

8. Anti-inhibitor effect of bz<sub>2</sub>.

Kernels of C<sup>i</sup> C C Bz bz<sub>2</sub> bz<sub>2</sub> constitution have considerably more color than either homozygote for bronze-2. The color is at least as dark as that of A<sup>d</sup>. Although further tests are needed, it presently appears that a single dose of C<sup>i</sup> and one or two doses of bz<sub>2</sub> are necessary for the effect.

9. Intensely pigmented tissue cultures.

Successful cultures of young endosperms, doubling in size in 6 weeks, were obtained last Spring. Intense pigmentation was produced through the use of in. Tester lines (a<sub>1</sub>, a<sub>2</sub>, bz<sub>1</sub>, c, C<sup>i</sup>, r) converted to su in are now available in addition to ACR Pr su in, which is the type cultured. Sugary is required according to Straus and LaRue (Amer. Jour. Bot., 1954). The medium is the tomato juice one which they used:

White's mineral stock	100 cc
Ferric citrate solution, 0.25%	4 cc
Nitsch' trace elements	1 cc
Sucrose	30 gm
Agar	10 gm
Tomato juice (see below)	200 cc
Water (double distilled)	to 1 liter

The tomato juice is made with one can of dietetic tomatoes, blended, filtered, and adjusted to pH 6.5-6.8 with 0.2M NaOH. The medium is poured into small screw-cap bottles and autoclaved complete. Additives of kinetin (10 micrograms per liter) and corn milk were tried in all combinations with and without tomato, but tomato alone was as good as or better than any other. Inoculations made at 10 or 11 days post-pollination were successful, but not 9, 13, 14, 15, 16, 17, 19, or 21 days (inoculations were all made in one day, from greenhouse material). Pieces of ear were surface-sterilized 10-15 minutes in 20% Clorox, and whole endosperms were removed with a sterile scoop.

10. Test for doubleness at C locus.

For the population reported last year, all tests are complete, and no cases of crossing over within C<sup>i</sup> have been obtained. For the four assumed structures, maximum map distances for C to I are:

<u>I C</u> :	0.00032	map units maximum.
<u>C I</u> :	0.00032	map units maximum.
<u>I c</u> :	0.064	map units maximum.
<u>c I</u> :	0.079	map units maximum.

Further tests will yield diminishing returns, since the last two structures result in an asymptotic relation of map distance to number tested. No further tests are planned.

### 11. Spontaneous mutation of $C^1$ .

The tests of cases reported last year for 809,370 gametes are complete:

<u>Endosperm</u>	<u>Number Obtained</u>	<u>Valid Cases</u>	<u>Deficiency for <math>C^1</math></u>	<u>Terminal Deficiency</u>	<u>Non- Corresponding</u>	<u>Failed</u>
Self-color	6	1 (c)	3	0	0	2
Variegated entire	85	0	0	32	31	22
Variegated sector	19	0	0	8	6	5
Colored pits	12	0	0	3	3	6
Colored scutellum	4	0	0	0	1 (haploid)	3
Diffuse color	<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>1</u>
Totals	130	1 (c)	3	43	44	39

Only one valid mutant, which is c, has been obtained. It has completely normal transmission and responds to Bh. This case was from one of the two full-sized self-color kernels reported last year. The other of these was a non-transmissible deficiency for  $C^1$ . Since the two which failed were small in size (one was germless), there is little doubt that only one valid mutant occurred in this population. Mutation of  $C^1$  to c has not been observed in 1,231,883 gametes; mutation of  $C^1$  to c has occurred once in 809,370.

The structure of  $C^1$  can be considered either as compound and c I or I c, with the two units quite close together, or as single and incapable of mutating to one of its two known lower alleles.

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