

Some backcrosses made with  $F_1$  pollen in J cytoplasm have failed to segregate sterile plants. Pollen abortion in these crosses may occur following the four-spore stage. The only evidence bearing on this possibility is that these tassels have had a trace to 50 percent aborted pollen grains at time of shed.

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1. Synapsis and crossing over in plants hyperploid for *Tripsacum* chromosome material.

Unexpectedly high trivalent frequencies have been found in certain 21 chromosome stocks containing a pair of *Zea-Tripsacum* interchange chromosomes. The constitutions of these plants have been described in detail elsewhere (Maguire 1961, Exp. Cell Res. 24:21-36). The chiasma frequencies inferred from these trivalents have been such as to suggest that crossover frequency (between homologous corn segments) was increased from an expected 60% (30 crossover units) to close to 100% in the distal half of the short arm of chromosome 2 in this material. Stocks of appropriate genetic constitution for simultaneous tests of recombination frequencies in the  $ws_3$ ,  $lg_1$ ,  $gl_2$  region and parental trivalent frequencies have been constructed, and data should be available for analysis during the 1962 season.

In addition material containing these interchange chromosomes was irradiated with the hope of recovering new chromosomal constitutions in which synapsis, chiasma frequency and recombination frequency can be studied. Two such new constitutions are currently being cytologically examined. Other new constitutions are available this season from rare crossovers between corn and *Tripsacum* segments in 20 chromosome plants followed by backcrosses to 21 chromosome plants. It is thought that a series of types of constitution will provide quantitative information on pairing relationships and on unusual chiasma frequency as a function of unusual material present.

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2. An additional common locus in corn and *Tripsacum*.

In previous studies a portion of a *Tripsacum* chromosome which had been substituted for the distal half of the short arm of corn chromosome 2 was found to carry dominant alleles for  $lg_1$  and  $gl_2$ . Recent tests have indicated the presence of a normal allele for  $ws_3$  also on the *Tripsacum*-derived segment. Synapsis at pachytene appears normal between the similar *Tripsacum* and *Zea* segments in plants in which no closer pairing partners are available, but crossing over apparently occurs between them only rarely.

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