It has been observed that in every advanced cycle generation the number of plants that withstand the attack of borer is increasing significantly. It is hoped that after a few more cycles of recurrent selection sufficient resistance will be developed in the material to withstand the attack of the pest.

This corn borer is active from March until July, thereby relegating the growing period of maize to the fag end of the season. The limited growing season has forced the farmers to grow short duration varieties with the result that acre yields of maize are very low in this country. Efforts to develop borer resistant maize hybrids will enable the farmers to grow a long duration crop and thereby increase their yield.

Evergreen maize hybrids.

The maize crop is raised both for grain and green-fodder in the canal colonies of West Pakistan. The stalks of the crop usually dry up at the time of maturity and as such cannot be utilized for forage purposes. Under the circumstances the necessity for the evolution and introduction of a maize strain that matures its grain while the plants are still green had long been felt. One of the breeding lines at Yousafwala was found to be segregating for the evergreen character. The plants bearing this character remain perfectly green for about one month after the cobs are matured and harvested. Hybrid combinations from this material will provide the farmer at once grain for his family as well as green fodder for his cattle. There is a general shortage of green fodder at the time when the maize crop is harvested, as the summer season fodder crops are over and winter season crops are not yet ready for harvesting.

In view of great economic value of the evergreen character for the farmers in West Pakistan, a regular breeding program has been undertaken to transfer this habit into important inbred lines viz: Pb7, M14, WF9, L318, 38-11, WM13R, 54AP1 and 20P2 to incorporate it in the commercial hybrids.

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1. Chromosome numbers in maize root tissue culture.

During the past year and a half we have maintained continuous cultures of corn root callus on a modified basic White's media containing 2-4D. Before attempting to utilize such a tissue culture technology in genetic studies it was important to first determine the stability of the chromosome complement. Toward this end, and after nine months of continuous culturing, chromosome counts were made on nine cultures derived from seven independently initiated ones representing marked genetic stocks in two inbred backgrounds.

Eight of the nine cultures proved to yield cells with only the normal diploid 20 chromosomes. In such a population of chromosome counts cells are found with chromosome number estimates other than twenty (18, 19, 21, 22); these are rare and are found also in intact root cells scored as controls. The one exception to the diploid genome which has been encountered is a presumed diploid-tetraploid chimera, in that cells from the same culture yielded 20 and 35-40 chromosome counts.

Again at twelve months after initiation of the cultures chromosome counts were made on part of the material assessed at nine months. The same diploid chromosome number was found. The diploid-tetraploid chimera culture was not re-evaluated due to its poor rate of growth at that time and since. It is not, however, the only culture we have been experiencing growth rate problems with.

As far as can be determined by comparative observation between chromosome squashes of callus and intact root cells, no intrachromosomal aberrations are apparent.

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1. Two rings of 10 chromosomes each.

Plants having $2^{\circ}10$ were obtained from the cross of 1-5-6-7-8 by 3-2-4-9-10/3-2-4-9. A few seeds were obtained by backcrossing these as ♀ with pollen of 1-5-6-7-8. The plan is to establish a stock that is homozygous for both groups of interchanges. This will be irradiated to combine the two rings.

2. Chromosome identification set of interchanges.

Interchanges: 1-2a, 2-4d, 3-7c, 5-7c, 8-9a and 8-10b, backcrossed to the A188 inbred; but segregating 1 heterozygous:1 homozygous interchange are available.

3. Crosses between interchanges involving the same chromosomes.

Preliminary results have been obtained. In 2-6(8786) x 2-6c(2S.90, 6S.77 x 2L.37, 6L.25). There were 61 cells with an association of four at diakinesis and 10 with 10 pairs. In all cells with 10II, only one was associated with the nucleolus. This indicates that the end segments of the "pairs" from the interchange complex are paired homologously; the mid-segments in these same "pairs" are non-homologous. This agrees with the observation by Tabata (Cytologia 28:278-292, 1963).