4. Effect of the Variegated Pericarp Allele (P^{VV}) on Pr and Wx Losses in Endosperm Tissue.

Pollen of two near-isogenic Pr Pr stocks, one heterozygous for medium variegated pericarp and colorless pericarp, red cob (P^{VV}/P^{WR}) and the other homozygous P^{WR} was placed on the silks of an inbred ACRPrP^{WR} line. The resulting kernels were scored for pr sectors under a low-power binocular microscope. A similar test was made for waxy sectors following the application of comparable lots of Wx P^{VV}/P^{WR} and Wx P^{WR}/P^{WR} pollen to plants. The results obtained are summarized in tables 1 and 2.

The frequency of sectoring for pr was more than three times as high following the use of pollen from P^{VV}/P^{WR} plants as after the control P^{WR}/P^{WR} matings. The difference is highly significant.

Only a few kernels have been scored for waxy sectors, but again the use of Wx pollen from plants carrying the P^{VV} allele results in more losses of the Wx phenotype than in the control P^{WR} matings. It is interesting to note, however, the frequency of sectoring in the controls also is high, namely, about one sector per two kernels on the average. The technique used in scoring probably disclosed all but the very small mutant sectors throughout the endosperm.

Table 1. Effect of P^{VV} on the frequency of Pr to pr changes in the endosperm tissue following pollination of ACR pr plants with near-isogenic P^{VV}/P^{WR} Pr/Pr and P^{WR}/P^{WR} Pr/Pr individuals.

Med. var. plants (P^{VV})	No. kernels with pr-sectors per 1000 kernels	Total kernels counted	Control plants (P^{WR})	No. kernels with pr-sectors per 1000 kernels	Total kernels counted
F220 (16)	58.75	5,634	F225 (1)	22.11	6,286
F220 (22)	114.01	2,263	F225 (2)	19.84	6,554
F220 (32)	120.52	2,987	F225 (4)	37.64	5,871
F220 (38)	145.27	3,263	F225 (18)	49.58	6,232
Sum	--	14,147		--	24,943
Means	109.64			32.29	
s	34.98			13.98	

difference of the two means = 77.35**

Table 2. The frequency of Wx to wx changes in the endosperm tissue following pollination of waxy plants with near-isogenic P^{VV}/P^{WR} Wx/Wx and P^{WR}/P^{WR} Wx/Wx individuals.

Med. var. plants (P^{VV})	Total kernels counted	% kernels with waxy	Total waxy sectors	Control plants (P^{WR})	Total kernels counted	% kernels with waxy	Total waxy sectors

		sectors				sectors	
F219 (7)	100	61	172	F227 (10)	100	29	38
F219 (8)	100	59	155	F227 (11)	100	28	32
F219 (21)	100	63	161	F227 (22)	100	54	89
Total	300	183	488		300	111	159

Cheng-Mei Fradkin