

is attempted. Two types of modified strains of A158 have been used: (1) those which are homozygous for introduced teosinte chromosomes or chromosome segments and (2) strains homozygous for introduced chromosomes or chromosomal segments extracted from races of maize which are not in obvious contact with teosinte.

After removal of the grains, the cob is securely fastened in a vise and sawed longitudinally between the two consecutive rows of spikelets with a scroll saw holding a fine-toothed blade. The split halves of the cob are then smoothed with the help of a fine file until a few spikelets in the middle of the cob are exposed in a longitudinal section. Further smoothing is done with the aid of an electric sander employing a fine aluminum oxide abrasive paper. The data have been taken from five to seven spikelets from the middle of each cob under a dissecting microscope. Averages from five to seven cobs of each stock are then compared with the unmodified inbred A158 for each of the following characters: (1) length and angle of inclination of the rachilla, (2) width of the cupule, (3) shape of the lower glume, (4) degree of induration of rachis, cupule tissue and lower glume. The "impressor hardness tester" has been used for this purpose.

Studies have not yet been completed to give exact estimates of teosinte and *Tripsacum* introgression, but from the preliminary data, it seems evident that both teosinte chromosomes and "extracted" chromosomes produce in general the same effects. These are: (1) shortening in the length of the rachilla and its position somewhat inclined to the axis; (2) widening of the cupule; (3) lower glume curved upwards; (4) great induration of the tissues, especially those of rachis, cupule and lower glume.

S. M. Sehgal

10. *Tripsacum floridanum* crosses readily with corn.

What may be the most primitive species of *Tripsacum*, *T. floridanum* ($n=18$), which is now isolated geographically from corn in the Everglades region of southern Florida, has a high degree of crossability with corn. Each of the thirty-five ears with shortened styles which were pollinated with *T. floridanum* pollen yielded at least a few hybrid kernels and, as might occur naturally, some of these hybrid kernels germinated without benefit of embryo culture. The crossability of corn with other diploid species of *Tripsacum* is very much lower as found by Mangelsdorf and Reeves (1939) and other recent workers.

A counterpart of this situation occurs in some Peruvian races of corn which have been isolated geographically from Tripsacum and which cross more easily with Tripsacum (Farquharson, 1957).

If T. floridanum is the most primitive species of its genus as studies of its morphology indicate and if it is an amphidiploid of two $n=9$ species such as Manisuris, as certain cytological data suggest, then its crossability with corn may be more than a matter of segregation and drift. The polyploid nature of T. floridanum may have enabled it to overcome the genetic barriers which originally separated its $n=9$ ancestors from wild corn ($n=10$). This idea has some support in the fact that a higher level of polyploidy in the $n=36$ forms of Tripsacum dactyloides helps to overcome the present genetic barriers to crossing with corn (Weatherwax, 1955 p. 11).

The present high degree of incompatibility between Tripsacum and corn in Mexico and Guatemala may have resulted from a limited amount of reciprocal introgression between them as the range of this first species of Tripsacum overlapped with that of corn. Such reciprocal introgression might also account for the present tripsacoid races of corn and maizoid species of Tripsacum.

A possible alternative explanation of T. floridanum's crossability is that it is a peripheral species which, extending its range and becoming no longer sympatric with maize, lost some of the genetic factors which had previously served as barriers between the species.

The distribution of T. floridanum in the Everglades National Park is spotted. Once it takes hold in the rough oolite region between the pine lands and the glades or at the margins of small hummocks in the glades, it may spread out to several hundred clumps. Its numerous short tillers and narrow stiff leaves cause it to blend in with the other grasses and sedges about it.

Collections of T. floridanum at a number of sites in the Park have been made in an attempt to find a reduced $n=9$ form and to study variation in this species.

W. C. Galinat

11. The association of pollen grain size with ear length in corn.

After observing the features of a certain unusually long ear of open-pollinated Longfellow Flint corn, it occurred to the writer that the adjustments related to the evolution of increased ear length in ears enclosed in husks might include an increase in pollen grain size. This open-pollinated ear was divided into four regions, each