Characterization of Common Maize Ear Rot Pathogens in Ilesa Nigeria and Their Potential Control Using Selected Arbuscular Mycorrhizal Fungi

Authors : Olumayowa M. Olowe, Michael D. Asemoloye Odunayo J. Olawuyi, Hilda Vasanthakaalam

Abstract : Poor management of maize ear rot caused by fungal infection in Nigeria affected the quantity and quality of maize. This study, therefore, aims at characterizing and controlling Fusarium strains using arbuscular mycorrhizal fungi. Maize ear showing rot symptoms were obtained from some selected farms located at Ilesa East and West using random sampling technique. Isolation of Fusarium pathogen from infected maize grain was done using direct pour plate method on potato dextrose agar (PDA) and was characterized based on morphological and molecular ITS-amplification methods. The reaction of PVASYN8F2, T2LCOMP1STR SYN-W-1, and T2LCOMP4 maize varieties, to the Fusarium ear rot pathogens and biocontrol efficacy of the mycorrhizal fungi were assessed on growth, yield, agronomic parameters and symptoms observed. The strains; olowILH1 and olowILH2 identified as Fusarium napiforme were the most dominant and virulent pathogens associated with the maize. They showed genetic similarity with documented ear rot pathogens on NCBI with accession numbers Fusarium proliferatum KT224027, KT224023, and Fusarium sp AY237110. They both exhibited varying inhibitory effects on the three maize varieties compare to control (uninfected plant) which had better growth characteristics. It was also observed that strain olowILH1 was more virulent than olowILH2. T2LCOMP4 was generally more susceptible to both fungal strains compared to the other two maize (T2LCOMP1STR SYN-W-1 and T2LCOMP4). In all, strain olowILH1 was more virulent than olowILH2, and Glomus clarum had higher inhibitory pathogenic effect against Fusarium strains compared to G. deserticola.

Keywords : arbuscular mycorrhizal fungi, disease management, Fusarium strains, identification
Conference Title : ICOH 2019 : International Conference on One Health
Conference Location : London, United Kingdom
Conference Dates : May 23-24, 2019