

Chalco Teosinte. A detailed study was made of teosinte in the Chalco area. Observations were conducted over the entire growing season in almost every part of the valley and under a wide variety of cultivation practices. In direct contrast to the situation studied in Guerrero, teosinte is limited to cultivated fields as a weed where it mimics maize. Field to field inspection indicated considerable variation in the number of teosinte plants, but essentially fields were of two types: either teosinte was absent (less than 1% of the plants in the field), or teosinte was present (more than 3%, usually between 5 and 15% of the plants in the field). The two classes were almost equally frequent. At the end of the season three selected representative fields were harvested and every plant was scored. The results are presented below:

Field	Total No. of Plants in the Field	Maize x teosinte Hybrids	% of Teosinte Plants in the Field*
Los Reyes	17,511 (acre)	38	4%
Chalco	17,574 (acre)	39	9%
Amecameca	9,121 (1/2 acre)	44	5%

\*Based on sample counts of 3600 to 4000 plants at the time of pollination.

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1. Estimates of spontaneous non-reduction in diploid inbreds.

Three to thirteen plants in each of 121 dent inbreds were pollinated by Synthetic B, a tetraploid variety. Plump and presumably tetraploid kernels were counted, as well as the shriveled triploids on each ear. The following year, plump kernels were planted and the resulting plants were pollinated by a diploid. At maturity, each plant was scored for its ploidal nature on the basis of seed set.

The frequency of diploid eggs, presumably arising largely from non-reduction varied widely from inbred to inbred. Eighty five percent of the inbreds produced no verified tetraploids in as many as 3,500 fertilizations. However, the frequency of tetraploidy in the WF9 crosses was high.

Frequencies of tetraploid and triploid progeny from diploid-tetraploid crosses.

Seed parent	Total no. fertilizations	Total no. verified progeny		Frequency per 10,000 fertilizations	
		4n	3n	4n	3n
WF9	230	8	0	348	0
R205	870	15	0	172	0
B46	2100	17	1	81	5
38-11	320	2	0	62	0
R107	320	2	0	62	0
B10	900	4	0	44	0
R211	870	0	10	0	115
R81	2720	0	9	0	33

The quality of triploid seed varies widely. All triploids cited in the table survived field planting and in all cases were plump and indistinguishable from tetraploid or diploid kernels.

An unusual ear was found in inbred B10 pollinated by the 4n male. The ear bore the usual shriveled triploid kernels on one side and plump kernels on the opposite side. Further, the frequency of triploids among the plump kernels was very low. Subsequent examination of stomata of seedlings from plump kernels revealed that they were 4n. The sector bearing plump kernels presumably was tetraploid. Estimates of spontaneous non-reduction, based on unmarked 2n x 4n crosses, are likely to be too high since tetraploids arising from sectorial chimeras cannot be distinguished from those arising from meiotic accidents.

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2. 4n corn by 4n sorghum hybridization attempts.

Attempts have been made for several years to cross autotetraploid sorghum and autotetraploid corn. The effort has primarily been made using corn as female although male sterile tetraploid sorghum has also been used as female on occasion.

In 1962, approximately 80 putative hybrids were dissected from kernels exhibiting varying degrees of stimulation and transferred to sterile media. Many failed to differentiate normally; others slowly developed and were transferred to pots. All those showing near-normal growth have turned out to be parthenogens, or contaminants.