But ammonia was absent in volatile vapours from growing cultures on YpSs broth. *Chaetomium thermophile*, *S. thermophile* and *T. aurantiacus* inhibit spore germination through their volatile products. This property might be playing a decisive role in establishing these thermophiles as the dominant flora of the composts.

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SPHAEROTHECA VERBENAE, A NEW FUNGUS FOR INDIA

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During December (1978) to March (1979), a severe powdery mildew was observed on plants of *Gmelina asiatica* L. (Family—Verbenaceae) growing in the botanical garden of Jiwaji University, Gwalior. From December to January the pathogen remained in oidial stage. Dark brown perithecia were formed abundantly on both the surfaces of the leaves during the warm weather of February and March.

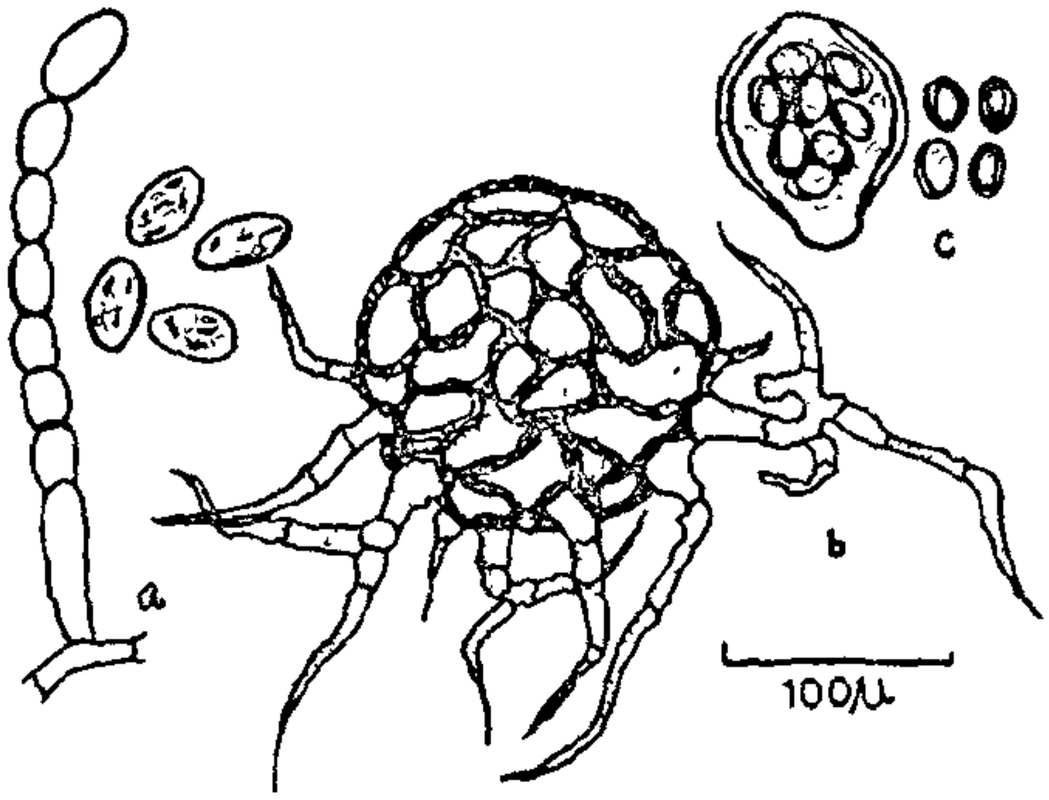

Fig. 1 (*a*, *b* and *c*). Camera lucida sketches of *Sphaerotheca verbenae*. *a*—conidiophore and conidia, *b*—cleistothecium showing branching of appendages, *c*—ascus and ascospores.

Description of the pathogen (Fig. 1—*a*, *b* and *c*)

Mycelium of the fungus white, cottony, forming thick superficial felt on the leaves, in addition to the leaves mycelium also grew on young twigs, 5·0–2·7 μ wide; haustoria simple, restricted to epidermal cells only ; conidial apparatus *oidium* type; conidiophores simple, septate, bearing upto 7 conidia in a chain; conidia borne in basipetal succession on conidiophores, hyaline, ellipsoid, 23·5–38·0 × 13·0–16·5 μ, germinating immediately after getting released; cleistothecia appear as dark brown specks embedded in the dense mycelial felt, globose, 100–160 μ, wall cells irregular, thick walled, very large (23 0–54·5 μ); appendages on cleistothecia numerous, pale brown, highly variable in length (70–400 μ), septate, irregularly branched; cleistothecium contained single ascus, ascus sac-like, thick walled (excepting at the apex), size 78·0–82·5 × 64·5–68·0 μ (at the broadest portion), contained typically 8 ascospores; ascospores liberate through apical crack in ascus, oval, hyaline with dense protoplasmic contents, 15·0–16·5 × 12·5–13·5 μ.

On the basis of the above characters the fungus was identified as *Sphaerotheca verbenae* Savul. and Negru. The specimen has been deposited in C.M.I. herbarium (I.M.I. No. 247204).

Several species of *Sphaerotheca* have so far been reported from India[1–7], but the occurrence of *S. verbenae* constitutes a new addition to the fungi of India.

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YELLOW MOSAIC OF PATCHOULI (*POGOSTEMON PATCHOULI*) IN INDIA

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Pogostemon patchouli Pellet. a member of *Labiatae* is the source of patchouli oil of commerce is being presently cultivated on an experimental scale in States of Karnataka and Tamil Nadu. During the screening of the patchouli germplasm maintained at the experimental farm of Indian Institute of Horticultural Research, Hessaraghatta (Bangalore), most of the plants showed symptoms similar to the one caused by viruses and the incidence ranged from 43 to 76% in four strains. The infected leaves of Malaysian strain showed a calico-like pattern of bright yellow irregular patches in addition to a systemic mottle (Fig. 1). The Indonesian strain of patchouli had typical mosaic mottling symptoms, devoid of bright yellow patches, whereas Johore and Java patchouli strains showed very diffused mosaic mottling and chlorotic spotting on the young leaves. The results of the pathogenic experiments are reported herein.

The sap inoculation tests were conducted by macerating the infected patchouli leaves in phosphate buffer pH 7 (0·05 M) with and without sodium sulphite/EDTA. None of the 19 test plants belonging to the families of *Labiatae*, *Solanaceae*, *Cucurbitaceae* and *Chenopodiaceae* was infected, indicating that the virus under study is not mechanically sap transmissible. However successful transmission was obtained by wedge grafting and out of the 14 plants grafted, 11 survived and 91% of the plants were infected. The plants expressed symptoms 18–20 days after grafting. Insect transmission tests were conducted by using whiteflies (*Bemisia tabaci* Gen.) and aphids (*Myzus persicae*, *Aphis gossypii* and *Macrosiphum sonchi*). During experimentation, the whiteflies were given 1 hr fasting period, acquisition feeding period of 6 hr and inoculation feeding period of 12 hr. Out of 15 plants tested only 4 patchouli (Malaysian strain) plants showed symptoms indicating thereby that the virus under study is whitefly transmitted. The disease was also transmitted to *P. purpurascens* and *Ocimum basilicum* through white flies. For the other three aphid species, the fasting period of 1 hr, the acquisition and inoculation periods of 30 min each were given and a set of 8 plants were used for each aphid species. None of the aphid species used in the studies could transmit the disease, in both the experiments.

Because of the high (76%) disease incidence field trials were conducted to find out the actual cause of the spread. Even though this disease is transmitted by the whiteflies, generally their colonization on patchouli is not noticed under field conditions. The transmission through whiteflies was only 27%. Six experiments were conducted to see the transmission through the single node cuttings, which is one of the general ways of patchouli multiplication. Out of the 2,680 cuttings raised, 2,386 plants were infected, giving an indication that the primary cause of high incidence is due to propagating the cuttings from the infected plants, without any selection.

Experiments were conducted to eliminate the virus from the infected cuttings by hot water and hot air therapy. The rooted cuttings of infected plants were

Fig. 1. Patchouli leaves showing yellow patches and mosaic mottling symptoms.