

Research Article

Morphological and Molecular Characterization of *Alternaria* isolates Associated with Alternaria Leaf Spot and Blight Disease of Makhana

Santosh Kumar^{1*}, Mahendra Singh², Ram Chandra¹ and Kishan Lal³

¹Department of Mycology and Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi-221 005, U.P., ²Department of Soil Science and Agriculture Chemistry, Acharya Narendra Dev University of Agriculture & Technology, Kumarganj-224 229 Ayodhya, U.P. ³Department of Plant Pathology, National PG College, Barhalganj, Gorakhpur, UP, E-mail: santosh35433@gmail.com

Abstract

Leaf spot and blight caused by *Alternaria tenuissima* and *A. alternata*, is the most debilitating disease in makhana crop. Therefore, frequent roving survey was made in the key makhana growing areas of Bihar which was poised at characterization of fungal samples from symptomatic part of leaf spot and blight diseases. There were 10 fungal isolates of makhana were collected from two different locations of each five key makhana growing district of Bihar and labeled accordingly for identification and characterization at both morphological and molecular level. The per cent incidence of disease was found 11.82 to 18.84. Makhana susceptible variety Sabour makhana-1 was used for pathogenicity test under aseptic conditions for all 10 *Alternaria* isolates. All isolates were found pathogenic, but no significant variances were noticed among the pathogenicity point of *A. tenuissima* and *A. alternata*. Period of incubation, number of spot and per cent spotted area were determined to know the aggressiveness all *Alternaria* isolates. Sections of ITS and LSU marked that the current isolates have a maximum identity of nucleotide ranging from 76.67 to 99.30 per cent with other known isolates of *Alternaria* retrieved from the NCBI database based on comparative study of concatenated sequence of all ten isolates. Similarly, the nucleotide identities of SSU were more than 99 per cent. In addition, the phylogenetic analysis suggested that all ten *Alternaria* isolates were closely clustered with *Alternaria* isolates investigated earlier.

Key words: *Alternaria*, blight, characterization leaf spot, makhana

Citation: Kumar S, Singh M, Chandra R and Lal K. 2024. Morphological and molecular characterization of *Alternaria* isolates associated with Alternaria leaf spot and blight disease of makhana. *J Mycol Pl Pathol* 54 (4): 377-389 (<https://doi.org/10.59467/JMPP.2024.54.377>)