

yellow, translucent grains, but only if the freeze-dialysis procedure is followed. Using lactate as a primary substrate, 97-100% of the grains stain blue and opaque. With ethanol, 50% stain blue and opaque and 50% stain yellow and translucent with zero statistically significant overlap; do not overstain. One of us (MF) has screened almost 200,000,000 pollen grains using these methods; the method works. We also know that the stain is able to detect as light blue grains 5% of wild-type ADH levels.

Adh is about 1.5 mu from lw (Schwartz) and less than 1 mu from Kn (Freeling) on the long arm of chromosome one. Like wx, Adh should be of general utility. Unfortunately, simultaneous scoring for waxy and ADH may prove difficult, especially since ADH is stained in shed pollen.

The power of pollen analysis (per Oliver Nelson's prototype work with wx) as a means for recombinational frequency or topological mapping within the Adh cistron would be greatly increased if we had flanking pollen markers. Small pollen, fluorescent pollen, oblong pollen and the like would be ideal if they prove transmissible; they need not specify competitive gametophytes. If anyone has a potential marker within 20 mu of lw your cooperation is requested.

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Effects of plant density and spacing on the grain yield of hybrids — In Szeged in 1973, the effect of different plant densities and of the cutting of the leaf surfaces on yield were examined. Two hybrids were sown with two spacings in a randomized block layout. After fertilization leaves were cut upwards from below in three different ways. Table 1 shows the extent of leaf cutting.

Table 1. Extent of leaf cutting.

Treatments	Surface of leaves (cm <sup>2</sup> )			
	A90 x 153R		W64A x Oh43	
	b <sub>1</sub>	b <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>
a <sub>1</sub> control (without cutting)	4913.2	4251.3	5562.3	4944.7
a <sub>2</sub> plants with leaves cut below ear	2241.4	2119.4	2781.8	2337.1
a <sub>3</sub> plants with half of leaves cut above ear	820.6	753.2	1017.9	786.0

b<sub>1</sub> = 5 plants/m<sup>2</sup>; b<sub>2</sub> = 10 plants/m<sup>2</sup>

The size of leaf surface was established with the aid of the Montgomery formula. Seeds were planted on May 15.

In 1973 during the growing season there was less precipitation compared with the 20-year mean (Table 2).

Table 2. Monthly precipitation sums (mm).

	April	May	June	July	August	September
Mean of 20 years	40.7	53.8	65.7	50.0	48.2	32.4
1973	59.9	33.9	79.9	43.5	18.4	12.2

The other ecological factors (temperature, hours of sunshine, etc.) did not show a significant difference from the 20-year mean.

The experiment was analyzed by variance analysis. Each of twenty plants represents a separate replication. Table 3 shows the effects of different plant densities on leaf surface and the change of leaf surface per hybrid.

Table 3. Change of leaf surface ( $\text{cm}^2$ ) with plant density.

Genotype	Plant density	
	$b_1$	$b_2$
A90 x 153R	4913.19	4251.28
W64A x Oh43	5562.30	4944.69

$SD_{1\%}$  376.48;  $SD_{0.1\%}$  501.01

Table 4 gives the grain yield per plant adjusted to 14% moisture and yield per 100  $\text{cm}^2$  leaf surface, according to the extent of leaf cutting.

Table 4. Changes in grain yield (gr) with plant density and cutting of leaf surface.

Extent of leaf cutting	A90 x 153R				W64A x Oh43			
	gr/plant		gr/100 $\text{cm}^2$ leaf surface		gr/plant		gr/100 $\text{cm}^2$ leaf surface	
	$b_1$	$b_2$	$b_1$	$b_2$	$b_1$	$b_2$	$b_1$	$b_2$
$a_1$	111.7	79.7	2.30	1.90	90.0	75.0	2.67	2.37
$a_2$	96.5	70.9	4.35	3.39	70.9	59.6	2.59	2.64
$a_3$	56.7	58.5	7.03	7.93	54.4	43.0	5.49	5.94
$SD_{1\%}$		0.71				0.72		
$SD_{0.1\%}$		0.92				0.93		

## 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<sup>2</sup> leaf surface above the ear is significantly higher than that for leaves below the ear.

J. Németh and L. Pintér

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.

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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