

other hand, shows a striking difference in the two categories of leaves. In the water-form only 2—3 lateral or 2° veins arise from the principal or 1° vein and the areole formation is hardly discernible. Even 2° veins are not continuous but are subtended by small free vein-endings (figure 1). On the contrary, in the wetland-form the venation is more elaborate with well-organized areoles which possess a few simple vein-endings. Here one rarely comes across free vein-endings (figure 2).

The simplicity in venation pattern of the water-form of *G. spathulatum* appears definitely related to the aquatic medium in which the plant remains submerged. This is because the leaf in a submerged state absorbs water from the whole of the surface and hence an elaborate venation pattern, essential for the conduction of water to all the tissues of the leaf, is not required.

The authors thank Prof. G. S. Paliwal for comments on the paper. One of us (SCP) is also grateful to the

authorities of Paliwal Degree College, Shikohabad for assistance.

16 October 1984

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SCHIZOPHYLLUM COMMUNE Fr. ON ENDOSPERM OF *COCOS NUCIFERA* L., A NEW HOST RECORD FROM INDIA

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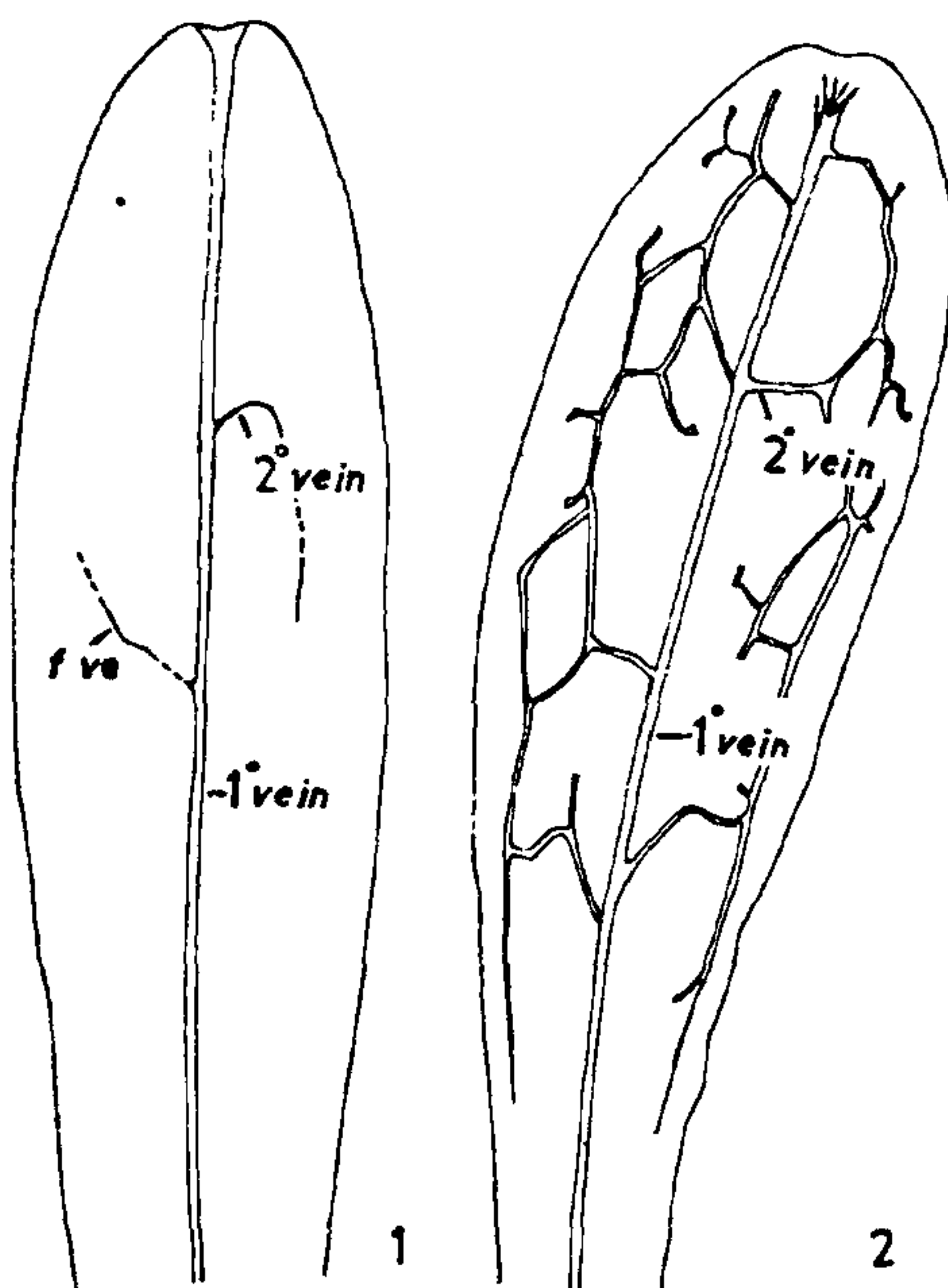
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SCHIZOPHYLLUM COMMUNE Fr. was isolated from the Kernel (endosperm) of coconut, where it causes rotting. The infected endosperm becomes pulpy and emits foul odour, becoming unfit for consumption.

A review of literature revealed that previously *S. commune* was regarded as saprophytic in nature, but later, various workers have observed in it a tendency towards parasitic mode of life. Chaudhari and Johar¹ reported it to be parasitic in mango (*Mangifera indica* L.) and Sheesham (*Dalbergia sissoo*) trees in Punjab. Since then it has been reported to be growing on logs of timber, tree trunks and branches, by various workers^{2, 3} and few workers^{4, 5} collected it growing on wooden logs and basal parts of living trees of *Butea monosperma*, *S. commune* is a widespread fungus occurring on hard woods⁶.

S. commune was first reported as a pathogen of coconut by Dupont in 1926 from Seychelles⁷. Besides this, no other report of its occurrence on coconut is available⁸. However, Dupont has not specified the nature of disease and the part of the plant attacked by it.

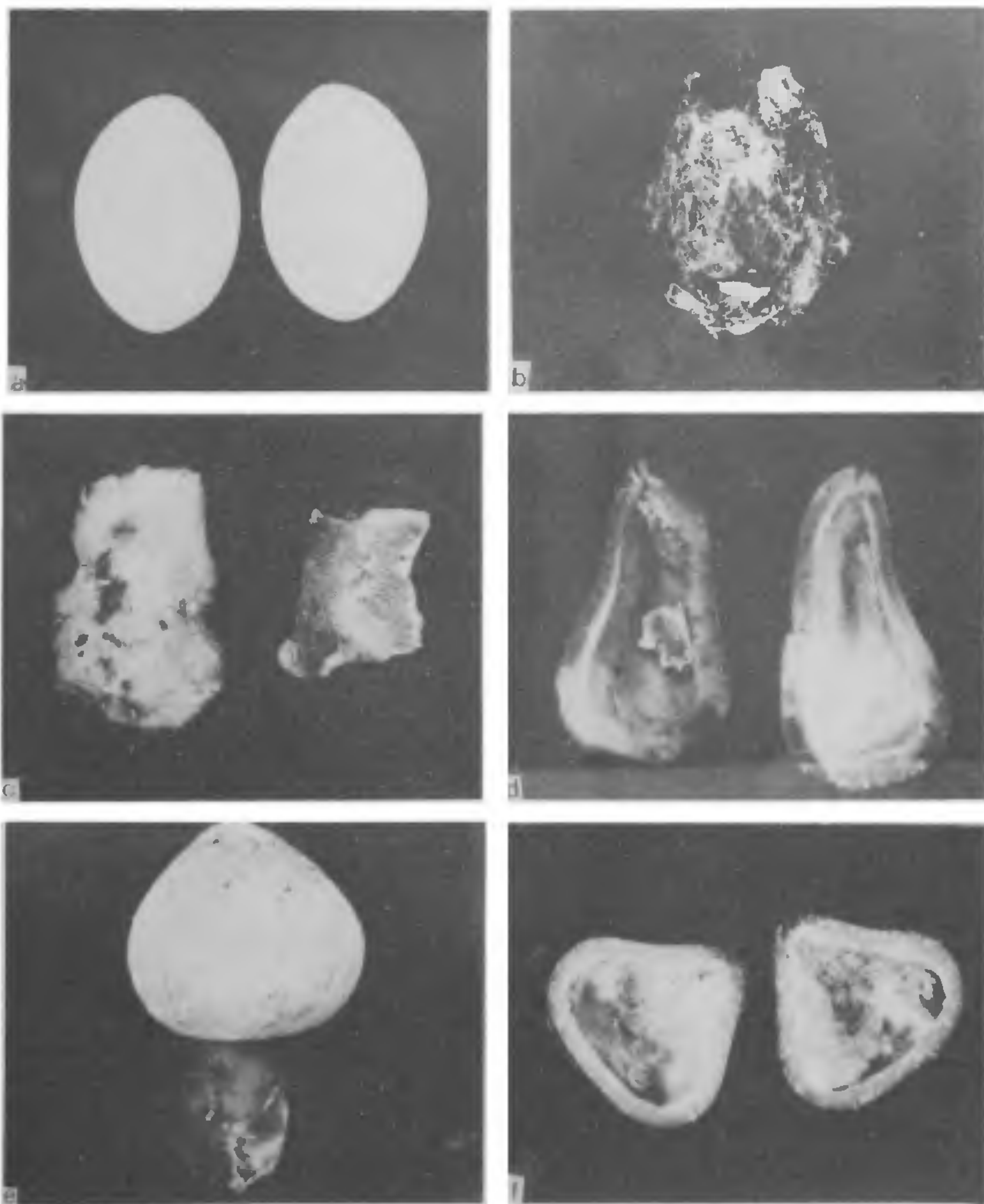
In the present study the pathogenic nature of the fungus was tested on healthy fruits by various methods, and Koch's postulates confirmed. Symptoms developed after 5—7 days of inoculation on coconuts.



Figures 1–2. *Glossostigma spathulatum*. 1. Leaf of the water-form showing simple venation pattern. 2. Leaf of the wetland form showing venation pattern (fve, free vein-ending). Both $\times 22$.

Pathogen: Colonies milky white, turning creamy. Colonies at 28°C on PDA fast growing reaching 68 mm in 5 days; surface velvety. Aerial mycelium scanty. Hyphae branched, septate 5.5 μ wide, with clamp connection. Basidiocarps mostly single sometimes in

groups of three, middle one bigger. Pileus circular, variable in size 0.5 to 2 cm in dia., lamellae of the gills bifurcate from half way, gills split longitudinally and incurved. Stipe small, 1.5–2 mm long. Basidiospores rounded, hyaline 3.2–4.8 μ in dia.



Figures 1a–f. a. Healthy raw endosperm of coconut. b. Coconut fruit showing white mycelial growth on fibrous mesocarp. c. Diseased (pulpy) raw endosperm of coconut. d. Dried coconut endosperm, showing white mycelial growth on the inner surface. e. Dried coconut endosperm showing white mycelial growth on the outer surface. f. Dried endosperm cut open to show mycelium on the inner surface also.

The culture of the fungus is deposited in C.M.I. Herbarium (IMI No. 262386).

In nature, infection occurs probably during harvest or in transit penetrating probably through the weak portions of the eyes, the fungus reaches the endosperm and spreads there. At later stages of infection, white to light brown mycelium can be seen on both surfaces of the endosperm.

In the laboratory, inoculation of the coconut fruits was successful through peduncle attachment point, eyes and in dried as well as raw endosperm (figure 1).

A perusal of available literature reveals that this appears to be the first record of *S. commune*, causing fruit rot of coconut.

The authors are thankful to Dr J. E. M. Mordue of C.M.I. Kew, Surrey, England for the identification of the culture and Dr S. M. Kazmi for providing the infected material. One of the authors (SNK) acknowledges the award of a fellowship by the UGC.

11 September 1984; Revised 20 November 1984

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AUXIN + KNO₃ INDUCED REGENERATION OF LEGUMINOUS TREE—*LEUCAENA LEUCOCEPHALA* THROUGH TISSUE CULTURE

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LEGUMES have generally failed to respond to organ induction *in vitro*. However, limited success has been

noted in recent years¹⁻⁹. *Leucaena leucocephala* (Lam) de Wit (Hawaiian Giant) is a protein-rich fodder plant, besides its other uses as firewood, windbreak, erosion and fire protection, shade for other plants¹⁰. We report here, rapid propagation of this plant on MS medium¹¹ with auxins (IAA, indoleacetic acid or NAA, naphthaleneacetic acid). Regenerants could be maintained on MS₁ medium with higher concentration of KNO₃ (MS + double the concentration of KNO₃ to that of original MS).

Nodal explants (1-1.5 cm) were excised from a healthy mature tree of *L. leucocephala* var K8 growing in the University garden.

After sterilization as described earlier¹², explants were cultured on MS medium containing 30 g/l sucrose, 0.9% agar and various concentrations of auxins (IAA; IBA, indolebutyric acid; IPA, indole propionic acid and NAA), cytokinins (BAP, benzylamino purine and Kn, kinetin), AdS (adenine sulphate) and GA (gibberellic acid), alone and in different combinations. The cultures were maintained at 26 ± 4°C in 16 hr photoperiod at a light intensity of ca 2000-3000 lux. The nodal explants with shoots or regenerants were subcultured at 30 day intervals.

The nodal explants responded to auxins and cytokinins (table 1). IAA (1 mg/l) and NAA (2 mg/l) were found suitable for regeneration of plantlets; other auxins, AdS and GA did not have any effect. Shoots readily developed from axillary buds of the explants (figure 1), irrespective of the hormones used (both auxins excepting IPA and cytokinins, used independently or in combinations, table 1). Multiple shoots (3-6 shoots) developed from axillary bud primordia of each explant in response to BAP (2 mg/l) after 30 days of culture (figure 2). On MS + IAA the nodal explants produced a vigorous shoot with a large number of long roots (figure 3). Dwarf shoots with one or two prominent roots were obtained from nodal explants in response to NAA (figure 4). Vigorous roots developed from the *in vitro* raised isolated shoot buds when subcultured on MS medium with IAA or NAA (1 mg/l, each). The regenerated plantlets did not survive after 30-40 days of culture. However, this problem could be overcome by culturing the plantlets on MS medium with a higher dose of KNO₃ (double the concentration to that of MS, designated as MS₁) in addition to IAA or NAA. This treatment resulted in the production of more vigorous roots, better growth, higher percentage and long term survival of regenerants (table 1). Earlier workers¹³⁻¹⁵ had reported only shoot regeneration or plantlet formation with a weak root system from seedling explants.