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1. Studies on the resistance of corn to Helminthosporium maydis.

During the last few years, a project has been underway with the purpose of finding resistant genes to Helminthosporium maydis Nisik and Miyake in pure corn lines, using a collection of 350 lines (S8-S34) and one made up of lines selected from populations derived from various Latin American countries.

On account of such studies, this Institute now possesses a number of lines resistant or very resistant to H. maydis. Some of them have already been distributed among private and official Institutions devoted to corn plant breeding projects.

At present our research work attempts to find a relationship among T cytoplasm and some other cytoplasms with various genotypes resistant to Helminthosporium maydis Nisik and Miyake.

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2. Euchlaena perennis Hitch. X Zea mays L.

Studies on Euchlaena perennis Hitch. (2 or 4N = 40) X Zea mays L. (2n = 20) were carried out by R. A. Emerson and G. W. Beadle in 1930 (Amer. Nat. LXIV: 190-192) and by D. S. Shaver in 1963 (Maize News Letter 37:8-11). In 1964, we carried out crosses between Euchlaena perennis Hitch. and Zea mays L. getting a perennial F_1 with very strong plants, with abundant tillers and with inflorescences similar to Euchlaena. A cytological study of the F_1 plants showed in diakinesis trivalents, bivalents, and monovalents; these characteristics agree with Emerson's and Beadle's studies. Only one F_2 kernel was formed in every 100 flowers.

The F_2 plants showed a segregation of 75% annual plants and 25% biennials or perennials, with a pollen fertility of about 0-50% in 85% of all plants and with a fertility of about 85-95% in 15% of all plants.

After six generations of mass and genealogical selection, we got a perennial population with 80% fertility. This population has some