

The cto mutation shows a high degree of polymorphism and thus may be of interest for embryologists. Further studies of this mutation are in progress.

E. I. Vahrusheva

A mutation causing the absence of the first division in meiosis — After treating the seeds of line W23 with a 0.012% solution of N-nitroso N-methylurea for 24 hours at 20-22° C, we have obtained in F₃ a recessive monogenic mutation showing total male and female sterility.

While studying meiosis in homozygous mutants the following peculiarities of chromosome behavior have been found:

(a) Premature spiralization of the chromosomes. A dense chromatin layer forms around the nucleolus and later divides into 20 strongly reduced univalents.

(b) Absence of all prophase I stages (leptotene, zygotene, pachytene, diplotene and diakinesis).

(c) Absence of chromosome conjugation.

(d) Division of the centromeres of sister chromatids in metaphase I and the strict separation of 20 chromosomes in anaphase I towards each pole.

(e) Random distribution of the chromosomes during division II, resulting in sterility.

We have designated this mutation as the absence of the first division (afd-W23).

I. N. Golubovskaya* and A. S. Mashnenkov

*Institute of Cytology and Genetics, Novosibirsk, U.S.S.R.

UNIVERSITY OF MASSACHUSETTS

Department of Botany, Amherst, Massachusetts

Possible sporophytic expression of the waxy gene — It is widely understood that the phenotypic influences of the waxy genotype are limited to the pollen and the endosperm. Ericksson (Hereditas 63:187, 1969), however, has presented the following summary of several studies:

<u>Cross</u>	<u>Total kernels</u>	<u>Waxy kernels</u>
<u>WX WX</u> x <u>WX WX</u>	79,381	39,173
<u>Wx wx</u> x <u>Wx wx</u>	152,871	36,523

The expected ratio of non-waxy to waxy should be 2:2 in the first cross and 3:1 in the second. If the totals were equal in the two crosses, the numbers of waxy kernels in the first and second crosses would then be in the ratio 2:1. The totals are not equal, however, and this ratio should be corrected to 2:(152,871/79,381) or 2:1.9257, if we assume that the disadvantage of the wx pollen is equal whether the genotype of the maternal parent is wx wx or Wx wx.

The assumption can be tested with the chi-square test:

Observed	39,713	36,523
Expected	$75,696(2/3.9257) =$	$75,696/(1.9257/3.9257) =$
	38,564.33	37,131.67

Chi-square = 19.5728, df=1, P <.005

The result suggests, first of all, that waxy may have an effect on stelar tissues. If further studies support this suggestion, an interesting interaction between pollen tubes and stelar tissues will be indicated. These further studies must, of course, test for an alternative explanation: the possible influence of the ga8 locus, which is within 15 map-units of wx on chromosome 9. Perhaps some of the material summarized by Ericksson showed the influence of this locus. This too could have caused the deviations observed.

D. Mulcahy and E. Ottaviano*

*University of Milan, Italy

UNIVERSITY OF MASSACHUSETTS

Suburban Experiment Station, Waltham, Massachusetts

and

HARVARD UNIVERSITY

Bussey Institution, Cambridge, Massachusetts

The practical use of high quality but defective endosperm traits — Various recessive endosperm mutants (e.g., shrunken, brittle, opaque, waxy, etc.) which improve the quality (sweetness, flavor, nutritive value) of the endosperm are often impractical for large scale commercial use because they are associated with undesirable production traits such as reduced germination and disease susceptibility. However, if they enter a corn hybrid from just the pollen parent, which constitutes only every fifth row in a crossing field and which may come from nurtured means, the desired recessive traits will still segregate out in 25% of the F₂ kernels scattered at random on each ear of the farmer's crop. Thus, there will be normal seed quality for the seedsman, and the recessive mutants will still have a significant although reduced effect on the quality blend of the farmer's crop.

The popular bi-color (Y vs. y) sweet corn hybrids are an established example of the concept. In the case of shrunken-2 now used in combination with starchy (Su Su, sh2 sh2), the double recessive (su su, sh2 sh2) would be in the pollen