

ADDENDUM:

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1. Stalk rot studies in maize.

In 1970, and especially in 1971 and 1972, we had a strong stalk rot infestation of maize associated with lodging, causing a significant yield loss in Hungary. Stalk rot due to Diplodia, Gibberella and Fusarium is common in Hungary and has caused increased infestation and damage both in seed and commercial crop production in the past two years.

We studied resistance to stalk rot in a series of diallel crosses of four inbred lines, including the reciprocals. The lines were: 156, a resistant inbred of Martonvásár, N 6, susceptible, H Mv 850-2, also Hungarian, and W 17, moderately resistant to stalk rot of maize.

Observations were made at three times. Final evaluation was made at complete maturity in the middle of November. Individual plants (60) from each hybrid and its parental lines were evaluated. The observations on percentage of natural infection in the direct and reciprocal hybrids, as well as in their parental lines, are presented in Table 1.

From Table 1 it can be seen that the percentages of infected and lodged individuals in the inbred lines are practically the same in both years. It is remarkable that the percentage of stalk rot of inbred lines showed no change in 1972, when the natural infection and the consequent lodging was very severe.

In contrast to the above, the behavior of diallel hybrids is different. If we consider the occurrence of stalk rot disease as 100% in 1971, then it is 397% in 1972. It is evident from Table 1 that the resistant and the moderately resistant lines give, on an average, worse hybrids than the parents themselves. At the same time, the very susceptible N 6 hybrid progenies are generally better than the N 6 parent. Moreover, there is a remarkable difference between the direct and reciprocal hybrids in stalk rot resistance.

Table 1
 Percentage of stalk rot infection in a diallel cross and
 in the parental inbred lines

Pedigree	Percentage of stalk rot infection		Average	Reciprocal differences
	1971	1972		
H Mv 850-2 x 156	15.0	35.5	25.2	5.8
156 x H Mv 850-2	18.8	20.0	19.4	
H Mv 850-2 x N 6	5.2	65.5	35.3	19.9
N 6 x H Mv 850-2	10.5	100.0	55.2	
H Mv 850-2 x W 17	2.6	34.3	18.5	12.7
W 17 x H Mv 850-2	19.4	43.1	31.2	
N 6 x W 17	17.0	57.9	37.5	5.2
W 17 x N 6	13.1	72.3	42.7	
N 6 x 156	25.0	70.1	47.6	24.7
156 x N 6	11.1	34.8	22.9	
W 17 x 156	7.8	57.3	32.6	10.1
156 x W 17	11.7	33.3	22.5	
Average	12.1	53.4	32.8	13.1
	14.1	50.6	32.3	
156	0.0	0.0	0.0	
N 6	77.7	81.6	79.7	
H Mv 850-2	6.6	8.9	7.7	
W 17	2.8	5.0	3.9	
Average	21.8	23.9	22.8	

There is a significant positive correlation between the stalk rot of maternal parent lines and their hybrids. A correlation coefficient of $r = 0.7455$ ++ is observed, which is significant at the 1 per cent level. Similarly, we have obtained a significant relationship between stalk rot of the two parent lines and their hybrids. The correlation coefficient was $r = 0.6941$ ++, which is also significant at the 1 per cent level.

We have investigated the stalk rot resistance of some normal lines and their opaque analogues, as well as hybrids (Table 2). Among them, the best was the single cross hybrid, 156 x B 14, in both the normal and the opaque forms.

Table 2
Stalk rot resistance of opaque-2 and normal hybrids
and their parents

Pedigree	Normal	Opaque-2	Average
156	0.0	4.1	2.0
W 153	3.8	7.1	5.4
156 X W 153	20.0	30.0	25.0
156	0.0	4.1	2.0
B 14	0.0	0.0	0.0
156 X B 14	3.3	3.1	3.2
N 6	81.6	75.1	78.4
C 103	0.0	2.0	1.0
N 6 X C 103	63.1	53.4	58.3
Inbreds average	14.2	15.3	14.7
Hybrids average	28.8	28.8	28.8

István Kovács

2. Heat unit differences for germination of maize.

The many year's experiences with cold testing of maize have led to significant achievements in maize breeding. Attention has mainly been concentrated on good germination percentages at low temperatures. Maize breeding, together with a good seed technology and effective fungicides, resulted in a good field stand even in northern regions of maize cultivation. But there are also great differences in germination processes among samples germinating well under low temperatures.

In the last ten years we tested a few hundred samples of breeding materials in Martonvásár and observed highly significant differences in the heat requirement of maize genotypes which have good germination per-