

Meiosis was examined in normal plants of Cylindrical Dent, Cuban Flint, and Early Caribbean. Meiosis was normal in that 10 bivalents were formed; there was no indication of lagging chromosomes which might have accounted for aberrant seedlings. In one plant of Coastal Tropical Flint the anthers were very small and shrivelled but P.M.C.s were present, although divisions could not be seen. Mitoses have also been examined in abnormal seedlings of four families. The diploid count of $2n = 20$ was obtained for seedlings that included albino, yellow-leaved, "virescent" and weakly seedlings, as well as normal controls.

Some plants produced viviparous growth in their tassels, the florets developing directly into young plants. It has been possible to vegetatively propagate these, and they form good roots. These propagules appear to make only limited growth and mortality has been heavy. This is believed to be the first record of this condition in cultivated maize, although it is known that Singleton's "corn-grass" mutant will vegetatively propagate. This character supports the view that West Indian maize has evolved along a differing path from North American corn.

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1. Test of Ga specificity.

Further genetic tests for specificity of the interaction between gametophyte factors in the style and those in the pollen were made. Five plants that were homozygous ga in 4 but heterozygous for a Ga factor in group 5 and for bt were self pollinated and also crossed as ♂ on two Bt Bt Su Su stocks: #1 which carries the Ga in 4 and the ga in 5 and #2 which carries the Ga in 5 and ga in 4. These crosses were grown in an open pollination plot with borders and scattered rows of bt bt and Bt bt plants as supplemental pollinators. When mature the number of ears segregating and not segregating bt were counted. The selfs of the five parents had 12% or less of bt seeds.

♂ parents	♀ = Ga in 5, ga in 4 Stock #2			♀ = ga in 5, Ga in 4 Stock #1		
	<u>Bt Bt</u>	<u>Bt bt</u>	% het.	<u>Bt Bt</u>	<u>Bt bt</u>	% het.
19875 - 2	65	2	3.0	46	18	28.1
19875 - 3	63	4	6.0	47	27	36.5
19875 - 7	20	1	4.8	61	15	19.7
19873 - 3	56	14	20.0	37	21	36.2
19873 - 5	42	31	42.5	43	21	32.8

If the Ga in 4 were specific in its effect, the cross with stock #1 should have given a ratio of 1 Bt Bt: 1 Bt bt. The tests indicate there was some effect of stock #1 on the ratio of Bt: bt through the pollen. This stock is known to carry the Ga in 4 and not the one in 5, suggesting a non-specific effect of the Ga in 4. Since stocks 1 and 2 are far from isogenic it is possible that the effect is due to some other factor, although there was no disturbance of the bt ratio when the test crosses of that stock were selfed.

The comparable data for the tests of plants homozygous for the ga in 5 but heterozygous for su and for the Ga in 4 were summarized in the Maize News Letter #28, p. 60. Stock #2 carrying the Ga in 5 had no effect on the Su: su ratio, indicating it had a specific effect.

2. Crossing over in ♂ vs ♀.

Tests of la - su - gl in crosses with maize chapaloti, Long eared Papago, Argentine pop, and Mexican Meal consistently showed higher recombination in the ♂ than in the ♀ in the la - su region but no difference in the su - gl region.

For region 1: 8.49 ± .66% as ♀, 11.01 ± 0.79% as ♂.

This difference is smaller than that found in tests with other stocks.

For region 2: 39.0 as ♀, 39.4 as ♂.

Tests of sh - wx with gourd seed, Tom Thumb pop, Maize chapaloti, Long eared Papago, and KYS, showed very little difference, except in occasional plants.

3. New characters.

"Expanded glumes" is a recessive in which at the time of anthesis and for a short time after that the glumes of the tassel are almost at right angles to the axis. Linkage was found with T5-7(5179):5L.64 - 7L.68 with a recombination value of 24.4 ± 3.2%; and with T5 - 10 (5688): 5L.78 - 10L.49 with a recombination value of 4.8 ± 0.6%. This gene must be located in the long arm of chromosome 5.

4. Tests for directed segregation in a Q4 with short interstitial segments.

An earlier test with Argentine pop had given doubtful results. In a new test of the F₁ backcrossed to Argentine pop there was a ratio of 258 fertile: 211 partially sterile. The deviation from 1:1 is significant; but even if it is the result of directed segregation the effect is small.