

4. A search for fertility-restorer genes for S/T cytoplasm in maize varieties of Orissa.

Necessary crosses have been made involving several local inbred lines and open pollinated varieties and strains carrying S/T cytoplasm obtained from the U.S.A. through the courtesy of Drs. I. P. Trotter and J. M. Poehlman.

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1. Long seeded flint corns from shallow seeded crosses.

In tropical and subtropical regions, flint corns are often used in those areas where storage insects and diseases are troublesome. As a rule they yield less than dent corns in terms of weight of grain per unit area. It should be possible to use a delayed backcross method e.g. (flint x dent) dent; self and select flint segregates; repeat (flint x dent) dent; self and select flint segregates, to increase the yield of these flints while preserving their superior storage qualities. However the theoretical yield expected could be modified (a) downward by the low shelling percentage of some shallow seeded flints or (b) upward by capturing the prolific tendencies of some long seeded flint popcorns, provided no deleterious gene systems are introduced by the recurrent dent parent. (Selection following the first backcross cycle may be prolonged.)

Will the shallow seeded flints give rise to long seeded segregates? Flints of several sources (Table 1) were crossed with long seeded "Country Gentleman" sweet corn. The  $F_1$  was grown and selfed in 1962; the starchy  $F_2$ 's were grown in 10 ft. row samples and selfed in 1963. At harvest the ears were broken and visually classified into 3 categories from cross cob observation. Yields in 1962 and 1963 were severely reduced by excessive drought so that balanced sampling was impossible. A single ear sample of a "Country Gentleman" self was classified as intermediate.

The results (Table 1) indicate that some flints dominate seed shape more than others but in the crosses with a common long seeded variety, selection of long seeded flint segregates is not too difficult.

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