

Table 1 Germination of *Crotalaria* pollen in cane sugar solution and distilled water under room temperature conditions

Species	Sugar solution (0.1 M)		Distilled water		t
	Range (%)	Mean (%)	Range (%)	Mean (%)	
<i>C. sericea</i>	82.14-100	92.00 ± 1.80	75.60-94.59	86.00 ± 2.05	2.19*
<i>C. retusa</i>	92.30-100	96.03 ± 0.64	92.23-98.00	94.37 ± 0.55	1.95*
<i>C. juncea</i>	90.90-100	96.49 ± 1.06	89.65-100	94.91 ± 0.94	1.40 ^{NS}
<i>C. verrucosa</i>	91.89-100	94.45 ± 0.85	62.74-86.66	75.03 ± 2.28	7.96**

*Significant at 5%; **Highly significant; NS, not significant.

Table 2 *Crotalaria juncea* pollen tube growth in sugar solution and distilled water

Incubation time (h)	Sugar solution (0.1 M)		Distilled water		t
	Range (µm)	Mean (µm)	Range (µm)	Mean (µm)	
1	6-12	9.5 ± 0.38	4-10	7.5 ± 0.40	3.59
2	20-38	27.00 ± 0.96	6-20	12.5 ± 0.80	11.51
3	26-50	41.1 ± 1.61	12-22	17.1 ± 0.62	13.84
5	40-68	58.1 ± 2.12	22-48	31.00 ± 1.82	9.63
24	62-84	70.4 ± 1.58	24-50	32.4 ± 1.63	16.65

tube growth and development, it is sufficient for germination of pollen grains in some species, for which this method may be attempted.

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A NOTE ON THE ANEUPLOIDY IN *ARAIOSTEGIA PULCHRA* (D. DON) COPEL. AND *ASPLENIUM YOSHINAGAE* MAKINO VAR. *PLANICAULE* MORTON

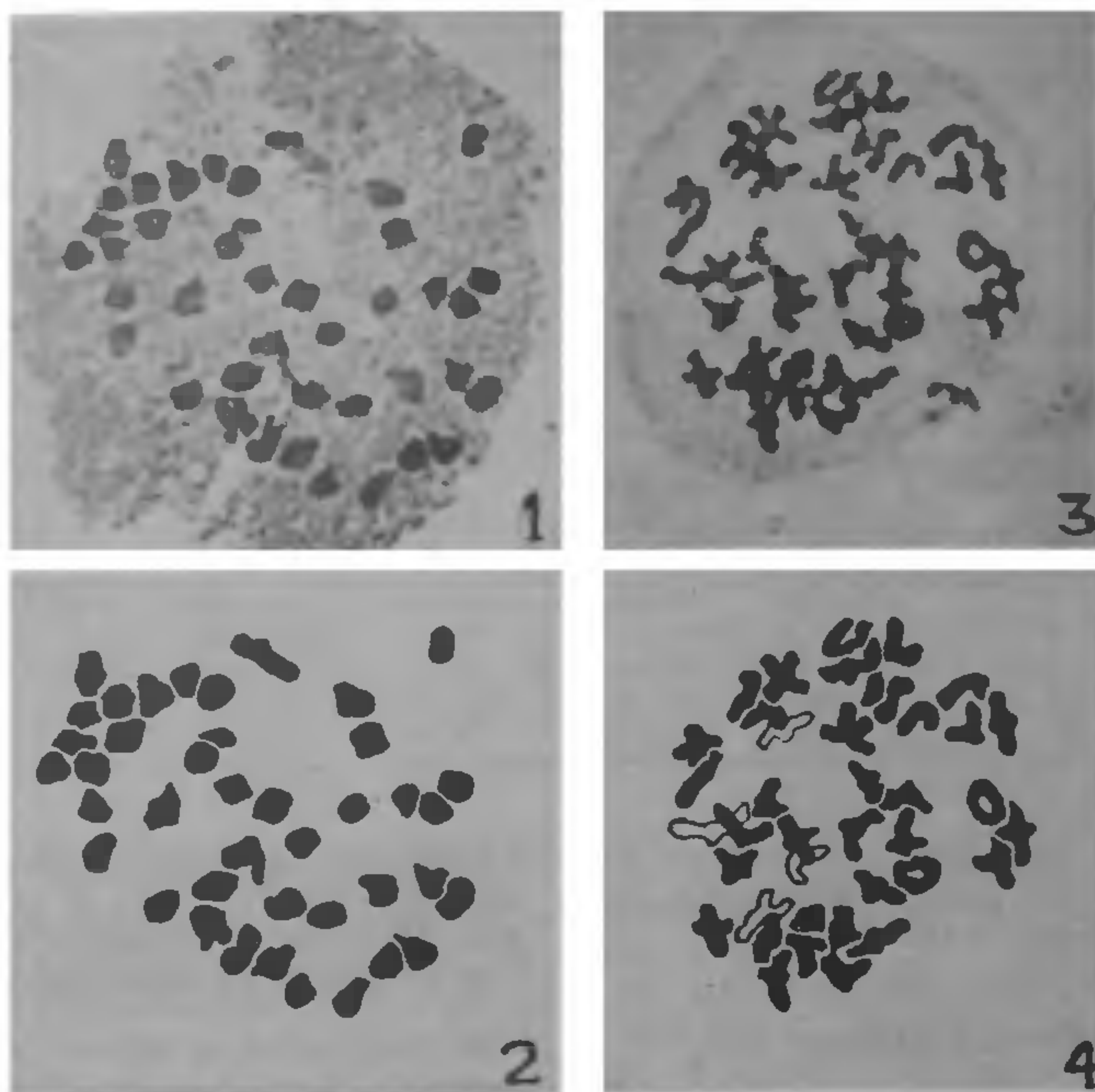
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ASPLENIUM YOSHINAGAE var. *planicaule* (Aspleniaceae) and *Araiostegia pulchra* (Davalliaceae)¹ were collected from Damthong at 2200 m in South Sikkim and Aritar at 1200 m in East Sikkim. *A. pulchra* grows on tree trunks and *A. yoshinagae* var. *planicaule* at the foot of tree trunks under moist and shady conditions. Occasionally *A. pulchra* is found on damp rocks under trees on accumulated humus. Both ferns prefer epiphytic habitat.

Fixation of young sporangia was done in 1:3 acetic acid:alcohol on the spot. Acetocarmine (2%) was used as the staining reagent in squash preparations. At least 15 cells were analysed to obtain the chromosome number.

A. pulchra showed 41 bivalents at meiosis (figures 1 and 2). The earlier reports on it, however, are²⁻⁴ $n=40$. *A. yoshinagae* var. *planicaule* exhibited 40 bivalents in spore mother cells (figures 3 and 4). This chromosome number, reported for the first time in the species, is comparable only to *A. unilaterale* Lam., where Bir⁵ reported $n=40$ in plants from East Himalayas. *A. yoshinagae* var. *planicaule* differs



Figures 1-4. Squash preparations of 1, *Araiostegia pulchra* $n=41$ ($\times 1000$) and 3, *Asplenium indicum* $n=40$ ($\times 1000$). 2 and 4, the corresponding diagrammatic representations.

taxonomically from *A. unilaterale* in having ascending rhizome, scaly stipe (fibrillose and often deciduous scales) and acute apex of pinnae. *A. unilaterale* possesses creeping rhizome, naked stipes and pinnae with obtuse apex. In *A. unilaterale* var. *udum* the pinnae have acute apex, as that of the present material⁶. Occasionally *A. yoshinagae* var. *planicaule* grows in association with *A. laciniatum* D. Don as an epiphyte on tree trunks and one is often confused for the other because of their morphological similarities.

A. laciniatum from the same habitat showed a haploid complement of $n=72$ in spore mother cells (unpublished work). Bir⁵ also reported a tetraploid of this species from East Himalayas. *A. yoshinagae* var. *planicaule* is an interesting case of probable aneuploidy showing $n=40$. The genetic system here may be in a state of flux, which may result in the evolution of a new taxon. The present number $n=40$ is unusual for *Asplenium*. Kuriachen⁷ reported $n=144$ (octoploid) in *A. indicum* from South India.

Araiostegia pulchra is a good example of aneuploidy showing $n=41$ as opposed to $n=40$, and might have been evolved from the latter. Panigrahi and Patnaik⁸ have commented that the aneuploid methods of reduction or increase in the base numbers have played a major role in the evolution of ferns.

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FUNGICIDAL ACTIVITY OF TOLCLOFOS METHYL IN GROUNDNUT PLANT AND IN SOIL ON *SCLEROTIUM ROLFSII*

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TOLCLOFOS methyl (Rizolex) is a systemic fungicide (Sumitomo, Japan (Code No. S-3349), and Rallis, India). Chemically it is *O,O*-dimethyl-*O*-(2,6-dichloro-4-methylphenyl)-phosphorothioate and belongs to the organophosphate group of chemicals. It is reported to be effective against *Sclerotium rolfsii* and *Typhula*¹ spp. and also against *Rhizoctonia solani*¹⁻³. The fungicide is also effective against *Thanatephorus cucumeris* (perfect state of *R. solani*)⁴ and *Ustilago maydis*⁵. However, there is no information on translocation and persistence of the chemical in the plant system and its persistence in soil. Hence the present investigation was taken up.

Seeds of groundnut cultivar TMV-2 were treated with the fungicide at 1 and 2 g/kg of seed as dry mix. The treated seeds were sown in pots (30 cm diameter) each containing 3 kg of sandy loam soil and watered regularly. Untreated seeds were also sown to provide control plants. The plants raised from untreated and treated seeds were collected at regular intervals and presence of the fungicide was checked by bioassay of tissue extracts⁶. The plants collected were thoroughly washed with sterile distilled water, blotted with sterile paper towels, and separated into different parts depending upon the age of the plant:

Days after germination	Plant parts
1, 3	: Whole plant
7	: Whole plant, root and shoot
14, 21, 28, 35, 42, 49 and 56	: Whole plant, root, shoot and leaves.

Five grams of plant material was ground thoroughly in a mortar with 10 ml of acetone. The ground material was filtered through cheesecloth, the filtrate collected in sterile glass vials (100 × 25 mm) and the acetone evaporated. The residue was taken up in 5 ml of sterile distilled water. This was added to 95 ml of molten potato dextrose agar and the agar was poured into petri plates (90 mm) after mixing. Tissue extracts

Table 1 Characteristics of different soils employed in persistence studies

	Red loam	Black loam	Sandy loam
Place of collection	Narakoduru (A.P.)	Agricultural College Farm, Bapatla (A.P.)	Agricultural College Farm, Bapatla (A.P.)
Previous crop	Coccinia	Groundnut	Groundnut
pH (1:2) Beckman pH meter (glass electrode) (Richards, 1954)	7.61	8.40	7.46
EC (mmho cm ⁻¹) Solubridge (Richards, 1954)	1.74	0.40	0.48
CEC (m.e./100 g soil) Neutral ammonium acetate method (Jackson, 1967)	9.40	50.00	7.60
<i>Mechanical analysis</i> (Piper, 1950)			
Sand %	64.97	43.10	84.45
Silt %	12.00	17.04	7.48
Clay %	18.00	39.86	6.94