been calculated, defined as the difference between the value of the hybrid and the average of the two parental values:

$$D = H - \frac{P_1 + P_2}{2}$$

For each character 34 deviations are thus obtained (one for each hybrid); their average m is calculated as well as the standard error of their distribution and the relation m/s in absolute value which reflects both intensity and regularity of the effect of heterosis. Moreover, the average relative deviation has been calculated (as percentage of the average value of the parental inbreds).

Character	Average m	Standard error s	m/s	Relative deviation
Interval emergence-flowering	- 6.7	1.4	<u>4.9</u>	- 9.5
Ear height	+ 27	11	<u>2.5</u>	+ 46
Total height	+ 51	14	<u>3.6</u>	+ 38
Relative ear height	+ 1.9	2.9	0.7	+ 4.3
Leaf number	- 0.8	0.7	1.1	- 4.4
Ear length	+ 3.5	1.1	<u>3.2</u>	+ 27
Number of rows	+ 0.3	0.7	0.5	+ 2.5
Ear number per plant	+ 0.23	0.32	0.7	+ 13.1
Kernel weight	+ 58	35	1.7	+ 26
Yield	+ 28	9.2	<u>3.1</u>	+ 147

The effect of heterosis is significant (5% level, m/s values underlined) for interval emergence-flowering (precocity), total height, ear length, yield and ear height. The most marked effect of heterosis is observed on flowering precocity (m/s = 4.9); the hybrids flower an average of 6-7 days before the parental strains; next comes total height (m/s = 3.6), the hybrids being an average of half a meter (m = + 51) taller than the parents. The number of rows of the ear is generally but little affected by heterosis (lowest m/s value: 0.5).

Finally, the effect of heterosis on yield, although the most important (147%) with regard to the yield of the strains, has been in these trials less constant (m/s = 3.1) than on earliness, height or length of the ear.

3. <u>Heredity of male sterility (Texas and U.S.D.A. types) in hybrids of dent x flint</u>.

In order to obtain some information on the behavior of Moroccan flint inbreds in crosses with male-sterile stocks of the cytoplasmic

type, a first hybridization program was carried out in 1955, with the American male-sterile lines W F_9^T, W F_9^S, W 22^T and W 22^S (all originated at the University of Wisconsin). In 1956, 20 single hybrids were studied with regard to pollen fertility. The following results were obtained:

Pollen Parent	Ear Parent (male sterile line) W F_9^T	W 22^T	W F_9^S	W 22^S
21	-	-	fertile	-
32	-	sterile	fertile	-
224	sterile	sterile	-	sterile
228	-	-	fertile	-
250	sterile	-	fertile	sterile
255	sterile	sterile	-	-
346	-	sterile	-	-
368	-	-	½ sterile	sterile
386	fertile	-	-	-
612	sterile	-	-	sterile
623	sterile	-	-	-
628	-	-	-	½ sterile

Remarks

(1) - Strain 386 is the only inbred that gives a male sterile hybrid with the male sterile strains of Texas type.

(2) - Some inbreds give different results according to the type of sterility (250), or whether the female parent was WF_9 or WF_{22} (250 and 368).

(3) - There are two hybrids of intermediate type: WF_9^S x 368 and W_{22}^S x 628, which produce a variable ratio of viable pollen grains without ever being either completely fertile or completely sterile.

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