

chlorophyll mutants and determine the influence of environmental parameters on the expression of the virescent (or chlorophyll deficient) phenotypes.

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Requests for seed — 1. We are interested in observing the 'ABPHYL' syndrome (AJB 59:466-472, 1972) in several different leaf size and leaf arrangement backgrounds. We would appreciate receiving a few seeds of such isolates, whether the isolates be specific mutant stocks or unique inbreds.

2. As indicated in the preceding report, we have techniques at hand which permit quantification of the greening processes in plants. Mutants such as virescents are now more amenable to analysis. We are interested in examining any virescent mutant and shall be prepared to perform tests of allelism with known mutants. I shall be grateful to colleagues if they would make available to us some seed of any virescent line unless they obtained the stock earlier from the Coop.

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The effect of K10 on chiasmata — It has been shown that K10 promotes crossing over in proximal regions of certain chromosomes, but the data are not yet inclusive enough to say that all chromosomes are affected similarly. A study of the effect of K10 on the number and distribution of chiasmata was undertaken to investigate the influence of this accessory chromatin on the total genome.

Sporocytes were taken from a line segregating k10 k10 and K10 k10, and chiasmata were studied at metaphase I. Data were collected from ten cells in nine plants each of k10 k10 and K10 k10. A chart was constructed with a schematic representation of tetrads having various numbers of proximal and distal exchanges, and a tally was made of the number of each of these tetrad types. For each genotype an average was obtained for the number of distal exchanges and proximal exchanges and the total number of chiasmata (Table 1). Statistical analysis was done by means of a t test.

Table 1. Effect of K10 on chiasmata.

	Average chiasmata per cell			Total number of chiasmata		
	distal	proximal	total	distal	proximal	total
k10 k10	7.73	11.06	18.78	696	995	1691
K10 k10	5.54	13.87	19.42	499	1249	1748
P	<.001	<.001	<.01			

The results suggest that K10 not only enhances chiasma formation but also causes a shift in chiasmata to more proximal positions. An increase in proximal exchanges would not be unexpected with the increase in total chiasmata, since any additional exchange would be more proximally located. However, the data indicate that the distal chiasmata are decreased under the influence of K10, demonstrating that normally distal exchanges have become proximal. Thus, these data confirm that K10 enhances chiasma frequency and causes a redistribution of chiasmata to more proximal positions.

These results do not indicate with certainty that all chromosomes are affected in the same way, because the chromosomes were not identifiable. However, they add substance to that interpretation.

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Enhanced phosphate content of amylose-extender starch — In 1928 R. A. Brink (Biochemical J. 22:1349-1361) reported that maize starch contained only one-twelfth as much organic phosphate (0.0015%) as did the starch from non-waxy seeds (0.0194%). This report prompted an examination of the phosphate content of the starches produced by seeds of several different genotypes.

The starches were prepared by the method of McGuire and Erlander (Die Staerke 18:337-341, 1966). The phosphate content was measured by the method of Ames (Methods in Enzymology 8:115), and the amylose content of the starches was measured by the method of Ulmann and Augustat (Z. Anal. Chem. 162:337-344, 1953). The results of the analyses are presented in Table 1.

Our results do not support the previous observation of a lower phosphate content in amylose-extender starch that is appreciably higher than that found in non-mutant starch or in the starch from other mutants with the possible exception of sugary. The ae mutants assayed here are derived from independent mutational events at the locus; neither is the reference ae allele.

It is not clear what this elevated phosphate content indicates since the starch components have not been separated to ascertain whether the increased phosphate content is confined to the amylose or amylopectin fraction or is characteristic of both. It may, however, provide a clue to those who are interested in the effect of the ae mutation on starch synthesis.