

## Identification of the fungal pathogen causing leaf blight of *Cinnamomum zeylanicum* Blume and *in vitro* screening of Tebuconazole sensitivity

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Leaf Blight Disease (LBD) is a major nursery disease of cinnamon (*Cinnamomum zeylanicum* Blume) and the disease causes serious foliar damage in seedlings, especially under high humidity and shade conditions. It also causes considerable damage to mature cinnamon bushes through leaf necrosis, defoliation and dieback of newly emerging flush. However, not much research has been conducted on LBD in Sri Lanka despite cinnamon being one of the key export crops. Therefore, the main objectives of the present study were to identify the causative agent of the LBD in Sri Lanka and to determine the minimum inhibitory concentration of Tebuconazole, one of the commonly used fungicides, to mitigate the pathogen growth *in-vitro*. LBD symptomatic leaves were collected from cinnamon fields in the Matara district representing 4 categories; tender leaves with initial LBD spots, tender leaves with regular lesions, mature leaves with regular lesions, and mature leaves with irregular lesions. Infected tissues from each category were cultured on PDA and percentages of emerging fungal colonies were determined. Pure cultures of all the fungal isolates were tentatively identified using morphological traits up to the genus level. From the cultures of tender leaves, *Rhizoctonia* and *Colletotrichum*-like isolates frequently appeared in 60% and 33.3% respectively. However, in the cultures of mature leaves, *Pestalotiopsis*-like isolates were detected more frequently (22 – 35%). To determine the exact causal agent, Koch's postulates were performed using representative isolates from each genus on detached tender cinnamon leaves. Actively growing mycelial plugs were inoculated on one side of the damaged leaf and the other side was inoculated with plain PDA plugs. Leaves were incubated in a moist chamber for 03 days and symptom development was observed. Typical LBD symptoms were developed when mycelial plugs of *Colletotrichum*-like species were introduced. *Rhizoctonia* and *Pestalotiopsis*-like species produced brown, circular or irregular lesions while *Colletotrichum*-like species showed a unique concentric ring pattern which is similar to the original symptoms of LBD. The potential pathogen species causing LBD was confirmed to be a *Colletotrichum*-like species. For species identification DNA of two *Colletotrichum*-like fungal isolates was extracted and ITS gene sequencing confirmed that the two isolates were *C. gloeosporioides* and *C. horii* with 100% similarity to the vouchered accessions of the GenBank. *In vitro* fungicide, sensitivity assay was conducted using a concentration gradient of the fungicide Tebuconazole. It was found that Tebuconazole could mitigate 100% growth of both *Colletotrichum* spp. at 5 ppm concentration *in-vitro*.

**Keywords:** cinnamon, Koch's postulates, *Colletotrichum*, *Rhizoctonia*, *Pestalotiopsis*