

the original Tr7 and Tr13. When only one of the two Tripsacum chromosomes was knobbed, it could terminate either the longer or the shorter one, according to independent assortment of these reciprocal alterations with their standard counterparts.

It is not known how much, if any, chromatin interchange took place accompanying the knob transfer nor into which arm of Tr7 the knob was transferred. It might be possible to obtain information on this in the heteromorphic bivalent condition now being developed by crossing the old standard Su^d (20+2) line of Tr7 with its altered Tr7+K as well as the old standard Gl₃^f (20+2) line of Tr13 with its altered (knobless) Tr13-K.

Studies of interchanges (translocations) between different Tripsacum chromosomes that are partial homoeologs to the definitively important fourth chromosome of maize and teosinte are important in uncovering the course of evolutionary differentiation in the chromosomes of the American Maydeae.

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6. Results of crossing annual and perennial teosinte with ig/Ig maize.

Pollinations were made on Kermicle's stock of ig/Ig W-23 maize with three varieties of annual and perennial teosinte in an attempt to recover androgenetic monoploids of both annual teosinte and "diploids" (polyhaploids) from tetraploid perennial teosinte.

Studies of meiosis in haploid teosinte have not been reported. Perennial teosinte is generally considered as an autotetraploid, although it is questionable if it originated by chromosome doubling from one of the present day annual teosintes. If a "diploid" can be obtained from the perennial teosinte, one can observe if it will still remain perennial and if its cytological behavior reflects any genome differentiation.

The kernels from these pollinations were classified as follows:
(1) those showing aleurone color at the crown of the kernel or at the scutellum and embryo axis; (2) those that are shrivelled (defective) and (3) those with no obvious color (Table).

Variety of Teosinte	No. of Kernels with Colored Scutellum	No. of Shrivelled (Defective) Kernels	No. of Kernels with No Scutellum Color	Total No. of Kernels	% Kernels with No Scutellum Color
Guatemala 51764	907	40	16	963	1.66
Nobogame	1,011	31	23	1,065	2.16
Chalco 62-394	371	30	9	410	2.19
Perennial	690	62	30	782	3.84

The anthocyanin pigmentation is produced by the R^{nj} factor in the maize parent. All of the kernels showing aleurone color and/or scutellum color probably represent maize-teosinte hybrids. The defective kernels might be due to abnormalities in endosperm development associated with the *ig* gene. At least some of the colorless kernels probably contain androgenetic teosinte embryos. Chromosome numbers from root tips will be checked before transplanting to the field in June.

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7. Preliminary studies on the inheritance of abscission layer development in Zea.

A disarticulation of the maize cob requires the transfer of genetic control of abscission in two areas. (1) Abscission through the rind which extends along the interface between the beak (roof) of the cupule with the glume cushion from above, angling upward to the pith. (2) Abscission through the pith at a level adjacent to the deepest indentation of the cupule. This second area of pith abscission is variable in expression, developing sometimes as a tear at these morphologically predetermined points of weakness. The tear may quickly heal leaving only a trace-like band extending across the pith or it may open into a gap usually bound by abscission layers.