

### 3. Pollination techniques with Zea mays.

Four experiments were conducted to determine the effects of certain pollination techniques on seed set of corn. Data were obtained on 300 single-cross plants in each experiment.

(a) A comparison of polyethylene (a new plastic type) and glassine shoot bags. Ten characteristics were used for comparison. A better seed set was obtained by the use of glassine bags.

(b) The effect of time of pollination on seed set. Five time-periods were used to divide the day into five pollination periods. No significant differences in the number of kernels per ear for the five periods were obtained. However, on the basis of average daily temperatures, the number of kernels per ear decreased as the temperature increased.

(c) The relationship of length and age of silks at time of pollination to seed set. No significant differences in seed set occurred between "cut" silks and "uncut" silks. Two- to three-day-old "non-mass" silks produced an average of 318 more kernels per ear than five- to ten-day-old "mass" silks.

(d) Pollen viability in cold storage. Comparisons were made between pollen stored 48 and 72 hours under four temperatures ranging from 2° to 25° C. Fresh pollen, the control, set 140 times more seed than stored pollen. The 48-hour storage gave better results than the 72-hour storage.

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#### 1. The tunicate locus dissected and reconstituted.

In previous News Letters we reported that the two components of the Tu locus could be separated by crossing over. When compared in isogenic stocks produced by repeated backcrossing on the inbred A158, the two loci proved to be different in their phenotypic effects; lines heterozygous for the locus, tu<sup>d</sup>, having longer glumes, both staminate and pistillate, than lines heterozygous for tu<sup>l</sup>. We have now reconstituted the Tu locus by restoring its separate components to their original positions on the same chromosome. Plants heterozygous for both tu<sup>l</sup> and tu<sup>d</sup> in a trans configuration were crossed on two inbred strains of the genotype tutu. It was assumed that the progeny of these test crosses would consist of the heterozygous genotypes, tu<sup>l</sup>tu and tutu<sup>d</sup>, in approximately equal numbers and that the great majority of the plants would fall into these two categories. It was assumed further, however, that there would be rare crossovers between the two components and that these would be of two complementary types, tu<sup>l</sup>tu<sup>d</sup> and tutu.