

similar to passion flower mosaic from Malaysia. On the basis of symptomatology on *P. edulis f. flavicarpa* and transmission studies the present virus disease has been labelled as Passiflora mosaic virus similar to one reported from Malaysia. Further studies on the identification of this virus by serology and electron microscopy is in progress.

The occurrence of passion flower mosaic virus is recorded for the first time in India.

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February 26, 1976.

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POLYHAPLOIDY IN MAIZE (*ZEA MAYS* L.)

POLYHAPLOIDS are haploids originating from polyploids and Kimber and Riley² listed 21 genera and 37 species where polyhaploids have been observed by various observers. In addition to their list, polyhaploidy has also been reported in *Zea mays*⁵, *Lilium longiflorum*¹, and *Sorghum alatum* Parodi⁴. Significance of polyhaploidy as an evolutionary mechanism has been repeatedly emphasized by Kimber and Riley², Magoon and Khanna³, Raven and Thompson⁶, and Randolph and Fischer⁵.

The occurrence of polyhaploids in angiosperms was first reported in maize by Randolph and Fischer⁵ who pointed out the significance of polyhaploidy from the evolutionary standpoint in that the reduced diploids are capable of establishing new forms. It would, however, appear strange that no further study to elaborate the mechanism of polyhaploidy in maize has been reported so far.

In a previous study one definite case of polyhaploidy from tetraploid maize was recorded in a *pr.* $4n \times$ multiply marked $2n$ crosses⁷. In subsequent studies we observed that freshly prepared tetraploid stocks produce parthenogenetic diploids much more frequently than the established tetraploid lines. To test this possibility we included a well established tetraploid line, Synthetic B $4n$, a freshly developed tetraploid line obtained from $2n$ -Syn. B $4n$ crosses⁸, and a tetraploid line selfed 10 generations after its synthesis, for comparison of polyhaploid-yielding frequencies. The seedling marker, *lg* (liguleless seedling), was available in all the lines and was used to isolate putative polyhaploids in *lg*, $4n \times$ *Lg*, $4n$ crosses.

Progeny from these crosses were raised in the field and the liguleless plants were selected as possible polyhaploid cases. They were crossed to diploid and

tetraploid tester lines to confirm the ploidy level. The polyhaploids would produce plump kernels when crossed to diploid ears and shrivelled kernels when crossed to tetraploids. Pollen from liguleless tetraploid plants (originating from self-contamination), on the other hand, would produce shrivelled seeds in crosses to diploids and plump seeds in tetraploid testers. The results obtained from these studies are presented in Table I. Synthetic B tetraploid failed to show a single

TABLE I

Polyhaploid frequencies in lg, 4n × Lg, 4n crosses involving different females

Female line	No. of fertilizations,	No. of liguleless plants	No. of polyhaploids
Synthetic B tetraploid	4,830	2	0
$4n$ line selfed ten generations	2,745	4	3
Freshly synthesised $4n$ line	4,216	9	7

case of polyhaploidy in 4,830 fertilizations, whereas the fresh tetraploid line produced 7 cases in 4,216 fertilizations giving a frequency of about 1 per 600. The other line which had undergone ten generations of selfing after its synthesis showed a frequency of about 1: 900.

These results clearly establish that the freshly developed tetraploid lines are more unstable and produce more parthenogenetic diploids than the older lines which had been stabilised over the years. Diploidization of tetraploid lines in maize may be expected as due to anomalies in sporogenesis and this phenomenon can be gainfully utilized to study the mechanism of polyhaploidy in maize.

The cytological behaviour of the polyhaploid plants was quite regular with 10 bivalents appearing in all the cells studied from 3 plants.

Seed set in the polyhaploid plants was normal with all the ovules developing. No cytological abnormality could be detected in the progeny of the polyhaploids.

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August 16, 1976.

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