

PURDUE UNIVERSITY  
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1. The difference in Wx frequency between male and female gametes from wx<sup>Coe</sup>/wx<sup>90</sup>.

In 1963 a conventional genetic analysis of the heterozygote Bz +90 V/bz C+ v, ae ae showed an interesting difference in Wx frequency in the male and female gametes. When the heterozygotes were used as males onto the bz wx<sup>Coe</sup> v, ae tester, 76 apparent Wx, ae recombinants were found in 133,358 kernels. This is a frequency of  $57 \times 10^{-5}$ . The weighted average of Wx frequency in the pollen of the heterozygotes was  $75 \times 10^{-5}$ . When heterozygous plants of the same genotype were used as female parents, 19 apparent Wx, ae recombinants were found in 94,158 kernels or a frequency of  $20 \times 10^{-5}$ . The probability that the observed distribution would be found if Wx gametes were equally likely for both male and female populations is .0001 (from expansion of the binomial distribution and summation).

The verification of the presumed recombinants was hindered by poor germination. Test pollinations (by bz wx<sup>Coe</sup> v, ae) were obtained on only 36 plants. Of these 31 came from Wx, ae recombinants, 2 from Wx Ae contaminants, and 3 from wx ae gametes. These latter could arise by heterofertilization events or misclassification.

The same type of test was repeated in 1965. Plants of the constitution Bz +90 V/bz C+ v, ae ae were used as male and female parents in crosses with the tester stock bz wx<sup>Coe</sup> v, ae. When the heterozygotes were used as males, 18 presumed Wx ae were found in 35,497 kernels. This is a frequency of  $51 \times 10^{-5}$ . The weighted average of Wx in the pollen of the plants used as male parents is  $72 \times 10^{-5}$ . When the heterozygotes were used as female parents, 17 presumed Wx ae were found in 85,679 kernels or a frequency of  $20 \times 10^{-5}$ .

The agreement between the results of 1963 and 1965 indicates that the difference in Wx frequency between male and female gametes for wx<sup>Coe</sup>/wx<sup>90</sup> heterozygotes is real and reproducible.

In tests with Bz Wx V/bz wx v plants that are as closely related as possible to the Bz wx<sup>90</sup> V/bz wx<sup>Coe</sup> v heterozygote, no differences were found for the bz wx interval ( $\sigma\sigma$  20.0% and  $\text{♀♀}$  19.1%) or the wx v interval ( $\sigma\sigma$  5.6% and  $\text{♀♀}$  5.4%).

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2. Reconstitution of the R<sup>st</sup> allele.

Near-colorless aleurone mutants from R<sup>r</sup>R<sup>st</sup> are associated with crossing over between outside markers and possess all