

11. Comparisons among plants with various constitutions for B, B', and b.

Advanced progenies on uniform backgrounds were available this year for a test of dosage, timing, and reciprocal effects in crosses of  $\underline{B'} \times \underline{B'}$ ,  $\underline{B'} \times \underline{b}$ ,  $\underline{B'} \times \underline{B}$ ,  $\underline{B} \times \underline{B'}$ ,  $\underline{b} \times \underline{B}$ , and  $\underline{B} \times \underline{B}$ . Respectively, 7, 4, 7, 4, 2, and 1 entries in three 15-seed replicates were coded and randomized, and planted in a linear, serpentine pattern. Plants were graded shortly after flowering, cobs indoors after harvesting, drying, and shelling.

Genotype egg/pollen	Plant Color Grade									Plants no.	Average Grade	
	0	1	2	3	4	5	6	7	8			9
$\underline{B'}/\underline{B'}$		30	153	31							215	2.00
$\underline{B'}/\underline{b}$		59	92	5							156	1.65
$\underline{B'}/\underline{B}$			14	174	71	5					262	3.26
$\underline{B}/\underline{B'}$			5	29	19	2					55	3.33
$\underline{b}/\underline{B}$							1	20	51		72	7.69
$\underline{B}/\underline{B}$							4	4	9	6	23	7.74

  

Genotype	Cob Color Grade					Plants no.	Average Grade
	0	1	2	3	4		
$\underline{B'}/\underline{B'}$	56	98	26	15	3	198	1.05
$\underline{B'}/\underline{b}$	13	115	15	3		146	1.05
$\underline{B'}/\underline{B}$	8	101	83	63		255	1.79
$\underline{B}/\underline{B'}$	3	21	13	16		53	1.79
$\underline{b}/\underline{B}$						67	6.42
$\underline{B}/\underline{B}$						11	7.91

Since  $\underline{B'}/\underline{B}$  and  $\underline{B}/\underline{B'}$  do not differ, no reciprocal difference in transmission of the phenomenon exists; since  $\underline{B'}/\underline{B}$  and  $\underline{B}/\underline{B'}$  plants are darker than  $\underline{B'}/\underline{B'}$  and  $\underline{B'}/\underline{b}$ , the change from  $\underline{B}$  to  $\underline{B'}$  must not be completed immediately. These data are very difficult to harmonize with a plasmid model.

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12. Somatic mutation to B'.

Several sectored plants were observed last summer in  $\underline{B}$  lines derived from unstable sources. Progeny tests confirm mutation to  $\underline{B'}$  during development. The previously-published conclusion that mutation to  $\underline{B'}$  is meiotic is in error.

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