

Tripsacum plant used and others, could account for the high frequency of hybrids. A more detailed study employing a number of different Tripsacum plants and certain maize stocks is being planned in an attempt to answer several questions posed by the results.

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2. Monogenic resistance to *Helminthosporium turcicum* extracted from teosinte.

In the 1962 Florida winter nursery plants of Guatemala teosinte were found to be highly resistant to northern leaf blight under natural epiphytotic conditions existing that year. The resistant plants were crossed to the susceptible inbred Oh43. Seedlings of the F₁ hybrid were tested in the greenhouse. All plants showed the typical phenotype for resistant lesions similar to the dominant (Ht) gene reported by Hooker in the 1963 M.N.L. In subsequent generations the material was backcrossed to the susceptible inbred for two generations and resistant progeny selected for backcrossing in each generation. A number of backcross generations were used to make the material more adapted to corn-belt conditions.

During the summer of 1963 backcross-two resistant plants (Ht/ht) were selfed and also backcrossed again to the susceptible recessive parent (Oh43, ht/ht). The backcross plants were also test crossed onto the susceptible inbreds Bl4 and WF9. The selfed and testcross seedlings were tested in the greenhouse. The limited data, presented in the following table, indicate a single dominant gene will explain the resistance observed. The phenotype of the resistant plants is similar to that found in GE 440 and 'Ladyfinger' popcorn by Hooker. Further tests are necessary to determine if this gene is allelic to the Ht alleles found in these two stocks. Should the gene be nonallelic to the Ht gene of Hooker, it may be possible to incorporate a greater degree of resistance to northern leaf blight than each gene separately.

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3. A possible cause for unreduced female eggs in corn-Tripsacum hybrids.

The occurrence of unreduced megasporocytes in the F₁ hybrid between corn x T. dactyloides has been reported by Mangelsdorf and Reeves (Texas Bull. 574). Galinat (M.N.L. 1961) found similar results for corn x T. floridanum hybrids. Several mechanisms could account for the unreduced eggs in these hybrids. One of these could be the failure of cell wall formation in either mitotic or meiotic divisions. Failure of cell wall formation during mitosis should give rise to somatic sectors of tissue carrying the doubled number of chromosomes. This should result in fertile eggs which are either "clustered" on the pistillate inflorescence or occur in a certain pattern.

In backcrossing corn x T. dactyloides hybrids (female parent) with the corn parent, "normal seeds" resulted from 61% of the pollinations.