

**A NOTE ON THE OCCURRENCE OF WHITE PLASTER DISEASE OF CULTIVATED MUSHROOMS (*AGARICUS BISPORUS*) CAUSED BY *SCOPULARIOPSIS FIMICOLA*—A NEW FUNGUS FROM INDIA**

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THE fungus *Scopulariopsis fimicola* (Cost. et. Matr.) Vuillemin is known to occur on beds of *Agaricus bisporus* (Lange) Imbach in other countries<sup>1</sup>. The fungus is not reported from India<sup>2</sup>. In the present investigation, it is recorded as a pathogen of *A. bisporus*. Some information is given on symptoms, morphology and control of the pathogen.

The pathogen occurred as a white mycelial mat (plaster) on the surface of compost and casing soil. The whitish growth changed to light pink after a week of formation of the spots. Sometimes plastered spots of more than 50 cm were observed. The presence of the pathogen inhibited the spawn run depending upon the plastered area. In some cases normal mycelium of *A. bisporus* developed; however, no fruiting bodies were produced. When plastered growth was found on the surface of casing soil, some trays had to be discarded as these failed to produce any crop.

The fungus is slow-growing in culture; 90 mm petri plates of potato dextrose agar (pH 6.5) were filled in 2 weeks at  $25 \pm 1^\circ\text{C}$ . Colonies initially membranous, folded, floccose, soon turning vinaceous buff at the centre with thin white margins; sporulation heavy and powdery pustules scattered all over the surface; the reverse surface of the colony dark avellaneous. Hyphae hyaline, 1.5–3.5  $\mu\text{m}$  wide, conidiophores of variable length, annellophores borne laterally on aerial hyphae 10–28  $\times$  2–4  $\mu\text{m}$ , tapering to 1–2.5  $\mu\text{m}$  at the apex, sometimes look like pointed, bear spores. Anellospores ovate, occasionally subglobose, round or showing truncation, buff to avellaneous in mass, occur in chains or clusters, measure 4.8–9  $\times$  4–8  $\mu\text{m}$ . The fungus was identified as *Scopulariopsis fimicola* (Cost. et. Matr.) Vuillemin (*Bull. Soc. Mycol. Fr.* 1911, 27, 143) as a new record in India and the culture has been deposited in the Indian Type Culture Collection under accession number 3548 (figure 1a, b).

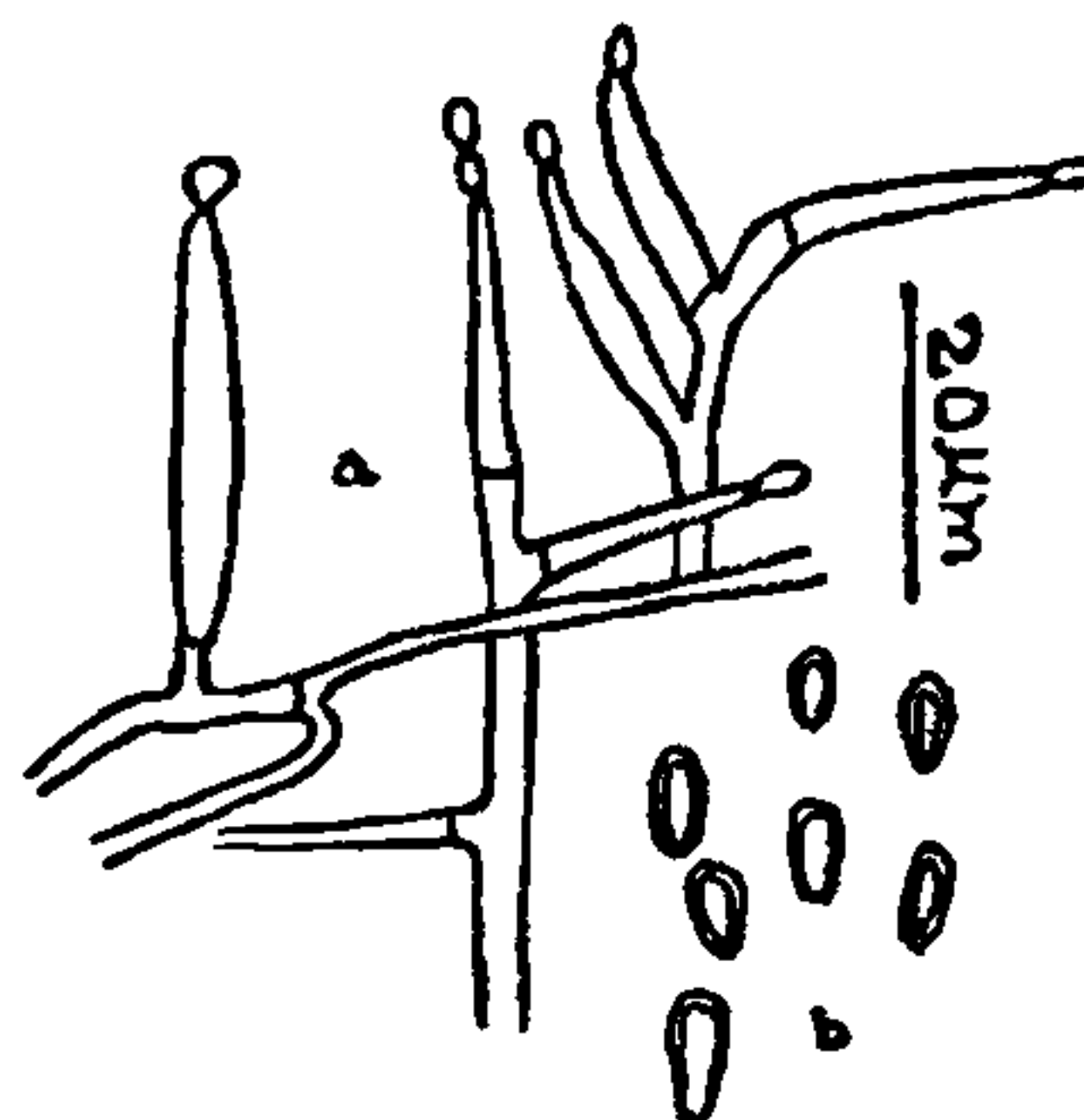


Figure 1a, b. *Scopulariopsis fimicola* (Cost. et. Matr.) Vuillemin. a. Developing conidia on annellophores, and b. Conidia.

Preliminary observations revealed that disease was more severe in under- or over-composted compost which retained the smell of ammonia and where pH was more than 7.5 at the time of spawning. Further studies on crops grown in small trays (30  $\times$  25  $\times$  15 cm, containing 6 kg of compost) according to the method of Munjal and Seth<sup>3</sup> confirmed it. An average yield of 500 g was obtained in diseased condition and 800 g in healthy condition at pH 7. The corresponding yields for pH values 7.5, 8 and 6 were 470/815, 110/845 and 268/413 respectively (5 replicates and 3 crops).

Maintenance of a temperature of 60°C throughout the compost during peak heat phase of pasteurization eliminated the pathogen completely, as indicated by absence of growth in repeated platings. Good hygiene combined with careful removal of stray patches with subsequent treatment with formalin (4%) further insured the crops against the disease.

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## POLY- $\beta$ -HYDROXYBUTYRIC ACID CONTENT OF RHIZOBIUM STRAINS IN RELATION TO GROWTH

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POLY- $\beta$ -HYDROXYBUTYRIC acid (PBH) is a storage product in pure cultures of rhizobia<sup>1</sup> and rhizobial cells in root nodules and accumulation of PBH in root nodules is related to photosynthetic products made available by nodulated legumes<sup>2</sup>. During stress, PBH serves as a reservoir of energy for biological nitrogen fixation. However, it is not known whether PBH content of rhizobial strains is related to the ability of strains to grow fast or slow, a criterion being increasingly recognized in speciation and effectiveness of rhizobia. With this objective in mind, root nodules of seven economically important leguminous crops (*Lens culinaris*, *Lathyrus sativus*, *Pisum sativum*, *Sesbania aculeata*, *Glycine max*, *Vigna radiata* and *Vigna mungo*) were collected from different places of Bangladesh and the native rhizobia isolated by following well-known procedures<sup>3</sup>. The generation time of several strains from nodules of each legume was calculated on the basis

Table 1 Generation time and PBH content of rhizobia from root nodules of some crop legumes from Bangladesh

Host	Strain Nos.	Range of generation time (min)	Range of PBH content (g/100 g wet weight of cells)
<i>L. culinaris</i>	DS11-DS16	180-208	5.5-8.5
<i>L. sativus</i>	DS17-DS21	170-193	5.8-10.8
<i>P. sativum</i>	DS22-DS26	210-243	5.6-11.3
<i>S. aculeata</i>	DS27 DS33	88-94	5.3 13.5
<i>G. max</i>	DS39-DS45	313-340	1.1-3.7
<i>V. radiata</i>	DS46-DS51	382 401	6.0 11.2
<i>V. mungo</i>	DS52 DS57	451-478	4.8 9.2

of growth curves on yeast extract mannitol broth based on turbidimetry<sup>3</sup>. The PBH content of different strains was determined gravimetrically following the method of Low and Slepecky<sup>4</sup> and expressed on percentage basis. The results show that both fast and slow growing rhizobial strains had PBH in varying amounts, the highest range in strains from fast-growing strains of *S. aculeata* and the lowest range in slow-growing strains of *G. max*; an intermediate situation, however, was noticed in another very slow-growing group of strains of *V. mungo* which had medium range of PBH (table 1). These results indicate that growth rate of rhizobia (fast or slow) has a bearing on their PBH content.

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## GENETIC DIVERSITY AMONG PLANTAGOS VI. SATELLITE ASSOCIATIONS IN *PLANTAGO OVATA* FORSK.

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THE phenomenon of 'Satellite association' (i.e. the tendency of the Sat. chromosomes to so orient that their satellites appear fused) is a common feature of mitotic metaphase spreads of human beings. A linear relationship exists between the transcriptional activity of nucleolar chromosomes and the frequency of satellite associations. This holds true for many animal taxa as well<sup>1-4</sup>. Among plants, the phenomenon is comparatively infrequent. Recently, Sato *et al*<sup>5</sup> recorded satellite associations in *Nothoscordum fragrans*, a bulbous angiosperm, and published it as