

Museum at the College of Agriculture, Vellayani.

Symptoms of the disease first appeared on the lower leaf sheath as elliptical or ovoid lesions about 1 cm in size with irregular brown margin. As the disease advanced the centre of the lesions turned greyish-white. Under humid conditions the disease spread rapidly and the lesions coalesced to cover large areas of the sheath (figure 1). Severe infection caused blighting of the leaves. The diseased specimens consistently yielded *Rhizoctonia solani* on isolation. On potato dextrose agar, the fungus produced profuse white mycelium which turned brown on ageing. Small brown sclerotia measuring 1.32 to 2.5 mm in size were formed on the medium.

Leaves and leaf sheaths of one-month-old ragi plants were artificially inoculated with the sclerotia of the pathogen. Symptoms appeared within 2–3 days and were identical to those observed in natural infection. Fungus identical to the original culture was obtained on reisolation. A perusal of the literature revealed no record of *Rhizoctonia solani* causing sheath blight of ragi.

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LEAF STREAK (C.O. *PESTALOTIOPSIS ROYENAE*)—A NEW DISEASE OF LARGE CARDAMOM FROM SIKKIM

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LARGE cardamom (*Amomum subulatum* Rox.) is an important spice and medicinal crop grown commercially in Sikkim. During a survey of large cardamom diseases, a new foliar disease, causing considerable damage in large cardamom plantations in the state, was noticed. This disease was recorded at locations of different altitude and was prevalent round the year.

The disease was characterized by numerous elongated, translucent streaks appearing on young leaves along the veins. The streaks turned reddish-brown within 3–4 days, with a central straw-

coloured necrotic area surrounded by prominent dark brown margins (figure 1). The central area was studded with several black dots visible on both leaf surfaces. The streaks were 5–20 mm long and 2–4 mm wide.

Generally the infection started in emerging, folded leaves. This helped in the spread of the disease to the adjacent folds. As a result, when these leaves opened many translucent streaks were noticed on the leaf blade. It was noticed that the younger, upper leaves were more prone to infection than the older, lower leaves. The *Goleshey* variety, with a crinkled leaf pattern, was found to be more susceptible than the *Sowney* variety, which has smooth leaves. Microscopic examination and repeated isolations yielded a fungal isolate, which was identified as *Pestalotiopsis royenae* (D. Sacc.) Steyaert.

The fungus was isolated and purified on potato dextrose agar medium and its pathogenicity was proved by spraying spore and mycelial suspensions on healthy leaves of large cardamom. Typical symptoms appeared on the inoculated leaves within a week. A perusal of the literature^{1,2} indicated that *P. royenae* (D. Sacc.) has not been reported earlier on *Amomum subulatum* Rox. Therefore this report constitutes a new host record for *P. royenae* and also a new disease record for *A. subulatum*. Diseased specimens and culture have been deposited in the



Figure 1. Leaf-streak of cardamom.

herbarium of CMI, Kew, England, under reference number IMI 276698.

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NEW RECORD OF FUNGAL PATHOGEN *ASPERGILLUS FLAVUS* LINK ON MULBERRY SILKWORM *BOMBYX MORI* L. FROM INDIA

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THE mulberry silkworm *Bombyx mori* L. is an important economic insect. It is affected by several micro-organisms¹. *Aspergillosis* is a serious disease of silkworms in Japan, and young worms are highly susceptible². Hitherto, only one species, *Aspergillus tamaris* Kita, has been reported to cause the disease in mulberry silkworms in India³. The occurrence of *Aspergillus flavus* Link on mulberry silkworms is reported here.

During studies on fungal diseases of silkworm, some dead worms (figure 1) showing yellow-green colour were noticed. A microscopic study revealed the presence of mycelia and fungal spores characteristic of *Aspergillus*. The pathogen was directly isolated from the body surface of dead worms with sterile forceps and cultured following the stamp agar method⁴. The culture plates were incubated at $28 \pm 2^\circ\text{C}$ and $80 \pm 5\%$ relative humidity. Initially the culture colonies were white and after 48 h turned yellow and later, green. The fungus was identified as *A. flavus* Link.

The characters of the isolated fungus are similar to earlier descriptions for the species⁵. Hyphae are $715 \pm 175 \mu\text{m}$ long and $9.76 \pm 2.36 \mu\text{m}$ broad. The hyphal walls are rough, broadening upwards and



Figure 1. Carcasses of *A. flavus*-infected silkworm larvae.

gradually enlarging into vesicles. The vesicles are dome-shaped and measure $28.71 \pm 6.61 \mu\text{m}$ in size. Conidiophores arise from submerged hyphae. Conidial heads are different shades of yellow-green and have chains of conidia. Conidia, $4.65 \pm 0.85 \mu\text{m}$, are pyriform to globose and less coarsely roughened. The vesicles bear a sterigma, which is in single series in young forms and in double series in mature forms.

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