2. A new teosinte mutant.

Last summer, 22 plants were grown from open-pollinated seeds of Guanajuato teosinte of central Mexico. When these plants were about two-months old, it was found that one of them was extremely different from its sibs. It was weedy. Its leaves were narrow, light-green, and pubescent. It was diminutive in height but tillered profusely. Hence, it was tentatively named a new mutant of Guanajuato teosinte.

Several male inflorescences of this mutant were fixed for cytological examination. However, no gross structural abnormalities of the chromosomes were identified. It was a diploid. The stainability of the chromosomes was generally poor. At both diakinesis and metaphase I, the bivalents appeared diffuse but were otherwise normal.

The pollen was poorly developed. Less than 10 percent of the ovules set seeds. Since the mutant was suspected to represent a primitive type of teosinte, a detailed study is in progress.

Y. C. Ting

3. Determination of the cell cycle (mitotic) of maize.

The cell cycle of maize was determined by autoradiography using tritiated thymidine. Seeds were germinated at room temperature in the dark and the sprouts were transferred to Hoagland's nutrient solution. After a day in Hoagland's solution they were transferred to the same solution with 1 uC/ml of tritiated thymidine. They remained in the the isotope solution thirty minutes and then were rinsed well and transferred back to fresh Hoagland's solution for continued growth.

Root tips were collected at varying time intervals after isotope treatment. They were then rinsed with fresh water, fixed with Carnoy's fixative, and stained with Schiff's reagent. The slides were prepared following the standard method and treated with Kodak NTB emulsion. After exposure for 13 days, the slides were developed and fixed. Under the light microscope, the slides were studied. Labelled and unlabelled prophase and metaphase figures were counted.

A total of 645 cells undergoing mitotic division was examined. The percentages of labelled mitotic cells were determined and plotted against time after labelling.

By using the method described by Wimber (1966), the duration of G_2 + M/2 (second growth period and half of mitosis), S (DNA synthesis), C (complete cycle), and that of G_1 + M/2 (first growth period and half of mitosis) were estimated. The duration of G_2 + M/2 equals 5.5 hours; S, 8.3 hours; C, 13.0 hours; and G_1 + M/2, -0.8 hours. From examination of all mitotic figures the results were: G_2 + M/2, equals 6.3 hours; S, 7.4 hours; C, 12.7 hours; and G_1 + M/2, - 1.0 hours.

The percentage of cells in mitosis was determined by counting the number of dividing and non-dividing cells. It was found that 14.11% of the total cells counted were in mitosis; therefore, mitosis consists of 14.11% of the complete cycle. This was calculated to be 1.83 hours by using the prophase results and 1.79 hours by using the combined results.

With this information the four parts of the cell cycle were estimated. The results in hours are as follows:

	C	S	G_2	M	G_1
Prophase	13.0	8.3	4.58	1.83	-1.72
Combined figures	12.7	7.4	5.40	1.79	-1.90

The large negative value for G_1, especially in the results of the combined figures, is difficult to interpret and no explanation can be given here for this. According to Clowes (1965), the negative value obtained for G_1 indicates that this stage does not exist separately but is probably accommodated in mitosis. But the large negative value for G_1 (-1.90) as found in the combined results could not possibly be so accounted for, since mitosis was calculated to be 1.79.

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