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1. Mendelian characters in Italian maize.\*

Self pollination has been carried out in plants of 220 further samples of Italian maize provided by the "Stazione di Maiscultura" of Bergamo.

The following mutants have been detected in a total of 1,448 progenies.

Character	No. of cases exhibiting a ratio of		Character	No. of cases exhibiting a ratio of	
	3:1	15:1		3:1	15:1
<b>A. <u>Seed Traits</u></b>			<b>B. <u>Seedling traits (in greenhouse)</u></b>		
Defective seed	107	4	Abnormal growth	41	38
Small seed	3	-	Allium type	-	2
Pregermination	6	1	Albescent	2	4
Germless	16	1	Albino	9	10
Floury endosperm	6	-	Fine stripe	12	9
Lemon	15	2	Glossy	56	6
Opaque	5	-	Green mottled	16	4
Shrunken	6	-	Booster color	20	6
Waxy	2	-	Japonica	4	5
White	10	-	Yellow green	20	5
"Orange skin"	2	-	Lutescent	10	2
			Luteus	21	4
			Liguleless	5	-
<b>C. <u>Plant character (in field)**</u></b>			Dwarf	12	3
Zebra type	18	-	Albino (lemon seed)	1	-
Brown midrib	5	-	Pale green	69	12
Golden stock	4	-	Pale luteus	4	-
Striped	14	-	Virescent	43	14
Argentea	1	-	Green striped	3	1
Golden	1	-	Sun red	1	-
Opposite leaves	1	-	Open coleoptile	2	-
White leaf base	1	-			
Adherent	3	-			
Tassel seed	1	-			
Ramosa	1	-			
Brachitica	3	-			
Crinkly leaf	1	-			

\*\*These mutants refer to a reduced sample of the studied material.

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Appropriate allelism tests and/or crosses of these mutants as well as those reported in previous MNL issues are underway.

Preliminary results from such experiments, for a part of these mutants, are summarized as follows:

All the waxy types are allelic to the known mutant on chromosome 9; on the contrary, most of the opaques turn out to differ from one another. Also the sugary mutants are all allelomorphic to su<sub>1</sub>.

Several shrunken stocks contain sh<sub>2</sub> alleles, but others are different. One of them appears "uncovered" by TB-4. Incidentally, in the same chromosome region involved in the TB-4 stock a shrunken type has been obtained following artificial mutagenesis experiments.

Among the seedling traits, the program has made substantial progress mainly thanks to the work of Dr. F. Salamini, whose results are condensed in the following table:

	<u>gl</u> <sub>1</sub>	<u>gl</u> <sub>2</sub>	<u>gl</u> <sub>3</sub>	<u>gl</u> <sub>4</sub>	<u>gl</u> <sub>6</sub>	<u>gl</u> <sub>7</sub>	Total
Number of <u>gl</u> allelic to known mutants	57	11	20	1	2	1	92
Number of <u>gl</u> possibly allelic to known mutants	4	2	10	1	2	1	20
Number of <u>gl</u> not sufficiently studied							21
Mutants examined							133

The glossy types have been also crossed by TB-A stocks. Out of a total of 346 ears from such crosses not a single case has been found "uncovered" with the exception of TB-7 and TB-3 (6 and 2 ears respectively). The latter, however, were cases in which alleles of gl<sub>1</sub> and gl<sub>6</sub> were involved, and these are known to be located in the distal part of long arm of chromosome 7 and 3, respectively. A somewhat analogous finding has been obtained in artificial mutagenesis; while, it is possible with ethyl methansulphonate to obtain chlorophyll mutations in the chromosome regions involved in the TB-A stocks, not a single case of glossy has been detected making appropriate use of TB-3, TB-4, TB-9, and TB-10.

Three liguleless types turned out to be alleles of the lg<sub>1</sub> locus.

Most of the dwarf plants are semilethal or sterile. One case is in the chromosome region involved in the TB-1a stock.

Among the chlorophyll mutations, the following are reported: two pale green in the translocated region of TB-9a; one pale green in the translocated region of TB-7; one yellow green in the translocated region of TB-3; one yellow green in the translocated region of TB-7; two yellow

green in the translocated region of TB-9b; one yellow stripe in the translocated region of TB-7.

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1. Crossing-over in the A<sub>2</sub>-Bt-Pr region.

Recombination data for markers of chromosome 5 in different genetic backgrounds are reported in the following table (backcross of the multiple recessive to heterozygous seed plants possessing T cytoplasm):

Genetic backgrounds	Kernel classes					
	A Bt Pr	A bt pr	A Bt pr	A bt Pr	a Bt	a bt
A 158	1725	76	335	59	139	1905
W 22	1320	59	383	31	69	1648

From these data the following recombination frequencies and standard errors may be calculated:

	Region A-Bt	Region Bt-Pr	Double recomb.
A 158	6.5 ± 0.4	17.9 ± 0.8	3.3 ± 0.4
W 22	4.5 ± 0.1	23.0 ± 0.6	2.3 ± 0.4

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1. Another isolation of the En-Spm system.

Two pale green plants with sectors of dark green were present in a 13 plant progeny of a second generation self in a corn breeding nursery in 1959. The unstable pale green plants were outcrossed as males to available silks in an inbred nursery. The unstable pale green phenotype again appeared in the F<sub>2</sub>. Pollen from these unstable pale green plants