4. The effect of the mutability factor at a^{p}_{m} on gene loss in endosperm tissue.

In the 1955 News Letter Fradkin reported that Modulator was effective in producing gene loss in endosperm tissue. M located on chromosome 1 or elsewhere in the genome can increase gene loss in chromosomes 9 (C and Wx) and 5 (Pr). This effect was presumed to be due to increased chromosome breakage in the presence of Mp. Nuffer presented similar data in which gene losses were controlled by the mutability factor Dt. Endosperm with a single dose of Dt exhibited a loss frequency for A_1 and Sh_2. Which differed significantly from the control. Here chromosome 3 losses were apparently controlled from chromosome 9.

Some preliminary counts have been made on experiments testing the effect of the mutability factor at a^{p}_{m} on gene loss, and the results are somewhat different from those in the above experiments. Losses of a linked gene (Sh_2) are considerably more frequent in the presence of the mutability factor (M) than in the controls (Table 1.). When a gene (Bz) on another chromosome (9) s considered, endosperm with and without the mutability factor differed only slightly in percentage of bz sectors. The greater rate of loss occurred in the control (Table 2).

Table 1. Somatic losses of Sh_2 in endosperm tissue.

Cross	Unsectored kernels	Sh_2-sectored kernels	Total	Percent sectored
a sh_2/a sh_2 x A Sh_2/A Sh_2	986	304	1290	23.6
a sh_2/a sh_2 x $a^{p}_{m}Sh_2/a^{p}_{m}Sh_2$	255	610	865	70.5

Table 2. Somatic losses of Bz in endosperm tissue.

Cross	Unsectored kernels	Bz-sectored kernels	Total	Percent sectored
bz/bz A/A x Bz/Bz a/a	2798	163	2961	5.5
bz/bz A/A x Bz/Bz a^{p}_{m}/a^{p}_{m}	1999	40	2039	2.0

Since M affects the loss of Sh_2, but not of Bz it appears that this mutability factor is behaving differently from Mp and Dt. The mutability factor located on chromosome 3 seems to control chromosome 3 gene losses but not chromosome 9 losses. The spreading-effect properties of M described above may be responsible for the somatic losses of Sh_2 activity, and M may lack the non-specific chromosome breakage properties of Mp.