

The data indicate that ears borne below an optimum position may be reduced in size probably because of competition with longer shanks and more numerous husks.

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9. Clustered spikes, an extreme feature of teosinte, present in maize-Tripsacum hybrid.

Since the clustering of spikes is unique to teosinte among the American Maydeae, this character seems at first to oppose the theory that teosinte is derived from a maize-Tripsacum hybrid. But the presence of clustered spikes in an  $F_1$  hybrid between multiple-tester maize and Tripsacum dactyloides, which is currently under study, demonstrates that this feature is merely a hybrid product of combining two other characters from maize and Tripsacum. When the many-noded shank (peduncle) of maize, which has a lateral bud at each node, is combined with the small two-ranked spike of Tripsacum there is a development of the lateral buds into clusters of spikes.

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10. Cytological studies of  $F_1$  hybrids between maize and teosinte.

A. Chalco teosinte - maize hybrids. Two  $F_1$  plants of the cross of an inbred maize strain of Wilbur's Flint x Chalco teosinte and its reciprocal were cytologically investigated. A practically terminal inversion was found at pachytene in the short arm of chromosome 8 in both of these plants. This inversion, like In 8 in other varieties of teosinte, formed loop-shaped, ring-shaped and asynaptic configurations. The length of this In 8 and the percentage of the short arm which it occupies are shown in Table I.

Table I. Length of In 8 in Chalco teosinte

Cell No.	Length in microns		Percent of Short arm
	Short arm	Inversion	
1	16.0	13.6	85.0
2	14.0	9.2	65.7
3	12.8	9.6	75.0
4	14.2	10.7	75.3
5	13.4	9.6	71.6
Average	14.0	10.5	74.5

The chromosomes in these  $F_1$  plants were well spread and easily identifiable. There was one knob on the long arm of chromosome 1, and one on each arm of chromosome 2. The long arm of chromosome 3 had a medium-sized knob. A small subterminal knob was present on the short arm of chromosome 4, and a relatively large knob occurred on the long arm. A large knob occurred on the short arm of chromosome 5. Two knobs were found on the long arm of chromosome 6, and a small terminal knob or a large chromomere on the short arm of the same chromosome. A large knob was also present on the