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1. Survival of tetraploids in mixed 2n-4n plantings.

Four mixtures of varying proportions of tetraploid Synthetic B and diploid Ill. 1996 were grown in isolation in 1959. The plots were allowed to open-pollinate to provide free competition between pollen of diploids and tetraploids. After harvest, shriveled triploids were screened out, leaving a mixture of plump diploid and tetraploid kernels. A random seed sample from each of the four plots was planted the following year, again in isolated blocks.

Random seed samples of each of the four mixtures harvested from the plots in 1959 and in 1960 were planted and all plants detasseled. Interplanted diploid hybrids provided pollen. Tetraploids were identified at maturity by the presence of triploid kernels.

Survival of tetraploids was unexpectedly poor. In populations involving as little as a 10% admixture of diploids, virtually all tetraploids would be expected to disappear after three generations of competition.

Survival of tetraploids in mixed 2n-4n plantings.

	Initial population*							
	90:10		80:20		60:40		40:60	
Gen. of open-pollination	1	2	1	2	1	2	1	2
No. plants observed (2n and 4n)	745	763	798	840	827	840	846	842
% 4n plants	65	31	32	12	16	4	1	0

\*4n percentage listed first.

The rapid decline in 4n's was primarily brought about by more rapid growth of haploid pollen and/or its establishment than in the case of diploid pollen. A series of pollinations involving 4n females x unrelated 4n pollen parents, followed 3 1/2 hours later by application of haploid pollen, were made. Even with the long delay, haploid pollen tubes were able to effect fertilization at a high frequency. Genotype of pollen of the tetraploids appears to be of importance in establishment and/or pollen tube growth rate, in diploid or tetraploid styles.

Summary of  $4n$  seed set in  $4n \times 4n$  pollinations, followed  
3 1/2 hours later by pollination from a diploid source.

Pedigree (1)	No. pollinations	% $4n$ kernels (mean)	Duncan's multiple range test (2)			
A. F. x "W8" (+2n ♂)	74	46	a	b		
A. F. x "W26" (+2n ♂)	63	34	a		c	
A. F. x "Oh51A" (+2n ♂)	53	37		b	c	
"W8" x A. F. (+2n ♂)	72	59				d
"W26" x A. F. (+2n ♂)	22	53	a			d

- (1) First named member was seed parent. A. F. = Argentine Flint.  
(2) Means followed by same letter are not significantly different from each other (5% level).

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### 1. The use of hypoploids in identifying naturally occurring duplications.

We have commenced using various hypoploids in an arm by arm search for naturally occurring duplications in the maize genome. Assuming that such duplications are not uncommon, it is argued that during meiosis in the hypoploid individual, the chromosome arm, or part thereof, that is in haplo condition should synapse occasionally with segments of other chromosomes representing duplications of chromatin in the haplo arm. Crossing over in such "illegitimately" paired regions should yield gametes carrying reciprocal interchanges; the identification and analysis of translocations originating in this way might be expected to reveal the nature and extent of naturally occurring duplications.

D. E. Alexander presented preliminary reports (see M.G.C.N.L. 1954 and 1956) on a study which suggests that "crossing over had occurred between non-homologs during megasporogenesis of haploid maize plants." He suggests that cytological analysis of semisterile progeny of monoploid maize plants should lead to inferences concerning duplication in the genome. The use of hypoploids, as suggested here, should afford greater precision in searching for these duplications. Moreover, even though the hypoploid individual, as a result of gross deficiency, customarily