

evaluate the ultrastructure of this salt tolerant Dinanath grass (*Pennisetum pedicellatum* Trin.).

The seeds were sown in earthenware pots containing artificially salinized soil following the method was earlier reported<sup>2</sup>. At maturity few leaves were taken for ultrastructural studies and the usual method for preparation of ultrathin sections was followed. Grey-coloured sections were mounted on uncoated copper grids and examined under Hitachi (Hu-IIIE) electron microscope at 75 kv after double staining with 1% aqueous uranyl acetate and lead citrate.

Our observations reveal that both bundle sheath and mesophyll cell layers are well differentiated in the mature leaves of Dinanath grass (figure C). The grana (G) are very few in number, while stroma lamellae (SL) appear frequently in the chloroplast of bundle sheath cell (figure A). On the other hand every chloroplast of mesophyll cell shows numerous well developed grana (G) intermingled with prolamellar bodies (PB) (figure B). Thus, the present finding clearly substantiates the previous observations of Laetsch<sup>3</sup> made in sugarcane and other grasses.

The authors are thankful to the Electron Microscopic Section, CDRI, Lucknow for electron microscopy.

4 September 1984

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## POLLEN MORPHOLOGY OF *STROBILANTHES KUNTHIANUS*

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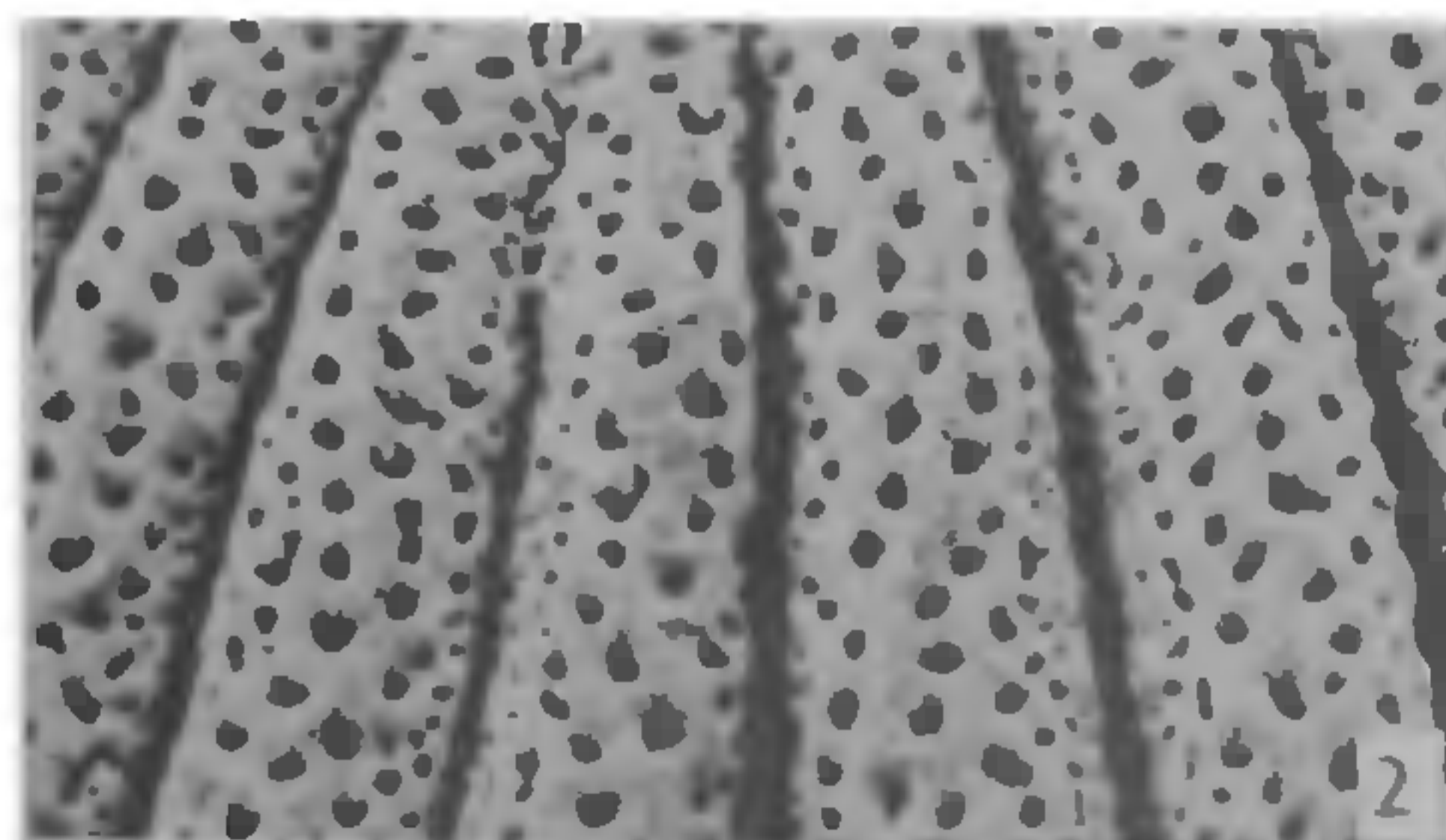
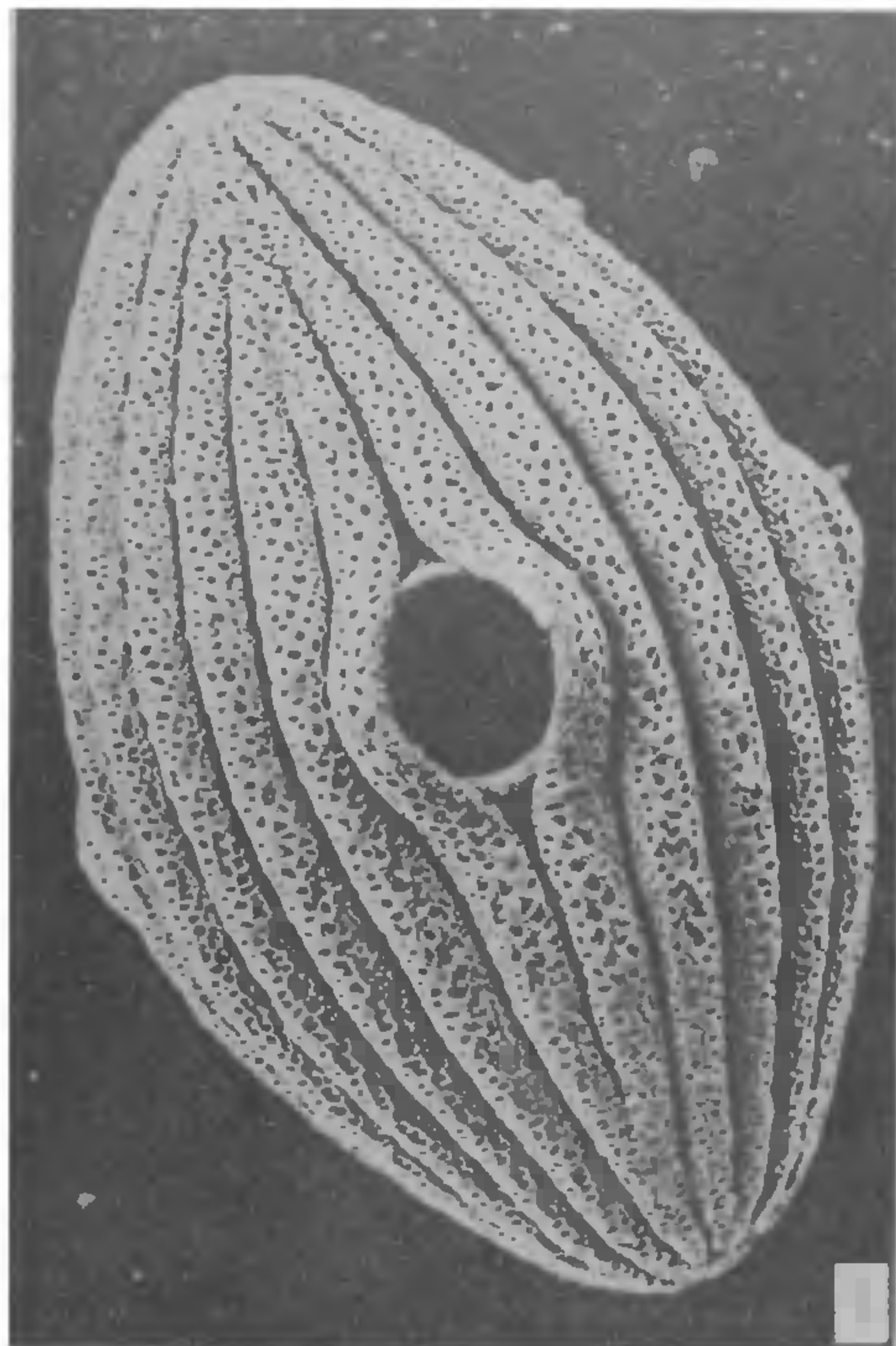
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*STROBILANTHES KUNTHIANUS* T. Anders (Acanthaceae) is a gregarious shrub with blue flowers found growing wild on open hill-sides at high altitude regions in South India. Like most other species of *Strobilanthes*, this is also a multiennial, flowering at intervals of 7–12 years. The pollen morphology of this species has not been described earlier.

Polliniferous materials of the species were procured from plants growing at the high-ranges of Munnar

(Kerala State). Routine acetolysis method<sup>1</sup> and standard terminology<sup>2</sup> were followed. The pollen descriptions are based on 100 grains viewed under light microscope as well as SEM photographs.

The pollen grains are 3-zonoporate with pore diameter 9.4  $\mu$ . The average pollen size is



Figures 1 & 2. SEM pictures of the pollen grain of *Strobilanthes kunthianus*. 1. A 3-zonoporate pollen grain at equatorial view ( $\times 3000$ ) 2. Portion of the exine surface showing the striae and lirae ( $\times 6000$ )

69.7 × 48.2 μ, range 60.1 – 86.7 × 40.1 – 53.4 μ. Exine is 3.4 μ thick, and surface is striato-reticulate with prominent ridges (striae) running along the polar diameter (figure 1). The ridges (2.19 μ broad) bear 4–6 rows of irregularly distributed and variously sized and mostly circular luminae (figure 2). The depressions (lirae) between the ridges (0.41 μ) are deep. The ridges are slightly raised on either side (equatorial) of the pore giving a hooded appearance at side view.

According to Bremekamp<sup>3</sup> the pollen morphology of the genus *Strobilanthes* has interesting taxonomic bearing. He has employed pollen morphological characters together with megasporic ones in breaking up the genus into a number of genera. Pollen morphology of about 65 species of the genus has been previously described,<sup>4,5</sup> all based on light microscopic study, and the available information reveals that the genus is recognizably eurypalynous with respect to aperture morphoform, exine pattern and pollen shape. Vishnu-Mittre and Gupta<sup>4</sup> have distinguished two types of pollen grains in the genus based on aperture form, viz colporate and porate; and based on exine pattern also two types such as banded and spinulose. The present species falls under the porate and banded type, which has relatively advanced morphological feature.

Authors are indebted to Prof. C. A. Ninan, Head of the Department of Botany and to Dr P. K. K. Nair, NBRI, Lucknow for encouragement and critical suggestions respectively. GV is thankful to the CSIR for the award of a research fellowship.

1 August 1984

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## FOLIAR SCLEREIDS IN *PERSOONIA* R. Br. EX. KNIGHT (PROTEACEAE)

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IN recent years more attention has been given to the types of leaf sclereids to obtain an overall perspective of their use in taxonomy. An attempt has been made in that direction, here in respect of the genus *Persoonia*, an Australian element of the Proteaceae. In this paper we describe the varied types of idioblasts and discuss some pertinent taxonomic problems.

Herbarium specimens were kindly provided by the herbaria in Calcutta, Lucknow, Sydney (CAL, LWG and NSW in Holmgren *et al*<sup>1</sup>). A list of examined species and their idioblasts are summarized in table 1.

The leaf sectors were cleared by the technique of Rao *et al*<sup>2</sup> and the varied idioblasts were categorised after Rao and Bhupal<sup>3</sup> and Rao and Das<sup>4</sup>, and unstained preparations were used for camera lucida drawings and photomicrography.

The comparative study of the cleared laminae, hand sections and macerations revealed the presence of varied idioblasts of morphological interest. The details of the main forms are as follows:

**Conventional tracheids:** They are simple and mostly undilated or tapering veinlet endings without morphological differentiation. They are commonly observed in the laminae of *P. angustiflora*, *P. comata*, *P. gunnii*, *P. juniperina*, *P. linearis*, *P. media*, *P. microcarpa*, *P. pinifolia*, *P. quinquenervis*, *P. revoluta*, *P. saccata*, *P. oblongata*, *P. tenuifolia*, and *P. virgata*.

**Tracheoids:** At the veinlet endings they have been observed in the laminae of *P. caleyi*, *P. chamaepence*, *P. chamaepitys*, *P. cornifolia*, *P. fastigata*, *P. hirsuta*, *P. tertifolia*, *P. myrtilloides* and *P. sericea*. Usually two types, namely pitted brachytracheoids and selerotracheoids are recognised, and both the categories or exclusively one category occur in a single leaf of the above mentioned species. Sometimes tracheoids-in-aggregates have been observed in *P. chamaepence*, *P. chamaepitys*, *P. gunnii*, *P. rigida* (figure 4) and *P. tenuifolia*.

**Sclereids:** They have been encountered in the laminae of 20 out of 40 species of *Persoonia*. They are of varied types showing diffuse patterns of distribution: Dermal sclereids of varied size tightly packed in *P. scabrella* (figure 5); Sub-spheroidal to oval or broadly