

## II. REPORTS FROM COOPERATORS

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1. Chromosomal instability in individual plants of *Coix aquatica*.

During a cytological study of the chromosomal variants in a mixed population of *Coix aquatica* ( $n=5$ ) reported last year (MNL 41:5-6, 1967), two plants (8-2 and 9-11) showed variation in chromosome number and behavior within the same individual. The observations on these are summarized in the table below.

Plant No.	Spike No.	Chromosome No.	Nucleolar bivalents	Meiotic behavior
<u>8-2</u>	1	$n=6$ and $2n=12$	one	6ii; A few cells had an association up to 4 chromosomes (not involving nucleolar bivalent).
	2 to 4	$n=5$ and $2n=10$	one, sometimes two	5ii; A few cells had a ring or chain of 4 chromosomes involving one of the nucleolar bivalents.
	5	$n=5$ and $2n=10$	one	5ii; Usually 1-4 univalents per cell were found. Occasionally a chain of 3 chromosomes (not involving nucleolar bivalent) is found. In one cell a fragment and the resulting heteromorphic bivalent were present. 1-3 laggards were recorded at AI.
<u>9-11</u>	1 to 6	$2n=11$	one	5ii + 1i; Univalent often found attached to the nucleolus but when separate it formed a small nucleolus of its own. It often showed fold back pairing which persisted till diakinesis and MI giving at these stages the appearance of a small ring bivalent.
	7 to 11	$n=5$ and $2n=10$	one	5ii

The manner in which the material was collected was such that it is not possible to know whether this variable situation exists between different branches of the same plant or between different spikes in the same branch.

The extra bivalent, occurring in plant no. 8-2, resembles the other chromosome pairs in the complement in staining intensity and length at diakinesis. In fact, it could not be identified from the rest at this stage. The presence of an extra chromosome pair and the formation of higher associations involving up to 4 chromosomes in a proportion of cells are suggestive of a tetrasomic condition. Since the higher associations comprised chromosomes that are not equal in size, and further, such associations were also observed even in spikes showing a chromosome number of  $n=5$ , a tetrasomic nature of pairing for the higher associations is overruled. Therefore, it is believed that the occurrence of the higher associations is due to chromosomal interchanges and that the extra chromosome pair is not involved in them. The occurrence of one or two nucleolar bivalents may be explained on the assumption, based on widespread existence of chromosomal interchanges in the karyotype of this species, that small portions of the nucleolus organizing region of the nucleolar chromosome were translocated to one of the non-nucleolar chromosomes. If the region involved is adequate enough for the function, two nucleolar bivalents may be found consistently. If not, one or sometimes two bivalents may be found associated with the nucleolus. If there is no such translocation, only one nucleolar bivalent may be found. The fragment observed in one of the cells of this plant could be of localized nature and of spontaneous occurrence. The differences observed in the formation of higher associations may be taken as related to the occurrence of chiasmata at appropriate places.

In plant no. 9-11, the extra univalent occurring in 6 of the 11 spikes studied did not pair with other chromosomes in the complement. It is as long and stains as much as other chromosomes and in this it resembles the extra bivalent in plant 8-2. Whether this univalent represents a single chromosome of the extra bivalent in 8-2 remains to be determined. The fact that the extra chromosome pair in 8-2 and the extra univalent in 9-11 did not show pairing affinities with other chromosomes in the complement and further, that they occur in some portions of the plant and are absent in the rest leads to the suggestion that these may be B-type chromosomes.

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## 2. Further cases of spontaneous chromosomal variation in job's tears (Coix lachryma-jobi).

A case of spontaneous chromosomal interchange in C. lachryma-jobi ( $n=10$ ) was reported earlier (MNL 39:184-185, 1965). Further studies on this species have revealed two plants showing two other types of spontaneous chromosomal variations, viz. a) trisomy and b) desynapsis.

(a) A plant with a chromosome number of  $2n=21$  was located. This showed at diakinesis and metaphase I nine bivalents and one trivalent. The trivalent is attached to the nucleolus. Since the third chromosome in the trivalent