suspected interchange leading to the altered morphology of the Su^d chromosome. An obvious recourse is to analyze the entire chromosome complement in this material and compare the data obtained with that of Longley (in Rhoades, 1950) for each of the 10 corn chromosomes.

Preliminary studies on these lines indicate that chromosome 4 remains morphologically unaltered. The possibilities of the Tripsacum chromosome having equal, if not greater, synaptic affinities with chromosomes other than 4 of corn, therefore, have to be considered. In at least two of the nuclei observed at pachytene, in which some of the corn chromosomes could also be identified, chromosome 8 shows an arm ratio of 4.5 against the expected 3.2 while the other chromosomes correspond fairly well with the data of Longley. Detailed studies to verify the possible implications of the variation are in progress.

It may be of additional interest to mention that consistent with the otherwise regular course of meiosis, these Su^d Su^d plants yielded 100% Su kernels when backcrossed with the recessive female parent both in the present and the preceding generations.

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9. Meiosis in some addition disomic corn-Tripsacum hybrid derivatives carrying the Su^d chromosome.

The source of the cytological materials for this report is the same as that referred to previously in items 7 and 8.

In a large majority of the pollen mother cells, the 22 chromosomes behave normally at meiosis and yield functional spores with 11 chromosomes each. In these, the two extra chromosomes undergo regular synapsis in prophase I and show normal disjunction at anaphase I and anaphase II. However, in a low percentage (about 5%) of cells, the Su^d chromosomes deviate from the normal in the course of their meiotic behavior as outlined below:

(a) Occurrence as univalents at diakinesis and metaphase I, which probably is due to ineffectual synapsis at pachytene (pairing not followed by chiasma formation) between one of the Tripsacum chromosomes and a pair of corn chromosomes;

(b) Occurrence of higher associations at diakinesis (types 7, 11 & 17);

(c) Precocious second meiotic division of the chromosomes at metaphase I;

(d) Unequal segregation (3:1 half-chromosomes or chromatids) at anaphase I;

(e) Occurrence of chromatin bridges at anaphase I with a chromatin 'knot' on the equatorial plate (arrested terminalization?) involving one of the corn bivalents and independent of the Tripsacum chromosomes, and

(f) Probable deletion-duplication in the corn chromosome pair involved in the bridge formation.

Any or all of the above cytological phenomena would alter the constitution, chromosomal as well as genetic, of the resultant microspores. Considering those listed from (a) to (d), three microspore types, i.e., with none, one or two $\underline{Su}^d$ chromosomes could be expected. Assuming a similar meiotic behavior in megasporogenesis, the functional egg could belong to one of the three nuclear phenotypes. It appears fusion between male and female gametes, each carrying more than one of the $\underline{Su}^d$ chromosomes, is eliminated as is to be inferred from the absence, so far as is known, of plants with 3 or 4 extra chromosomes in the derived progeny.

The transmission frequencies for the $\underline{Su}^d$ allele in the different test crosses made during 1966 and 1967 are listed in Table 1. While in some the observed data agree with the expected, in certain others they are not in agreement. The variable rates from identical crosses probably are related to the meiotic phenomena (a) to (d) and the consequences of those listed under (e) and (f) are not yet understood.

Table 1

Transmission frequencies of the $\underline{Su}^d$ allele in the different test crosses of addition disomic corn-Tripsacum hybrid derivatives

Year	Plant No. and cross	Observed $\underline{Su}^d$ kernels (Per cent)
1966	66-1026 : Selfed . . .	100
	66-1026-2 X $\underline{su}$ $\underline{gl}_3$ . . .	100
	66-1026-4 X $\underline{su}$ $\underline{gl}_3$ . . .	100
	$\underline{su}$ $\underline{gl}_3$ X 1026-5 . . .	99
	$\underline{su}$ $\underline{gl}_3$ X 1027 . . .	96
1967	$\underline{su}$ $\underline{bm}_3$ X 248 . . .	97
	$\underline{su}$ $\underline{bm}_3$ X 251 . . .	75
	Plant row numbers 1026, 1027 for 1966 and 248, 251 for 1967 have the same source as 67-258 & 259.	

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10. Emergence of "Pseudo-substitution" stocks of corn carrying the $\underline{Su}^d$ allele derived from Tripsacum.

Among the selfed progeny of the 20+1 addition monosomics of corn marked by the phenotypic expression of the dominant $\underline{Su}^d$ allele of Tripsacum, certain $\underline{Su}^d$ plants with $\underline{2n}$=20 chromosomes were isolated by cytological studies