Title Biodiversity of *Fusarium* species in Mexico associated with ear rot in maize

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Abstract

Fusarium proliferatum, Fusarium subglutinans, and *Fusarium verticillioides* are known causes of ear and kernel rot in maize worldwide. In Mexico, only *F. verticillioides*and *F. subglutinans*, have been reported previously as causal agents of this disease. However, *Fusarium* isolates with different morphological characteristics were obtained in the Highland-Valley region of this country from symptomatic and symptomless ears of native and commercial maize genotypes. Moreover, besides the morphological studies, analyses based on the Internal Transcribed Spacer region and the Nuclear Large Subunit Ribosomal partial sequences led to the identification of identification of *F. subglutinans*, *F. solani*, and*F. verticillioides*, as well as four species (*F. chlamydosporum*, *F. napiforme*, *F. poae*, and *F. pseudonygamai*) that had not previously been reported to be associated with ear rot. In addition, *F. napiforme* and *F. solani* were absent from symptomless kernels. Phylogenetic analysis showed genetic changes in *F. napiforme* and *F. pseudonygamai* isolates. Our results suggest that the biodiversity of *Fusarium* species involved in ear rot in Mexico is greater than reported previously in other places in the world. This new knowledge will permit a better understanding of the relationship between all the species involved in ear rot disease and their relationship with maize.