

rachilla/kernel indices, proved to be quite susceptible to environmental influences. Again, indices based upon solely vegetative characters were consistently influenced more strongly by environmental factors and interaction than were those based on reproductive characters.

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1. Induction of chlorophyll sectors by DES.

Homozygous opaque-2 seeds were treated with various concentrations of DES ranging from 0.0025 M to 0.01M for 8 hrs. by replenishing the solution every hour. Among the 559 surviving plants, 176 were found to have three types of chlorophyll sectors, i.e., yellow, albino and yellow-green. The sectors ranged from 0.1 to 1.5 cm in width and from 1/3 to the whole length of the leaf.

Yellow sectors were more frequent on the 6th, 7th and 8th leaves and albino sectors were more frequent on the 6th and 7th leaves whereas yellow-green sectors were more frequent on the 5th and 7th leaves.

The three types of chlorophyll sectors were examined histologically; the yellow and albino sectors were found to have no chloroplasts, but the yellow sectors retained a yellow pigment in the bundle sheath. The yellow-green sectors showed chloroplasts only in the upper epidermis.

In the treated material it was observed that four plants had one leaf without a mid-rib and two plants had a terminal modified "thread like" leaf.

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2. Some pigment studies in different genotypes of maize.

The husk and aleurone tissue of cherry (r^{ch}) and purple (Pr) and husk tissue of B have been analyzed chromatographically and spectrophotometrically.

The comparison of Rf values and absorption maxima of various

alcoholic tissue extracts with pure sample of cyanidin monoglucoside, aglycone and pelargonidin chloride has shown that all these genotypes have only one type of pigment, i.e., cyanidin monoglucoside. The cherry (r^{ch}) husk tissue extract gave two distinct Rf values, 0.23 and 0.33; however, both have the same absorption maxima (528 mu).

Since all the three genotypes contain the same pigment, it appears that these genes might play a quantitative role by regulating the availability of the precursor(s) in anthocyanin production.

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3. Opaque-2 gene incorporation studies.

Several inbred and elite lines were selected for the incorporation of the opaque-2 gene to develop a nutritionally superior variety as reported earlier (MNL 1968). This opaque-2 gene was recovered in various backgrounds and it is interesting to note that the seed from inbred line (Eto-25A-F) showed 5% more weight than the original opaque-2 seed (W64 A) from Dr. Nelson.

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4. Trifurcated leaves in opaque-2 maize.

Among 559 surviving plants, treated with DES, 30 plants were found with one, and eight plants with more than one "trifurcated" leaf blades. The affected leaf terminal was cut into three, each with a distinct outline, the midrib being present in the middle one. Such trifurcated leaves were also found among the controls, their frequency being 30 out of 540 plants examined. These trifurcations were more frequent on the 9th and 10th leaves and the pattern was quite uniform in all the observations.

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