

of the tripsacum chromosome is about 70% of the short arm of corn II, linkage values other than those obtaining in corn might be expected, although the order of sequence of the common loci could be the same.

Studies on the Lg gl plants have not yielded any meaningful results. The interchanged Tripsacum chromosome in this case had the terminal knob, as expected, and showed inside pairing, illegitimate pairing as well as nonhomologous associations to variable degrees in each cell where it could be identified. The inconsistency in its behaviour at pachytene is attributable to the presence of a sufficiently large segment of corn in an intercalary position. It appears that a small portion proximal to the terminal knob, the region adjacent to the centromere, and the short arm represent the original segments of the tripsacum chromosome, while a greater part of the long arm represents the corresponding intercalary segment of the normal corn II. Intercrosses of the lg Gl and Lg gl plants, which are under study, might yield some information on this aspect.

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11. The discovery of the booster locus (b) on Chromosome 9 of Tripsacum dactyloides.

In the F₂ segregants from a heterozygous substitution for the corn-tripsacum interchange, homeologous to corn Chromosome IIS, the phenotype of recessive b appeared in the derived homozygotes for the interchange. As the corn marker stock contained only dominant B (lg₁ gl₂ B v₄), it is apparent that the recessive b allele is contributed by the tripsacum segment along with linked dominants (Lg₁ Gl₂). The data are as follows:

F₂ for a C-T heterozygous substitution for the homeolog to corn Chromosome II S.

Color	Green	Purple	Purple
Phenotype	<u>Lg Gl b</u>	<u>Lg Gl B</u>	<u>lg gl B</u>
Constitution of) Chromosome II)	C ^T C ^T	C ^T C	C C
No. of plants) observed)	9	30	11

After observing that only the homozygous substitution plants for the C-T interchange were green (b) in the above F_2 (69-294 to 300), it was realized that all previously isolated homozygous substitutions for this interchange C-T chromosome were also b.

The discovery of the b locus on chromosome 9 of T. dactyloides increases the number of loci held in common with the short arm of corn II to six.

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12. Multiple homeologies of chromosome 9 of *Tripsacum dactyloides*.

In some of the microsporocytes from 20+2 Lg Gl plants, chromosome 9 of T. dactyloides is seen to be occasionally associated at pachytene with corn chromosome X in addition to its association with corn II S. Sometimes, the otherwise homomorphic pair of this extra chromosome is found to be deficient for a greater part of its long arm including the terminal knob and the corresponding segment is found attached, as a univalent, to the short arm of corn X. Less frequently, the distal knobbed univalent portions of both these pairs also show homologous pairing in these regions, and in related stocks the terminal knob of tripsacum 9 is found in the short arm of corn X. The breakpoints for these interchanges, which seem to be confined to a few nuclei, are estimated to be in the proximal half of the long arm of the tripsacum chromosome and in the distal portion of the short arm of corn X. Spontaneous breakage (fragmentation) and reunion is ruled out because of the somewhat regular, but low, frequency with which such configurations appear among the pachytene nuclei. Further, identical pachytene associations and altered chromosome types have been observed in the Lg Gl homeolog extracted independently from T. floridanum (vide item 17). From these observations it seems reasonable to assume that there exist some unidentified homeologies between tripsacum chromosome 9 and corn X, in addition to its already known affinities to the short arm of corn II, and that the alterations in the form of these chromosomes is not due merely to breakage and reunion of the concerned segments.