

9. Tests to determine whether paramutation is unidirectional or reciprocal in $R^r R^{st}$ heterozygotes.

The R^r allele conditioning self colored aleurone and plant pigment is regularly changed to a weakly pigmenting form in the progeny of heterozygotes possessing the R^{st} allele (Brink, 1956). Two tests were conducted to determine whether the stippled phenotype produced by R^{st} is regularly altered in the $R^r R^{st}$ heterozygote. The first test was made in the following way. A W22 $R^r R^{st}$ heterozygote was selfed. The $R^{st} R^{st}$ and $R^r R^{st}$ progeny from this self were testcrossed on W23 $r^e r^e \phi \phi$. The kernels of $R^{st} r^e r^e$ aleurone phenotype from the testcross ears were scored under a 30x binocular microscope fitted with a 20 x 20 reticule, covering an area of approximately 12 square millimeters. A predetermined area of the abgerminal side of the kernel was brought under the reticule and the number of spots delimited by one-half of the reticule were counted. The results were as follows:

Testcross	No. of kernels scored	Mean no. of spots per kernel
W23 $r^e r^e$ x $R^{st} R^{st}$	360	35.22
W23 $r^e r^e$ x $R^r R^{st}$	240	33.52

A test of significance gave $t = 0.56$, $P > 0.5$.

The second test was made in the following way. A W22 $R^{st} r^r$ heterozygote was selfed and used as the pollen parent on W22 $R^r R^r$. The $R^{st} R^{st}$ and $R^r R^{st}$ progeny were testcrossed on W23 $r^e r^e \phi \phi$. The kernels of $R^{st} r^e r^e$ aleurone phenotype from the testcross ears were scored with a microscope fitted as described above. A predetermined area of the crown was brought under the reticule, and the number of spots delimited by one-twentieth of the reticule area were counted. The results were as follows:

Testcross	No. of kernels scored	Mean no. of spots per kernel
W23 $r^e r^e$ x $R^{st} R^{st}$	240	6.08
W23 $r^e r^e$ x $R^r R^{st}$	240	6.37

A test of significance gave $t = 0.51$, $P > 0.5$.

These facts indicate that paramutation is unidirectional in the $R^r R^{st}$ heterozygote.

H. B. Cooper

10. The effect of dissociation (Ds) on the stability of the variegated pericarp allele, P^{VV} .

The addition of a transposed Modulator ($tr-Mp$) to a P^{VV}/P^{WR}