Addendum:

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1. Further studies on spontaneous chromosomal variation in Coix aquatica.

Spontaneous chromosomal variation was observed in certain populations of Coix aquatica from India (Maize News Letter, 1965). With a view to isolate different cytologically abnormal types the several collections of Coix aquatica from India were grown intermixed and open pollinated. Seed was collected from a male sterile plant in the field and, in the progeny raised, six plants cytologically checked were all found to be heterozygous for a translocation. Thereafter plants were grown in isolation for two generations and in the population raised from seed of the second generation 18 plants were cytologically checked which showed the following categories:

Cytological Class	Remarks	No. of Plants
2n = 10	Meiosis normal	6
2n = 15	Triploid	1
2n = 20	Tetraploid	2
2n = 13	Aneuploid with bridge and fragment at anaphase I	1
2n = 17	Aneuploid with association of three and four chromosomes at diakinesis and metaphase I	1
2n = 10	Bridge and fragment at anaphase I	2
2n = 10	Ring or chain of four chromosomes at diakinesis and metaphase I	3
2n = 10	Ring or chain of four chromosomes at diakinesis and metaphase I; bridge and fragment at anaphase I	1
2n = 10	Desynaptic; eight to ten univalents at diakinesis and metaphase I	1
	Total	18

The progeny consists of plants with 10, 13, 15, 17 and 20 chromosomes as somatic number. Plants with the aneuploid numbers (13 and 17) and the desynaptic plant were completely sterile and did not set seed. The rest were partly fertile. The plants with 2n =10 (desynaptic) and 2n = 13 were dwarf, and had a bushy habit with narrow, short, thick, and dark green leaves. The plant with 2n = 13 had aborted ovaries also. Plants with 2n = 15, 2n = 17 and 2n = 20 all showed the gigas characters usually associated with polyploidy. From the occurrence of chromosome numbers varying from 10 to 20 in this progeny it appears that in Coix aquatica gametes with n, 2n and intermediate numbers as well function successfully in fertilization.

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2. Meiosis in a spontaneous tetraploid of Coix aquatica.

Two spontaneous tetraploids with 2n = 20 were located in the progeny of a population of Coix aquatica known to contain plants heterozygous for translocations (See this News Letter: Further studies on spontaneous chromosomal variation in Coix aquatica). Chromosome pairing, in one of the two plants, was studied at metaphase I in 40 nuclei. In addition to bivalents, trivalents and quadrivalents, associations of five, six and eight chromosomes were present. Univalents were also observed. The mean frequency of chromosome pairing was 0.05_{VIII}, 0.2_{VI}, 0.075_{V}, 1.6_{IV}, 0.4_{III}, 4.9_{II}, 0.625_{I}. In only one case two associations of six chromosomes (one ring and one chain of six) were observed in a cell; otherwise, as at diakinesis, only one association of five or more chromosomes occurred per cell. Probably during open pollination of plants heterozygous for translocations fusion of two gametes with 2n chromosome number gave rise to this tetraploid.

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3. Further studies on apomixis in Coix aquatica.

In last year's News Letter (1965) Venkateswarlu and Chaganti reported apomixis in Coix from attempted crosses between maize and Coix. The following additional observations have been made in this regard. In Coix aquatica it has been observed that at the upper nodes on a culm both male and female flowers are produced while at the lower nodes, down from the fifth or sixth node, only female flowers are produced which are suspected to set apomictic seed. Embryo sacs were studied in squash preparations according to the method of Bradley (1948) from these flowers. Preliminary observations revealed occurrence of two to three embryo sacs per ovule all of which were four nucleate. This is suggestive of the occurrence of apomixis in Coix aquatica.

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