

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<br>egg/pollen          | Plant Color Grade |    |     |     |    |   |   |    |    | Plants<br>no. | Average<br>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<br>no. | Average<br>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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