Table 1 *Effect of sulphur dioxide (2669 ± 105 μg/m³), expressed as per cent inhibition/stimulation of growth, on some phylloplane fungi*

Species	Exposure time (min)		
	10	30	60
A. alternata (Fr.) Keissler	−9.25 ± 0.58*	−15.13 ± 0.33**	−22.68 ± 0.67**
A. flavus Link ex Fries	+2.09 ± 0.67	− 4.20 ± 0.33*	− 8.39 ± 0.33**
A. niger van Tiegham	+4.41 ± 0.58*	− 1.96 ± 0.33	−10.78 ± 0.67**
C. cladosporioides (Fresen.) de Vries	−6.05 ± 0.33	−13.64 ± 0.58**	−19.69 ± 0.88*
C. lunata (Wakker) Boedijan	−1.76 ± 0.33	− 5.29 ± 0.67*	−10.60 ± 0.67**
D. australiensis (Bugnicourt) Subram. and Jain	−3.00 ± 0.67	−10.45 ± 1.15*	−17.90 ± 0.67**
E. purpurascens Ehrenb. ex Schlecht.	+7.79 ± 0.33*	− 5.22 ± 0.33	− 7.79 ± 0.33*
F. oxysporum Schlechtendahl	+1.74 ± 0.33	− 3.05 ± 0.58*	− 7.86 ± 0.38*
P. chrysogenum Thom	−13.70 ± 0.33*	−23.52 ± 0.58*	−29.41 ± 0.33**
P. citrinum Thom	− 7.71 ± 0.58	−15.41 ± 0.33**	−19.94 ± 0.33**

All values are mean ± SE.
+, Stimulation; −, inhibition.
*t significant at $P = 0.05$; **t significant at $P = 0.01$.

culated as [Per cent stimulation/inhibition = (Difference in colony diameter (mm) of test species between control and treated/colony diameter of control) × 100].

Colony growth of all the test fungi was significantly ($P = 0.05$) inhibited on prolonged SO_2 exposure (table 1). Growth of *A. alternata, C. cladosporioides, C. lunata, D. australiensis, P. chrysogenum* and *P. citrinum* was inhibited by all three durations of exposure, and the inhibition was more significant ($P = 0.01$) for the 60 min exposure (table 1). The maximum inhibition was of *P. chrysogenum* and the minimum, *E. purpurascens*, for the longest exposure time. *A. flavus, A. niger, E. purpurascens* and *F. oxysporum* showed growth stimulation at the shortest exposure time (10 min). Per cent growth inhibition of all the test fungi increased with increasing exposure time. In general, the order of inhibitory effect of SO_2 was *P. chrysogenum > A. alternata > P. citrinum > C. cladosporioides > D. australiensis > A. niger > C. lunata > A. flavus > F. oxysporum > E. purpurascens* (table 1).

It is reported that SO_2 inactivates the sulphhydryl groups of enzymes[4]. Inhibition of acid phosphatase activity by SO_2 has been reported[5]. The increased colony growth of some of the test fungi after short exposure may be due to their resistance and ability to neutralize the toxic effects of SO_2 or because of their ability to use SO_2 as nutrient source to a certain extent.

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A NEW RECORD OF DIPLOID CYTOTYPE OF *SCHIZANDRA GRANDIFLORA* HOOK. F. & THOMS. FROM INDIA

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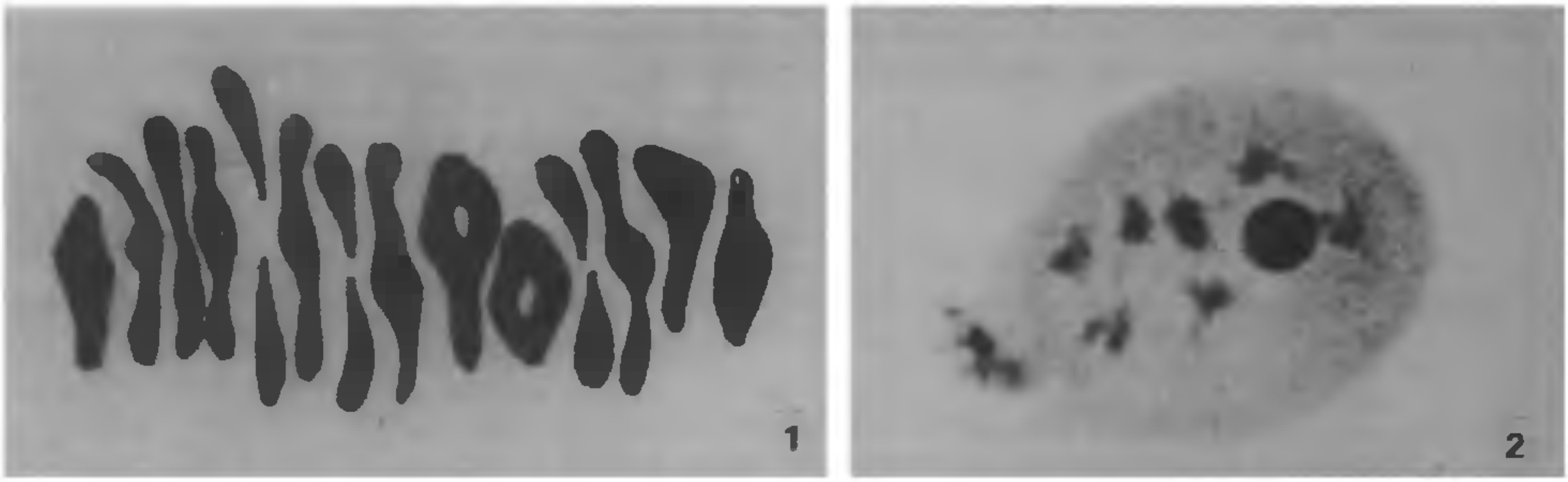
SCHIZANDRA GRANDIFLORA (family Schizandraceae), common in dense forests, is a large, glabrous, woody climber with unisexual, white, fragrant axillary flowers. Of the six species of *Schizandra* reported from India[1], *S. grandiflora* is the only species found in the Western Himalaya between 1900 and 3100 m



Figures 1 and 2. Chromosomes of *S. grandiflora*. **1**, PMC showing 14 bivalents at metaphase I (×2640). **2**, PMC showing 7 bivalents at diakinesis (×1260).

altitude. For the present studies, material was collected from different locations. Young floral buds were fixed in Carnoy's fluid for 24 h and then transferred to 90% ethyl alcohol. Meiotic preparations were made usually by squashing the developing anthers in 1% acetocarmine. Vouchers are preserved in the Herbarium, Department of Bio-Sciences, HPU, Shimla.

Cytological investigations revealed that meiosis was perfectly normal in all the individuals studied. A chromosome number of 14 bivalents at diakinesis and metaphase-I (figure 1) was obtained for the material collected from Shimla (2350 m), Theog (2350 m) and Shilaru (2500 m), while 7 bivalents were recorded at diakinesis (figure 2) and metaphase-I for the material collected from Baghi (2800 m). Normal bivalent formation with equal segregation of chromosomes has been observed in both the cytotypes (diploid and tetraploid). The average pollen fertility for the diploid is 94% and for the tetraploid 97%. There is no significant difference in the morphology and size of the pollen grains between the cytotypes.

The present count of $n=14$ agrees with the previous report[2,3] of $2n=28$. The diploid cytotype with $n=7$ has been reported for the first time from India. However, its existence in Nepal has already been reported[4].

The diploid plant is short compared to the tetraploid plants. By and large, the diploid cytotype can be distinguished in the filed by its large but thin and light-coloured leaves compared to the tetraploid cytotype.

Of the three species studied so far, all are tetraploid with $n=14$. The intraspecific diploid with $n=7$ has been recorded for *S. grandiflora* only. So the genus seems to be monobasic with $x=7$ as the base number.

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PLANT REGENERATION FROM POLYETHYLENEGLYCOL ADAPTED CALLUS OF RICE

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THE use of *in vitro* techniques akin to the selection of variants in bacterial and fungal cultures has been proposed and employed in very few higher plants[1-3]. Plant cell culture methods allow selection of variants, such as those resistant to water stress[4,5], which would have practical application in agriculture.