Table 1. Relationships of two earliness characteristics in some of the CIMMYT varietal crosses.

Symbol of varietal crosses	Days to 50% male flowering											
	Average number of leaves above the ear											
	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2
131 A	109											
130 A	108											
129 A		113										
39 A			107									
64 A				110								
108 A					110							
77 A						114						
127 A							116					
55 A					96							
76 A					99							
9 A						100						
18 A							100					
40 A								100				
1 A									100			
50 A											106	
4 A												106

Mean male flowering time: 104 days
Mean leaf number above the ear: 5.97

The adaptability to environmental factors can be evaluated on the basis of such earliness characteristics as the days to 50% male flowering and the number of leaves above the ear. We obtained a highly significant positive correlation ($r = 0.2989^{+++}$) between these two traits. Within this relationship, however, we have found several special responses to the climatic conditions, including the day length. It can be seen in Table 1 above that certain combinations having a lower number of leaves above the ear require more days to 50% male flowering; conversely, there are certain combinations which have relatively more leaves above the ear and at the same time have a short vegetative period.

I. Kovács

Heat requirement for germination of maize at low temperature — We have presented data in the 1973 News Letter (47:214-216) on the characteristic behavior of certain inbred lines of maize during the germination process and on their heat requirements at low temperatures (10 days at 8°C, followed by 21-22 days at 14°C. planted in a plastic box 5 cm deep in soil). In the present paper we have new experimental data from tests conducted in the incubators of the Martonvásár Phytotron.

Effect of growing conditions of different years: We found that seeds harvested in different years were very similar in their time of germination and heat requirements (Table 1), despite the variable quality of the seed, as indicated by

the germination percentages. We concluded that the heat energy required for germination was little affected by the environmental conditions of different years.

Table 1. Germination data for seeds of inbred lines B14, WP14 and N6 harvested in different years.

Inbred	Year of Harvest	Germination (%)	Days	Sum of temperatures (°C)
B14	1972	70	21	234
B14	1973	85	22	248
WP14	1966	80	22	248
WP14	1970	86	22	248
WP14	1972	56	21	234
N6	1969	70	25	290
N6	1973	56	25	290

Comparative tests on inbreds and hybrids: Forty-five inbred lines and 28 hybrids differed by only 3% in germination percentages, but by 3.5 days in germination time and 49°C in heat unit requirement, an average difference of 17%. We observed differences of 13 days among the various inbred lines and 10 days among the hybrids (about 10 cm growth). Greater differences could possibly have been observed, but most of the sweet corn samples had not germinated or had only started germination by the end of the one-month cold test.

Table 2. Heterosis in heat requirement.

Combinations	Sum of temperatures (°C)		
	$\overline{P}$	F_1	$\overline{P}$ (as % of F_1)
M5190 x B14	248	178	139
HMv1410 x B14	248	192	129
M5190 x HMv1311-1	227	192	118
HMv1366 x HMv1311	213	206	103
HMv1410 x W22R	220	220	100
156 x B14	248	220	113
HMv1410 x HMv1322	283	248	114
M5190 x A239	276	248	111
HMv1410 x OH05	269	248	108
HMv1410 x HMv424-e	311	318	98
Average	253.7	231.4	

Heterosis: Experimental data on the hybrids and their mid-parents are presented in Table 2 above; it is interesting to note that heterosis resulted in reduced heat requirements for all but two of the hybrids.

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