

designed to study the genetics of B-chromosomes evidence for non-disjunction on the male side was observed. It was not possible to accumulate more than three B-chromosomes in a given plant. Furthermore, in this species, at pachytene the B-chromosomes were seen to be of two morphological types, one with sub-median and the other with sub-terminal centromeres. Our preliminary studies on the effects of B-chromosomes on the chiasma frequency in the A-chromosomes show that the B-chromosome with sub-median centromere has a depressing effect while the sub-terminal one has an enhancing effect on the chiasma frequency of A-chromosomes. When the two morphologically different B-chromosomes are brought together in one plant they pair with each other and in such a situation only the effect of the B-chromosome with the sub-terminal centromere is manifested with reference to the chiasma frequency of the A-chromosomes.

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2. Apomixis in Coix.

Apomixis is a common phenomenon in grasses and one way of locating it is by attempting crosses between distantly related genera. In a program aimed at understanding relationships between maize and Coix we have made several crosses between the two genera. In none of the crosses true hybrids resulted. But when the cross was made using Coix as the female parent a low frequency of diploid Coix plants was recovered. In about 900 pollinations involving two species of Coix (C. aquatica and C. lachryma-jobi) as the female parents and maize as the male parent, 13 parthenogenetic-diploid Coix plants were obtained.

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3. Spontaneous chromosomal variation in Coix aquatica.

Coix aquatica is characterised by a basic chromosome number of $n=5$ which at meiosis normally organize into five bivalents. In studies on the population dynamics of this species two populations, one from Madhya Pradesh and the other from Orissa, were located which showed high proportions of chromosomal aberrations. The

following categories of cytological variations were found:

1. occasional tetraploid sectors in the sporophytic tissues,
2. triploids,
3. trisomics,
4. translocation heterozygotes,
5. accessory chromosomes and
6. occasional inversion bridges.

The frequencies of the more common variants are given below:

Table 1
Frequencies of the different classes of chromosomal variants in two populations of Coix aquatica

Population	Triploid	Per cent aberrant plants		
		Trisomic	Interchange	Accessory Chromosomes
Madhya Pradesh	5	5	20	15
Orissa	5	-	25	10

The triploids were probably the resultants of mating between diploid gametes produced in the tetraploid sectors and of gametes from the normal plants. The trisomics would originate in the progeny of the triploids. Translocations were variable and involved sometimes up to six or eight of the ten chromosomes. The most usual situation, however, was a translocation complex of four chromosomes. The role of these variations in the evolution of Coix is under further study.

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4. Spontaneous interchange in Coix lachryma-jobi.

During a cytological study in different populations of Coix lachryma-jobi ($n=10$), occurrence of a spontaneous translocation involving four chromosomes was recorded in a single plant of a population raised from seed collected from plants growing wild in the University campus. This is the first record of the occurrence of an interchange in this species. Naturally occurring