

Figure 1. Electrophoretic pattern of (a) diploid and (b) tetraploid green-gram.

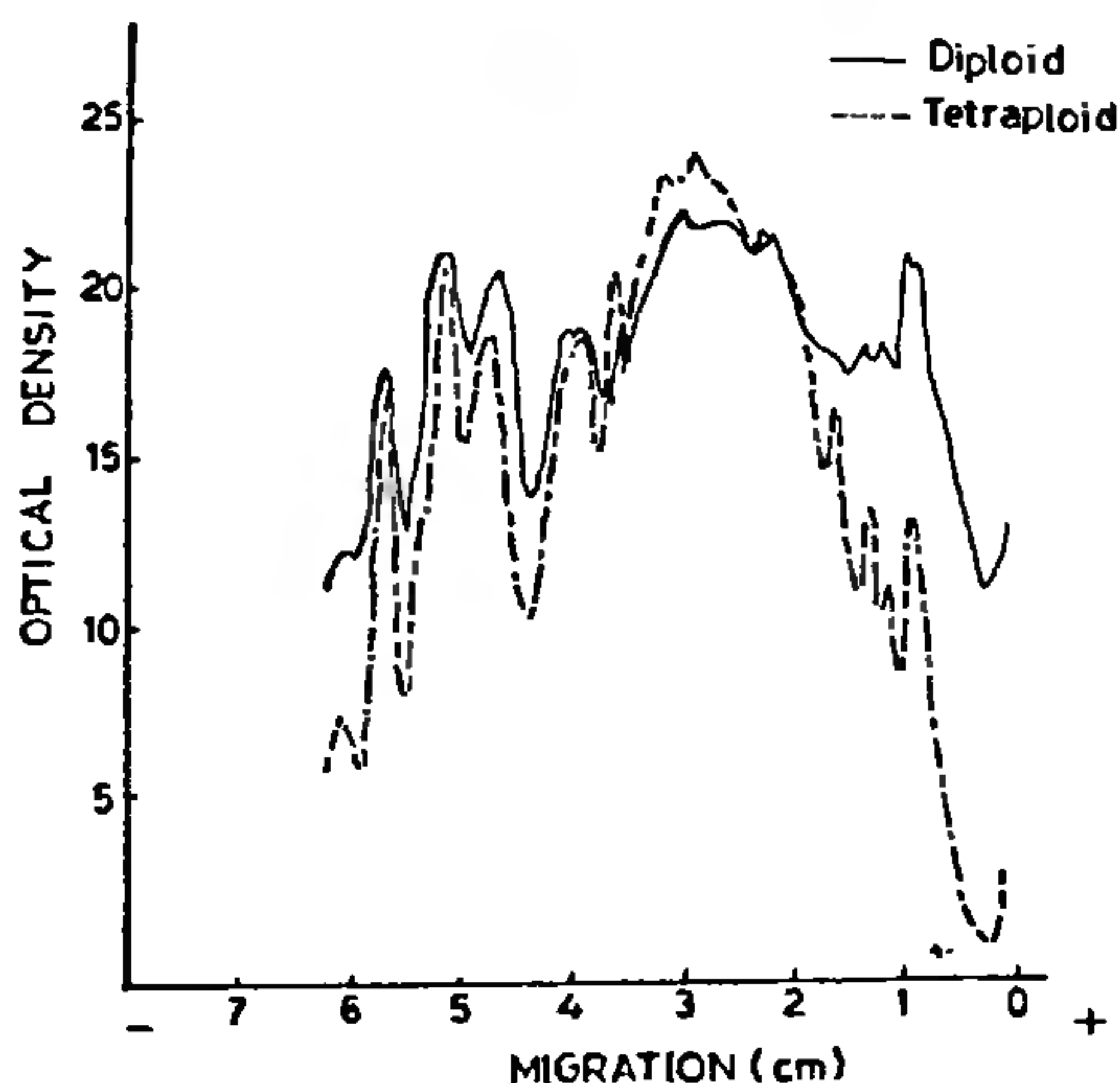


Figure 2. Densitograph of soluble protein fractions of diploid and tetraploid of green-gram.

at R_f 2.4 in the tetraploid (figures 1 and 2). The present study lends support to the opinion expressed by Ladzinsky and Hymowitz¹ that diploids and polyploids show uniform protein pattern and represent a small segment of the genetic variability. Highly uniform protein profile in polyploid plants not only permits a quick identification of their diploid progenitors but also is of practical value for plant breeders.

Auto-tetraploids have been produced in a large number of crop species for their improved quality, utility in breeding and ability to overcome self-incompatibility. Although no difference in seed protein profile was noticed, the diploid and the tetraploid exhibited distinct morphological differences in leaf, flower and seed characters. Further studies on isozyme pattern may yield more information and bring out finer differences between diploid and tetraploid.

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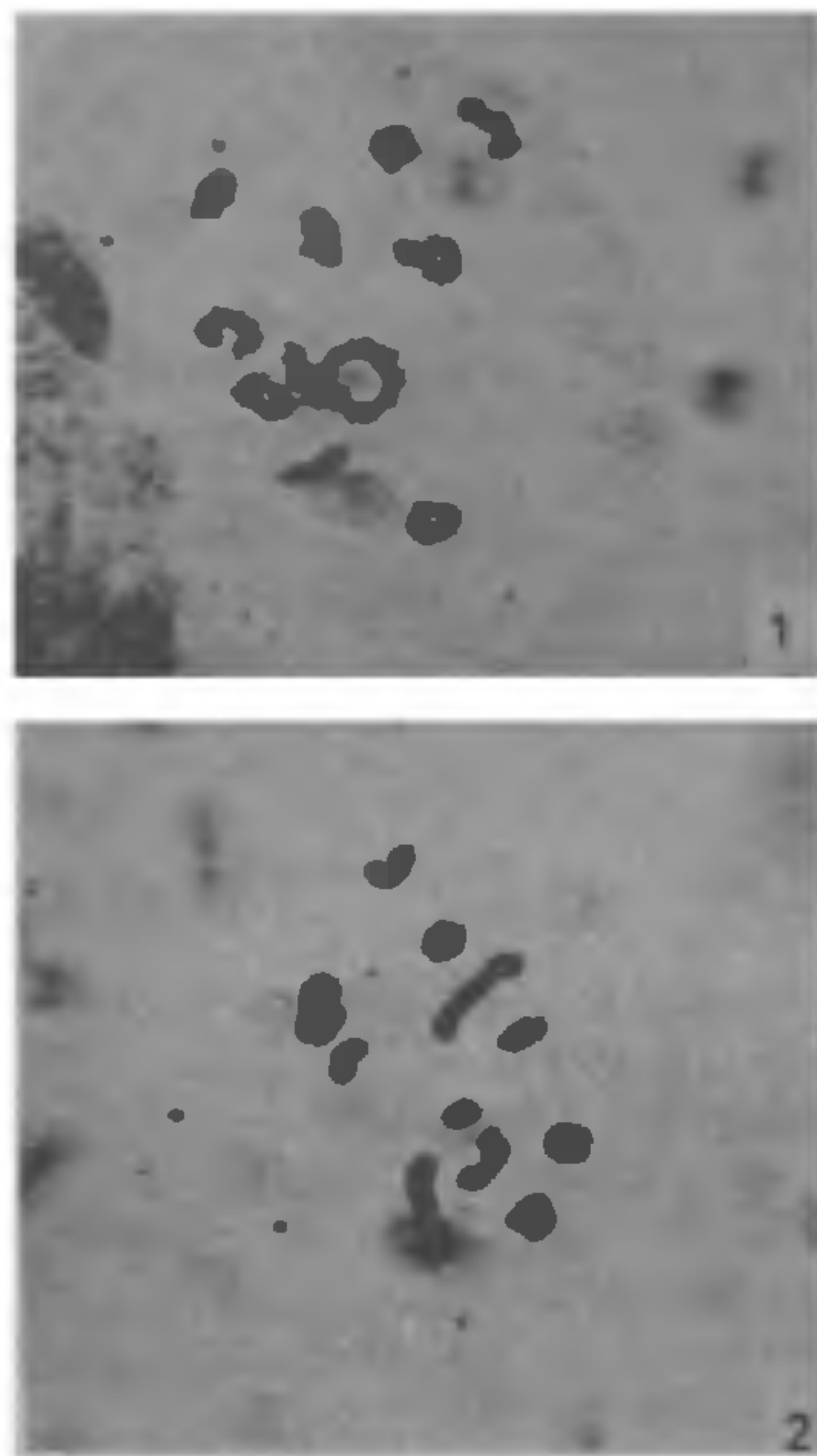
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A NOTE ON COLCHICINE-INDUCED INTERCHANGE HETEROZYGOSITY IN *CAPSICUM ANNUUM* L.

I. HARINI, N. LAKSHMI and N. S. PRAKASH
*Department of Botany, Nagarjuna University,
Nagarjunanagar 522 510, India.*

COLCHICINE, the alkaloid drug obtained from the bulbs of autumn crocus *Colchicum autumnale*, not only acts as a polyploidizing agent but also acts as a mutagenic agent¹⁻⁸. The present study confirms the mutagenic action of the drug on the genus *Capsicum*, an important cash and condiment crop of Andhra Pradesh, in addition to the earlier reported action on rye, *Sorghum*, *Collinsia* and castor beans.

To produce polyploids artificially, 10-day-old seedlings of five divergent diploid strains of *Capsicum annum* were subjected to 0.3% colchicine treatment by cotton plug method for 24 hr. In addition to polyploids, plants with interchanges fragmentation and chromosome mosaicism were recorded. The present report deals with the occurrence of an interchange heterozygote in colchicine-



Figures 1 and 2. 1. Showing 1 IV (ring) + 10 II; 2. showing 1 IV (chain) + 9 II + 2 I.

treated seedlings of $\times 180$, a stabilized hybrid variety of *C. annuum*.

In 80.4% of the PMCs, an association of the four involving four median chromosomes was encountered both at diakinesis and metaphase I (figures 1 and 2). In a few PMCs, however, either 12 bivalents or 11 bivalents, and 2 univalents or 10 bivalents, and 4 univalents were realized (table 1). Ring type of association was in general more predominant (63.2%) than the chain type (17.2%). It is therefore inferred that large chromosome segments of the different non-homologous chromosomes are involved in the present interchange, since the exchange of short chromosome segments should lead to chain formation. A study of the co-orientation pattern of the interchange multiples at metaphase I revealed that the interchanged chromosomes occurred in an adjacent orientation in a greater proportion of the PMCs (52.4%) while linear (17.2%) and alternate types (10.8%) occurred in lesser proportion. There was a slight decrease in chiasma frequency per cell in the interchange heterozygote (20.21).

Table 1 Chromosome associations in an interchange heterozygote in *Capsicum annuum* (var. $\times 180$)

Chromosome associations				Number of cells	Percentage
IV	III	II	I		
1R	—	10	—	158	63.2
—	—	11	2	12	4.8
1C	—	10	—	31	12.4
—	—	10	4	13	5.2
1C	—	9	2	12	4.8
—	—	12	—	24	9.6

R = ring; C = chain.

Chromosome disjunction at anaphase I was irregular with varying number of laggards (2–4) and bridges in 54% of the PMCs analysed. Tetrad stages manifested many variations such as pentads and hexads with 1–7 micronuclei. In contrast to the completely sterile heterozygotes reported earlier^{9–11}, the present plant was semi-fertile (52.48%) and a few fruits could be secured for progeny studies. The semi-fertility may be attributed to a consequence of change in the linkage relationships brought about by the interchange.

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