Massarina azadirachticola sp. nov.

Perithecia separata, hemispherica, partim immersa, ostiolata, brunnea, 135–165 μ diameter, paries 18·9 – 27·0 μ crassitudine, cellulis crasse tunicati, atro-fuscis, 2.7–5.4 μ diam; asci numerosi, octospori, paraphysati, bitunicati, apice crassetunicati, hyalinae, cylindricei vel claviformis 54–68 × 11–19 μ; ascosporae biseriatae, hyalinae, rectatae, ellipticae, apice rotundatae, 3-septate, septis nonconstrictae, 16·2–18·9 × 5·4–6·75 μ. Ad ramuculos emortuos *Azadirachta indica* A. Juss. collecta ex Jodhpur, March, 1979.

Perithecia numerous, hemispherical, partly embedded, ostiolate, dark brown 135-165 μ in diameter, perithecial wall 18.9–27.0 μ in thickness and composed of small thick walled brown polyhedral cells, measuring, 2·7–5·4 μ in diam. (figure 1a);

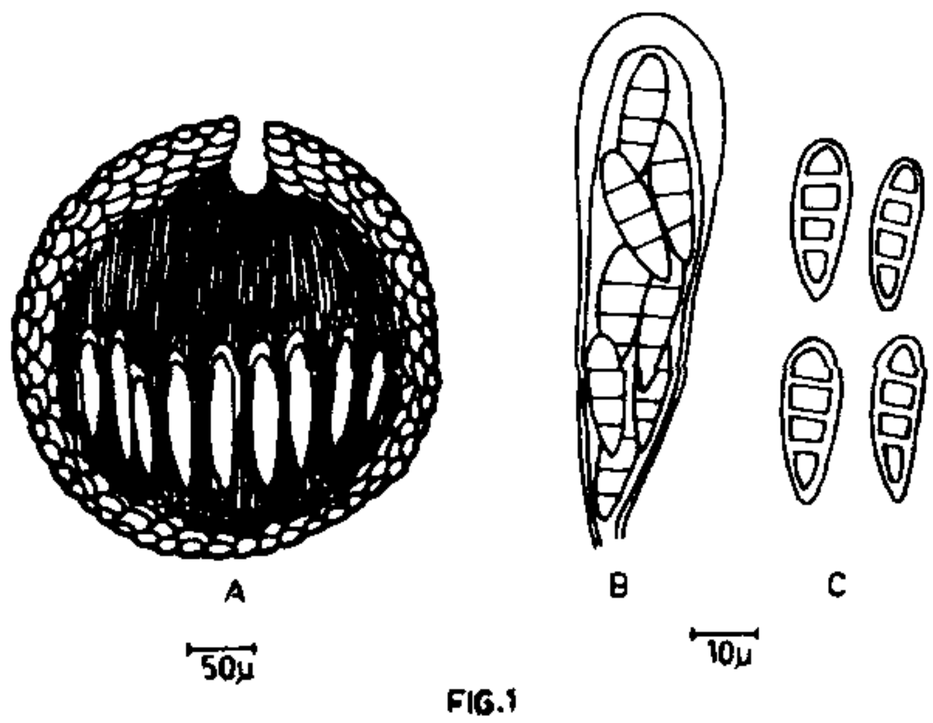

FIG. 1

asci numerous, 8-spored, paraphysate, bitunicate, thickened at the apex, hyaline, cylindrical to clavate, 54–68 × 11–19 μ (figure 1b); ascospores biseriate, hyaline, straight, elliptical, rounded at the apex, 3-septate, non constricted at the septa, 16·2–18·9 × 5·4–6·75 μ in size and devoid of mucous sheath (figure 1c).

On dried twigs of *Azadirachta indica* A. Juss. collected from Jodhpur, March, 1979.

Specimen deposited with C. M. I., Kew, Herb, IMI 236247 type coll. J. U. M. L. 732.

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INDUCTION OF NEGATIVELY GEOTROPIC ROOTS IN CULTURES OF *TAGETES PATULA* L.

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IN vitro morphogenesis has been studied in several members of the Compositae[1–5]. In the present study negatively geotropic roots were observed to develop in cultures of hypocotyl and cotyledon explants of *Tagetes patula*, an ornamental plant.

Seeds of *T. patula* were collected from the Botanical garden of the University of Rajasthan, Jaipur and germinated aseptically in culture tubes. Cotyledon and hypocotyl explants were excised from 8-day old seedlings while stem and leaf explants were taken from young plants.

When cotyledon and hypocotyl explants were grown on Murashige and Skoog (MS) medium[6] containing indole butyric acid (IBA, 5·0 mg/l) or naphthalene acetic acid (NAA, 0·5-2·0 mg/l) normally oriented roots were produced. Rooting was observed from various explant types on media supplemented with different combinations of an auxin with a cytokinin. Negatively geotropic green roots were formed in large numbers from cotyledon and hypocotyl explants on a medium with 0·5-4·0 mg/l each of kinetin and IBA (figure 1 A). The negatively geotropic roots thus induced were upright, green, short and stout and showed profuse branching which resulted in anastomosis. A microscopic examination of roots showed different types of hair—normal, single celled and unbranched, single celled with knobed apices, 2-3 celled and 2-3 celled and branched. The roots frequently showed a pseudo-dichotomous branching. Upon subculture on the same medium they continued to produce the same type of negatively geotropic roots up to the third passage (figure 1C). However, in subsequent passages the number of negatively geotropic roots declined and instead positively geotropic white roots were produced.

To the best of our knowledge there are no reports of *in vitro* differentiation of such negatively geotropic roots in large numbers from hypocotyl explants. However, there are examples in which they are induced in intact plants or seedlings by various treatments particularly by morphactins[7, 8]. In nature such roots are produced in mangrove plants and in plants like *Cycas*.

Shoot buds differentiated in stem, leaf and cotyledon explants on MS medium with 5·0 mg/l each of BAP and an auxin (IAA or IBA).

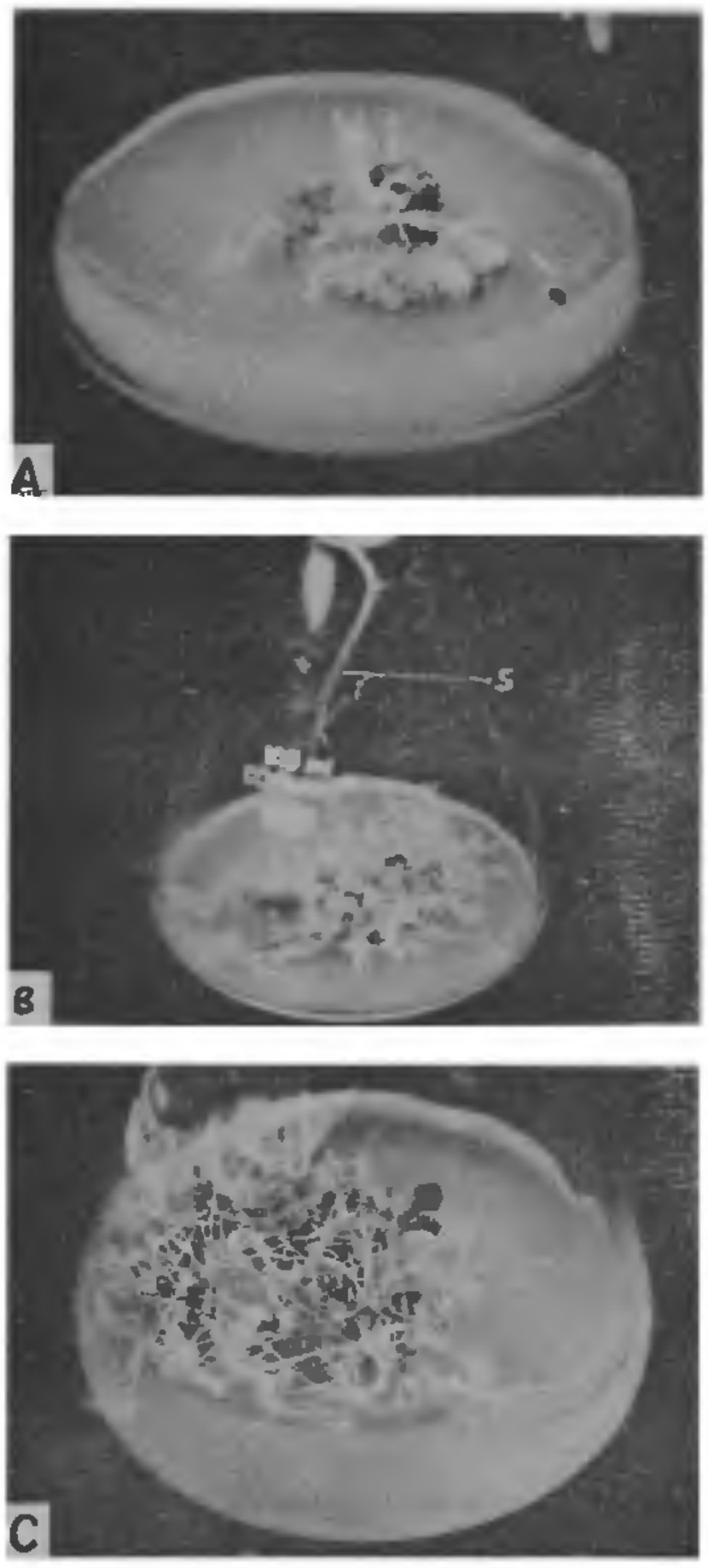

Figure 1. Negatively geotropic roots in cultures of *Tagetes patula*. **A.** Roots arising from cotyledonary explant on MS+IBA (1·0 mg/l) + K (1·0 mg/l). **B.** The same arising from hypocotyl explant on MS+IBA (1·0 mg/l) + BAP (3·0 mg/l). Note also a shoot emerging out (S). **C.** Showing profuse regeneration of negatively geotropic roots on subculture on MS+IBA (1·0 mg/l) + K (1·0 mg/l).

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IDENTIFICATION OF PEPPER VEINAL MOTTLE VIRUS ON TOMATO, (*LYCOPERSICON ESCULENTUM* MILL.) IN INDIA

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DURING a survey of the tomato growing areas, it was observed that virus and yellows-type of diseases cause significant loss in production. While identifying different viruses infecting this crop, a virus disease different from the ones already reported on this crop was isolated. This paper reports the results of a series of glass house experiments conducted to determine the causal virus.

Under natural conditions, the tomato plants infected with the virus were stunted and leaves exhibited mosaic mottling symptoms. In most of the leaves vein banding symptoms were very much conspicuous and in certain plants stem necrosis was also noticed. The virus culture was maintained on tomato var. *Pusa Ruby* under glass house conditions. For mechanical sap inoculation, the inocula were prepared by grinding the infected tomato leaves in phosphate buffer pH 7 (0·05 M) and was rubbed manually on carborundum dusted leaves of test plants. The host range was confined to *Solanaceae* and *Chenopodiaceae.* On the inoculated leaves of tomato, black necrotic lesions measuring 3–4 mm were noticed 5–6 days after inoculation, followed by systemic mosaic mottling and vein banding symptoms (figure 1). About 30% of the plants died within 25–30 days after inoculation, due to stem necrosis and leaf defoliation. Even chillies and bell pepper plants also expressed similar symptoms as noticed in tomato, but the majority of leaves were filiform; whereas in *Petunia hybrida* L., *Solanum nigrum* L. and *Physalis floridana* Rydb., initial mild mottling was noticed and by 35–40 days they became chlorotic. Reddish brown necrotic local lesions were observed on *Chenopodium quinoa* Willd and *C. amaranticolor* Coste and Reyn., 8–12 days after inoculation. On *Nicotiana tabacum* var. W. B. only necrotic local lesions were formed 4-5 days after inoculation. The virus failed to infect when mechanically sap inoculated, to the hosts like *Cucumis*