



# Comparative analysis of phylogenetic relationships, morphologies, and pathogenicities among *Curvularia lunata* isolates from maize in China

T. Liu<sup>1</sup>, F.Z. Zhao<sup>1</sup>, Y.Y. Wang<sup>1</sup>, J.M. Hou<sup>1</sup>, L.Z. Liu<sup>2</sup>, Y.Q. Shen<sup>1</sup>, Z. Liu<sup>1</sup>, H.T. Zhang<sup>1</sup> and Y.H. Zuo<sup>1</sup>

<sup>1</sup>Institute of Plant Pathology and Applied Microbiology, Agricultural School, Heilongjiang Bayi Agricultural University, Daqing, Heilongjiang, China

<sup>2</sup>Shanghai Academy of Agricultural Sciences, Shanghai, China

Corresponding author: Y.H. Zuo  
E-mail: liutongamy@sina.com

Genet. Mol. Res. 14 (4): 12537-12546 (2015)

Received May 13, 2015

Accepted July 31, 2015

Published October 16, 2015

DOI <http://dx.doi.org/10.4238/2015.October.16.21>

**ABSTRACT.** To understand the effects of disease-resistant maize varieties and new cropping systems on the population of *Curvularia lunata*, 52 isolates of *C. lunata* were collected in China from 2011 to 2013. The isolates were analyzed in terms of phylogenetic relationships, morphology, and pathogenicity. Phylogenetic analysis showed that the 52 isolates clustered into 2 distinct clusters with further subdivisions, suggesting the emergence of new genetic divergence within *C. lunata*. Results of morphology and pathogenicity analyses demonstrated that there were significant differences among these isolates: 27 isolates were classified as fast growing, 5 as slow growing, and 20 as moderate growing. Three isolates had white-colored colonies, 13 had yellowish green-colored colonies, and the remaining isolates had dark green-colored colonies. Furthermore, conidiation rates were assessed: 30 isolates were characterized as having low conidiation rates, 15 as having medium conidiation rates, and the remaining 7 isolates

as having high conidiation rates. Eleven of the isolates appeared to be strongly pathogenic against maize, 15 isolates proved to be weakly pathogenic against maize, and the remaining isolates were regarded to be moderately pathogenic. Interestingly, correlation analysis demonstrated a negative correlation between the growth rate and the pathogenicity of the isolates, while a positive correlation was observed between the conidiation rate and the pathogenicity. No correlation was observed between the colony color and the pathogenicity of the isolates.

**Key words:** *Curvularia lunata*; ITS; Genetic divergence; Pathogenicity; Correlation