than with a mixture of isolates as used in 1973. Disease readings were based upon the same scale for 20 plants per plot in this experiment.

The inheritance of susceptibility and resistance appeared to be quantitative in nature, so the Gardner-Eberhart model was used to partition the variation among generation means into line effects (additive) and heterosis effects. When the analyses were conducted with parents included (Analysis II), heterosis effects were subdivided into average, line and specific heterosis effects. Without parents (Analysis III), general and specific effects were estimated.

Significant additive effects were detected in the analyses of the Lincoln data for both years and for the combined locations in 1973. This variation in parental contributions of homozygous loci amounted to 80.7-88.7% of the total variation among genotypes for the different analyses. Heterosis effects were significant only for the Lincoln data where syringe inoculation at pollination time was used, in which case specific heterosis effects accounted for 7.0% of the total variation. This was probably due to the specific effects of susceptible line B14A crossed onto the more resistant lines. Analyses with and without parents gave similar results.

Partial dominance for susceptibility to LFW is indicated by the fact that the F_1 readings of crosses between resistant and susceptible lines are generally greater than the midparent values.

Breeding techniques concentrating on additive gene effects should be effective in breeding for resistance to LFW. Testing over several locations is recommended due to significant genotype-by-location interactions. It appears, however, that LFW will become an economically serious disease only when plant injury occurs in conjunction with very warm and moist environmental conditions and the presence of the disease organism.

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Comparison of nuclear DNA from corn, Tripsacum and their hybrids — Tripsacum hybridizes with its relative, corn, and we have been able to characterize corn, Tripsacum and their hybrids for the buoyant density of nuclear DNA. It was of particular interest to determine if the parents of an intergeneric cross could vary in buoyant density and thus in their guanine + cytosine ratio. It was also important to make the rather novel comparison of parents versus hybrid with regard to buoyant density.

Corn-Tripsacum hybrids were made in the field by shortening the corn silks on the day preceding pollination with Tripsacum pollen. Harvested seeds were stored in a freezer and dusted with Arasan prior to germination in rolled paper towels. The germinated seeds were placed in expanded peat pellets until the plants were large enough to transplant to the field. Hybrids were easily identified by their gross and floral morphology.

Nuclear DNA was obtained and characterized for buoyant density as previously described (Shah and Levings, Crop Sci. 13:709-713, 1973). Nuclear DNA was isolated from purified nuclei to avoid contamination from organelle DNAs and to increase the yield. Buoyant densities were determined in neutral CsCl with Micrococcus luteus DNA as a marker on a Spinco model E analytical ultracentrifuge equipped with UV optics. Buoyant density values and the corresponding guanine + cytosine contents were calculated by using the equations described in the previous reference.

The corn parents involved in the cross were from the Bolivian race, Pororo, the nuclear DNA of which had a buoyant density of 1.702 g/cm^3 (Table 1).

Table 1. Buoyant density of nuclear DNA of corn, Tripsacum and their hybrids.

	Buoyant density g/cm^3
Parents	
Z. mays (Pororo)	1.702
T. dactyloides (64-48)	1.702
T. dactyloides (64-52)	1.701
Hybrids	
Z. mays (Pororo) x T. dactyloides (64-48)	1.702
Z. mays (Pororo) x T. dactyloides (64-52)	1.702

Previously, we had determined the mean density of DNA from several corn belt hybrids to be 1.702 g/cm^3, so Pororo appears to be typical of corn. Two different T. dactyloides parents, 64-48 (1.702 g/cm^3) and 64-52 (1.701 g/cm^3) were used in this study. The corn-Tripsacum hybrids both had densities of 1.702 g/cm^3. The difference between the 1.701 parent and the 1.702 hybrid was statistically significant at the 5% level. If it is assumed that these DNAs are composed of

only the four common bases, then buoyant densities of 1.701 and 1.702 g/cm^3 have molar percentages of guanine and cytosine of 41.8 and 42.8, respectively.

The nuclear DNAs of corn, Tripsacum and their hybrids consisted of single main bands with no satellites, as revealed by the neutral CsCl analytical centrifugation technique. This has been characteristic of all the grasses thus far studied.

The nuclear DNA of Tripsacum is similar to corn and other grasses in that they all have relatively high buoyant densities and thus guanine + cytosine contents. In one case, the intergeneric cross of corn and Tripsacum was successful despite the fact that its two parents differed by 1% in guanine and cytosine content; the hybrid between the two different parents resembled the high parent, corn,in buoyant density.

C.S. Levings, III, and D.H. Timothy

A fast renaturing fraction of nuclear DNA of corn — When DNA is melted and then allowed to renature for a short period of time, a fast renaturing fraction of the total DNA can be isolated. Using this technique we have isolated and partially characterized a fast renaturing fraction of nuclear DNA (nDNA) of corn.

Nuclear DNA was isolated and purified as previously described (Shah and Levings, Crop Sci. 13:709-713, 1973). The DNA was sheared, melted at 100^{o}C for 10 minutes and then allowed to renature (Cot = 1). Single- and double-stranded DNAs were separated by hydroxyapatite chromatography. Buoyant densities were determined in neutral CsCl with Micrococcus luteus DNA as a marker on a Spinco model E analytical ultracentrifuge (technique described in previous reference).

Under the conditions of this study (Cot = 1), a fast renaturing fraction of corn nDNA has been isolated which comprises about 11% of the total nDNA. Neutral CsCl analytical ultracentrifugation of this fraction revealed a single band with no satellite and a buoyant density of 1.708 g/cm^3; since total nDna has a density of 1.702 g/cm^3, the fast renaturing fraction is richer in guanine and cytosine than the main band.

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"Normal"-appearing sugary alleles — As part of my studies of kernel carbohydrates, I am incorporating various sugary alleles into the W64A inbred. During backcrossing I have been able to identify self-pollinated ears segregating for su-am or su-66. Both alleles have near-normal phenotypes but have a translucent halo-