differences between the various sub-lines with regard to aleurone spotting tended to persist in recurrent matings to the W22 $r^r r^r$ inbred strain.

A light marbled family was tested for frequency of mutation to self-color in homozygotes ($R^{mb}R^{mb}$) and heterozygotes ($R^{mb}r^r$). The mutation rates were 0.0×10^{-4} and 6.8×10^{-4}, respectively.

Two W22 marbled sub-lines differing in degree of aleurone spotting and rate of mutation to self-color proved to be indistinguishable in paramutagenic action in $R^r R^{mb}$ heterozygotes.

-- Willem H. Weyers

(The above note, submitted by R. A. Brink, is a slightly paraphrased excerpt from the summary of Dr. Weyer's Ph.D. thesis. Dr. Weyers has recently returned to South Africa. His address is P/B 1021, University of Natal, Pietermaritzburg, Natal, South Africa.)

5. Paramutation of R^g mutants from standard R^r.

A series of mutant genes designated R^g_1 to R^g_{10} were derived from the standard R^r allele used in previous Wisconsin studies of paramutation. The mutants differ from R^r in that they produce green, rather than red, seedling and anthers. Comparisons were made of the aleurone phenotypes conditioned by each of the R^g genes, relative to that of standard R^r, and tests were made for paramutability of the mutants.

The following test matings were made: (1) W23 $r^g r^g$ ♀ x W22 $R^r R^g$ ♂, (2) W23 $r^g r^g$ ♀ x W22 $R^g R^{st}$ ♂.

The aleurone pigmentation of the individual testcross kernels was scored by matching them against a six-kernel standard set selected so as to define seven pigmentation classes. The $R^g r^g r^g$ and $R^r r^g r^g$ classes of kernels from testcrosses involving $R^r R^g$ plants were separated retroactively to scoring by germination and observation of seedling color. The $R^g r^g r^g$ and $R^{st} r^g r^g$ kernels from testcrosses involving $R^g R^{st}$ plants were separated visually on the basis of aleurone phenotype, and only $R^g r^g r^g$ kernels were scored.

A representative sample of the data obtained is shown in table 1.

Table 1. Mean aleurone color scores for $R^r r^g r^g$ and $R^g_1 r^g r^g$ kernels from the cross $r^g r^g$ ♀ x $R^r R^g$ ♂, and for $R^g r^g r^g$ kernels from the cross $r^g r^g$ ♀ x $R^g_1 R^{st}$ ♂

Mating	Pedigree	No. of ears	Endosperm genotype	Mean score
$r^g r^g$ ♀ x $R^r R^g_1$	W23 x J-79	4	$R^r r^g r^g$	5.41
			$R^g_1 r^g r^g$	5.45
$r^g r^g$ ♀ x $R^g_1 R^{st}$	W23 x J-36	4	$R^g_1 r^g r^g$	2.27

The complete data show that: (1) the mutant genes are indistinguishable from standard R^r in aleurone pigmenting capacity; and (2) the R^g gametes produced by R^gR^{st} heterozygotes regularly determine paramutant aleurone phenotypes.

-- Douglas Brown

6. Paramutagenic action of paramutant R^r.

Data were collected to test the possibility that paramutant R^r genes have acquired the capacity to promote paramutation in some degree.

R^rR^g heterozygotes from matings of the type R^rR^{st} ♀ x R^gr^g ♂ were used as pollen parents in test crosses to W23 r^gr^g parents. It is expected that paramutagenic action of the paramutant R^r allele, if such exists, would be revealed by reduced pigmentation of $R^gr^gr^g$ testcross kernels. The controls consisted of $R^gr^gr^g$ kernels from test matings of R^rR^g heterozygotes derived from R^rR^r ♀ x R^gr^g ♂ crosses. Testcross kernels were scored and identified according to the procedure described in the preceding section.

The results are summarized in table 2.

Table 2. Mean scores for $R^gr^gr^g$ kernels from testcrosses involving R^rR^g plants derived from R^rR^r ♀ x R^gr^g ♂ and R^rR^{st} ♀ x R^gr^g ♂ matings

Parentage of R^rR^g ♂ testcross parent	No. of testcross ears	Mean score for $R^gr^gr^g$ kernels only
R^rR^r ♀ x $R^g_1r^g$	4	5.45
R^rR^{st} ♀ x $R^g_1r^g$	10	4.36
R^rR^r ♀ x $R^g_3r^g$	4	5.70
R^rR^{st} ♀ x $R^g_3r^g$	10	4.88
R^rR^r ♀ x $R^g_4r^g$	4	5.53
R^rR^{st} ♀ x $R^g_4r^g$	10	4.82
R^rR^r ♀ x $R^g_5r^g$	4	5.09
R^rR^{st} ♀ x $R^g_5r^g$	10	4.11
R^rR^r ♀ x $R^g_6r^g$	4	5.45
R^rR^{st} ♀ x $R^g_6r^g$	10	4.91
R^rR^r ♀ x $R^g_7r^g$ ♂	4	5.53
R^rR^{st} ♀ x $R^g_7r^g$ ♂	10	4.80
R^rR^r ♀ x $R^g_8r^g$ ♂	4	5.69
R^rR^{st} ♀ x $R^g_8r^g$ ♂	10	4.55
R^rR^r ♀ x $R^g_{10}r^g$ ♂	4	5.38
R^rR^{st} ♀ x $R^g_{10}r^g$ ♂	10	5.02