

4. Higher population studies of the Rp_1 locus for resistance to *P. sorghi*.

Previous studies at this laboratory have shown that the corn inbred lines GG208R, Cuzco and Mex 212 carry a single dominant gene that conditions resistance to a specific biotype (90laba) of corn rust *Puccinia sorghi* Schw. Further work showed that genes in GG208R and Cuzco were allelic and were respectively designated Rp_1^a and Rp_1^d . The gene in Mex 212 appeared to be either a member of this allelic series or a gene very closely situated to Rp_1 . The data from the following test crosses support the latter view.

Crosses	Number of seedlings observed		Expected		Freq. of Susc.
	Res.	Susc.	Res.	Susc.	
(GG208R x Mex 212) x R168 (Rp_1^a $Rp_1^?$) x rp rp	6175	8	1:0		13×10^{-4}
(GG208R x Cuzco) x R168 (Rp_1^a Rp_1^d) x rp rp	4168	2	1:0		4.8×10^{-4}

The very low frequency of susceptibles arising in cross number 2 can be due to deletion or mutations. The F_1 generations are currently being studied to measure mutation and deletion frequencies. The frequency of susceptibles arising in cross number 1 involving Mex 212 is almost 2.7 times larger than that in cross number 2. The difference is highly significant. It appears then that in test cross number 1 the frequency of susceptibles also includes crossover events. If this is true, then corn chromosome number 10 has a region bearing several genes close to one another conditioning resistance to biotypes of corn rust.

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1. Protogyny and male sterility in maize.

A large collection of maize germ plasm from India, North Central and South America, Caribbean and other maize growing regions of the world has been collected under the Coordinated Maize Breeding Scheme at this center. Inbred lines developed from such wide germ plasm have been screened and are being used for production of various hybrids. During a study of this material, it was discovered that some inbred lines