F_2 data show that the male cytoplasms produced significant differences in time of silking, erect plants, and yield. The F_2 female cytoplasmic data indicate a significant effect on time of silking and erect plants.

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3. Female vs. male cytoplasm.

The effects of these two kinds of cytoplasm on the offspring may not necessarily be in direct proportion to the amount of cytoplasm that is contributed to the zygote by each parent. Significant effects may be obtained from apparently small amounts or large amounts of contributed cytoplasm in certain genotypic-cytoplasmic combinations. This statement is made on the assumption that only a small amount of cytoplasm is obtained through the male.

In addition, as reported in Maize Genetics Cooperation News Letter 41: p. 39, 1967, by Fleming and Campbell, the expression of the male cytoplasm can be influenced by the female cytoplasm.

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4. New character affects hybrid performance.

Six stocks of the long-time white inbred, Tx61M, were crossed to a single-cross tester, T105 x K64. The Texas stock has the greatest amount of brachyism, a character previously reported (Fleming and Kozelnicky, 1964, Maize Genetics Cooperation News Letter 38:47). The short internodes above the top ear cause a bunching effect of the upper leaves.

In the three-way testcrosses, the Texas stock caused significantly more brachyism in the hybrid than the five Tx61M stocks from Alabama, Georgia, Kentucky, North Carolina, and Tennessee.

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