

Table I. Individuals heterozygous for various recessive mutants in some Italian varieties of maize.

Variety	Ratio	Defective endosperm	Virescent seedling	Yellow seedling	Glossy seedling	Pale green seedling	Dwarf seedling	Striped seedling	Liguleless	Other seed characters	Other seedling characters	Total examined
Locale Valle d'Arena, Potenza	3:1	9	3	2	1	1	1	1		3	2	37
	15:1							1				
Pergola, Pesaro	3:1	7		2		2				2	2	40
	15:1									2	1	
Marano, Vercelli	3:1	5	1	2		1	2		1			23
	15:1	1								1	1	
Sacra Famiglia, Vercelli	3:1	3	3			1	2	3			6	33
	15:1											
Nostrano dell'Isola, Vercelli	3:1	3	4			3		1			2	46
	15:1											

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3. Mutagenic activity of ethyl methan sulfonate.

In barley, Heslot *et al.* (C.R. Séances Acad. Sci., Paris, 1959) have shown that the ethyl methan sulfonate applied to seed is a very powerful mutagen. Some preliminary experiments conducted by means of pollen treatment in maize gave inconclusive results. However, treatments carried out on maize seeds, heterozygous

for alleles of the Yg_2 locus, seem clearly to confirm its strong mutagenic action. Somatic sectors, representing losses of the dominant allele (action), provide a criterion of genetic damage.

A first series of data are summarized in Table II.

It may be noted that the EMS not only is a powerful mutagen when applied to maize seed, but also its action tends to persist in cell lineages: while the X ray sectors are reduced by a factor of at least 3, the EMS sectors are only halved passing from the 3rd leaf to the 4th one. The linearity between sector frequency and EMS concentration is very striking.

Table II. Mutagenic action of ethyl methan sulfonate (EMS) as measured by sector frequency of leaves 3 and 4 in maize seedlings of Yg_2/Yg_2 genotype (yellow green sectors on green background)

Type of treatment	control (no treatment)	6000 r	EMS 1/100	EMS 1/200	EMS 1/400	EMS 1/800
a) germination %	100	100	44.0	96.0	98.0	96.7
Physiological responses						
b) seedling height in cm.	13.7	13.8	4.1	10.2	12.5	13.6
Genetical response [No. of mutant sectors per leaf.]						
3rd leaf	0.4	9.2	Scoring impracticable	21.3	12.4	5.8
4th leaf	0.0	2.6	"	10.0	6.3	3.4

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