

4. Isozymes of four enzyme types among three tissues (meiotic material, leaves and roots) of seven inbred lines.

The four enzyme types tested are esterases, peroxidases, phosphatases and leucine amino peptidase. Bands found in starch gels were either tissue limited or general (found in each of the three tissues). Of the 10 esterase bands, none were limited to meiosis and only one was tissue limited--i.e., one appeared in the leaf only of several inbreds. Some of the peroxidase bands were tissue limited to the leaf but none was limited to meiotic tissue or roots. None of the three phosphatase bands nor the one leucine amino peptidase band was limited to any of the three tissues.

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5. Three C^I alleles.

In MGCNL 42:84, it was reported that three C^I alleles could be distinguished. These were $C^{I(m. coop)}$ from the Maize Genetics Cooperative, $C^{I(mc)}$ from Maiz Chapolote and $C^{I(ZC)}$ from Zapolote Chico. The distinction in the earlier report was by a color matching test.

In a reexamination of this material using isogenic stocks and a colorimetric test this distinction has been confirmed. There are three distinguishable color-suppressing C^I alleles. Isogenicity was accomplished by successively crossing each of the alleles into the color converted W-22. The kernels for each of these isolated lines were obtained from testcrosses onto two color lines, W-22 and an early flint.

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6. Carbohydases of sh_1 .

The relative activities of some carbohydases in developing endosperm tissue of maize varying in gene dosage of the shrunken-1 allele were studied. The activities of ADP-glucose pyrophosphorylase, soluble ADP-glucose:starch synthetase, and α -amylase in shrunken ($sh_1 sh_1 sh_1$) endosperm approximately equaled those activities in normal ($Sh_1 Sh_1 Sh_1$) endosperm 18 days after pollination. The amylase activities in endosperm

controlled by all four gene dosage levels of the shrunken-1 allele decreased with the age of the kernel. Glucosidase activity, present in normal endosperm, was missing from developing shrunken endosperm, and granular bound ADP-glucose:starch synthetase had higher activity in normal than in shrunken endosperm.

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7. Diversity of germinal derivatives of $a_2^{m(r-pa-pu)}$.

As reported in MGCNL 45:77-78, the $a_2^{m(r-pa-pu)}$ allele is stable pale in the absence of En; in the presence of En, the phenotype is colorless but is mutable expressing colorless, pale and deep purple sectors in the aleurone. Full mutant colorless and colored kernels not responsive to the presence of En are recovered in the testcross progeny of $a_2^{m(r-pa-pu)}$. The colored mutations occur as single kernels on the progeny ear and only one occurrence of an ear sector has been recovered. Intensity of the aleurone pigment of these mutants varies from a dark pale color to full A_2 expression.

In order to verify the visual distinction of these derivatives, a quantitative analysis of the pigment was made. Four kernel types were examined. These included: uniformly pale colored ($a_2^{m(r-pa-pu)}$ without En) and full colored (independent germinal mutations of the $a_2^{m(r-pa-pu)}$ allele) kernels and, for comparative purposes, the control included full colored and colorless types. The pale and full colored derivatives were isolated from testcrosses.

Following methanol extraction of the ground kernels, a colorimetric reading of the pigment was made on a Beckman Model DB Spectrophotometer (510 or 530 mu - depending upon the Pr genotype). The mean was determined from three samples from each ear and the results are shown in Table 1.