

the centromere and the centromere of the fractured chromosome sticking to the centromere of a maize bivalent (non-homologous centromere association), or an acentric fragment which would be lost in the next generation. A large number of cells examined at diakinesis and metaphase I showed the fragment appearing separately from the rest of the bivalents and at anaphase I it showed a tendency to divide with the two sister chromatids attached by a "fiber."

R. V. Tantravahi
P. Chandravadana
W. C. Galinat

10. Comparative studies of American Maydeae and the Andropogoneae:
III Morphology of the pachytene chromosomes of *Manisuris cylindrica*
($2n = 18$).

The cytology of *Manisuris cylindrica* is of special interest in our cytological comparisons of the Andropogoneae to their close relatives in the American Maydeae because of the speculations that *Manisuris* is both one parent of *Tripsacum* and the evolutionary link connecting their respective tribes.

From about 250 observations made on individual *Manisuris* chromosomes at pachytene, it was possible to identify each of the nine members of the complement by their relative lengths and arm ratios (see Table). Due to poor spreading, not all chromosomes could be identified individually in any single cell.

The chromosomes are knobless. The position of their centromeres is median to submedian except for chromosomes 3 and 8 in which it is subterminal. The centromeres are oval achromatic regions with deeply stained heterochromatic areas on either side, as in *Coelorachis* and *Tripsacum*. *Manisuris* ($n = 9$) has half of the number of chromosomes and, on the average, shorter chromosomes than those of the other two genera ($n = 18$).

The nucleolar chromosome is assigned the 8th position. The organizing body itself is subterminal in the short arm as in *Coelorachis* and maize but not in the species of *Tripsacum* studied so far.

Morphology of the pachytene chromosomes of Manisuris
cylindrica ($2n = 18$)

Chromosome No.	Long arm (microns)	Short arm (microns)	Total length (microns)	Arm ratio
1	26.3	19.8	47.9	1.4
2	21.6	16.6	39.6	1.3
3	23.4	9.4	38.6	2.5
4	18.4	13.0	33.1	1.4
5	17.3	9.4	28.1	1.9
6	15.1	10.8	27.4	1.5
7	14.4	10.8	27.0	1.4
8*	15.8	10.8	21.9	3.5
9	10.1	7.2	18.4	1.4

*Nucleolus organizing chromosome.

P. Chandravadana
W. C. Galinat

11. Comparative studies of American Maydeae and the Andropogoneae: IV
Morphology of the pachytene chromosomes of *Coelorachis racemosa*
($2n = 36$).

The basic chromosome number in Coelorachis is 18, the same as the genus Tripsacum. Meiosis has been found to be regular, 18 bivalents being formed in almost all cells. Occasionally there are cells with 17 bivalents and 2 univalents. Extensive studies of chromosomes at the pachytene stage of meiosis in pollen mother cells have been made.

Most of the Coelorachis chromosomes can be identified by their relative lengths and differences in arm ratios (see Table 1). In cases where their lengths and arm ratios are similar, they could be distinguished by comparing them together in the same cell.

The general range in chromosome lengths and arm ratios is similar to that of some species of Tripsacum.