarium spp. were sequenced and submitted in NCBI database with theaccession numbers of KY855504, KY855505, KY855506, KY855507, KY855508, KY855509, KY855510, KY855511,KY855512, KY855513 and KY855514. Eight soil-borne fungal isolates [KY855505, KY855506, KY855507,KY855508, KY855510, KY855511, KY855512 and KY855514] were identified as F. oxysporum based on its cultural,morphological and molecular characteristics. KY855504 and KY855509 had molecular identity to Ascotamycota andKY855513 had the molecular identity of Phoma sp. This study contributes knowledge on genetic diversity of localpathogenic Fusarium strains useful in crop breeding and disease management of cowpea crop in KakamegaCounty, Kenya

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