

There is little doubt that changes of the four types described above have occurred in the maize plant during its evolution under domestication. It cannot yet be proved that such changes were wrought by genetic changes at the Tu-tu locus, but it would be strange indeed if this were not the case. At least no other locus has yet been discovered in maize which is capable of so drastically changing the maize plant in the direction of greater usefulness to man.

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#### 9. Mutation rates in teosinte derivatives.

In previous News Letters we have recorded the occurrence of a wide variety of mutations in modified strains of the inbred A158 in which one or more teosinte chromosomes have been substituted for maize chromosomes. No mutation was ever observed in the original inbred A158.

During the past year we have conducted a controlled experiment in which the mutation rates for seed and seedling characters of the teosinte-modified strains were compared directly to the original strain. In 100 ears of A158 there was one mutation to defective seeds. In 435 ears of teosinte derivatives there were 32 mutations involving 12 defective seeds, one brittle endosperm and 19 seedling defects of various types.

The mutations which have now occurred in the teosinte derivatives include most of the categories of inherited defects found in open-pollinated maize: gametophyte factors, defective seeds, chlorophyll deficiencies (albinos, virescents, stripes), brittle and sugary endosperm and dwarfs.

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#### 10. Papyrescent maize.

The dominant gene which produces this glume character has been designated previously as "pseudopod" (Pp) (Galinat and Mangelsdorf, MNL, 1955) but it now seems more appropriate to use the name "papyrescent" and the symbol Pn in order to call attention to its papyry character and its similarity to the "papyrescens" character of Sorghum (Rangaswami) as well as to avoid confusion with the symbols for heterozygous pericarp color (Pp).

When we first obtained the Pn character from a Peruvian variety, it was closely linked to another mutant form resembling branched silkless (bd) reported as near the long arm of chromosome 7. The associated