

In order to study the phenotypic effects of these chromosomes on maize, measurements were made on ten morphological characters (plant height, number of tillers, number of leaves, leaf length, leaf width, leaf length/leaf width, number of days to silking, number of ear shoots, number of days to anthesis, and length of the central spike) in the back-cross progenies of the addition monosomics and means for 20- and 21-chromosome plants compared. In the case of chromosome 5, the 21-chromosome plants were significantly shorter, had shorter and narrower leaves and their leaf length/leaf width ratio was higher compared to the 20-chromosome plants. In the case of chromosome 11, the 21-chromosome plants were also significantly shorter, had narrower leaves, and exhibited a higher leaf length/leaf width ratio compared to the 20-chromosome plants. They were also later in silking. It seems quite likely that all the observed effects are the consequence of aneuploidy rather than due to specific genes residing on the extra chromosomes.

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13. Chromosome synapsis in an interspecific *Tripsacum* hybrid.

A hybrid between *T. floridanum* Simm., and *T. dactyloides* L., was produced by one of us (W.C.G.) and its cytology with reference to pachytene synapsis has been studied in order to understand the chromosomal relationships of the two species. At pachytene the chromosomes of the two species showed good synapsis for most of their lengths. However, the hybrid was found to be heterozygous for the following differences:

(1) a duplication of 3.5 microns on the short arm of chromosome 7, about 3 microns removed from the proximal end; (2) a duplication of about three microns on the nucleolar arm of the nucleolus organizing chromosome immediately following the nucleolus organizer; (3) a terminal knob on chromosome 12. Besides the above, several other differences were found in the synaptic relationships. They are: (1) an intercalary unpaired region in the short arm of chromosome 1 about three microns in extent and about 3.6 microns removed from the distal end; (2) variable (total to none) failure in the long arm of chromosome 15; (3) fusion of the terminal ends of the two arms of chromosome 7 and the nucleolus organizer chromosome giving "ring shaped" bivalents at pachytene.

Diakinesis pairing was normal and 18 bivalents were always formed. Metaphase was extremely clumped and there was some bivalent lagging at anaphase.

From the above description it can easily be seen that there are no major differences between the karyotypes of the two species. Except for the two small duplications the chromosomes of the two species are more or less identical in their morphology. The present data support other unpublished evidence that the two species are closely related.

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