ON THE OCCURRENCE OF *SCLERODERMA CITRINUM* IN INDIA

During the course of our studies on the fungi in mycorrhizal association with *Pinus patula* the occurrence of *Scleroderma citrinum* in large numbers in the new pine plantations in Kodaikanal, Tamil Nadu, was observed. The fungus is described and illustrated blow. Colour terminology used is that of Kornerup and Wansher[1].

Scleroderma citrinum Pers.

Sporocarp epigeal, globose to subglobose, 3·5 cm broad and 2·5 cm high, rarely pear shaped and up to 3·5 cm high and 3·2 cm broad, sessile, deeply and widely plicate beneath and with a dense fasicle of interwoven mycelial filaments at the base. Peridium in young specimens light yellow (2A5) to yellow (2A7) and in older specimens it is pale yellow (3A3) with violet brown (11F4) patches. Peridium white in section and when dry rigid, up to 2 mm thick. At maturity peridium opens by irregular cracks at its apex. Gleba when young white and at maturity breaks down into olive brown spores. The young basidium bears 4 sterigmata (up to 2·8 μ long). Basidia clavate with a narrow stalk, 28·0–49·0 × 9·8–15·4 μ. Basidiospores globose, dark yellow brown, spinose and reticulate and 9·8–14·0 μ in diameter. The reticulation is very distinct in 10% potassium hydroxide solution.

Habitat : In large groups in the new pine plantation of *Pinus patula*, Kodaikanal, Tamil Nadu. 12–8–1978. Coll. K. Natarajan,

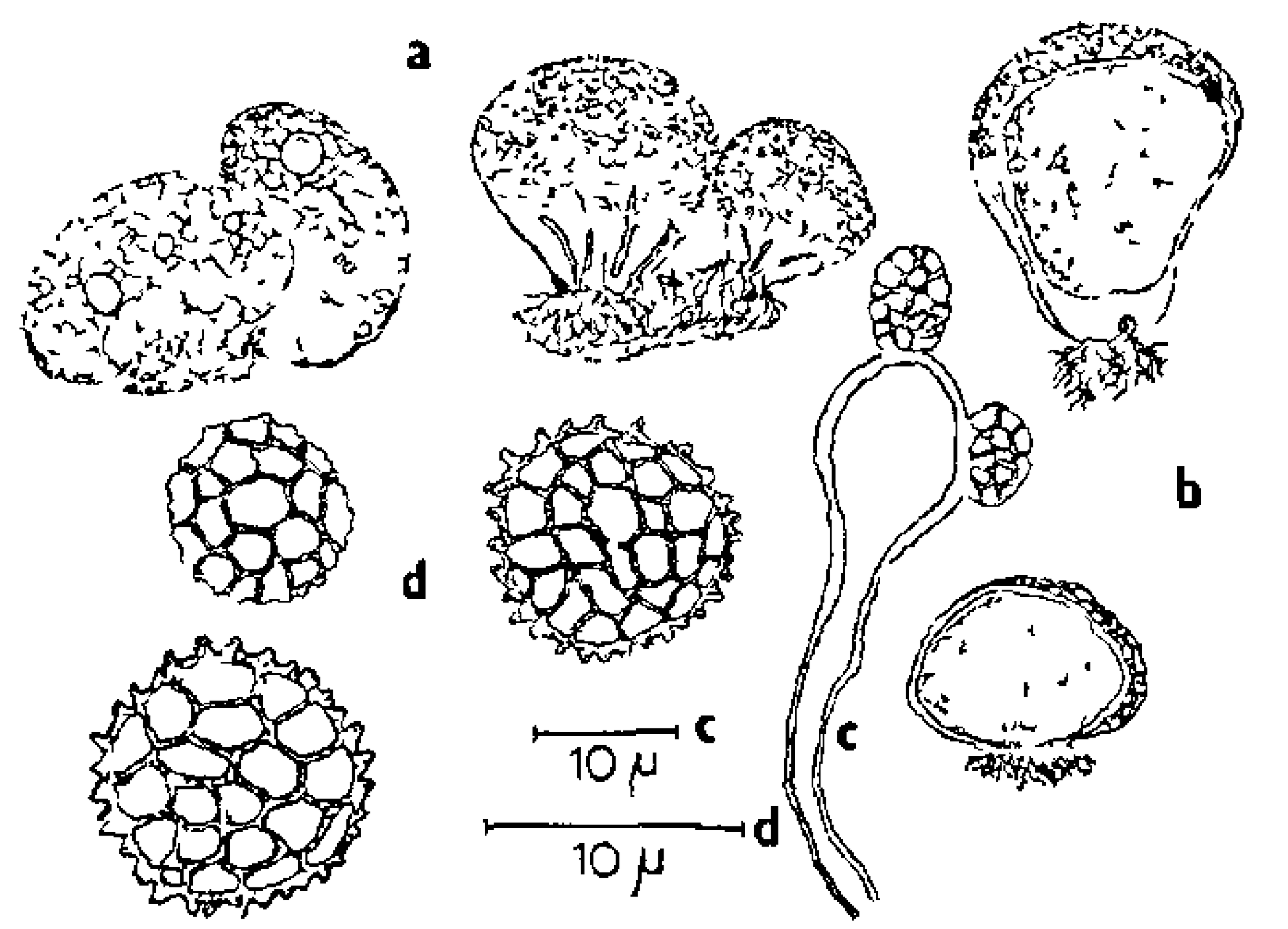


Fig. 1. (*a*) Sporocarp entire — Natural size, (*b*) Sporocarp section—Natural size; (*c*) Basidium; (*d*) Basidiospores.

S. citrinum is the most common *Scleroderma* in acid humus woodlands in Europe and North America. According to Guzman[2] this species is a facultative mycorrhiza former and has been introduced with pines in many parts of the world. The occurrence of this species in large numbers in *Pinus patula* plantations indicate that it is probably a mycorrhizal former with this plant. *S. aurantium*, which is a synonym of *S. citrinum*, has been shown to be in mycorrhizal association with many species of *Pinus*, but *Pinus patula* is not one among them[3]. *S. aurantium* has been reported from India earlier by Butler and Bisby[4] based on a collection reported as *S. vulgare* by Hennings[5]. But Sultan Ahmad[6] considered that the determination of this particular collection as *S. aurantium* is doubtful and identified it as *S. cepa*.

Thanks are due to Dr. V. Demoulin of University of Liege, Belgium, for his comments.

Centre of Advanced Study in Botany,
University of Madras,
Madras 600 005,
August 10, 1979.

K. Natarajan.
K. Kannan.

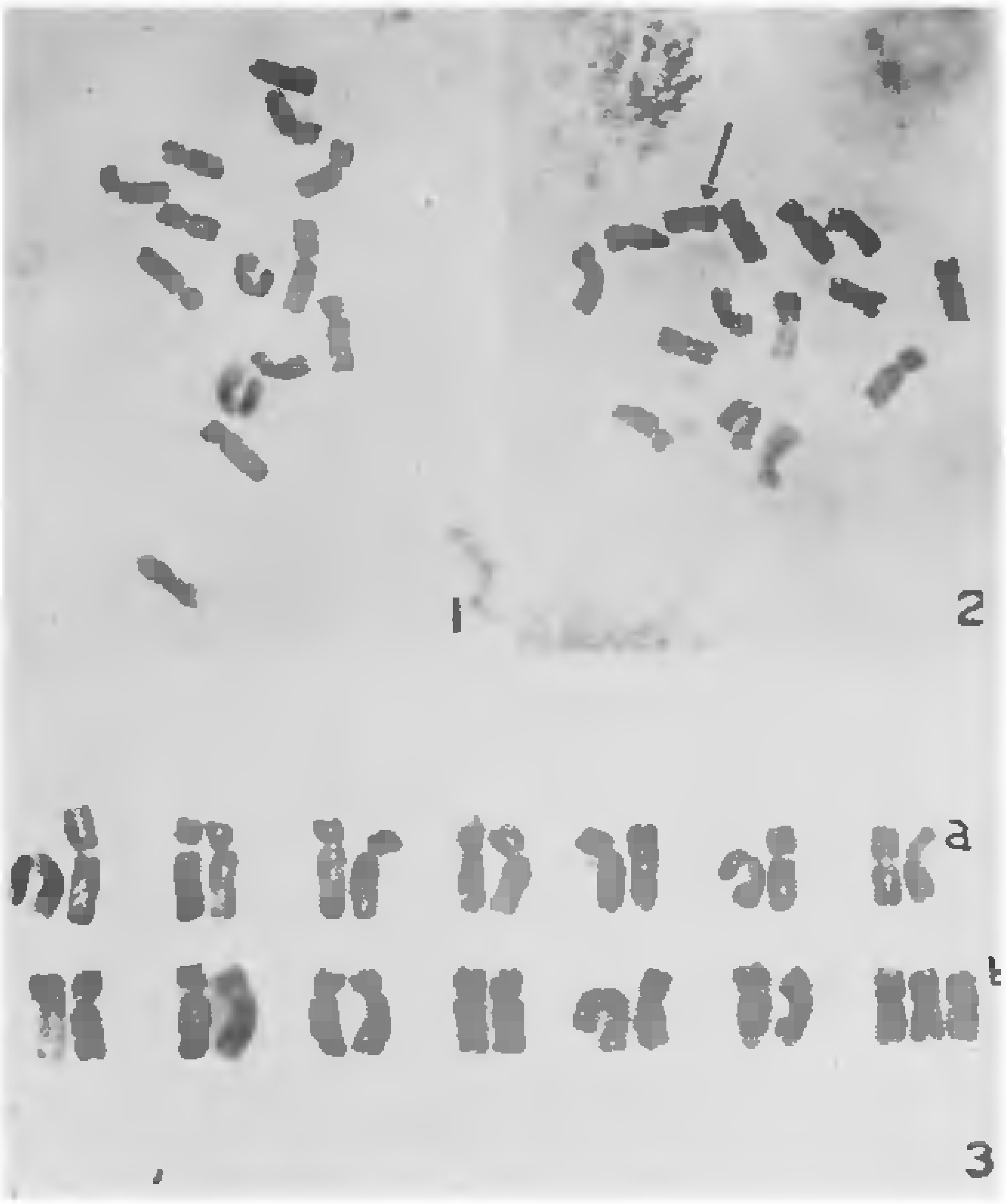
1. Kornerup, A. and Wansher, J. H., *Methuen Handbook of Colour*, Methuen and Co., Ltd., London, 1967, p. 243.
2. Guzman, G., *Darwiniana*, 1970, **16**, 329.
3. Trappe, J. M. *Bot. Rev.*, 1962, **28**, 538.
4. Butler, E. J. and Bisby, G. R., *Fungi of India*, Imp. Counc. Agr. Res., 1931, p. 237.
5. Hennings, P., *Hedwigia*, 1901, 40, 323.
6. Sultan Ahmad, *J. Indian bot. Soc.*, 1942, **21**, 283

A CASE OF TRISOMY IN *LATHYRUS ODORATUS* L.

The garden varieties of sweet pea have arisen from a single diploid ($2n = 14$) species, *Lathyrus odoratus* L. Selection of mutants and their further crossing resulted in recombination and release of variability within the dipoid stock[1].

During a systematic karyotypic study of about 10 cultivars of *Lathyrus odoratus*, a case of trisomy was discovered for the first time. The extra chromosome has been found to belong to the smallest (7th) pair. Karyotypic formulae of normal diploid ($2n = 6m + 8\,sm$) and trisomic ($2n + 1 = 1M + 6m + 8\,sm$) following Levan *et al.*[2] exactly coincide except that the extra chromosome has been found to be with median centromere (M. '*r*' index 1·0) (Figs. 1-3).

The trisomic had delayed germination and the seedling was so weak in vegetative growth that the unfavourable season ensued before any flowering could take place. The detrimental effect of extra chromosome on phenotypic development is expected of a basic diploid[3]. The absence of trisomic for any chromosome other than the seventh (smallest) pair



FIGS. 1-3. Figs. 1 and 2. Somatic complement of normal diploid ($2n = 14$) and trisomic ($2n + 1 = 15$). Arrow indicates extra chromosome, × 1,500. Fig. 3. Photo ideogram of diploid (*a*) and trisomic (*b*) × 2,100.

may lead to the supposition that there is a relatively greater tolerance for smaller chromosomes and that they are transmitted more freely than the larger ones as in the case with tomato[4].

Due to the lack of meiotic studies, it is difficult to indicate the nature of trisomy. However, there can be two possibilities. The intraspecific variation in karyotype has been noted by the present authors (unpublished data) and a few cultivars show median (M, '*r*' index 1·0) seventh pair. The extra chromosome found in the present case might have come from $n + 1$ gamete of such a cultivar. The possibility also includes some degree of outcrossing in this habitual inbreeder[1]. The other possibility of extra chromosome, being an isochromosome, can also not be ruled out, as was reported in *Avena*[5] and other genera like *Datura*, *Mathiola* and *Zea*[6].

The authors are thankful to Dr. T. N. Khoshoo for guidance and encouragement.

Cytogenetics Laboratory, National Botanical Research Institute, Lucknow 226 001, India. *August* 10, 1979.

D. OHRI.
M. A. NAZEER.
G. V. SUBRAHMANYAM.

1. Darlington, C. D., *Chromosome Botany*, George Allen and Unwin, London, 1973.
2. Levan, A., Fredga, K. and Sandberg, A. A., *Hereditas*, 1964, **52**, 201.
3. Khush, G. S., *Cytogenetics of Aneuploids*, Academic Press, Inc., N.Y. and London, 1973.
4. Rick, C. M. and Barton, D. W., *Genetics*, 1954, **39**, 640.
5. Rajhathy, T. and Fedak, G., *Can. J. Genet. Cytol.*, 1970, **12**, 358.
6. Burnham, C. R., *Discussions in Cytogenetics*, Burgess Pub. Company, Minneapolis, 1962.

COLCHICINE-INDUCED AUTOTETRAPLOIDS OF TEA [*CAMELLIA SINENSIS* (L.) O. KUNTZE]

THE occurrence of natural polyploids in Assam tea with the chromosome number ranging up to the hexaploid level has been reported earlier[1-3]. The triploid Japanese varieties screened out, exhibited thicker leaves, longer and fewer stomata and were more resistant to cold[4]. Out of 292 colchicine treated shoots, only one shoot was recovered as a total tetraploid shoot[5]. It was reported that polyploid plants were self-sterile but gave rise to triploids when pollinated with pollen from diploid plants[6,7] and that the spontaneous polyploids were exclusively triploids[8]. The induction of autotetraploidy in Assam tea by colchicine treatments was successful in our research field.

The results of all the treatments followed in the experiment with three varieties of tea (St. 449, St. 458 and St. 450) were taken separately and they are presented here.

1. *Seed treatment* : The seeds of 3 varieties of tea were treated with aqueous colchicine of concentrations ranging from 0·25 to 0·50% for a duration of 12 to 24 hr but no polyploidy could be induced. Though at the very beginning the seedlings looked healthy, some of the seedlings under different treatments died within one month. The remaining seedlings grew well.

2. *Apical and axillary bud treatment* : Young and active apical and axillary buds were treated with colchicine solutions of 0·25 to 1·0% concentrations for 24 hr and applied for 1-3 days. Cotton plugging method was employed. The survival rate varied from variety to variety. Some of the treated buds of each variety died within one week of treatment; the remaining buds grew well and developed into healthy shoots. None of the treatments was found effective in inducing polyploidy.

3. *Treatment of meristematic region* : As the above three methods failed to induce polyploidy, a