

Short Communications

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First Report of Botrytis Gray Mold Disease (*Botrytis cinerea* Pers. Fr.) on Lily (*Lilium* spp.) from Jammu & Kashmir

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Botrytis gray mold disease of liliaceae is a major fungal disease and is one of the main factors that limit the liliaceae cultivation and production. It appeared as a new disease on crop liliaceae from May to August (2018-2019) causing death of leaves and flowers. The pathogen was consistently isolated on PDA, from infected leaves and flowers. *Botrytis cinerea* was recorded as a gray mold pathogen on *Lilium* for the first time in Kashmir, causing leaf and flower and blight. The fungus was identified as *B. cinerea* based on morphological characteristics of isolate in pure culture as well as on host and molecular characteristics.

Lily (*Lilium* spp.) is one of the most valuable commercial market flower bulbs in the world, owing to its various ornamental attributes as a cut flower or a potted plant (Mathews, 2007). Under Kashmir conditions the crop has been found to be seriously affected by a hitherto unreported disease which attack leaves and flowers of the plant. This disease cause considerable degradation of lily flower quality and severely affects plant growth and development. The aim of the present study was to identify the disease and associated causal pathogen. The disease appears during

mid May on leaves and in the month of June on petals of flower buds. Both the leaves and petals of the flower buds showed circular necrotic spots that enlarged gradually and caused blighting of affected parts (Plate 1). In advance stage of disease development, the affected plant parts showed grey moldy growth of the causal fungus (Plate 2).

The causal fungus on host produced septate mycelium (6.9-15.5 μ m in width) and long, branched cluster of conidiophores (27.5-35.0 X14.5-17.0) which produced ovoid and

unicellular conidia (6.5-14.0x4.5-8.0 μ m). Black sclerotial bodies were also observed on petals of blighted flower buds, measuring 1.3-5.0x1.2-4.0 mm. The fungus in culture grown on potato dextrose agar produced whitish aerial tufts of mycelium. The colonies were circular with cottony growth, which were initially white, turned grayish white and finally gray (Plate 3). The pathogen produced filamentous, hyaline, branched and septate mycelium, measuring 7.5-15 μ m in width. Conidiophores were erect, hyaline and dichotomously branched, measuring 28.5-32.0 x15.0-16.5 μ m (Plate 4).The conidia formed in clusters on tree-like, branched and septate conidiophores were one-celled, hyaline to pale brown, round to ovoid in shape and smooth walled, measuring 6.8 -12.0 x 5.0 -8.5 μ m (Plate 5). Sclerotia, formed after 15 days of incubation were hard, black and irregular in shape measured 1.7-5.5x 1.3-4.5 mm (Plate 3). Pathogenicity of the isolated fungus was confirmed by proving the postulates of Koch. The causal fungus on the basis of pathogenicity test and morphological and symptomatological characteristics was identified as *Botrytis cinerea* Pers. Fr.

Morphological identification was confirmed by comparison of ITS sequences of nuclear

ribosomal DNA. For molecular identification, genomic DNA was extracted and PCR amplification was done using ITS region. After DNA extraction, the ITS region was amplified and sequenced using the primers ITS1 (5'TCCGTAGGTGAACCTGCGG-3') and ITS4 (5' TCCTCCGCTTA TTGATATGC-3). Sequencing results showed a length of 623 bp. The nucleotide sequence of the pathogen (Accession number MN783427) had 100% homology with other *B. cinerea* isolates in GenBank (MN380285, MN275886, MK558826) and as such confirmed the morphological identification. On the basis of source of isolation, morphological characteristics of isolate in pure culture as well as on host and molecular characteristics, the fungus inciting the disease was identified as *Botrytis cinerea* Pers. Fr. The pathogenicity of the pathogen was established by following Koch's postulates.

The disease is known to occur on strawberry (*Fragaria ananassa*), grapes (*Vitis vinifera*), Lily (*Lilium polyphyllum*), rose (*Rosa indica*),sponge Gourd (*Luffa cylindrica*) and pear (*Pyrus communis*) (Dhayani *et al.*, 2012, Khazaeli *et al.*, 2010, Kurbetli *et al.*, 2016). However, this is the first report of *Botrytis* blight from Jammu and Kashmir state on lily.



Plate.1 *Botrytis* blight on leaves **Plate.2** *Botrytis* blight on flowers



Plate.3 Colony of *Botrytis cinerea*

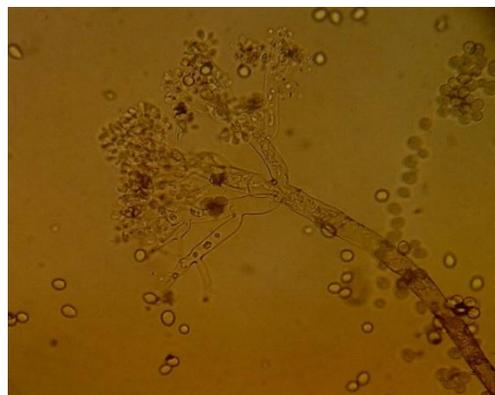


Plate.4 Tree like branched and septate conidiophore

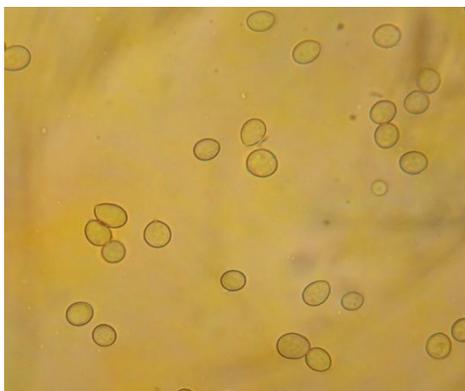


Plate.5 Conidia

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