young anther. Fig. B. T.S. anther lobe showing archesporial cells. Figs. C, D. Portions of anther lobes showing differentiation of different layers of anther and 2-nucleate tapetal cells. Fig. E. T.S. anther parts showing meiotic divisions of pollen mother cells. Fig. F. T.S. anther part showing dimorphic tapetal cells. Fig. G. T.S. anther part showing endothecial fibrous thickenings. Fig. H. Uninucleate pollen grain. Fig. I. Bi-celled pollen grain. Figs. J–S. Megasporogenesis and the development of the female gametophyte. Fig. M. Micropylar and sub-chalazal megaspores show signs of degeneration. Fig. N. Degeneration of sub-micropylar and sub-chalazal megaspores. Fig. O. Functional chalazal and sub-chalazal megaspores. Fig. P. Chalazal and sub-chalazal megaspores have formed uninucleate and 2-nucleate embryo sacs respectively. Fig. Q. Four-nucleate embryo sac, Ent, Hy. Figs. R, S. Eight-nucleate embryo sacs, Ant, Eg, Ent, Hy, Pn, Syn.

(Ant—Antipodal cells ; Ar—Archesporial cell ; C—tpc-Connective tapetal cell ; Cut—Cuticle ; E—Epidermis ; Eg—Egg ; Ent—Endothelium ; Eth—Endothecium ; Hy—Hypostase ; Ml—Middle layer ; Mmc—Megaspore mother cell ; Ne—Nucellar epidermis ; Pn—Polar nucleus ; Ssl—Secondary sporogenous layer ; Spl—Sporogenous layer ; Syn—Synergids; Tpc—Tapetal cell ; Tpl—Tapetal layer ; Vs—Vascular supply).

submicropylar (Fig. M) and sub-chalazal (Figs. O, P) megaspores may grow further, in addition to the chalazal megaspore but they stop functioning after a short span and only the chalazal megaspore undergoes 3-successive divisions to organize 8-nucleate embryo sac of Polygonum type (Maheshwari[2]). The nucellar epidermis degenerates as the functional megaspore enlarges.

The mature embryo sac is comparatively broad at the micropylar region and narrow in the chalazal part. The egg apparatus consists of a pair of hooked synergids which overlap the egg. The antipodals are organized as regular cells. They degenerate before fertilization. The two polar nuclei fuse to form a secondary nucleus just before fertilization. An endothelium with richly protoplasmic contents surrounds the three-fourth region of the embryo sac (Figs. Q–S).

At four-nucleate embryo sac stage a hypostase is formed by a small group of cells underlying the chalazal end. They show dense contents and thickened walls (Figs. Q–S).

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A REPORT ON THE CYTOLOGY OF *PASPALUM COMPACTUM* VAR. *FIMBRIATUM*.

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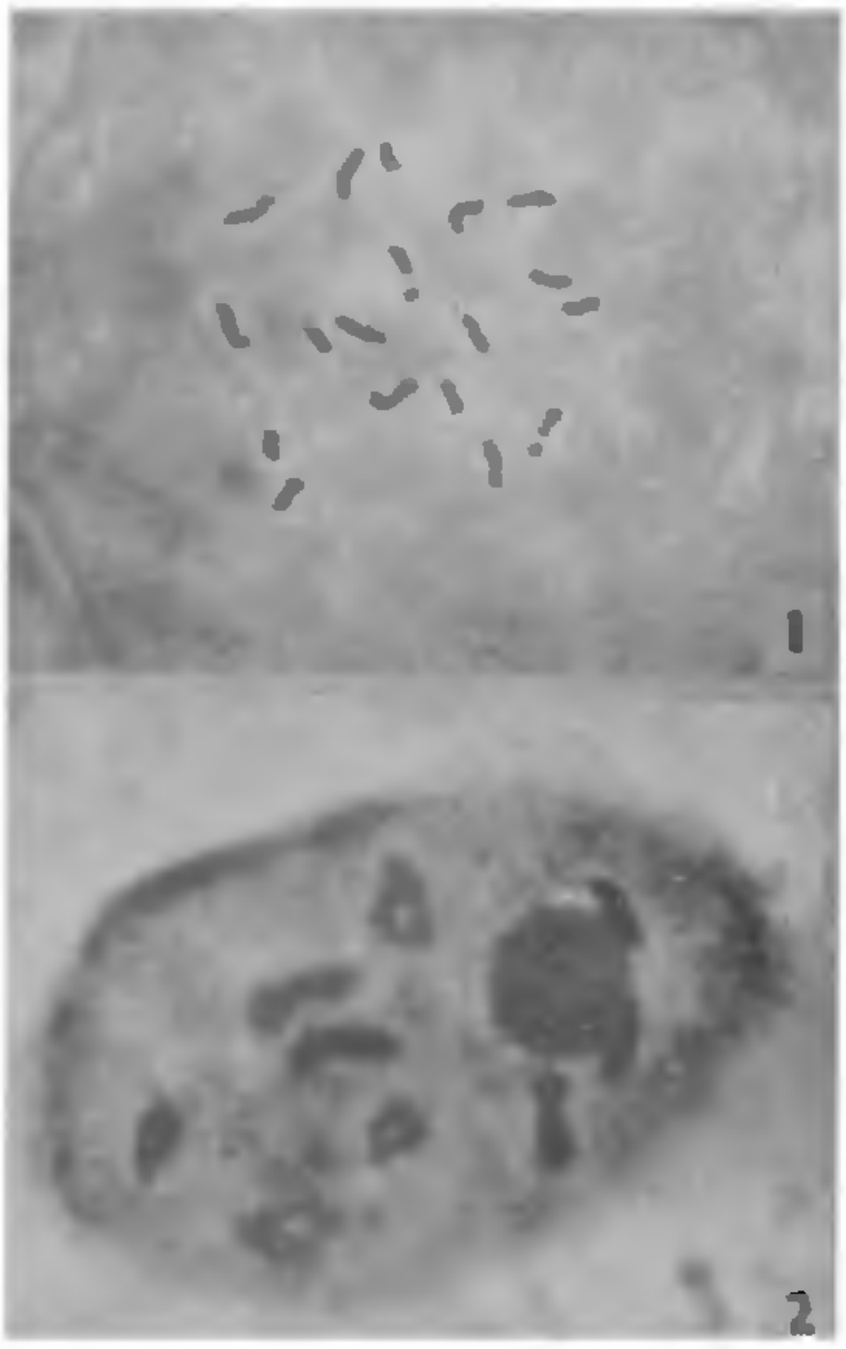
Paspalum is a large and diverse genus composed of more than 400 species found in tropical and warm regions of the world. Fourteen species are reported to be occurring in India. Most of the cytological work is carried out by Burson[1], Burson and Bennett[2–7] and Burson *et al*[8]. According to them the genus has chromosome numbers in multiples of 10, ranging from $2n = 20$ to 160 with basic chromosome number $x = 10$ and 12. *Paspalum compactum* var. *fimbriatum* presently investigated is an exception with $2n = 18$ chromosomes and 9 as the basic number.

Paspalum compactum Roth. Var. *fimbriatum* Bor, is a delicate, villous, annual grass rooting at lower nodes. There is no earlier report of chromosome number or karyomorphology. The somatic chromosomes from root tip cells and idiograms are shown in Figs. 1, 3 and 4. The chromosomes are eighteen in number and are of medium size. They are grouped into three types, (i) a single satellited pair with centromere in median region having SAT on short arm, (ii) six pairs of chromosomes having centromere in median region and (iii) two pairs of chromosomes with centromere in sub-median region. The satellite is fairly conspicuous and measures about 0·7 microns. The chromosome length ranges from 1·61 to 2·93 microns. The absolute length of the chromosomes is 20·63 microns.

Meiosis is normal and nine bivalents are formed regularly at diakinesis and metaphase-I Fig. 2. Out of nine bivalents, 5 are rod shaped and 4 ring shaped. Two bivalents are invariably associated with the nucleolus. Anaphasic disjunction is normal. No laggards and micronuclei are observed. Tetrad formation is normal and pollen fertility is 80%.



FIGS. 1–2. Fig. 1. Somatic mataphase plate showing $2n = 18$ chromosomes × 1,500. Fig. 2. Diakinesis with 9 bivalents × 1,500.

The majority of the species of *Paspalum* show chromosome numbers in multiples of 10 and generally $x = 10$ is considered as the basic number for the genus. However, Forbes and Burton[10] based on their observations viewed that $X = 10$ is a derived number from some lower number, probably 5 or 6. Magoon and Manchanda[11] said that there are only a few reports of chromosome numbers that are not fitting into the series of 10, and further suggested that in the light of reported uniformity of chromosome numbers in the genus *Paspalum*, such odd numbers represent aneuploid cases rather than those based on true basic number. Davidse and Pohl[9] while reporting the chromosome number of *P. contractum* said that the number $n = 9$ in it is highly unusual for the genus and $n = 9$ represents apparently an isolated case of aneuploid reduction. The present chromosome count $2n = 18$ and $n = 9$ for *P. compactum* var. *fimbriatum* adds to the isolated case of *P. contractum*. If a few more diploids with $2n = 18$ chromosome number are discovered a rethinking of the basic number will become necessary.

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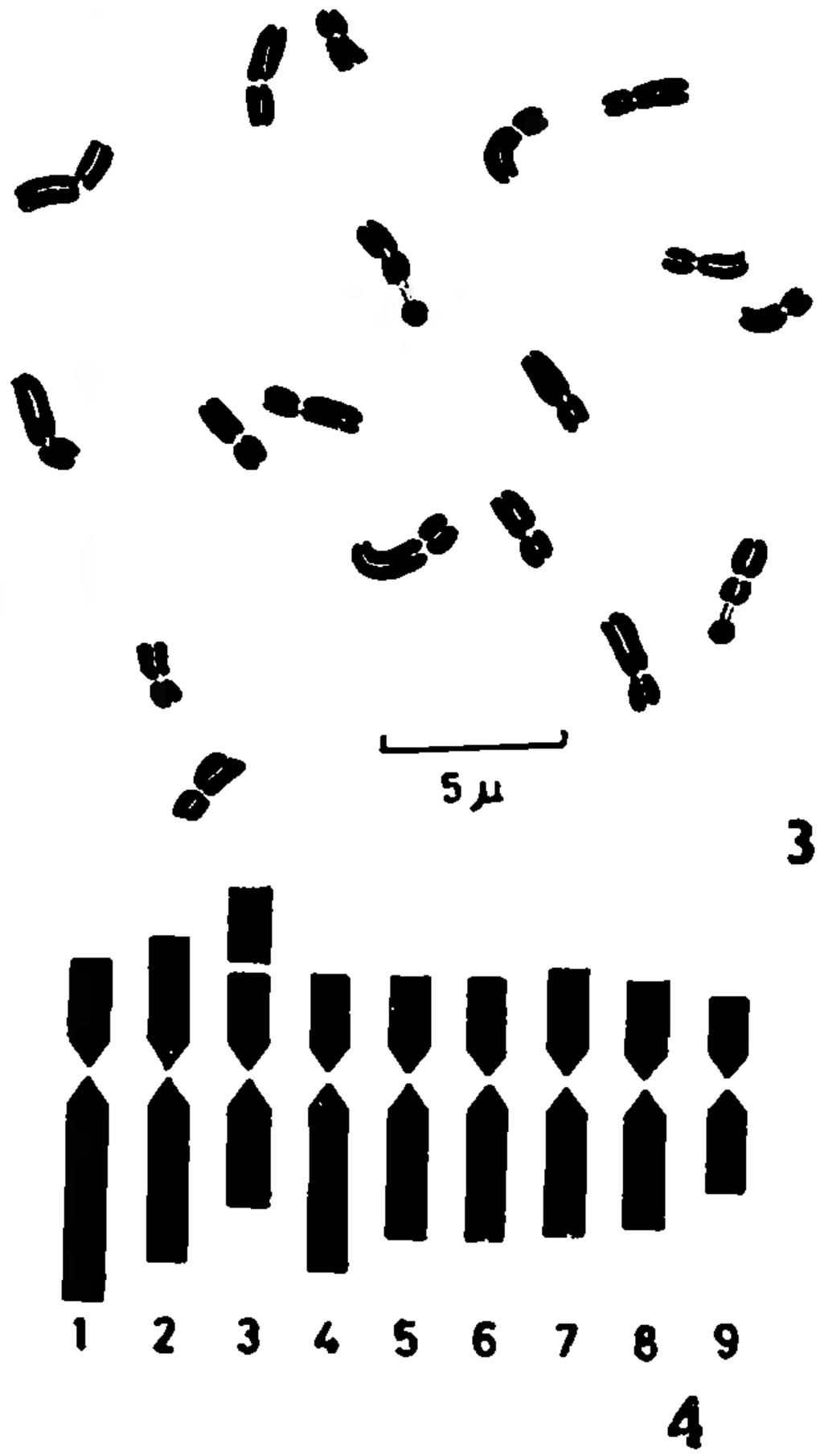

FIGS. 3 and 4. Karyotype and idiograms.

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