

an old government collection. Efforts are under way to obtain fresh seed specifically to study the possible genetic basis of its drought resistance.

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1. Field studies on hybridization and parallel variation in the wild relatives of maize in central Mexico.

Field studies of the wild relatives of maize in Mexico were begun during the fall of 1968. This field work is being undertaken in the following regions in which maize, teosinte and Tripsacum are all found growing in the same fields: Churintzio, Michoacan; Quiroga, Michoacan; Huetamo, Michoacan; Aguacate, Guerrero; Mazatlan, Guerrero; and Acachautla, Guerrero. In all these areas studied the fields were planted to maize, teosinte was wild around the margin of the fields and sometimes occurred as a weed in the fields, and Tripsacum was present within 100 yards of the field, either along stone walls or on rock outcroppings of a barranca. All of these sites are on limestone soils between 1350 and 1900 meters with the exception of Huetamo (600 m.). Although the data of the study are still in preliminary form, it is hoped that continued studies will yield field documentation on the mechanics of tripsacoid introgression via teosinte into maize and will explore the parallel variation found in Tripsacum, teosinte, and maize where the three occur together. [In the Balsas basin of Guerrero are found the most tassel-branched forms of maize, the most tassel-branched forms of teosinte (race Guerrero), and the most tassel-branched forms of Tripsacum (T. maizar). On the Central Plateau in central Mexico are encountered the maize plants with the most pronounced development of plant color, the most intensely colored teosinte race (race Central Plateau), and the Tripsacum species (T. pilosum and T. lanceolatum) with the most well-developed red plant color. There is also a parallel in the distribution of some of the most hairy forms of maize, teosinte, and Tripsacum on the Central Plateau.]

Critical field-collected clonal introductions of Tripsacum from these study areas are being maintained in the Maize Relatives - Genetics Garden of Tulane University.

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1. Biochemical study of anthocyanidins produced by different R alleles.

Analyses of the anthocyanins in maize are being carried out in this laboratory for the purposes of:

- (1) Using anthocyanin formation as an indicator to study gene action at various developmental stages.
- (2) Characterizing different allelic forms of the R locus with respect to anthocyanin production.

Five different alleles of the R locus were employed for this study:

- (1) standard R^rR^r -red seedlings, red anthers and colored aleurone.
- (2) R^gR^g Canada (P.I. 214199) -red seedlings, green anthers and colored aleurone.
- (3) R^rR^r Ecuador (1172) -red seedlings, red anthers and colored aleurone.
- (4) r^rr^r -red seedlings, red anthers and colorless aleurone.
- (5) r^gr^g -green seedlings, green anthers and colorless aleurone.

All stocks used were strains of W22 carrying A₁ A₂ C₁ C₂ Pr pl. The W22 B allele is probably B^b (pigmented glume base and culm but otherwise weak plant-color).

Plants for this study were grown in the greenhouse. Pigmented tissues were collected and extracted with 1% HCl in MeOH, concentrated in vacuum and hydrolyzed with 4N HCl for 30 minutes. By adding a few drops of isoamyl alcohol, the hydrolysate was separated into an organic and an aqueous layer. The aglycones in the alcohol layer were spotted on a thin layer plate coated with Avicel S.F. Cellulose. The chromatograms were developed in two directions. First, formic acid: 4N HCl (2:1 v/v),