This is followed by the development of a blackish brown discolouration spreading to the leaf lamina and defoliation.

Identity of the Pathogen

The pathogen inciting the leaf spot of betelvine is identified as *X. betlicola* Patel *et al.*[1]. Important and routine bacteriological tests, Breed *et al.*,[3] were conducted. Colony morphology, colour, motility, shape and gram reaction were suggestive of the genus *Xanthomonas*. Pertinent physiological properties of the isolate were studied as per Dye[4]. The observations are given below.

A. *Morphological and Cultural Characters of the Organism*

Colony colour—yellow and slimy; colony shape—circular and shiny; shape of the organism—short rods; motility—motile; temperature range—26–30° C; temperature optimum—28° C; gram reaction—gram negative; growth on nutrient broth—turbid yellow growth.

B. *Physiological and Biochemical Properties*

Starch hydrolysis—strong and positive; Catalase production—positive; Kovac's Oxidase test—negative; Nitrate reduction—negative; H_2S production—positive; Fermentation of sugars, Lactose—fermented with acid production and no gas formation; Sucrose—fermented with acid production and no gas formation.

The properties of strong starch hydrolysis, negative Kovac's Oxidase test, negative nitrate reduction, and the fermentation of lactose with production of acid coupled with yellow colony colour, negative gram reaction, rod shape and motility are suggestive of the identity of the pathogen as *X. betlicola* Patel *et al.*[1]. Singh and Cnand[2] also got similar results in their studies. So the pathogen is identified as *X. betlicola*. This is the first authentic report of the disease and pathogen from Kerala.

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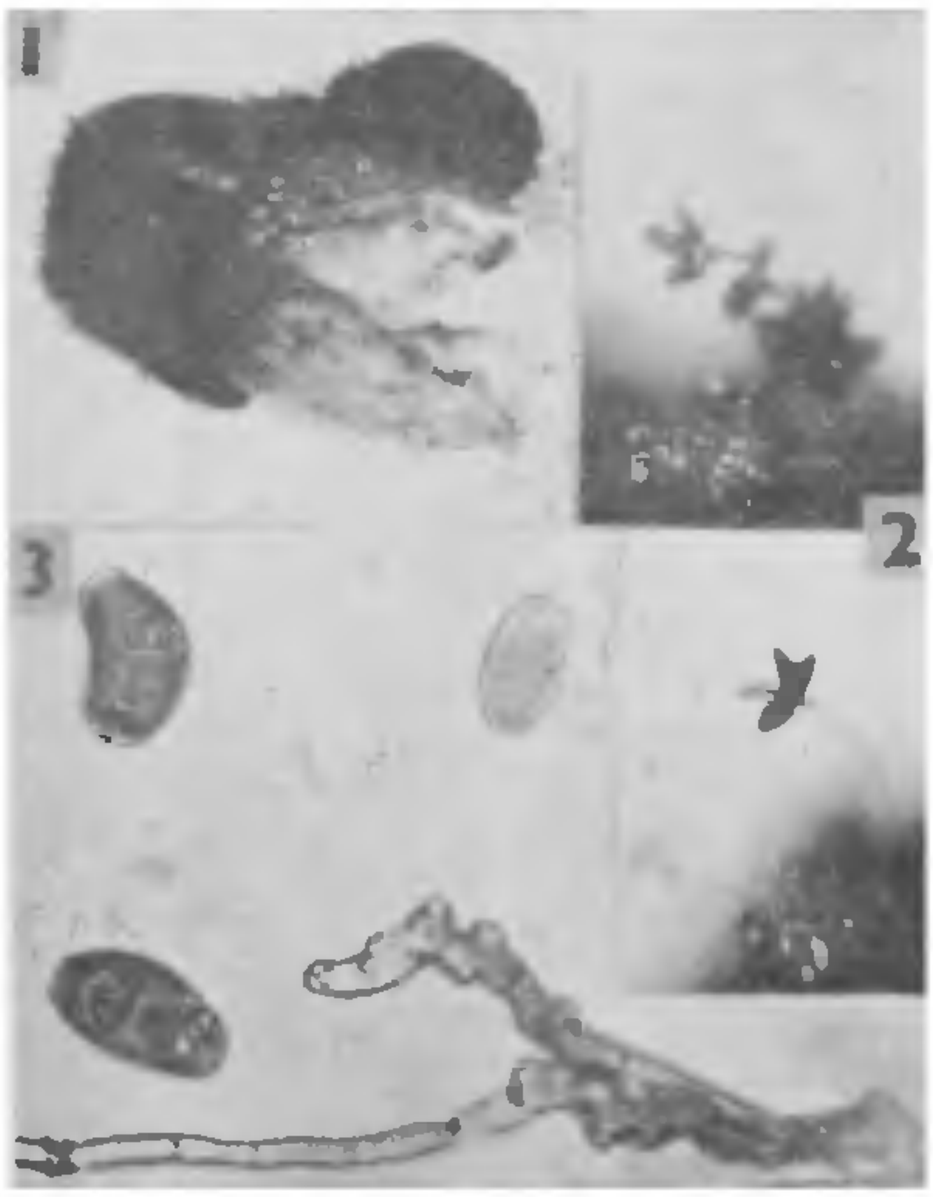
DRECHSLERA SUBPAPENDORFII MOUCHACCA —A NEW RECORD FROM INDIA

WHILE investigating the seed-borne fungi of Leguminous plants from India, an unrecorded species of *Drechslera*, viz., *D. subpapendorfii* was found growing on seeds of *Phaseolus aconitifolius* L. collected from Vadgaon (Rajasthan), by B. L. Jain, 1975 (RUBL. 1701).

This species was originally isolated from soils of arid regions from Egypt by Mouch·cc [1]. The present report is the first record of this species on seeds and also a new record for India. The growth characteristics of this fungus are briefly described since they are important in seed pathological studies.



FIGS 1–3. Fig. 1. Growth of *D. subpapendorfii* on the seed coat and cotyledons, × 72. Fig. 2. A conidiophore bearing conidia, growing on the seed, × 316. Fig. 3. Conidiophores and conidia, × 720.

Colonies on seeds (Fig. 1) amphigenous, wooly and brown to dark brown. Conidiophores (Figs. 2, 3) produced singly or in clusters of 2-4, straight or flexuous, simple or branched, sharply geniculate pale to medium brown, upto 520 mμ long; 5·2 8·5 mμ wide at the apex and 2·2 6·2 mμ wide at the base. Conidia small, borne in clusters of 3-4, produced acropleurogenously at the tips of conidiophores; curved or straight, obpyriform, navicular or ellipsoidal, light to dark brown with the end cells slightly pale, (2) 3-pseudoseptate, 20·0 33·2 mμ long, 10 0 15·9 mμ wide (av. 27·1 · 13·15).

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USTILAGO CONSIMILIS SYDOW— A NEW RECORD FROM MANIPUR

DURING a visit to Imphal in October, 1975, a species of Smut Fungus, parasiting on the inflorescence axis of *Narenga porphyrochroma* (Hance) Bor (*Poaceae*), was collected from Kongba Khetri Leikai, Imphal, Central Manipur District, Manipur. The disease manifests itself as a markedly hypertrophied portion, 0·6–1 cm. in diameter, at the apex of the culm just above the last node, completely checking further development of the inflorescence. Sori, completely destroying the inflorescence and part of the axis, are being covered by the leaf sheath partly, 2–3 in number, pseudo-membranous, which later flasks away after drying up of the culm exposing sooty black spore masses partly. Columella, 0·3–6 cm. in diameter, tapering upwards or quite long as the sorus.

Some of these spores on being examined microscopically in a drop of distilled water and by Ellis Method (cited from Chamberlain[2]) revealed a species of *Ustilago*, spores being spherical to elliptical in shape; spore chestnut brown in colour, 3·5–6·5 μ in diameter; expore, thick with smooth surface; endospore thin and delicate. The pathogen has been deposited at C.M.I., Kew, England (IMI—199505) and indentified as *Ustilago consimilis* Sydow. The germination potential of the spores was studied by employing methods described earlier[2, 3, 6, 7] but failed to germinate. Ainsworth and Sampson[1] indicate factors which may be of considerable practical importance in germination studies. Duran and Safeeulla[3] state—"Although smut spores are generally considered to germinate failrly readily on agar media, optimum conditions vary from species to species". Mordue and Johnston[4] stated that smut spores should reach full maturity on host plant otherwise only a low proportion of viable spores can be expected. A perusal of literature revealed *N. porphyrochroma* is a new host of *U. consimilis*[5] and hence a new record for Manipur.

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MICROSPOROGENESIS AND MALE GAMETOPHYTE IN *CYNODON DACTYLON*

THE spikelets of *Cynodon dactylon* were fixed in FAA and pretreated with 10% of HF before processing for microtomy. The anther is tetrasporangiate. A hypodermal archesporial cell differentiates in microsporangium (Fig. 1). Sometimes, a plate of archesporial cells may be seen (Fig. 2). The mode of anther wall development (Figs. 2–6, 8, 11–13) is of the monocotyledonous type (Batygina[1]). During development the endothecium develops lignin thickenings in the form of finger-like projections from the base towards apex and also free from each other (Figs. 12, 13). It is, therefore, of grass type (Untawale and Bhasin[3]).

The tapetum is of secretory type, single-layered and the nuclei in some of the cells divide mitotically forming two nuclei (Figs. 8, 11). In a mature anther, the cells of the tapetum persist as a thin band adhering to the inner wall of the endothecium. These cells develop Ubisch bodies on their tangential walls (Figs. 12, 13).

The primary sporogenous cells give rise to microspore mother cells after undergoing one or two divisions (Fig. 6). These cells round off and undergo successive meiotic divisons (Figs. 7–10) resulting only in isobilateral and decussate tetrads (Figs. 9, 10). Unlike the condition in *Eleusine africana* where all types of tetrads are described (Mahalingappa[2]). A thin layer of callose which is present around the microspore mother cell disappears by the time microspores are formed (Figs. 6–11).

The male gametophyte is somewhat round in shape with a smooth thin exine and a thin intine and the nucleus is lying towards a side due to the presence of