

Reciprocal introgression of high condensation from maize into teosinte causes the primitive rectangular outline of the rachis segment to become compressed to a more triangular form. (Galinat, Bot. Mus. Leaf. 17 (8)).

Corn with more than an average amount of fasciation should be more tolerant of reduced condensation from teosinte than the average strain. Inbreds with obvious fasciation (e.g. Iowa 5125) might be modified and improved by introducing one or two teosinte chromosomes.

W. C. Galinat

13. Chromosomes in the F_1 hybrids of maize and Jutiapa teosinte from Southern Guatemala.

Microcytes of F_1 hybrid plants of Wilbur's flint x Jutiapa teosinte and its reciprocal cross showed that meiotic chromosomes are sticky throughout all stages of this division. Chromosome knobs are usually fused into masses of heterochromatin, rendering chromosome identification and knob count extremely difficult.

At pachytene a paracentric inversion occupying the middle region of the long arm of chromosome 1 and equivalent to about one-fifth of its length was found. In addition to In 1 a practically terminal inversion in the short arm of chromosome 9 was definitely identified. Like In 9's in other previously reported teosinte varieties, this inversion underwent various configurations, predominantly loops, at pachytene. Measurements at pachytene showed the length of this In 9 to be about 62 per cent of the total length of the short arm, about the same length as in In 9's previously reported.

At metaphase I occasionally a few large sporocytes fail to undergo regular chromosome congress. Instead, the chromosomes form several chromatin masses scattering in the cytoplasm. These chromatin masses are well stained, but they no longer show any chromosome individuality. This phenomenon may be due to incompatibilities probably existing between the germplasm of maize and that of Jutiapa teosinte.

At anaphase I, chromatid bridges and fragments were counted in a total of 509 randomly chosen sporocytes. As shown in Table I, about 20 per cent of these sporocytes have either one bridge and one free fragment, or one free fragment without bridge. Three sporocytes having one bridge but without fragment were unexpectedly encountered.

At anaphase II the frequency of the occurrence of chromosome bridges was unexpectedly low. In a total of 415 single cells only one cell having a chromosome bridge was observed. (Table I.)

Table I. Frequency of dicentric bridges (B) and acentric fragments (F) at anaphases I and II of F_1 plants of maize and Jutiapa teosinte.

	Anaphase I						Anaphase II based on single Cell Counts	
	O B	1 B	O B	1 B	O B	1 B	O B	1 B
	O F	1 free F	1 free F	O F	2 F's	1 attached F		
Frequency	405	53	46	3	1	1	414	1
% of total	79.5	10.4	9.0	0.6	0.2	0.2	99.8	0.2

Y. C. Ting

14. Low temperature effects on chromosomes similar to those of X-rays.

In the winter of 1959, inflorescences of nine F_1 plants of Wilbur's flint x Jutiapa teosinte and its reciprocal cross were collected and fixed with aceto-alcohol fixative in Homestead, Florida. The time of fixation of these inflorescences was about one week after frost occurring on the 24th of January, which killed a part of the winter-grown maize plants. When microsporocytes of these inflorescences were investigated with standard squash technique, synizetic knob, ubiquitous univalents, mitotic chromosomes, chromatin aggregates, precocious division, elongated spindles and micronuclei were constantly observed. These irregularities are similar to those induced by x-rays. However, when the same materials were grown in Jamaica Plain, Mass., in the summer of 1960, the above abnormalities were rarely obtained with the same technique. It seems difficult to exclude a conclusion that these irregularities are probably induced by low temperature.

Y. C. Ting

15. Cross-sterility in Chalco teosinte.

Eleven Chalco teosinte plants grown from open-pollinated seeds were employed as seed parents and crossed with our standard inbred strain of Wilbur's flint. Only four seeds were produced. The total number of receptive silks involved was estimated at 785, which