

3. Tassel mosaics (paramutation) from RR and Rr backgrounds.

In our reports above, differences in paramutated R expression, when R is introduced through pollen, are likely to represent different states of the R gene. Relatively large score differences have been found in tassel sectors and since these differences are carried over into the following generations, they are of genetic significance. It is possible to inquire whether such tassel mosaicism which attends paramutation is a peculiarity of the paramutagenic alleles (such as R^{st}) only. We find that tassel mosaics for R expression can be conditioned in RR and Rr backgrounds and thus all alleles of R can be considered paramutagenic, even R itself. This view has the value of permitting conceptual unity with respect to paramutation; paramutagenic alleles such as R^{st} can now be regarded as paramutagenic extremes in an allelic continuum where all alleles possess paramutagenic ability to one degree or another.

Table 3 shows scores from testcrosses of RR homozygotes. The pollen collected earliest on the tassel produced the darker phenotypes compared to those collections made four to seven days later. The same gradient is expressed in the data on Rr pollen collections where the last collections tend to be lighter than the first. Another point to be noted in the data is that slightly higher pigment values are recorded for the Rr combination. Brink and his students have already noted this difference in the earlier literature. The interesting point is that the difference in R expression becomes most marked in the last pollen collections; when the first pollen samples for RR and Rr testcrosses are compared a relatively slight difference is recorded. The data suggest, therefore, that the mosaic gradient for R expression is increased in single tassels of the RR combination compared to the Rr heterozygote. In terms of paramutation, R is somewhat more paramutagenic than r.

Table 3
Comparison of testcrosses from pollen samples taken from the same tassel. First and last pollen samples were separated by periods ranging from four to seven days apart.

Tassel Sample	Plant Number							Sample Pooled Mean
	1	2	3	4	5	6	7	
	<u>RR</u> Testcross Scores							
First Pollen Sample	20.94	20.68	21.06	20.30	21.48	20.98		20.91
Last Pollen Sample	19.60	19.76	20.24	19.42	20.48	20.04		19.92
	<u>Rr</u> Testcross Scores							
First Pollen Sample	21.12	20.80	21.36	20.94	20.94	21.24	21.16	21.08
Last Pollen Sample	20.12	20.60	21.22	19.72	20.80	20.76	20.98	20.60

Bernard C. Mikula
William Meyer