

First Report of *Allelochaeta fusispora* Causing Necrotic Leaf Spot on *Eucalyptus tereticornis* in Telangana, India

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Abstract

Eucalyptus tereticornis, one of the most common plantation forest trees in India, is a host to many fungal pathogens. During December to February 2023-2024, necrotic leaf spots were observed on *E. tereticornis* in plantations across Telangana. Symptoms began with circular, light-brown spots on the lamina that subsequently spread to the leaf margin and mid-rib areas, becoming brown and irregular, and were marked by a clear dark brown margin. Microscopic observation indicated several black acervuli on the upper and lower surfaces of the leaves. Multiple isolations all produced a fungal pathogen morphologically fitting the description of *Seimatosporium fusisporum*. Recent taxonomic reclassifications, however, have demoted *Seimatosporium fusisporum* (Swart and Griffiths, 1974) to *Allelochaeta fusispora* (Barber and Crous, 2011; Crous et al., 2019). Identification was made through detailed morphological features. A representative culture was deposited in the International Mycological Institute (IMI), Kew, England (IMI No. 360861). Although *Allelochaeta fusispora* was earlier reported from Australia, the current study is the first report of this pathogen on *Eucalyptus tereticornis* from the state of Telangana, India. This new report brings to the fore the necessity of continued research into the extent, epidemiology, and possible management of this disease in Indian *Eucalyptus* plantations.

Keywords: *Eucalyptus tereticornis*, *Allelochaeta fusispora*, *Seimatosporium*, new record, leaf spot.

Introduction

Despite much care to cultivate *Eucalyptus* species in agroforestry to use in pulp and paper production, yield was not up to expectation, and the biggest limiting factor to its productivity has been pest and diseases (Crous et al., 2019; Keane, 2000; Park et al., 2000; Ximena Silva et al., 2023). In India, *Eucalyptus tereticornis* Sm. is a prominent plantation species, especially in states such as Telangana, yielding extensively to the forestry economy. During our research on fungal diseases of *Eucalyptus*, a unique leaf spot disease not previously reported is detailed in this communication.

Materials And Methods

While conducting regular surveys of *Eucalyptus tereticornis* plantations in various districts of Telangana, India, from December to February, 2023-2024, typical leaf spot symptoms were noted. Infected leaf samples with differential degrees of disease development were harvested. Symptomatic parts were surface-sterilized with 0.5% sodium hypochlorite for 1 minute and then rinsed three times in sterile distilled water. Small pieces of tissue were then cultured on potato dextrose agar (PDA) with streptomycin sulfate (100 µg/ml) to suppress bacterial growth. Plates were incubated at $25 \pm 2^\circ \text{C}$ under a 12-hour day/night regimen. Fungal colonies repeatedly isolated from the necrotic lesions were purified and sub-cultured. Morphological features of the fungal isolates, such as colony morphology, conidiomata, conidiogenous cells, and conidium dimensions, were carefully studied using a compound microscope. At least 50 conidia and 20 acervuli were measured. These features were contrasted with the type description of *Seimatosporium fusisporum* (Swart and Griffiths, 1974) and more recent treatments of the genus *Allelochaeta* (Barber and Crous, 2011; Crous et al., 2020). A representative isolate has been stored in the International Mycological Institute (IMI) with accession number IMI No. 360861.

Results And Discussion

Necrotic lesions appeared on the leaves of *Eucalyptus tereticornis* during December to February. Initially, spots were circular, light-brown, appearing on the lamina. For some time, lesions were confined to the leaf margin, later extending to the mid-rib region, turning brown and irregular in shape. Lesions were demarcated by a prominent dark brown margin. Keen observations revealed numerous black acervuli on both the sides of the leaf. Repeated isolations from such spots revealed it to be *Seimatosporium fusisporum* Swart and Griffiths. The culture is deposited in IMI, Kew, England (IMI No.360861).

Taxonomic Description

Seimatosporium fusisporum Swart and Griffiths, Trans. Br. Mycol. Soc. 62:359-366. Colonies spreading, hyaline to pale-brown; hyphae hyaline, septate, branched; conidiomata acervular, brown, up to 200 µm dia., conidiophores usually emerging from upper cells of the conidiomata, unbranched; conidiogenous cells holoblastic, annellidic; conidia fusiform; 3-septate, slightly constricted at the median septum, smooth walled, 12–21×6–7 µm, median cells 11–14 µm long, fairly thick walled and medium brown; walls of median cells and the proximal half of the terminal cells are pigmented, the apical cell is short, conic, tapering to an unbranched, hyaline appendage, 9–18 µm long, the basal appendage is unbranched, hyaline and 7–16 µm long. It is worth mentioning that *Seimatosporium fusisporum* Swart & Griffiths (1974) is now classified as *Allelochaeta fusispora* (H.J. Swart & D.A. Griffiths) Crous, according to phylogenetic and morphological investigations (Barber and Crous, 2011; Crous et al., 2020).

The genus *Allelochaeta* is currently established within family Sporocadaceae, including species formerly assigned to *Seimatosporium* that have particular conidial features, such as cellular, filamentous apical appendages (Crous et al., 2020). *Allelochaeta* (and previously *Seimatosporium*) species cause leaf spots and other foliage diseases on hosts such as *Eucalyptus* and *Rosa* species (Yang et al., 2024; Kanetis et al., 2022). The disease has previously been reported by Swart and Griffiths (1974) from Australia.

Though several fungal diseases of *Eucalyptus* have been reported in India (Old et al., 2000; Tewari, 1992), such as recent physiological disorders like intumescence on *E. tereticornis* (Dhiman, 2025), to our knowledge, this is the first reported incidence of *Allelochaeta fusispora* (ex *Seimatosporium fusisporum*) infecting *Eucalyptus tereticornis* with necrotic leaf spot in India, particularly from the state of Telangana. This observation increases the previously known geographical range and host repertoire of this pathogen as designated at present taxonomically. The predominance of symptoms in December to February, coinciding with the winter season in Telangana, indicates a possible effect of environmental factors like humidity and temperature on disease development. Additional studies are necessary to develop an understanding of the epidemiology of the disease, its effect on *Eucalyptus tereticornis* growth and production in Indian environments, and to determine possible management options. The deposit of the culture in IMI will allow for future studies and comparative evaluations.

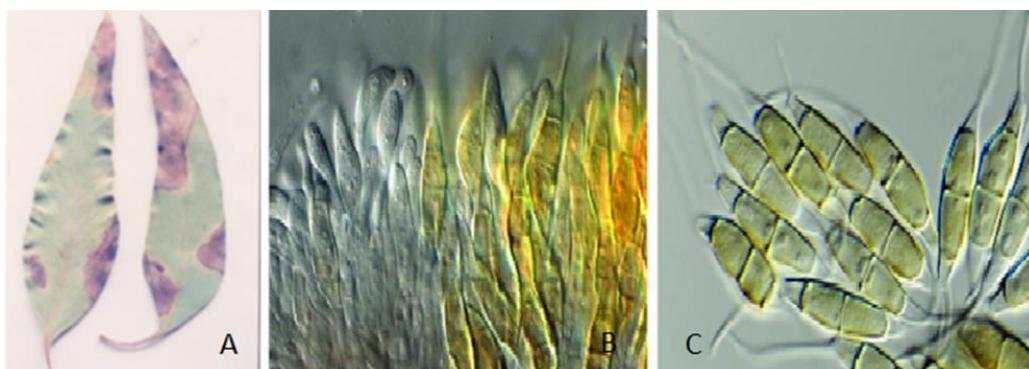


Fig 1 *Allelochaeta fusispora* (*Seimatosporium fusisporum*) A. Leaf spots. B. Conidiomata on PDA. C. Conidia. Scale bars = 10 µm. (Crous P et al., 2018)

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