Table 3

Mutational losses of C following exposure of post-meiotic tassels to an intense electrostatic field

	Control	Intermittent field	Steady field	Total
Examined No.	62,175	74,867	22,190	159,232
Losses per 10^4				
Whole endosperm	0.8	0.7	1.4	0.8
Half	0.8	1.5	2.3	1.3
Quarter	12.1	17.1**	14.4	14.8
BFB cycles per 10^4				
Whole endosperm	3.1	1.6	1.4	2.1
Fractional	5.0	4.4	2.3	4.3
All events	21.7	25.2*	21.6	23.4

*,** Significantly higher than control at 5% and 1% level, respectively.

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3. Location of new mutants by A-B translocation method.

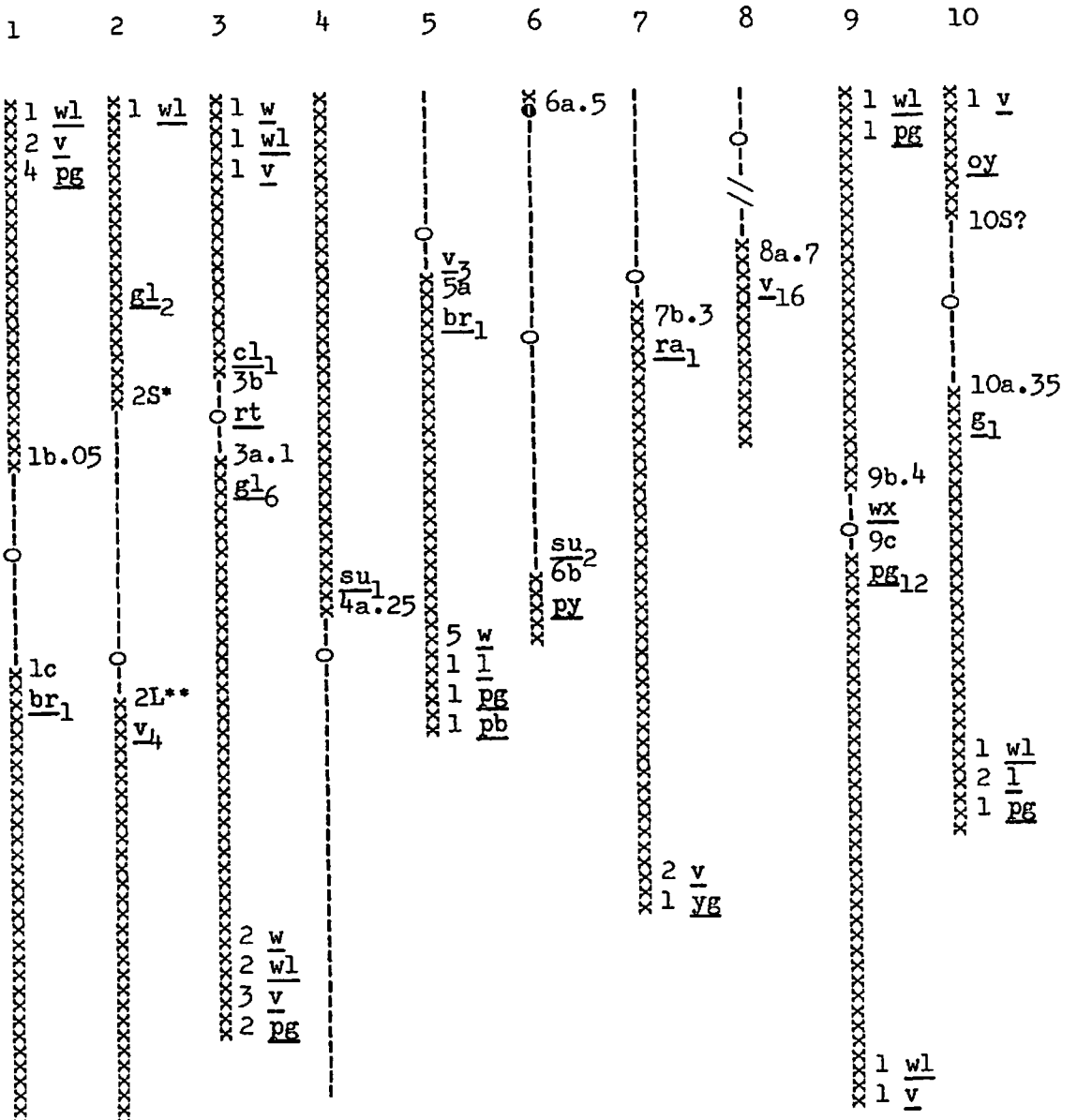
A collection of 116 chlorophyll mutants, produced either by treatment of pollen with chemical mutagens ethylmethanesulfonate or nitrosoguanidine or from experiments with the controlling elements (Ac, Dt or Spm), was prepared for linkage tests using a series of A-B translocations according to the method suggested by Roman (Genetics 32:391-409).

The collection included 75 mutants induced by EMS, 8 induced by NG and 33 derived from cultures with controlling elements. They were classified at seedling stage as w (white), wl (yellowish white), l (yellow), v (virescent), pg (pale green), yg (yellow-green) and pb (piebald). A number of unusual types, such as mutables, temperature or light sensitives, and atypical virescents, were grouped in the above categories for this report.

The procedure consisted of planting selfed seed of a known heterozygote for each mutant (since many were homozygous lethal), crossing

Figure 1

Linkage map with A-B translocations and tentatively located mutants.



A-B translocations indicated by originator's symbol (with cytological position when available) at the estimated proximal end of the uncovered portion (xxxx), and closest known flanking markers. The numbers and types of mutants uncovered are listed beside each region.

* TB 2S, $3L_{6270}$

** TB 2L, $1S_{4464}$ or TB 2L, $3L_{7285}$

three plants of each family by the A-B translocation set, planting 100 kernels from each ear in a sand bench, and noting the hypoploid seedlings that expressed the mutant phenotype.

The set of A-B translocations used covered 16 chromosome arms to some degree. They consisted of a group of 17 obtained from various sources as indicated below.

1b Roman	6a Roman
1c Beckett	6b Beckett
2S, $3L_{6270}$ Robertson	7b Roman
2L, $1S_{4464}$ Robertson	8a Roman
2L, $3L_{7285}$ Robertson	9b Roman
3b Beckett	9c Beckett
3a Roman	10S Beckett translocation not verified
4a Roman	
5a Beckett	10a Roman

The relationship of these translocations to the current linkage map and the frequency and types of mutants uncovered by each is shown in figure 1.

Fifty-two of the 116 mutants tested were tentatively located to chromosome arm. This proportion is about what one would expect, considering that the translocations covered roughly 66% (our estimate) of the known linkage map and that some of the crosses were missed, many female plants were homozygous normal and not all male parents carried the translocation.

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4. Chemical mutagens and in vitro germination of pollen.

An earlier report (MNL 42:124) on the use of paraffin oil as a carrier for chemical mutagens in treating corn pollen showed the method was promising. Subsequent experiments using this method have given mixed results because of difficulties in standardizing dosages. Variations occur because of purity and potency of chemicals and because of differences in mixing technics. These variations often result in complete killing as one extreme, or ineffective treatment as the other. A quick method for reducing these extremes has been developed.