

inoculated mechanically at the earliest, i.e. prior to flowering, the seeds were fewer per pod, rather small with roughened pale-brown and uneven seed coat.

Several lots of 200–300 seeds each were collected from naturally infected pea plants of either variety from various locations. In the second case, 4–5 week old pea plants, raised in green house, were aphid-inoculated and the seeds harvested at maturity. Seed-transmission of the virus was recorded in the plants raised in next season, under insect-proof conditions. Usually a lower degree of seed-borne mosaic (20–40%) was recorded in the case of seeds from naturally infected plants than a higher rate of transmission of the virus (30–60%) in seeds from artificially infected plants.

The physical properties of the virus, determined according to the methods described by Noordam³ were as follows:

DEP 1:1,000–1:10,000; TIP 55–60°C; and LIV 3–4 days at room temp. (12–18°C). The virus was examined electron microscopically (Phillips electron microscope) by Dr L. Bos (Netherlands), from the leaf samples dried for 24 hr at 4°C over CaCl₂, after negative staining with 2% PTA, pH 6.5⁴. It had long flexuous particles of 760 nm. Serologically the virus (using fresh infected leaf sap) did not react with antisera against either potato viruses X, Y or tobacco mosaic, cucumber mosaic, pea common mosaic, bean yellow/golden mosaic viruses. But a positive (moderately strong, ++) reaction was observed only against pea seed borne mosaic virus (PSBMV).

Peas are known to suffer from a number of virus diseases including pea common mosaic and bean golden/yellow mosaic viruses^{4–7}. However, on the basis of the symptoms, seed transmission and other characteristics and serological affinity, it was identified to be a variant of PSBMV^{5,6,9}. To the best of the authors' knowledge, PSBMV has so far not been reported from India.

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A WHITE BUD ROT OF *DIANTHUS CARYOPHYLLUS*—A NEW RECORD

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DURING the course of a survey of diseases of the flowering plants at Chaubattia, heavy incidence of bud rot disease of *Dianthus caryophyllus* was observed during August 1984. The disease appeared as white mycelial growth on buds before opening of the blooms. It started from the basal bracts of the calyx and cover completely the bud within three days. The pathogen isolated and examined under microscope was identified as *Trichothecium roseum* (Persoon) Link ex Fr.

On oat meal agar medium, the colony was white in the beginning, later turning pink to orange due to heavy sporulation. Conidiophores hyaline, simple, septate and slightly swollen at the tips. Conidia borne on the tips of conidiophores acrogenously and accumulated in groups. Conidia hyaline, ovate to pear-shaped with septation and measure 12.80–19.20 × 8.00–11.20 μm. Pathogenicity was established by inoculating 7-day old culture of the pathogen on healthy buds of *D. caryophyllus*. Characteristic symptoms appeared after 4–7 days under natural conditions. The pathogen was earlier reported as parasitic

on *Pongamia glabra* Vent¹ and *Prunus bokhariensis* Royle² causing leaf spot disease.

This is the first record of the occurrence of white bud rot disease caused by *T. roseum*.

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SPONTANEOUS TRIPLOIDY IN *SOLANUM NIGRUM* L COMPLEX

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NATURAL populations of *Solanum nigrum* have three cytotypes and these are diploids ($n = 12$), tetraploids ($n = 24$) and hexaploids ($n = 36$)¹. There is a preponderance of evidence in support of participation of diploid and tetraploid species in origin and evolution of hexaploid *S. nigrum*², but there is no report in literature on natural hybridization between them. The present note reports the occurrence of triploids in natural sympatric populations of *S. villosum* Mill and *S. americanum* Mill.

Diploid and tetraploid accessions were grown sympatrically in this University botanic garden and from this, 3 sterile plants with irregular meiosis and $n = 18$ chromosomes were isolated (figure 1). At diakinesis and metaphase I, univalents, bivalents and trivalents were recorded in various frequencies. The mean chromosome association, per cell, at metaphase I, was $8.11_I + 7.23_{II} + 3.85_{III} + 0.47_{IV}$. Anaphase I was characterized by laggards, chromatin bridges and unequal distribution of chromosomes at poles.

It appears that the sterile triploids have originated by natural hybridization between *S. villosum* ($2n = 4x = 48$) and *S. americanum* ($2n = 2x = 24$). In general pattern of morphological characters, they closely resembled the synthetic triploids of the cross *S. villosum* × *S. americanum*. The synthetic hexaploids raised from these triploids were highly fertile and set fruit and seed abundantly. Meiosis was normal and was predominantly characterized by bivalents since here each chromosome has got its homologue.

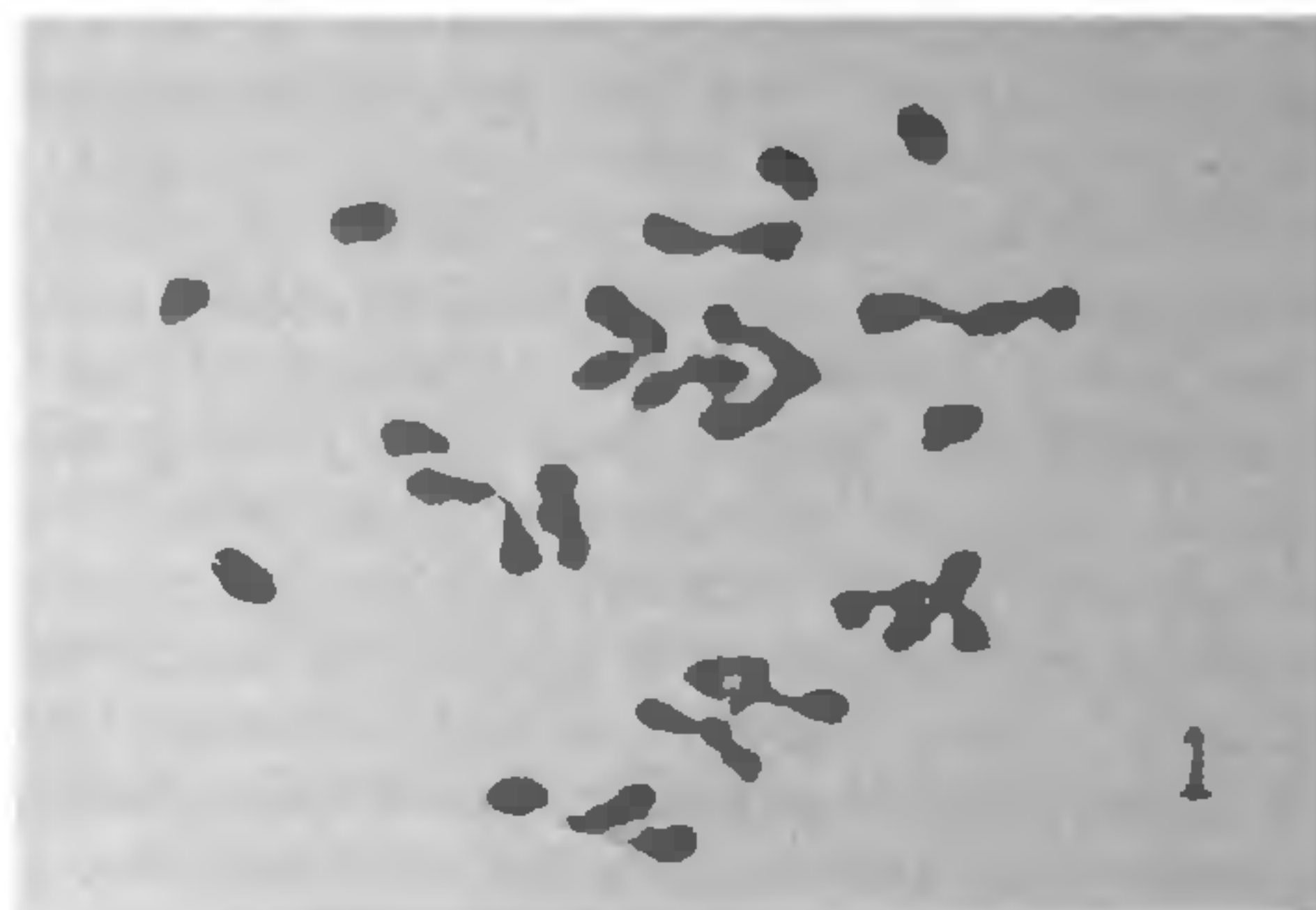


Figure 1. Meiosis in triploid plant: metaphase I showing $7_I + 5_{II} + 5_{III} + 1_{IV}$.

Occurrence of fertile hexaploids with regular meiosis indicates that the sterility in triploids is primarily due to chromosomal cause^{3,4}.

Synthetic and natural hexaploids of *S. nigrum* were identical in several morphological characters and they were readily crossable with each other producing fertile hybrids with normal meiosis.

From the aforesaid observation it is postulated that, during the evolution of polyploidy in *S. nigrum* a high degree of sympatry might have existed between its diploid and tetraploid forms resulting in hybridization and production of sterile triploids. In nature the incompatibility between the genomes in triploid hybrids most likely had induced a tendency for chromosome doubling leading to homologous pairing⁵. In the light of these it is concluded that hybridization and natural polyploidization seem to have played a significant role in origin and evolution of hexaploidy in the *Solanum nigrum* L. complex.

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