

## SHORT COMMUNICATION

# First report of *Cladosporium cladosporioides* causing leaf blight on garlic (*Allium sativum* L.) in India

J. S. REMYA<sup>1\*</sup>, JALAJA S. MENON<sup>2</sup>, M. NAFEESA<sup>1</sup>, M. MURUGAN<sup>1</sup>, BERIN PATHROSE<sup>3</sup>, NIMISHA MATHEWS<sup>1</sup> AND E. P. DEEPNA<sup>1</sup>

<sup>1</sup>Cardamom Research Station, Kerala Agricultural University, Idukki 685553, Kerala

<sup>2</sup>Cashew Research Station, Kerala Agricultural University, Thrissur 676509, Kerala

<sup>3</sup>College of Agriculture, Kerala Agricultural University, Thrissur 680656, Kerala,

Received : 23.09.2025

Accepted : 24.11.2025

Published : 29.12.2025

Garlic (*Allium sativum* L.) plants exhibiting severe leaf blight were observed in the Kanthalloor hills of Western Ghats, Kerala, India, during July 2024. Based on morphological characterization, nucleotide homology, and pathogenicity test, the causal agent of the disease was identified as *Cladosporium cladosporioides* (Fresen.) G. A. de Vries. This is the first report of *C. cladosporioides* causing leaf blight on garlic in India and worldwide.

**Keywords :** *Cladosporium cladosporioides*, garlic, leaf blight

## INTRODUCTION

Garlic (*Allium sativum* L.), a member of the Alliaceae family, has been widely recognized as a valuable spice and a vegetable worldwide. In June 2024, garlic (*Allium sativum* L.) cultivated in Kanthalloor hills (Lat. 10.218097<sup>o</sup>, Long. 77.191851<sup>o</sup>), a rain shadow mountain of the Western Ghats, Kerala, India had witnessed a severe foliar blight with an incidence of 20- 50%. Initial symptoms started as yellowing at the tip of the leaves. Later small to medium sized brown streaks appeared parallel to the veins. Gradually streaks were coalesced and whole leaves looked a blighted appearance (Fig. 1).

## MATERIALS AND METHODS

The pathogen was isolated on PDA medium as per the standard protocols (Rangaswami and Mahadevan, 1999), to study the cultural and morphological characteristics of the pathogen. For molecular identification, the fungal genomic DNA was extracted using a modified CTAB (Cetyl trimethyl-ammonium bromide) method. The LSU

region was amplified by PCR and sequenced using primer sets LROR/LR7. The sequence was compared with the existing sequence of NCBI GenBank.

To verify the pathogenicity, leaves of garlic plants were inoculated with mycelial discs of 6 days old culture, while control was treated with sterile water. Ten replicates were used for the inoculation. On 7<sup>th</sup> day, all the inoculated plants showed typical symptoms, while control plants remained healthy. Reisolated colonies were identical to the original ones, thus fulfilling the Koch's postulates.

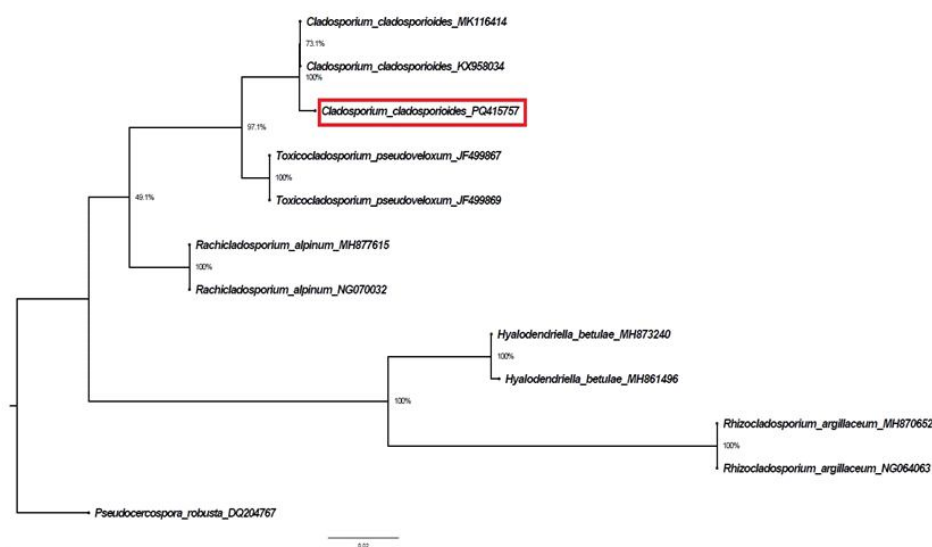
## RESULTS AND DISCUSSION

Colonies were olive green to brown, with velvety and floccose aerial mycelium. Hyphae were light brown, septate, branched, 2.9– 3.5µm width. Conidia were one celled, ellipsoid to lemon shaped with notches attached to the conidiophore measuring the size of 12-14 x 2-3.5µm. BLASTn analysis revealed 98.75% molecular identity with two isolates (MK116414.1 and KX958034.1) of *Cladosporium cladosporioides* in the GenBank sequence database of NCBI.

\*Correspondence: remya.js@kau.in



**Fig.1:** Leaf blight symptoms on garlic plants



**Fig. 2 :** Phylogenetic tree constructed using MEGA11 software by maximum likelihood method. NCBI GenBank accession numbers are given with the name. The isolate marked with a red colour was used in the study.

Based on the morphological and molecular analysis, the fungus was identified as *Cladosporium cladosporioides* (Fresen.) G. A. de Vries. The sequence was deposited in GenBank with accession number PQ415757. The molecular phylogenetic tree was constructed using MEGA 11 to confirm the identity of the pathogen. Phylogenetic analysis also showed that the isolate was grouped with isolates belonging to *C. cladosporioides* (Fig. 2).

Although *C. cladosporioides* has previously been reported to cause leaf diseases on many crops, this is the first report of this fungus causing leaf blight on garlic (*A. sativum*) in India and worldwide. *C. allii-cepae* and *C. allii* have already been reported on *A. cepa* and *A. porrum*, respectively, by Ryan 1978, and Kirk and Crompton 1984. Urgent attention to its management under field conditions is

recommended because of the pathogen's impact on the growth and productivity of garlic.

## DECLARATION

Conflict of Interest. Authors declare no conflict of interest.

## REFERENCES

- Kirk, P.M. 1984. Pathogenicity and taxonomy of *Cladosporium* leaf blotch of onion (*Allium cepa*) and leek (*A. porrum*). *Plant Pathol.* 33: 317-324 <https://doi.org/10.1111/j.1365-3059.1984.tb01326.x>
- Rangaswami, G., Mahadevan, A. 1999. Diseases of cereals. Diseases of crop plants in India (4th ed.) Prentice Hall of India, Pvt. Ltd., New Delhi, pp. 160-264
- Ryan, E.W. 1978. Leaf spot of onions caused by *Cladosporium allii-cepae*. *Plant Pathol.* 27:200