The range of the size of endosperm mosaics varies from 1/2 to 1/4 or smaller of the endosperm. Some of the bz-sh phenotype were of the usual breakage-fusion-bridge-cycle products. Endosperm nuclei treated between 52 to 68 hours after fertilization gave seed of which at least half contained one or more small mosaic losses. Quantitative studies could very well be done at this stage because of the relatively large number of sectors and ease of identification.

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4. Studies on induced non-disjunction.

In the studies where losses of the short arm of chromosome 9 have been followed in the endosperm and aleurone layers, it has always been assumed that losses of C - sh - bz - wx genes are due to a break between waxy and the centromere. A loss of the entire chromosome 9 would give the same result.

A homozygous 5-9 translocation (Anderson and Longley's 7205) carrying a dominant marker was used to test this latter possibility. The break in the long arm of 9 is attached to the segment of 5 containing Pr. Irradiated pollen was crossed to the recessive C - sh - bz - wx, pr thereby permitting one to detect loss on both the short and the long arm of 9. Roughly about 1/10 of the losses of Wx also lost Pr. As expected, it appears that chromosome breakage between wx and the centromere does explain the majority of losses. Coincident losses of Wx and Pr can be explained by two separate detachments (i.e. dicentrics and centric rings) although a low frequency of complete chromosome loss cannot be ruled out.

Four different compounds were selected for tassel treatment because of their known properties and reactions with sulfhydryl groups. According to Mazia and others, sulfhydryl groups are reported to be involved with spindle function. The following compounds were used at the concentration indicated: 0.001 M $HgCl_2$, 0.005 or 0.0001 M. $CuSO_4$, 0.002 M iodoacetamide and 0.01% betamercaptoethanol. Solutions of these compounds were injected with a hypodermic syringe into the tassel well after meiosis had occurred with the idea of disturbing the second pollen grain division. The desired situation was to get 11 chromosomes in one sperm and 9 in the other.

Pollen from treated plants was then crossed to recessive testers as follows: C - sh - bz - wx, pr, y X c - Sh - Bz - Wx - Wc - Pr, Y (homozygous 5-9 translocation). Aberrant kernels possessing the recessive phenotype were selected from 4,593 seeds and planted in order to test the possibility that the plants were trisomic for chromosome 9. Root tips were collected from each of the 29 plants which resulted. Backcrosses were made to the recessive tester to detect any evidence of trisomic-type ratios and contamination. Of the 24 plants checked out completely, all were diploid as far as chromosome 9 was concerned. No clear cut case for non-disjunction giving rise to trisomic plants was found.

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