

2. Chromosome knobs in maize types from the Sikkim region.

During the course of a cytogenetic survey of maize types cultivated in the Sikkim region some types from that area have been analyzed and reported below.

M 306: 9 knobs were observed, one each on the long arm of chromosomes 2, 4, 6 and 7, two on chromosome 8 and one each on the short arm of chromosomes 2, 3 and 9. There is a chromomere on the short arm of chromosome 1.

M 308: 7 knobs were observed, one each on the long arm of chromosomes 4 and 6 and two on chromosome 8 and one each on the short arm of chromosomes 2, 3 and 9. There is a prominent chromomere on the short arm of chromosome 1.

M 303: 6 knobs were observed, one each on the long arm of chromosomes 2, 4, 5, 6 and 7 and one on the short arm of chromosome 9. Two chromomeres are present on the short arm of chromosome 1, one on the short arm of chromosome 3 and one on the long arm of chromosome 6.

Except the knob on the short arm of chromosome 9 which is terminal, the rest are interstitial in all the three types.

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3. Increase in the frequency of plants with chromosomal interchanges in a mixed population of *Coix aquatica*.

Cytological abnormalities in two populations of *Coix aquatica* (obtained from Orissa and Madhya Pradesh) were reported earlier (MNL 39:183-184, 1965). These two populations and a third population from Andhra Pradesh were grown side by side in an experimental garden. From a random seed lot taken from the total seed harvested from open pollinated (naturally outbreeding) plants of the three populations, a mixed population was raised the next year. The process of collection of random seed lot from the bulk seed and raising the progeny the following year was repeated four times. This year 72 random plants of the mixed population were scored cytologically to see whether all the categories of cytological variations reported earlier persist in the mixed population also and with the same frequency. The variations observed presently were mostly chromosomal interchanges, a few cases of accessory chromosomes and a single case of aneuploidy. Polyploidy, even as sectorial, was not observed. The categories of cytological variations, their frequency and percentage of occurrence in the mixed population are given below.

<u>Category</u>	<u>Frequency</u>	<u>Per cent</u>
1. Normal plants	43	58.33
2. Plants with interchanges	26*	36.05*
3. Plants with accessory chromosomes	4*	5.56*
4. Plants with aneuploid chromosome number	1	1.39

While there is a good increase in the percentage of individuals with interchanges in the mixed population from 20 - 25 (earlier report) to 36.05, there is either a total disappearance or a reduction in frequency of plants with other chromosomal abnormalities when compared to the observations recorded from the original populations. In Coix aquatica it may be assumed that when all the plants in the population are provided equal chance of survival and growth in the experimental garden, it appears likely that translocations float in the population with increased frequency rather than being lost like the other chromosomal variations.

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4. Variation in pollen fertility in a population of Coix aquatica.

Pollen fertility in 40 plants of a mixed population of Coix aquatica was determined by counting stained pollen grains in acetocarmine. Pollen fertility varied between 28.12% and 95.88% in plants with normal meiosis and about three-fourths of these plants showed pollen fertility of over 50%. The plants with chromosomal interchanges, involving nucleolar and non-nucleolar chromosomes, forming higher associations of 3, 4, 5 and 6 chromosomes at meiosis have a pollen fertility ranging from 17.10% to 94.00%. Nearly one-half of these plants have more than 50% of pollen fertility. It may therefore be assumed that at least some of the interchanges do not seem to have any adverse effect on pollen fertility and the plants with interchanges show as high or as low a pollen fertility as normal plants. This is perhaps indicative that in C. aquatica pollen fertility is more a function of the genetic make-up of the individual than the effect of the chromosomal interchanges.

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5. Meiosis in autotetraploid Chionachne koenigii.

Autotetraploidy was induced in Chionachne koenigii through colchicine treatment. Root portions of seedlings (raised from seed obtained from Maharashtra) with 2-3 leaves were dipped in 0.4% aqueous solution of

*Two plants which showed the presence of interchanges as well as accessory chromosomes are included in both categories for the purpose of calculating the frequency and percentage.