Lesser amount of neutral proteases was elaborated by *A. flavipes, C. cladosporioides* and *Penicillium* sp. and they showed a gradual increase with increase in time. However *A. flavus, A. flavipes, A. nidulans*, and *F. oxysporum* showed higher degree of alkaline proteases, whereas *A. niger* showed minimal activity.

A few fungi like *A. flavus, C. oxysporum* and *F. oxysporum* produced both alkaline and neutral proteases almost equally. Figure 1 depicts the lysis of milk protein in the Petri plate by extracellular protease produced by the fungi.

Khanmova and Esperantina[4] reported that *A. niger* was the best proteolytic enzyme producer and surpassed considerably *Penicillium olsoni* which is the most active species of this genus *Penicillium*. The present study showed that *A. niger* is the least active fungus in the production of both alkaline and neutral protease. The differential response of the same species might be due to variation in environmental parameters or the species in question may be a different physiological strain which needs further detailed investigation.

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CYTOLOGY OF A TETRASOMIC PLANT OF *CAPSICUM ANNUUM* L.

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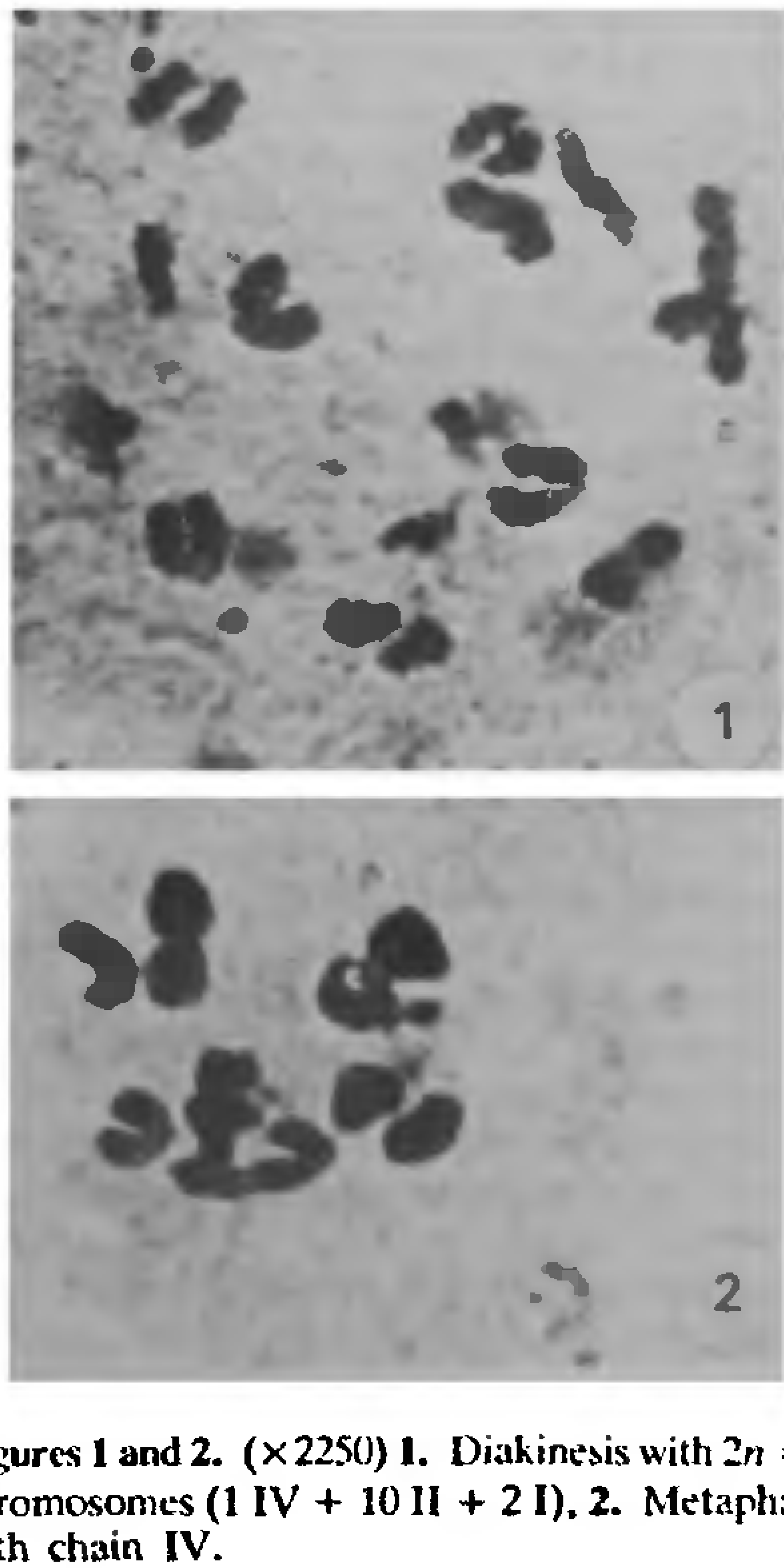
DURING the course of cytogenetic investigation of progeny of four autotriploids obtained spontaneously in intervarietal hybrid swarm, a number of cytological variants viz trisomics, tetrasomics, interchange heterozygotes, asynaptics and mosaics were encountered. The present paper gives an account on the morphology and cytology of the tetrasomic located.

The tetrasomic was late in flowering and quite distinct from the normal with increased plant height, decreased spread and number of branches. The leaves were pale green in colour and were almost double in size than those of the control. The flowers were comparatively larger with six petals and big ovary.

Cytological studies revealed the presence of 26 chromosomes ($2n + 2$) in contrast to the disomic $2n = 24$ chromosomes (figure 1). The different associations of the 4 homologous chromosomes were IV, III + I, 2 II and 1 II + 2 I but no PMC showing all the four univalents was encountered. The most frequent configuration seen in 59.38% cells was 13 II. The other configurations 1 IV + 11 II (ring, rod and Y types), 1 III + 11 II + 1 I and 12 II + 2 I were observed in 29.68%, 7.81% and 3.13% respectively (table 1, figures 2). The chiasma frequency per cell was high (22.92) when compared to that of the disomic (21.16%). During metaphase,



Figures 1 and 2. (×2250) 1. Diakinesis with $2n = 26$ chromosomes (1 IV + 10 II + 2 I). 2. Metaphase I with chain IV.

Table 1 *Frequency of chromosome associations of four homologues at diakinesis in the tetrasomic*

Total number of PMCs scored	II + II	IV	III + I	II + 2 I
128	76	38	10	4

in 33.33% of cells, 2–4 chromosomes were non-oriented on the metaphase plate, 2 being the most common occurrence. Formation of bridges and 2–12 laggards was observed during anaphase I and telophase I. Pollen fertility was low (10.67%) when compared to that of the normal (92.6%). Genic imbalance caused by tetrasomy leads to abnormal meiosis which seems to be responsible for poor fertility. Reduced fertility and marked phenotypic alteration were recorded in aneuploids of pearl millet[1] and *Trigonella*[2] also. There was no fruit formation either on open pollination, selfing or crossing.

Chromosomal deviation from the normal, resulting in nullisomics ($2n-2$) and tetrasomics ($2n+2$) had been recorded in several plants[3]. Although in *Capsicum*, multiple aneuploids[4–6] were on record, so far there are no reports on detailed cytological behaviour of the tetrasomics. Occurrence of a tetrasome in triploid progeny was reported by chennaveeraiah and Habib[7]. It can be inferred that the $2n+2$ (26) chromosome plants might have originated by the chance union of two aneuploid gametes ($n+1$ i.e. 13) or a normal and aneuploid gamete (n and $n+2$ i.e. 12 and 14) formed in the triploid parent plant.

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ASHY STEM BLIGHT OF SOYBEAN IN INDIA

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CHARCOAL rot disease of soybean caused by *Rhizoctonia bataticola* (Taub.) Butler (Pycnidial state–*Macrophomina phaseolina* (Tassi) Goid.), is an important problem in the northern plains of the country[1]. The fungus causes blight of young seedlings and attacks the root and stem bases of grown-up plants producing typical charcoal rot symptoms[1,2]. In the present communication symptoms on soybean induced by *R. bataticola* are reported.

During 1983 and 1984, some soybean cultivars grown at the IARI farm in New Delhi exhibited stem blight symptoms during September-October. The symptoms were confined to adult plants. Initially, elongated brownish lesions appeared at several points on the stem which later became densely specked with minute black sclerotia. Due to production of sclerotia, the colour of the lesion changed to grey. Similar symptoms were also noticed on the pods and 5–9% seeds obtained from such pods had sclerotia of the fungus on surface. The disease caused a premature ripening of the crop. Repeated isolations from the diseased stem tissue, pods and seed, yielded a culture of *R. bataticola* producing sclerotia only on potato dextrose agar. Samples of the blighted stem have been deposited in the HCIO, IARI, New Delhi (accession no. **37**, 194).

Ashy stem blight caused by this fungus has been reported in beans, cowpea, mustard, snapbean and urid[3] but the present report on soybean appears to be a new record. The ashy stem blight disease has been attributed to be produced as a result of infection caused by the pycnidiospores of the fungus. Luttrell and Garren[4], and Ghaffar[5] reproduced the ashy stem blight symptoms of snapbean and mustard by inoculation with pycnidiospores. Patel[6] suspected similar role of pycnidiospores in causing ashy stem blight of cowpea. We observed that the blighted soybean seedlings due to *R. bataticola*, produced numerous pycnidia during August in field as well as in pot culture. Pycnidiospores from such diseased seedlings seem to be responsible for causing subsequent infection in the crop producing ashy stem blight. This report also confirmed the