Results:

1. Leaf surface per plant decreases significantly as the result of higher plant density.

2. There is a considerable difference in the leaf surface between the two investigated combinations.

3. When all leaves were cut below the ear, the grain yield per plant decreased less than when half of the leaves above the ear were cut.

4. The amount of grain produced per 100 cm^2 leaf surface above the ear is significantly higher than that for leaves below the ear.

<div align="right">J. Németh and L. Pintér</div>

Investigation into the relationship between moisture content and severity of infection in maize —In 1973 in Szeged the changing of moisture was examined for 36 different-maturity inbred lines and 44 hybrids. The samples were taken at 10-day intervals from August 23 to October 16. On September 5 artificial inoculations were made with Fusarium graminearum by inserting an inoculum-laden toothpick into each ear of 15 plants. A numerical rating of 1 to 5 constituted a linear scale of percent rot in the inoculated ear. These values were a measure of the intensity of infection. The results obtained are, for the relationship between moisture content and severity of infection:

Inbred lines   r = + 0.53***   n = 36

Hybrids   r = + 0.46**   n = 44

For the relationship between silking date and severity of infection:

Inbred lines   r = + 0.53***   n = 36

Hybrids   r = + 0.46**   n = 44

From the data the following conclusions may be drawn:

1. We obtained a significant correlation coefficient between the moisture content and the severity of infection for both inbred lines and hybrids.

2. The correlations between days to mid-silk and the severity of infection of the ears were also significant.

<div align="right">A. Korom and L. Kálmán</div>

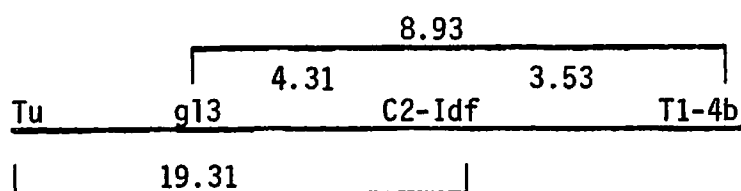THE UNIVERSITY OF CONNECTICUT

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Linkage relations of the diffuse factor on chromosome 4 — Prior written reports have disclosed that the diffuse factor is located on chromosome 4, but its exact position, relative to other marker sites, has not been given in any written form. Linkage studies are continuing and the following statements can now be made:

    a. Diffuse, which in the highly unstable state conditions a high frequency of somatic sectoring in pericarp tissue, has been located between glossy-3 and the

breakpoint of the reciprocal translocation T1-4b. The order concluded on the basis of two point tests is presented in Table 1 along with the sample size and percent recombination.

Table 1. Recombination values and linkage of markers on chromosome 4.

Chromosome interval	Sample size	Recombination %
Tu-C2-Idf	3933	19.31
gl3-C2-Idf	1034	4.31
C2-Idf-T1-4b	2141	3.53
gl3-T1-4b	524	8.93

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                          8.93
                   ┌─────────────────────────────────┐
                   ┌  4.31              3.53          │
            Tu        gl3          C2-Idf          T1-4b
            └───────────────┐
            └    19.31      ┘
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b. The stable, fully active form of diffuse, which inhibits pigment in all plant tissues even in single dose, was tested individually against two other markers on chromosome 4: distal pale (dp) and c2. In a population of 970 individuals dp and diffuse showed 23.0 percent recombination. No data relative to the other chromosome 4 markers and dp are available from these current matings, but Dr. E. G. Anderson, who supplied the distal pale stocks for these studies, indicated that dp was "really far out on chromosome 4." Most probably, distal pale is more distal than diffuse. Since no direct confirmation of the direction is yet available, its position in Table 1 has been omitted.

c. In a population of more than 5000 individuals c2 and diffuse showed no proven recombinants. Since c2 c2 c2 conditions colorless aleurone and the active form of diffuse produces an indistinguishable phenotype, crossover tests required that only 1/2 of the recombinant types in the total population would be detectable, and phenotypically they would be colored aleurone. All seeds from the mating C2 diffuse/c2 nondiffuse x c2 nondiffuse/same that exhibited any detectable level of pigment were tested as presumptive C2 nondiffuse chromosomes resulting from crossing over. All such individuals proved to be variations in the expression of the active form of diffuse; thus, no recombinants were recorded.

Is diffuse an allele of C2 or does diffuse restrict exchange in its vicinity? In order to check these possibilities, tests were made to measure the recombinational rate between glossy-3 and two translocations, T1-4b and T4-9b, with and without the diffuse character inserted between them. The data are clear (Table 2);

diffuse in the form tested, the highly unstable state, does not reduce recombination between the outside markers. Thus, C2 and diffuse are situated at the same chromosomal site. Are they alleles? Operationally, since there has been no observed recombination between C2 and diffuse they must be at least very close to each other in a physical sense. However, functionally they are quite different. For one, diffuse in the active state suppresses pigment in every tissue of the corn plant including the pith and roots, while c2 has so far been found to stop pigment formation in the aleurone only. On the other hand, there are those states of diffuse which apparently suppress pigment formation in the aleurone but not detectably in the pericarp. This latter grouping at first looks like a c2 effect but with one important difference. When this form of diffuse, called very dark diffuse, is in three doses in the aleurone, the aleurone is not colorless but rather exhibits modest levels of aleurone pigment. Since pigment suppression

Table 2.   Recombination between glossy-3, diffuse and reciprocal translocations T1-4b and T4-9b.

$$g13 \xrightarrow{\quad 18.49 \quad} T4\text{-}9b \ (N = 173)$$

$$g13 \xrightarrow{\quad 5.43 \quad} C2\text{-}Idf \xrightarrow{\quad 15.6 \quad} T4\text{-}9b \ (N=423)$$

$$g13 \xrightarrow{\quad 11.01 \quad} T1\text{-}4b \ (N=218)$$

$$g13 \xrightarrow{\quad 4.25 \quad} C2\text{-}Idf \xrightarrow{\quad 5.23 \quad} T1\text{-}4b \ (N=306)$$

in a clear dominant fashion is a constant characteristic of diffuse, it is suggested that the symbol C2-Idf be used. The nondiffuse situation would then by symbolized C2 or C2-idf. With such a symbol the individual characteristics will be noted while expressing the zero recombination result.

Irwin M. Greenblatt

A major modifier of diffuse instability — The somatic sectoring rate conditioned in the pericarp by C2-Idf, while variable in different pedigrees, exhibits a rather repeatable average number of stripes in a specific line. The heterozygote produces, on the average, one-half as many stripes as the homozygote. In one pedigree, Inbred W22R C2-Idf heterozygotes averaged 32 stripes on an area of 50 kernels, and the homozygote averaged 64 stripes in the same area.

A discrete variant of the above rates has also been found. It is known as very dark diffuse and in the same W22R background produced only 0.10 stripes per 50 kernels. The single stripe found in the entire pericarp of an individual of this