

A NEW RECORD OF LEAF DISEASE OF TEA (*CAMELLIA SINENSIS* (L.) O.KTZE)

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TEA is our undisputed national drink which is made from the young leaves and the unopened leaf buds of the tea plant. *Camellia sinensis*. Tea plantations in India are spread over 396,000 hectares or 9,78,120 acres of land in North Bengal, Assam, Cachar, Tripura, Tamil Nadu, Kerala, Karnataka, Himachal Pradesh and Dehra Dun. A total of 312 tea estates of West Bengal covering an area of 97,170 hectares are located in Darjeeling hill, Terai and Dooars regions. Of these, 54 tea estates are distributed in the Terai region alone.

A thorough survey of tea estates of Terai regions of West Bengal was conducted to ascertain the magnitude of the fungal and bacterial diseases of tea prevalent in this area. This communication reports an important fungal disease associated with young shoots—the tea leaves and buds, which is a completely new record for the leaf disease of tea.

Disease symptom appears as light brown, irregular patches on the first three leaves. These patches are often accompanied by many small, more or less circular brown spots. The colour of the larger patches is a mixture of brown, chocolate-brown and grey on the upper surface, the under surface is evenly brown. Diseased leaves often remain attached. The period of occurrence of this disease is mainly from March to August. It causes considerable damage to the young leaves.

Repeated isolation from the infected leaves yielded one specific fungus which was identified as *Bipolaris carbonum* anamorph of *Cochliobolus carbonum* Nelson.

Mycelia of *B. carbonum* are usually hyaline to subhyaline, white when young but become grey to black with age. Hyphae are septate, branched in no definite angle. Conidiophore brown, 150–550 μ long, 4–8 μ broad, mainly unbranched or sparingly branched, producing conidia through an apical pore and forming a new apex by growth of subterminal region. Conidia straight or curved with 3–9 septa, all septa are transverse, fusoid, 12–100 \times 6–20 μ .

Germination of spore mainly from the two terminal cells. In no case germ tubes arise from the middle cells. Germ tubes sometimes branch just after formation. Exosporium smooth, rigid and brown, endosporium hyaline, amorphous.

Fresh young tea leaves were collected from Gayabari Tea Estate and inoculated with conidial suspension of *B. carbonum* following detached leaf technique for the completion of Koch's Postulate. After 90 hr of inoculation, the pathogen was reisolated from the infected leaves and identity of this isolated organism was confirmed after comparing with *B. carbonum*.

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MORPHOLOGY AND NITROGEN-FIXING ABILITY OF *AZOLLA NILOTICA* DECAISNE

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AZOLLA is a genus of small aquatic ferns containing a heterocystous blue-green alga *Anabaena azollae* as a symbiont in cavities of dorsal leaf lobes¹⁻³. Out of its seven existing species, *Azolla nilotica* Decaisne is native of only Africa. Information on the morphology and nitrogenase activity of *Azolla nilotica* is not clearly available. There has also been no prior attempt to grow this species in India. This study reports nitrogen fixation (nitrogenase activity) and general morphological characters of *A. nilotica* grown in Indian conditions. It was cultivated in a net house in shallow earthen pots of 10 cm height \times 28 cm diameter (3 kg CRRI farm soil/pot with 6 kg P_2O_5 ha⁻¹ applied in three splits) during February to April. Its morphology and nitrogenase activity were observed after two months of incubation. The nitrogenase activity was estimated by acetylene reduction technique⁴ and total chlorophyll was determined using the method of Yoshida *et al.*⁵.

After a certain period of growth on water, its fronds showed tendency of growing erect from surface and looked like terrestrial ferns. Its main rhizome was divided into first and second lateral branches (figure 1). The length of the main rhizome ranged from 5.3 to 11.3 cm whereas it was 1.8–6.0 cm and 0.2–1.1 cm of the first and second lateral