In the pericarp the red pigment conditioned by $\underline{A_1}$, $\underline{P^{rr}}$ and the brown pigment conditioned by Ch apparently both come to expression in individuals carrying all three dominant alleles. Idf-mutable will suppress the red pigment in the typical mutable pericarp pattern of such individuals while not affecting the co-present brown pigments. Inasmuch as the brown pigment conditioned by $\underline{A_1}^{b}$ $\underline{P^{rr}}$ does not develop in the presence of Idf it may be concluded that these two brown pigments are not the same.

Another brown pericarp pigment, recessive bp bp on chromosome 9 is known to interact with $\underline{P^{rr}}$ and thus would be expected to respond to Idf. A direct test of this assumption is now in progress.

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2. Tests for Ac and Spm in Diffuse stocks.

In recent years loci in corn exhibiting high rates of somatic instability have generally been found to involve one or another of the recognized transposable elements. Since the Diffuse gene (Idf) is characterized by a high degree of somatic mutability it is of major interest to determine if one of the now recognized transposable elements is involved in this case.

By utilizing tester stocks (developed by Dr. B. McClintock) Idf was evaluated for Ac and Spm factors. This was accomplished by the following matings:

1. Test for the presence of Ac by using a C-Ds tester.

   C Ds, $\underline{A_1}$, R, idf x c -, $\underline{A_1}$, r, Idf

   If Idf could substitute for Ac a pattern of C ⟶ c breaks would be expected on the resultant kernels. No such C ⟶ c events occurred.

2. Test for the presence of Spm by using a $\underline{c_2}^{mt}$ tester.

   $\underline{c_2}^{mt}/\underline{c_2}$, $\underline{A_1}$, $\underline{C_1}$, R, idf x $\underline{C_2}$, $\underline{A_1}$, $\underline{C_1}$, R, Idf

   In this case if Idf could substitute for Spm one-half of the kernels would exhibit a spotting of dark purple in a dilute purple background. No such spots were observed on seven test ears.

In the above matings all recognized states of the Idf allele were utilized, i.e. mutable (high), mutable (very low), stable (but highly active phenotypically).

Thus Idf does not seem to substitute for two known transposable elements, Ac and Spm. A test to determine if Idf can substitute for Dt induced a_1-mutability will be made. However, another negative result is expected in this test for the following reasons: Two main features of transposable elements are lacking from the Idf spectrum of mutations: (1) No regular stable class (either phenotypically active or inactive) occurs among the Idf mutant types. (2) Non-diffuse segregants from Diffuse heterozygotes do not carry any modifiers of the diffuse phenotype as might be expected were transposable elements involved.

It is currently believed that the cause of Idf mutability is most likely not a transposable element but some other gene action control type mechanism.

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3. Karyotype stability of haploid and diploid maize root tissue cultures.

In our first attempts to determine karyotype stability in maize root tissue cultures, chromosomes were counted nine months after callus initiation and again after twelve months. Counts made at nine months showed all cultures to be diploid except one (8 cultures out of 9) which was a chimera of 2n/4n. The second round of counts made at 12 months showed all to be diploid (the culture with a chimera was not recounted due to poor growth) (MNL 1963).

On the basis of these results it was considered important to inquire into the relative stability of haploids. Haploids were obtained from the mating 22 A C r^g x 22 A C R^{sc} by selecting the resultant kernels having purple aleurone and colorless scutellum.

Such presumed haploids (with diploid controls) were germinated sterilely on agar media. When seedlings were transferred to modified White's media, root tips were removed and fixed in acetic alcohol for later confirmation of presumed chromosome numbers. The assessment of chromosome numbers in a cell was made of late prophase, metaphase, and early anaphase periods of cell division. Only rapidly growing tissue could provide the various periods for examination.