

Data from each experiment are summarized in Table 1 for yield in bushels per acre, per cent moisture, and total damaged plants (T.D.Pl.). The pairs of single crosses are entries 1 and 2, 3 and 4, 5 and 6, with No. 7 being the check entry. With the exception of entry 5 in experiment 226 and entry 6 in experiment 229, no pair member significantly outyielded the other. In the case of moisture, five pairs differed significantly and two pairs differed in total damaged plants. Of the 24 pairs of single crosses compared, eleven yielded more with a TR female and thirteen yielded more with a T female. When the yields of the entries from hand harvested and picker-sheller harvested experiments were averaged, the number of TR and T female single crosses outyielding the other was the same, namely six.

B. Restorer Gene Expression

By using the TR line in the female or "A" position, it was also possible to detect any inhibiting or enhancing action on the part of the pollinator inbred with respect to fertility restoration in the crosses containing Rf germ plasm. From a cursory examination of the plants at pollen shedding time, it was found that entries 1 and 5 in experiment 224 had a higher proportion of fertile plants than the expected 1:1 ratio of fertile to sterile. Entry 5 of experiment 226 exhibited only partial fertility. However, its sterile counterpart, entry 6 in the same experiment, exhibited the same degree of partial fertility. These results, even though from incomplete data, suggest that further investigation of this mode of fertility expression is warranted.

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2. Parthenogenesis.

In parthenogenesis in maize, the fate of the male nucleus that normally fertilizes the egg is unknown. The possibility has been raised that in parthenogenesis both male nuclei fuse with the polar nuclei to form a tetraploid endosperm. To check this possibility, the white inbred line 4Co82 was crossed reciprocally with the yellow inbred line W22. It was hoped that dosage effects would indicate tetraploid endosperm, as follows:

- a) 4Co82 as female x W22 as male -
 - normal endosperm yyY (pale yellow)
 - tetraploid endosperm yyYY (medium yellow)
- b) W22 as female x 4Co82 as male -
 - normal endosperm YYy (strong yellow)
 - tetraploid endosperm YYyy (medium yellow)

The expected (tetraploid) class of endosperms was not detected. Another test set based on stippled gave the same negative result.

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