

# Extension of distribution of two species of *Stemphylium* from West Bengal

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## Extension of distribution of two species of *Stemphylium* from West Bengal

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Two dematiaceous leaf inhabiting fungi viz. *Stemphylium botryosum* Wallroth and *Stemphylium lycopersici* (Enjoji) Yamamoto have been collected and illustrated. Both species are reported for the first time from West Bengal

**Key words:** New report, dematiaceous hyphomycetes, taxonomy, West Bengal

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### INTRODUCTION

The form genus *Stemphylium* was first established by Wallroth. This genus shares with *Alternaria* and *Ulocladium* by dictyospores on well differentiated conidiophores. However conidiophores of *Stemphylium*, particularly their mode of proliferation, differ strikingly from those of the other two genera. The Conidia of *Stemphylium* are solitary, dry, acrogenous, oblong, rounded at the ends, ellipsoidal, obclavate or sub spherical, some species with a pointed conical apex and one with lateral conical protrusions, pale to mid dark or olivaceous brown, smooth, verrucose or echinulate, muriform, often constricted at one or more of the septa, cicatrized at the base. Researchers from all over the world have made valuable contribution on the dematiaceous hyphomycetes. Some of them are: Geoffrey *et al.* (2011), Mwakutuya and Banniza (2010), Thomidis and Michailides (2008), Lindsey *et al.* (2005) and Seifert *et al.* (2011).

In India too, a good number of workers have worked on this group of fungi. Special mention may be made of some as: Bhat (2010), Haldar and Ray (2009,2011), Kamal (2010) and Mukherji and Monoharacharya (2010).

During work on dematiaceous hyphomycetes from

West Bengal, two species of *Stemphylium* viz. *Stemphylium botryosum* and *Stemphylium lycopersici* have identified. Review of literature reveals that the *Stemphylium botryosum* and *Stemphylium lycopersici* have not been reported so far from the state of West Bengal. Hence, it is the first time report of the occurrence of *Stemphylium botryosum* and *Stemphylium lycopersici* from the state of West Bengal.

### MATERIALS AND METHODS

The infected leaves of different ages were detached intact from the host plant and they were kept in the polythene bags, closing the mouth by rubber ring. The infected leaves having distinct symptoms were collected and dried to make herbarium specimens, a part of which was deposited in the herbarium, International Mycological Institute (IMI), Kew Surrey, England. Depending on the size of the leaf and the nature of infection the entire or a portion of the infected host tissue along with the adjoining healthy tissue was detached carefully with a sharp scalpel. It was then mounted on a glass slide in a drop or two of lacto phenol and covered with a cover glass and warmed on a flame so as to make the host tissue transparent. Stained preparations were also made with lacto phenol accompanied with a drop of cotton blue to study the details of transparent parts of the fungal

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specimens. Morphotaxonomic study of the associated fungi were done through the low and high magnification of the compound microscope. The measurement of the different structures were also taken and camera Lucida drawings were made with the aid of standard camera lucida attachment.

## RESULTS AND DISCUSSION

***Stemphylium botryosum*** Wallroth, *Fl. Crypt. Germ. Pars. Post.*300. 1833 (Fig. 1).

Leaf spots amphigenous, circular to irregular, dark brown to blackish brown, slightly zonate, scattered, a few, not vein limited, 1-5 mm in extn; *caespituli* amphigenous, effuse; conidiophores emerging through stomata, usually solitary, sometimes in groups of 2, with nodose swelling, dark brown, paler towards the apex, straight to flexuous, very rarely geniculate, thick walled, septate, 2-7, vesicular swellings intercalary and terminal, 5.5-7.5  $\mu$  in diam., base broad and swollen, apex sub spherical with a dark verrucose band just below, 57.0-140.5  $\times$  4.5-7.5  $\mu$ ; conidia solitary on host tissues, ovoid to sub spherical, golden brown, smooth to minutely verruculose, apex and base broadly rounded, transverse septation 1-4, longitudinal and oblique septation 1-6, constricted at the median transverse septa, hilum thick, 21-42  $\times$  11.0-19.5  $\mu$ .

Specimen studied: On the living leaves of *Trianthema portulacastrum* L., (Fam. Aizoaceae), Canning, South 24 Parganas, West Bengal, India, IMI 302835, 20 August, 1985.

***Stemphylium lycopersici*** (Enjoji) Yamamoto, *Trans. Mycol. Soc. Japan* 2 : 93. 1960 (Fig.2).

Leaf spots amphigenous, circular to semi-circular, sometimes irregular, pale brown centre with slightly raised dark brown margin, numerous, scattered, sometimes necrotic, not vein limited, 1-3 mm in diam., *caespituli* amphigenous, well developed on ventral surface; conidiophores non stromatic, emerging through stomata, solitary or in groups of 4, with nodose swelling, pale to mid brown, paler towards apex, unbranched, flexuous, smooth, thick walled, septate (upto 12), vesicular swelling intercalary and terminal, 7-9.5  $\mu$  in diam., base bulbous, apex superficial, 38.0-190.0  $\times$  4-7.0  $\mu$ ; conidia solitary on host tissue, ovoid to ellipsoidal, mid to dark brown, smooth, thick walled, base rounded, with thick and broad hilum, apex conical, trans-

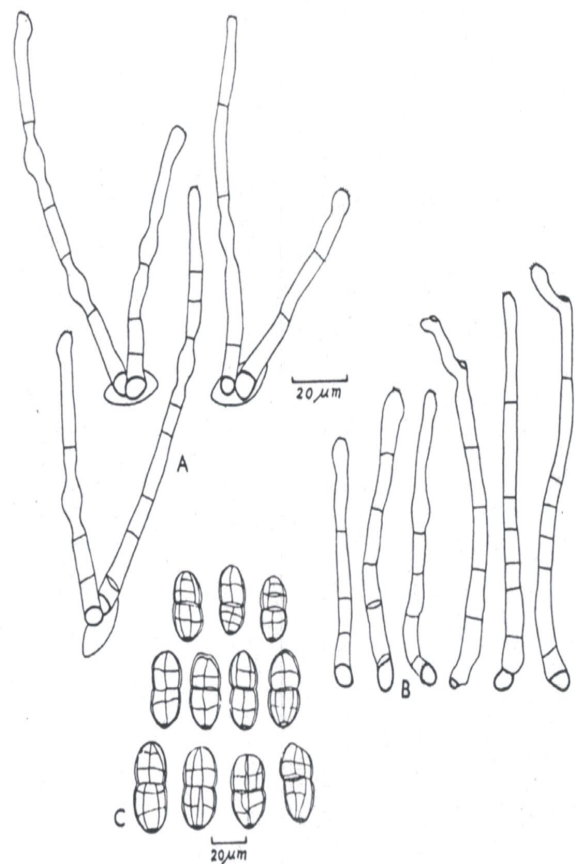


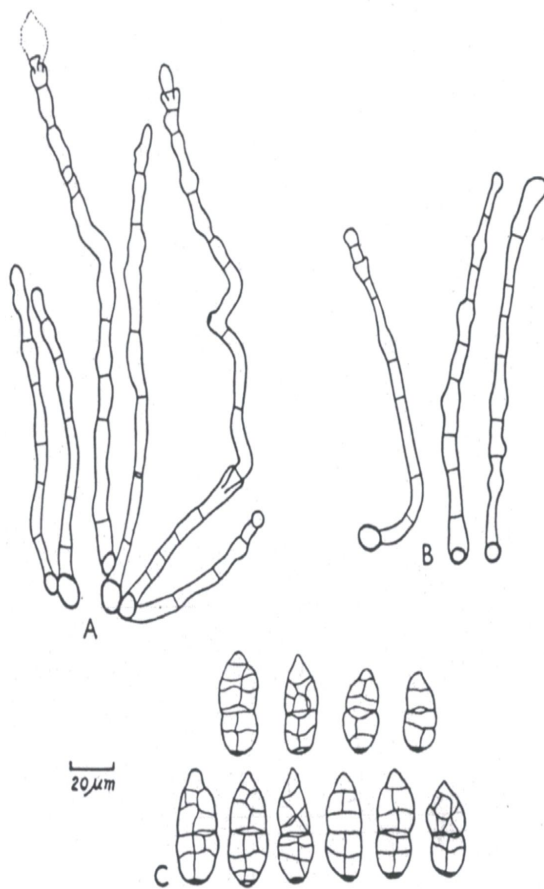
Fig. 1 : *Stemphylium botryosum*, A. Conidiophore in groups, B. Conidiophores, C. Conidia

verse septation 4-5, longitudinal and oblique septation 5-6, usually constricted at the third septation, sometimes at the second septation, 30.5-80.0  $\times$  13.0-19.0  $\mu$ .

Specimen studied: On the living leaves of *Lycopersicum esculentum* Mill., (Fam. Solanaceae), Dakshin Barasat, South 24 Parganas, West Bengal, India, IMI 297832, 22 March, 1985.

The occurrence and distribution of *Stemphylium botryosum* and *Stemphylium lycopersici* are significantly distinctive during winter to early summer. The host infection appears to start by the end of the rainy season and becomes vigorous during winter months. The growth rate however declines by the end of the summer and the fungi thrive best in areas of high thermo-humid condition.

From the above observation it may be concluded that *Stemphylium botryosum* and *Stemphylium lycopersici* primarily infects on the leaf blades. The petioles, stems, inflorescence and fruits are also infected. The characteristics of the symptoms depend on the nature of leaves as well as parasites.



**Fig. 2 :** *Stemphylium lycopersici*, A. Conidiophore in groups, B. Conidiophores, C. Conidia

The effects may vary from plant to plant and even on same plant. When infection reaches a certain degree of severity, the leaves curl, dry and drop down. Thus it may be concluded that the species

of the genus *Stemphylium* grow vigorously on leaves throughout the seasons but virulent in winter to early summer.

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