7. Action of c_2 and Pr/pr.

Seeds of c_2 in pr were germinated under incandescent light. The aleurone of the triple mutant c_2 in pr developed a small quantity of red pigment, pelargonidin-3-glucoside. Also, the nonilluminated c_2 in pr seed had a faint red pigment (pelargonidin-3-glucoside) indicating that the Pr/pr gene might act before the c_2 gene in the gene action sequence.

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1. Protein electrophoretic patterns of maize, teosinte, and Tripsacum dactyloides.

Electrophoretic patterns of 70% ethanol extracts of ground seed of maize and teosinte are similar, but differ from that of Tripsacum dactyloides. The maize and teosinte bands have homologous migration velocities. The electrophoretic technique was similar to that of Johnson (1967). The nonspecific protein stain was naphthalene black.

Extract with 0.5 M NaCl (Paulis & Wall 1969) of maize and teosinte gave almost identical electrophoretic patterns, using Johnson's disc electrophoresis technique. There are at least 8 bands with homologous migration velocities. The maize and teosinte patterns are different from that of T. dactyloides. There is slight pattern variation among different races of maize and among different races of teosinte, but over all, teosinte does not appear to have any bands not found in maize. Primitive races of maize from Peru have similar patterns to primitive races of maize from Mexico.

Using this technique, the seed protein patterns of wild and cultivated diploid and tetraploid wheat, and wild and cultivated diploid and tetraploid cotton were shown to be almost identical (Johnson & Hall, 1965; Johnson, Barnhart & Hall, 1967; Johnson, 1967; Thein, 1967; Johnson & Thein, 1970). Even though more tropical species of Tripsacum

and other maize relatives have yet to be investigated, the above data support the hypothesis that maize is domesticated teosinte.

This work was begun at the Genetics Department, University of Missouri, Columbia, Missouri, U.S.A.

References:

Johnson, B. L. 1967. Science 158: 131-132.

Johnson, B. L., Barnhart, D. & Hall, O. 1967. Amer. J. Bot. 54: 1089-1098.

Johnson, B. L. & Hall, O. 1965. Amer. J. Bot. 52: 506-513.

Johnson, B. L. & Thein, M. M. 1970. Amer. J. Bot. 57:1081-1092.

Paulis, J. W. & Wall, J. S. 1969. Cereal Chem. 446: 263-273.

Thein, M. M. 1967. Electrophoretic studies of genome groups and the origin of the tetraploid species of Gossypium. Ph.D. Thesis, Univ. Calif., Los Angeles.

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2. Leaf phenolics of Zea mays, Zea mexicana and Tripsacum species.

A project is underway to investigate leaf phenolic constituents of primitive races of Zea mays, geographically diverse collections of Zea mexicana and several biotypes of each species of Tripsacum.

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3. New chromosome techniques for knob detection in mitotic chromosomes in maize and teosinte.

Recent advances in cytological techniques have made possible the linear differentiation of mitotic chromosomes in many plant and animal species (Caspersson et al. 1969; Vosa, 1970, 1971; Pardue and Gall, 1970; Arrighi and Hsu 1971).

There are now two new main cytological methods; one exploits the differential DNA binding specificity of certain fluorochromes of the acridine group and the other the property of the Giemsa stain to differentiate, after various kinds of denaturation and reannealing, between repetitive and less repetitive DNA sequences in the chromosomes. The